CHAPTER II

TRADE AND INDUSTRIALISATION
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In this chapter we shall study the strategy of industrialisation as determined by comparative advantage. In other words, an attempt has been made to test whether small countries could bring about industrial growth with the expansion of manufactures for export.

A study of this model can be made by bringing into sharp focus two major aspects. The first one is concerned with the export of labour-intensive manufactures. And the second one embraces a complementary segment of the former i.e. development of skills. As we have seen, such a strategy can be understood by resolving the contradiction of manufacturing industries oriented to markets characterised by high income and price elasticity of demand. The explanation of trade in manufactures was an explanation of scale economies.

PART I

EXPORT OF LABOUR-INTENSIVE MANUFACTURES

Labour intensive manufactures are products in which economies of scale are insignificant and factor prices determine processing costs. Reductions in transport costs, which are also an outcome of improvement in transport facilities, enable a country to enjoy the benefits of lower factor prices. Decrease in transport costs and importance of scale economies allow for relocation of industries on the basis of factor prices.
especially labour-cost differential. Exports of labour-intensive manufactures are therefore determined by factor endowment.

The explanation for such trading patterns does not follow automatically from the traditional neo-classical trade model. The representative Heckscher-Ohlin (H-O) model attributes trading patterns to differences in factor endowments. Accordingly, a labour surplus economy would specialise in the export of labour intensive manufactures, a capital intensive economy would specialise in the export of capital-intensive products. But the model itself is not concerned with shifts in location of manufactures. The constraint to such a shift is the factor-immobility assumption of the H-O model, for in the model commodity movement substitutes factor movement. By allowing factor mobility, the possibility of taking advantage of low labour costs exists.

The exploitation of the labour-cost differential is therefore dependent on two conditions, i) capital mobility; and ii) low skilled labour. The first condition applies to situations where capital is not generated domestically. Then mobility of capital is necessary given a certain amount of complementarity between capital and labour. The second condition is operative due to the fact that the production of manufactures however labour intensive require low skills.

The need to translate cheap labour costs to cheap low skilled labour would mean government provision of training facilities.

It is with the above understanding that we can postulate the export of labour intensive manufactures from LDCs which have seen a phenomenal rise between 1960 and 1970. They grew at an annual rate of 20 per cent which exceeded the growth of total exports from all sources by a substantial margin. Thus, despite tariff barriers countries like Hong Kong, Taiwan and Korea have been successful in the export of manufactures.

The products have all been labour-intensive ranging from simple products (leather and leather products, foodstuffs, plastics etc.) to more sophisticated products requiring more skills (electronic goods, switchgears, accounting machines, typewriters etc.). Such growth in trade has been facilitated by improved transport and communication facilities as well as the widening wage differential between the advanced world and the backward countries. The table below gives an idea of the growth of manufacturing exports from Asia. Rahman has calculated


**Light Manufactures Exports of Asian Countries**

(U.S. $ million)

<table>
<thead>
<tr>
<th>Country</th>
<th>1960</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>2,506</td>
<td>9,052</td>
</tr>
<tr>
<td>Korea, Republic of</td>
<td>4</td>
<td>574</td>
</tr>
<tr>
<td>Taiwan</td>
<td>58</td>
<td>823</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>518</td>
<td>1,950</td>
</tr>
<tr>
<td>Philippines</td>
<td>17</td>
<td>79</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4</td>
<td>137</td>
</tr>
<tr>
<td>Singapore</td>
<td>204</td>
<td>357</td>
</tr>
<tr>
<td>West Malaysia</td>
<td>120</td>
<td>426</td>
</tr>
<tr>
<td>Thailand</td>
<td>8</td>
<td>140</td>
</tr>
<tr>
<td>Burma</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Cambodia</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>South Vietnam</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

\(a = 1961\) \(b = 1963\)


Commodity-wise break-up of labour-intensive exports. About 82 per cent of total exports in 1968 were labour-intensive commodities. Clothing alone accounted for 23 per cent of the total, non-cotton fabrics (mostly jute fabrics), (9.6 per cent), plywood (7.0 per cent), cotton fabrics (6.4 per cent),
leather (4.5 per cent) and carpets (4.4 per cent) made up another 32 per cent. Other labour-intensive commodities accounting for more than 2 per cent of the total were toys and sports goods, footwear, miscellaneous textiles, radio receivers, textile yarn and miscellaneous electrical machinery (mainly batteries, lamps and transistors). This trade has been mainly between developed and developing countries.

Explanations of Trading Patterns

Explanations then for such trading patterns are within the framework of a modified H-O model. The modification is necessary when capital-mobility is introduced so that strictly speaking the model is not the traditional two-factor model but a three-factor model viz. capital, skilled-labour and low skilled labour. Capital being relatively mobile compared to labour, comparative advantage is determined by the endowment of skilled and low skilled-labour. The mobility of capital equalising interest rates between countries reduces the three-factor model to the two-factor case. The two factors being skilled-labour and low skilled labour. Generally, labour-intensive industries require low skilled labour while capital intensive industries require skilled labour. In some industries however, although capital intensive require a higher proportion of low skilled labour. The reason for this will be studied later in this chapter.

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Rehman, n. 2, p. 108.
The four conditions for the above trading patterns are therefore: i) that labour is the immobile factor while capital is relatively mobile; ii) that low skilled labour cannot be perfectly substituted by either skilled labour or capital under identical production functions; iii) in a two-country, two-factor case with identical production functions it is possible to rank industries according to their labour-intensity and skill-requirements i.e., to rank them according to comparative advantage. Factor-intensity reversals are ruled out.

Thus small countries with the twin constraints of limited natural resources and surplus low skilled labour are able to attain comparative advantage in manufactures for export. By virtue of the first constraint such manufactures are not resource-based industries.

Reasons for Rising Labour Costs in the Developed Countries

The differential in labour factor costs between developed and developing countries has initially been due to the early industrialisation of developed countries. Wages have been higher to start with. This has been compounded by differing rates of population growth and rising trade union activity in the developed countries.

This differential even if it gets narrowed down in relative terms over time and with industrialisation, in absolute...
terms the gap remains. Sharpston has estimated that if U.S.
wage rates go up 5 per cent and Korean wages by 20 per cent,
the absolute differential still remains. Among the developing
countries increasing industrialisation increases wages faster
in some countries as compared to others. For example, Hong Kong,
Singapore and Korea 15 years ago were regarded as low wage
countries, but this is no longer the case. Firms with a high
low skilled labour component are shifting to Malaysia and
Indonesia. It has been estimated that by 1985 the only really
low-cost labour in Asia will be India, Bangladesh and Burma.

Technology and Labour-Intensive Manufactures

To complete our understanding of the shifts in location
of labour-intensive manufacture it is necessary to understand
trends in technological development. In the above analysis
the role of technology was ignored, where increasing labour
costs only provoked a shift in location. The neutrality of
technology cannot be accepted. Only by understanding the effect
of technological advancement and the failure to mechanise or
completely substitute low-skilled labour by capital that trade
in labour-intensive manufactures can be explained. Technolo-
gical development and labour-intensive manufactures can be
understood with i) static models or ii) dynamic models.

1) **Static Model**

This model is an explanation for labour-intensive manufactures with dated technology. The technological development of advanced countries has been motivated by the replacement of the scarce factor whatever it may be. In the case of U.S.A., Habakuk has argued that mechanisation was stimulated by the shortage of labour. To quote Habakuk:

> The dearness of American labour and the inelasticity of its supply provide an adequate explanation. Why, from a given range of techniques, the choice of the American manufacturer should have been biased towards those which were more productive per unit of labour because they were more expensive in capital per unit of output. The same circumstances might also have exerted favourable influences on the rate of investment by providing an incentive to devise new labour saving methods, and because capital intensity of investment increased the ability to devise such methods and also increased the propensity to save out of profits. The implication of the argument is that technical progress might itself have been the result of the expansion of the reserve army and not something introduced from outside the system. 8

Such price-induced adaptations is a search for cheaper methods of production. The historical trend expectation of rising labour costs and the opportunity to invest of an open-economy favoured labour-saving innovations in America. The impact of such innovations is to relegate labour-intensive manufactures as dated technology unsuited to the factor endowment of advanced countries.

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The above analysis is within the framework of static comparative advantage. The immobility of factors foreclosed any option besides substituting surplus domestic factor for scarce domestic factor.

ii) Dynamic Models - Product Cycle Model

The introduction of factor mobility may not always be in keeping with the innovation possibility outlined above. Dynamic conditions of factor mobility explain technological developments within a product cycle. The product cycle model and its variants (technological gap etc.) explain both the innovating and locational aspects of firms. Location of a product is influenced by a multitude of factors of which labour-cost considerations need not necessarily be the main one. With the introduction of multinational enterprises (MNE's) into trade, the location of investment is no longer governed by national factor endowment. MNE's are a major channel of mobility of capital. The product cycle is therefore, an integration of trade theory and locational factors.

A product has three phases and to each phase different locational considerations apply. To start with innovations

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9 References to the Product Cycle Model


c) J.E. S. Parker, The Economics of Innovation (The national and multinational enterprise in technological change) (London, 1974).

occur in markets of high income countries, especially the U.S.A., in response to growing new wants. This is despite the fact that basic scientific knowledge is free. The bias of the innovation is determined by factor endowments. For example, high labour costs in the U.S. dictated the introduction of drip-dry shirts among consumer products, or automatic fork-lifts in industrial products. An additional factor for location of a new product in advanced countries is the need for swift and effective communication between the producers and the consumer. At this stage the products not be standardised demand greater flexibility in changing inputs. The market experience of developed countries assures this flexibility. The producer is a monopolist and since the price elasticity of demand is low, low-cost location is unimportant. In the United States location of new products is made on the basis of national locational considerations which extend well beyond simple factor cost analysis plus transport considerations.

Phase II is characterised by growing demand and emulation by other firms. The lag between the two phases will depend on the technological possibilities for improvements and the number of competitors. Increased rivalry introduces price competition. The technology is now standardised so whatever changes that occur are usually product improvements and differentiation. Mass production becomes possible and economies of scale operate to reduce prices. The structure of the industry is that of mature oligopolist. Location is a function of economies of scale in production. If the product has a high income elasticity

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11 Vernon, n. 9a, p. 311.
of demand, or is labour-substituting, it will be located in advanced countries where the market is growing.

Phase III is that of the senescent oligopolists. Competition is strong and price elastic. The product is standardised and matured. The proportion of scientific and technical personnel is reduced. Survival is now through cost reductions that induce production shifts to low wage countries. In the case of MNE's location is easier due to their global options. Two alternatives are possible. The first is that of horizontal integration through the production of consumer goods. This would involve shifting of entire plants to LDCs. In many cases as in that of chemical fertilisers, the production process may be capital intensive. But since the product is standard a large proportion of low skilled to skilled labour is employed thus allowing for location in LDCs. The second alternative is that of vertical integration arising out of the ability to decompose production process into labour intensive and non-labour intensive phase as in the case of the electronics industry. Such decompositions are in processes which besides being labour-intensive are also easy to transport. A typical example is of the wafer in semi-conductors. Wafers are manufactured in U.S. Since they are light and easy to transport they are flown to Taiwan where they are soldered to the terminals, soldering being a labour-intensive process. The semi-conductors are then flown back to the U.S. 12

The advantage of highly standardised products is the existence of a well-developed market in the advanced countries.

12 Sharpston, n. 6, p. 95.
This advantage is more pronounced in international sub-contracting. Through sub-contracts the problem of marketing is avoided because of brand names, established outlets, publicity etc. Further, provisions in the tariff schedules of the advanced countries are lenient towards imports under international sub-contracts. Products which come under Tariff schedule of the U.S.A. custom items 807.00 and 806.35, permit an importer under certain restrictive conditions to pay the normal duty for the product imported only on the value-added abroad. No duty is paid on the value of the U.S. parts or materials incorporated. Similar provisions are there with Japan, U.K., France and Germany.

Diagramatically the three phases are represented for the U.S.A.

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13 Ibid.
Upto $\text{to}$ the product is new and produced in the U.S.A. From $\text{to}$ to $t_1$ the product is matured and competition increases. The product is initially exported and then relocated in other advanced countries. $t_1$ onwards the product is standardised and is now imported from cheap-labour countries.

In both the models labour-intensive manufactures have resisted the trend towards mechanisation. In a manner of speaking they represent the failure of technology. For example, in processes which involve complex shapes and re-entrants, standardisation is not feasible. Sewing of garments is similar to sewing with domestic machines and hence account for 80 per cent of the labour cost, while cutting has been mechanised through the use of laser beams. Assembling and production in short-runs again are labour-intensive. Included in such processes are those which are hot and messy such as sand casting, which even in advanced countries native labour can afford not to like thus, leaving this work to be done by badly-paid immigrants. Similarly textiles has always remained labour-intensive despite attempts to mechanise. It is this knowledge which enforces acceptance of a new international division of labour by the advanced countries.

Klein has demonstrated how it is possible to introduce dynamic considerations of learning and R&D activity into the

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14 Ibid.
15 Lary, n. 5. Lary has studied this problem in detail.
H-O model. The production function is given by

\[ q_i = S_i(z), \ \Phi_i(k, l). \]

The \( S_i(z) \) is the dynamic learning part or the firm's knowledge function. \( S_i \) depends on \( z \) which is a vector of cumulative variables. Klein has taken two \( z \)'s. One is the 'learning by doing' and the other 'R & D investment'. \( \Phi_i(k, l) \) is the static factor content part. When learning ceases \( (S_i \cong 1) \), \( \Phi_i(k, l) \) becomes the production function of the H-O model.

Superimposed on the product cycle model the \( S_i(z) \) of the production function is associated with Phase I/II. The advantage is with the developed countries. The second part of the production function is associated with Phase III and is a return to the neo-classical location theory.

The 1960's saw an increase in MNE's investments in LDCs in keeping with their international locational options. The preference range has been between setting up subsidiaries to other forms of marketing arrangement, as this would assure a constant high standard product outflow. In 1966 U.S. subsidiaries in Asia sold 75 per cent in their respective markets, exported 6 per cent of total sales to the U.S. and exported 10 per cent to countries other than the U.S. In later years, however, only 5 per cent of total sales were destined for local markets, 8 per cent for exports to the U.S. and a whopping 35 per cent for export to other countries.

17 BIA, n. 7, p. 43.
Labour-Intensive Manufactures

To sum up, labour intensive manufactures for exports have the following characteristics:

i) Production functions requiring significant inputs of labour;

ii) a high elasticity of demand which allows for a decrease in cost with an increase in the scale of production. This is necessary for gaining momentum in exports;

iii) production process largely independent of external economies;

iv) low transport costs, or high unit value manufactures capable of absorbing significant freight costs. 18

The categorisation of products are: i) labour-intensive final products which are produced inefficiently under heavy protection in developed countries (textiles, sporting equipment, shoes, leather etc.); ii) labour-intensive processes and component specialisation within vertically integrated industries (automobile parts, radio antenases, battery etc.); iii) labour-intensive resource oriented industries (marine products, canned fruits and vegetables). The production of the third category depends on low cost labour and transport improvements besides resource availability. Peru’s success in marine products is as much due to the Humbolt’s current as to low labour costs. 19

There is a fourth category which are standardised products but capital intensive. These include chemical fertilisers, news-

18 Vernon, n. 9a, p. 319.

19 a) Lary, n. 5.
b) Rehman, n. 2.
print, iron and steel. Strictly speaking they are dependent on domestic market and external economies.

PART II

SKILL FORMATION

In the model traced above labour-intensive manufactures involved low-skilled labour and not unskilled labour. The use of capital needs simple skills in any production function. Since most LDCs have a shortage of even low skilled labour the need to translate cheap labour into cheap trained labour is an essential prerequisite for industrialisation. An alternative to this could be the import of skilled labour. This is an expensive proposition.

Lack of skilled labour is due to the lack of a market for such skills. Skill formation is the outcome of two pulls -- incentive and capacity. Both these two forces are inoperative in LDCs. With industrialisation and widening of the market skill formation is sequential to the operation of external economies. There is another reason for investing in skills, with the exhaustion of labour-surplus it is inevitable that wages rise and comparative advantage shifts to products involving more skill. As mentioned earlier this has been noted for Korea and Taiwan. These countries have shifted from simple manufactures to more sophisticated manufactures. A brief analysis of the mechanism of skill-formation would therefore, be relevant in this context. Mechanism of skill-formation is related to two aspects: 1) the nature of training facilities i.e., institutional training or the 'on-the-job' training.
facilities; 2) who invests in these training facilities the government, firm or the individual.

Occupational Classification and Skills

There are two types of skills. One that is an outcome of generations of education in a technical atmosphere. Here skill formation is related to higher per capita income. The other involves the learning of basic elementary skills. Such skills have been categorised as 'on-the-job' training and are easily acquired. In the long run emphasis is on technical institutional training facilities for developing higher skills.

Keesing has classified the labour force into eight occupational categories. They are:

I  Scientists and Engineers.
II  Technicians and Draftsmen.
III  Other Professionals.
IV  Managers.
V  Machinists, electricians, tool and die-makers.
VI  Other skilled manual workers.
VII  Clerical, sales and service workers.
VIII  Semi-skilled workers.

The occupational skill structure is hierarchical. Semi-skilled are on the lowest rung needing minimum training acquired mainly through 'on-the-job' training facilities. In a technical

atmosphere such skills can be acquired in a few days. In

- current cases, traditional skills of LDCs such as weaving,
sewing and darning are themselves enough for utilisation in
the electronics industry after a minimum period of six weeks.

An upward progression of skills is possible only through

in institutional training facilities. As the market widens the
demand for skill increases, with expectation of higher profits

and rising wages it is worthwhile to invest in labour training.

Economies of scale operate to reduce training costs. The
question is who will bear the cost of training.

1) Individual

There are two forces to this argument viz., capacity and
incentive. After the initial increase in income-labour is less
concerned with the consumption of basic consumer goods. The
capacity to invest in oneself increases. In an LDC wages of
unskilled labour are very low reducing the individuals capacity
to invest in skill formation. Only a very large increase in
income increases capacity. This increasing capacity has to be
weighed against the possibility of earning higher incomes from
investment in skill training. As long as the demand is for low
skilled labour there is no motivating force to invest in

training.

2) Firms

Firms investment in training labour is dependent on the
return from such costs. With rising wages firms would shift to
manufactures with skilled labour as value-added is higher in
these manufactures. Only with the possibility of earning higher
profits are firms willing to incur labour training costs provided there is guarantee of retention of employee. This fear is more in the case of general skills than specific skills. Becker has suggested two methods. First, that the costs of training be borne by labour itself by paying wages lower than marginal productivity during the training period. This condition is subject to labour's acceptance of lower wages, for in the labour's calculation such sacrifice could be unnecessary. Second, by providing incentives to stay on such as pension schemes, Japan used an ingenious method of extension of the family system into the modern firm. In this system, the incentive to train by the firm and the incentive to stay for trained labour with the firm was achieved through long-term contracts (life-time commitments).

iii) Government

In an LDC where the market is inefficient reliance on either individual or firms to invest in labour-training facilities would be a slow process. The failure of the market to industrialise and the need for a deliberate policy of government initiated industrialisation is linked to the government subsidisation of training facilities. In LDCs this has to be accompanied by measures to prevent excessive brain drain.

Limitations of the Model

First, the limited range of manufactures where low wage costs are more important than economies of scale. The popular

example is that of textiles where attempts at mechanisation have not been successful. But it is in these manufactures that developed countries levy heavy tariffs.

Second, the commercial policy of developed countries towards greater protectionism of labour-intensive industries especially in the traditional textile industries. This may be either due to sentimental reasons or because they are still large industries employing many in the developed countries. But the growing protectionism is more the outcome of pressure from the domestic labour unions which are strongly entrenched in old labour-intensive industries.

Third, private capital flows are determined by profitability conditions. Low wages is one of the factors. There are other factors which influence profits. They are:

i) Domestic market condition and the availability of infrastructural facilities. The availability of such facilities allows for external economies and reduction in risk.

ii) Geographical location from the point of view of transport costs. Freight and distance costs may outweigh consideration of cheap labour locations. For example, even though Mexican wage rates are higher than say the Far East, proximity to the American market reduces this differential. In any transport network 'nodal' points have a transfer advantage attracting manufactures. With economies of scale in transport, these 'nodal' points on main liner routes allow for freight reduction. From such points trading and intermediate
handling is easier. "Since the transfer advantages of these points rests partly on large volume traffic and frequent and flexible service, there is evidently a cumulative pressure towards concentration of transfer advantage".

iii) Natural resources add weightage to the attracting pull of cheap labour costs for investments. Under this category come those investments who wish to exploit the natural resources of a country. In resources which are bulky and loose weight in processing, transport costs dictate proximity to these resources.

iv) On the political side, there is the question of military significance and political stability and bargaining power. Military significance and political bargaining power are determined by the geopolitics of advantageous location, while political stability and guarantee of assurance of non-nationalisation acts as strong inducements to foreign investors. The sentiment of nationalisation scare away foreign investors.

In the ultimate analysis it is cheap and trainable labour that determines locational advantage. Whether or not, the advantage of cheap labour is conducive to rapid industrialisation will be the theme of the following chapters. Both the strategies of industrialisation will be tested with reference to Bangladesh.