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INDUSTRY AND DEVELOPMENT
No. 20

UNIDO

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna, 1987

Explanatory notes

References to dollars are to United States dollars. unless otherwise stated.

The monetary unit in India is the rupee (Rs); in Indonesia, the rupiah (Rp); and in Japan, the yen (¥).

The following abbreviations are used in this publication:

DRC   domestic resource cost
ERP   effective rate of production
ERS   effective rate of subsidy
GDP   gross domestic product
IDBI   Industrial Development Bank of India
MVA   manufacturing value added
RSME   root-square mean error

Totals may not add precisely because of rounding.

The following symbols have been used in tables:

Two dots (..) indicate that data are not available or are not separately reported.

A slash (1980/1981) indicates a crop year or a financial year.

SMALL AND MEDIUM ENTERPRISES:
SOME BASIC DEVELOPMENT ISSUES

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A. Industry size and economic growth

1. Role of small industry

Empirical studies ([1]-[4]) covering both developed and devel-
oping countries over several decades indicate that in the course of
economic growth, the size structure of manufacturing enterprises
passes through three broad yet distinct phases. Household and
cottage or shop enterprises, also called the informal sector, pre-
dominate at the early stage, accounting for up to three quarters of
total manufacturing employment. The predominantly rural and agri-
cultural character of the economy leads to forward and backward
linkages of processing and input supplies in rural and semi-urban
household non-farm enterprises. Fragmented markets, insufficient
infrastructure and low technology encourage labour-intensive manu-
facturing in cottage enterprises. The growth of incomes from the
first phase of development generates changes in demand patterns and
stimulates the development of technology and infrastructure. Small
workshops and factories, often located in urban centres and using
modern technology and equipment, tend to displace household manu-
facturing in the second phase. With the growth of infrastructure,
technology, urbanization and localization, large-scale production
eventually tends to dominate and displace most of household manu-
facturing and a great proportion of small workshops and factories,
the growth of the latter itself contributing appreciably to the
development of large-scale industry.

While the above description of changes in the size character-
istics of manufacturing is broadly true, the following should be
noted:

(a) Enterprises of different size co-exist in most economies,
since labour, capital and product markets are usually imperfect,
and changes in technology, transportation, consumer preferences and
life-styles continually influence manufacturing;

(b) Owing to the dualistic nature of most developing econ-
omies, the stages of growth usually overlap, informal manufacturing
dominating in the rural areas or in subcontracting activities, and
large-scale organized manufacturing taking over in certain branches
and sectors of industry;

(c) Structural changes caused by comparative cost disadvantages in traditional manufacturing in developed market economies since 1970 (compared with selected developing countries with a high share in manufacturing), the accent on knowledge-intensive and skill-intensive industrialization (as against material- and energy-intensive industrialization), the increasing advantages of decentralized work centres arising from computerization, the accent on the quality of life etc. have resulted in arresting the decline in small-scale enterprises and given new emphasis to small business.

The following tables provide some empirical evidence bearing on the above-mentioned trends.

Table 1 provides data on percentage distribution of manufacturing employment among cottage producers and shops (less than 5 workers), small and medium industries (5-99 workers) and large industry (100 or more workers) in selected developed and developing countries and selected years. In table 2 the product distribution of employment and MVA (manufacturing value added) in very small enterprises in developed countries is shown for 5 African, 5 Asian and 2 Latin American developing countries. Table 3 shows for selected developed and developing countries changes over a recent 3-10 year period in the informal sector's share of MVA.

2. Size differences in industrial groups

Small and medium enterprises thus play an increasing role in the early stages of development and a decreasing role at later stages. The trend towards large-size manufacturing enterprises as incomes increase reflects increases in market size, economies of scale, changing factor proportions, and better transport and communications infrastructure. However, such economies are more important in some industries than in others. Other factors governing large-size establishments are government regulations, factor market imperfections, and legal and political advantages. Relative factor costs influence scale economies or optimum size and thus account for different size structures of the same industry in different countries.

Smaller-scale activities in developing countries are of major importance in food products, wearing apparel, leather and garments, wood products, furniture, non-metallic mineral products and metal products. The average size of plants in different industry groups in high-income and middle- and low-income countries provides an indication of size characteristics in relation to development (see table 4 below).

Table 1. Distribution of manufacturing employment among industries
of different size in selected countries and years
(Percentage)

Country or area	Year	Industry breakdown by size a/		
		Cottages and shops (less than 3 workers)	Small and medium (3-99 workers)	Large (100 or more workers)
Developed countries				
Canada b/	1959	2.5	31.9	65.6
	1955	2.8	30.3	66.7
	1950	2.9	31.2	65.9
	1930	3.7	35.5	60.8
Japan c/	1975	19.1 (1-9)	36.6 (10-99)	44.3
	1965	16.1 (1-9)	37.1 (10-99)	46.8
	1955	20 (1-9)	40.2 (10-99)	39.8
United States d/	1967	1.1	22.3	76.6
	1947	1.1	23.9	75
Developing countries				
China (Taiwan Province) e/	1971	3 f/	33	64
	1966	4 f/	39	57
	1940	25.3 f/	74.7 (3 or more)	..
	1920	60.6	39.4 (3 or more)	..
Colombia g/	1978	42.5	28.6	27.6
	1970	53.7	21.7	24.6
	1964	51.4	25.9	23.7
Ghana h/	1970	78 (1-18)	7 (19-49)	15 (50 or more)

Table 1 (continued)

Country or area	Year	Industry breakdown by size a/		
		Cottages and shops (less than 3 workers)	Small and medium (3-99 workers)	Large (100 or more workers)

Developing countries

Country or area	Year	Cottages and shops (less than 3 workers)	Small and medium (3-99 workers)	Large (100 or more workers)
India i/	1973	60 (1-9)	18 (10-99)	22
Indonesia j/	1975	76	12	12
Kenya h/	1969	49 (1-4)	10 (5-49)	41 (50 or more)
Nigeria h/	1972	59 (1-18)	15 (19-49)	26 (50 or more)
Philippines k/	1975	66 (1-9)	8 (10-99)	26
	1967	77.8 (1-9)	7.2 (10-99)	15
Republic of Korea l/	1975	36	17	47
United Republic of Tanzania h/	1967	55 (1-4)	8 (5-49)	37 (50 or more)

Source: Cortes and Ishaq [3].

a/ Where necessary, more precise ranges for the number of workers are given within parentheses.

b/ Data appears to exclude unpaid workers. See Historical Statistics of Canada, M. C. Urquhart and K.A.R. Buckley, eds. (Toronto, Cambridge University Press, 1965), p. 489.

c/ Data compiled from various annual editions of the White Paper on Small and Medium Enterprises, prepared in Japan by the Small and Medium Enterprise Agency. See R. Kaceda, Development of Small and Medium Enterprises and Policy Response in Japan: an Analytical Survey (Washington, D.C., World Bank, 1979), p. 89.

d/ Data refer only to paid employees and therefore underestimate the share of employment in cottages and shops and in the similar size categories of small and medium industry. See United States Department of Commerce, 1967 Census of Manufactures (Washington, D.C., Government Printing Office, 1971), vol. I, p. 24.

e/ See Samuel P. S. Ko, Small-scale Enterprises in Korea and Taiwan, World Bank Staff Working Paper, No. 384 (Washington, D.C., World Bank, 1980), p. 5. Original sources cited therein.

f/ Not comparable with the figures for the earlier year since the population census definition of manufacturing employment includes only persons who worked during the survey week more than 3 hours per day or 2 days per week.

g/ Figures are from Cortes and Ishaq [3], table 2.25. For 1978 the lower of the total manufacturing employment figures of that table are used here. As discussed in section A of this paper, there is considerable uncertainty about the comparability of figures for the various years, so the trends suggested here should not be taken as proven facts.

h/ John M. Page, Jr., Small Enterprises in African Development: a Survey, World Bank Staff Working Paper, No. 363 (Washington, D.C., World Bank, 1979), p. 2.

i/ Dipak Mazumdar, "A descriptive analysis of the role of small-scale enterprises in the Indian economy" (unpublished), 1980, pp. 2 and 54.

j/ T. Otsuki and others, Industrial Development in South-east Asian Countries: Small and Medium Industries - Republic of Indonesia (Tokyo, International Development Center of Japan, 1977), p. 3.

k/ Figures from Dennis Anderson and Farida Khambata, Small Enterprises and Development Policy in the Philippines: a Case Study, World Bank Staff Working Paper, No. 468 (Washington, D.C., World Bank, 1981), p. 9.

l/ See Ko, op. cit., p. 5. If all temporary or daily workers are excluded from manufacturing employment, and it is assumed that all of these were in the household sector (it is not clear how exaggerated an assumption this is), then the share in that sector would fall to 16 per cent.

Table 2. Distribution of employment and MVA in very small and in
large-scale enterprises in selected developing countries
(Percentage)

Region, country and year	Employment		Manufacturing value added	
	Very small enterprises	Large-scale enterprises	Very small enterprises	Large-scale enterprises
Asia				
Bangladesh (1976-1977)	87	13	45	55
Indonesia (1974-1975)	87	13	20	80
Iran (Islamic Republic of) (1968)	83	17	44	56
Philippines (1969-1971)	70	30	6	94
Sri Lanka (1968)	71	29	33	67
Africa				
Egypt (1966-1967)	33	67	16	84
Ghana (1963)	87	13	39	61
Sierra Leone (1974-1975)	96	4	44	56
Somalia (1974)	50	50	40	60
United Republic of Tanzania (1961-1964)	50-80	50-20	30	70
Latin America				
Ecuador (1974)	78	22	17	83
Honduras (1975)	98	2	59	41

Source: UNIDO [4].

Table 3. Changes in the informal-sector share of manufacturing value added
(Percentage)

Country	Year	Share of MVA	Year	Share of MVA	Maximum num' ∸ of employees of establishments covered in the informal sector
Australia	1975	13	1981	3	3
Bangladesh	1975	43	1979	18	4
Belgium	1970	16	1980	14	4
Ethiopia	1971	39	1981	19	9
Greece	1970	33	1977	26	9 a/
Guatemala	1971	39	1978	29	4 a/
Honduras	1971	24	1975	20	4 a/
India	1970	38	1980	37	9 using electricity or 19 not using electricity
Italy	1970	19	1980	16	19 a/
Kenya	1970	22	1978	14	49
Mauritius	1970	25	1980	21	9
Netherlands	1970	18	1979	14	9
Pakistan	1970	43	1977	50	9
Swaziland	1971	36	1979	31	9
Trinidad and Tobago	1974	25	1977	8	9 a/
United Republic of Tanzania	1970	39	1974	30	9 a/

Source: UNIDO [4].

a/ Persons engaged.

Table 4. Average size of plants
(Number of workers)

Industry group	High-income countries	Middle- and low-income countries
All industries	51.8	12.7
Tobacco products	324.6	108.2
Basic metals	306.3	80.2
Paper and pulp products	139.9	34.7
Textiles	105.3	103.3
Petroleum	301.4	41.0
Electrical machinery	131.5	27.2
Rubber products	69.0	41.9
Non-electrical machinery	61.5	26.6
Transport equipment	142.7	13.8
Non-metallic mineral manufactures	42.2	22.0
Printing and publishing	28.3	17.8
Beverages	31.6	15.3
Leather products	44.0	16.4
Food processing	48.0	27.4
Fabricated metal	38.3	15.4
Diverse industries	37.1	13.4
Apparel	43.0	13.4
Furniture	55.4	44.3
Wood	16.7	9.4
Food, beverages, tobacco	55.1	13.5

Source: Cortes and Ishaq [3].

3. Basic issues for consideration

Small-scale industry provides the seed-bed for growth. It provides training for entrepreneurs and managers and through this learning process small industries grow into large ones. Both the birth and the mortality of small enterprises are high; they grow and become large or they fail and disappear. A corps of dynamic enterprises plays a vital role even in a mature economy, as subcontractors to large industry or as suppliers of specialized and service requirements.

In developing countries Governments play an important role through indicative planning, allocation of financial resources, industrial policy, trade and economic controls etc. in influencing and stimulating growth and development. Government regulations and controls tend to favour large-size enterprises, often unintentionally, through the operation of incentive schemes, import quota allocations, financing etc. The scarcity of entrepreneurial and managerial talents tends to favour large-scale enterprises able to

secure foreign investment and co-operation. Special programmes to assist small-scale industries through technical, financial and managerial assistance are expensive and are not able to help the informal sector and the really small artisans and entrepreneurs.

In section B, the environment for small industry development and policies appropriate to ensure a healthy growth of small enterprises are considered.

In section C, infrastructural and institutional factors promoting small industry development are covered, including the question of entrepreneurship development and the role of industrial co-operatives.

In section D, the important questions of mobilization and allocation of domestic financial resources for small and medium enterprises are dealt with.

Section E is concerned with domestic and international subcontracting and its contribution to integrated development.

At the end of each section conclusions and issues for consideration are summarized.

B. Environment and policies

1. Reasons for favouring small industry

The specific reasons for promoting small industries in a developing economy need to be appreciated in each case in order to create the proper environment and to adopt appropriate policies. They may be listed as follows:

(a) Small industries provide the seed-bed for growth;

(b) They stimulate indigenous entrepreneurship;

(c) They mobilize capital not otherwise generated in the economy;

(d) They save scarce capital and employ less scarce labour;

(e) They can be developed on a decentralized basis in rural and semi-urban areas to meet local demand;

(f) They provide linkages to agricultural and rural activities;

(g) They use simple technology;

(h) They use local resources - human and material - economically and save on transport costs;

(i) They create a middle class of self-employed entrepreneurs;

(j) They contribute to a more equitable distribution of income and wealth.

The role of small industries in growth and their contribution to employment and incomes has already been emphasized in the introduction to this paper. It has also been stated that in a healthy industrial structure both large enterprises and small enterprises play an appropriate role, varying in different branches of industry and at different stages of development, and depending on scale economies, infrastructure development and relative factor proportions and costs. It is thus necessary first to properly demarcate the small industry sector, and secondly to relate small industry policy to leading sector policy as well as to macro-economic policy in the economy.

2. Definition of small industry

A small enterprise, to be eligible for public assistance programmes or to be able to benefit from government policy measures, such as tax exemption, is usually defined with an upper limit of employment (usually 100 workers) or of fixed capital investment (for example, $250,000). Such a definition is intended to encourage labour-intensity on the assumption that it is high in small enterprises. However, labour-intensity alone may not be sufficient. Where capital is scarce, high capital productivity may be desirable. Efficiency criteria, or criteria of total factor productivity or of social cost-benefit analysis may require a disaggregation within industry to examine how labour- and capital-intensity and capital and labour productivity vary in size within industries and sub-industries. Both capital productivity and total factor productivity are found to be highest in the middle ranges of enterprises having 50 to 200 workers. Thus, there could be merit in defining small industry in terms of some measure of capital used, so that enterprises which are medium in terms of employment are not excluded. While very small enterprises employing less than 10 workers are not the most labour-intensive or the most efficient employers of the factors of production, they provide the bulk of employment in the lower-income developing countries and should not be discriminated against.

3. Macro-economic policies

Policies and measures towards small industry should form a continuum within national industrialization policies and general economic policy measures to promote development, having regard to the economic goals of the country. Compartmentalization and a rigid set of measures, without reference to the possibility of growth (from one size to another), often defeat their own purposes and help those for whom the help was not intended, namely the large-scale rather than the small-scale sector.

The policies for development of agriculture, natural resources, education, training, financing the public sector etc. will bear on the prospects for the small-scale industry sector. These policies should create the proper environment for small private enterprises to grow and prosper. From the demand side, economic policy measures that usually encourage labour-intensive industries are the promotion of agriculture and rural development, of exports and of income redistribution. These provide strong linkages towards stimulation

of small-scale industry. Policies favouring agriculture will
increase rural incomes (and their distribution) and expand local
markets, the high income elasticity of demand providing opportu-
nities for small enterprises.

4. Leading sector policies

Industrial policies, including tariffs, investment incentives,
industrial licensing, foreign exchange allocations etc. have tended
to favour large-scale industry and capital-intensity, at the expense
of small-scale industry and labour-intensity. Eliminating such a
bias of policies and regulations will in itself create a proper
environment for small industry development. On this point, Anderson
([1], p. 62) quotes H. Myint as follows: "The glaringly unequ:
terms on which capital funds, foreign exchange and economic servi
provided by governments are made available to the two types
manufacturing industry ... may be said to protect the large-sca..
modern factories not only from foreign competition but also from the
domestic competition of the small-scale economic units .... A
reduction in the unequal access to scarce economic inputs between
the larger-scale and small economic units would make the latter more
competitive and increase their share of economic output, thereby
raising the proportion of labour to capital employed in the manu-
facturing sector as a whole."

Apart from eliminating biases, increased efficiency of leading
sector policies will tend to improve efficiency of small industry
programmes. This applies to tariffs and quotas (lowering and uni-
formity), incentives (favouring labour against capital), financial
policy (including interest rate structure) and markets (liberal-
ization from controls).

5. Small industry policies

Policies and programmes need to be designed, taking into
account the situation and requirements in a particular country,
based on an analysis of actual supply and demand constraints on
small-scale enterprises [5]. It has been noted that the policy
objective is not just to increase employment, but to improve total
factor productivity, that is, utilization of resources. Secondly,
while start-up assistance should not be restricted, efficiency
improves with growth into medium size. Thirdly, transformation of
traditional into modern small industries, in other words, expansion
into medium size, demands improved qualities of entrepreneurship
and management in order to eliminate X-inefficency and continuously
improve productivity. Fourthly, capital market imperfections and
the lack of access of small enterprises to financing need to be
tackled to enable them to compete equally with large enterprises.
Fifthly, linkages between small and large enterprises through sub-
contracting promote integration and efficiency.

Three further points on a policy towards small industry may be
made in the light of country experiences. First, a well-designed
policy and programme should be comprehensive and yet selective,
addressing different constraints simultaneously, but not indiscrim-
inately assisting small enterprises, certainly not those which need
the least assistance or on which assistance will be wasted.

Secondly, positive development measures lead to more efficiency than protective and restrictive measures. The latter segment product markets, reduce competition for both small and large firms, and inhibit growth and exports. Thirdly, delivery mechanisms for financial and extension services should be designed to reach the needy and deserving enterprise through decentralized organizational networks, preferably of small enterprises themselves, such as industrial co-operatives and associations or local self-financing organizations involved in, for example, rural development.

6. Conclusions and issues for consideration

1. The role of small enterprises in the process of development should be carefully defined with reference to the requirements of the country and the goals of its economic policy.

2. Small industry policies should be related to leading sector policies and macro-economic policies as a single strategy in a continuum of development measures, in order to promote healthy, balanced and integrated development.

3. Macro-economic policies towards agriculture, rural development, education, training, natural resources, transportation and industrialization in general should create the proper environment for small industry growth through ensuring the equitable supply of inputs.

4. Efficiency of leading sector policies contributes to efficiency of small industry. Small enterprises should have equitable access to finance, incentives and other assistance, just as large-scale enterprises.

5. Small industry policies themselves should promote total factor productivity, remove X-inefficiencies, improve entrepreneurship and management, be positive and developmental, utilize decentralized delivery mechanisms and ensure growth.

C. Infrastructure and institutional factors

1. Requirements

Infrastructural requirements of small and medium enterprises may broadly be either physical or institutional. Physical infrastructure relates to factory accommodation and related utilities. Institutional infrastructure is required to make up for market failure or insufficiency in supplying inputs to small enterprises and to remedy or remove operational inefficiencies of the enterprises. These relate to financing; extension and consultancy services; supply of equipment and materials; technical services of testing, quality control, tool rooms, repair and maintenance; training of entrepreneurs and managers; market promotion and marketing.

2. Physical infrastructure [6]

Household and cottage enterprises by definition do not need factory accommodation. The provision of factory shed is related, on the one hand, to the aspect of transformation and upgrading of

traditional enterprises into modern ones, and, on the other, to the creation of new enterprises by ex-factory employees, young technicians or graduates, retired civil servants etc., mainly in urban and semi-urban areas. Facilities provided by local or public authorities may range from allotment of plots in industrial areas to standard sheds in industrial estates, to custom-built premises to suit individual needs. The device of the industrial estate has been transformed from the post-depression-era experience of the United Kingdom of Great Britain and Northern Ireland and the United States of America to stimulate regional and local development and to relocate industry from overcrowded metropolises. In the case of new enterprises it has been used to provide start-up facilities in nursery factories or incubators for a short term until the new venture grows and finds its own accommodation. A further development has been the science and technology park to attract enterprises around a university or research institution. The basic idea of the industrial estate is to group together enterprises that could derive economies of scale in construction and utility costs and through trading among themselves.

Evaluation of experiences has not indicated that benefits have been commensurate with costs, or that the objectives of small industry development have been met. Success in urban locations has benefited the upper range of small enterprises. In semi-urban and rural areas, occupancy has taken a very long period and sheds have been used as godowns or by disguised large enterprises. Capital-intensity has been encouraged through low rents or long periods of repayment. Not much inter-trading or integration has resulted from common location.

The accent during the last decade has been on letting private estate developers or co-operative associations of small enterprises undertake the construction of industrial estates to meet specific requirements. In rural areas efforts are better left to local bodies responsible for rural development.

3. Industrial financing

The issues of small industry financing are elaborated in the next section. Suffice it to state here that institutionalization of capital and credit availability for small and medium enterprises requires the following:

(a) Costs and risks involved must be reflected, since subsidization increases capital-intensity and benefits the upper range of enterprises;

(b) Both expansion of activities of commercial banks and leadership by public financing institutions (development banks) must take place;

(c) Credit and extension services must go together;

(d) Mobilization of resources and their allocation must be combined, particularly in rural areas.

4. Industrial extension services

Industrial extension is a generic term used for services rang-
ing from supply of economic and market information, identification
of opportunities, guidelines on establishment and operation, man-
agerial and technical assistance, trouble-shooting during operation
and marketing assistance. Institutions providing such services
range from government departments for small industry development to
semi-autonomous small industry service institutions, to extension
departments of development banks or industrial estates to management
development and training institutions. The crux of the problem is
the difficulty in identifying and reaching recipients, that is,
managers and workers in enterprises. A combination of provision of
loans with technical assistance (both pre-loan and post-loan),
either by a development bank or by the financing institution and the
extension agency in close co-operation, is often successful in
increasing the productivity of capital. Another lesson of exper-
ience is that services provided free by Governments are not effec-
tive, since no screening of recipients takes place and the quality
of assistance cannot be maintained. Charges at cost or with some
subsidy are preferable to free services. A further lesson of
experience is the effectiveness of self-help organizations of
recipients. Grouped together into an association or co-operative,
it is possible to ensure effective contact with the extension agency
and also to spread know-how within the group. The concept of
assistance to a group is particularly relevant in dispersed loca-
tions and rural areas.

5. Entrepreneurship development

The functions of entrepreneurship development, management
development, and development of consultancy services will be con-
sidered together, since they are closely related.

The supply of entrepreneurship in response to market growth in
developing countries has generally been elastic. Small industry
entrepreneurs have emerged from varying backgrounds: artisans,
tradesmen, factory workers, agriculturists, young engineers, civil
servants etc. However, experience has shown that the "learning
process" alone is not enough to improve efficiency and enable small
firms to expand to medium size. The entrepreneur reaches a man-
agerial plateau or optimum in the absence of further training and
development.

Apart from measures needed to tackle constraints on small
enterprise growth discussed in section A (for example, inefficient
input markets, incentives and macro-policies), conscious efforts
are needed to identify, train and upgrade entrepreneurs, improve
their managerial ability, and enable them effectively to use con-
sultancy services as they grow into medium size. Techniques have
been developed for identifying entrepreneurs, motivating them and
equipping them with managerial skills to operate a successful
enterprise. Entrepreneurship development programmes are followed
up with financing based on needs and in-plant counselling. The
management level is thus upgraded and X-inefficiencies eliminated.

Entrepreneurship development programmes may be undertaken by development banks, management development centres, engineering schools, small industry service institutions and co-operative training institutions. Close co-operation of financing and extension service agencies is essential. From the long-term point of view, the quality of entrepreneurship and management can be upgraded through incorporating such training within the educational and training system of the country, so that the products of agricultural, trade, engineering and commercial schools could be identified for their entrepreneurial qualities, thus enabling them to enter the managerial field.

Management and technical training of entrepreneurs and workers could be organized through part-time courses, evening programmes, one- or two-day programmes, by national productivity agencies, extension departments of engineering colleges or technology institutes or research and development institutes.

In India, technical consultancy services for small industries have been organized by financial institutions such as the development banks. The services undertaken include the identification of project ideas and entrepreneurs, preparation of feasibility studies, advice on technological choices, preparation of project reports and assistance in project implementation and operation. The success of these technical consultancy services is assured by the needs of the financial institutions themselves for technical appraisal of project proposals. Eventually such consultancy services should function autonomously and rely on income generated by its services, with only occasional subsidization by governments or financial institutions.

6. Industrial co-operatives [7]

The co-operative form of organization offers a viable alternative institutional framework for rendering self-help and organizing help to small enterprises, particularly in rural areas. The example of co-operative associations and societies in Japan for financing small enterprises is referred to in the following section D. In certain areas, such as agro-processing and handicrafts, co-operative societies have been successful in some developing countries. However, co-operation tends to relate to supply of inputs and marketing of outputs rather than to production. Families, clans or tribes in rural areas may perceive the benefits of co-operative organization, which from the point of view of the Government or financial institutions offers an effective delivery mechanism. "An emphasis on co operative methods with its self-reliance objectives would seem to imply a cost-effective channel for greater small scale industry support .... There are several directions by which co operatives may enhance small-scale production efficiency and profitability:

- the greater incentives following from the fact that each worker is also an owner;

- attainment of scale advantages through joint purchase, pro duction and marketing;

- strength to withstand negative influence from competitors, trade monopolies and governments through co-ordinated policies;

- pooling of financial resources; and

- joint purchases of essential services, e.g. marketing, financial management, accounting, insurance etc." ([7], pp. 13-14).

Co-operatives thus offer an alternative and perhaps more effective route for the industrialization of least developed countries and of rural areas. They could be encouraged through government support in areas of financing, marketing and training.

7. Viable institutional delivery mechanisms [8]

Institutions and services for small enterprises, operated by governments and subsidized, are essential in the early stages and in backward and rural areas. However, mechanisms imposed from outside and not operationally linked to small enterprises tend to suffer from rigidly applied rules and regulations, bureaucratic inertia and inability to innovate and to take risks. As a result, the assistance may not reach the intended recipient. It is easier and less risky to assist the better-off enterprises that are able to approach the extension agent than to assist the weaker enterprises.

In order to be viable, institutions need an operational link with the small enterprise so that the service provided is effective. A financial institution provides such a link, since it grants loans (see section D). A large enterprise can also provide a link through subcontracting to small enterprises (see section E).

Besides the financial institution and the large enterprise, there are other possibilities for ensuring the viability of the institutional mechanism. Grouping together small enterprises in a co-operative association or society makes it possible to derive effective benefits from the extension agency. This is particularly useful for financing the informal sector or small enterprises in rural areas (see section D).

Examples of other link-ups making possible viable and cost-effective delivery mechanisms are as follows:

(a) An engineering college, or technology institute, or management institute providing extension services through a network of its alumni who have set up as entrepreneurs. Such institutes may also be linked with associations of small enterprises or co-operatives;

(b) Sectoral research and development institutes, for example in food or leather, providing extension services to small enterprises in the subsector. Application of suitable technology for small enterprise could be spread through such efforts;

(c) Input or equipment-supplying large enterprises, such as machinery and steel or fertilizer manufacturers or dealers,

providing technical and extension services to small enterprises purchasing and using such materials and equipment;

(d) An electronics research centre or a computer manufacturing firm providing assistance to small-scale assemblers or users (see section E);

(e) A rural training institute located in a rural or semi-urban area providing services for repair and maintenance, assistance to tool-makers etc. in rural areas.

(f) University-industry linkages through contacts between extension departments of different faculties and industry associations. Innovations in mechanisms and services have to be continuously adapted to maintain vitality and viability. Assistance extended to self-help programmes would eventually be the most successful in achieving cost-effectiveness and reaching the intended beneficiaries.

8. Conclusions and issues for consideration

1. The provision of physical infrastructure in industrial areas and industrial estates becomes important as small enterprises grow into middle size from the nursery or incubator stage. Experience indicates that private developers or co-operative associations of small enterprises should undertake construction of factory premises, regulated by local and municipal authorities, rather than having the Government provide built-in accommodation at subsidized rates.

2. Institutionalization of capital and credit availability to small enterprises should be led by public banks, but undertaken equally by private banks, with costs and risks being covered. Credit and extension services should go hand in hand.

3. Industrial extension services may be provided by a variety of institutions. However, the nature of the institutional mechanism will depend not only on the type of service to be provided, but also on its accessibility to those needing it.

4. The supply of entrepreneurship in response to market growth in developing countries has been elastic, but quality and internal efficiency have to be improved through entrepreneurship development programmes. There is also a continuous need for management development and consultancy services.

5. Industrial co-operatives may offer a viable institutional framework for small industry development in rural areas and in less developed countries of Africa. They need government encouragement in areas of financing, marketing and training.

6. Finally, viable institutional delivery mechanisms providing for operational linkages with small enterprises need to take the place of initially government-operated mechanisms, in order to ensure vitality and cost-effectiveness.

D. Mobilization and allocation of domestic financial resources to small and medium enterprises

The mobilization and allocation of financial resources for small industry development, in market-oriented and mixed economies, is generally related to the financial structure and its development, and specifically to the following: the development of appropriate financial institutions: the availability of simple and convenient financial instruments to meet the savers' and the borrowers' needs and preferences; and an interest rate structure that is rational and positive (to ensure effective mobilization and allocation).

The financial sector more than any other is, in fact, crucial for the generation of indigenous entrepreneurship [9]. Furthermore, analyses of experience indicate that "innovations relating to the financial structure are as important, if not more, for the development process as innovations relating to the production structure" [10].

Economic growth and development during the 1960s and 1970s in much of the developing world has increased monetization, expanded the banking sector and led to the establishment of development financing institutions. The creation of money and capital markets and the institutionalization of credit have benefited large-scale enterprises and urban activities rather than small-scale enterprises and rural activities. While market imperfections exist even in developed market economies, the importance of imperfect and informal markets is inversely proportional to the degree of development. Dualistic structures have prevailed in most developing countries, the role of informal markets being even more significant for smaller-sized enterprises and for those located in semi-urban and rural areas.

1. Domestic savings

Domestic savings rather than resource inflows have financed investment in developing countries during the last two decades. The ratio of domestic savings to gross domestic product (GDP) is higher in developing than in developed countries (except for the group of low-income countries). The contribution of resource inflows has in fact been very little except for the high-income developing countries in the 1960s, and it has indeed been negative for the low-income countries. The following table 5 provides relevant information for developed market economies, for developing countries as a whole, and separately for the three groups of high-income, middle-income and low-income developing countries for three years, 1960, 1970 and 1980.

While income level and its growth rate stimulate the demand for savings, which in turn contributes to growing investment and increasing national product, the supply of savings is greatly dependent on the development of the financial structure - institutions, instruments and the interest rate. The major part of domestic saving has taken place in households and non-corporate enterprises. Public sector saving has been less than 25 per cent of total savings. Government revenues have contributed to mobilizing

domestic resources, the ratio of current resources to GDP amounting
to around 15 per cent for many developing countries.

2. Capital markets for small-scale industries ([1], [11])

Considerable scattered information is available on the state
of capital markets for small-scale enterprises through borrower and
lender surveys carried out or sponsored by the World Bank in recent
years [12]. Some general conclusions may be summarized immediately.

First, the vast majority of small enterprises depend for start-
up capital almost entirely on personal savings, mostly their own
plus loans from friends and relatives.

Secondly, institutional credit, mainly from commercial banks,
comes into play for working capital requirements as firms grow or
as they become profitable. However, even in this respect, sup-
pliers' or trade credit plays an equally important role.

Thirdly, except in Africa, money-lenders and other informal
credit markets play a significant role in the expansion of the firm.
Retained earnings are an important source of expansion, also in
Africa.

Fourthly, the role of institutional finance and of special
credit institutions, as well as of credit guarantee schemes, becomes
important in the upper ranges of small enterprises, that is, in
medium-sized enterprises. The bias of financial institutions
towards units of larger size reflects a natural tendency to want to
lend where costs are lower and risks less.

Table 5. Investment and its financing, 1960, 1970 and 1980
(Percentages of GDP in 1975 constant prices)

Year	Investment/GDP	Domestic savings/GDP	Resource inflow/GDP
		Developed market economies	
1960	21.76	21.49	-0.26
1970	24.63	23.39	-1.25
1980	22.07	22.80	0.73
		Developing countries (total)	
1960	17.29	21.40	4.11
1970	19.19	27.84	8.85
1980	25.47	24.00	-1.48

Table 5 (continued)

Year	Investment/GDP	Domestic savings/GDP	Resource inflow/GDP
	Developing countries (high income) a/		
1960	18.82	30.84	12.02
1970	18.98	37.90	18.92
1980	26.81	26.58	-0.24
	Developing countries (middle income) b/		
1960	15.?1	15.31	0.00
1970	19.54	20.83	1.29
1980	25.35	24.13	-1.22
	Developing countries (low income) c/		
1960	16.62	13.48	-3.14
1970	19.27	16.41	-2.87
1980	23.06	19.07	-3.99

Source: UNIDO data base, Statistics and Survey Unit.

Notes: Investment = Gross capital formation
         Domestic savings = Gross domestic product less final
                             consumption expenditures
         Resource inflow = Exports less imports

a/ Per capita GDP above $1,320 in 1978.

b/ Per capita GDP $600-$1,320 in 1978.

c/ Per capita GDP below $600 in 1978.

        Finally, India, which has the most comprehensive interconnected
institutional mechanism for financing small enterprises, has,
through a deliberate policy of credit allocation, engineered a large
increase in commercial bank loans. More than 50 per cent of those
loans has probably gone to the upper half of the sector, that is,
to medium-size enterprises. In India, informal credit markets also
play an important part in financing small-scale and especially rural
enterprises.

        Thus, small industries in developing countries have in general
little access to the resources of the organized financial sector.
The reason is that the transaction costs of lending to small enter-
prises is quite high, ranging between 6 per cent and 20 per cent in
different countries. Taking into account financial costs and profit
margins, banks could not afford to lend to small enterprises at a
cost less than 16-30 per cent. At this cost, there will be no

inducement to borrow, since the average rate of return of small enterprises is generally much less than this rate.

3. Financial repression

Government policies to promote financing of small-scale industries in developing countries have responded by holding down institutional interest rates below market equilibrium levels. Banks have no incentive to lend at these rates, except to the largest firms able to provide collateral and where transaction costs enable profits to be made. Savers have no incentive to make deposits at these rates, thus reducing the level of savings. On the whole, such a situation of financial repression has led to less financial intermediation and reduced efficiency of investment. On the basis of analysis of experience in Turkey during 1950-1977, Fry [13] has calculated that a 1 per cent fall in real deposit ratio of interest reduces savings by 0.274 per cent and raises the incremental capital output rates by 0.249 per cent, having a combined effect of a half percentage point of economic growth foregone.

Fry defines financial repression as indiscriminate distortion of financial prices including interest rates and foreign exchange rates, which reduces the real rates of growth and the real size of the financial system relative to non-financial magnitudes. The role of financial intermediation is to raise real returns to savers and, at the same time, lower real costs to investors by accommodating liquidity preference, reducing risk through diversification, reaping economies of scale in lending, increasing operational efficiency and lowering information costs to both savers and investors through specialization and division of labour.

4. Institutional finance

Developing countries, in their policies and measures for the promotion of small and medium enterprises, have attempted to provide institutional finance by setting up special lending schemes, generally on a concessionary basis. Such schemes have been combined with provision of advice, business counselling, training and extension service.

Many governments have taken decisive steps to give inducements to lending institutions to advance credit on more liberal terms to small-scale industry. The most common scheme for subsidized loans to small-scale industry is refinancing by the Central Bank. Funds are provided through a special "small business window" whereby the Central Bank refinances all loans made to small business at a very low rate of interest which is intended to compensate the lending bank for higher risks and costs.

Credit guarantee schemes are also a common form of government support to commercial banks to cover the risks of credit to small enterprises. Commercial banks are thus encouraged to liberalize the terms of credit to small enterprises and to extend their operations to a larger number of small borrowers, having the assurance from the Government that the extra risks they take in making such loans are covered.

Providing credit on liberal terms is not in itself an adequate form of assistance to small-scale industry in developing countries. Supervised credit, in its commonly applied form of supply of machinery on a hire-purchase basis, has been introduced in several developing countries. The small-scale industry promotion agency arranges to supply equipment on hire-purchase terms and assists the entrepreneur in improving production processes so as to achieve more economical operation. The entrepreneur is often able to pay the instalments on the equipment out of the additional earnings from the new machine. This form of supervised credit ensures that the capital made available for a small entrepreneur is used for the purpose intended. Supervised credit may also take the form of assistance in the purchase of raw materials, the construction of factory buildings and the sale of finished products.

In addition to direct financing schemes, a number of other measures to relieve the financial burden on small-scale industry have been introduced by Governments, small industry promotion agencies and major industries. Some common examples are as follows:

(a) Development of infrastructural facilities and building of industrial estates for rental of workshops to small-scale industrialists;

(b) Establishment of common service facilities such as maintenance centres, a central tool room and training centres etc.;

(c) Government assistance in marketing of products of small-scale industry such as preferential price systems and reservations for purchases exclusively or partially from small-scale industry;

(d) Government assistance in bulk import of essential raw materials by State corporations and distribution of the same in smaller quantities in order to relieve small-scale industry from stock-building and the problems associated with imports, especially of small quantities;

(e) Setting up ancillary industries by public sector undertakings and large private sector enterprises to provide finance to small-scale industry through guaranteed prompt payment against assured offtake of production. Further, the small-scale units are relieved of investments in costly raw materials and components, testing equipment, training etc.

Special funds for loans to small-scale industries through development financing institutions, credit guarantee funds, co-financing among such funds, commercial banks and small enterprises themselves etc. have been developed in many Asian and Latin American countries, and to a much lesser extent in African countries. Some illustrations are given below.

(a) India [14]

Since nationalization of 14 major private banks in 1969, the small-scale industrial sector has been accorded priority status in the banks' lending programme in India. In 1969 the bank loans

outstanding with 50,850 small-scale units stood at 2.51 billion rupees (Rs); by 1980 these figures had risen to 800 thousand and Rs 27.50 billion, while the banks' outstanding gross credit with small-scale industries had further risen to Rs 54.12 billion at the end of March 1984. This phenomenal growth in the number of small-scale enterprises has been mainly the result of the Government's policy thrust in favour of the small s ctor, which included the following measures:

(a) Reservation of an increased number of industrial production items for small units to the exclusion of the medium and large sector;

(b) Reservation of a number of items for supply to government and semi-government organizations;

(c) Price preference for specified items produced in the small-scale industry sector for government purchases;

(d) Concessional credit and finance on liberal terms to the small-scale units;

(e) Marketing assistance and supply of scarce raw materials through the State-level small-scale industries development corporations.

While the nationalized and other commercial banks are encouraged to give liberal credit assistance to small-scale units through the operation of the credit guarantee scheme and targets laid before them under the priority programme, the State Financial Corporations have been induced to provide liberal term finance to small units through the grant of refinance from the Industrial Development Bank of India (IDBI) at concessional rates of interest. IDBI, since its inception in 1964, has been granting refinance to the State Financial Corporations and banks to enable them to assist small-scale industries on concessional terms, but the volume of such refinance markedly increased in the latter half of the 1970s, as may be seen from table 6. IDBI refinance assistance to small-scale industries and the number of small units benefiting from such assistance have also risen significantly, particularly during the latter half of the 1970s. Nevertheless, it should be noted that the number of units benefiting from refinance was 121,000 out of the total number of registered units of 596,000 at the end of March 1983. It is thus obvious that the benefits of refinance from IDBI have not yet been distributed widely. The number of units benefiting from refinance has also to be seen in relation to the total number of small-scale units having borrower accounts with commercial banks (about 800,000 in 1980). At the same time, it has to be borne in mind that at least about 25 per cent of registered units would not be functioning, that refinance is provided selectively - more in backward areas, less in larger cities - and that not all units are eligible. Moreover, there is reason to believe that relatively developed states continued to secure a sizeable share in IDBI refinance assistance. In fact, the figures for IDBI assistance in the financial years 1979/80 to 1982/83 disclose that around one third of IDBI refinance came to be disbursed to the three industrially advanced States of Maharashtra, Gujarat and Tamil Nadu.

Table 6. Assistance sanctioned by IDBI to small-scale industry,
1964/65 to 1983/84

Years (ending June)	Total assistance to SSI by refinance and bills rediscounting (millions of rupees)	Aggregate assistance by IDBI (millions of rupees)	Share of SSI in total assistance by IDBI (percentage)	Number of SSI units assisted	Average refinance assistance per SSI unit (rupees)
1964/65 to 1969/70	94	2 989	3.2	1 012	92 885
1970/71 to 1975/76	2 204	11 503	19.2	19 042	115 744
1976/77 to 1981/82	20 390	63 000	32.4	225 492	90 424
1982/83 and 1983/84	15 517	46 403	33.4	121 645	127 559
Total	38 205	123 892	30.8	367 191	104 046

Source: Annual Reports of the Industrial Development Bank of India.

Note: SSI = small-scale industry.

During that period, the 18 State Financial Corporations were the
principal state-level financial institutions catering to the term
loan requirements of small-scale enterprises. Of course, commercial
banks have also supplied term loans on an increasing scale. Total
outstanding term credit to small-scale industries from the commer-
cial banks stood at Rs 5,542 million at the end of June 1981. This
compares with the gross outstanding bank credit to small-scale
industry from 50 banks (which account for about 95 per cent of gross
bank credit) of Rs 54,120 million at the end of March 1984 and Rs
34,060 million at the end of June 1981. The assistance of State
Financial Corporations disbursed during the four financial years
1980/81 to 1983/84 to small-scale industry was Rs 1,533.9 million,
Rs 2,107.1 million, Rs 2,911 million and Rs 3,161.2 million respec-
tively, their cumulative disbursements at the end of March 1984
having been Rs 16,096.5 million. These are impressive figures, but
the share of small-scale industry in aggregate financial assistance
disbursed by all financial institutions in the country amounted to
only about 9.5 per cent, 10.2 per cent, 12.3 per cent and 11.0 per
cent in the four years 1980/81 to 1983/84 respectively. The cumu-
lative share of small-scale industry in total financial assistance
disbursed by all financial institutions up to March 1984 was only
10.71 per cent.

(b) Indonesia [15]

Indonesia may be accorded the distinction of having the largest
number of credit schemes for small and medium businesses, most of
these coming under the aegis of the Department of Industry's Project
for the Guidance and Development of Small Industry. The Project
takes an integrated approach to small business development; finan-
cial and other aid is only one aspect of a programme package that
includes creating a favourable environment for small industry,
providing support services and upgrading equipment and skills. Thus
in the financial sphere, for example, a Bank Co-operation Group of
Small-scale Industry and several state banks are charged with the
task of identifying groups of small and medium businesses requiring
financial assistance and facilitating the loan process for the
groups identified. There is official support for the Bapak Angkat
(foster-father) scheme. Also worthy of mention are efforts to col-
lect together groups of small and medium businesses in clusters of
small enterprises producing similar goods or in mini-industrial
estates.

Of the financial programmes themselves, the most significant
by far are the Small Investment Credit Scheme and the Working
Capital Credit Scheme. Soft credit generated by a World Bank loan
programme is channelled through a national network of more than
1,000 branches of five major banks. In 1982, the maximum individual
loan amount in both schemes was 10 million rupiahs (Rp), with sup-
plementary credit of Rp 15 million. Lending rates of 10.5 per cent
(Small Investment Credit Scheme) and 12 per cent (Working Capital
Credit Scheme) per annum, respectively, still provided a generous
differential for participating banks, since the rediscount rate from
Bank Indonesia was 3 to 4 per cent per annum for up to 80 per cent
of credit.

It is difficult to assess the success of the two schemes from available information. The Annual Report of Bank Indonesia for 1983/84 shows the number of applicants for loans under the Schemes increasing almost exponentially from 387,000 in 1978 to 743,000 in 1980, 1.47 million in 1982 and 1.85 million in 1984. This effectively portrays the increase in demand for credit by small business. However, since the number of applications realized is not given, it is impossible to say whether the number of loans actually approved increased as much.

(c) **Philippines** [16]

In the Philippines the major source of funds for small and medium business financing is the Industrial Guarantee Loan Fund. Set up in 1952 through an agreement between the Governments of the Philippines and the United States, the Fund was reoriented towards small industry finance in 1973, with financial assistance from the International Bank for Reconstruction and Development and the United States Agency for International Development. In 1983, the Industrial Guarantee Loan Fund helped finance 57.5 per cent of total loan approvals to small and medium businesses. Of these, more than 60 per cent were disbursed through the following four financial aid programmes: Central Bank - Industrial Guarantee Loan Fund; the Development Bank of the Philippines' Small and Medium Industries Lending Programme; the Industrial Guarantee Fund; and the Export Industry Modernization Programme.

Private sector programmes generally depend on deposits and Central Bank rediscounting as sources of funds. Programmes cited as popular were the series of Venture Capital Corporations, Ventures in Industry and Business Enterprises Inc., Philippine Business for Social Progress and Philguarantee.

Defaults on repayments appear to have increased in recent years, an understandable development in the light of the country's economic situation. Thus, the Development Bank of the Philippines' Small and Medium Industries Lending Programme was suspended in 1983 because of high arrears, while similar problems forced Philguarantee to sell off holdings of borrower firms, and the number of projects assisted fell for almost all credit programmes. The major exception was loans of the Industrial Guarantee Loan Fund, which actually doubled in total amount from 1983 to 1984. While repayment problems have developed, the financial assistance schemes were on the whole regarded as successful and able to meet the needs of small and medium businesses.

(d) Liberia [16]

The Small Enterprise Finance Organization was set up in 1980 as a limited liability corporation by the Liberian Bank for Development and Investment, the Liberian Finance and Trust Corporation, Partnership for Productivity and the Netherlands Finance Company for Developing Countries. At a later stage, the Agricultural and Co-operative Development Bank and the National Housing and Savings Bank decided to participate in the Small Enterprise Finance Organization. Partnership for Productivity and the

National Investment Commission provide technical assistance. All these institutions are represented on the Board of the Organization.

The Small Enterprise Finance Organization provides short, medium and long-term loans, and plans to go into the leasing of fixed and moveable assets, risk capital (equity), participation and the provision of guarantees. It has a head office in Monrovia and a branch office in the province of Nimba, and was fully operational by the end of 1982. As of 30 June 1983, 37 projects had been approved (10 long-term and 27 short-term) for 330,000 Liberian dollars.

(e) Japan [17]

Among developed countries, Japan provides an experience most relevant for developing countries. Its non-corporate sector saves about 21 per cent of its disposable income and 60 per cent of this is in the form of net financial assets, mostly deposits in banks. Institutions and policies have promoted this pattern by the following means: branches of banks (one office per population of 10,000), credit associations and co-operatives; a postal savings system; positive though low real interest rate (3 per cent); incentives for savings; and security of the banking system through insurance and supervision.

As may be seen from table 7, banks provided 52.6 per cent, co-operative institutions 36.4 per cent and special financial institutions 11 per cent of loans to small businesses in 1984.

While the bulk of finance is provided by the commercial banks, these tend to meet the requirements of small businesses at the upper limits or higher range. Also, the allocation of banks' funds to small businesses fluctuates from time to time depending on the financial institutions. Therefore, financial institutions of small businesses play an important role and are supplemented by special government financial institutions.

Mutual loan and savings banks are corporations offering a combined savings and instalment loans scheme which particularly meets the needs of small businesses. They receive deposits, there is a restriction on the size of individual loans and on their territorial jurisdiction, and there is a statutory liquidity (and deposit) requirement.

Credit associations are financial co-operatives that are non-profit and restricted to localities, loans being made to members although deposits are received also from others. Members are proprietors of small enterprises, liquidity and deposit requirements are imposed, and there are ceilings on lending rates as well as on the amount of individual loans.

Credit co-operatives are confined to members and there are restrictions on employment of surplus funds as well as guidance provided on ratios of resources and of loans to deposits and equity.

Table 7. Outstanding loans and discounts for small businesses
by financial institutions

Type of institution or account	Number of institutions	Outstanding loans and discounts a/		Percentage share of small enterprises in total loans a/
		Billions of yen	Percentage of total	
All banks				
City banks	13	36 844	23.5	43.7
Local banks	63	31 851	20.3	64.9
Others (trust banks, long-term credit banks)	10	8 858	5.7	28.9
Trust accounts	10 b/	4 741	3.0	26.5
Subtotal	86	82 294	56.6	45.2
Financial institutions for small businesses				
Mutual loan and savings banks	71	23 119	14.8	100
Credit associations	456	25 175	16.1	100
Credit co-operatives	468	8 710	5.6	100
Subtotal	995	57 004	36.4	100
Government financial institutions for small businesses				
National Finance Corporation	1	4 535	2.9	100
Small Business Finance Corporation	1	5 182	3.3	100
Shoko Chukin Bank	1	6 785	4.3	100
Environmental Sanitation Business Finance Corporation	1	750	0.4	100
Subtotal	4	17 252	11	100
Grand total	1 085	156 550	100	61.1

Source: The Bank of Japan, "Economic Statistics Monthly", various issues, 1984.

a/ End of March 1984.
b/ Not counted separately in total to avoid double counting.

The Central Bank for Commercial and Industrial Co-operatives (Shoko Chukin Bank), which facilitates financing of associations of small enterprises, is funded on a mutual aid system and its deposit and loan transactions are confined to member organizations which subscribe to its capital. Government contributes 50 per cent of the capital. The Bank is authorized to issue debentures which are the main source of its funds.

The Small Business Finance Corporation is entirely government-owned and supplies long-term funds for the promotion of small businesses with a capital of not more than 100 million yen or not more than 300 employees.

The National Finance Corporation is similar to the Small Business Finance Corporation but extends long-term loans to businesses of a smaller scale, that is, with a capital of not more than 10 million yen or with not more than 100 regular employees.

The credit guarantee system of the Credit Guarantee Associations and the credit insurance system of the Small Business Credit Insurance Corporation provide small business credit supplementation. The former, which consists of about 50 local Credit Guarantee Associations, guarantees the obligations of small business obtaining credit from financial instititions. The latter provides insurance for the guarantees made by the former. Funds to Associations are provided by local governments. The Small Business Credit Insurance Corporation, which is government-funded, also provides loans to Credit Guarantee Associations.

5. Informal credit markets ([18], [19])

It has been noted earlier that informal rather than formal capital markets provide the bulk of small enterprise financing, especially in the lesser developed countries, in the smaller-sized categories of enterprise and in rural areas everywhere. The continued importance of informal markets despite the growth of monetization and commercialization in the subsistence sectors of developing countries is the result of restrictive and repressive financial policies, lack of innovative measures and instruments to integrate informal and formal markets and often the lower transaction costs of certain informal market credit intermediaries.

The essential characteristic of informal markets is that they are far more loosely monitored and regulated than formal finance markets. Informal financial intermediaries include friends, relatives, traditional mutual aid groups, middlemen, landlords and professional money-lenders.

India has a well-developed system of intermediaries, lenders and borrowers in the informal credit markets. They include indigenous bankers who take deposits and make loans; commercial financiers who mainly lend; financial brokers who intermediate for commercial financiers; and commercial paper discounters. Informal markets are estimated to cover 10 to 30 per cent of the capital needs of small producers. Interest rates are 2 to 4 per cent higher than the bank lending rates. Very small enterprises, however, may

pay even 1C per cent higher than normal bank rates. Thus avail-
ability rather than cost of credit determines demand and supply of
funds. The transaction costs and default rates of informal markets
are, by and large, lower than for commercial banks. There are legal
restrictions on some segments of the informal market and the
Government in India is gradually bringing them into licensing pro-
cedures.

In Africa informal markets consist mainly of circles of friends
and relatives and sometimes traders and middlemen. In many coun-
tries rotating savings and credit associations play a prominent role
in the rural economy. Such an association forms a group in which
participants make a regular periodic contribution, the proceeds
being shared by each member in turn. Personal relationships are the
dominant factor in the setting-up and functioning of those groups,
often based on village or ethnic origins. Thus, there is a great
deal of trust between lenders and borrowers and social pressure to
reduce or eliminate moral hazards (default, diversion or misuse of
funds etc.). Rotating savings and credit associations display a
high degree of flexibility and versatility. They fulfil the three
functions of consumption, insurance and investment, the first two
being more important. The associations exist in many African coun-
tries and are known by different names. In Cameroon they are known
as tontines and engage in the following four activities: purely
tontine activity (pooling of savings); mutual aid activity (contri-
butions from every member); savings activity (savings bank
function); and credit activity (making loans).

Informal credit markets are generally complementary to formal
markets. Since they are able both to mobilize and allocate savings,
they are characterized by a smaller scale of operations and they
enable direct contact between borrower and lender. Informal credit
markets need to be closely integrated in the capital market
structure in order to serve the needs of the rural market and of
smaller enterprises in an effective and efficient manner.

It has been noted earlier that policies of financial repression
have led - despite the growth of institutional finance - to the
financing of larger borrowers and to the limitation of deposit
mobilization. Informal credit markets have met a large part of the
requirements of small enterprises in both urban and rural areas,
because of their ability to assess risk and ensure repayment and
their lower loan transaction costs. Nevertheless, there is still a
large unmet demand for credit by small borrowers. Besides improving
the efficiency of institutional finance through higher deposit rates
and subsidies for small borrowers (targeted on the rural poor),
refinancing of informal credit markets by formal financing institu-
tions would help to fill the unmet demand. Indigenous bankers have
thus been refinanced in India and pawnbrokers in the Philippines and
Malaysia by the formal sector. Other examples are the provision of
trade credit or using input and output dealers to lend to small
farmers and small enterprises in rural areas. This kind of
integration enables the use of lower transaction costs and closer
contacts of informal credit markets for widening and deepening the
financial market.

6. External financing

Small and medium enterprises do not generally receive external
project finance. They are, however, sometimes assisted indirectly
through loans extended by international financial agencies (such as
the World Bank, the Inter-American Development Bank and the Asian
Development Bank) and bilateral agencies or programmes (such as the
United States Agency for International Development or the programmes
of assistance of the Federal Republic of Germany or the United
Kingdom) to national development banks, earmarked for lending to
small enterprises. Such loans help to bridge the foreign exchange
gap at the national level, while at the same time enabling financial
institutions to provide for the import requirements of equipment and
materials of small and medium enterprises. They may also be
required to focus on disadvantaged sectors, for example micro-
businesses or rural enterprises. External financing of this nature
is accompanied by technical advice as well as policy advice on
credit assessment, project appraisal, pre-loan screening, post-loan
monitoring, interest rate structure and extension service organiza-
tion and operation. While such loans supplement and complement
formal financial mechanisms and enable their development to meet the
needs of small and medium enterprises, they are still dependent on
the proper functioning of national financial structures and
policies. When properly integrated with the domestic structure,
such external financing can make and has made a valuable contribu-
tion to modernization and upgrading of small enterprises and
expanding their objectives. However, they might have contributed
to increasing capital intensity, without improving capital produc-
tivity.

One important aspect of external capital mobilization for small
and medium enterprises relates to foreign remittances by emigrant
workers of developing countries to their families and friends at
home and savings brought back by them. Insufficient attention has
been paid to utilizing such small savings to meet the needs of small
enterprises. Such remittances have mostly been used for luxury
consumption and land and farm purchases rather than as start-up
capital or operational capital for enterprises. India has provided
incentives for investment by non-resident nationals by offering
attractive interest rates on deposit and tax exemptions and
holidays. Turkey offers incentives for investment in small busi-
nesses by nationals returning home.

In general, the efficiency and effectiveness of national
financial structures and policies influences the flow of external
finance as well as its efficient utilization. Prudent policies and
mechanisms can, in turn, make it possible for external financing to
generate and expand the flow of domestic financing resources into
investment. However, external financing is of limited significance
for the establishment and operation of small and medium enterprises.

7. Venture capital financing

Financing of venture capital for small industries has been
attempted in some developing countries, in combination with pro-
grammes for entrepreneurial development or introduction of new

technology (for example, in electronics or computers). In the
United States, institutional investors raise money for venture
capital funds from individuals, co-operatives, insurance companies,
pension funds, endowments etc., besides financing of new ventures
by small business investment companies. In the Philippines, venture
capital companies finance small enterprises before they can qualify
for public underwriting. The enterprise financed has usually
potential for growth through rationalization and has a linkage
(backward or forward) with other enterprises, including large-scale
ones. Equity capital investment is provided with the sharing of
risks and provision of management and technical advisory services.
In India, the technical entrepreneur is provided with a financial
package of assistance, after training and screening, but owned
equity of at least 10 per cent is insisted upon. An entrepreneurial
training and development programme precedes such assistance. In
practice such schemes help in modernizing and upgrading existing
small ventures having potential for diversification and expansion.
It is not certain, however, that such special schemes provide the
best means for transfer of technology. On the one hand, linking up
research and development to establishment of small and medium
enterprises often requires outright grants to establish the
viability of a new technology or process. On the other hand, inter-
firm or inter-industry transfer of technology might take place
through subcontracting and development of ancillary relationships.

8. Financial innovations

Innovations in credit or financial instruments are required in
developing countries - taking into account relevant socio-cultural
factors in each country - to reduce the cost of transactions as well
as both borrowers' and lenders' risks. The risk-reducing effect of
an innovation should be greater than its cost-increasing effect.
The role of informal markets is important in identifying opportu-
nities for financial transactions and introducing innovations. On
the basis of the experiences of Japan, as well as India and other
middle-income developing countries, certain successful innovations
that have reduced overall transaction costs and risks involved in
financing, may be cited:

(a) The provision of guarantees reduces risk without increas-
ing transaction costs. Such guarantees range from personal guaran-
tees by a person or firm in the trust of both borrower and lender,
to mutual guarantees by mutual loans and savings banks, to co-
operative credit arrangements among relatively homogeneous groups,
to credit guarantee schemes supported by public or common funds
created for this purpose;

(b) An objective substitute for personal guarantees is
provided by the innovation of collateral or security, comprising
real or financial assets. Such collateral enables short-term
credit to be renewed or rolled over, for example against the
security of raw materials or goods-in-process. The degree of the
lender's and borrower's knowledge of each other and mutual trust
reduces risks and costs;

(c) A further innovation is that of loans based on the security of assets created out of them. The loan size would be less than the market value of assets, to reduce the risk of capital loss. Such a security-cum-equity type of innovation includes medium- and long-term instalment loans for purchase of equipment, buildings and other fixed assets;

(d) The provision of leasing finance to machinery manufacturers or dealers will make possible the hiring of equipment (or purchase in instalments) rather than outright purchase by small enterprises, job workers, ancillary units or subcontractors. This will reduce the extent of medium or long-term borrowing requirements of small and medium enterprises;

(e) Development or commercial banks may lend to informal market dealers or agents rather than directly to small enterprises, in order to enlarge the credit market and make use of the informal market mechanisms. Both administrative costs and risks may be lower under such arrangements. Links may similarly be developed with co-operative credit societies, banks or associations and with rural banks and money-lenders, by refinancing their loans to small and medium enterprises.

As in the case of allocation of resources, savings could be mobilized through innovative institutional and policy measures, particularly in rural areas, which, in turn, improve the effectiveness and efficiency of informal credit channels. Some of the ways in which this can be done are mentioned below:

(a) There could be an expansion of banking and availability of savings instruments, for example through savings and time deposits, in rural areas. Postal savings banks play a vital role in many countries;

(b) Savings mobilization schemes combined with the provision of group credit based on group guarantees and with extension services in technologies, supplies of inputs and marketing will benefit the poor in rural areas, both in agricultural and non-farm occupations;

(c) Mobile banks, door-to-door collection of savings, pigmy deposits and confining a savings-cum-lending institution to a local area are other methods of investment for tapping rural savings;

(d) Compulsory provident-and-pension schemes and insurance policies (including group insurance) have stimulated rural savings.

9. Conclusions and issues for consideration

1. Economic growth in developing countries has been financed during the last three decades largely through domestic savings, which have accounted for 80 to 90 per cent of gross investment. Savings in the household sector have accounted for 50 to 60 per cent of domestic savings.

2. Financial intermediation through institutionalization of credit and the expansion of money and capital markets, has benefited the larger enterprises in urban areas and in the middle- and high-income developing countries.

3. The bulk of the capital and credit requirements of small enterprises has been met by own savings, loans from friends and relatives, trade credits and transactions in the informal markets. Institutional credit has mainly benefited small and medium enterprises in the upper ranges in urban areas.

4. Financial repression, through holding down the interest rates, the allocation, planning and rationing of credit, segmentation of credit markets, special credit schemes etc. has tended to reduce the volume of savings and of loans (or at least has not increased them to the extent possible), since it is not profitable for financial institutions to lend at the controlled rates (to small and medium enterprises) and the rate of interest for savings is not sufficiently attractive to savers.

5. Financial innovations are required both to mobilize savings and allocate them for small enterprises and rural areas. Innovations which reduce lenders' risks and the transaction costs of loans include personal guarantees, collective guarantees, credit guarantee funds, security-collateral linked to asset creation, and integration of formal and informal markets. Loans to collective entities and groups, the successive disbursement of a loan by instalments and reimbursement through domiciliation of sales revenue have been tried successfully. The granting of loans should be based on the viability and profitability of the project rather than on collateral. Reliance on expansion of insurance mechanisms - for both deposits and loans - reinforce financial soundness. Besides insurance mechanisms, innovations which increase mobilization of savings include expansion of branch banking, increased availability of simple savings instruments (such as savings and time deposits), collection of pigmy deposits, co-operative and collective savings and loan associations etc.

6. The utilization of informal markets, which increase the market for savings and loans and provide needed funds to small-scale and rural sectors not available from institutional channels, can be improved by forging links with the formal sector. Such links can be provided by the following means: refinancing of the informal sector by the formal sector; providing competition by setting up facilities and improving efficiency in the formal sector; improving the performance of informal financial institutions through government regulations; and encouraging the transformation of informal into formal financial institutions. An integrated financial structure should provide a continuum from purely formal to purely informal institutions and markets, rather than a dualistic system, dichotomizing between formal and informal.

7. The provision of credit combined with extension services, rather than subsidization of interest rates, has been found more

effective in developing smaller-size enterprises, particularly in rural areas.

8.   In rural areas, the elements of savings mobilization, investment and extension services may be cor ned by assisting homogeneous groups on a collective basis, wi   the need for provision of collateral for loans. In some case. .vings generated in a locality or region may be used within that locality or region, by linking formal and informal markets, and combining credit with technical assistance.

9.   In regard to interest rate policy, while interest rates considerably lower than market equilibrium rates lead to reduced savings as well as reduced loans, a freely determined market rate may itself be too high, tending to drive away low-risk borrowers and defeating the purpose of efficient allccation of resources between large and small industries. A pragmatic policy would be for interest rates to reflect the estimated costs of lending to low-risk small firms, screening and monitoring lending costs as well as costs of extension services being borne by the financing programme (public authorities) during an initial period and until the learning process is effective in the financial institution. Losses may also be covered by credit guarantee and insurance schemes.

10.   Advisory and extension services are a necessary complement to a financing programme, especially for the smaller-size enterprises and for rural areas. The cost of providing such services may in the long run be outweighed by improved marginal efficiency of capital loaned and reduced marginal cost of capital to the borrower.

E.   Domestic and international contribution of subcontracting to integrated development

In the process of industrialization, linkages between enterprises grow with the development of the infrastructure and of specialization in the functions of the production system. Such linkages contribute not only to coherent and integrated development but also to the economical and effective allocation and use of resources.

Linkages or interrelationships between or among enterprises may be broadly of three types. First, enterprises of a similar nature may co-operate with each other in the form of a guild or association to deal with common problems of technology or supplies or marketing. Secondly, two or more enterprises may collude in production or market sharing with a view to obtaining oligopolistic profits. Thirdly, there is a relationship in the same production chain between one enterprise and another or others, in which some parts, components and sub-assemblies are manufactured and supplied by some to be incorporated or assembled into the end-product by another or others.   This last kind of relationship between an enterprise and its supplier or buyer is the one referred to as between a contractor and a sub-contractor, or between a primary enterprise and an ancillary enterprise, or between an assembler and a feeder enterprise.

1. Definitions and scope

The most comprehensive definition of subcontracting is provided by UNIDO as follows: "a subcontracting relationship exists when a company (called a contractor) places an order with another company (called the subcontractor) for the production of parts, components, sub-assemblies or assemblies to be incorporated into a product to be sold by the contractor. Such orders may include the processing, transformation or finishing of materials or parts by the sub-contractor at the request of the contractor" [20].

It should be noted that the definition could be interpreted to include the possibility of subcontracting the manufacture of finished products to be marketed as such by the principal without any need for prior assembly. On the other hand there is no sub-contracting when the large company purchases shelf items or commonly available services, such as transportation, electricity, telephone, auditing, research, design and maintenance.

International subcontracting is distinguished from domestic subcontracting when the principal and the subcontractor are located in two different countries. However, sometimes "the foreign origin of the principal, which may be a subsidiary of a multinational corporation or a firm under foreign control" [21] even when located in the same country as that of the subcontractor, is regarded as sufficient to be defined as international subcontracting, partic-ularly if experts or foreign exchange earnings are generated for the country of the subcontractor.

A distinguishing feature of the subcontracting relationship is that it is between firms of different sizes and often of unequal bargaining power. Subcontracting refers to a specific aspect of the organization of industrial production where large and small firms co-exist (with a high degree of specialization) with informal co-operation in production and sometimes in investment decisions as well [23]. The parent firm can exercise considerable control over its subcontractors through technical, financial, input and market linkages.

Several forms or types of subcontracting are distinguished in the literature on the subject. UNIDO provides the following clas-sification:

(a) Full-capacity subcontracting or peak-load subcontracting, where due to insufficient capacity in the principal's firm a per-centage of total output is regularly subcontracted;

(b) Specialized subcontracting, where subcontractors manu-facture and supply parts or components on a more or less permanent basis, including the use of specialized machinery or equipment or techniques;

(c) Marginal subcontracting, where infrequent or small orders are passed on to subcontractors;

(d) Cost-saving subcontracting, where costs of production of subcontracted items are much lower in subcontractor firms because of lower overheads, lower taxes and lower expenses in wages and other payments to labour.

A distinction may be made between industrial subcontracting and commercial subcontracting, the former involving manufacturing, or processing or assembling by both parties, the latter involving only marketing and distribution by the contractor or principal. Most international subcontracting is stated to be in the nature of commercial subcontracting.

A further distinction is between purchasing-, supply- and task-oriented subcontracting [22]. Purchasing-oriented subcontracting is similar to specialized subcontracting, where specialized parts and components are purchased from subcontractors. Supply-oriented subcontracting refers to parts and components which can be used in various end products in the automotive, electrical and electronics industry, and are supplied to several clients. Some analysts [23] regard these as traditionally bought-out components and not proper subcontracting. Task-oriented subcontracting means that the subcontracted and the purchasing company jointly develop and produce, on the basis of research and development, new parts, components and end products.

Nagaraj [23] distinguishes among four types of subcontracting. Component subcontracting is similar to specialized subcontracting, the parent firm concentrating on a limited range of technology-intensive segments of the final product and on assembling, marketing after-sales service and research and development. Such component subcontracting takes place in the metalworking and machinery industries. Another type of subcontracting is where an entire process or activity could be subcontracted. This is known as activity subcontracting, illustrated by the cotton-textile industry where large firms produce yarns, have it woven in separate power-loom units and have the cloth printed in other specialized firms. A third type is that of assembly subcontracting, where the subcontracted small and household enterprises assemble the final products in a highly labour and skill-intensive manner. This is typified by the electronics industry where production of components like the chip, capacitor, transistor, picture tube etc. includes high-technology capital-intensive processing carried out by large specialized enterprises, while assembling of the final product is done by small enterprises. Nagaraj's fourth type is called product subcontracting, where the complete product is made by the subcontractor, the parent firm performing only the marketing function. This is akin to commercial subcontracting and prevalent in apparel and clothing, footwear and leather goods, small motors, transformers, electrical appliances etc.

In regard to international subcontracting, four types are again distinguished [21]. Across-border subcontracting is between two firms located in different countries. It is "commercial" when the finished product is made by the subcontractor and exported to the contractor. It is "industrial" when parts and components are exported by the subcontractor and assembled and finished by the

principal. Within-border industrial subcontracting takes place
between a subsidiary of a transnational corporation and a local firm
located in the same city. When the subcontractor makes the finished
product, it is within-border commercial subcontracting. Subcon-
tracting may also take place between a parent company and a sub-
sidiary located in different countries or between two subsidiaries
of different transnationals locat.. in the same country. Relations
between a transnational corporation and its subsidiary may often be
in the nature of off-shore manufacturing and may not strictly be
called international subcontiacting. Benefits to a developing
country are stated to arise substantially only when the relationship
is between a transnational corporation and a locally-owned
enterprise ([24], [25]).

2. Factors influencing growth of subcontracting: benefits and costs

A number of combinations and variants of the forms of sub-
contracting outlined above takes place in different industries, in
different countries and at different stages of development. Growth
and development leads to a whole spectrum of inter-firm relation-
ships, in which subcontracting is only one form of linkage. The
fundamental basis of subcontracting in manufacturing is, on the one
hand, the principle of division of labour and specialization and,
on the other, the prevalence of lower labour and overhead costs in
small-scale enterprises. "Make or buy" decisions of the principals
are based on the relative costs of production within the factory or
outside. Such decisions depend on the availability and reliability
of small-scale suppliers, their technical competence, critical
quality considerations etc. Thus the stage and status of indus-
trialization, the organization of the industrial sector and the
institutional framework greatly influence the "make or buy" choice
of the principal manufacturer. The well-developed and integrated
institutional structure and system in industrialized market-oriented
and mixed economies makes it easy for subcontracting and other
linkages to exist and flourish. However in today's developed coun-
tries, especially the United States and Japan, government policy has
played an important part in stimulating and strengthening inter-
linkages. Anti-monopoly and anti-cartelization policies, as well
as encouragement to small business through mandatory government and
defence purchase requirements [26] in the United States - apart from
the operation of competition and the market mechanism leading to
size characteristics of manufacturing enterprises adapted to product
and demand characteristics - stimulated the development of the sub-
contracting relationship.

In Japan both government policy and industrial organization
have favoured the coexistence and co-operation of giant enterprises
with thousands of small-scale enterprises to derive the maximum of
comparative cost advantages. In India a conscious government policy
in the post-independence period has provided a framework of institu-
tional as well as incentive measures for the stimulation of sub-
contracting.

As is well known, the division of labour is limited by the
extent of the market. Beyond a certain scale of production, average

costs are reduced through the operation of specialized firms.
Furthermore, the development of batch production enables growth of
specialization. Another factor is localization or spatial con-
centration of factories, making subcontracting economical through
reduced capital investment and reduced transport costs. It is
noteworthy for instance that "in any industry average size of fac-
tories in backward regions tends to be larger than that in advanced
regions. And in any region older plants tend to be of much larger
size than the newer ones" [23]. Thus the economy as a whole can
benefit from a network of subcontracting relationships through
stimulation of investment, diffusion of technology and skills,
economical use of capital and labour and balanced growth of small
and large enterprises.

As for small-scale enterprises, they receive from the large
contracting firms (and sometimes from public institutions set up by
government or by government and industry together) information,
technical assistance and technology transfer to plan investment and
production, associated with a flow of business and an assured
market, and financial, management and extension service assistance.

While there are benefits to small enterprises, large enter-
prises and the economy, there may also be costs involved. Reduction
of competition is inherent in a linkage relationship, unless and
until the existence of a large number of suppliers and buyers (sub-
contractors and contractors) ensures market competition in the
classical or neo-classical sense. Such a state exists in developed
market economies. Moreover, large-scale enterprises in developing
countries run the risk or incur the costs of the learning experience
of small enterprises until effective communications and transfer of
technology take place and the quality of subcontracted output is
ensured at economical cost.

Usually, however, it is the small-scale supplier, being unequal
in economic power with the large contractor, who runs the risk of
being squeezed or exploited. The parent firm can pass on the burden
of market fluctuations to the subcontractor, by delaying payment or
refusing delivery or postponing inspection. Onerous terms and
prices could be imposed on the subcontractor, while on the one hand
government measures of protection are designed to prevent such
abuses, and on the other, even in a recession large enterprises may
often find it more cost-saving to retain subcontracting activity
rather than incur higher cost through maintaining employment of
higher-paid labour in their own factories. The latter situation is
particularly relevant in labour-surplus economies or those having
labour market rigidities.

3. The experience of Japan ([26], [27])

Subcontracting has played and continues to play a crucial role
in the Japanese economy. The Japanese features of lifetime employ-
ment and the seniority system have introduced rigidities in the
labour market. Large firms overcome this inflexibility through the
system of subcontracting. They provide financial assistance and
raw materials to small firms in return for an assured supply of
manufactured parts, components and products. The availability of

sufficient low cost and skilled labour provides the basis for capital substitution and farming-out of production.

In Japan two thirds of all small and medium enterprises engaged in manufacturing are <u>shitauke kigyo</u> or subcontracting companies. The total number of these companies is estimated at 46,500. Eighty per cent of them are in the textile and clothing and machinery manufacturing industries. Dependence between parent firms and subcontractors is mutual. Technology is transferred from parent firm to subcontractor through delivery of materials and machinery and through provision of training. Former skilled employees of the parent firm may also be set up as subcontractors. The parent firm is highly dependant on the technological level of subcontractors for the quality, function and productive efficiency of its own products. Ito [27] has described the development of the system as follows:

"From the mid-1950's through the high economic growth period, subcontracting production systems developed. Fierce competition between large parent firms has worked to ensure a constant raise of standards in technology, as well as production and quality control of the subcontracting firms, and has also provided them with instruction and material aid necessary. This is the general trend which distinguishes the Japanese subcontracting system from those of other countries. Here are the major technological transfers made from large parent firms to subcontractors in Japan: (1) Reforms on facilities and machinery; instructions on production and quality controls. (2) Aid for facility funds; transferring of technology through leasing of facilities and machinery. (3) Transferring of technology through receiving trainees and sending out technological instructors."

Ito furthermore describes the characteristics of the sub-contracting system in the machinery industry:

"1. Subcontracting firms are divided into parts makers, parts assemblers, special processors etc., and the degrees and types of specialization surpassed other developed countries.

"2. The subcontracting firms are classified into different levels, i.e. first, second, third, fourth etc.

"3. Subcontracting system, far from being static, dynamically transforms itself according to the strategies of the parent firm switching from outer order to in-plant production and vice versa, as well as changing firms for orders.

"4. At first the parent firms used subcontracting firms in order to save on initial capital, take advantage of the low wage rate and as a shock absorber of industrial fluctuations. But these factors have ceased to be the main motives and now they have shifted to the utilization of subcontractors' specialized techniques and equipment and to compensate for the limited production capacity of the parent firm."

While the Japanese system is uniqu in itself, there is no
doubt that even here the vulnerability o subcontractors is greater
than that of parent firms. For example, to make up for the sharp
appreciation of the yen, reduction in production costs of about 20
per cent is required from the subcontractors. To prevent malprac-
tices by contractors, the Japanese Ministry of International Trade
and Industry and the Fair Trade Commission issued on 19 November
1985 an unprecedented notice to contractors "warning them not to
delay payments to subcontractors or force them to make unreasonable
price cuts or return parts already made to order and delivered".
Apart from such regulation of transaction terms to prevent exploi-
tation, the Government sets a target for the share of public
procurement from small companies and prevents the entry of big
business into many small business fields. The ready provision of
low-cost finance to small business is the biggest incentive.   In
1982, Y 1,000 billion or 56.4 per cent of all loans outstanding from
government financial institutions were provided to small companies.

The shitauke companies are assisted by Government-funded
enterprise promotion associations operating in each prefecture of
the country. There are 16 offices in Tokyo of the Metropolitan
Small and Medium-sized Enterprises Promotion Public Corporation. A
staff of 30 acts as matchmaker for about 15,300 subcontracting com-
panies. They introduce the big companies and the shitauke sub-
contractors, ensuring the flow of orders in an appropriate manner.
A newspaper advertises subcontractors' specializations, advises on
tax and legal matters and analyses business trends.

Continuous cost reduction is attempted by subcontractors
through both technological and managerial efforts. With regard to
technology, numerical control machines and computer applications are
on the increase. With regard to management, total quality control
and just-in-time system of inventory control (Kanban system) are
increasingly employed.

Even though the mortality of Japanese small business (20,000
per year) is double the rate of the United States, small sub-
contracting companies maintain dynamism and vitality through
continuous adaptation and change. A survey by the Shokochukin Bank
(Central Co-operative Bank for Commerce and Industry) indicates that
25 per cent of shitauke do not wish to increase dependence on one
large contractor, but to develop as independent specialized manu-
facturers, and that 49 per cent of firms have introduced mecha-
tronics machinery, 36 per cent numerically-controlled machinery and
15 per cent industrial robots. With these dynamic developments,
the subcontracting system is expected to expand - rather than
contract   in Japan.

4. The Indian Experience ([23], [28], [29])

Since the mid-1960s there has been considerable growth of
small scale enterprises, particularly ancillary enterprises, in
India. Government policies - both positive and protective - have
consciously promoted both the expansion of small enterprises and the
development of subcontractor relationships, known as ancillarization

in India. Apart from the network of institutions for technical and extension service assistance, a fiscal policy providing differential excise duty and exemptions for small enterprises and a financial policy of loans at lower rates of interest may have especially promoted subcontracting. Tax differentials and lower labour and overhead costs make the products of small enterprises cheaper for large industries to buy, rather than to manufacture them in large factories. Availability of credit to small enterprises makes it possible for ancillary units to extend credit to parent firms through delayed payments by the latter. A further incentive to growth of small subcontractors has been the policy of reserving a large number of items (over 800) for production by small enterprises, thus making product subcontracting feasible and profitable.

Direct attention in the form of institutional finance, supply of machinery on hire purchase and supply of raw materials, as well as indirect assistance through factory sheds in industrial estates, provision of extension and common service facilities, testing facilities and market information are especially available to ancillary enterprises, in whose case the eligibility criteria has been extended to include enterprises with a fixed capital investment of Rs 4.5 million (as against Rs 3.5 million for other small enterprises). Moreover, public sector enterprises receive guidelines and instructions to identify parts and components and suitable subcontractors and to farm out supply orders to them. Private large-scale enterprises have also been active in promoting subcontracting through their associations as well as through subcontracting exchanges set up by governments as part of its industrial extension service.

While the role of government policies and measures in India has been to stimulate and promote the growth of small and medium enterprises, including ancillary industries, it seems that with the establishment of a viable and growing small-scale industry sector by the mid-1960s the subcontracting relationship has expanded considerably in the last 15 years through natural and spontaneous growth. Analysis of comparative performance of the small-scale sector and the corporate sector indicates that "the profitability as well as capital efficiency in the small-scale sector as a whole is much higher than that of the corporate sector", due to "lower wages and greater exploitability of labour on the one hand and fiscal concessions on the other" ([29], p. 1746). A growing subcontracting relationship between large and small engineering firms is indicated by the fact that "a very large proportion, over four-fifths, of output of the metal-based industries is used as inputs for industrial production" ([29], p. 1794). "A majority of enterprises (of the small-scale sector) directly supply their output - which invariably are intermediate products - to units in private, public and small-scale sectors" ([29], p. 1796). Lower labour and overhead costs in small firms and reducing employment of workers in large firms seem to have encouraged growth of subcontracting.

Only scattered data are available on the extent of subcontracting in India. The number of small enterprises in India grew from 60,000 in 1950 to over 1 million in 1983. The value of

production increased five times, employment twice and the value of exports six times in the small-scale sector over a 10-year period ending in 1983. Purchases from ancillaries by public sector enterprises increased 3 1/2 times over a five-year period from 1975 to 1980. Potential for ancillarization is estimated to range from 60 to 90 per cent in the transportation industries, 50 to 75 per cent in the communications industries and 20 to 40 per cent in industrial machinery and machine tools.

India provides an example of the advantages of subcontracting in a labour surplus and capital-scarce dual economy. Large and small firms face different market conditions. Large firms have greater accessibility to finance and tend to be capital and technology intensive, with high labour productivity. The smaller firm has access to cheaper labour and has the advantage of lower wage rates and lower labour costs. Subcontracting enables small firms to grow and acquire technical and managerial skills. Some small firms expand into medium firms often with independent products made for the market.

With the continuous expansion - both in number and in size - of the Indian small-scale industry sector, which is encouraged by the Government through periodical upward revision of the definitions of small-scale enterprises and ancillary small-scale enterprises, there is increasing scope for subcontracting in technology-intensive and skill-intensive industries, such as electronics and computers. The present system which leaves market and product development to large parent companies, and specifies rigid purchasing obligations on them, may not be adequate to develop ancillarization. Small-scale enterprises will need to adjust to rapid technological innovations and keep abreast of market and product development.

5. International subcontracting
([20], [22], [24], [25], [30], [31])

The pure form of international subcontracting involves a contractual relationship between an independent supplier in one country and a buyer abroad. It enables enterprises in developing countries to develop and grow through technology transfer from the parent buying company and to export their products abroad. Much of it takes place on considerations of comparative costs by the buyer in the developed country and can be influenced only very little by the government of a developing country, except by maintaining a favourable environment within the country for such subcontracting to take place.

There is a wide spectrum of linkages between foreign and domestic enterprises, ranging in the developing country from a foreign-owned (or transnational) enterprise or its subsidiary (including location in an industrial free zone) to a publicly or privately owned national enterprise (including small-scale or medium-sized enterprises). Not all of the linkages, however, qualify as international subcontracting.

One of the fastest-growing elements in the growth of exports of manufactures from developing countries - particularly from selected developing countries with a high share in manufacturing - during the last two decades has been in the form of off-shore assembly of components exported to developing countries by developed countries under provisions of special tariff schedules in the latter exempting from tax the value of components exported by the developed country. Such activities are concentrated in Latin American countries adjoining the United States of America, in North Africa and Mediterranean countries neighbouring on the European Economic Community, and East Asian countries or territories neighbouring on Japan, although China (Taiwan Province), Hong Kong, the Republic of Korea and Singapore export even to United States markets. Some data on such exports to the United States are given below in table 8.

Table 8. Exports to the United States under United States
Tariff Items 806.30 and 807.00 as a percentage
of total manufactured exports

Exporting country or territory	1970	1975	1980
Barbados	42.5	40.4	62.0
Brazil	1.2	3.7 (1976)	1.7
Colombia	0.5	6.8	2.6
Dominican Republic	2.6	16.8	152.0
El Salvador	0.6	32.9 (1976)	35.0
Haiti	63.3	177.8	181.0 (1978)
Hong Kong	6.4	2.8 (1976)	3.1
Indonesia	..	4.3 (1976)	10.0
Malaysia	0.6	25.5	34.0
Mexico	60.5	115.6	139.0
Philippines	9.0	17.7	35.0
Republic of Korea	4.4	3.1	2.2
Singapore	7.6	10.2 (1976)	8.8
Thailand	..	2.4 (1976)	5.3

Source: Grunwald and Flamm [25].

Note: United States imports from Mexico and Haiti under Tariff Items 806.30 and 807.00 exceed the total manufacturing exports of those countries because Mexico does not count exports under those items in their trade statistics and Haiti counts only the value added.

The total value of these United States imports amounted to $541.5 million in 1970 and $2,245.9 million in 1975, including import tax values of, respectively, $245.9 million and $1,202.9 million [21]. The principal items covered are shown in table 9.

Table 9. share of major products in
total value of imports, 1975

Item	Percentage
Semi-conductors	23.6
Television sets	19.1
Electronic machinery components	10.2
Textiles	8.6
Office machines	8.3
Toys and dolls	5.9

Source: Organisation for Economic
Co-operation and Development [21].

In the case of Morocco international subcontracting takes place
mostly with French principals. While operations are by subsidiaries
of transnational corporations in the tyre and chemical industries
(and not through subcontracting), private small and medium enter-
prises are subcontractors in engineering, electrical and electronics
industries; textile and leather industries, and agro-food indus-
tries. In Tunisia promotion has taken place through the public
industrial sector, the development bank and the establishment of a
subcontracting exchange (Bourse tunisienne de sous-traitance).
Relationships have been established with France, Germany, Federal
Republic of, Italy and the Benelux countries. The majority of
contracts are for ready-made clothing, but they also cover metal,
mechanical and electrical equipment industries.

Transnational corporations dominate in the automobile industry.
They set up subsidiary factories, or have collaborative arrange-
ments, or penetrate into component manufacturing in developing
countries. Purchase of parts and components is mostly a commercial
transaction and sometimes in the nature of commercial subcontract-
ing. Transnational corporations located in developing countries
have developed backward linkages with both large-scale and small-
scale enterprises.

Foreign assembly activities have concentrated on two sectors:
garments and electronics. In both cases value-to-weight ratios are
high and thus transport costs low. Both types of manufacture
involve segmented and separable operations in time and space.
However, the life cycle is short, fashions and technologies
frequently change. While in the garment sector international sub-
contracting has taken place between independent firms, operations
in electronics have been carried out mostly by subsidiaries of
transnational corporations. In the case of electronics, "the
originally expected technological spill-over effects, through the
promoted off-shore manufacturing of international companies, have
by and large remained limited, and have had little effect on the
development of a domestic electronics industry ... large industries
rather than small-scale have profited by technology transfer through
joint ventures" ([22], p. 9).

Foreign assembling - whether it involves international sub-contracting or not - seems to have attained a stability not affected by recessions. Indeed, "during a business downturn producers seem to reduce their high-cost operations in the United States in favour of production abroad, and the trend is not reversed during the sub-sequent economic recovery" ([25], p. 223). Furthermore, value added in assembly has been continually increasing.

Foreign assembling (including international subcontracting) is a critical source of employment, incomes, and foreign exchange earnings in small countries of the Caribbean basin, such as Barbados and Haiti, and for Singapore and the territory of Hong Kong. They are also important for China (Taiwan Province), Mexico and the Republic of Korea.

Foreign assembly production by subsidiaries (not involving nationally-owned enterprises through subcontracting) lacks linkage effects and is not integrated into the production activities of the host country. Tax and tariff incentives, such as those provided in industrial free zones, prohibit shipments to local markets and thus prevent inputs to national production. However, in countries of Eastern Asia there has been progressive substitution of nationally produced inputs for imported materials, especially in textiles and garments.

Inducements for international subcontracting are reduction of costs and increased flexibility by the principal contractors. However the basic engine has not been developing country policies but rather the advantages of redeployment of production stages which are no longer competitive in developed countries.

Economic linkages of assembly production can be greatly increased through greater integration into national economies by deliberate government development policies and actions. "Subcontracting rather than intra-United-States firm activities that now predominate abroad facilitates the transfer of technology and provides the opportunity for national firms to improve their expertise through practical experience" ([25], p. 250).

Since small-scale enterprises suffer from severe financial, technical and information constraints arising from their size, production structure and management, public measures could stimulate linkages through various means, such as the following: fiscal con-cessions, incentives and assistance to small-scale industry; setting up industrial estates - functional (as in electronics) or ancillary (linked, for example, to a large enterprise); systems for putting small subcontractors in touch with buyers (for example through subcontracting exchanges); and schemes relating to training, transfer of technology and production reservation. In regard to international subcontracting, stability, infrastructure and appro-priate location of small-scale enterprises is particularly impor-tant, as well as provision of information to buyers and subcontrac-tors, provision of materials, quality-control practices, market research and stability of contractual terms. The Trade Development Authority in India acts as a middleman between buyers abroad and small-scale enterprises in the country.

6. Conclusions and issues for consideration

1. Subcontracting involves linkages between lead and linked enterprises - large-scale and small-scale enterprises - whereby long-term contracts are entered into, product information is exchanged, prices are negotiated, technologies shared or diffused, and other forms of assistance made possible. The development of such linkages in developing countries makes possible integration of production and a self-reliant industrial structure. On the other hand, industrial growth - particularly that of metal and engineering industries - itself leads to development of such linkages. Sub-contracting relationships benefit the economy through reduction in costs of production and improved allocation of capital, labour and other resources, thereby improving economic performance.

2. Industries characterized by specialized and separable operations over space and time, such as textiles and garments, metals, engineering and electronics, are suitable for subcontracting relationships rather than chemical and metallurgical processing industries. As differentiation and hierarchization of industrial structure develop, opportunities increase. While most opportunities exist in middle-income and high-income developing countries, initial promotion could be undertaken in low-income countries through encouragement to small-scale engineering industries and their institutional and linkage mechanisms.

3. Linkages are of various types and could be provided by large industries themselves or by their associations, by small-industry associations or co-operatives, public industrial extension services, development banks specialized in small-industry opera-tions, subcontracting exchanges etc. The role of government is important in ensuring the right environment of fiscal, financial and licensing policies to encourage linkages. Information linkages provide for exchange of information on demand, future investment, market conditions etc., and are best carried out by chambers of commerce and associations or autonomous public institutions. Tech-nical and transfer-of-technology linkages related to assistance in innovations and product design, process know-how, production costs, quality control, testing, training, tooling etc. are provided either directly by the principal contracting large firm or by a public industrial extension service. Financial linkages relate to the provision of loans, negotiation of prices and contractual terms. In order that the initial low bargaining power of small-scale enterprises is not exploited by large contractors, regulatory and assistance measures should be set up by the Government. An indus-trial extension service, or the large contractor, or an association of small industries could also provide managerial assistance in accounting, computerization, control procedures, purchase of materials.

4. International subcontracting has developed largely in the form of foreign or off-shore assembly activities undertaken by transnational corporations or large foreign enterprises in devel-oping countries offering adequate infrastructure, trained labour and lower costs of production. Developing countries benefit most where national enterprises become involved as subcontractors and

gradually reduce dependence on imported parts and components. There is evidence that international subcontracting is of a permanent nature, although the industries involved may be different from time to time, depending on varying comparative costs of labour and capital and on technological change. There is considerable scope in the electronics industry, which is of a different nature from the traditional textile and garment industry, in that assembling rather than component manufacture is labour- and skill-intensive. A proper economic environment engendering stability and confidence in the developing country location, as well as incentive policies, are required in the initial stages for developing international subcontracting operations.

5. Given the hierarchization and differentiation of industrial structures, as well as the level of sophistication and skill development in the high- and middle-income developing countries, international subcontracting could be a means for the promotion of economic and technical co-operation among developing countries [26], thereby providing stimulus to industrial development in the current world context of slow growth in North-South co-operation.

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PRICES AND GOVERNMENT INTERVENTIONS IN DEVELOPING COUNTRIES

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This article makes a case for the importance of price reform by examining both theoretical arguments and empirical evidence on the functioning of markets in developing countries. After considering government interventions in markets in general terms, it discusses in turn theoretical arguments relating to a number of specific types of markets - those for traded commodities, foreign exchange, labour and capital. The latter part of the chapter surveys the empirical evidence on the significance of the malfunctioning of markets in developing countries.

There is a common view in the literature on economic development that prices in developing countries are highly "distorted", and cannot therefore fulfill their appropriate role as a resource allocation mechanism. This view has become increasingly influential in recent years. The consensus of opinion among development economists is now probably that earlier writings in the 1950s and 1960s, which assumed that demand and supply conditions in developing countries are so inelastic or unresponsive to price changes that "prices do not matter" greatly overstated their case. 1/ Before examining this argument it may be helpful to clarify the meaning of some of the terms used.

Here a distortion refers to the deviation between actual prices and opportunity costs to the economy of the items concerned. 2/ Opportunity costs are defined as the value of a commodity or resource in its most likely alternative use and this value in alternative use is what is meant by an economic value. The term shadow price also arises at several points. Although first used in the programming literature it has been adapted by cost-benefit analysis to refer to a price that reflects opportunity costs to the economy. 3/ Shadow prices may also be defined in a broader sense, in that they may reflect other factors of a dynamic or of a "non-economic" nature (for example, income distribution); this broader view is central to much of the present study.

The argument concerning the economic significance of distortions is that governments intervene in the functioning of markets in developing countries for a variety of reasons, for example to conserve foreign exchange, to protect local producers from foreign competition, to guarantee a minimum wage, to encourage investment

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and to raise government revenue. These interventions will involve
a range of policy instruments, including quantitative import
restrictions, tariffs, minimum wage legislation, credit subsidies,
controlled interest rates and indirect taxes. In practice, the
neat matching of one target (for example, the balance-of-payments
position) with one policy variable or instrument (for example, the
exchange rate), which is seen as the sole means of achieving the
target concerned, is very rarely present. Government objectives
are normally sought through a variety of instruments, often with the
relative weights placed on the instruments varying over time. 4/
While the basic objectives of government policy can be taken as
given, the argument is that interventions in the operation of mar-
kets will force market prices away from opportunity costs. Thus it
is argued that significant losses in economic efficiency will be
created if producers and consumers respond to "distorted" rather
than "efficient" market prices. 5/ Initially, many market prices
may not themselves reflect economic values, so that this original
distortion is the reason for government intervention. However it
is argued that, in many cases, intervention to remove one distor-
tion is carried out in such a way as to create fresh distortions
elsewhere in the economy. These "by-product distortions" or side-
effects may be both unanticipated and undesirable, and, theoret-
ically at least, could negate the beneficial effect of the removal
of the initial distortion.

This argument will be explored further below, but a simple and
obvious example can be given at this point. Consumption of certain
luxury goods may be judged to be socially undesirable and therefore
their import may be severely restricted by the imposition of a high
import tariff. 6/ However, the tariff may now make domestic pro-
duction of the good commercially profitable, since its domestic
price can be set equal to or just below the tariff-inclusive world
price. If consumption of the good is to be discouraged it will
require either the imposition of a high rate of indirect taxation
on domestic sales, or the outright prohibition of domestic produc-
tion in addition to restraint on imports. The initial intervention
through the import tariff will not on its own be sufficient to dis-
courage consumption if domestic production becomes a viable alter-
native.

One of the major strands of the argument in favour of overall
reform of the price system in many developing countries is what is
seen as the chaotic set of forces working to determine relative
prices in these economies. Often, it is suggested, Governments do
not foresee the implications for prices of various policies, and if
they could they would feel unhappy with the consequences of many of
their interventions in the functioning of markets. It should be
noted that this type of argument has often been used as a justifi-
cation for leaving many crucial decisions to the outcome of market
forces. However, the logic of the argument does not preclude
government intervention. It simply suggests that if markets do not
give the signals Governments wish, intervention will be necessary.
However, the implications of this intervention should be examined
to ensure that desirable effects in one direction are not offset by
undesirable effects in another.

Over the last 15 years or so a large number of empirical studies have identified significant divergences between market prices and shadow prices. 7/ In addition, work on the systems of protection in developing countries has focused more narrowly upon the relative incentives which have been created by various forms of protection, and implications of these incentives for economic efficiency. 8/ For a large number of countries the general picture is of economies where the price system has been highly distorted through government intervention. The discussion here focuses on what have been termed "macro-prices": 9/ that is, prices for the main macroparameters - foreign exchange, labour and capital. The discussion is simplified in that it ignores the segmentation of labour and capital markets and proceeds as if there is a single price for these factors. Also, each of the three markets - those for foreign exchange, labour and capital, are considered in isolation even though these macro-prices are interrelated. These inter-relations can be complex, however, with the direction of causation varying with circumstances. For example, the exchange rate may influence wage rates strongly in some circumstances, and be influenced by them in others. The exchange rate is crucial in determining the relative costs of traded and non-traded goods, and if wages are determined by the cost of the consumption of labour, any change in the exchange rate will alter money wages. On the other hand, in a situation of cost-push inflation arising from an independent growth in money wages, it will be wage increases that determine the market-clearing exchange rate through their effect on domestic vis-à-vis international inflation. A similar two-way causation can exist between the exchange rate and interest rates. If an economy is prone to short-run capital movements in response to interest rate changes, the latter can be an important influence on the exchange rate. On the other hand, if the exchange rate is fixed and monetary policy is used to reduce a trade imbalance, it will be interest rates that are determined by the exchange rate, and not vice versa. Although the discussion that follows is in terms of markets viewed in isolation, these various interrelation-ships should be borne in mind.

Prior to a discussion of the exchange rate it is necessary to consider markets for traded commodities, since conditions in these markets will be a key influence on the demand for and supply of foreign exchange.

A. Markets for traded commodities

It is well established in the literature on shadow pricing that for internationally traded commodities, for which an economy participates in world trade, economic efficiency prices or opportunity costs will be given by the world prices, c.i.f. for imports and f.o.b. for exports, of the commodities concerned. In an economy with protection from the world market - and most economies will be protected in some way - domestic and world prices will not be equal. 10/ If import tariffs are imposed, once an import reaches its port of entry, its price will be raised immediately by the tariff. Quotas will also work to raise domestic prices above world levels, even if no tariffs are involved, since they restrict the supply of an import. The price of such a good in the domestic

market would rise until demand is equated with the limited supply
available under the quota. The excess of the domestic selling
price above the import price is termed the scarcity premium arising
from the imposition of a quota. The ratio of the scarcity premium
to the world price is sometimes referred to as the tariff equiv-
alent premium, since a tariff of this rate would create the same
domestic price as the quota; however, as is discussed further
below, the effects of tariffs and quotas need not be the same.

On the export side similar effects will be at work. An export
tax on a commodity which can be sold domestically as well as abroad
will create a domestic price equal to the export price minus the
export tax. This follows since, other things being equal, produc-
ers will only sell abroad if they can obtain a net price, after tax
payments, equal to that in the domestic market. 11/ Export sub-
sidies have the opposite effect however, since the domestic price
must now equal the export price plus the subsidy.

These trade interventions will normally be introduced for a
number of reasons, and as noted earlier, in practice, one policy
instrument often serves more than one purpose. Import tariffs may
be imposed for revenue reasons, for example; however, in many
countries they may have an important role in either restricting the
overall demand for imports, or raising the profitability of local
import-competing producers. Import quotas are often introduced for
short-run balance of payments considerations to restrict demand for
the limited amount of foreign exchange that is available. It has
been argued, however, that frequently quotas introduced under such
circumstances have been retained for protection after the original
foreign exchange crisis has passed. While, theoretically, quota
restrictions and import tariffs can be shown to have identical
effects on resource use, this argument rests on the assumption of
competitive production conditions in the domestic economy. 12/
Under monopolistic domestic production, for example, supply and
demand curves may be affected differently by the quota as opposed
to a tariff. Of more practical importance is likely to be the fact
that tariffs provide a known rate of protection given by the
percentage tariff rate. The effect of quotas on domestic prices is
more uncertain however, and will change with domestic supply and
demand conditions. Therefore, with tariff protection the domestic
price is normally set by the world price plus the tariff, so that
domestic prices alter in response to changes in world prices, with
domestic demand and supply having little or no influence on
domestic prices. With a fixed quota however, the reverse will hold
and it will be shifts in domestic demand and supply which determine
domestic prices. The distributional effects of tariffs and quotas
will differ also. Tariffs are a major source of government
revenue, while the scarcity premium created by quotas will go to
those traders or producers who obtain import licences under the
quota system. Although in principle Governments can auction import
licences and thus capture this premium for themselves, in practice
this policy is rarely followed. 13/

Export taxes are used chiefly to raise government revenue and
are normally applied to primary or mineral exports. They could be
imposed, for example, to tax windfall gains resulting from sudden
fluctuations in the world price for a commodity. In theory, export

taxes could also be imposed by an individual country for terms-of-trade reasons - what is described as the "optimal tariff" case - the aim being to restrict supply and thus raise the export prices of goods with inelastic world demand. In practice this has not been a major motivation for most developing countries, who are generally price-takers for their exports, especially of manufactures. In some circumstances, export taxes may also be used to protect domestic users of the commodity. This follows because, as has been noted, export taxes work to lower the domestic prices at which exportable goods are sold. Finally, it should be noted that export subsidies can take various forms, which will be discussed in more detail below. They are a means of raising the profitability of exporting, often as a counter to the level of the official exchange rate, which may provide an unattractive rate of return for exporters.

The extent to which many developing countries have used these interventions in markets for traded commodities is now well documented, and the undesirable consequences for economic efficiency of many protective measures are stressed frequently. The following three separate strands of the argument can be distinguished:

(a) The varied and often unanticipated effect of protective measures in terms of the incentives created for different branches of the industrial sector; in other words, not all branches will benefit equally and the relative levels of incentive may be unplanned and, in some cases, undesired;

(b) The general encouragement protection from import competition gives to high-cost domestic production, and the lack of stimulus it provides to reduce costs to international levels;

(c) The harmful impact of industrial protection on other parts of the economy, particularly agriculture and exports in general.

Considering the relative impact of protection on different industrial branches, the essential point is that the final degree of incentive will generally not be known in advance, when the protective measures involved are being planned. This may be either because of the uncertain impact of quotas, or because of the effect of imposing different rates of tariffs, taxes or subsidies on inputs as compared with outputs. The observed or nominal rate of protection is given by the ratio of the domestic price to the world price for a comparable commodity. 14/ However, the full effect of a protective system can only be estimated by comparing the tariff or tariff equivalents on the output of a producer with those on the inputs he must purchase. The logic of this is that if in absolute terms a producer's input prices are raised above international levels by more than his output prices, he is being penalized rather than encouraged by the protective system, even though his own output may have a positive tariff. A comparison of the output tariff of a producer with a weighted average of the tariffs on his inputs, with the weights determined by the share of inputs in the value of the output, gives, after adjusting for the difference in value of inputs and output, what is termed the "effective rate of production" (ERP). This measures the extent to which value added of a producer, or the aggregate of all producers in a branch, at

domestic, that is protected, prices exceeds what it would be in a free-trade situation, where world and domestic prices are assumed to be equalized. 15/

In other words, to assess the full impact of a protective system it is necessary to know the degree to which value added, not simply the output price, is raised above international levels. Higher value added will normally, although not inevitably, imply higher profitability, and if one is interested in gauging the impact of the incentives resulting from protection, one must have some idea of how relative profitability between industrial branches is affected. 16/

ERP measures have been used extensively in applied work on industrial development in developing countries, although they are not without both empirical and conceptual problems. Empirically there are difficulties in obtaining comparable world and domestic price data and in achieving a sufficient degree of disaggregation to estimate separate ERPs for a large number of branches, and time series are usually not available, so ERP estimates are commonly limited to a single year. Conceptually also there are difficulties in the treatment of non-traded goods, in the need to assume fixed input coefficients, and in determining the appropriate exchange rate to use in the calculations. Nonetheless, given these limitations, it is generally felt that the ERP measure is useful for analysing the extent to which protectionist policies create incentives for resources to shift in different directions.

Table 1 gives both the average level of ERP in manufacturing and of the range of ERPs between branches within manufacturing for a number of countries in the 1960s and early 1970s.

Table 1. Mean and range of ERP for manufacturing in some developing countries

Country	Year	Average ERP manufacturing	Range of ERPs	
Brazil	1958	106	17 to	502
	1963	184	60 to	687
	1967	63	4 to	252
Chile	1967	175	-23 to 1	140
Colombia	1969	19	-8 to 1	040
Côte d'Ivoire	1973	41	-25 to	278
Indonesia	1971	119	-19 to 5	400
Pakistan	1963/1964	356	-6 to	595
	1970/1971	200	36 to	595
Republic of Korea	1968	-1	-15 to	82
Thailand	1973	27	-43 to	236
Tunisia	1972	250	1 to	737

Source: A. O. Krueger, Alternative Trade Strategies and Employment (Chicago University Press, 1983), vol. 3, table 3.1.

While it is acknowledged that ERPs will give a more accurate picture of the relative incentives to resource shifts than will nominal rates, a major problem is that ERP estimates are both technically complex and require detailed information. Where they can be produced they will normally only be available with a lag of several years, during which time economic conditions and policies may have changed. However, where nominal and effective rates are highly correlated, and this appears to be the case in some countries, one can argue that nominal rates alone will give at least a rough guide to relative resource pulls created by protection. 17/

A point of particular concern often raised in discussions of the unanticipated effects of protection is that the degree of bias against local production of capital goods and in favour of consumer goods may be far greater than indicated by nominal protection. While there is a clear tendency in many countries for nominal tariffs to be higher for consumer, as compared with producer or intermediate, goods, the tariff structure often magnifies this into a much greater effect in terms of value added. The point is simply that while some Governments may list capital goods as one of their priority areas, and encourage their production through various incentives, the protection system may be creating a major bias against their domestic production through its impact on the relative profitability of different manufacturing branches. 18/

The second strand in the attack on the use of tariffs and quotas in developing countries is that they provide a shelter for inefficient domestic producers who have no incentive to lower their costs to international levels. Local production at costs above world levels imposes economic losses, it is argued, since with the abolition of protection resources would be reallocated to more internationally competitive activities. The ERP measure discussed above must be seen primarily as an indicator of the relative degree of incentive received by producers in particular activities from the protective system. It is not strictly a measure of the efficiency with which resources are employed. A measure often used to indicate the relative efficiency of different branches or sectors is the domestic resource cost (DRC) ratio, which compares the value of domestic resources used per unit of foreign exchange earned, if output is exported, or saved, if it is an import substitute. 19/ Numerous studies have estimated DRC ratios for developing countries. 20/ The following common findings have been made for many activities:

(a) The DRC ratio is substantially above the official exchange rate, so that the costs of earning or saving foreign exchange exceed the official price at which foreign currency is bought and sold;

(b) There is a significant variation in DRC ratios between different branches and sectors.

The DRC ratio can be interpreted as an exchange rate for particular investments. However, if it is to be used as a measure of the economic desirability of an investment, domestic costs at

shadow prices must be compared with the economic cost of foreign
exchange, not with the official exchange rate. In other words if
one is to use the DRC ratio for either ex ante decision taking, or
for ex post reappraisals, one must compare the DRC for the invest-
ment concerned with the shadow exchange rate. 21/ Investments with
DRCs above the shadow exchange rate are interpreted as economically
unjustifiable, unless they involve dynamic or external benefits
which have not been allowed for in the calculations.

The wide variations between DRCs for different activities is
often interpreted as evidence of resource misallocation. The case
is stronger where the DRCs are above the shadow exchange rate, but
even where they are not it can still be argued that efficiency in
resource use would be improved by expanding activities with low
DRCs at the expense of those with high DRCs. The common sense of
this is that if it costs x per cent more to save foreign exchange
in activity i as compared with activity j it will be desirable to
expand j relative to i. Theoretically the case is not as clear as
this, but in general wide variations in DRC between different
activities can be taken as evidence of a misallocation of
resources, which is likely to have been made possible by the dif-
ferential set of incentives created by the import protection
system. 22/ Protection therefore allows firms with high costs in
both economic and commercial terms to survive, and in the absence
of reforms to the protective system they will have little incentive
to lower these costs.

Turning to the effect of trade controls on sectors of the
economy other than import-substituting manufacturing, two important
biases may be created by the protective system, one relating to
exports and the other to agriculture. It is argued that by
restricting the demand for imports, tariffs and quotas allow the
maintenance of an exchange rate well above that which would obtain
in the absence of such controls. This means that exporters receive
less local currency for every unit of foreign exchange earned than
in a free trade situation, where a lower exchange rate would
prevail. Further biases against exports can arise from the effect
of import controls in raising the price of tradeable goods sold in
the home market, relative to those sold abroad, and in requiring
exporters to use domestically produced inputs more expensive than,
and perhaps inferior to, the alternatives available on the world
market. Recent work by Greenaway and Milner [32] has also drawn
attention to the impact of import protection on the prices of non-
traded goods, since higher prices of inputs of these goods are an
implicit tax on exporters. It is recognized that subsidies to
exporters, for example in the form of access to low-cost credit, or
reductions in tax, can be used to offset these biases, and in
theory there will be a rate of uniform import tariffs and export
subsidies that can create the same incentive effect as any level of
the exchange rate. The argument is, however, that in many of the
countries which adopted inward-looking industrialization strategies
in the 1960s and 1970s, export subsidies were no more than a
partial offset to the biases against exports created by the protec-
tive system. Some empirical attempts to substantiate this view
have used an extension of the ERP measure - what is termed the

effective rate of subsidy (ERS). The ERS allows for the fact that profitability can be affected by subsidies, as well as tariffs and quotas, and incorporates their impact on domestic value added. 23/ A bias against exports can be said to exist when the ERS on domestic sales exceeds that on exports. However, Balassa [3] has also shown that in some countries which adopted an export-oriented growth strategy the bias swung in the other direction, with exports having a higher ERS than domestic sales. 24/

Finally, a bias against agriculture may arise from the fact that agriculture is still the major export sector in many developing countries, so that it naturally suffers most from any anti-export bias. However, it is also suggested that this stems from the lack of protection afforded agriculture relative to other sectors. Cases of negative ERP for agriculture can arise if domestic prices for crops and livestock are broadly comparable with world levels, while the locally produced or imported inputs used in agriculture are protected or taxed, and thus have domestic prices above world levels. In some instances, this discrimination against agriculture may have been the unanticipated result of the separate policies of keeping down food prices for urban consumers, while at the same time protecting local manufacturing. 25/

To summarize, therefore, in many countries where interventions in the market for traded commodities are still widespread, it is frequently suggested that a number of harmful side-effects have been created. These include unanticipated effective levels of protection and profit incentives to particular sectors, a shelter to high-cost producers, a bias against exporting in general and, in some countries, a bias against agriculture in particular. Therefore, while there may be a strong theoretical case for protection of manufacturing in developing countries, there is a substantial amount of evidence, from a range of countries, that in practice the way in which protection has been implemented has created a number of significant negative effects both within manufacturing itself and in other parts of the economy.

B. Market for foreign exchange

The type of trade control policy summarized above will have significant implications for the market for foreign exchange. Both imports and exports will be at lower levels than in the absence of controls, and any excess demand for foreign exchange will be suppressed. Where, as is common in such situations, the Government maintains a fixed value for the official exchange rate, this will be above a market-clearing level. In other words, when there is a suppressed demand for foreign exchange (for example, dollars) the local currency (for example, rupees) price of a dollar will be below the free-market level, and with the removal of trade controls and the freezing of the exchange rate, the rupee price of dollars will rise, implying a rupee devaluation.

A number of shadow-pricing studies have illustrated the magnitude of divergence between official exchange rates and market-clearing rates, where the latter are termed a shadow exchange rate. However, it should be noted that the concept of a shadow

exchange rate is not free from ambiguity, since it must be defined in the context of a given level of domestic expenditure and set of trade control policies. The approach to the measurement of the shadow exchange rate will differ, for example, whether one assumes the introduction of free trade or the continuation of the existing controls. 26/

Over-valuation of domestic relative to foreign currency is generally undesirable because of the distorted set of relative prices that it creates. This is another variant of the anti-export bias argument referred to above. Over-valuation, however, penalizes the production of tradeable goods in general in comparison with non-tradeables, since all goods whose domestic prices are determined by world prices will receive less domestic currency per unit of output when the exchange rate is overvalued. As we have seen, the protection of tradeables in the home market normally allows producers to set prices well above world levels, often more than compensating for over-valuation. However, exporters often receive only limited compensation through export subsidies, so that in these circumstances the chief burden of over-valuation falls on exportables, not on the production of traded goods in general.

Devaluation of the local currency combined with reform of the trade controls system is seen as the remedy for this situation, and this policy prescription is in line with much of the recommendations of this study. The argument is that reform of the trade control system is desirable because of the differential and often unanticipated incentives and biases the system creates. However, to allow even a gradual reform of the system, it is likely to be necessary to lower the exchange rate. Devaluation is seen as essential for the following reasons:

(a) To remove any underlying deficit in the balance of payments. This it is argued, will occur through a switching effect as the prices of tradeables rise relative to non-tradeables, and as production for the export market expands in response to this price incentive;

(b) To protect import-competing production for which tariffs will be lowered and quotas relaxed. Thus while the prices of imports in the domestic market will be reduced by trade reforms, devaluation will work in the opposite direction to raise all domestic prices for goods priced originally in foreign currency. Unlike tariffs and quotas, however, in its effect on prices devaluation does not distinguish between traded goods.

It must be stressed, however, that devaluation per se is not an immediate economic panacea for developing countries, and that its success depends upon certain key conditions being met. 27/ The following points should be noted:

(a) For the relative price effect of a devaluation to improve the trade balance requires that the price elasticities for a country's traded goods be greater than a certain minimum, the size of which will depend upon the initial trade deficit. However,

there seems agreement that beyond the short term for most developing countries the size of their trade elasticities is not itself a problem;

(b) Much more critical appears to be the extent to which the relative price effect of devaluation is eroded by an increase in the domestic price of non-traded goods. It is for this reason that most discussions of devaluation stress the need to combine the switching policy of devaluation with general restraint of internal demand to prevent excess demand for non-traded goods emerging, and thus putting up their prices, until the original pre-devaluation relative prices are restored. Successful devaluations generally require a fall in real expenditure, or absorption as it is termed in the trade literature, and in particular a fall in real wages. The response of money wages to the immediate inflationary impact of devaluation where cost-plus pricing is used will be a critical parameter. At one extreme, if money wages rise by the same rate as domestic prices - the case of real wage rigidity - the relative price effect of devaluation will be removed completely;

(c) An improvement in an underlying balance of payments deficit requires devaluation of the real as opposed to the nominal exchange rate, where the former is the nominal rate adjusted by the ratio of a price index for the country concerned to that for its trading partners. In other words, international competitiveness is determined not just by nominal exchange rates, but also by differential rates of inflation. Devaluations inevitably have an inflationary impact through the rise in import prices they create, and if this initial impetus is built on by wage settlements, credit expansion or inflationary expectations, the inflation rate can accelerate, thus weakening and perhaps offsetting the initial real devaluation;

(d) The need for devaluation to be accompanied by a fall in real expenditure has already been noted. However, devaluation itself can have a significant short-run deflationary impact. This can arise through a number of mechanisms. For example, if the demand for imports is inelastic, a rise in their domestic currency prices following devaluation will lead to a higher expenditure in domestic currency on imports. If the level of overall expenditure is constrained by monetary policy, this will leave a smaller expenditure for all home-produced goods. The deflationary effect will be greater, the higher the average propensity to import, and the lower the price elasticity of demand for imports. Another possibility, important for highly indebted countries, arises through the increase in the domestic currency value of external debt servicing. However, whether or not devaluation on its own is sufficiently deflationary to permit the required resource shifts into tradeables and out of non-tradeables clearly varies with circumstances. The assessment of the overall deflationary consequences of devaluation rests largely on one's view of export supply responses. If exports grow rapidly, rising expenditure from the export sector may counterbalance the short-run deflationary consequences noted above. 28/

To summarize, therefore, devaluation must be seen as part of a macro-economic package that aims at both expenditure-switching and restraint, and attempts to control wages and counter the undesirable short-run distributional c sequences of devaluation. Some of the empirical evidence on devaluation will be surveyed briefly in a later section. It must be stressed however that devaluation is likely to be essential for the trade and price reform strategy considered here. The issue is one of identifying and applying appropriate macro-economic policies that will allow devaluation to work effectively, and limit the short-run costs in terms of output loss, inflation and redistribution that may be involved.

C. Market for labour

The third market intervention that will be considered concerns the functioning of markets for labour in developing countries. A common pattern is for there to be a major divergence between rural wages for unskilled workers and wages paid to unskilled or semi-skilled workers on new development projects in urban areas. In so far as these wages simply reflect differences in quality of labour or costs of training, no market imperfection need be present. However, where these factors account for only a small part of observed wage differences, the latter are normally put down to interventions in the operation of labour markets. In other words, in a smooth-functioning labour market, workers could shift from rural to urban areas until the wage rates for similar skills are equalized. Nominal differences might remain owing to variations in the cost of living in different areas, or to costs of movement, but after money wages had been deflated by the relevant cost indices, real differences should be removed.

The picture that is normally painted in shadow price studies is one of relatively competitive rural labour markets for unskilled labour, so that daily wages for hired agricultural labour can be taken as broadly equal to the productivity of the workers concerned. The competitive nature of these rural markets can be taken to stem from their possession of the following characteristics: large numbers of employers (chiefly small farmers); large numbers of potential workers normally poorly organized in terms of trade union activity; reasonably good information on prevailing wage rates; and geographical mobility of labour, at least on a regional basis.

On the other hand, it is often argued that in urban labour markets for unskilled or semi-skilled workers conditions are non-competitive owing particularly to trade union organization and government intervention in the form of minimum wage legislation. These factors, it is suggested, raise urban wages in the formal or organized sector significantly above rural wage rates. However, it is the latter which are normally taken to define the economic cost of unskilled labour. In other words, if one adopts a view of the rural areas of developing countries as characterized by a surplus of underemployed workers, and assumes that the creation of new urban based jobs draws additional workers out of agriculture, the opportunity cost of employing these workers on new projects will be

measured by a drop in agricultural output. This is the output foregone, or the opportunity cost, associated with their new employment. If one further assumes that rural labour markets are competitive, the productivity of agricultural labour can be approximated by their earnings from wage employment.

The divergence between market wages paid to unskilled workers on new projects and their economic cost or shadow wage is often found to be substantial. A common result of shadow price studies, for example, is that the output foregone in agriculture may be less than half the urban wage. 29/ The point of central importance for the present discussion relates to the role of government intervention. Governments may intervene in the functioning of labour markets to establish minimum wages, to guarantee a certain minimum income level, or to support trade union activity to prevent the exploitation of workers by powerful employers. In some countries these interventions may be significant in raising urban wages above the levels they would otherwise reach. Many would accept these interventions as highly desirable in their own right, but nonetheless argue that they introduce major distortions in urban labour markets, and create a number of serious side-effects.

Three arguments are normally put forward in discussions of the harmful impact of labour market distortions.

According to the first argument, if the market wage paid to unskilled labour is substantially above the economic cost of employing these workers, the commercial profitability of new investment will be understated relative to its economic profitability. In other words, firms will pay a wage bill determined by market wage rates, and, other things being equal, their commercial or private profitability will be less than the economic returns they generate, to the extent that the shadow wage is below the market wage. If investment decisions are based on commercial criteria, too little investment will be made. In addition labour-intensive activities will be particularly penalized, so that the composition of output in the economy will contain a lower share of labour-intensive commodities than if market and shadow wages were equal. This argument, concerning the divergence between market wages and the economic costs of employing unskilled labour provided a major part of the initial theoretical rationale for protection of new industrial activity in developing countries, and was the clearest example of the need to introduce shadow price estimates into calculations of investment viability. 30/

Secondly, in addition to a problem of insufficient investment, it is suggested that labour market distortions will have a harmful effect on the technology embodied in new investment. Therefore, provided there is the possibility of substitution of capital or materials for labour, it is argued that urban wages above the economic cost of labour will encourage a shift in factor intensity in a labour-saving, rather than a labour-using, direction. This will have undesirable effects in terms of both distribution, since it is now recognized that the provision of employment is the most effective means of raising the living standards of low income groups in developing countries, and economic efficiency. In

economic terms the argument is that there will be a loss of effi-
ciency, since specialization on the basis of developing countries'
most abundant resource, labour, will not be carried far enough. 31/
The impact of labour market distortions on technological choice
will be compounded by additional factors operative in capital
markets, which work to lower the market cost of capital below its
economic level. These capital market distortions will be discussed
in the next section. However, the important point to stress is
that the overall significance of both sets of distortions for the
technology used in developing countries depends critically on the
possibility of significant substitution between factors in the
production of different commodities in response to changes in
factor prices. This is an issue on which much has been written.
In general there is now agreement that in a wide range of
industries there is significant scope for factor substitution.
What is more in dispute is the importance of the relative prices of
factors as an influence on technology choice. It must be recog-
nized that they are likely to be a more significant influence in
some branches than in others, and that other influences will
include the availability and cost of information on alternative
technologies, market size and concentration, product quality and
the availability of complementary inputs. 32/

Finally, the third argument regarding the harmful effects of
distorted urban wages refers to their impact on rural-urban migra-
tion. It is suggested that the creation of new urban-based jobs
can lead to an outflow of migrants from rural areas in excess of
the number of new jobs available. Such a situation can arise if
migrants balance expected earnings in the formal urban sector
against their present average income in the countryside. Where the
wage differential between urban and rural areas is both significant
and fixed, it is suggested that the level of urban employment will
act as the equilibrating mechanism in the labour market. When
excessive numbers of migrants leave the rural areas urban unemploy-
ment will rise until the expectation of obtaining a job is reduced
to the extent required to equate expected urban earnings with
average rural incomes. In this view, institutionally fixed high
urban wages are the key factor inducing high migration, and are
seen as creating problems, not only because of the excessive loss
of agricultural output involved, but also because of the growth of
unemployment or underemployment in the casual or informal urban
sectors, as migrants who fail to obtain permanent jobs nonetheless
remain in urban areas.

In terms of the functioning of urban markets, the arguments
discussed above focus primarily on the markets for unskilled
labour. A common assumption is that for skilled workers demand in
many developing countries is high relative to their availability,
and that it is this demand rather than minimum wage legislation or
trade union bargaining strength which determines market wages. If
such excess demand in fact exists, it is likely that most skilled
workers will be able to find employment at roughly comparable
levels of earnings and productivity, should they leave their exist-
ing activity. This is the justification for the assumption, common
in many empirical studies of shadow prices, that for skilled
workers the market and the shadow wage are roughly equal. 33/ In

the case of unskilled labour however, the basic argument is that government interventions either directly through minimum wage legislation, or indirectly through their support for trade union activism or wage-setting policy within the public sector itself create institutional rigidities in the functioning of urban labour markets which prevent wages from falling to their market clearing levels. The distorted urban wages in turn, it is argued, create the undesirable side-effects discussed above - chiefly excessive capital-intensity, reductions in investment and employment growth, and excess rural-urban migration.

However, before ending the discussion of labour markets it is important to stress that despite the frequent repetition of the view of government intervention in urban labour markets set out above, it has now come to be challenged as a generalization valid for all developing countries. Squire [60], for example, in a survey of evidence on the operation of labour markets in developing countries, argues that government intervention is often not in support of a high wage policy; minimum wage legislation is seen as ineffective in many countries, and in others government intervention is to keep down urban wages rather than to increase them. A number of countries where a high-wage policy has been pursued are identified, but Squire suggests that not only is experience varied, but that only a limited number of countries would have much to gain from a major change in government policy towards the labour market. 34/ This type of argument does not necessarily invalidate the view that market and shadow wage rates can differ substantially for many categories of workers, but it does question the economic significance of government-induced labour market distortions.

D. Capital markets

Many developing countries do not have free capital markets. Rather they are characterized by what has become known as "financial repression", which is generally equated with controls that result in negative or very low real interest rates on deposits. These controls are normally imposed by the Government, although they can occasionally arise from agreements between private sector financial institutions to restrict interest rates. The main consequences are that actual interest rates are distorted from the equilibrium interest rates that would prevail in a competitive market for money, wide interest rate differentials arise, and funds may be rationed, leading to delays and possible corruption. Repression may also be extended to refer to government restrictions that discourage the development of financial institutions and instruments, leading to incomplete, or fragmented, financial markets. Repression theories orginated with McKinnon [51] and Shaw [59], based on the earlier work of Gurley and Shaw [34] and Goldsmith [31]. Subsequent theoretical refinements have been conveniently summarized by Fry [21]. Numerous attempts have been made to estimate the impact of financial repression on growth, and the major studies are summarized later in the chapter.

The importance of the banking sector is central to theories of financial repression. In most developing countries, bank deposits (or deposits in quasi-banks, such as post office savings banks, savings and loan associations and credit unions) provide by far the most important vehicle for savings. Other savings instruments, such as marketable securities (shares and bonds), life insurance policies and pensions schemes, tend to be limited in availability. On the other side of the coin, banks and quasi-banks dominate the sources of funds for investment. An investor may save and invest his own funds, but apart from that the main source of capital will be bank loans (from commercial or development banks). He is unlikely to be able to issue equity capital or debentures since the stock market, if there is one, is likely to be narrow. He cannot turn to pension funds, insurance companies or venture capital companies for loans or equity. He is therefore dependent on the banking system. In a country with underdeveloped financial institutions and instruments, the willingness of savers to hold money in the form of bank deposits is therefore crucial to the saving-intermediation-investment process (sometimes called debt intermediation). Repression theories have identified the level of real interest rates as being the crucial determinant of the willingness of savers to hold money in the form of bank deposits.

E. Measures of financial repression

The main measure of repression is generally interest rate controls, although exchange rate controls and high reserve requirements of commercial banks can also play a significant role. The literature tends to concentrate on the impact of interest rate controls, often referring to them as a proxy for financial repression. As price reform is concerned with the level of interest rates as representing the price of capital, we will concentrate here on interest rate controls.

1. Interest rate controls

The following three main forms 35/ of administered interest rate control may be identified: ceilings on deposit rates; ceilings on loan rates; and ceilings on both deposit and loan rates. (Interest rate floors on deposit and loan rates are also possible, but since they appear to be much less commonly found, attention will be focused on the other controls.)

Interest rate controls generally seem to be imposed with the aim of encouraging investment. If interest rates to borrowers are kept low, it is thought this will increase the number of projects which have a positive net present value when discounted at the borrowing rate, and will therefore increase the rate of investment. Ceilings on loan rates will produce this effect directly, it is thought. Ceilings on deposit rates are thought to produce the same effect indirectly, for banks which obtain their funds cheaply will be able to lend them cheaply. Ceilings on both together may eliminate any possibility of anything going wrong with the above analysis. 36/

This line of argument, though, assumes that adequate funds will still be forthcoming from savers to meeting the demands of investors, in spite of the ceilings (direct or indirect) on the deposit rate. However, if the supply of savings, and the demand for investible funds are both functions of the real rate of interest, the effect may be to raise demand for funds above the equilibrium level, and to depress the supply of funds below the equilibrium level.

The figure below illustrates the savings (S) and investment (I) functions, both being determined by the real rate of interest (r).

Savings and investment under controlled interest rates

Real rate of interest (r) and savings (S)
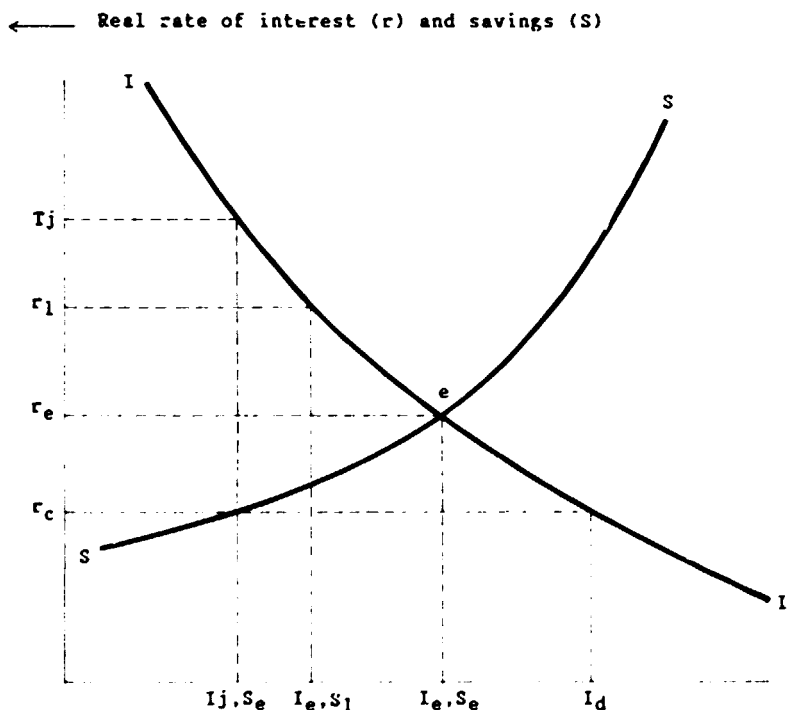
In the absence of interest rate controls, the market is in equilibrium at e, where $I_e = S_e$ and r_e is the equilibrium rate of interest which clears the market. 37/ Now if the deposit rate of interest is fixed by the Government below r_e, say at r_c, then the amount of savings deposited in institutions will fall to S_c. Thus the amount available for investment is I_c and the rate of interest charged to borrowers that clears the market is r_i. The effect of the control is to lower both savings and investment by an amount $(I_e - I_c)$. As investment is an important determinant of the rate of growth, the effect of the controlled interest rate is to restrict the rate of growth. The difference between lending and borrowing rates, $r_i - r_e$, will result in higher margins to the financial intermediaries, although the volume of their business will be lower than it would be in equilibrium.

If, in addition, the lending rate is controlled at a level r_1, below r_i, then the financial intermediaries will have insufficient deposits to meet the borrowing demand at interest rate r_1. Demand for borrowing for investment will be I_1 and unsatisfied demand $(I_1 - I_c)$. The extreme case is that the lending rate should be fixed so that it is equal to the borrowing rate, r_c (or, in practice, slightly above to cover administration costs of the banks). Under these circumstances, the unsatisfied demand for investible funds would be $I_d - I_c$. With controlled lending rates, financial intermediaries must ration credit by means other than the interest rate. They will therefore tend to favour borrowers with substantial security or an established reputation, which may mean projects with foreign capital, technology or management. Secondly, they will tend to favour low-risk projects, with relatively low rates of return, as they will not be able to charge a risk premium commensurate with the risk of the project. The consequence is that higher-return, higher-risk projects, projects promoted by younger (and possibly more enterprising) entrepreneurs and small projects may be starved of capital. In short, the venture capital element of financing may have disappeared and the overall equality of investment may have been reduced. Again, the effect may be to restrict the rate of economic growth, because the quality of investment may be reduced, as well as the quantity.

It should be noted that a repressed interest rate system impinges on the current assets of enterprises, as well as an investment in fixed assets. If credit is scarce or rationed, then the level of capital utilization of a firm may be restricted, for example because it cannot obtain credit to finance its working capital, which may restrict its output and sales. Liberalization of interest rates, leading to greater availability of short-term credit, may have the effect of increasing the utilization of the existing capital stock.

The figure above represents a static equilibrium analysis of saving, investment and the interest rate. If, in period 1, the interest rate on deposits is raised to the equilibrium level, saving and investment will increase. This will increase growth in the next period, which in turn will increase saving and investment in that period. Therefore, the implication of repression theory is

that liberalizing the interest rate will have the effect of moving
a country into a virtuous circle of increasing saving, investment
and growth.

2. Other measures of financial repression

Bank deposit requirements. It is normal for central banks to
impose reserve requirements cn commercial banks. Historically,
reserve requirements were intended to provide some stability to the
banking system. Typically, in developed countries, total reserve
reqirements may be of the order of 10-15 per cent of bank
deposits. However, in some developing countries, the figure may
become as high as 50 per cent. These reserves are placed with the
central bank at low (or even zero) rates of interest, or are
invested in low-interest government bonds. Thus the Government
uses the banking system as a source of finance, and becomes the
principal borrower, pre-empting other potential borrowers.

The effect on the banking system is twofold. First, a sub-
stantial amount of the available funds is directed away from
potential borrowers. Secondly, the bank's interest rate structure
will be distorted. If banks are to make profits, they must main-
tain a wide margin between boirowing and lending rates in order to
compensate themselves for the low income they receive or their
reserves. This is done by depressing interest on deposits, or by
raising the rate charged to borrowers (or both) relative to what
would otherwise be the equilibrium rate.

Direction of investment. Some Governments order their finan-
cial institutions to direct a certain proportion of their loans to
a specific sector, often agriculture, at low rates of interest. An
alternative practice is for Governments to set up specialized
lending agencies, financed by taxation or cheap government bor-
rowing, to lend to specific sectors. Again, agriculture is often a
beneficiary. Such policies may restrict the funds available to the
industrial sector, and at the same time raise the cost of those
funds that are available. However, the intention is usually to
correct a bias among lenders which favours industrial rather than
agricultural borrowers. This bias is itself often a consequence of
financial repression, which curtails the volume of lending and the
charging of risk premiums for high-risk projects, such as agricul-
tural loans.

Assessment of repression theories. The assumptions underlying
repression theories, outlined above, together with the heavy
emphasis in the literature on the role of real interest rates,
suggests that it might not tell the whole story. The keystone of
the theory is a presentation of the relationship between saving,
investment and real interest rates. However, in any economy, this
is likely to be a substantial simplification of determinants of
saving and investment. First, the theory starts with the following
relationships:

Demand for money = private sector financial savings
                  = bank + quasi-bank deposits
                  = credit availability + reserve requirements

Private sector financial savings is a function of the real rate of interest.

The next step is to make the following equation:

    Investment = credit availability (which is a function of the
                   real rate of interest)

This, of course, even if correct, explains only private sector investment and only that part which is financed by domestically mobilized resources. Government investment in developing countries is in the main financed by taxation and aid and borrowings from abroad, neither of which is dependent upon the domestic rate of interest. Borrowing by government on the domestic capital market may be a function of the rate of interest, but in many developing countries the issue of government bonds provides only a small proportion of government income. Therefore government investment, which usually provides a substantial proportion of total investment (even in developed countries), can be excluded from repression theory. 38/

Likewise, much private sector investment that is financed from abroad can also be excluded. The volume of direct foreign investment and export credits are not a function of domestic interest rates. On the other hand, shortages of domestic credit may force the local private sector to seek foreign capital. Also the availability of foreign capital, whether to Government or the private sector, may discourage domestic saving. 39/

Repression theories tend to assume, at least implicitly, that investment (in particular, domestically financed private sector investment) is financed entirely by borrowing. This is obviously a substantial simplification. In any country, however well developed its financial sector, a substantial proportion of investment is financed by retained earnings, which are not dependent on the intermediation mechanism. In many instances, the constraint on new investment may not be the unavailability (or the cost) of credit, but rather the unavailability of equity capital, whether retained earnings or funds raised by issuing new shares. The debt-shareholders' funds ratio and security requirements may in many cases be the restraint on lending, rather than the availability of credit. Therefore financial repression can only restrict that proportion of investment that is financed by borrowing on the domestic market, and this, in some countries, may be a fairly small proportion of total investment, even with liberalized interest rates.

Although the impact of financial repression on total investment may be less than indicated by the simplified neoclassical model, it may still reduce the quality of investment. First, financial repression is still likely to encourage self-financed investment at the expense of intermediation and borrowing. Secondly, the credit rationing process will still tend to discriminate against new entrepreneurs, new technologies and products not previously produced in the country. Lenders will tend to favour borrowers with security and a record of achievement. This may

squeeze out some highly profitable, but more risky, ventures.
(However, this probl⌐ is encountered also in developed countries
with advanced financial sectors. Most lenders like to have good
security.) These arguments have been presented formally by Galbis
([27] ana '26]). Repression theories further assume that, given
liberalized interest rates, maturity transformation by financial
institutions will permit the medium and long-term borrowing needed
for investment purposes. If institutions are reluctant to lend
long term, then an increase in deposits may not have the beneficial
effects on investment and growth that are presumed, unless both
lenders and borrowers are prepared tc use short-term funds to
finance long-term assets. In some countries Governments may need
to encourage longer-term lending, for example by partially guar-
anteeing or rediscounting the more distant debt service payments.

Galbis [26] has further pointed out that the effects of finan-
cial repression on investment may anyway be mitigated by the devel-
opment of alternative channels of intermediation, at least to some
extent. Unorganized money markets will be encouraged, foreign
finance may be substituted for domestic finance and self-financing
may substitute f ⌐ borrowing in enterprises which are squeezed out
of financial mark ts. These mechanisms may be less efficient and
more expensive than the alternative of liberalized money markets,
but nonetheless they may compensate to some extent.

Repression theory also places great stress on the banking
system as an essential financial intermediary in the saving-
investment process. While this may be justified in many countries,
others with a wider range of financial instruments and institutions
offer investment opportunities in which capital gain, rather than
interest on deposits, provides the incentive to save. Secondly,
the theory appears to assume that if funds are available for
investment, then there will be a demand for it, assuming that the
price (that is the interest rate) is right. It is likely that
investment is determined by a range of factors, of which the
interest rate is but one. Other loan conditions, notably the
maturity of the loan and the security required, are another.
Businessmen, at least in developed countries, would place con-
siderable emphasis on the elusive but nonetheless important "con-
fidence", which to some extent depends on macro-economic expecta-
tions. 36/

A further cause of criticism lies in the assumption which
repression theory makes about the credit allocation procedures of
lenders (generally banks). Fry [23] stated that under repression,
"... nonprice rationing of investible funds must occur. This
typically takes place on the basis of quality of collateral, polit-
ical pressures, "name", loan size and covert benefits to respon-
sible loan officers. These criteria can be counted on to discrim-
inate inefficiently between investment opportunities."

All this admittedly takes place to some extent whether or not
interest rates are controlled by Government. In countries where no
such controls exist, banks still rely heavily on their assessment
of the creditworthiness of the borrowers, and the security
available, and charging risk premiums on higher-risk loans may be a

secondary rather than a primary rationing device. Such credit
rationing by banks has the effect of restraining the demand for
funds, and in itself helps to maintain equilibrium interest rates
below what they would otherwise be in the absence of credit ration-
ing. Arndt [2] has pointed out that credit rationing by banks
tends to exclude the less privileged loan applicants, and may
justify government-inspired concessional credit schemes, for
example for small farmers, for house purchase, for small-scale
enterprises, or others who may be identified as priority borrowers.
Concessions do not necessarily imply interest rate subsidies; they
may come in the form of funds tied to certain specific uses, or in
the guarantee or refinancing of commercial bank credit to certain
categories of borrowers. A case for a government concessional
credit scheme is made by Bolnick [10], in the context of Indonesia's
special concessional credit programmes designed to promote the
development of indigenous small-scale enterprises.

Although repression theory has emphasized the effects of
interest rate controls on investment, there are also further pos-
sible effects on technology choice and distribution. The relative
cheapening of capital through controlled interest rates will tend
to encourage the use of capital-intensive technologies and the
selection of capital-intensive industries, while the maintenance of
artificially low rates of interest means that borrowers pay less
and savers receive less than they would in a freely competitive
market. One economic effect is to encourage consumption at the
expense of saving. However, the major effect is distributional,
since savers (that is, lenders) are implicitly subsidizing bor-
rowers, a subsidy which becomes more apparent when real interest
rates are negative. A priori, there appears to be no justification
for such a subsidization of borrowers by lenders, and the onus is
on the supporters of financial repression to justify it. In some
cases (for example when saving is excessive) it may be readily
justifiable, but these cases probably arise in only a small number
of developing countries.

The case for liberalization of financial markets, therefore,
appears fairly strong generally. However, in some countries it may
not be feasible to remove interest rate controls, at least in the
short run, for institutional, political or legal reasons. In such
cases, the question arises as to whether there exists a feasible
"second-best" policy which alleviates many, if not all, the
undesirable effects of interest rate controls. Nellor [53] has
looked at tax policy options which might reduce the distortions to
savings in repressed financial markets. He comes to the conclusion
that consumption (or sales) taxes can be designed to make saving
relatively more attractive, and can be adjusted so that the real
return to saving approximates to the free market interest rate. In
order to implement such a second-best policy, it is necessary to
have a broadly based consumption tax. Many developing countries do
not have such a system of taxation, but its introduction is one of
the principal recommendations of this study. It is important, too,
that financial institutions should perform the function of maturity
transformation, making long-term credit available for capital
investment.

This concludes the summary of the theoretical impact of financial repression on saving, investment and growth. While liberalized interest rates would have a positive effect, it seems that interest rate liberalization is not likely to be a sufficient condition for the development of the financial sector to the extent that it exerts a substantial influence on investment and economic growth. In particular, it needs to be accompanied by institutional development and strengthening so that alternative competitive markets for savings, such as equities, unit trusts, life assurance and pension funds, are created. It is important, too, that financial institutions should perform the function of maturity transformation, making long-term credit available for capital investment. The theoretical conclusions, therefore, tend to give qualified support to what is currently regarded as the accepted position succirctly put by Van Wijnbergen ([71], p. 3). "Establishing high time deposit rates (high compared to anticipated inflation) has become a standard part of the policy advice given to (developing countries) by external experts, ranging from the visiting academic economist via the World Bank to emissaries of the International Monetary Fund". However, the strongest argument against repressed interest rates remains intact: why should savers be expected to subsidize borrowers? The case needs to be made before repressed interest rates are accepted.

F. Subsidies

To conclude the review of distortions, a brief review of subsidies not already discussed under traded goods will be presented. The definition of a subsidy is not straightforward. At the simplest level it is a cash payment by the Government to a consumer or producer. However, many subsidies do not take the form of cash payments. For example, incentives such as government encouragement to industry through tax concessions, special depreciation allowances or physical facilities such as rent-free premises are, in fact, subsidies. The provision of free educational or medical services are subsidies. Permitting a manufacturer to obtain higher prices on the domestic market because he is protected from imports is a subsidy. At another level, Governments that absorb the losses of State enterprises are subsidizing either the consumer of the output or the resources employed by the enterprises, often labour. The control of investment licences can enable existing manufacturers to earn a rent because capacity or production is restricted. Thus a subsidy may be described as any device which permits consumers to purchase goods at a price below that which would obtain in a competitive market, or which enables producers to obtain an economic rent. A subsidy has the effect of transferring resources from one group to another. The key point to remember is that one group must pay for another's subsidy; there is no such thing as a free lunch.

At the level of resource allocation, the presence of subsidies affects the prices used in investment appraisal and leads therefore to different decisions that would be made if competitive market prices were used. The use of world prices (and shadow prices for factors and non-traded goods) in principle corrects for the use of distorted market prices. However, practice may not be as good as

the principle; the extent to which world prices are used in invest-
ment appraisal is limited.   Governments and different government
departments use them to differing degrees (if at all) and the
private sector does not use them.   Moreover, even when used in
appraisals, shadow prices may not be able to catch and offset all
the effects of subsidies, especially in countries where subsidies
are widespread.

Although the presence of subsidies may distort prices and
resource allocation superficially, their use is intended to reflect
government policies.   The subsidized price, given perfect govern-
ment decision-taking, is the price which the Government wants to
exist.   In particular, subsidies are an important device for trans-
ferring resources to the poor.   The provision of subsidized health,
education and food are obvious examples.   Likewise, Governments may
protect infant industries because of their growth potential.
Similarly, Governments may subsidize State enterprises or private
sector enterprises because they are assisting government policies
of employment creation or regional development, for example.   There
is undoubtedly a rational basis for subsidies, however the concern
here is that in practice subsidies may not have been applied log-
ically and consistently in many countries, leading in some
instances to undesired prices and other effects which no longer
reflect government policies and which may result in significant
misallocation of resources.

Apart from protection from competing imports and low interest
rates, which have already been discussed, most industrial subsidies
come in the form of incentives.   Public sector industrial enter-
prises may, in addition, have losses financed by the Government.
However, cases of cash subsidies, especially to the private sector,
are not plentiful.   The most widespread form of incentive is the
tax concession, which may take the form of tax holidays, accel-
erated depreciation allowances, tax deduction for expansion re-
investment and tax exemption on imported capital equipment.   In
several instances, the object of these subsidies is to compensate
manufacturers for the anti-export bias of import tariffs.   However,
they also have the effect of lowering the after-tax cost of capital
relative to the cost of labour, and may therefore introduce a
further distortion in that the use of capital is encouraged at the
expense of labour.   That distortion will influence both the selec-
tion of industry (for example, oil-refining may appear relatively
more attractive than shoe-making) and the choice of technology
within an industry.

The effects of the provision of indirect subsidies through
protective tariffs and capital market controls ave already been
discussed.   A few words should be said about three specific types
of subsidy, namely export subsidies, consumer subsidies and sub-
sidies provided by losses of state corporations.

Export subsidies.   Direct subsidies on exports are, of course,
contrary to the regulations of the General Agreement on Tariffs and
Trade.   However, the prevalence of high tariffs in many countries
means that prices of some inputs of exporting industries are well
above world prices, and some form of export subsidy is needed to

compensate exporters for the anti-export bias of tariffs. There-
fore it is not uncommon for Governments to offer some form of
incentives package to exporters. This may take the form of rebates
on import duties, tax credits or other fiscal incentives, or even
direct cash payments. Alternatively, the exchange rate may be held
down to assist exporters. These "subsidies" are generally not in
themselves distortionary; rather they are intended to correct for
other distortions.

Consumer subsidies. Subsidies to consumers usually apply to
foodstuffs and, in some countries, to petroleum products and other
consumer products such as textile goods. They are generally
introduced for welfare reasons. The distortionary impact of such
subsidies depends upon how they are operated. The least distor-
tionary method would be a cash hand-out to consumers, such as a
welfare payment. However, consumers might not then spend it in the
way intended. A price subsidized by the Government may lead to
"excessive" consumption (of petroleum products, for instance)
leading to effects such as a diversion of exports and a preference
for private transport rather than public transport. A subsidy to
producers (with the intention of keeping prices low) may encourage
excess production of the subsidized good rather than other goods.
Finally, subsidized imports (for example, of foodstuffs) may lower
domestic prices and thereby discourage local production. This
problem has been experienced as a result of low-priced food aid
(Jackson and Eade [36]).

Losses of State corporations. The extent to which losses
incurred by State corporations arise from deliberate subsidies
rather than bad planning or management is largely a matter for con-
jecture. Nonetheless, losses of State corporations in some coun-
tries are substantial and represent a notable drain on the govern-
ment budget. Ghana, Senegal, the United Republic of Tanzania and
Zambia are four countries for which the extent of losses has been
documented (Killick [38]). But subsidies to State enterprises are
not restricted to absorbing losses. The provision of low-cost
finance, including development aid, freedom from taxation and the
ability to sell its output or provide services at artificially high
prices because of protection or monopoly are advantages which State
enterprises may receive.

The rationale for subsidizing State enterprises is that they
have "social" as well as financial objectives. To the extent that
these objectives conflict, pursuit of an objective of maximizing
net social benefits may entail financial losses, which would
justify a subsidy. However, the widespread suspicion that State
enterprises, particularly those in a monopoly or protected position,
generate "X-inefficiency" (production inefficiencies owing to lack
of competition) suggests that subsidies provided on the grounds of
maximizing net social benefits should be justified carefully.

1. Further aspects of subsidies

The notion of subsidizing deserving cases may appear to be
superficially attractive. However, it has been noted that sub-
sidies may have a number of important side-effects, notably in

resource allocation, which may be both unintended and undesirable. It is also important to bear in mind that subsidy schemes may be very expensive to administer, a point of particular relevance to countries where administrative staff and skills are scarce, and they open possibilities for corruption. Costs of administration and corruption need to be borne in mind as well as the financial costs of subsidies. As a generalization, therefore it may be stated that subsidies need to be used sparingly. Where necessary, they should be simple to implement, and Governments should ensure that the expected benefits exceed the expected costs.

G. Economic significance of distortions

1. Traded goods

The major distortions which it is often argued exist in many developing countries have been discussed in the preceding sections. It is clear that a large number of applied studies on both shadow pricing and broader measures of economic efficiency provide evidence of the existence of many distortions. However, establishing their existence is not the same as proving the validity of arguments which assert that such distortions have a critical role in holding back the long-run development of many countries. The question of the economic significance of these distortions must be considered; for example, are there in some instances short-run costs which have to be borne as part of a desirable and viable long-run strategy? It is clear that one need not accept all of the arguments noted in the previous sections. Most controversial is the implication that trade controls are always undesirable. For example, it might be argued that notwithstanding the distortionary effects of a system of import quotas and tariffs, given the foreign exchange constraint faced by a particular economy, such trade controls provide the most effective and least harmful means of managing the balance of payments. It must be recognized that specific elements of a system of controls can always be improved, but for many countries there is no justification for automatically accepting the view that full trade 'iberalization is a feasible and more effective option, in terms of long-run growth, than some form of protection.

Given the frequent statements of the desirability of removing distortions from the key markets of developing countries it is necessary to consider some of the evidence to substantiate such claims. It is interesting to note that one of the leading researchers in this area has recently commented as follows (Krueger [43], p. 555): "Despite the importance of distortions in theory relatively little empirical work has been undertaken to estimate their magnitude or their effects".

Most work on the quantitative impact of distortions has been devoted to the costs of protection and general interventions in international trade. Two broad approaches can be identified; the first involves what is termed "partial equilibrium" analysis, since it does not rest on some consistent macro-model of an economy; the second, however uses such a model, and can be seen as a "general equilibrium" approach. It is significant that early attempts to

estimate the cost of protection in a partial framework found this cost to be only a small proportion of current national income. The approach was basically to estimate the production and consumption cost for goods produced domestically under protection, but which would be imported if the protective system were abolished. The production costs are defined as the difference between domestic costs for the importable items, which would be imported under free trade, and their import value.

Consumption costs are the difference between what consumers are willing to pay for the importable products under protection, and the price that would be established once free trade is intro-duced. 40/ In combination these two effects were described as the "allocative inefficiency" associated with protection, and, as has been noted, were generally found to be rather small. However, partial equilibrium approaches to the cost of protection were extended significantly by incorporating "X-inefficiency" effects into the calculations. 41/ X-inefficiency implies that firms are not producing at their minimum possible unit costs, and can arise, it is argued, due to a lack of competitive pressure in an environ-ment protected from world competition. Bergsman's extension of the earlier approach allowed for the possibility that many protected commodities might still be produced domestically after the move to free trade, but that in the new competitive environment X-inefficiency would fall, thus bringing production costs down to international levels. The existence of X-inefficiency creates an additional cost of protection not captured by the earlier produc-tion and consumption costs. The economy as a whole would gain from the reduction of X-inefficiency due to the resources freed for use elsewhere, while consumers of the products affected would gain through lower prices. A major limitation of the approach, however, is that it cannot distinguish between high costs due to a relaxa-tion of cost-reducing efforts, defined as X-inefficiency, and monopoly profits. In other words, with protection, domestic prices may be above world prices either because production costs are higher than they need be - X-inefficiency - or because a monopoly position in a sheltered market is being exploited. However, bearing this limitation in mind, the major point of interest for the present discussion is that by allowing for a combination of X-inefficiency and monopoly returns Bergsman produced cost-of-protection estimates substantially above those found by others. His major effort was directed at estimates for Brazil, but he also applied his method to other economies. His results are summarized in table 2.

The following important points should be noted:

(a) For all economies the allocative costs of protection, arising from allocative inefficiency, are either very small or negative. Negative results imply that countries lose from the move to free trade, chiefly because of the terms of trade effect;

(b) While the X-inefficiency monopoly returns effect is always more significant, in only two of the six countries studied is it more than 5 per cent of national income.

Admittedly, what is a high cost in this context is not clear. Bergsman himself argues that the figures for Brazil and Pakistan are high enough to matter. Others may feel that, given the emphasis often placed on the irrationality of the protective system in many developing countries, results of this order of magnitude are hardly convincing evidence that distortions arising from protection really are significant. 42/

Table 2. Costs of protection in six economies a/
(Percentage of GDP)

item	Brazil	Malaysia	Mexico	Pakistan	Philippines	Norway
Net allocative cost	0.3	-1.2	0.3	0.5	1.0	-0.2
X-inefficiency plus monopoly return	6.8	0.4	2.2	5.4	2.6	2.0
Total cost of protection	7.1	-0.8	2.5	5.9	3.6	1.8

Source: J. Bergsman, "Commercial policy, allocative efficiency and X-efficiency", Quarterly Journal of Economics, vol. 87, August 1974.

a/ Based on data from the 1960s.

The general equilibrium approach to estimates of the cost of protection has also been employed in recent years. Krueger [43] summarizes the types of models which have been used, stressing their demanding data requirements and pointing out the econometric techniques involved. The work of de Melo [52] on Colombia is frequently cited as an important example of this approach. What is significant is that although his results generally produce higher cost-of-protection estimates than the partial approach, they appear highly sensitive to key assumptions. The cost of protection ranges from 3.8 per cent of gross national product assuming a quota on coffee exports, and an upward sloping labour supply curve, to 11.0 per cent with an optimal tax on coffee exports, and the same labour market conditions. If a perfectly elastic labour supply curve is assumed, the cost of production becomes 5.8 per cent with the same coffee quota, and 15.8 per cent with the export tax. 43/ This is a very wide range, and it illustrates the uncertainty attached to exercises of this type.

The major point to stress regarding any attempt to capture the macro-economic costs arising from an import protection system is that for most countries experiencing relatively high protection, free trade is no more than a hypothetical situation, and little confidence can be placed in projections for an economy which moves from a highly protected to an open trading policy. It is significant that only by incorporating dynamic factors, such as cost reductions due to lower X-inefficiency, can quantitatively significant cost-of-protection estimates be derived, at least in a partial equilibrium framework. However, these improvements are only one possible scenario resulting from the removal of trade controls. Those less optimistic concerning the benefits associated with freer trade could construct an alternative with high-cost domestic producers closing down, and the resources freed by their closure not finding their way into dynamic export activities. In these circumstances it would be free trade that introduces the costs, in terms of a loss of potential national income, not protection. The difficulty is that once one allows for the central importance of dynamic rather than static considerations, estimates of costs will depend largely upon judgements concerning the viability of alternative growth strategies. Naturally opinions differ on such broad questions, and those sceptical of the merits of free trade are unlikely to be convinced by cost-of-protection calculations.

A more fruitful approach to the question of the impact of trade distortions on growth is likely to be through reductions in exports due to the anti-export bias of protection. 44/ If exports are held back this is likely to have important implications for long-run growth, since rising exports should help to ease the foreign exchange constraint and may allow the attainment of greater economies of scale, when production is no longer limited to the home market. Exports can be held back in a number of ways: two of these - the high cost of non-traded inputs arising from protection and the relatively higher incentives for domestic market sales - will be referred to in this section. A third, a high exchange rate maintained by protection, will be considered in the next section.

Recent work using what is termed "shift analysis" has estimated the extent to which protection of importables has penalized the export sector, through its effect on the domestic price of non-tradeables. As has been noted earlier, higher prices of non-traded imports imply an implicit tax on the export sector which may more than offset any subsidies it receives. Greenaway and Milner [32] provide data on the shift coefficient in a number of countries, where this can be seen as the proportion of the growth of protection to importers that is passed on to exporters as higher prices of non-traded goods. The simple average for the Latin American countries for which they provide data is 67 per cent. 45/ An important point the authors bring out is that while Governments can set nominal rates of import duty and export subsidies, unless they operate a very comprehensive set of price controls for the non-traded sector they cannot influence prices of non-traded goods in relation to importables and exportables. The final outcome of relative prices will be determined by the technological characteristics and consumer preferences that determined the degree of

substitutability between the non-traded and traded sectors. In
other words, Governments cannot influence the shift coefficient and
thus cannot determine ex ante the real protection or real subsidy
they are granting. This is another way of expressing the argument
regarding the unco-ordinated nature of the incentive structure
under a trade control system. The exact empirical significance of
the findings of   : analysis is unclear since one would need to
know how imports   responded to t..e taxes on exports that are
implied. However,   provides further evidence of anti-export bias.

There is evidence from a number of countries, much of which is
summarized in Krueger [41], that non-traditional exports respond to
both export incentives and real exchange rate changes. Krueger
stresses, however, that the critical determinant of performance
appears to be the trade bias of a protective system, rather than
the level of the exchange rate; in other words, what is of central
concern is the relative levels of incentives in the domestic and
export markets. Krueger argues that what is required for success-
ful export growth is the removal of a bias against exports, and a
substantial government commitment to prevent the re-emergence of
any such bias in future. This involves granting exports equivalent
incentives to those afforded to domestic sales, but does not, it
should be noted, necessarily imply a need to move to a free trade
policy. Several of the successful export economies of the 1960s,
for example Brazil, Japan and the Republic of Korea, maintained
various forms of import protection, while export growth was taking
place. The important point was that the incentives created by
import protection were offset by various combinations of export
incentives and exchange rate changes. Furthermore, discussions
such as that of Krueger, and the earlier work of Little, Scitovsky
and Scott [50] normally fail to allow for a possible link between
an initial stage of import-substitution-biased industrialization
and later export success. Although the case still needs to be
proved conclusively, it is possible that some of the successful
export economies were able to achieve rapid export growth as a con-
sequence of the production experience acquired initially in selling
in a protected domestic market. If this is the case, the stark
dichotomy between inward- and outward-looking industrialization
which is still present in many d cussions of trade strategy may
prove to be a misleading oversimpli cation. 46/

2. Foreign exchange markets

Many studies have estimated the divergence between controlled
official exchange rates and market clearing rates. These estimates
can be incorporated into the type of cost of protection models
discussed in the previous section. However, given the limitations
of these models in considering the cost of intervention in the
foreign exchange market, it is more appropriate to focus on the
disincentive to exports implied by exchange rate overvaluation.
There is evidence from a number of studies that implies that over
valuation and its associated policies held back exports and thus
tightened the balance of payments constraint on overall growth.
Bird [9] for example argues that in general, trade elasticities in
most developing countries, at least in the longer term, are suffi
ciently high for exports and imports to move in the direction

required for balance of payments improvement. His survey of the evidence follows the earlier work of Cooper [12] in concluding that in a majority of cases the trade balance improved following devaluation. However the following qualifications must be made:

(a) In many countries the period over which the real exchange rate is devalued is relatively brief. Often this follows in part from the inflationary consequences of devaluation itself; 47/

(b) The internal relative price effect on traded and non-traaed goods is also normally transitory. Evidence from a number of countries suggests that the price advantage for tradeables is largely eroded within a period of up to three years; 48/

(c) The depression of economic activity following devaluation varies between countries, from periods of a few months to over a year. 49/ There are difficulties however in disentangling the direct effects of devaluation from those of other policy changes.

These findings suggest that the effect of devaluation on the trade balance is largely short term, although it may still be a useful impetus for future growth. There are nonetheless short-run costs likely to be involved to set against favourable trade and allocation effects. These are essentially a higher rate of domestic inflation and some reduction in real expenditure and activiry. The type of economy in which these costs will be highest will be where the propensity to import is high, import demand and export supply are inelastic, and labour resistance to real wage cuts is greatest. These are clearly the economies where the favourable effects of devaluation are likely to be weakest, or even negative.

3. Labour markets

Turning to the question of labour market distortions, some estimates exist of the magnitude of labour and capital market distortions, in terms of raising labour and lowering capital costs. Krueger [40] reports data from eight countries in the 1960s and early 1970s which show the degree to which labour costs were raised relative to capital for the modern protected sector of the economy. Those data are given in table 3. The key figures are in the last column, and show the increase in che wage-capital cost or wage-capital rental ratio for the protected modern sector relative to the same ratio in the rest of the economy. It is difficult to generalize on the basis of data from only eight countries, but it appears that in only two, Brazil and Côte d'Ivoire, were the percentage distortions in labour costs greater than those in capital costs. In two countries, Pakistan and Tunisia, the combined effect of wage and capital distortions appears to have been substantial. However, again it is unclear what constitutes a significant level of distortion in cases such as this. Krueger reports that efforts to estimate the level of employment in the absence of distortions produced a 10 per cent increase for Argentina, 15 per cent for Brazil, and as much as 271 per cent for Pakistan. The realism of such projections is unclear, but even allowing for the fact that they refer to once-for-all increases,

and disregarding the Pakistan result as extreme, the results for
the other two countries are still substantial. 50/

Table 3. Percentage estimated distortion in capital
and labour costs from various sources a/

Country or area	Year	Percentage increase in labour costs	Percentage reduction in capital costs due to			Percentage increase in wage-rental ratio
			Trade	Credit	Others	
Argentina	1973	15	8	9	..	38
Brazil	1968	27	0	4	..	31
Chile	1966-1968	..	37	..	..	37
Côte d'Ivoire	1971	23	0	3	12	45
Hong Kong	1973	0	0	0	0	0
Pakistan	1961-1964	0	38	53	10	316
Republic of Korea	1969	0	0	8	2	11
Tunisia	1972	20	30	6	..	87

Source: A. 0. Krueger, Alternative Trade Strategies and
Employment (Chicago University Press, 1983), table 7.1.

a/ Percentage changes refer to costs in the "distorted" or
protected modern sector relative to costs in the rest of the
economy.

As noted earlier there is now general agreement that scope for
technology choice, in terms of degrees of labour-intensity, exists
in a fairly wide range of industrial activities. Several firm-
level studies have indicated that for particular branches the gain
in employment arising from use of more labour-intensive techniques
can be substantial. One of the most comprehensive of these is by
Pack [54], and his results are worth noting. Pack examined the
range of technologies in use in nine manufacturing branches, and
contrasted the characteristics of what he identifies as the most
economically appropriate and the most capital-intensive technol-
ogies. In total, for an equal investment in each branch, use of
the economically appropriate technologies generated approximately
four times the number of jobs associated with the most capital-
intensive technologies. This result depends upon the branches
selected for study, but the nine chosen are all likely to be
important, particularly for the low income developing countries. 51/

However, this evidence on the scope for technology choice does
demonstrate that particular labour or capital market distortions
will be sufficient to block the adoption of economically efficient

technologies. Squire [60], for example, judges labour market dis-
tortions in many developing countries to be a relatively weak
influence on the level of employment.

He tests for the effect of reductions in the minimum wage on
employment in both the formal and informal sectors, and in partic-
ular on productivity in the latter. His conclusion is that the
removal of distortions in the form of minimum wage legislation is
unlikely to have a significant impact on incomes in the informal
sector through a rise in productivity, as workers leave to find
formal sector employment. Furthermore, simulations of his model
for different demand and supply elasticities for labour show reduc-
tion in minimum wages to have relatively little impact on total
employment, although they can increase substantially formal sector
employment, if relatively high demand elasticities are assumed. 52/

This type of evidence does not mean that in combination the
effect of labour and capital market distortions may not still be a
significant influence on employment and capital use in many
countries. Relative factor prices will be among a number of
influences on technology choice, and clearly if some technologies
are judged more economically efficient than others, prices facing
producers should be such as to encourage shifts in the desired
direction. The extent to which such shifts will actually fall in
response to relative factor price changes will vary both between
branches and between economies.

Squire does also suggest, however, that capital market distor-
tions in the form of the availability of cheap credit to farmers
may have a significant negative effect on agricultural employment
in many countries, owing to excessive mechanization.

H. Empirical studies of capital market controls

Most empirical work has focused on attempts to estimate the
impact of interest rate controls on economic growth. Interest
rates are generally taken as a proxy for financial repression, and
have the virtue, from a research point of view, of being readily
measurable. Various models have been tested by their various
authors. Work has concentrated on specifying a model in a testable
form (data are available for the variables used) and then estima-
ting tne values of tne coefficients in order to evaluate the impact
of the rate of interest on savings, investment and growth. The
method of estimation used is invariably a form of least squares
regression analysis. Tests have been performed on a substantial
number of countries over substantial periods of time. The main
econometric studies are summarized briefly below. It should be
noted, however, that the regressions produce variable results in
their correlation coefficients and t-statistics and in the mag-
nitude of their coefficients. However, it is difficult to do full
justice to the studies in the limited space available, and
interested readers are referred to the original texts.

Fischer [20] estimated an investment function for forty devel-
oping countries over the period 1960-1972. He found that "domestic
savings transferred within the respective country had a greater

influence upon capital formation in countries with low and stable inflation rates than in countries where rates of inflation were high and stable".

The positive sign of the coefficient of the nominal interest rate and the negative sign for the expected inflation rate confirm repression theories. Fischer estimated that the interest rate and the inflation rate each account for about 20 per cent of the change in the private domestic investment ratio, but the biggest influence is the inverse relationship between public sector investment and private domestic investment. His results support the notion that public sector investment crowds out private domestic investment.

Fry [25] found that in Afghanistan changes in the real rate of interest had a definite impact on growth. Abe and others [18] found a positive (but not very substantial) relationship between saving and the real deposit rate in six Asian countries. Fry [22] looked at 14 developing countries in the region of the Economic and Social Commission for Asia and the Pacific and found that increases in the real rate of interest did increase financial savings. The effect may not be to increase total savings, rather it may divert savings from inflation hedges to financial savings. The effect, nevertheless, is to increase the availability of loanable funds available for investment. Fry [23] found that the real interest rate had a positive effect on domestic saving and economic growth in seven Asian developing countries over the period 1962-1972. 53/ Fry [24] extended the analysis to cover 61 developing countries and found that saving is affected positively by the real deposit rate of interest and that credit availability is an important deter- minant not only of new investment, but also of capacity utilization of the entire capital stock. He further estimated the cost of financial repression to be around 1/2 per cent in economic growth lost for each 1 per cent by which the real deposit rate of interest is set below its market equilibrium rate. Hanson [35] studied the impact of the change from positive to negative real interest rates in Colombia in 1967 on saving, investment and growth and found that they all declined as a result. In a fairly broad study of ten West African countries, Leite [46] came to the general conclusion that the prevailing policies of low and stable interest rates are inap- propriate.

Not all studies have obtained positive results, however. Galbis [29], in a study of 19 Latin American countries, produced inconclusive results. Brodersohn [70] found a positive relation between liberalization of interest rates and saving in the Southern Cone countries of Latin America, but found that the impact on the demand for investment funds was inconclusive or negative. Vogel and Buser [72] looked at the relationship between real interest rates, saving and investment in Latin America and the results were again inconclusive.

Few empirical studies have been carried out to estimate the impact of liberalizing interest rates after such a reform has been implemented. Sri Lanka, where interest rates were raised consid- erably after the election in 1977, has produced two studies. Roe ([56], p. 221) found that

"... a large part of total investment is not governed either as to its total quantity or its allocation by local interest rate conditions. Under present institutional arrangements, the administered interest rates could be set at almost any level without affecting the pattern of investment. Thus so long as these arrangements persist it is impossible to say what is the 'correct' level of these rates, or whether 'high' rates are preferable to 'low' ones."

Khatkhate [37], although only concerned with the pre-1977 liberalization in Sri Lanka, was of the opinion that negative real interest rates had resulted in a shrinking of the supply of real loanable funds, leaving the demand for investment finance unsatisfied.

In Latin America, Galbis [28] found that liberalizing interest rates in the 1970s had been generally successful in Argentina, Brazil and Uruguay, but not in Chile.

The Republic of Korea reformed its interest rates in 1965. This was followed by an enormous increase in time deposits. Van Wijnbergen [71] has estimated that this growth came from switching money from the kerb, or parallel, market to time deposits, rather than from increased savings or increased mobilization of cash savings. The effect was to tighten credit on the kerb market, which many smaller businesses depend on, and the reform was therefore contractionary in the short-run. Van Wijnbergen considered that the contraction would persist if bank lending were restricted by government controls. Tight credit controls, if a permanent feature of bank regulation, would self-evidently restrict investment, and be contrary to the objective of interest rate liberalization.

In short, the bulk of the empirical evidence supports the main tenet of repression theory, that liberalizing interest rates tends to increase savings and investments. The significant number of inconclusive and negative studies gives some weight to the qualifications made in the earlier discussion of repression theory, that interest rate liberalization may not be a sufficient condition for increased saving and investment, and in some countries it may simply not work. However, there is little evidence that liberalization is harmful, and, as has been noted earlier, the onus is on the supporters of repression to justify the policy, and to justify the implication of repression, that savers should subsidize borrowers.

I.   Economy-wide distortions

The preceding discussion has focused upon individual distortions more or less in isolation from one, another. However, it can be argued that in a highly distorted economy a number of important market signals will be functioning wrongly and that in total the combined effect of these distortions may exceed the individual effects viewed in isolation. The World Bank [77] attempted to meet this point by relating estimates of the overall level of distortions in a sample of 31 developing, countries to their growth

performance, on a cross-country basis. Since this is one of the
few attempts to quantify the overall effect of distortions, it is
worth discussing in some detail. There are major difficulties in
quantifying the degree of distortion in different markets, since
one requires a norm with which to compare actual prices. The World
Bank study was not able to compare market prices with accurate
estimates of shadow prices. The approach is to derive rough proxy
estimates for shadow prices in different markets. In all, seven
distortions are considered relating to the exchange rate, effective
protection for manufacturing and agriculture respectively, un-
skilled labour and capital, the rate of inflation and public
utility pricing. Using data from the 1970s, countries are grouped
in high-, medium- or low-distortion categories, on the basis of
their distortion measure in each market.

The growth performance of the 31 developing countries during
the 1970s can be considered in relation to their rating by degree
of distortion. The basic results of the study are summarized in
table 4, countries are grouped on the basis of an overall distor-
tion index into high, medium or low categories, and the simple
averages of various performance indicators are calculated for each
group. It is clear that the low-distortion group has a superior
growth performance on the basis of all the indicators shown. For
example, in terms of GDP growth the low-distortion group had an
annual average growth of about 7 per cent per year during the
1970s, which is 2 percentage points above the average for all coun-
tries in the sample, and 4 percentage points above the average for
high-distortion countries. The divergence in performance between
the low- and high-distortion groups is particularly marked in the
case of exports, with the former showing an average growth of just
under 7 per cent per year, and the latter a growth of below 1 per
cent.

Cross-sectional regression analysis relating GDP growth to the
composite distortion index was also applied to allow for variations
between countries in the three separate groups shown in table 4.
This showed a significant negative correlation between the distor-
tion index and growth. On the basis of this evidence the World
Bank ([77], p. 63) concludes that "in short the statistical anal-
ysis clearly suggests that prices matter for growth". However, a
number of qualifications, outlined below, should be borne in mind:

Table 4. Indices of price distortions and growth
performance a/ in the 1970s

Countries by distortion group	Annual GDP growth	Domestic-savings-income ratio	Annual growth of agriculture	Annual growth of industry	Annual growth of exports
Low	6.8	21.4	4.4	9.1	6.7
Medium	5.7	17.8	2.9	6.8	3.9
High	3.1	13.8	1.8	3.2	0.7
Overall average	5.0	17.4	3.0	6.1	3.5

Source: World Bank, World Development Report (Washington, D.C., World Bank,
1983), table 6.1.

a/ All measures of performance are simple averages for the groups of coun-
tries involved.

(a) There are several problems in quantifying the vario s distortions across countries. The measures of distortion used do not compare market prices with shadow prices, but only with proxies for the latter, which in some cases are very crude; for example, market wages are not compared with shadow wages, nor are actual rates with exchange rates. Moreover, measures of ERP may vary substantially with the methodology adopted, and it is not clear how directly comparable across countries are the ERPs for agriculture and manufacturing used in the construction of the composite index. Therefore, in so far as the overall distortion index is constructed, at least in part, with data of questionable validity, the strength of the conclusions of the study must be weakened;

(b) The regression results show the distortion index to be a significant explanatory variable, explaining about one third of the variation in growth performance between countries. 54/ However, certain countries grew more rapidly than predicted by the equation - including Brazil, Côte d'Ivoire, Egypt, Indonesia, Nigeria and the Republic of Korea - while others performed markedly worse than predicted -- including Ethiopia, Ghana, India and Jamaica. The World Bank ([77], p. 63) acknowledged that "many other elements, not least natural resource endowment as well as other economic, social and political, and institutional factors would need to be considered in a more complete explanation to account fully for the variation in growth rates". This is quite clearly a reasonable conclusion, but once the importance of other factors is allowed for, the primacy of price distortions becomes open to question;

(c) Finally, perhaps the most important point is that a statistical association between measures of distortion in an economy and growth obviously says nothing about causation. Earlier sections of this paper have summarized many of the arguments which suggest that distortions will reduce both allocative efficiency and long-term growth. Protection, for example, may shelter high-cost producers and create a bias against exports. Similarly, technology choice may be biased in an inappropriate direction owing to factor market distortions, and specialization along the lines of existing resource endowments may be hindered. Such arguments suggest that causation runs directly from high distortions to low growth. However, the evidence is open to another interpretation. Some would argue that in many developing countries growth is held back by various structural rigidities. For example, lack of domestic entrepreneurs and skilled workers may make it difficult to increase domestic supply of many commodities in the short run, the inability of the Government to raise revenue may restrict the level of investment, and export earnings may be held back by external constraints. 55/ In this view distortions can be the symptom of structural problems rather than the fundamental cause of low growth. It is interesting that the World Bank [77] finds the exchange rate to be the single most significant individual distortion. However, one would expect an economy with what may be termed a structural balance of payments problem - a small non-traditional export sector and a high propensity to import - to experience low growth, since whenever incomes rise significantly the absolute increase in imports will exceed the foreign exchange that the export sector can generate. Growth may be curtailed for balance of

payments reasons. To conserve foreign exchange such an economy may have to establish an import controls system - inevitably raising the ERP granted to many producers - and it may also experience a real exchange rate appreciation, if structural bottlenecks create a higher rate of domestic inflation than in its trading competitors. In such circumstances, low growth will be accompanied by distortions, as measured by high ERPs and exchange rate appreciation. However, such distortions are not necessarily the underlying causes of low growth, which in this view lie in the structural characteristics of the economy. One need not generalize this argument too far, since the interpretation of the relation between distortions and growth will be determined by a reading of the constraints faced by particular economies. There is no reason, however, why causation should always lie in a single direction. In some countries, at some time, distortions as defined here may contribute directly to poor economic performance. In other circumstances however, they may simply reflect more fundamental structural problems so that removal of the distortions alone would not be a long-term solution.

This section has gone in some detail into the empirical evidence on the significance of price distortions, and it is necessary to draw together some conclusions from the often ambiguous data considered. The most important general point is that the economic consequences of the sets of market prices prevailing in developing countries do appear to matter, although getting prices right is clearly not the only issue. There is evidence that the relative prices prevailing in many developing countries often bear no clear relation to government objectives, and that in some circumstances the effects of prices may operate in direct contradiction to certain objectives. In terms of the specific consequences of market distortions, it appears that protection of import-substitute industries has sheltered high-cost producers, and in some instances pulled resources into non-priority areas. Perhaps most seriously, incentives for domestic production have often not been matched by incentives for export, which has hindered the growth of exports. Regarding the effect of labour market distortions, their impact on employment growth is unclear, although in certain sectors employment may have been negatively affected to a substantial degree. Finally, domestic savings do appear to be responsive to real interest rates, suggesting that capital market distortions may have held down savings and investment.

The evidence on the overall consequences of distortions for growth clearly does not demonstrate that price policy is the only factor which can explain the wide variation in growth experience between developing countries. However, there are strong grounds for arguing that prices have a sufficiently important role to warrant consideration of ways of reforming price-setting procedures. If resource mobilization and allocation decisions are responsive to price changes, then one can argue that decision-takers should be forced to examine whether prices currently ruling in key markets of their economies are appropriate, in the sense that the effects created by these prices, in terms of either resource use or income distribution, are in line with government objectives and priorities.

Notes

1/ In a recent book, Ian Little [48] categorizes development economists as either "structuralist" or "neo-classical" on the basis of the extent to which they believe prices to be an important factor in resource allocation. The latter clearly do, and he defines the former as all those who do not.

2/ One can also distinguish between distortions created by government policies, and those resulting from market conditions, for example, monopoly. Corden [15] uses the term distortion to refer to the effects of government intervention, describing the effect on market conditions as a "divergence".

3/ There is a substantial literature on the definition and estimation of shadow prices; see, for example, [67], [68] and [69], Little and Mirrless [49] and Squire and van der Tak [61]. Where Governments are interested in objectives other than allocative efficiency, the measurement of opportunity costs will have to be broadened to cover the effects on these wider objectives.

4/ In terms of the previous example, this implies that the balance of payments may be controlled by a mixture of the exchange rate, quota restrictions, tariffs and internal demand management.

5/ The term efficiency is ambiguous, since it must be related to the achievement of particular objectives. In this section, efficiency is used in the sense of allocative efficiency, that is, the extent to which income is maximized from the utilization of existing resources. Dynamic and distributional considerations are introduced in later chapters.

6/ Here the initial distortion will be the difference between the valuation of the commodity by the Government and the valuation of private consumers.

7/ Major empirical works on shadow pricing include Lal [45] on India, Scott, MacArthur and Newbury [57] on Kenya, and Powers [55] on several Central and Latin American economies.

8/ Balassa has been the pioneer in this area; see, for example, Balassa [5] and more recently Balassa [3].

9/ The term comes from Timmer et al [66].

10/ In this statement and elsewhere in the discussion the deviation of domestic from world prices owing to domestic transport and distribution costs is ignored.

11/ Strictly this assumes that export demand is perfectly elastic (the small country assumption), so that exporters have no problem selling more at the prevailing price, and that competitive production conditions prevail domestically.

12/ See, for example, Bhagwati [8]. This point of the relative effects of tariffs and quotas is explored further in the discussion of policy alternatives.

13/ Krueger [42] points out that real economic resources may be wasted by firms or traders wishing to obtain access to licences or other documents necessary under a system of direct economic controls (rent-seeking).

14/ We have already seen how market interventions through tariffs, taxes and subsidies will influence this ratio.

15/ The ERP formula for branch j is

$$ERP_j = \frac{T_j - \Sigma T_i \cdot a_{ij}}{1 - a_{ij}}$$

where T_j and T_i are the nominal rates of protection on output j and input i respectively

a_{ij} gives the input of i per unit of j at world prices, and world prices of j and i are normalized to equal unity.

It can be shown that ERP_j can be rewritten to give the ratio of the additional value added arising from protection to value added under free trade so that

$$ERP_j = \frac{VADP_j - VAWP_j}{VAWP_j}$$

where VADP and VAWP are value added at domestic and world prices, respectively.

Corden [14] provides a comprehensive study of the theory of protection.

16/ A simple numerical example may illustrate the extent to which nominal and effective protection rates can differ. There are three goods produced under protection - A, B and C. Nominal rates of tariff are 40 per cent for A, 20 per cent for B and 10 per cent for C. For simplicity it is assumed that each good requires only one produced input B, and that B is 50 per cent of the value of output at world prices in each case. With these assumptions the ERP measures will be 60 per cent for A, 20 per cent for B and zero for C.

In comparison with the nominal rates the ranking of products has remained unchanged, but the relative degree of incentive has widened substantially. C receives no net protection and the effective protection of A is 50 per cent greater than its nominal rate.

17/ Balassa [3] finds the rankings of branches by nominal and effective rates of protection to be significantly correlated in some countries. He argues, however, that ERP measures will be much more effective in predicting the absolute size of resource shifts arising from protection. The implication is that in some countries nominal rates may be useful in predicting the direction, as opposed to the magnitude of resource shifts.

18/ Little, Scitovsky and Scott [50] pointed to the bias within manufacturing against production of capital goods.

19/ Formally the DRC ratio for activity j is

$$DRC_j = \Sigma s_i \ V_{ij} \ / \ IVA_j$$

where s_i is the shadow price of domestic factor i

V_{ij} is the amount of factor i required per unit of output j

IVA_j is the international value added in j.

From this definition it follows that ERP and DRC measures will be equivalent if market prices rather than shadow prices are used in the DRC measure.

20/ Bhagwati [8] surveys some of the evidence on DRCs; see chapter 5, pp. 82-126.

21/ Estimating the appropriate exchange rate for an economy is by no means straightforward, however. For various theoretical approaches see, for example, Oxford Economic Papers [63].

22/ Bhagwati [8] points out that theoretically a wide range of DRCs need not inevitably imply resource misallocation. A producer with a low DRC at present may run into increasing costs for example, or alternatively face a falling output price if his production is expanded. Both effects would raise his DRC ratio. Also Warr [73] points to the limitations of ranking by DRC ratios.

23/ Balassa [3] uses the definition of

$$ERS_j = \frac{VADP_j - VAWP_j}{VAWP_j}$$

where $VADP_j$ is value added in j at domestic prices adjusted for subsidies

$VAWP_j$ is value added at world prices.

The subsidies included in the estimates are for credit and tax payments. The incidence of the subsidy has to be estimated fairly crudely however; see Balassa ([3], pp. 9-19).

24/ This appears to have been the case in Taiwan Province of China and, to a lesser extent, in the Republic of Korea.

25/ Agarwala [1] surveys ERP estimates for agriculture and manufacturing for a number of countries, and finds 12 where the average ERP for agriculture was negative during the 1970s.

26/ Balassa [4] provides formulae for the calculation of the shadow exchange rate under these alternative policy scenarios.

27/ Thirlwall [65] gives a good introduction to devaluation and competing theories of the balance of payments.

28/ The "new structuralist" critique of devaluation as a policy measure for developing countries is that it is "stagflationary" - creating both inflation and domestic recession. This rests in part on the view that export responses will be slow to emerge; see Taylor [64] and Krugman and Taylor [44].

29/ For an example of this approach in Jamaica, see Weiss [74]. It must be remembered that the extent of underemployment must be allowed for, so that a worker's annual productivity will be measured by days worked per year multiplied by the daily wage rate. This simple view of migration patterns, where agriculture provides the labour for all new projects in the economy, can be modified in various ways. However, it still provides the basis for many empirical studies on shadow wages.

30/ For example, it figures in the article setting out the famous "Lewis-model" for a labour surplus economy; see Lewis [47].

31/ The argument must be qualified, however, since under certain circumstances long-run growth of both employment and income could be greater with capital-intensive rather than labour-intensive techniques. Sen [58] provides the classic discussion of these issues.

32/ See Stewart [62], White [75] and Pack [54] for surveys of the literature.

33/ This abstracts from differences between market and shadow wages due to differences between domestic and international prices; see, for example, the discussion of skilled labour in Powers [55].

34/ High-wage economies where government intervention has been important are listed as the East African countries, plus Colombia, Pakistan, Puerto Rico, Nigeria and Sri Lanka. It is noted that in many mining-based economies the initial impetus towards high urban wages comes from the foreign mining companies; see Squire ([60], pp. 129-130).

35/ Interest rate floors on deposit and loan rates are also encountered occasionally, but they have not been taken into account in the analysis here. As an illustration of methods of nterest rate controls, Galbis [28] found that 17 out of 19 Latin A erican countries studied had imposed interest rate controls at some time during the period 1967-1976. Interest rate ceilings on deposits were encountered in 14 countries, of which five were comprehensive ceilings and nine partial ceilings. Three countries had interest rate floors. In seven countries, interest rates were pegged to some form of index, usually as part of a much wider indexation of financial assets and liabilities.

36/ The argument assumes that the interest rate is the main determinant of the investment rate in a given period. This is obviously questionable, and other important determinants include the expected rates of growth and inflation, the level of excess capacity at the beginning of the period, and all the other factors which make up that elusive concept, business confidence.

37/ There will always be a margin between bank borrowing and lending rates, but this is ignored for ease of exposition.

38/ Nonetheless, government borrowing, by offering increasingly higher risk-free rates of return to lenders, may "crowd out" private sector borrowing. To the extent that crowding out occurs, government borrowing, if used for current expenditure, may be at the expense of private sector investment.

39/ The literature on the impact of foreign capital inflows on domestic saving efforts has been summarized recently by Dowling and Hiemenz [17], for example.

40/ For a brief exposition of the approach, see Corden [13]. It should be noted that a number of qualifications may have to be made to the simple definition of producer and consumer costs given above. In particular, the expansion of exports associated with a move to free trade must be allowed for. This expansion may have a negative terms-of-trade effect if international prices for exports fall, and may also encounter rising production costs, if there are diminishing returns to scale. On the consumption side, if domestic prices of exportables rise with the move to free trade, this will create consumption costs of free trade to offset the removal of the consumption costs associated with protection.

41/ See Bergsman [7].

42/ It should be noted that Balassa amended Bergsman's calculations to produce somewhat higher figures including 3.7 per cent for the Philippines, 6.2 per cent for Pakistan and 9.5 per cent for Brazil. See Balassa ([6], p. 156).

43/ These results are cited by both Krueger [43] and Balassa [3].

44/ Bias can be expressed simply in quantitative terms as the ratio of domestic to world prices for importables over the same ratio for exportables. Therefore bias exists where

$$B \neq 1 \text{ and}$$

$$B = \frac{DP_m/WP_m}{DP_x/WP_x}$$

where B is the measure of bias

DP_m and DP_x are the domestic prices of importables and exportables respectively

WP_m and WP_x are the world prices for importables and exportables respectively.

Anti-export bias implies $B>1$, and pro-export bias $B<1$.

45/ The shift coefficient is derived from the equation

$$\therefore \left(\frac{Ph}{Px}\right) = w \left(\frac{Pm}{Px}\right)$$

where $\therefore$ denotes changes; Ph, Px and Pm are the prices of non-tradeables, exportables and importables respectively; and w is the shift coefficient.

46/ This possibility is touched on by Diaz-Alejandro [16] and Findlay [19]. Some empirical evidence is considered by Kirkpatrick and Nixson [39].

47/ The brief period of real depreciation is illustrated for several countries in Krueger [41].

48/ Warr [73] surveys this evidence and contrasts it with the Indonesian experience.

49/ See Cooper [12].

50/ The percentage increases in employment refer to the protected sector only, see Krueger ([43], p. 557). Earlier estimates for Pakistan (Guisinger [33]) put the possible additional employment arising from the removal of distortions at rather less. However, exercises of this type are generally highly sensitive to assumed demand and supply elasticities.

51/ Pack [54] defines economically appropriate as the technology which generates the highest net benefit-to-capital ratio at market prices. His nine branches cover a range of industrial processes and represent a variety of technical rigidities.

52/ See Squire ([60], pp. 126-128). High demand elasticities are defined here as greater than 2.0. Squire notes that empirical estimates of unskilled labour demand elasticities are frequently found to be 1.0 or less, and if this is the case, the employment effect of the removal of minimum wage legislation is small even in the formal sector.

53/ Giovanni [30] re-estimated Fry's equations for the same countries over a different period (roughly the 1970s) in order to try to test the robustness of Fry's results. He found an insignificant relationship between domestic savings and the real interest rate, concluding, "Serious doubts are cast on the view that the interest elasticity of savings is significantly positive and easy to detect in developing countries" ([30], p. 603).

54/ The detailed research upon which the analysis in the World Development Report 1983 is based is in Agarwala [1], which gives details of the procedure adopted.

55/ Kirkpatrick and Nixson [39] give a summary of what they term the "structuralist-dependency perspective" on industrialization.

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A STATISTICAL ANALYSIS OF THE SOURCES OF CHANGE
IN MANUFACTURING VALUE ADDED BY INDUSTRY AND REGION
IN 1963-1980: A DECOMPOSITION APPROACH

Secretariat of UNIDO

A. Structural change and global economic interdependence

In recent years much attention has been focused on two inter-
related development issues, namely growing interdependence and
structural change in the world economy. The accelerating inter-
dependence of national economies is evident within both developing
and developed country groups. Equally important is the North-South
economic interdependence that has grown rapidly in past decades.

At the same time, the increasing internationalization of
trade, production and finance, combined with the intensified
development efforts of developing countries, has contributed to a
significant structural change in many national economies and
resulted in the continuously shifting international division of
labour.

Structural change is broadly viewed here to include the whole
range of interrelated changes in the structure of an economy in the
development process. This includes a shift in such variables as
the composition of demand, product mixes, sectoral composition of
employment, as well as the external structure of trade and capital
flow.

While economic growth remains as one of the most important
development objectives, structural change that transforms a tradi-
tional agrarian economy into a modern industrial economy has been
accorded equally high, if not greater, priority by many development
thinkers and policy-makers. It reflects a commonly held view that
structural change may not necessarily lead to rapid economic growth
in the short run, but is needed to develop the productive capacity
to expand and sustain output, employment and welfare of an economy
in the long run. Recent development experiences in most resource-
rich developing economies and particularly capital-surplus oil
economies illustrate this point. They attained growth rates of
unprecedented rapidity, primarily relying on a few primary commod-
ity exports, but delayed or even impeded structural transformation
essential for creating the productive capacity to sustain rapid
growth and reduce vulnerability to the · ps and downs of the world
economy. However, recent massive capital investments in the infra-
structure and energy-intensive downstream industries in the Gulf
states mirror their preoccupation with the structural balance and
diversification of their economies. In addition, some of the
resource-poor countries or territories such as China (Taiwan
Province), Hong Kong, the Republic of Korea and Singapore underwent
structural change at fairly early stages of development with rela-
tively low per capita incomes initially, and after the two decades
of restructuring and revamping their economies on the basis of an
export-oriented growth strategy, they became "success stories" among

the community of developing countries by firmly establishing a sus-
tainable and diversified economy.

Central to the study of structural change are, among other
things, the patterns of sectoral change, namely the change in the
sectoral composition of output and employment. For instance, it
has been amply documented that the relative share of industry and
particularly manufacturing in gross domestic product (GDP)
increases with the rising per capita income. With this perspective
in mind, we attempt systematically to examine the patterns of manu-
facturing value added (MVA) growth of 28 manufacturing industries
in various regions of both the North and the South during the
period 1963-1980. The relatively narrow focus of this study on the
manufacturing sector may be partly justified, given the pivotal
role that industrialization plays in structural change and economic
development and given a common perception that the development of
manufacturing industries is the most critical element of industri-
alization.

Going beyond a comparative assessment of the general patterns
of MVA changes in different industries of different regions of the
world in different periods, we further attempt to decompose the
sources of such MVA changes into three elements attributable to the
global economic effect, the individual industry effect and the
regional effect. Our main objective is served by the identifica-
tion of regional growth or decline in the MVA of an industry that
is region-specific. Put slightly differently, the regional effect
component would permit us to determine the magnitude of the con-
tribution of endogenous growth factors such as the capacity of a
region to expand its share of world MVA growth, independently of
the general fluctuations of the world economy. This has an impor-
tant implication for a South-South industrial co-operation
strategy, since the question of whether such a South-South scheme
is viable and sustainable depends on the vulnerability of the
economy of the South to the rise and fall of the world economy.

Likewise, global and industrial components may enable us to
gauge the increasing sensitivity of manufacturing activities in
various regions, particularly in the North, to the global inter-
dependence factor and the dynamics of shifting comparative advan-
tage. In this context, there is mounting evidence that the tradi-
tional manufacturing industries in the North are rapidly losing
their comparative advantage to the South and an empirical measure-
ment of the shift in the international division of labour would be
useful.

The objective of this paper is to analyse the past growth per-
formance of manufacturing value-added of 28 industries in 12 regions
of the world to assess the extent of structural change within the
manufacturing sector that occurred between 1963 and 1980 and to
quantify and compare the sources of change in MVA among different
industries and regions in the same period with the aid of a decompo-
sition analysis.

B. Patterns of MVA growth by industry and region during the period 1963-1980

The statistical data used for this study was drawn from the UNIDO data base. MVA data for the International Standard Industrial Classification (ISIC) 28 three-digit manufacturing industries in 1975 constant prices were examined for three subperiods of 1963-1967 (period 1), 1967-1973 (period 2) and 1973-1980 (period 3). The division of the 1963-1980 period into three subperiods was primarily dictated by a discernible trend in the average annual increase in MVA of both developed market economies and developing countries within each subperiod identified. Figure I shows such shifting trends in different periods. More specifically, period 1 (1963-1967) was dominated by a marked steady decline of the annual MVA growth rates of both developed market economies and developing countries by approximately equal magnitudes, while the MVA growth rate of central ly planned economies showed a firm upward trend during this period. Period 2 (1967-1973) begins with the onset of a sharp upswing in 1967 and ended with the 1973 watershed year of the first oil price rise. During this period, the MVA growth rate of developed market economies exhibited a considerable fluctuation, dropping precipitously in 1969-1970 and rising sharply again in the remaining period. Meanwhile, the pattern of MVA growth of developing countries was a healthy upward trend with a mild slowdown around 1970. Period 3 (1973-1980) was characterized by a continuous slide in the MVA growth of all three economic groups, reflecting the adverse impact of two oil price rises and worldwide stagflation during the period, although the developed market economy group was hit hardest among the three in terms of declining MVA growth.

The method of aggregating country data obviously has a significant bearing on the statistical results of any empirical analysis. But there are no hard-and-fast rules for country grouping. Usually, country grouping can be done either by the criteria of geographical proximity or by some common country characteristics such as stages of development (measured by per capita income), country size, natural resource endowments, trade orientation and so on, or a combination of both approaches. A hybrid method of country grouping based on both income criteria and geographical proximity is adopted in this study. First, using the 1982 per capita income of $300 as a cut-off line, developing countries are divided into two groups, namely low-income and middle-income developing countries. Then, within each income group, countries are further grouped according to geographical proximity. As a result, the following six regional groups of developing countries emerged: low-income countr. grouping - Indian Subcontinent (LIS) and Africa (LAF); middle-income country grouping - Asia (MAS), West Asia and North Africa (MWA), Africa (MAF) and Latin America (MLA). Likewise, among developed countries, Western Europe is divided into two groups, advanced Western Europe (WE1) and newly industrialized Europe (WE2), using the income criteria, and the rest of the grouping consists of North America (NA), Japan (JP), Eastern Europe (EE) and other Developed Countries (OD). A total of 12 regions (six developed, six developing) were covered in the study sample.

Figure I.   Annual increase in manufacturing value added
by economic grouping, 1961-1980

Increase over
preceding year
(percentage)

Key:

———————— Developed market economies

— — — — — — Developing countries

—··—··—··— Centrally planned economies
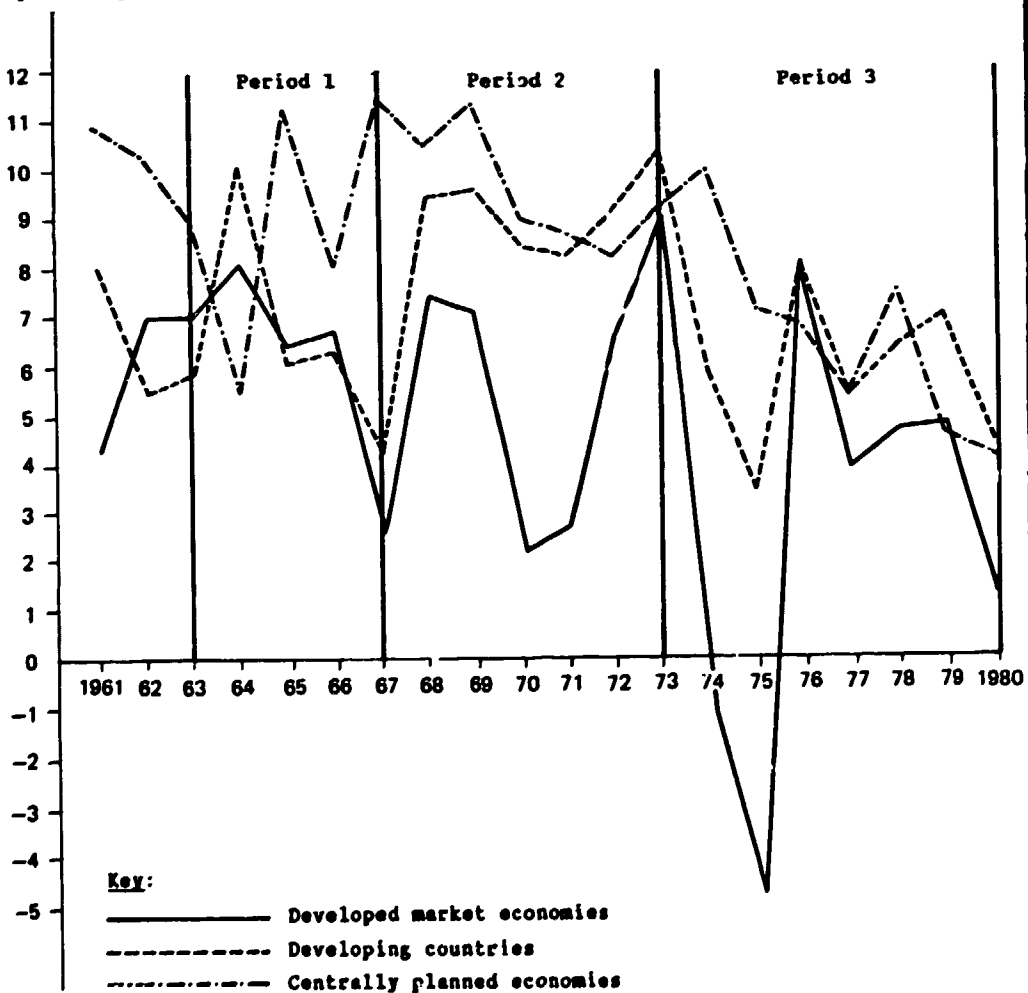
Source: UNIDO data base; information supplied by the United Nations
Office of Development Research and Policy Analysis and the United Nations
Statistical Office; United Nations Monthly Bulletin of Statistics, November
1980, and estimates by the UNIDO secretariat.

Note: Data for 1980 are preliminary estimates.

Countries with a population of less than one million in 1980 were
excluded from the sample. Conspicuously missing from the sample,
because of the unavailability of 1980 data, is the region of
centrally planned Asia, consisting mainly of China. The composi-
tion of each regional grouping in the sample of 74 countries is in
table 1.

Table 1. Breakdown of sample of 74 countries by region, 1980

Country grouping	Population (millions)	Per capita gross national product (dollars)	MVA per capita (1975 constant prices)
I. Developing countries	1 861.6	726.2(w)	105.0(w)
A. Low-income developing countries	970.6	233.9(w)	25.1(w)
Indian Subcontinent (LIS)	858.6	234.7(w)	26.6(w)
1. Bangladesh	88.5	130	11
2. India	673.2	240	27
3. Pakistan	2.2	300	37
4. Sri Lanka	14.7	270	44
Africa (LAF)	112	227.2(w)	13.7(w)
1. Ethiopia	31.1	140	12
2. Madagascar	8.7	350	27
3. Mozambique	12.1	230	19
4. Uganda	12.6	300	11
5. United Republic of Tanzania	18.7	280	14
6. Zaire	28.3	220	10
B. Middle-income developing countries	891	1 262.3(w)	192.1(w)
Asia (MAS)	297	739.2(w)	100.9(w)
1. Indonesia	146.6	430	30
2. Malaysia	13.9	1 620	222
3. Philippines	49.0	690	115
4. Republic of Korea	38.2	1 520	262
5. Singapore	2.4	4 430	967
6. Thailand	47.0	670	96
West Asia and North Africa (MWA)	149	1 194.9(w)	114.4(w)
1. Algeria	18.9	1 870	96
2. Egypt	39.8	580	94

Table 1 (<u>continued</u>)

Country grouping	Population (millions)	Per capita gross national product (dollars)	MVA per capita (1975 constant prices)
3. Iran (Islamic Republic of)	38.8	951	174
4. Iraq	13.1	3 020	99
5. Jordan	3.2	1 420	63
6. Morocco	20.2	900	91
7. Syrian Arab Republic	9.0	1 340	59
8. Tunisia	6.4	1 310	137
<u>Africa (MAF)</u>	135	859.6(w)	45.7(w)
1. Congo	1.6	900	27
2. Côte d'Ivoire	8.3	1 150	109
3. Ghana	11.7	420	50
4. Kenya	15.9	420	35
5. Nigeria	84.7	1 010	32
6. Zambia	5.8	560	98
7. Zimbabwe	7.4	630	106
<u>Latin America (MLA)</u>	310	1 971.4(w)	380.4(w)
1. Argentina	27.7	2 390	799
2. Bolivia	5.6	570	72
3. Brazil	118.7	2 050	428
4. Chile	11.1	2 150	290
5. Colombia	26.7	1 180	139
6. Dominican Republic	5.4	1 160	179
7. Ecuador	8.0	1 270	126
8. Jamaica	2.2	1 040	199
9. Mexico	69.8	2 090	349
10. Peru	17.4	930	234
11. Uruquay	2.9	2 810	395
12. Venezuela	14.9	3 630	393
II. <u>Developed countries</u>	1 202.4	7 683.3(w)	1 601.2(w)
<u>North America (NA)</u>	251.6	11 243.2(w)	1 871.6(w)
1. Canada	23.9	10 130	1 689
2. United States	227.7	11 360	1 891
<u>Advanced Western Europe (WE1)</u>	281	10 327.3(w)	1 922.8(w)
1. Austria	7.5	10 230	1 985
2. Belgium	9.8	12 180	1 978
3. Denmark	5.1	12 950	1 988

Table 1 (continued)

Country grouping	Population (millions)	Per capita gross national product (dollars)	MVA per capita (1975 constant prices)
4. Finland	4.9	9 720	1 886
5. France	53.5	11 730	2 139
6. Germany, Federal Republic of	60.9	13 590	2 839
7. Italy	56.9	6 480	1 448
8. Netherlands	14.1	11 470	1 992
9. Norway	4.1	12 650	1 562
10. Sweden	8.3	13 520	2 492
11. United Kingdom	55.9	7 920	1 105
Newly industrialized Western Europe (WE2)	127	3 222.5(w)	532.9(w)
1. Greece	9.6	4 380	516
2. Ireland	3.3	4 880	642
3. Portugal	9.8	2 370	723
4. Spain	37.4	5 440	851
5. Turkey	44.9	1 470	186
6. Yugoslavia	22.3	2 620	598
Japan (JP)	116.8	9 890	2 677
Eastern Europe (EE)	375	4 513.3(w)	1 295.3(w)
1. Bulgaria	9.0	4 150	936
2. Czechoslovakia	15.3	5 820	1 761
3. German Democratic Republic	16.9	7 180	2 551
4. Hungary	10.8	4 180	1 027
5. Poland	35.8	3 900	1 223
6. Romania	22.2	2 340	1 174
7. USSR	265.5	4 550	1 228
Other developed countries (OD)	51	4 916.3(w)	941.1(w)
1. Australia	14.5	9 820	2 146
2. Israel	3.9	4 500	834
3. New Zealand	3.3	7 090	910
4. South Africa	29.3	2 300	363

Sources: World Development Report 1982; UNIDO data base.

Notes: The letter "w" within parentheses indicates a weighted average.

Sample covers selected countries with a population of more than one million in 1980.

Table 2 reveals an evolution in the pattern of MVA by region.
First of all, the MVA share of the sample developing countries as a
whole shows an unmistakable upward trend, growing steadily from
7.35 per cent in 1963 to 9.52 per cent in 1980, but at a far slower
rate of growth than that required to attain the Lima target of
25 per cent.* Moreover, the aggregate figures disguise consider-
able variations among regions of both the South and the North. It
is noteworthy that the MVA share of the low-income group, par-
ticularly that of low-income Africa (LAF) with a very small base to
begin with, has been continuously sliding, while that of the middle-
income group, notably middle-income Asia (MAS) and middle-income
Latin America (MLA), increased markedly during the period. Simi-
larly, behind a generally slow decline over time in the aggregate
MVA share of total developed countries lies substantial regional
differences. Eastern Europe (EE) and newly industrialized Western
Europe (WE2) registered an appreciable gain in their respective MVA
shares, while the rest of the group showed a downward trend.

Table 2. Regional shares of world MVA for selected years
(Percentage)

Total manufacturing by region	1963	1967	1973	1980
Total value (millions of dollars, 1975 constant prices)	802 310	1 022 987	1 505 288	1 897 032
Developing countries	7.35	7.45	8.07	9.52
Low-income	1.40	1.32	1.08	1.08
Indian Subcontinent	1.30	1.20	0.90	1.00
Africa	0.10	0.10	0.10	0.08
Middle-income	5.95	6.13	7.10	8.47
Asia	0.70	0.70	0.90	1.40

*A trend least-squares fitted to the share data of developing
countries for the period of 1961-1980 was

$$MVAS = 7.493 + 0.1488t \quad [R^2 = 0.86]$$
$$(44.68) \ (10.63)$$

where the numbers in parentheses are t-values. A trend projection
up to the year 2000 based on the above equation gives only about
13.4 per cent, falling short of the 25 per cent target by a great
margin. See "The Lima target and the South-South co-operation: a
statistical review" (UNIDO/IS.468).

Table 2 (continued)

Total manufacturing by region	1963	1967	1973	1980
Middle-income (continued)				
West Asia and				
North Africa	0.70	0.70	0.80	0.90
Africa	0.20	0.20	0.30	0.30
Latin America	4.40	4.60	5.10	5.90
Developed countries	92.65	92.55	91.93	90.48
North America	29.10	29.50	26.30	23.70
Advanced Western Europe	34.10	30.60	28.80	24.60
Newly industrialized				
Western Europe	2.60	2.90	3.40	3.70
Japan	6.50	7.80	9.60	9.30
Eastern Europe	18.10	19.70	21.80	27.40
Other developed				
countries	2.20	2.10	2.00	1.80

Source: UNIDO data base.

Table 3 shows inter-industry variations in the MVA shares of developed and developing country groups for selected years. The table provides a number of important clues to the patterns of structural change which took place within the manufacturing sector between 1963 and 1980.

Table 3. Share of industry in total world MVA for selected years
(Percentage)

Total manufacturing by industry a/ and country grouping	1963	1967	1973	1980	1963-1980 annual MVA growth rate
Total value (millions of dollars in 1975 constant prices)	802 310	1 022 987	1 505 288	1 879 032	5.13
Developing countries	7.35	7.45	8.07	9.52	6.74
Developed countries	92.65	92.55	91.93	90.48	4.99

Table 3 (continued)

Total manufacturing by industry a/ and country grouping	1963	1967	1972	1980	1963–1980 annual MVA growth rate
311 Food products	11.76	11.06	9.61	9.41	3.77
Developing	10.75	10.68	11.95	13.13	5.00
Developed	89.25	89.32	88.05	86.87	3.60
313 Beverages	2.22	2.16	2.00	2.12	4.85
Developing	10.05	10.21	11.85	16.01	7.76
Developed	89.95	89.79	88.15	83.99	4.42
314 Tobacco	1.17	1.05	0.88	0.86	3.24
Developing	19.19	20.71	21.92	25.90	5.07
Developed	80.81	79.29	78.08	74.10	2.71
321 Textiles	6.65	6.00	5.58	4.92	3.29
Developing	15.48	15.27	15.63	17.43	4.01
Developed	84.52	84.73	84.37	82.57	3.15
322 Wearing apparel	3.83	3.48	3.18	2.93	3.48
Developing	6.72	7.48	6.87	7.01	3.75
Developed	93.28	92.52	93.13	92.99	3.46
323 Leather and leather products	0.73	0.61	0.49	0.44	2.09
Developing	8.50	9.08	9.35	11.93	4.15
Developed	91.50	90.92	90.65	88.07	1.86
324 Footwear	1.25	1.11	0.86	0.79	2.36
Developing	8.79	9.36	9.40	10.35	3.35
Developed	91.21	90.64	90.60	89.65	2.26
331 Wood products	2.45	2.23	2.06	1.71	2.93
Developing	7.90	7.87	8.22	11.15	5.05
Developed	92.10	92.13	91.78	88.85	2.72
332 Furniture and fixtures	1.82	1.79	1.84	1.71	4.73
Developing	5.66	5.76	5.06	6.45	5.55
Developed	94.34	94.24	94.94	93.55	4.68
341 Paper and paper products	3.27	3.24	3.15	2.86	4.33
Developing	5.55	5.85	6.30	7.72	6.37
Developed	94.45	94.15	93.70	92.28	4.18

Table 3 (<u>continued</u>)

Total manufacturing by industry a/ and country grouping	1963	1967	1973	1980	1963–1980 annual MVA growth rate
342 Printing and publishing	4.21	4.04	3.44	3.27	3.58
Developing	5.41	5.07	5.78	5.60	3.79
Developed	94.59	94.93	94.22	94.40	3.57
351 Industrial chemicals	3.67	4.33	5.20	5.38	7.52
Developing	4.34	4.39	5.51	6.71	10.31
Developed	95.66	95.61	94.49	93.29	7.36
352 Other chemical products	3.02	3.21	3.33	3.66	6.32
Developing	11.88	13.13	14.63	18.28	9.05
Developed	88.12	86.87	85.37	81.72	5.85
353 Petroleum refineries	1.78	1.92	2.11	2.01	5.91
Developing	27.21	26.63	27.07	32.50	7.02
Developed	72.79	73.37	72.93	67.50	5.44
354 Petroleum and coal products	0.63	0.55	0.45	0.42	2.64
Developing	6.43	8.58	11.96	14.54	7.69
Developed	93.57	91.42	88.04	85.46	2.10
355 Rubber products	1.41	1.38	1.43	1.34	4.83
Developing	9.31	9.69	11.01	13.98	7.37
Developed	90.69	90.31	88.99	86.02	4.51
356 Plastic products	0.77	1.04	1.64	1.81	10.57
Developing	9.36	7.84	6.82	7.00	8.70
Developed	90.64	92.16	93.18	93.00	10.74
361 Pottery and china	0.61	0.57	0.56	0.58	4.76
Developing	8.69	9.02	9.62	10.76	6.08
Developed	91.31	90.98	90.38	89.24	4.61
362 Glass and glass products	0.87	0.89	0.92	1.01	6.08
Developing	6.42	7.12	9.09	10.83	9.40
Developed	93.58	92.88	90.91	89.17	5.78
369 Non-metal products	3.40	3.41	3.47	3.25	4.85
Developing	6.87	7.12	8.07	11.59	8.13
Developed	93.13	92.88	91.93	88.41	4.53

Table 3 (continued)

Total manufacturing by industry a/ and country grouping	1963	1967	1973	1980	1963–1980 annual MVA growth rate
371 Iron and steel	6.78	6.63	6.38	5.31	3.64
Developing	5.01	5.21	6.37	10.51	8.26
Developed	94.99	94.79	93.63	89.49	3.28
372 Non-ferrous metals	1.88	1.99	2.03	1.96	5.39
Developing	6.87	7.23	7.45	8.72	6.88
Developed	93.13	92.77	92.55	91.28	5.26
381 Metal products	6.68	6.78	6.92	6.92	5.35
Developing	4.54	5.06	5.39	6.46	7.57
Developed	95.46	94.94	94.61	93.54	5.23
382 Machinery	9.43	9.87	10.16	10.83	6.00
Developing	2.23	2.73	4.07	4.80	10.87
Developed	97.77	97.27	95.93	95.20	5.83
383 Electrical machinery	6.23	6.86	8.02	9.23	7.59
Developing	3.79	4.30	4.59	5.98	10.51
Developed	96.21	95.70	95.41	94.02	7.44
384 Transport equipment	9.37	9.46	9.72	9.61	5.29
Developing	4.71	4.86	6.52	7.80	8.46
Developed	95.29	95.14	93.78	92.20	5.08
385 Professional goods	2.17	2.42	2.70	3.59	8.29
Developing	1.21	1.13	1.26	1.22	8.37
Developed	98.79	98.87	98.74	98.78	8.29
390 Other industries	1.85	1.84	1.83	2.02	5.70
Developing	7.38	7.96	6.26	6.83	5.21
Developed	92.62	92.04	93.74	93.17	5.73

Source: UNIDO data base.

a/ Classified according to the International Standard Industrial Classification of all Economic Activities (ISIC).

In table 4 the dominant industries in terms of their shares of total world MVA in 1963 and 1980 are ranked in descending order of importance.

Table 4. Industries accounting for dominant shares of
world MVA in selected years

	1963			1980	
ISIC code	Industry	Percentage share of world MVA	ISIC code	Industry	Percentage share of world MVA
311	Food products	11.76	382	Machinery	10.83
382	Machinery	9.43	384	Transport equipment	9.61
384	Transport equipment	9.37	311	Food products	9.41
371	Iron and steel	5.78	383	Electrical machinery	9.23
381	Metal products	6.68	381	Metal products	6.92
321	Textiles	6.65	351	Industrial chemicals	5.38
383	Electrical machinery	6.23	371	Iron and steel	5.31

Except for foods and textiles, it was capital goods industries
and heavy industries that claimed the lion's share of value added
generated in the manufacturing sector in both 1963 and 1980,
although the relative ranking changed in favour of capital goods
industries during the intervening period.

In terms of the direction of change in the share of industries
in world MVA between 1963 and 1980 and the annual MVA growth rate
relative to the world average, each industry can be classified into
the two groups shown in table 5.

Table 5. Industry classification based on shares of world MVA
and annual MVA growth rates between 1963 and 1980

ISIC code	Growth industry	ISIC code	Declining industry
351	Industrial chemicals	311	Food products
352	Other chemical products	313	Beverages
353	Petroleum refineries	314	Tobacco
356	Plastic products	321	Textiles
362	Glass products	322	Wearing apparel
372	Nonferrous metal	323	Leather and leather products
381	Metal products	324	Footwear
382	Machinery	331	Wood products
383	Electrical machinery	332	Furniture and fixtures
384	Transport equipment	341	Paper and paper products
385	Professional goods	342	Printing and publishing
390	Other industries	354	Petroleum and coal products
		355	Rubber products
		361	Pottery and china
		369	Non-metal products
		371	Iron and steel

Growth industries and declining industries are graphically represented in figure II. The dotted line indicates the percentage share of a given declining industry in world MVA and the rectangular shaded and blackened areas at the top of the line represent the share losses by the North and the South respectively between 1963 and 1980. Likewise, the bold black line represents the percentage share of a growth industry, with the shaded and blackened boxes at the top showing the respective gains of the North and the South.

It is again worth noting that, with a few minor exceptions, the growth industries are concentrated in most capital goods industries and heavy industries producing industrial intermediate goods. It is particularly important to observe that some of the fastest-growing industries are electrical machinery, machinery, industrial chemicals and professional goods, while among the rapidly declining industries are food products, wearing apparel, iron and steel, and wood products.

The share of the developing country group in world MVA increased in all manufacturing industries except plastic products (356) and other industries (390) during the same period. In other words, developing countries had made tangible headway in both so-called "sunrise" and "sunset" industries. Table 6 shows the industries in which developing countries accounted for at least 10 per cent of MVA in 1980, ranked in descending order of importance.

Table 6. Industries in which developing countries accounted for at least 10 per cent of MVA in 1980

ISIC code	Industry	Percentage share of world MVA
353	Petroleum refineries	32.50
314	Tobacco	25.90
352	Other chemical products	18.28
321	Textiles	17.43
313	Beverages	16.01
355	Rubber products	13.98
311	Food products	13.13
323	Leather & products	11.93
369	Non-metal product	11.59
331	Wood products	11.15
362	Glass and glass products	10.83
361	Pottery and china	10.76
354	Petroleum and coal products	14.54
371	Iron and steel	10.51
324	Footwear	10.35

Figure II. Changes in the share of industry in total world MVA
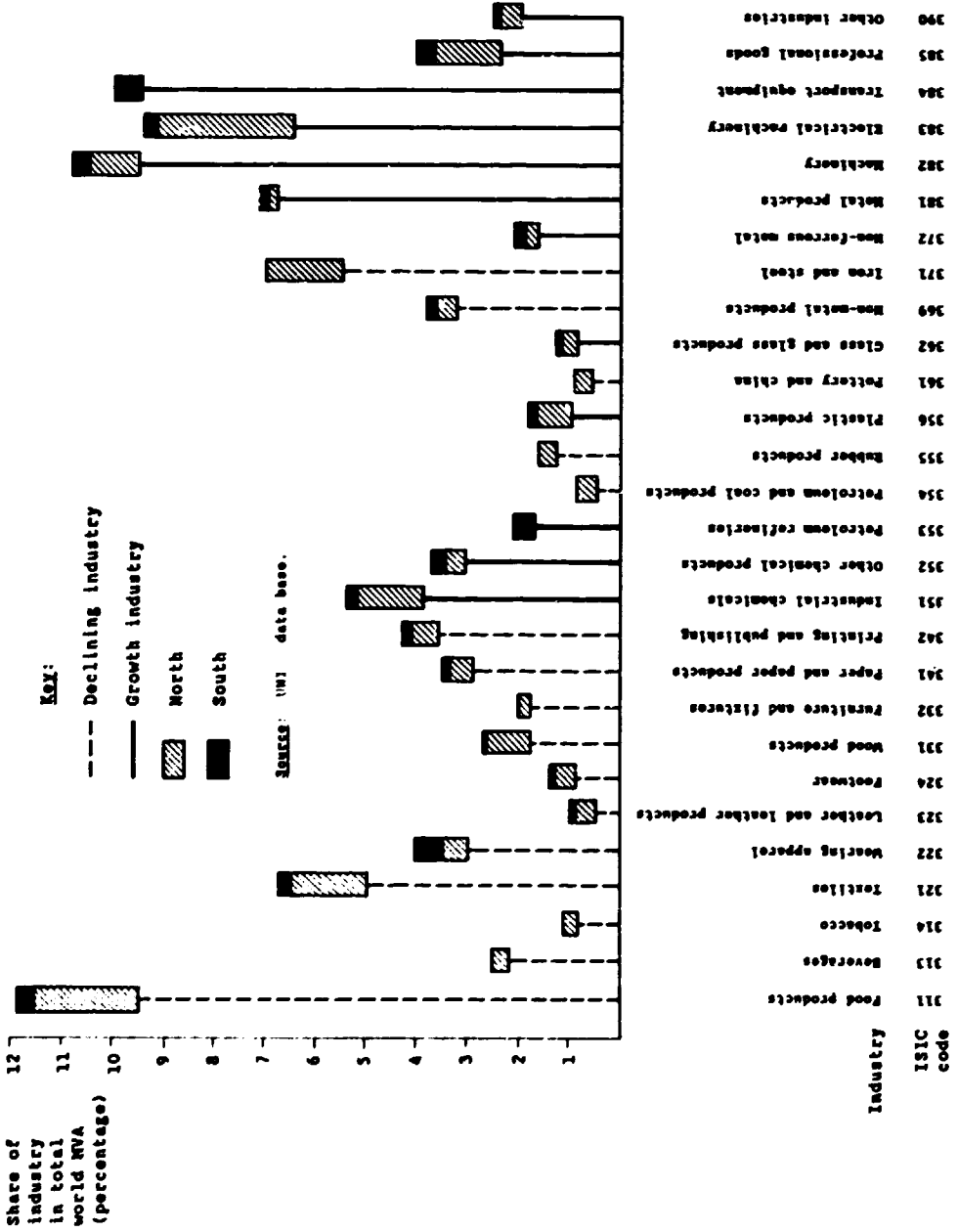
The competitive advantage of the developing country group seems to lie in light industry and in some of the resource-based industries, particularly petroleum. Developing countries as a whole have yet to make a significant penetration into the domain of high technology and skill-intensive industries such as capital goods and certain heavy industries.

C. Changes in the composition and regional shares of world MVA, 1963-1980

Figure III shows the regional distribution of changes in total world MVA for three subperiods, 1964-1967, 1967-1973 and 1973-1980. Some of the salient features of the patterns of change in world MVA observed in these periods are as follows:

(a) An overwhelming proportion of world MVA changes are concentrated in the North, particularly North America, Eastern Europe and advanced Western Europe, while the South's share of the total pie is still distressingly small;

(b) The shares of North America and advanced Western Europe are quite sizeable but decline rapidly over the three periods in sharp contrast to significant gains made by Eastern Europe during the same time, reaching nearly a 50 per cent share of total world MVA change in the last period;

(c) The worst performance was noted in Africa. The share of low-income Africa (LAF) was virtually nil, and that of middle-income Africa (MAF) was not much better, hovering around a meagre half of one per cent of the total share;

(d) There are signs of some isolated burgeoning growth poles. Not surprisingly, such dynamic growth is most notable in middle-income Latin America and to a lesser extent in middle-income Asia. It is well known that these two regions together include the core of the group of selected developing countries with a high share in manufacturing.

Changes in the composition of MVA by industry for 12 regions between 1963 and 1980 are summarized in table 7. Table 8 shows percentage point changes calculated from table 7, revealing some clues to the extent of structural change which took place within the manufacturing sector during the period dealt with. At the global level, as described earlier, notable percentage point gains were observed in the following growth industries:

351	Industrial chemicals	(1.71)
352	Other chemical products	(0.64)
356	Plastic products	(1.04)
382	Machinery	(1.40)
383	Electrical machinery	(3.00)
385	Professional goods	(1.42)

Figure III. Regional share of total world MVA change

LIS = Low-income Indian Subcontinent

LAF = Low-income Africa

MAS = Middle-income Asia

MWA = Middle-income West Asia and North Africa

MAF = Middle-income Africa

MLA = Middle-income Latin America

NA = North America

WE1 = Advanced Western Europe

WE2 = Newly industrialized Western Europe

JP = Japan

EE = Eastern Europe

OD = Other developed countries

Year and MVA change a/
1964-1967   157,277
1967-1973   482,301
1973-1980   373,744

a/   In millions of 1975 constant dollars.

Table 7. Changes in the composition of MVA, 1963 and 1980
(Percentage)

ISIC code	Industry	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EE	D
311	**Food products**														
	1963	17.19	10.03	40.77	25.12	18.94	17.43	17.06	11.32	10.46	10.04	11.86	9.57	15.21	15.23
	1980	12.98	11.55	21.67	15.91	12.95	14.20	12.35	9.04	8.86	9.46	10.18	5.56	9.54	13.51
313	**Beverages**														
	1963	3.04	0.64	6.32	2.91	2.66	4.80	3.63	2.16	1.39	2.40	2.59	2.69	2.66	2.27
	1980	3.57	0.91	10.08	3.55	2.16	11.00	3.71	1.97	1.76	2.36	2.66	1.20	1.20	2.97
314	**Tobacco**														
	1963	3.07	4.04	4.50	6.96	6.39	3.05	1.65	1.02	1.12	0.85	3.50	0.67	0.97	0.92
	1980	2.35	5.21	5.25	4.32	3.68	1.86	1.20	0.71	0.74	0.76	2.12	0.40	0.55	0.70
321	**Textiles**														
	1963	14.00	23.72	12.15	7.96	15.97	10.24	12.05	6.06	3.32	6.46	13.53	6.27	8.75	4.68
	1980	9.01	14.60	17.05	10.68	14.05	12.12	6.66	4.49	3.07	4.21	7.88	3.39	5.90	4.30
322	**Wearing apparel**														
	1963	3.50	7.12	2.68	2.00	2.23	4.28	2.88	3.86	3.55	3.18	7.63	3.17	5.34	3.75
	1980	2.16	3.00	4.21	2.89	3.00	2.24	1.69	3.01	2.66	2.21	4.25	1.71	4.26	3.75
323	**Leather and leather products**														
	1963	0.84	1.35	0.19	0.33	0.63	0.52	0.84	0.72	0.41	0.81	1.86	0.37	1.01	0.77
	1980	0.55	0.47	0.90	0.65	0.73	0.79	0.50	0.43	0.22	0.45	0.97	0.20	0.60	0.44
324	**Footwear**														
	1963	1.49	1.20	1.82	0.89	1.27	1.17	1.70	1.23	0.83	1.24	2.24	0.20	2.09	1.10
	1980	0.86	0.64	2.00	1.09	1.09	1.38	0.77	0.78	0.32	0.69	3.15	0.15	1.30	0.87
331	**Wood products**														
	1963	2.63	1.94	4.88	4.81	1.60	4.47	2.50	2.43	2.35	1.86	3.32	4.21	2.64	4.25
	1980	2.00	3.21	1.86	3.25	1.34	2.90	1.56	1.68	1.79	1.66	2.33	1.51	1.47	3.10

Table 7 (continued)

ISIC code	Industry	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EE	OD
332	**Furniture and fixtures**														
	1963	1.40	0.39	1.24	1.20	0.91	2.27	1.76	1.86	1.29	2.10	2.76	4.11	1.38	1.71
	1980	1.16	0.68	0.90	0.44	0.89	1.70	1.42	1.77	1.25	2.64	2.80	1.48	1.37	1.94
341	**Paper and paper products**														
	1963	2.46	1.65	0.38	3.41	1.95	1.75	2.72	3.33	4.86	3.22	2.52	3.53	1.17	2.80
	1980	2.32	2.22	1.31	1.78	2.21	2.11	2.51	2.92	4.73	4.73	3.46	2.88	0.92	3.60
342	**Printing and publishing**														
	1963	3.10	1.29	1.34	2.46	3.26	3.37	3.73	4.30	5.79	4.00	3.94	8.50	1.04	3.97
	1980	1.92	1.45	2.35	2.24	1.55	3.66	1.88	3.41	5.48	4.00	3.30	3.79	0.85	5.29
351	**Industrial chemicals**														
	1963	2.17	2.33	1.82	2.02	1.12	2.53	2.30	3.79	3.81	4.17	3.05	2.55	3.76	2.32
	1980	3.79	5.73	2.42	4.51	1.84	1.99	3.71	5.54	6.26	5.66	5.42	3.05	5.75	4.37
352	**Other chemical products**														
	1963	4.88	6.70	2.11	3.68	2.87	6.74	4.85	2.87	3.67	3.19	3.91	2.70	0.86	3.14
	1980	7.02	6.98	3.04	4.24	5.01	6.38	8.08	3.30	5.07	3.25	4.99	4.80	1.05	3.92
353	**Petroleum refineries**														
	1963	6.57	0.75	2.20	13.18	18.04	0.39	5.90	1.40	2.11	1.27	1.80	0.37	0.88	0.63
	1980	6.87	1.27	2.07	8.89	19.22	1.57	5.84	1.50	1.66	1.71	2.90	0.49	1.34	1.27
354	**Petroleum and coal products**														
	1963	0.55	0.70	0.00	0.26	0.47	3.56	0.45	0.64	0.40	0.60	0.52	0.36	1.23	0.32
	1980	0.64	0.67	0.00	0.42	1.31	1.73	0.54	0.40	0.32	0.21	0.34	0.40	0.64	0.33
355	**Rubber products**														
	1963	1.79	1.09	0.29	3.22	2.03	2.33	1.75	1.38	1.46	1.42	1.17	1.54	1.12	1.54
	1980	1.98	1.55	1.10	2.63	1.25	3.81	1.91	1.28	1.22	1.49	1.39	1.39	1.08	1.42

Table 7 (continued)

ISiC code	Industry	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EE	OD
356	Plastic products														
	1963	0.98	0.16	0.00	0.30	0.61	0.45	1.43	0.75	0.56	0.96	0.70	1.60	0.34	1.09
	1980	1.33	0.43	0.69	1.19	0.45	1.73	1.66	1.86	2.42	2.26	1.57	2.67	0.77	2.06
361	Pottery and china														
	1963	0.73	1.27	0.10	0.39	0.13	0.32	0.75	0.57	0.19	0.90	0.50	0.64	0.78	0.19
	1980	0.65	0.71	0.55	0.23	0.18	0.29	0.84	0.57	0.14	0.72	0.52	0.46	0.87	0.20
362	Glass and glass products														
	1963	0.76	0.53	0.48	0.93	0.60	0.32	0.85	0.88	0.89	0.84	1.02	1.24	0.78	0.83
	1980	1.15	0.59	0.97	0.76	2.52	0.65	1.16	1.00	0.94	1.10	1.14	0.75	1.03	0.85
369	Non-metal products														
	1963	3.18	2.40	2.20	3.13	4.17	3.24	3.29	3.42	2.78	2.9.	4.00	3.37	5.27	3.93
	1980	3.96	3.53	2.62	3.93	6.61	2.51	3.74	3.17	2.26	2.72	4.83	3.04	4.15	3.83
371	Iron and steel														
	1963	4.62	6.87	1.82	1.02	2.35	3.56	5.00	6.95	6.49	7.40	3.90	6.67	7.48	6.08
	1980	5.87	6.14	1.59	4.07	2.22	3.31	6.99	5.25	3.89	6.09	6.26	7.77	4.61	6.64
372	Non-ferrous metals														
	1963	1.76	0.76	1.53	0.67	2.66	1.56	2.09	1.89	2.17	1.31	1.66	1.74	2.58	2.25
	1980	1.80	0.93	0.69	0.85	1.06	1.70	2.29	1.98	1.79	1.35	1.70	2.02	2.64	3.34
381	Metal products														
	1963	4.12	2.68	2.20	2.52	3.28	5.51	4.90	6.88	7.48	7.14	6.89	5.87	5.46	9.41
	1980	4.70	3.94	4.28	2.79	3.88	5.88	5.34	7.15	6.86	6.60	8.00	7.01	7.75	8.67
382	Machinery														
	1963	2.86	3.12	0.96	1.37	1.25	1.17	3.39	9.95	9.17	12.32	3.48	9.38	7.89	9.62
	1980	5.46	6.92	1.10	2.25	2.02	0.92	6.80	11.39	11.96	12.64	3.66	12.80	10.64	6.80

Table 7 (continued)

ISIC code	Industry	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EE	OD
383	**Electrical machinery**														
	1963	3.22	2.53	0.67	.94	1.23	2.53	4.02	6.47	6.83	7.00	4.28	5.20	5.79	5.60
	1980	5.80	5.67	1.31	8.61	4.58	2.56	5.59	9.59	9.33	9.58	6.02	14.31	8.98	5.26
384	**Transport equipment**														
	1963	6.01	7.23	1.34	4.20	1.34	5.64	6.80	9.64	12.74	9.90	5.26	5.13	6.42	9.68
	1980	7.88	4.69	2.21	5.90	3.07	8.91	9.60	9.79	10.38	10.14	7.07	9.55	9.53	8.03
385	**Professional goods**														
	1963	0.36	0.53	0.00	0.33	0.02	0.00	0.39	2.31	2.31	1.35	0.59	1.48	4.89	0.45
	1980	0.46	0.59	0.00	0.69	0.02	0.02	0.48	3.92	3.14	1.53	0.53	3.96	7.37	0.84
390	**Other industries**														
	1963	1.86	6.47	0.96	1.35	0.20	1.43	0.90	1.85	1.57	1.08	1.15	6.85	2.12	1.16
	1980	1.45	5.44	3.04	0.96	0.49	1.12	1.05	2.08	1.48	1.20	1.47	3.24	3.13	1.56

Source: UNIDO data base.

Note: TDG = Total developing countries   TDD = Total developed countries
      LIS = Low-income Indian Subcontinent   NA = North America
      LAF = Low-income Africa   WE1 = Advanced Western Europe
      MAS = Middle-income Asia   WE2 = Newly industrialized Western Europe
      MWA = Middle-income West Asia and North Africa   JP = Japan
      MAF = Middle-income Africa   EE = Eastern Europe
      MLA = Middle-income Latin America   OD = Other developed countries

Table 8. Percentage point changes in industry shares of total MVA between 1963 and 1980 by region

ISIC code	Industry	World	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EK	OD
311	Food products	-2.35	-4.21	1.52	19.10	-9.21	-5.99	-3.23	-4.71	-2.28	-1.60	-0.58	-1.68	-4.01	5.67	-1.72
313	Beverages	-0.10	0.53	0.27	3.76	0.64	-0.50	6.20	0.08	-0.19	0.37	-0.04	0.07	-1.49	-1.46	0.70
314	Tobacco	-0.31	-0.72	1.17	0.75	-2.64	-2.71	-1.19	-0.45	-0.31	-0.38	-0.09	-1.38	-0.27	-0.42	-0.22
321	Textiles	-1.73	-4.99	-9.12	4.90	2.72	-1.92	1.88	-5.39	-1.57	-0.25	-2.25	-5.65	-2.88	-2.85	-0.38
322	Wearing apparel	-0.90	-1.34	-4.12	1.53	0.89	0.77	-2.04	-1.19	-0.85	-0.89	-0.97	-3.38	-1.46	-1.08	-0.00
323	Leather and leather products	-0.29	-0.29	-0.88	0.71	0.32	0.10	0.27	-0.34	-0.29	-0.19	-0.36	-0.85	-0.17	-0.41	-0.33
324	Footwear	-0.46	-0.63	-0.56	0.18	0.20	-0.18	0.21	-0.93	-0.45	-0.51	-0.55	0.91	-0.05	-0.79	-0.23
331	Wood products	-0.74	-0.63	1.27	-3.02	-1.56	-0.26	-1.57	-0.94	-0.75	-0.56	-0.20	-0.99	-2.70	-1.17	-1.15
332	Furniture and fixtures	-0.11	-0.24	0.29	-0.34	0.24	-0.02	-0.57	-0.34	-0.09	-0.04	0.54	0.04	-2.63	-0.01	0.23
341	Paper and paper products	-0.41	-0.14	0.57	0.93	-1.63	0.26	0.36	-0.21	-0.41	0.13	1.51	0.94	-0.65	-0.25	0.80
342	Printing and publishing	-0.94	-1.18	0.16	1.01	-0.22	-1.71	0.29	-1.85	-0.89	-0.31	0.00	-0.64	-4.71	-0.39	1.32
351	Industrial chemicals	1.71	1.62	3.40	0.60	2.49	0.72	-0.54	1.41	1.75	2.45	1.49	2.37	0.50	1.99	2.05
352	Other chemical products	0.64	2.14	0.28	0.93	0.56	2.14	-0.36	3.23	0.43	1.40	0.06	1.08	2.10	0.19	0.78
353	Petroleum refineries	0.23	0.30	0.52	-0.13	-4.29	1.18	1.18	-0.06	0.10	-0.45	0.44	1.10	0.12	0.46	0.64
354	Petroleum and coal products	-0.21	0.09	-0.03	0.00	0.16	0.84	-1.83	0.09	-0.24	-0.08	-0.39	-0.18	0.04	-0.59	0.01

continued

Table 8 (continued)

ISIC code	Industry	World	TDG	LIS	LAF	MAS	MWA	MAF	MLA	TDD	NA	WE1	WE2	JP	EE	OD
355	Rubber products	-0.07	0.19	0.46	0.81	-0.59	-0.78	1.48	0.16	-0.10	-0.24	0.07	0.22	-0.15	-0.04	-0.12
356	Plastic products	1.04	0.35	0.27	0.69	0.89	-0.16	0.88	0.23	1.11	1.86	1.30	0.87	1.07	0.43	0.97
361	Pottery and china	-0.03	-0.08	-0.56	0.45	-0.16	0.05	-0.03	0.09	0.00	-0.05	-0.18	0.02	-0.18	0.09	0.01
362	Glass and glass products	0.14	0.39	0.06	0.49	-0.17	1.92	0.33	0.31	0.12	0.05	0.26	0.12	-0.49	0.25	0.02
369	Non-metal products	-0.15	0.78	1.13	0.42	0.80	2.44	-0.73	0.45	-0.25	-0.52	-0.19	0.83	-0.33	-1.12	-0.10
371	Iron and steel	-1.47	1.25	-0.73	-0.23	3.05	-0.13	-0.25	1.99	-1.70	-2.60	-1.31	2.36	1.10	-2.87	0.56
372	Non-ferrous metals	0.08	0.04	0.17	-0.84	0.18	-1.60	0.14	0.20	0.09	-0.38	0.04	0.04	0.28	0.06	1.09
381	Metal products	0.24	0.58	1.26	2.08	0.27	0.60	0.37	0.44	0.27	-0.62	-0.54	1.11	1.14	2.29	-0.74
382	Machinery	1.40	2.60	3.80	0.14	0.88	0.77	-0.25	3.41	1.44	2.79	0.32	0.18	3.42	2.75	-2.82
383	Electrical machinery	3.00	2.58	3.14	0.64	6.67	3.35	0.03	1.57	3.12	2.50	2.58	1.74	9.11	3.19	-0.34
384	Transport equipment	0.24	1.87	-2.54	0.87	1.70	1.73	3.27	2.80	0.15	-2.36	0.24	1.81	4.42	3.11	-1.65
385	Professional goods	1.42	0.10	0.06	0.00	0.36	0.00	0.02	0.09	1.61	0.83	0.13	-0.06	2.48	2.48	0.39
390	Other industries	0.17	-0.41	-1.03	2.08	-0.39	0.29	-0.31	0.15	0.23	-0.09	0.12	0.32	-3.61	1.01	0.40

Source: Calculated from table 7.

Note:
TDG = Total developing countries
LIS = Low-income Indian Subcontinent
LAF = Low-income Africa
MAS = Middle-income Asia
MWA = Middle-income West Asia and North Africa
MAF = Middle-income Africa
MLA = Middle-income Latin America

TDD = Total developed countries
NA = North America
WE1 = Advanced Western Europe
WE2 = Newly industrialized Western Europe
JP = Japan
EE = Eastern Europe
OD = Other developed countries

Similarly, the following are among the major declining industries:

311	Food products	(-2.35)
321	Textiles	(-1.73)
322	Wearing apparel	(-0.90)
331	Wood products	(-0.74)
342	Printing and publishing	(-0.94)
355	Rubber products	(-0.70)
371	Iron and steel	(-1.41)

Against this global trend for structural change in the manu-
facturing sector, we shall summarize the most salient features of
the patterns of structural change in each region during the period.

1. Low-income Indian Subcontinent (LIS)

The Indian Subcontinent registered a substantial gain in
certain capital goods industries, in particular machinery (3.80),
electrical machinery (3.14), and industrial chemicals (3.40), along
with a modest increase in non-metal products (1.13) and metal
products (1.26). The share gains in machinery and industrial
chemicals represent the greatest in the two industries among all
regions in both the North and the South. The result is consistent
with the vastly expanding technological capacity of the region, and
particularly of India as a major third world exporter of capital
goods and other relatively skill-intensive manufactures. In the
areas of light manufacturing, the results are mixed: a sharp
decline in textiles (-9.12) and wearing apparel (-4.12), accompa-
nied by a notable increase in food products (1.52), tobacco (1.17)
and wood products (1.27). The region seems to be moving into the
stages of industrialization characterized by technologically sophis-
ticated and skill-intensive manufacturing activities.

2. Low-income Africa (LAF)

In the region dominated by the least developed countries, the
results are not surprising. During the period 1963-1980, the MVA
share increased markedly in textiles (4.9), beverages (3.76), wood
products (3.02), and wearing apparel (1.53), but there was a dras-
tic drop in food products (-19.1). Otherwise, nothing much changed
in terms of structural change. Simply, the region remained stag-
nant.

3. Middle-income Asia (MAS)

The most rapid expansion in iron and steel (3.05) and the
second largest increase in electrical machinery (6.67) took place
in middle-income Asia, second only to Japan among all regions of
the world. A modest gain was also observed in industrial
chemicals (2.49) and transport equipment (1.70), and a rather unex-
pectedly low gain in machinery (0.88). However, these gains were
partly offset by a sharp drop in petroleum refining (-4.29). In
the area of light industry, the region registered the biggest share

increase in food products (9.21), in sharp contrast to generally downward trends elsewhere. However, the MVA shares of other light industries diminished appreciably over the period: tobacco (-2.64), paper and paper products (-1.63) and wood products (-1.56), while the textile industry increased its share considerably (2.72). On the whole, empirical evidence seems to suggest that the economy of the region became more balanced and diversified, with increasing export competitiveness in traditional manufactures such as foods, textiles, iron and steel, consumer electronics and transport equipment.

4. Middle-income West Asia and North Africa (MWA)

Since this region is dominated by oil-exporting countries, its comparative advantage is expected to lie in oil-based products and other energy-intensive manufactures. Consistent with the expectations, the region's expanding industries in terms of the MVA share are found in petroleum refining (1.18), other chemical products (2.14), glass products (1.92) and petroleum and coal products (0.9*), which is unexpectedly too low. Somewhat surprising gains are also noted in electrical machinery (3.35) and transport equipment (1.70). Otherwise, the structure of production in the region changed little, with the exception of a considerable decline in some light industries: food products (-5.99), tobacco (-2.71), textiles (-1.92) and publishing and printing (-1.71). On the whole, it seems clear that despite the relatively high per capita income of the region ($1,200 in 1980), a narrow industrial base and structural imbalance has been and continues to be the major development issue confronting MWA.

5. Middle-income Africa (MAF)

The dominance of Nigeria in terms of area, population and GNP must be taken into account in analysing structural change in the group of middle-income African countries. In general, the MVA shares of most industries remained nearly constant. Notable exceptions were beverages (6.2), textiles (1.88), rubber products (1.48) and transport equipment (3.27) on the plus side, and food products (-3.23), tobacco (-1.19), wearing apparel (-2.04), wood products (-1.57) and petroleum and coal products (-1.83) on the minus side. As compared with the low-income African group, the middle-income African group definitely shows some signs of structural transformation in the manufacturing sector, but the pace of change does not appear to be significant enough to produce tangible industrial progress.

6. Middle-income Latin America (MLA)

Latin America made substantial headway towards the expansion of certain capital goods industries and heavy industries during the period, in particular industrial chemicals (1.41), other chemical products (3.23), iron and steel (1.99), machinery (3.41), electrical machinery (1.57) and transport equipment (2.8). However, these gains in capital goods industries and heavy industries were accompanied by the diminishing importance of light industry, including food products (-4.71), textiles (-5.39), wearing apparel (-1.19),

footwear (-0.93), wood products (-0.94) and printing and publishing
(-1.85). On the whole, Latin America appears to have undergone the
most rapid structural change among various developing country groups
during the period 1963-1980.

7. North America (NA)

The MVA shares of all light industries except beverages (0.37)
decreased in varying degrees. Among major growth industries were
industrial chemicals (2.45), other chemical products (1.40), plastic
products (1.86), machinery (2.79) and electrical machinery (2.50),
while the shares of iron and steel (-2.60) and transport equipment
(-2.36) declined considerably over the period.

8. Advanced Western Europe (WE1)

Similar to the pattern of structural change in North America,
most light industries experienced a contraction in varying degrees,
with the sharpest decline occurring in textiles (-2.25). Some of
the major growth industries were electrical machinery (2.58), paper
and paper products (1.51) and industrial chemicals (1.49), while
iron and steel (-1.31) was the only industry except textiles, men-
tioned above, to suffer a decline in its share by more than one
percentage point.

9. Newly Industrialized Western Europe (WE2)

This group of European countries experienced a much sharper
decline in most light industries than their more mature European
counterparts, notably in textiles (-5.65), wearing apparel (-3.38),
food products (-1.68) and tobacco (-1.38). In contrast to North
America and advanced Western Europe, the share of iron and steel
grew by 2.36 percentage points along with other growth industries
such as industrial chemicals (2.37), other chemical products (1.08),
petroleum refining (1.10), electrical machinery (1.74), metal
products (1.11) and transport equipment (1.81). The patterns of
change in the sectoral MVA shares for this group may reveal a
transition stage from an advanced developing economy to a developed
economy. It is expected that during this transition period, the
decline in most light manufacturing activities will accelerate,
while some of the traditional heavy industries such as iron and
steel and metal products maintain their steady growth rates, and
the shares of capital goods industries begin to increase percep-
tibly.

10. Japan (JP)

Japan seems to represent the leading edge of structural
change, with a drastic cutback across all light industries and a
shift of the growth centre to the production of sophisticated cap-
ital goods and other precision products. This important shift was
evidenced by a sizable decline in most light industries, including
food products (-4.01), printing and publishing (-4.71), tex-
tiles (-2.88), wearing apparel (-1.46), beverages (-1.49), wood
products (-2.7) and furniture and fixtures (-2.63), accompanied by
a dramatic increase in electrical machinery (9.11), followed by

transport equipment (4.42), machinery (3.42) and professional goods (2.48). Other industries also grew considerably, in particular other chemical products (2.10), plastic products (1.07), iron and steel (1.10) and meta! products (1.14).

11. Eastern Europe (EE)

Eastern Europe is a more or less self-contained block of centrally planned developed economies with relatively few trade linkages with countries outside the ,roup. The patterns of structural change, characterized by a marked decline in light industries and a considerable growth in capital goods industries, are however strikingly similar to those of developed market economies. Among the declining industries are food products (-5.67), beverages (-1.46), textiles (-2.85), wearing apparel (-1.08), wood products (-1.17), printing and publishing (-4.71) and iron and steel (-2.87), while the growth industries are headed by electrical machinery (3.19), transport equipment (3.11), machinery (2.75), professional goods (2.48), metal products (2.29) and other chemical products (2.10).

12. Other developed countries (OD)

This group comprises, for the sake of completeness, a collection of residual developed countries (Australia, Israel, New Zealand and South Africa) that do not neatly fit into other country groupings. The numerical results of this group therefore seem less meaningful for our analytical purposes.

The foregoing analysis of the numerical results contained in tables 7 and 8 are highly intuitive and imprecise. What is needed here is a more systematic and rigorous method for measuring, testing and comparing the extent of structural change that occurred in various regions of the world during the period under consideration. The most serious problem encountered in developing such a measurement method is the non-existence of an ideal norm against which actual performance could be compared. In the field of development economics, the notion of the optimal structure of production of an economy not only is conceptually elusive and yet to be formulated, but also may vary over time and space as a result of a shift in the international division of labour and comparative advantage, thus making its empirical measurement extremely difficult.

In the absence of ideal yardsticks for a comparative assessment, a more pragmatic approach was adopted in this study, based on certain "heroic" assumptions. In particular, on the assumption that the industry share distributions of MVA in Japan and North America in 1980 reflect a desired, if not ideal, form of structue, they are designated as a bench-mark against which changes in the industry share of all other regions are measured. Evaluation criteria used for this purpose are the inequality coefficients (u)*

*For a detailed explanation of the use of the inequality coefficient method, see Henry Theil, Applied Economic Forecasting (Chicago, Rand McNally, 966).

and the root-square mean error (RSME), that is,

$$u = (\Sigma_i(y_i^s-y_i^b)^2/\Sigma_i(y_i^b)^2)^{1/2}$$

$$RSME = (\Sigma_i(y_i^s-y_i^b)^2/N)^{1/2}$$

where

y_i^b = "i"th industry share of total MVA in the bench-mark region

y_i^s = "i"th industry share of total MVA in the sample region

N = number of industries

The RSME and inequality coefficients of the share values of all regions for 1963 and 1980 are given in table 9. The figures in table 9 provide an overall indication of how close the share distribution of a sample region in a given year came to the corresponding value of a bench-mark region in 1980. For instance, it is obvious that the closer the share distribution of a sample region is to that of a bench-mark region, the smaller the coefficient, which is zero in the extreme case when the two are identical.

The data contained in table 9 tend to confirm the intuitive analysis and conclusions reached earlier. Some of the major implications of the data are outlined below.

Whether measured against Japan or North America as a bench-mark region, the "u" coefficients and RSME for low-income Africa in both 1963 and 1980 are largest among the 12 regions. It seems to suggest that low-income Africa least resembles Japan or North America in the structure of production among all groups included in the sample, reflecting the still early stages of industrialization in that region. It is worth noting, however, that both coefficients were considerably reduced between 1963 and 1980 in the same region. For instance, the "u" coefficient fell to 0.6871 from 1.2965 and RSME to 5.967 from 8.1969 for Japan as a bench-mark region. This means that some positive structural change occurred between 1963 and 1980 in the region, although not rapidly enough.

In this regard, it is interesting to compare the relative performance of low-income and middle-income Africa. All the coefficients for middle-income Africa slightly increased between 1963 and 1980, and the gap between low-income and middle-income Africa was substantially reduced. It would imply that the initial structure of production for middle-income Africa was more balanced and far closer to that of Japan or North America than that of low-income Africa via-à-vis Japan or North America in 1963, but it deteriorated over the period, while low-income Africa improved its structural balance to such an extent that the initial large gaps which existed

Table 9. A comparative measure of structural change

Country grouping	Inequality coefficients a/				Root-square mean error b/			
	Bench-mark region Japan c/		Bench-mark region North America d/		Bench-mark region Japan c/		Bench-mark region North America d/	
	1963	1980	1963	1980	1963	1980	1963	1980
TDG	0.39565	0.209513	0.31397	0.150344	4.52799	3.29502	3.82487	2.64677
LIS	0.53803	0.259466	0.54326	0.233055	5.28025	3.66684	5.03126	3.29535
LAF	1.29656	0.687090	1.17516	0.592719	8.19687	5.96704	7.39983	5.25530
MAS	0.71236	0.327233	0.57738	0.266307	6.07578	4.11794	5.18686	3.52261
MWA	0.78592	0.606578	0.69860	0.552690	6.38177	5.60654	5.70541	5.07474
MAF	0.39624	0.406063	0.30406	0.322946	4.53136	4.58721	3.76404	3.87916
MLA	0.33356	0.167025	0.25014	0.111746	4.15755	2.94200	3.41403	2.28186
TDD	0.09173	0.040442	0.04623	0.014572	2.18027	1.44767	1.46761	0.82400
NA	0.09160	0.052688	0.03371	0.000000	2.17876	1.65236	1.25319	0.00000
WE1	0.07518	0.048421	0.04067	0.014766	1.97383	1.58406	1.37666	0.82948
WE2	0.30700	0.178045	0.24356	0.124231	3.98860	3.03750	3.36787	2.40596
JP	0.14326	0.000000	0.11611	0.058596	1.72465	0.00000	2.32594	1.65236
EE	0.20162	0.086560	0.16899	0.074556	3.23232	2.11792	2.80611	1.86387
OD	0.15685	0.151793	0.09316	0.080164	2.85100	2.80464	2.08344	1.93270

Note: TDG = Total developing countries   TDD = Total developed countries
LIS = Low-income Indian Subcontinent NA = North America
LAF = Low-income Africa   WE1 = Advanced Western Europe
MAS = Middle-income Asia   WE2 = Newly industrialized
MWA = Middle-income West Asia and   Western Europe
      North Africa   JP = Japan
MAF = Middle-income Africa   EE = Eastern Europe
MLA = Middle-income Latin America   OD = Other developed countries

a/ Inequality coefficient = $[\sum_i (y_i^s - y_i^b)^2 / \sum (y_i^b)^2]^{1/2}$

where

y_i^b = "i"th industry share of total MVA in the bench-mark region.

y_i^s = "i"th industry share of total MVA in the sample region.

b/ RSME = $[\sum_i (y_i^s - y_i^b)^2 / N]^{1/2}$ N = 28

c/ Industry share of total MVA in Japan, 1980 used as a bench-mark.

d/ Industry share of total MVA in North America, 1980 used as a bench-mark.

between the two groups in 1963 narrowed considerably by 1980. This further seems to show that both low-income and middle-income Africa have been affected by a similar problem of structural imbalance in recent years.

It is hardly surprising that the coefficients for West Asia and North Africa are among the highest, second only to those of low-income Africa, and these coefficients changed little between 1963 and 1980. Many countries in the region are major oil exporters and tend to specialize in the production and export of a few commodities, particularly crude oil. Despite their high per capita incomes, the structure of the economies of the region during the period 1963-1980 was basically dominated by the oil sector with a very narrow industrial base. This may however change drastically in the current decade, in view of recent massive investment in the physical and social infrastructure and energy-related downstream industries, notably in the Gulf region. The 1980-1990 statistics seem most likely to tell a different story of substantial structural transformation.

Middle-income Latin America yielded the best indicators of structural change among all regions of the South. In fact, the coefficients for middle-income Latin America are strikingly close to those of newly industrialized Western Europe, perhaps indicating roughly the same degree of structural change which might have taken place in the two regions during the period under consideration. In this regard, middle-income Asia, which consists mainly of selected developing countries with a high, or a significant, share in manufacturing, did not fare as well as middle-income Latin America, but a substantial decrease in the coefficients between 1963 and 1980 seems to imply that the region underwent a significant structural change. Furthermore, despite the adverse international economic environment of the early 1980s, and in sharp contrast to the worsening performance of middle-income Latin America with its huge external debt burden, the recent remarkable growth of production and exports of middle-income Asia seems to reflect a quite different picture of the 1980s, with that region emerging as the most dynamic growth pole in the world. In that connection, it is interesting to note that the region's structure of production seems to have moved somewhat closer to the model of North America than to that of Japan.

The data also show that developed Western Europe was structurally much closer to Japan and North America than newly industrialized Western Europe and Eastern Europe vis-à-vis the two bench-mark regions. The coefficients comparing the two bench-mark regions, Japan and North America, are also strikingly low, thus suggesting a remarkable similarity in the patterns of structural change between the two regions. Moreover, the extent of structural change seems to have been somewhat greater in Japan than in North America during the period dealt with. For instance, the RSME for Japan calculated from the formula using Japan as a bench-mark shows the coefficient value of 2.72 in 1963, while a similar calculation for North America yields the value of only 1.25.

On the whole, the results show a significant gap in structural balance between the North and the South both in 1963 and 1980, if the pattern of industrialization in Japan and North America is assumed to be the model of development. This parti *r assumption may, of course, be open to question.

D. A decomposition analysis of the MVA changes by region and industry for the periods of 1963-1967, 1967-1973 and 1973-1980

1. Methodology

The objective of this section is to develop and apply empirically a simple method for analysing the past MVA growth performance of 28 manufacturing industries in each of the 12 regions identified earlier for this study. The method developed here permits the disaggregation of MVA growth into three components attributable to the global economic effect, the individual industry effect and the regional effect. The main goal is served by the identification of regional growth or decline in the MVA of an industry which is region-specific. The regional effect component is intended to provide a measure of the relative performance of the region in a particular industry. Positive regional effect could then be associated with the locational advantage of the region for that industry and vice versa.

The location advantage discussed in this paper is not to be confused with the concept of comparative advantage analysed within the context of foreign trade. In international trade, comparative advantage generally refers to the ability of a country or a region to expand its exports of certain products based on factor endowments and production efficiency considerations. On the other hand, the concept of locational advantage is to be interpreted within the context of the region-specific capacity of a given region to expand its share of world MVA change, independently of the general increase in aggregate world MVA and the relative performance of the industry in question vis-à-vis other industries in the world economy. In other words, there is no necessary causal link between traditional comparative advantage and locational advantage. For instance, MVA growth of an industry in a particular region may be attributable largely to the strong export growth of a region as in the case of East Asia and particularly selected developing countries with a high share in manufacturing, or factors other than export performance and relative factor efficiency such as import substitution and expanded domestic markets for a given product, a phenomenon which may explain part of the past MVA growth in Latin America.

The analytical method used here is adapted partially from shift-share analysis which has been widely used as a forecasting

technique for regional employment in the field of regional science.*

The necessary variables are defined as follows:

MVA_{ijt} = MVA of industry "i" in region "j" in period "t"

$$i = 1, 2, \ldots, n$$
$$j = 1, 2, \ldots, m$$

r = percentage increase in total world MVA from period t-1 to period t

r_i = percentage increase in world MVA of industry "i" from period t-1 to period t

r_{ij} = percentage increase in MVA of industry "i" in region "j" from period t-1 to period t

It follows from the foregoing definitions that

$\Sigma_j \, MVA_{ijt}$ = MVA_{it} = world MVA of industry "i"

$\Sigma_i \, MVA_{it}$ = MVA = world MVA of all manufacturing industries

Now, for industry "i" in region "j", the following mathematical identity can be established:

$$\Delta MVA_{ijt} = MVA_{ijt} - MVA_{ijt-1} = rMVA_{ijt-1} + (r_i-r)MVA_{ijt-1} +$$

        (a)   (b)

$$(r_{ij}-r_i)MVA_{ijt-1}$$

       (c)

The above equation decomposes the growth of MVA of industry "i" into three components attributable to the following:

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*The literature on shift-share analysis is quite extensive and there are numerous variants of the shift-share technique. For a critical review of the literature on shift-share as well as a comprehensive bibliography on this subject, see B. H. Stevens and C. L. Moore , "A critical review of the literature on shift-share as a forecasting technique", _Journal of Regional Science_, vol. 20, No. 4 (1980), pp. 419-37. Leamer and Stern also independently developed a similar technique to analyse the relative performance of export growth in a particular country; see R. E. Leamer and R. M. Stern, _Quantitative International Economics_ (Boston, Allyn and Bacon, 1970). For an empirical application of the constant market share analysis, see R. Banerji, "The export performance of less developed countries: a constant market analysis", _Weltwirtschaftliches Archiv_, vol. 110, 1974, pp. 447-81.

(a) The globa. effect (r), that is, the general rise in total world MVA as a function of the levels of world economic activity;

(b) The industry effect (r_i-r), that is, the growth rate of MVA of industry "i" relative to the world average MVA growth. Thus, if the MVA of industry "i" is growing faster than the world average for all manufacturing industries, the term would be positive, and negative if the opposite holds;

(c) The regional effect $(r_{ij}-r_i)$, a term that measures a differential growth rate of MVA in the same industry between a given region and the rest of the world. Therefore, if a given region has a special advantage in producing and increasing the local input content of the industrial product "i" because of favourable factor endowments or locational advantages (for example, the locational advantage of the Gulf region in petrochemical products owing to cheap energy costs), the term would show a positive sign. If the region is losing its locational advantage, the sign would of course be negative.

Note:

The mathematical identity described can be readily converted into a recursive form for forecasting the region-and-industry-specific MVA, namely,

$$MVA_{ijt} = MVA_{ijt-1} + \Delta MVA_{ijt}$$

where $\Delta MVA_{ijt} = rMVA_{ijt-1} + (r_i-r)MVA_{ijt-1} + (r_{ij}-r_i)MVA_{ijt-1}$

The definition of time, t-1, in the long process would have to be determined by empirical research. Even so, once the parameter values of r, r_i, r_{ij} and the initial values of MVA_{ijt-1} are given, a series of forecast values of MVA_{ijm} (m = t, t + 1, t + 2, ...,) can be recursively generated. The use of the above equation for forecasting MVA should be limited to a relatively short-term period, however, since the structural parameters of the equation are likely to change considerably over a lengthy period of time.

Finally, some of the limitations associated with the application of the method presented above must be considered. First, the estimate is devoid of any causal relationships by the nature of the identity relation. The technique is useful in disaggregating past MVA growth into its different components, but it fails to offer any explanations as to why a given component, for example, the regional effect, is the dominant factor in explaining actual MVA changes in a given region. Nevertheless, the technique helps ` identify the areas in which the explanations can be sought. Secondly, as mentioned earlier, the technique is not stochastic in form and hence not valid for econometric projections; the procedure can be used only to analyse the ex post performance. Thirdly, the conclusions drawn from a decomposition analysis are valid only for the particular time period chosen, the level of industry disaggregation used and the particular regional grouping adopted. An alternative set of these parameters may produce different results and perhaps other conclusions.

2. Empirical results

Table 10 summarizes, for the developing and developed country groups, the overall decomposition of MVA changes into the three effects - global, industry and regional - for three periods, 1963-1967, 1967-1973 and 1973-1980.

The presence of negative signs in the table seems somewhat confusing at first glance, but this can be readily clarified by means of an illustration. For example, the table shows a total MVA change of $18,196 million between 1973 and 1980 in the basic products industry in developing countries as a whole, a change which is explained by the three components in the following proportions: 40 per cent for the global effect; and 64 per cent for the regional effect, the sum of which is partly offset by about 4 per cent owing to the below-average performance of the industry in question. For developed countries, the actual MVA change of this industry was $55,996 million during the same period. However, if MVA in the basic products group had grown at the world average growth rate of total manufacturing for the period (25 per cent) and not been off-set by the negative industry and regional effects, MVA change would have been $86,307 million, about 1.54 times the actual value. This positive global effect of $86,307 million was, however, partly counterbalanced by about $18,613 million (-33 per cent) owing to the sluggish performance in basic products relative to the world average, and by around $11,703 million (-21 per cent) owing to the loss of locational advantage of developed countries in the industry under consideration. This means that the net MVA change was $55,996 million.

For analytical convenience, 28 manufacturing industries were reclassified under five broad industrial groups, namely agro-food processing, energy, basic products, light industry and capital goods. This was done mainly to articulate a broad sweep of structural change across industries and regions. This broad overview however was often supplemented by a more detailed analysis of some significant developments at the individual industry level when appropriate.

The most striking outcome is the pervasive presence of positive regional effects in the South and the opposite of this situation in the North, consistently across industries and over time with a few exceptions. As a corollary to the above phenomenon, MVA change was seen to be considerably more sensitive to the general global economic environment and the world-wide market conditions of individual industries in the North than in the South. This would seem to suggest that production and trade in the North has become increasingly internationalized, while the South has still abundant untapped potential for increasing value added in many manufacturing activities at regional levels.

Each broad industrial group will now be dealt with.

(a) Agro-food processing

The South secured an expanding share of total MVA change over time in this industry group, as evidenced by the rapid increase in

Table 10. **A North-South comparison of decomposition of MVA changes, 1963-1980**
(Percentages)

ISIC code a/	Country grouping	1963-1967				1967-1973				1973-1980			
		MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional
						Agro-food processing							
311	Developing	1 952	142.8	-39.1	-3.7	5 194	109.7	-46.1	35.3	5 938	72.3	-7.3	35.0
	Developed	16 880	137.2	-37.6	0.4	26 242	181.6	-74.6	-7.0	26 332	120.0	-12.1	-7.9
313	Developing	469	105.0	-12.3	7.3	1 310	81.3	-19.2	37.9	2 807	31.6	9.4	59.0
	Developed	3 857	114.3	-13.4	-0.9	6 664	140.7	-33.2	-7.4	6 902	95.5	28.5	-24.0
314	Developing	425	117.0	-55.7	38.7	668	157.6	-81.5	23.9	1 293	55.7	-5.5	49.8
	Developed	933	224.5	-106.9	-17.6	1 785	225.8	116.8	-9.0	1 668	153.8	-15.2	-38.6
	Total b/												
	Developing	2 846	132.72	-37.16	4.44	7 172	108.97	-43.76	34.71	10 038	58.78	-2.40	43.62
	Developed	21 670	136.87	-36.27	-0.61	34 691	176.02	68.82	-7.18	34 902	116.77	-4.22	-12.55
						Energy							
353	Developing	1 343	79.4	29.0	-8.4	3 378	72.8	23.1	4.1	3 694	57.8	-13.4	55.6
	Developed	4 009	71.1	26.0	2.8	8 786	77.2	24.4	-1.6	2 360	243.7	-56.6	-87.1
354	Developing	158	56.6	-33.1	76.5	333	68.4	-37.7	69.3	329	61.6	23.3	61.7
	Developed	419	310.4	-181.5	-28.9	858	282.8	-155.9	-26.9	723	206.2	-78.1	-28.1
	Total b/												
	Developing	1 501	77.00	22.46	0.54	3 711	72.11	17.64	9.95	4 023	58.11	-14.21	56.10
	Developed	4 428	93.74	6.37	-0.20	9 644	95.44	8.36	-3.85	3 083	234.91	-61.64	-73.26

Table 10 (continued)

		1963-1967				1967-1973				1973-1980			
ISIC code g/	Country groupings	MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional
						Basic products							
341	Developing	485	82.4	-3.4	21.0	1 047	87.3	-7.5	20.2	1 167	63.5	-28.7	65.2
	Developed	6 423	105.9	-4.4	-1.6	13 216	111.2	-9.6	-1.6	5 280	208.7	-94.3	-14.4
351	Developing	668	52.6	44.0	3.4	2 363	38.8	24.2	36.9	2 472	43.3	7.5	49.2
	Developed	14 191	54.6	45.6	-0.2	31 549	63.3	39.5	-2.8	20 327	90.3	15.7	-6.0
352	Developing	1 435	55.2	16.1	28.7	3 011	67.5	7.6	24.8	5 234	34.7	17.3	47.9
	Developed	7 175	81.9	23.9	-5.7	14 222	94.6	10.7	-5.3	13 399	79.2	39.5	-18.7
361	Developing	96	122.6	-42.4	19.8	286	86.4	-4.1	17.7	357	56.3	9.1	34.6
	Developed	790	158.5	-54.1	-2.4	2 324	107.2	-5.1	-2.2	2 071	91.2	14.7	-6.0
362	Developing	199	61.8	6.2	32.0	618	49.3	6.4	44.4	795	39.5	18.9	43.6
	Developed	1 909	93.9	9.4	-3.3	4 211	94.3	12.2	-6.5	4 312	72.8	34.9	-7.7
369	Developing	609	84.7	0.9	14.5	1 731	67.7	3.8	28.5	2 862	36.6	-11.7	75.2
	Developed	6 972	100.2	1.0	-1.3	15 642	97.6	5.6	-3.2	5 942	200.7	-64.5	-36.2
371	Developing	811	92.4	-9.0	16.6	2 585	64.5	-7.6	43.2	4 374	34.7	-29.3	94.6
	Developed	12 692	111.9	-10.8	-1.1	25 620	118.4	-14.0	-4.4	-639	-3 495.2	2 947.9	647.3
372	Developing	435	65.5	17.5	16.9	808	85.9	5.9	8.3	935	60.5	-10.8	50.3
	Developed	4 826	80.1	21.4	-1.5	9 444	94.3	6.4	-0.7	5 304	132.6	-23.7	-8.9
Total b/	Developing	4 738	70.37	10.22	19.32	12 449	63.85	5.36	30.78	18 196	39.97	-4.28	64.29
	Developed	54 978	88.23	13.44	-1.68	116 228	93.86	9.47	-3.33	55 996	154.13	-33.24	-20.90

Table 10 (<u>continued</u>)

ISIC code a/	Country grouping	1963-1967				1967-1973				1973-1980			
		MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional

<u>Light industry</u>

ISIC code a/	Country grouping	MVA	Global	Industry	Regional	MVA	Global	Industry	Regional	MVA	Global	Industry	Regional
321	Developing	1 115	203.6	-91.8	-11.8	3 761	117.5	-25.6	8.1	2 979	109.4	-65.2	55.7
	Developed	6 938	178.6	-80.5	1.9	18 878	129.9	-28.3	-1.6	5 456	322.6	-192.1	-30.4
322	Developing	600	94.7	-40.0	45.3	620	202.7	-55.7	-47.0	575	141.8	-55.7	13.9
	Developed	4 284	184.2	-77.8	-6.3	11 565	134.4	-36.9	2.5	6 632	166.7	-65.5	-1.2
323	Developing	73	187.3	-137.3	50.1	117	229.7	-146.3	16.6	305	55.9	-26.3	70.4
	Developed	356	413.4	-303.2	-10.3	957	281.2	-179.1	-2.0	661	250.3	-117.8	-32.5
324	Developing	184	131.4	-66.7	35.3	148	338.6	-242.0	3.3	329	91.4	-34.5	43.1
	Developed	1 171	214.4	-108.8	-5.5	1 381	351.5	-251.2	-0.4	1 664	174.2	-65.7	-8.5
331	Developing	250	170.4	-68.2	-2.3	747	113.5	-27.9	14.3	1 032	61.3	-52.6	91.3
	Developed	2 988	166.3	-66.5	0.2	7 384	134.4	-33.0	-1.4	58	12 176.7	-10 451.6	-1 625.1
332	Developing	228	99.8	-7.9	8.1	344	144.6	11.6	-56.2	671	51.8	-18.3	66.6
	Developed	3 475	109.2	-8.6	-0.5	8 988	90.6	7.3	2.2	3 762	173.3	-61.4	-11.7
342	Developing	257	188.1	-35.9	-52.2	898	109.9	-51.0	41.1	446	166.5	-41.2	-25.3
	Developed	7 251	121.2	-23.1	1.9	9 543	193.7	-89.8	-3.9	9 221	131.2	-32.5	1.2
355	Developing	313	92.6	-9.8	17.1	1 009	63.9	7.9	28.2	1 156	51.0	-16.1	65.0
	Developed	2 474	114.2	-12.0	-2.2	6 468	92.9	11.5	-4.4	2 516	189.6	-59.7	-29.9
356	Developing	251	63.2	101.4	-64.7	851	46.0	83.5	-29.5	702	59.5	32.0	8.6
	Developed	4 165	36.9	59.2	3.9	13 197	34.8	63.3	1.9	8 704	65.5	35.2	-0.7

continued

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Table 10 (continued)

ISIC code a/	Country groupings	1963-1967				1967-1972				1972-1980			
		MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional	MVA change (millions of 1975 dollars)	Global	Industry	Regional
381	Developing	1 079	61.9	4.3	33.7	2 110	78.4	5.2	16.4	2 784	50.1	-0.1	50.0
	Developed	14 689	95.8	6.7	-2.5	32 740	94.8	6.3	-1.1	23 049	106.2	-0.1	-6.0
	Total b/												
	Developing	4 360	125.89	-34.42	8.48	10 605	108.14	-14.75	6.60	10 979	78.97	-29.78	50.79
	Developed	47 785	126.08	-25.28	-0.78	111 101	113.23	-12.59	-0.64	61 723	152.03	-42.98	.9.02
						Capital Goods							
382	Developing	1 072	43.3	9.4	47.3	3 470	37.5	3.5	59.0	3 531	43.8	14.4	41.8
	Developed	24 226	83.9	18.2	-2.1	48 586	95.3	9.0	-4.2	46 969	77.6	25.6	-3.1
383	Developing	1 122	46.5	21.5	32.0	2 520	56.5	29.9	13.6	4 841	28.4	21.5	50.0
	Developed	19 004	60.6	32.2	-1.9	48 070	65.8	34.9	-0.7	47 866	59.8	45.3	-5.1
384	Developing	1 153	84.5	3.5	12.0	4 844	45.7	3.9	50.4	4 549	52.1	-2.9	50.8
	Developed	20 387	96.7	4.0	-0.7	44 681	97.1	8.3	-5.5	29 776	114.0	-6.3	-7.8
385	Developing	69	83.7	45.5	-29.2	232	56.7	20.4	22.9	311	40.8	67.1	-7.9
	Developed	7 319	64.6	35.1	0.3	15 662	73.8	26.6	-0.3	26 414	37.8	62.2	0.1
390	Developing	405	74.3	-1.2	26.9	271	319.8	-8.8	-211.0	876	48.8	26.7	24.5
	Developed	3 604	104.8	-1.8	-3.0	8 413	97.1	-2.7	5.5	9 681	66.0	36.2	-2.2
	Total b/												
	Developing	3 821	60.69	10.70	20.61	11 207	51.18	9.67	39.14	14 108	41.44	13.18	45.35
	Developed	74 540	82.87	18.58	-1.47	165 432	85.27	17.41	-2.67	160 706	71.80	32.21	-4.00

Source: UNIDO data base.

a/ For industry designation, see table 8.

b/ Industry group totals and averages.

the ratio of South-North MVA change from 13 per cent in the first period (1963-1967) to 21 per cent in the second (1967-1973) and almost 30 per cent in the final period (1973-1980). Furthermore, regional growth factors as measured by co-efficients of regional effect played an increasingly important role in bringing about this change. For instance, only 4 per cent of the South's MVA change ($2,846 million) in agro-food processing was accounted for by the regional growth factor in the first period, but this proportion was markedly increased to 35 per cent in the second period and to 44 per cent in the last period. Meanwhile, the North exhibited extreme sensitivity to world economic conditions and the general downward trend of the agro-food processing industry, with little regional strength throughout the periods. The same patterns of change were more or less replicated at individual industry levels, all pointing to a substantial gain in regional strength as a significant factor explaining the growth of the industry in the South, which sharply contrasted with the growing vulnerability of the industries of the North to external factors.

(b) Energy

The energy group, which is made up of only two industries, petroleum refining (ISIC 353) and petroleum and coal products (ISIC 354), was the only sector in which the South gained a greater share of total MVA change than the North. To be more precise, this has occurred only in petroleum refining, which started out with the MVA change of the South amounting to less than half that of the North in the first two periods, but the MVA growth of the South surpassed that of the North by one and a half times in 1973-1980, thanks primarily to the two oil price rises which occurred during the period. In this regard, it is worth noting that the regional coefficient for the South made a quantum jump from 4.1 per cent in 1967-1973 to 55.6 per cent in 1973-1980, while the regional coefficient of the North dropped sharply from -1.6 per cent to -87.1 per cent, and the global effect drastically increased from 77.2 per cent to 244.0 per cent between the last two periods. This seems to underscore the growing fragility of the petroleum refining industry in the North. In a similar vein, region-specific factors explained more than 60 per cent of the MVA growth of petroleum and coal products in the South, while the same industry performance in the North was predominantly influenced by both the global and industry effects over the same periods.

(c) Basic products

From the point of view of the South, the basic products group as a whole registered the second best MVA growth performance, only behind the energy group. There was a remarkable increase in the MVA growth of the South as a percentage of the change in the North, starting from 8.6 per cent in 1963-1967, rising to 10.7 per cent in 1967-1973, with an abrupt increase to 32.5 per cent in 1973-1980. The regional strength to sustain output in the South also dramatically improved in a similiar fashion over time as the regional coefficient increased from 19 per cent in the first period to 31 percent in the second period to 64 per cent in the last period. In sharp contrast, with its diminishing share of MVA change, the

performance of the North became progressively sensitive to the
global effect, the coefficient of which increased from 88 per cent
in the first period to 154 per cent in the third period. At the
individual industry level, the growth performance of iron and steel
provides a particularly interesting North-South contrast. The MVA
change of the South increased more than fivefold from $811 million
to $4,374 between the first period and the last period along with
its markedly improved regional coefficient, while the MVA change of
the North initially doubled from $12,692 million to $25,620 between
the first two periods, only to experience a sudden decline in its
MVA by $640 million between 1973 and 1980. Other notable indus-
tries in the South which were quantitatively significant in terms
of output and performed exceptionally well as compared with their
counterparts in the North are industrial chemicals (ISIC 351),
other chemical products (ISIC 352) and non-metal products
(ISIC 369).

(d) Light Industry

In general, the light industry group in the South chalked up
an impressive gain in its share of MVA growth vis-à-vis the North,
although not as striking as the results achieved by the basic prod-
uct group. The ratio of South-North MVA change remained almost
constant around 9.5 per cent between the first two periods, but the
ratio nearly doubled to 18 per cent in the third period. At the
same time, the regional coefficient markedly increased from about
8 per cent in the first period to 50 per cent in the third period,
which was equally matched by a substantial decrease in the propor-
tion of MVA change that was explained by world economic conditions,
a drop from 125 per cent to about 79 per cent. The relatively poor
growth performance of the light industry group world-wide seems
however to have prevented this industry group in the South from
growing faster, as explained by sizeable negative values of the
industry effect. What happened to the light industry group in the
North was the opposite of the situation in the South. Namely, the
predominant portion of MVA change in the light industry group in
the North was accounted for by the global economic situation and
the world-wide growth performance of the industry under considera-
tion.

The most important industries within the light industry group
in terms of MVA change are indicated below.

First, the textile industry (ISIC 321) in the South sustained
its steady growth over the periods considered, despite its world-
wide downward trend which adversely affected the growth performance
of the industry in the North. The region-specific factors also
became increasingly important in explaining the growth of the South
in the most recent period.

Secondly, the wood products industry (ISIC 331) witnessed a
dramatic reversal of the dominant position between the North and
the South. The MVA growth in the North was over 13 times larger
than that of the South in the initial period, $228 million in the
South to $2,938 million in the North. But the figure for the South
jumped to $1,032 million while that for the North fell to only
$58 million in the last period. Meanwhile, the capacity of the

South to generate growth internally increased tremendously, while the performance of the North became extremely dependent on the external factors.

Thirdly, the South made a hefty gain in the rubber products industry (ISIC 355) along with its considerably strengthened locational advantage. The MVA change of the industry in the South was up sharply to $1,000 million from $313 million between the first two periods and stayed at the same plateau in the last period. The gain of the North, however, was equally remarkable, almost tripling from $2,474 million to $6,468 million between the first two periods but subsequently dropping to the previous level of almost $2,500 million. In the meantime, the global and industry effects became dominant factors in explaining the growth performance of the North.

Fourthly, in the metal products industry (ISIC 381), both the North and the South enjoyed considerable MVA gains throughout the periods, although the ratio of South-North MVA growth slightly improved over time in favour of the South. The growth of the North also tends to be more sensitive to external forces than that of the South.

(e) Capital goods

The development of the capital goods industries is commonly seen as one of the most essential ingredients required to accelerate technological advances and achieve industrial maturity in developing countries. Yet the empirical evidence seems to suggest that the gains of the South in this critical sector during the periods considered were less impressive than the progress made in other sectors. The ratio of South-North MVA change increased steadily but slowly from about 5 per cent in 1963-1967 to 7 per cent in 1967-1973 and to slightly less than 9 per cent in 1973-1980. Unlike previous cases, there were no striking changes in all coefficients for global, industry and regional effects in both the North and the South. It appears that the North clearly maintains a firm control over the production of capital goods and the South is yet to make any significant dent in the dominant position of the North in this important sector.

There are, however, considerable inter-industry variations within the capital goods sector in terms of the performance of the South as compared with that of the North. For instance, the South made remarkable strides towards the enlargement of its share of world MVA growth in the transport equipment industry (ISIC 384) as the MVA change of the South as a percentage of that of the North rapidly climbed from about 6 per cent in the initial period to 11 per cent in the second period and further up to 15 per cent in the third period. There was also a parallel growth in the capacity of the South to generate MVA in this industry on its own strength, as shown by a notable increase in the regional coefficients from 12 per cent to around 50 per cent between the first and third periods. By sharp contrast, the MVA growth of the South in the professional and scientific goods industy (ISIC 385) was very

small in relation to that of the North throughout the periods con-
sidered, never exceeding 1.5 per cent of the growth of the North.
Meanwhile, the performance of the South in machinery (ISIC 382) and
electrical machinery (ISIC 383) comes between these two extremes.
In the machinery industry the MVA growth of the South as a per-
centage of that of the North increased somewhat from 4 per cent to
7 per cent initially, and remained at the same level thereafter
with the regional coefficient varying between 40 and 60 per cent.
Likewise, in the electrical machinery industry, the ratio of
South-North MVA change increased twofold from 5 per cent to 10 per
cent between the last two periods, along with a remarkable increase
in the regional coefficient from 13 per cent to 50 per cent. On
the whole, there were signs of burgeoning growth of the capital
goods industry in the South, but such growth was confined to a
handful of countries in a few regions, namely Latin America and
South and South-East Asia.

Space limitations do not permit a full account of the sub-
stantial variations among the regions and the MVA changes for
28 industries in the 12 regions covering the three periods. An
attempt will be made only to identify, in table 11, a few regions
of the South and the North that generated the most notable change,
both positive and negative, in each industry, measured by the
regional coefficients as well as actual MVA change in the three
periods. Such an identification may serve the purpose of alerting
interested readers for a more thorough and systematic analysis of a
particular industry in a particular region which could be under-
taken separately.

3. Regression analysis

As stated earlier, the decomposition analysis could not offer
any explanations of the causal factors underlying the relative
regional strength of a particular industry in a particular region,
as measured by the regional coefficient. Obviously, the region-
specific ability to generate and sustain the MVA growth of an
industry independently of external influences could be affected by
a whole host of factors such as natural resource endowments, trade
régimes, technological capacity and skill levels, market size,
relative factor costs, physical and social infrastructure and many
other socio-economic variables. These factors vary vastly from
region to region. Therefore, given the diversity and heterogeneity
of the regions, each may have to be examined separately.

It is, however, beyond the scope of this study to carry out a
comprehensive study of causal factors for the strengths and weak-
nesses of the manufacturing sector and its component industries in
each region. Instead, an ad hoc general hypothesis about what
might explain interregional and inter-industry differences in the
regional effect is developed and its validity statistically tested
using cross-section and time-series pooled data for each industry.
The empirical results presented here only serve to determine the
general empirical validity of a set of the variables postulated to
have an explanatory power with regard to the regional effect. The
results do not apply to the special conditions of any specific
region.

Table 11. Regions generating the most significant change in various industries, 1963-1980

ISIC code	Industry	Regions
311	Food products	MLA, MAS, EE, WE1, NA
313	Beverages	MLA, MAS, EE, WE1, NA
314	Tobacco	LIS, MAS, MLA, WE1, EE
321	Textiles	MLA, MWA, MAS, EE, NA, JP
322	Wearing apparel	MLA, LIS, MAS, EE, NA, JP
323	Leather and leather products	MLA, MAS, EE, NA
324	Footwear	MAS, MLA, EE, WE2
331	Wood products	MAS, LIS, MLA, EE, WE1
332	Furniture and fixtures	MLA, LIS, WE1, NA, EE
341	Paper and paper products	MLA, LIS, MAS, NA, WE1, EE
342	Printing and publishing	MLA, MAS, NA, WE1
351	Industrial chemicals	MLA, LIS, MAS, NA, EE
352	Other chemicals	MLA, LIS, MAS, NA, WE1, JP
353	Petroleum refineries	MLA, MWA, MAS, WE1, EE
354	Petroleum and coal products	MLA, MWA, EE, NA
355	Rubber products	MLA, MAS, NA, EE
356	Plastic products	MLA, MAS, NA, WE1, EE
361	Pottery and china	MLA, EE, WE1
362	Glass and glass products	MLA, MWA, NA, EE, WE1
369	Non-metal products	MLA, MAS, EE, WE1, WE2, JP
371	Iron and steel	MLA, MAS, EE, JP, WE1, NA
372	Non-ferrous metals	MLA, MWA, EE, NA, JP, WE1
381	Metal products	MLA, MAS, EE, NA, WE1, JP
382	Machinery	MLA, LIS, NA, EE, WE1, JP
383	Electrical machinery	MLA, MAS, NA, WE1, JP, EE
384	Transport equipment	MLA, MAS, NA, WE1, EE, JP
385	Professional goods	MLA, MAS, EE, NA, JP, WE1
390	Other industries	MLA, LIS, EE, NA, WE1, JP

Notes: LIS = Low-income Indian Subcontinent
LAF = Low-income Africa
MAS = Middle-income Asia
MWA = Middle-income West Asia and North Africa
MAF = Middle-income Africa
MLA = Middle-income Latin America
NA = North America
WE1 = Advanced Western Europe
WE2 = Newly industrialized Western Europe
JP = Japan
EE = Eastern Europe
OD = Other developed countries

The following functional specification was used for this purpose:

$$X_{ij} = a + b_1 \ln y + b_2 (\ln y)^2 + cN + d_1 \ln(I/GNP) +$$

$$d_2 \ln(Ep/GNP) + d_3 \ln(Em/GNP)$$

where

X_{ij}	=	calculated regional effect of "i"th industry in "j"th region
y	=	per capita income
N	=	population
I/GNP	=	ratio of investment to GNP
Ep/GNP	=	primary exports as percentage of GNP
Em/GNP	=	manufacturing exports as percentage of GNP, and ln represents a natural-log transformation of the variable

Per capita income was included as a proxy variable for the stages of development. It is based on the hypothesis that as a country or region advances along the path of industrialization, so does its capacity to generate the growth of MVA internally up to a certain critical point. While industrialization broadens the capacity of a region to increase MVA, it tends progressively to integrate the economy of the region into the world economy. At the same time, industrial performance becomes increasingly sensitive to external factors such as world economic conditions and the world-wide growth performance of a given industry rather than to region-specific factors. The importance of the regional effect is there-fore expected to diminish, while global and industrial effects should become a dominant factor in explaining MVA growth, once a region achieves industrial maturity. Furthermore, the patterns of this change may be approximated by a non-linear form, a log-quadratic function in this case. Theoretically correct signs should be plus for the linear term and minus for the quadratic term, reflecting a diminishing rate of increase of the regional effect in proportion to increasing per capita incomes.

It is further postulated that the capacity of a region to generate MVA growth is positively related to market size (N) and the rate of resource mobilization of the region, that is, the share of cap'tal formation in GNP (I/GNP), and negatively related to the relative natural resource endowments of the region, which are measured by two variables, namely the share of primary exports in GNP (Ep/GNP) and the share of manufacturing exports in GNP (Em/GNP). It is well known that specialization in the production and export of primary commodities tends to delay or even impede industrializa-tion. It is equally obvious that manufacturing-export-led growth would make an economy more open and sensitive to changing inter-national economic conditions.

The goodness of fit for the estimated equations as measured by R^2 ranged from 0.09 to 0.81, but the majority of the equations (21 out of 29) had a reasonably good fit with R^2 of over 0.5 (see table 12). In fact, the results turned out to be better than expected, since cross-section data tend to yield poorer fits than time-series data. Furthermore, most of the sectoral equations have correct signs for their variables, except for population (N).

Turning to the individual variables, the regression results generally support the conceptual hypothesis about the relationship between per capita incomes and the regional effect as described by a log-quadratic function. In other words, the regional effect is expected to increase at a decreasing rate as per capita incomes rise, and become negative once per capita incomes reach a critical level. For this relationship to hold, the sign for the linear term must be plus and the quadratic term negative. Generally, this is the case. Out of 29 sectoral equations estimated, only four have wrong signs. But only 12 estimated equations have statistically significant coefficients for both linear and quadratic terms at the 95 per cent confidence level.

Table 12. Regression analysis of determinants of regional effect

ISIC code	Industry	Constant	lny	$(lny)^2$	N	ln(I/GNP)	ln(XP/GNP)	ln(XM/GNP)	R^2	Dw	n
311	Food products	-18 621.10* (-3.362)	5 914.36* (2.94)	-477.50* (-3.33)	-0.56 (-0.54)	825.09 (1.04)	-574.01* (-2.50)	-66.91 (-0.35)	0.72	2.35	27
313	Beverages	-6 255.10 (-1.61)	2 118.62 (1.50)	-157.75 (-1.56)	0.42 (0.57)	6.23 (0.01)	-218.93 (-1.35)	-291.00* (-2.14)	0.41	2.00	27
314	Tobacco	-2 643.56* (-3.86)	732.25* (2.95)	-61.50* (-3.46)	-0.03 (-0.21)	209.08* (2.13)	-32.77 (-1.15)	44.77 (1.88)	0.81	2.31	27
321	Textiles	-4 517.67 (-0.54)	1 135.11 (0.37)	-124.14 (-0.57)	-1.83 (-1.17)	1 569.09 (1.31)	-684.30* (-1.97)	-516.94* (-1.78)	0.48	2.01	27
322	Wearing apparel	-4 683.63 (-1.21)	1 097.92 (0.78)	-109.483 (-1.09)	-1.40* (-1.93)	1 063.82* (1.92)	-287.56* (-1.79)	-161.84 (-1.20)	0.65	2.08	27
323	Leather and leather products	-920.21	200.01 (-1.11)	-20.54 (0.66)	-0.25 (-0.95)	248.61* (-1.60)	-76.36* (2.09)	-43.02 (-2.22)	0.61 (-1.49)	2.44	27
324	Footwear	-2 937.71* (-2.25)	898.29* (1.89)	-79.62* (-2.35)	-0.67* (-2.72)	347.40* (1.85)	-164.05* (-3.02)	-5.10 (-0.11)	0.75	2.32	27
331	Wood products	-5 730.08* (-1.90)	1 983.68* (1.81)	-149.69* (-1.91)	0.65 (1.14)	-189.06 (-0.44)	-57.53 (-0.46)	-12.51 (-0.12)	0.32	2.26	27
332	Furniture and fixtures	-5 894.20* (-2.20)	2 215.66* (2.28)	-158.52* (-2.29)	0.70 (1.39)	-622.14 (-1.62)	73.27 (0.66)	-3.42 (-0.04)	0.37	2.01	27
341	Paper and paper products	-5 787.22* (-3.02)	1 645.10* (2.36)	-141.76* (-2.85)	-0.92* (-2.55)	754.18* (2.74)	-347.22* (-4.36)	-61.19 (-0.92)	0.79	2.57	27
342	Printing and publishing	-1 588.45 (-0.40)	631.64 (0.44)	-48.27 (-0.47)	-0.22 (-0.29)	-117.60 (-0.21)	2.44 (0.02)	-35.20 (-0.25)	0.09	2.09	27

Table 12 (continued)

ISIC code	Industry	Constant	lny	(lny)²	N	ln(I/GNP)	ln(XP/GNP)	ln(XM/GNP)	R²	Dw	n
351	Industrial chemicals	-10 463.85 (-0.91)	3 269.59 (0.79)	-291.39 (-0.98)	-1.95 (-0.91)	1 /30.89 (1.06)	-148.39* (-2.42)	-696.06 (-1.75)	0.47	2.47	27
352	Other chemical pr.ducts	-7 109.14 (-0.84)	1 215.45 (0.39)	-131.40 (-0.60)	-1.65 (-1.04)	2 586.72* (2.13)	-970.60* (-2.76)	-598.63* (-2.03)	0.52	2.22	27
353	Petroleum refineries	-12 052.86* (-2.85)	3 398.61* (2.22)	-272.31* (-2.49)	-0.22 (-0.27)	729.78 (1.21)	-150.05 (-0.86)	60.08 (0.41)	0.61	2.22	27
354	Petroleum and coal products	-195.81 (-0.17)	-112.72 (-0.27)	1.93 (0.06)	-0.33 (-1.52)	414.00* (2 47)	-130.19* (-2.68)	-98.36* (-2.41)	0.54	1.94	27
355	Rubber products	-4 458.21* (-2.39)	1 135.91* (1.68)	-100.31* (-2.08)	-0.45 (-1.28)	656.37* (2.46)	-194.96* (-2.52)	-29.66 (-0.46)	0.71	2.13	27
356	Plastic products	2 862.65 (0.50)	-685.64 (-0.33)	52.69 (0.36)	-0.10 (-0.10)	-44.61 (-0.06)	-176.01 (-0.75)	-255.36 (-1.29)	0.12	2.02	27
361	Pottery and china	-1 679.94 (-1.42)	497.79 (1.16)	-42.55 (-1.39)	-0.30 (-1.34)	252.49 (1.49)	-156.18* (-3.18)	-124.88* (-3.03)	0.66	2.33	27
362	Glass and glass products	-3 800.66* (-2.75)	1 125.18* (2.24)	-87.28* (-2.43)	0.10 (0.38)	123.98 (0.63)	-32.72 (-0.57)	-53.73 (-1.12)	0.61	2.14	27
369	Non-metal products	-11 939.49* (-2.80)	3 312.15* (2.14)	-277.56* (-2.51)	-0.82 (-1.03)	1 316.13* (2.15)	-522.80* (-2.95)	-183.07 (-1.23)	0.72	2.42	27
371	Iron and steel	-25 445.95* (-2.90)	6 414.41* (2.02)	-566.59* (2.49)	-3.10 (-1.88)	4 126.04* (3.28)	-1 445.43* (-3.97)	-189.82 (-0.62)	0.78	2.41	27
372	Non-ferrous metals	-6 693.38* (-1.96)	1 642.38 (1.32)	-148.45 (-1.68)	-0.96 (-1.49)	1 055.57* (2.16)	-267.90* (-1.89)	30.26 (0.25)	0.64	2.14	27

Table 12 (continued)

ISIC code	Industry	Constant	lny	(lny)^2	N	ln(I/GNP)	ln(XP/GNP)	ln(XM/GNP)	R^2	Dw	n
						Regression coefficients					
381	Metal products	−20 023.10* (−1.73)	4 789.86 (1.14)	−463.55 (−1.54)	−4.14* (−1.91)	4 364.84* (2.63)	−1 473.52* (−3.07)	−471.97 (−1.17)	0.71	2.27	27
382	Machinery	−12 541.51 (−0.68)	1 444.05 (0.22)	−246.80 (−0.52)	−5.78 (−1.67)	7 177.12* (2.72)	−2 684.49* (−3.52)	−1 676.00* (−2.62)	0.66	2.14	27
383	Electrical machinery	−7 542.23 (−0.41)	−1 788.71 (−0.27)	−50.55 (−0.11)	−8.17* (−2.37)	9 134.35* (3.47)	−2 148.69* (−2.82)	−414.60 (−0.65)	0.65	2.04	27
384	Transport	−37 158.00* (−1.80)	8 123.58 (1.08)	−780.32 (−1.46)	−6.28 (−1.62)	7 745.12* (2.61)	−1 834.24* (−2.14)	−141.00 (−0.20)	0.67	2.01	27
385	Professional goods	−2 804.48 (−0.30)	−525.10 (−0.15)	−25.86 (−0.11)	−3.14 (−1.78)	3 104.88* (2.30)	−703.32* (−1.80)	−107.07 (−0.33)	0.47	2.09	27
390	Other industries	−8 385.90* (−2.57)	2 936.95* (2.48)	−220.96* (−2.62)	0.45 (0.74)	−387.63 (−0.83)	2.51 (0.02)	−69.90 (−0.62)	0.56	2.02	27
300	Total manufacturing	−134 541.00 (−1.49)	38 573.46 (0.87)	−2 798.28 (−1.19)	−25.10 (−1.48)	35 240.03* (2.71)	−12 203.67* (−3.25)	−3 981.29 (−1.26)	0.64	1.99	27

Notes: Numbers in parentheses are t-values
  y = per capita income
  N = population
  I/GNP = investment as percentage of GNP
  XP/GNP = primary exports as percentage of GNP
  SM/GNP = manufactured exports as percentage of GNP
  * = statistically significant at the 95 confidence level.

It can be readily seen that the elasticity of regional effect with respect to income, that is,

$$e = (y/x)(\partial x/\partial y) = (1/x) \ (b_1 + 2b_2 \ln y)$$

decreases as per capita incomes rise for $b_1 > 0$ and $b_2 < 0$. This means that the regional effect becomes progressively smaller, eventually diminishes to zero, and then becomes negative, as per capita incomes continuously rise. Also setting $(\partial x/\partial y) = 0$ and solving for y will give the value of a threshold per capita income beyond which point the regional effect becomes negative, ceteris paribus. For instance, such threshold incomes calculated from table 12 are $486 for food products, $853 for beverages, $349 for tobacco, $97 for textiles, $1,086 for furniture and fixtures etc., all in 1980 constant dollars. It must be cautioned, however, that these figures are very rough estimates and should not be taken too seriously.

It seems reasonable to expect that the capacity of a region to generate MVA growth from internal sources is positively related to the extent of resource mobilization within the region, which is roughly measured by the share of investment in GNP (I/GNP). The empirical results clearly confirm this expectation. Only five of 29 coefficients have a wrong sign and more than half of them are statistically significant at the 95 per cent confidence level. More importantly, the results show that the elasticity of the investment share in GNP is considerably larger than that of the primary export share or the manufacturing export share in GNP in most cases. This implies that resource mobilization and expansion of productive capacity is likely to have a greater impact on the endogenous growth of a region than trade promotion guided by natural resource endowments.

As stated earlier, specialization in the production and export of primary commodities tends to be negatively correlated with structural change and industrialization of a country or a region. Particularly, the commodity-exporting region may be exposed to the boom-and-bust cycle of dependence on widely fluctuating world demand and unpredictable change in supply conditions. As a result, the capacity of an economy to grow on the strength of its own endogenous economic resources may be greatly impaired. It seems that the empirical results support this theoretical expectation. The bulk of the coefficients for the primary commodity export share are not only statistically significant (at the 95 confidence level) but also have a correct sign (minus). The results further show that the regional coefficients tend to be more responsive to the primary export share than the manufacturing export share in most cases.

In a similar vein, the manufacturing export share is expected to be negatively related to the regional coefficient. This negative relationship seems to be consistently corroborated by the empirical results. Only 3 out of 29 equations have a wrong sign for this variable. Despite their correct signs, however, only 6 coefficients are statistically significant. It must be concluded, therefore, that statistical relationships between the manufacturing export share and the regional coefficient seem far weaker

and less accurate than that between the primary export share and
the dependent variable.

Lastly, the results obtained for the population variable would
seem rather unexpected and inexplicable. Since population is used
often as a proxy variable for market size, and market size is con-
sidered to be a crucial determinant of the capacity of a region to
expand its own internal market, the sign for the population coef-
ficient should be positive. But almost all coefficients have a
wrong sign. The results should not carry too much weight, however,
since most coefficients are statistically insignificant and hence
little confidence could be placed in these estimates.

E. Conclusions and policy implications

Admittedly, the method adopted for analysing MVA data in this
paper is rather crude and subject to many limitations. To draw a
sharply focused picture of the patterns of MVA change among dif-
ferent regions would moreover be difficult without an in-depth
analysis of why MVA increased the way it actually did within the
specific regional context, going beyond a mere statistical analysis
of data. The principal findings nonetheless provide interesting
and substantive insights.

The analysis in this paper shows that if the pattern of MVA
growth in different manufacturing industries provides reasonable
clues to structural change in manufacturing, then world manufac-
turing industry underwent marked structural transformation between
1963 and 1980. Changes in industry shares of world MVA between
1963 and 1980 indicate that some of the fastest-growing industries
have been concentrated in capital goods, particularly electrical
machinery, machinery, industrial chemicals and professional goods.
On the other hand, the relative shares of most light industries
(such as food products, textiles and wearing apparel) and some
resource-based industries (such as iron and steel and wood prod-
ucts) declined rapidly over the same period.

Although the North accounted for an overwhelming portion of
world MVA change between 1963 and 1980, the MVA of most traditional
manufacturing industries in the South had been steadily on the rise
despite the shrinking shares of most of these industries in total
world production, and even more importantly, the gains of the South
had been based on internally generated economic forces, as revealed
by the significance of the regional effect calculated from the
decomposition analysis. Africa, both the low-income and middle-
income groups, is a major exception to this otherwise encouraging
picture.

As a corollary of the expansion of the South in light manu-
facturing and resource-based industries, the share of the North in
these smokestack industries declined dramatically and instead its
growth has been increasingly dominated by capital goods and other
high-technology industries. In this regard, it is important to
note that the gains of the South in the critical capital goods
industry during the period were much less impressive than the

advances made in other sectors. The North still maintains undisputed control over the production and trade of capital goods and the South has yet to make any significant dent on the dominant position of the North in this important sector.

Moreover, the decomposition analysis suggests that across nearly all manufacturing industries, the North exhibited a remarkable sensitivity to general fluctuations of the global economy and the world-wide performance of individual industries. It revealed little regionalized viability to withstand external pressures.

Admittedly, the South is not a monolithic economic group. The reality is considerably more complex, for the pace and patterns of structural change within the South varied widely from region to region. For instance, statistical test results show that the structure of production in Africa changed little between 1963 and 1980, when compared with the 1980 structure of Japan or North America. Meanwhile, during the period Latin America underwent the most rapid structural change among all regions of the South, closely followed by middle-income Asia, although there are some signs of a dramatic reversal of this positive trend in Latin America, under the impact of its huge external debt burden of recent years. Moreover, West Asia fared only slightly better than Africa in terms of structural change, despite the region's high per capita income of the region. This result is not surprising, because the structure of the economies of the region during the period was dominated by the oil sector with a very narrow industrial base.

Taking all these empirical results together, one important conclusion would seem to emerge. The diverse configurations of structural change in the manufacturing sector in different regions of the world, as described so far, all seem to be explained by one common pattern of development. It is the theoretical premise that an economy like an organic body is subject to an evolutionary process progressing through successive stages of specialization, beginning with the production of labour-intensive, technologically simple non-durable consumer goods in the first stage, followed by the production of intermediate goods in the second stage, and culminating with the production of sophisticated skill-intensive capital goods and other knowledge-intensive high-technology products in the final stage. Exploiting shifting comparative advantage and the dynamic international division of labour, some will move rapidly from one stage to another while others remain stagnant at the initial stages of development. Development experiences in South-East Asia and Africa in the 1960s and 1970s provide a telling testimony to this fact. This development process will entail a shift in the composition of output and exports from traditional labour-intensive goods such as textiles, garments, electronic assembly, and other light manufacturing to more technologically advanced and skill-intensive goods such as engineering goods, machinery, components, consumer durables and transport equipment. The process will also be marked by shifting locational incidence of production of labour-intensive goods from countries or territories at the higher hierachy of development to those at the lower echelon, as it occurred in the past in the textile industry, first

from Japan to the Republic of Korea and Hong Kong, and then coun-
tries or territories in South Asia.

Such a theory of change seems to be capable of explaining what
actually happened to the manufacturing industry in various regions
of the world during the period 1963-1980. At the risk of over-
simplification, our detailed analysis of MVA data for the period
seems to offer the following salient points. Africa remained stag-
nant in the earliest stage of industrialization during the period.
West Asia and North Africa approached the threshold of the second
stage of industrialization with heavy concentration on production
of energy-intensive industrial intermediate goods. In a similar
vein, the Indian Subcontinent appeared to have been positioned to
enter the third phase of industrialization by embarking on the
production of technologically simple capital goods and transport
equipment, although the region needs to improve its international
competitiveness in producing labour-intensive manufactured goods.
Newly industrialized countries in Europe were also at the upper end
of the second phase of industrialization, roughly comparable to
that of the industrially most advanced countries of middle-income
Asia and Latin America. Finally, our analysis shows a marked
erosion of the MVA growth of most manufacturing industries in the
North, with the major exception of capital goods. This finding
conforms with other mounting evidence of the shift in the compar-
ative advantage of the North away from the traditional smokestack
industries to skill-intensive capital goods and knowledge-intensive
high-technology industries characteristic of the last phase of
industrialization.

Another important dimension to this growth process is the
extent to which an economy becomes increasingly sensitive to
external pressures as it progresses through the successive stages
of development. The main results of the decomposition analysis
seem to substantiate this hypothesis. Irrespective of the branch
of manufacturing industry, performance tends to be generally
affected more by region-specific factors than external factors at
the initial stage and early in the second stage of industrializa-
tion. At the advanced stages of industrialization, most industrial
activities become extremely responsive to the ebbs and flows of the
world economy and the world-wide performance of a given industry.
The reason may be that as the economy passes through the successive
stages of specialization, it will also be progressively drawn into
the international division of labour and trade. The pace of inte-
gration into the world economy may vary considerably from industry
to industry, but ultimately all reach the point where the external
economic environment becomes a more dominant factor than region-
specific internal economic conditions in explaining the MVA growth
of the region. The regression results lend empirical support to
the notion of increasing internationalization of production and
trade at successively advanced stages of development. More specif-
ically, the results show that the part of MVA growth attributable
to internally generated economic forces as measured by the regional
effect tends to increase initially in step with rising per capita
incomes, and then begins to diminish continuously as per capita
incomes rise beyond a certain critical level. As a result, our
decomposition analysis portrays clearly the pervasive presence of

positive regional effects in nearly all manufacturing industries of the South and the opposite situation in the North.

A number of important policy implications could be drawn from these results. First, the South has still abundant untapped potential for increasing value added in many manufacturing industries within its own respective regions without depending on external markets, whereas such opportunities in the North may have been almost exhausted.

Secondly, industrial redeployment from the North to the South based on the shifting international division of labour seems likely to accelerate in the years to come.

Thirdly, continuously shifting configurations of comparative advantage and the division of labour within the South resulting from the dynamic growth of certain of its regions, particularly East Asia and parts of Latin America, would seem to hold out prospects for expanding South-South industrial redeployment and economic co-operation. As rapidly industrializing developing countries venture into the new territory of high-technology, the production of traditional labour-intensive low-technology goods are likely to be redeployed to less industrially advanced developing countries. The process of industrial redeployment will also create greater potential for South-South co-operation. For instance, rapidly industrializing developing countries could offer a wide range of technical know-how, skill development and international marketing expertise to resource-rich developing countries that could reciprocate with raw materials, cheap labour and capital.

Fourthly, there has been mounting empirical evidence that trade in capital goods has a much greater tendency to be two-way trade or intra-industry trade than is the case for labourintensive, intermediate and consumer goods.* In view of the relatively embryonic stage of development of the capital goods industry in developing countries, it appears that a great potential for intra-industry trade in investment goods among developing countries has so far not yet been exploited.

Lastly, looking far into the future, say two or three decades ahead, the world economy will be likely to evolve eventually into one highly-integrated complex network of production and exchange of goods and services in which each part of the body is functionally dependent on every other part, analogous to an organic system. This ultimate form of global economic interdependence will slowly emerge as more and more developing countries forge ahead with industrialization through the successive stages of specialization and growth. In the process, the distinction between the North and the South will be increasingly blurred and regionalizedc economic

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*For an empirical analysis of intra-industry trade among developing countries, see O. Havrylyshyn and E. Civan, "Intra-industry trade among developing countries". Journal of Development Economics, vol. 18, 1985, pp. 253-271.

strength will diminish, as all will be shaped by the common global forces at work. Until ti :n, there seems to be ample scope for exploiting the region-specific growth-inducing factors in developing countries.

Certain caveats are in order before concluding this study. First, much has happened since 1980. Most notable among many turbulent events are prolonged world-wide stagnation, persisting unemployment, a collapse of commodity prices and worsening terms of trade against developing countries, a rising tide of protectioni m, and most important of all, the acute problem of external indebtedness in developing countries, and particularly in Latin America. All of these factors combined may alter some of the basic conclusions arrived at on the basis of the 1963-1980 data. This seems most likely in the case of Latin America. Nevertheless, most other findings may still hold.

Secondly, it remains uncertain how some of the frontier technolgy currently being developed in the North, such as microelectronics, robotics, fibre optics, biotechnology, genetic engineering and artificial intelligence will affect the present competitive advantage of the North and the South and the international division of labour. In particular, there is considerable concern that the application of new technology may help the North to regain a competitive advantage in some of the so-called "sunset industries" by rendering the South's newly installed industrial structure obsolete and uncompetitive. On the face of it, this would bring about a dramatic reversal in the process of industrialization of the South which has been evolving ir the last several decades. It would seem, however, premature and even simplistic to predict such a scenario of technological development. Too little is known about the economic feasibility and cost implications of introducing new technology in traditional smokestack industries. In some industries, the gain in competitiveness of the North through the application of new technology may not be sufficient to offset the competive advantage of the South in labour and other resource costs. Moreov.r, according to a paradigm of the product cycle theory, a new product made today by new technology will soon become a standardized product that will be imitated and produced by everyone through the diffusion of technology. In such a world of rapid technological change, an initial gain in cost competitiveness made possible by the application of new technology will sooner or later be outweighed by the competitive advantage in labour and resource costs as the product passes through the cycles of innovation, imitation and standardization. This is exactly what has happened to many of the sunset industries in the past. Hence there will probably always be a wide range of products in which developing countries could compete in the international markets.

décomposition. L'Afrique est une exception de taille à ce tableau encourageant. En contraste, dans pratiquement toutes les industries manufacturières, le Nord a fait preuve d'une remarquable sensibilité aux fluctuations générales de l'économie mondiale. En outre, les conséquences de la régression confirment l'hypothèse selon laquelle la sensibilité d'une économie aux forces économiques extérieures dépend du niveau d'industrialisation. Quelle que soit la branche de l'industrie manufacturière, les résultats tendent à être davantage influencés par des facteurs propres à la région que par des facteurs extérieurs, aux premiers stades de l'industrialisation.

À un stade plus avancé d'industrialisation, la plupart des activités industrielles deviennent extrêmement sensibles aux conditions économiques mondiales. Ceci s'explique peut-être par le fait que l'économie avance de pair avec l'industrialisation et sera progressivement prise dans l'engrenage de la division internationale de la main-d'oeuvre et des échanges.

EXTRACTO

Pequeñas empresas industriales: algunas cuestiones básicas de desarrollo

S. Nanjundan

En este artículo se defiende la tesis de que la pequeña indus-
tria es el semillero del crecimiento, hecho que los gobiernos debe-
rían tener presente en la preparación de planes de desarrollo y la
adopción de políticas. Se destacan las siguientes características
de la pequeña industria: el entorno de políticas en que esta in-
dustria opera; los factores infraestructurales e institucionales,
en particular la cuestión del fomento del espíritu empresarial y la
función de las cooperativas; la movilización y asignación de recur-
sos financieros internos; y la subcontratación nacional e interna-
cional, así como su contribución al desarrollo integrado.

Precios e intervención pública en los países en desarrollo

Richard Kitchen y John Weiss

Se examina la repercusión de la intervención económica del
Estado sobre los precios de los bienes objeto de comercio, los ti-
pos de cambio, la mano de obra y el capital, y se pasa revista a
las publicaciones sobre el tema. Se exponen argumentos teóricos y
se presentan pruebas empíricas con objeto de mostrar que esa reper-
cusión suele ser significativa, ya que crea distorsiones en el sis-
tema de asignación de recursos y otros problemas que limitan el
crecimiento y el desarrollo económico. Se sostiene la conveniencia
de modificar las políticas para mejorar la estructura de precios,
especialmente en el sector manufacturero.

Análisis estadístico de los orígenes del cambio en el valor agregado industrial por industria y región en 1963-1980: un enfoque de desagregación

Secretaría de la ONUDI

En este artículo se analizan estadísticamente la estructura de
crecimiento del valor agregado industrial (VAI) y los orígenes de
su modificación en 28 industrias y 12 regiones durante el período
1963-1980. Concretamente, se incluyen un análisis de las variacio-
nes en la composición y los porcentajes regionales del VAI mundial,
un desglose estadístico de los cambios del VAI por región e indus-
tria durante los períodos 1963-1967 y 1973-1980, así como algunas
conclusiones y consecuencias de política. Aunque al Norte corres-
pondió una proporción abrumadora del cambio registrado en el VAI
mundial entre 1963 y 1980, el VAI de las industrias manufactureras
más tradicionales del Sur ha aumentado continuamente, pese a haber-
se reducido la participación de la mayoría de estas industrias en
el total de la industria mundial. Los aumentos correspondientes al
Sur han obedecido a fuerzas económicas generadas internamente, como
revela la importancia del efecto regional calculado a partir del
análisis de desglose. Africa es la principal excepción en este

panorama por otra parte alentador. El Norte, en cambio, acusó en
casi todas las industrias manufactureras una notable sensibilidad
ante las fluctuaciones generales de la economía mundial. Además,
los resultados de la regresión abonan empíricamente la hipótesis de
que la medida en que una economía comienza a responder a las fuer-
zas económicas externas puede explicarse en función de las etapas
de industrialización. Independientemente de la rama de la indus-
tria manufacturera de que se trate, en las etapas iniciales de la
industrialización el rendimiento industrial tiende por regla gene-
ral a verse más afectado por factores específicamente propios de
una región que por factores externos. Por el contrario, en etapas
de industrialización avanzadas, la mayoría de las actividades in-
dustriales comienzan a reaccionar en sumo grado a las condiciones
económicas mundiales. Quizá ello se deba a que a medida que una
economía avanza en su industrialización se ve progresivamente impe-
lida hacia la división internacional del trabajo y el comercio.

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