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AIMS AND SCOPE OF *INDUSTRY AND DEVELOPMENT*

Industry and Development attempts to provide a link between practitioners and theorists working on economic and related aspects of industrialization. The focus of the journal is on applied economics, particularly in areas emphasized in the Lima Declaration and Plan of Action on Industrial Development and Co-operation.

The journal is published as an integral part of the work programme of the Industrial Policy and Perspectives Division of the United Nations Industrial Development Organization. It is prepared under the general guidance of a Supervisory Panel, composed of staff members from the Division, with the Head of the Global Issues and Policy Analysis Branch as its Chairman. Responsibility for the detailed supervision of a specific issue is rotated among the members of the Panel. The member responsible for this issue was J. Cody.

The Supervisory Panel of *Industry and Development* welcomes readers' opinions and comments and will be glad to consider for possible publication articles relevant to the aims and scope of the journal (see "Information for contributors").

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References to dollars ($) are to United States dollars, unless otherwise stated.

In tables:

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

An em dash (—) indicates that the amount is nil or negligible.

Unless otherwise indicated, a minus sign (-) before a figure indicates an amount subtracted, and a plus sign (+) before a figure indicates an amount added.

The following abbreviations are used in this issue:

ASEAN	Association of South-East Asian Nations
c.i.f.	cost, insurance, freight (landed import price before taxes)
ERP	effective rate of (tariff) protection
GDP	gross domestic product
LNG	liquefied natural gas
MVA	manufacturing value added
NICs	newly industrializing countries
NRP	nominal rate of protection
NTI	non-traded input
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
SCF	standard conversion factor
UDEAC	Central African Customs and Economic Union (Union Douanière et Economique de l'Afrique Centrale)
UDE	Equatorial Customs Union (Union Douanière Equatoriale)
VAT	value added tax

Countries are referred to by the names that were in official use at the time the relevant data were collected.

PROFILES OF KEY BRANCHES OF AGRO-INDUSTRIES IN SUB-SAHARAN AFRICA

George B. Assaf* and Paul Hesp**

Introduction

As part of the programme for the Industrial Development Decade for Africa, the Regional and Country Studies Branch of UNIDO is issuing a series of studies determining the major problems of African manufacturing and the potential for regenerating the sector. The studies are focused on the rehabilitation needs of agro-based industry, for three reasons:

(a) The development of agro-based industries is seen by African Governments as an important vehicle for establishing an industrial tradition based on locally available raw materials;

(b) Agro-industries currently dominate African manufacturing industry in terms of value added and play a key role in attempts to diversify exports and overcome foreign exchange constraints;

(c) More important, agro-industries can provide the means by which African Governments can satisfy their basic needs, in particular their goals for self-sufficiency in food production and food security.

In recognition of the importance of the rehabilitation of key industries catering to basic needs in Africa, the studies concentrate on the food-processing subsector. The present paper is based on four of the country case studies of the food-processing subsector in sub-Saharan Africa.***

This paper brings together in convenient form branch-level analyses, findings and recommendations drawn from the country surveys cited above. These branch profiles are offered as a first attempt to overcome the current dearth of information on African

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***"The regeneration of Angolan manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Angola in September 1988 (PPD/R.21); "The regeneration of Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Liberia in January-February 1989 (PPD/R.23); "The regeneration of the Tanzanian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to the United Republic of Tanzania in February-March 1989 (PPD/R.26); "The regeneration of Zambian manufacturing industry with emphasis on agro-based industries", Report

continued

industry at the branch level. They serve to illustrate the existing and potential linkages between various branches of industry. They also attempt to draw out common constraints and potentials across branches as an analytic input to the elaboration of more consistent and concerted national, regional and international development strategies and cooperation.

The paper covers four food-processing branches: meat and fish processing, fruit and vegetable processing, animal feed manufacturing and vegetable oil milling. In addition, two branches closely related to food processing are covered: wood processing and packaging materials.

The branch profiles must be seen as only a first round of analysis. They are based on month-long country survey missions to selected African countries by a multidisciplinary team of experts. Also, the information available on sub-Saharan African industry at the branch level is limited. For example, it was not always possible to examine the same branches in all the countries covered. This weakness clearly limits the generality of the analysis presented. It is clear, therefore, that more detailed and comprehensive analyses are required to provide the appropriate qualifications and perspective for the profiles presented. The profiles do, however, identify the main areas on which future investigations should be focused.

In sum, the branch profiles presented in this paper highlight a key range of issues in a number of key industries in a small but representative sample of countries in sub-Saharan Africa. They should not be seen as a comprehensive analysis of branches or industries but rather as a first step towards such analyses.

A. Structure and concentration of branch profiles

1. The importance of agro-processing in sub-Saharan Africa*

Agro-industry is of fundamental importance in sub-Saharan Africa for two reasons: (a) it helps to reduce food shortages by

(continued) of the UNIDO field mission to Zambia in May-June 1988 (PPD/R.19). For a general survey of the rehabilitation potential of industry in the whole of Africa, including agro-based industries, see "Regenerating African manufacturing industry: country briefs" (PPD.97).

*In this report, the term "agro-based industries" refers to manufacturing branches that use agricultural products as their raw materials. In Africa these branches tend to use local raw materials and thus have important backward linkages with the agricultural sector. They also have significant forward linkages with agriculture, an obvious example being animal feed. As already noted, the profiles cover two branches that cannot definitively be categorized as agro-industries, namely wood processing and packaging materials.

reducing waste and increasing keeping qualities and (b) it could become a major foreign exchange earner.

The most dramatic expression of the economic crisis in many countries of sub-Saharan Africa is the shortage of essential food products. Some estimates suggest that as much as 25 per cent of the total population in sub-Saharan Africa suffers from undernourishment, compared with 21 per cent in South Asia and 7 per cent in East Asia and the Pacific region. While the good crop years bring temporary relief, most African countries have become dependent on food imports. Total cereal imports by countries in sub-Saharan Africa have to be paid for in scarce foreign exchange. One remedy would be a sustained increase in domestic food production. Many African countries have abundant land resources, and the effective stimulation of agriculture would sharply curtail food imports and provide work in the sector that is the largest source of employment in Africa.

Food production covers both the production of crops and the processing of agricultural raw materials by the manufacturing sector. Domestic food processing has become an essential element in basic needs strategies. The food-products subsector is the most important industrial subsector in the great majority of sub-Saharan African countries, sometimes accounting for as much as 50 per cent of manufacturing output and manufacturing value added (MVA).

Food processing is an important industry for several reasons. It tends to be labour-intensive, and it can play a significant role in reducing unemployment, absorbing labour released by growing agricultural productivity and providing additional jobs during the slack season in agriculture. Also, its technology tends to be relatively unsophisticated, so that small-scale processing is often economically justified. It is also important because it creates value added from the processing of agricultural raw materials.

Demand for the products of the food-processing subsector is generally concentrated in the larger urban areas in the countries under review. When located on the coast, these areas are also the leading ports, such as Dar es Salaam and Luanda. For this reason the main processing units (employment in the plants studied was generally between 100 and 500) are situated in the large urban centres.

Agricultural exports are directed to highly competitive markets, often in developed countries with a strong negotiating position on prices and a wide choice of interested sellers. The result has been low export prices, two examples at the end of the 1980s being coffee and cocoa. As nearly all African countries depend heavily on the export of goods for their foreign exchange revenue, there has been a deterioration in their balance of payments.*

*Between 1985 and 1988 the overall balance of payments deficit of the sub-Saharan African countries increased from $US 3.4 billion to $US 11.0 billion, according to the The World Bank Annual Report 1990, Washington, D.C.

Exporting processed agricultural goods would bring more value added to the economy and reduce vulnerability to the sharp fluctuations of the world commodity markets.

The food products subsector can only perform well if it has regular and balanced supplies of raw materials from the agriculture sector, which must therefore be provided with the necessary stimuli for the subsector to prosper. The development of the subsector also requires access to packaging materials, an indispensable element in processing.

Wood processing, like food processing, is based on vegetable raw materials, and the two subsectors have many problems in common. Indiscriminate logging has been a major cause of desertification, which is one important reason for the agricultural crises in many West African countries. Exports still take the form mainly of round logs, which, as with coffee and cocoa, leaves the producer exposed to the highly volatile world markets for raw materials. Processing is rarely efficient and equipment is ageing, with the result that many African countries endowed with substantial forest resources import secondary wood products. These same producers must restructure their branches to increase their processing activities, thereby slowing the rate of deforestation and bringing more value added to their economies.

2. The structure of the branch profiles

Each branch profile is divided into five sections: inputs; output and markets; spatial distribution; linkages; and major problems and constraints.

Branch-specific policies and me sures are not covered in this paper since individual manufacturing branches are generally subject to government policies for the sector as a whole, albeit with certain policies specific to agro-based industries. Recurrent elements in these policies are the greater use of domestic inputs (allied to campaigns to boost agricultural output), improved local supplies of processed food within a basic needs strategy and the encouragement of non-traditional exports, such as processed food. In the last case, many Governments have given the exporters in question the right to retain a fixed percentage of their foreign exchange earnings. The rehabilitation country case studies have identified certain policies that are branch-specific but in fact echo broader policies for the sector or the economy as a whole. Some examples are listed below:

(a) The Government of the United Republic of Tanzania is committed to raising the nutritional standards of the population and reducing the wastage of fruit through spoilage. Therefore, fruit canning is given priority among agricultural processing industries;

(b) For nutritional reasons, the Government of the United Republic of Tanzania aims to increase the consumption of milk, eggs and meat. Accordingly, it encourages the production of stock feeds;

(c) Liberian-owned firms in the wood products branch have been encouraged by the Government to form a professional association, the

Liberian Wood and Carpentry Industry Association. The Association receives Government and external backing, and its principal aim is the development of secondary wood processing;

(d) The Government in Liberia has decided to lower the duties on imported cereals and vegetable oil, with the aim of improving the flow of inputs to the processing branches, which cannot secure adequate supplies on the domestic market;

(e) In Angola, manufacturers of plastic bags pay only 50 per cent of the duty on imported plastic raw material. This partial exemption has been in place since 1975, although it is thought that tariff policies will be revised to remove subsidies within the current economic and financial rehabilitation (SEF) programme of economic and financial restructuring;

(f) In Zambia, the Government has embarked on an extensive programme of removing price controls. The programme has not covered certain sensitive commodities such as cooking oil, which adversely affects the revenue of the oil-milling branch.

B. Meat and fish processing

1. Characteristics of the branch

Inputs

The meat and fish processing branch was studied in Angola, Liberia and Zambia. In those three countries, this branch is dominated by the processing of beef, pork, poultry and the major species of salt-water fish and crustaceans. Although some fishing takes place on inland waters in Zambia, the available data do not point to any processing activity. In the three countries, the branch derives the greater part of its supplies from traditional farming and fishing operations.

In Angola, the raw materials for meat processing have been scarce since the late 1970s as a consequence of the war, which has caused massive displacement of farming communities and destroyed a major part of the road and railway network. The critical impact of the war is evident from Ministry of Planning statistics, which show that the quantity of cattle slaughtered fell from 24,500 tonnes in 1973 to 3,700 tonnes in 1985. Within the Government's fishing research programme, a method has been developed to replace beef and pork with fish as the basis for sausage production.

The scarcity of beef and pork has forced many meat factories to close or switch to the use of fish. The two most important meat companies still in operation are Fabrica de Alimentados (FAL) at Luanda and Bucaco at Huambo. For a decade, FAL has based its products on fish, while Bucaco depends on stray pigs, a necessarily irregular source of supplies that is supplemented, when possible, with imported pork.

However, fresh fish appears to be in abundant supply and is found in the many markets surrounding Luanda at parallel market

prices (of 5,000-6,000 kwanza (Kz) per kilogram in September 1988). Dried fish, which local fishermen land and dry in the open air by the roadside, is sold in a similar manner at Luanda.

In Liberia, the development of intensive animal production and meat processing in urban areas has been slow, partly because of a tradition of fish production and processing, which was the principal source of protein for the urban population. However, since 1980 fish processing in the modern sector has come virtually to a standstill as a result of mismanagement at the leading enterprise in the sector, the Mesurado Fishing Complex.

Meat-processing firms have been unable to fill this gap. The traditional livestock herd is small. The Ministry of Agriculture and Water Development estimated a total of only 260,000 head in 1987-1988, 50 per cent of them goats, 23 per cent sheep, 21 per cent pigs and 6 per cent cattle. The Ministry also estimated a total of 800,000 poultry on traditional farms. Assuming annual off-take rates of 10 per cent for cattle, 75 per cent for pigs, goats and sheep and 100 per cent for poultry, and using a base of prevailing average carcass rates, this suggests a current equivalent meat supply of just 4,150 tonnes. With few exceptions, the meat off-take of traditional farms is consumed in the villages. In the peak years of 1979 and 1980, commercial, intensive poultry and pig farming supplied an additional 2,200 tonnes of meat per year.

Poultry processing once appeared to be the most promising industry in the branch, but most of the large integrated poultry slaughtering units in operation at the time of the survey have since closed. Commercial operations are now reduced to two relatively large units and some 30 small farms, which sell the greater part of their poultry production live. Low capacity utilization is the norm, and there is an emphasis on laying rather than slaughtering.

Demand for meat and meat products in the towns cannot be met by these local suppliers. Data from the Ministry of Agriculture show that in 1986-1987, import levels reached 10,000 tonnes of pork ribs, 5,400 tonnes of frozen poultry, 12,500 tonnes of frozen beef and about 8,000 tonnes of processed meat products.

Pork is the principal input of meat processing firms in Zambia. Pig products, including processed items such as sausages, polonies, cured hams and bacon, account for about 7 per cent of domestic meat consumption in the country. This is a long-established proportion. Statistics on pig production are incomplete, being largely confined to the traditional sector. The Annual Livestock Report of the Ministry of Agriculture and Water Development shows that the number of pigs in the traditional sector remained relatively stable in 1983-1986, at around 170,000 head. Estimates by the Ministry put the number of breeding sows in the commercial sector at about 5,200 at 16 medium to-large-scale farms and a number of smaller units with less than 50 sows. Recent years have seen a fall in the number of the smaller farms. Feed conversion ratios are low because of inadequate management standards and feed that is low in quality and irregular in supply.

In the past decade, a number of programmes have been launched in the commercial sector under the Integrated Pig Management Scheme. This Scheme aims to organize groups of farmers into cooperatives, each with a central management responsible for the supply of feed and other inputs and for marketing and extension services. The following projects were started under the Scheme:

(a) An Israeli-sponsored project in the Copperbelt. This cooperative collapsed when Israeli technical assistance was withdrawn;

(b) A German-sponsored integrated programme at Monze in Southern Province, incorporating management, veterinary and extension personnel, a stock feed plant and a large number of vehicles. Shortages of spare parts for the feed mill and the vehicles resulted in deficient feed supplies and a general decline in the programme.

Two other pig management schemes, at Kumbe in Central Province and Chipata in Eastern Province, did not progress to the formation of cooperatives. Some individual farmers are being supported by the Ministry in acquiring feedstuffs and marketing their production. It appears that the Scheme still provides some assistance with the supply of better-bred pigs.

Output and markets

In Angola, the total processing capacity of the major firms is about 1,000 tonnes. Detailed statistics are only available for FAL, which has a capacity of 465 tonnes of processed products per year. Its output in 1987 amounted to 45 tonnes of fish sausages and 208 tonnes of smoked fish. The total production of FAL is said to have averaged 180 tonnes annually for an unspecified period in the 1980s. The domestic market, however, has been estimated at 2,400 tonnes per year, with most sales effected at the factory gate.

In Liberia, meat and poultry processing is currently only a cottage industry. The scale of the domestic market is indicated by imports of 8,000 tonnes of processed meat in 1986-1987 (at that time, the fiscal year started on 1 July), although foreign exchange constraints and informal cross-border trade are both significant factors. The next section provides an indication of the potential capacity of the poultry processing industry.

Output of the branch in Zambia is not known, although the slaughter of 30,000 pigs in 1986 gives a starting point for an estimate. Two enterprises, Zambia Pork Products (ZAPP) and Twikatane Farm Products, control about 80 per cent of the market. The size of the domestic market is not known exactly, but domestic demand does not appear to be satisfied.

Spatial distribution

Until recently, the security situation in Angola was such that the two areas in which the branch was active had to be regarded as autonomous areas. It appears that competition between the two areas

has not yet resumed. Against the background of these constraints, new investment in any form would have to be viable both in the present circumstances and in a normalized situation, when massive changes in the competitive environment are expected to be inevitable.

The principal area is Luanda and its surroundings, where FAL has no serious competitor for its products, notably fish sausages and smoked fish. Other producers are local fishermen, who supply fresh fish directly to the local market.

The second area of activity for the meat and fish processing branch in Angola is the south-western and southern region. Proteica, a meat-processing business located at Lubango, used to operate with a large workforce and ageing machinery and had a rated capacity of 7,000 tonnes per year. However, it was forced to close since farmers were no longer willing to sell their livestock at the official prices. Another enterprise in the branch in that area is Bucaco, which continues to produce a range of sausages and other meat products. Its slightly different range, tailored to the Portuguese taste, and the isolation of the area as a result of the war means that it is not a competitor to FAL.

Data on the geographical distribution of inputs for meat processing (cattle, pork and poultry) are not available. As already indicated, processing plants partly rely on stray pigs. Virtually all operational plants are Government-owned.

In Liberia, subsistence farmers throughout the country are the principal owners and breeders of cattle, pork and poultry. Only a fraction of this production is supplied to the market.

In the Monrovia area, the Baker hatchery had a capacity of 24,000 day-old chicks per week, but it ceased to operate in 1980. Its broiler farm, with a capacity of 500,000 broilers per year, closed in 1984. In the Gbarnga area, the Baker unit, as well as the Sangai laying and broiler farm and broiler processing plant, which had a capacity of 1,000 birds per hour, halted production in 1980. A hatchery unit at Sangai was completed but never commissioned. The only remaining commercial operation is the Bright layer farm at Kakata, which produces about 26,000 eggs per day. A broiler production unit is currently planned for the same site. All poultry processing plants are privately owned.

In Zambia, the slaughtering and processing of pork is concentrated in the Lusaka area, with some activity in the Copperbelt. Animal diseases occasionally prevent the transport of pigs and pig carcasses out of Southern Province. For the same reason, Eastern Province is not currently a source of supplies.

The three main producers operate along the line of rail in the large population centres (the Copperbelt, Lusaka and Livingstone). As already noted, ZAPP and Twikatane Farm Products dominate the market. The latter is a non-profit-making enterprise in Lusaka. Its slaughtering capacity is about 20 pigs per shift, supplied both from its own piggery and from sources that also meet the needs of

ZAPP. There are reports that Twikatane plans to establish a slaughtering and processing facility in the Copperbelt to supply northern areas. The third producer is Lusaka Cold Storage Ltd., a subsidiary of Galaun Holdings Ltd., which trades under the name Luscold. Like ZAPP, this company procures its pigs from within a 50-kilometre radius of Lusaka, supplementing the output of its small piggery.

Kyundu Ranch in Lusaka is a smaller operation that largely serves the needs of the expatriate population in the capital. It has reportedly opened recently a small slaughterhouse about 35 kilometres from Lusaka.

It is estimated that Lusaka and its environs account for as much as 90 per cent of Zambia's current output of pork products. Privately owned enterprises are responsible for virtually all production.

Linkages

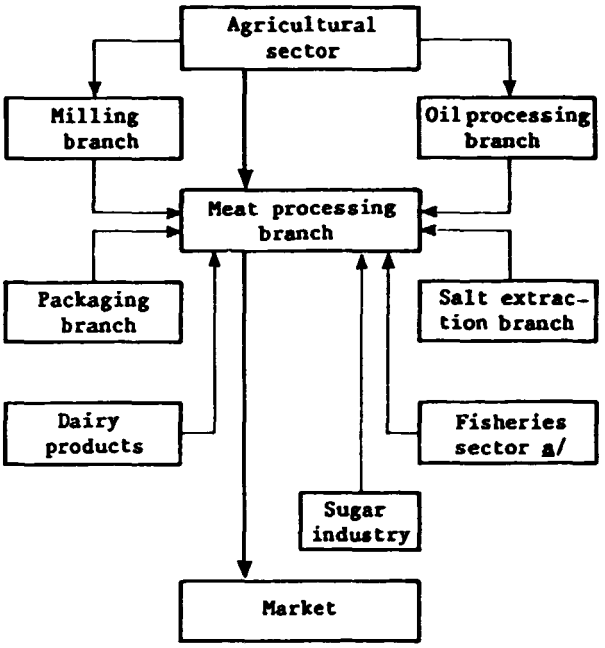
The previous sections have illustrated the major backward linkages of the meat and fish processing branch to animal husbandry and fisheries. Other inputs to the branch include spices, vegetable oil, sugar, salt and other preservatives, flour, vegetables, dairy products, casings and packaging materials.

Forward linkages are normally with the consumer, although some products of the branch serve as inputs for other industries. For example, fish-meal and bone-meal can be used by the stock feed industry, while processed meat and fish can be ingredients for canned soups and deep frozen dinners. The first example is a realistic way of reducing imports where local alternatives exist, but the second will have only limited application, in the short term, given the low income levels and the stage of economic development currently prevailing in sub-Saharan Africa.

Figure I shows the linkages of the meat and fish processing branch in Angola. Although almost all the required inputs can potentially be provided by the domestic agricultural sector and other manufacturing branches, this is not currently possible in view of the massive dislocation caused by the war.

The domestic economy is currently able to provide fish and some supplies of pork, salt, flour, vegetable oil and sugar. Since the output of the branch is limited, it can broadly manage with the low level of other inputs. Casings are provided by another industry within the branch, slaughterhouses; synthetic casings, spices, emulsifiers and preservatives are not available. The small volume of importer inputs required by the branch has largely been provided. A substantial proportion of sales takes place at the factory gate, so the shortages of packaging are not currently a constraint. The forward linkage is predominantly with the consumer and is direct.

Figure I. Angola: linkages in meat and fish processing



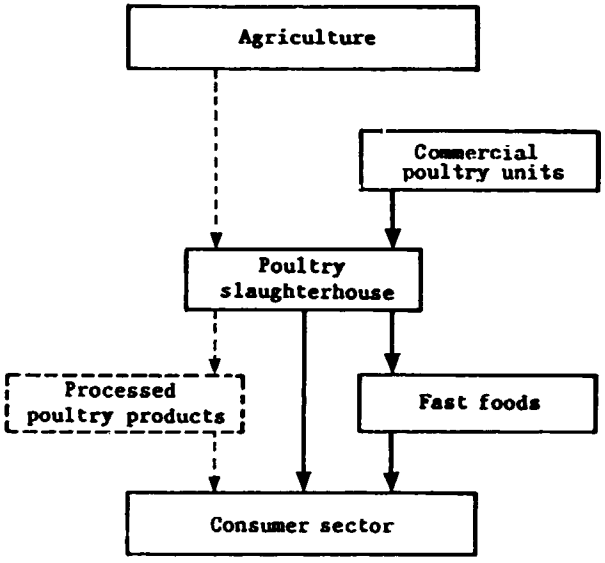
Source: "The regeneration of Angolan manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Angola in September 1988 (PPD/R.21, p. 50).

a/ This is the temporary supplier of raw materials to the branch until meat is again available on the Angolan market.

Figure II shows the backward and forward linkages in the poultry slaughtering industry in Liberia. The only commercial enterprise in this industry is at present non-operational. The backward linkages of the industry are with poultry producers. In the long term, the market for live birds is expected to be replaced by one for dressed birds. At that stage, the slaughtering industry will most likely purchase broilers and spent hens from small and medium-sized poultry operations within integrated farms.

The branch is expected to remain relatively independent of other manufacturing branches, because slaughtering, deep freezing and packaging would be its only significant operations. It could perhaps use domestic paper, given the forestry resources of the country, and plastic manufactured locally for its packaging needs, provided that products were tailored to meet its specific requirements. The forward linkages are two: with the consumer, directly, and with catering enterprises, which are called fast foods in figure II. A future forward linkage could be the supply of offal to stock feed plants, which are partly integrated in the branch.

Figure II. Liberia: linkages in poultry processing



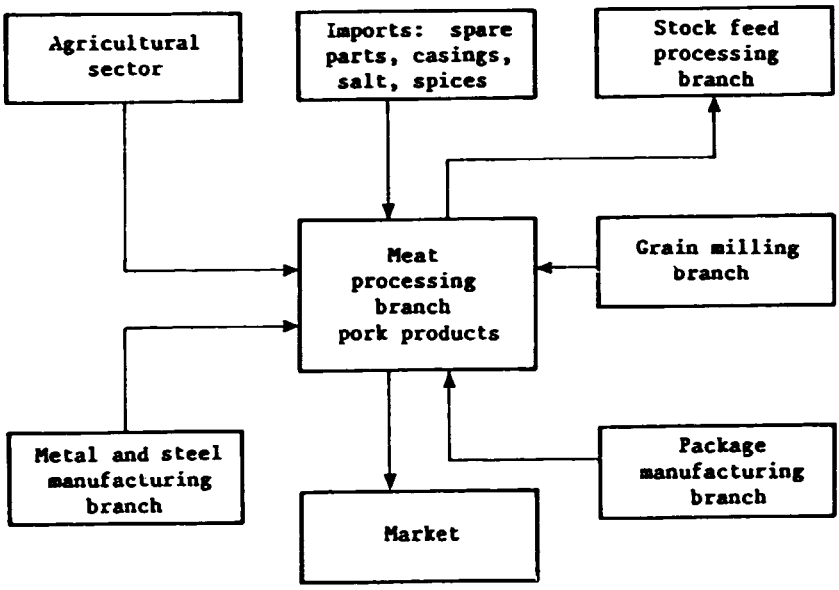
Key:
———— = Present linkages
- - - - - - - - = Potential linkages

Source: "The regeneration of Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Liberia in January-February 1989 (PPD/R.23, p. 62).

Figure III illustrates the major linkages of the meat-processing branch in Zambia.

Other than meat, the branch produces salt, flour, milk powder, rice, casings and bags for packaging. A limited volume of casings, salt and spices needs to be imported. This branch, in common with others in Zambia, is constrained by the shortage of foreign exchange, but its import requirements are modest and it appears that it is not currently experiencing major problems. As in the other countries under survey, the irregular availability of foreign exchange adversely affects branch performance when spare parts are required. The forward linkages are two: with the consumer and with the stock feed processing industry, which uses offal as an input.

Figure III. Zambia: linkages in meat processing



Source: "The regeneration of Zambian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Zambia in May-June 1988 (PPD/R.19, p. 21).

2. Major problems and constraints

Two constraints common to the development of the branch in all the countries under review are shortages of raw materials and spare parts. The latter constraint is generally a result of foreign exchange shortages, since spare parts have to be imported in the majority of cases. Foreign exchange shortages, often compounded by low levels of agricultural production, also explain the inadequate supply of raw materials.

In Angola, the acute shortage of pigs and cattle is the main problem. This is largely the result of the continuing war, which has prevented the raising of animals in many areas and has seriously disrupted communications between producing regions and the densely populated areas where manufacturers and consumers are concentrated. In certain central areas, there is a large surplus of animals. However, this surplus is not marketed because of transport problems and the fact that potential buyers cannot offer acceptable goods in payment.

The supply of pigs has also been limited by frequent outbreaks of swine fever, which is said to be caused by the poor state of hygiene prevailing in government-owned slaughterhouses. A further constraint lies in the regular power cuts, which damage not only the products and inputs stored in refrigeration chambers but also the installations themselves, since sharp temperature fluctuations can cause walls to crack. Moreover, certain production processes require a long and complicated restarting procedure, even after a short loss of power. This, in turn, necessitates diesel generator plants, which have to be imported.

In addition, the branch must struggle against a high incidence of pilferage. Cash can buy little, since consumer goods are in very short supply. As a result, raw materials, packaging, spare parts and finished goods are stolen on a large scale since they offer the means of barter. One factory reports that it receives, on average, 45 per cent less fish for processing than it is invoiced for. It is not uncommon for a factory to lose up to 35 per cent of its stocks.

In Liberia, several poultry slaughtering and processing firms, some of which are part of larger intergrated poultry enterprises, closed after 1982-1983 owing to mismanagement, inadequate working capital, irregular feed supply and shortages of bank credit. Those enterprises still operating encounter great difficulties in importing their principal raw materials (feeds, day-old chickens, packaging and spare parts) because of the scarcity of foreign exchange.

Before 1981 the branch was protected by a ban on the import of chickens. The subsequent liberalization of imports brought competition from very low priced European chickens, forcing many poultry operations out of business. This remains a major problem for the surviving firms. In an effort to reduce their imports of inputs, private producers are beginning to contract out the local farming of feed and are establishing new hatcheries. This trend is constrained by difficult access to credit at acceptable terms.

The pork products branch in Zambia suffers from a shortage of slaughtering pigs and, to a lesser extent, from inadequate spare parts for essential equipment. These two problems explain the low capacity utilization reported by some firms. In the current sellers' market, meat is sold without difficulty, but new storage space and equipment and packaging facilities will be needed once pig production increases significantly.

C. Fruit and vegetable processing

1. Characteristics of the branch

Inputs

The fruit and vegetable processing branch was surveyed only in the United Republic of Tanzania, where fruit and vegetable farming is dominated by subsistence farmers, each cultivating a few hectares. Large-scale operations are very few in number, and commercial contract cropping has barely developed. None of the

factories in the branch has a significant land area of its own to act as a supply nucleus.

Apart from occasional shortages, however, there is generally an adequate seasonal supply of fruits for processing, such as oranges, mangoes, pineapples, passion-fruit and tomatoes. The problem lies in supplying the factories with fruit regularly and in good condition. There is a severe shortage of lorries, none of which are converted for refrigeration and fruit transport. The outlying roads are in a very poor state. This causes the journey time from harvesting to arrival at the factory gate to exceed two days on occasion and causes extensive damage and losses, which reportedly reach 50 per cent in extreme cases.

Output and markets

Output statistics on the fruit and vegetable industry in the United Republic of Tanzania are very limited. Shortages of spare parts and losses of raw materials are known to constrain output. Research has identified export demand for Tanzanian fruit products, but this can be converted into sales only if the quality of the products and packaging is improved and supply becomes more reliable.

Spatial distribution

The UNIDO survey identified 7 of the 26 reported fruit processors in operation in the United Republic of Tanzania. Most of the fruit-processing plants are found in and around Dar es Salaam.

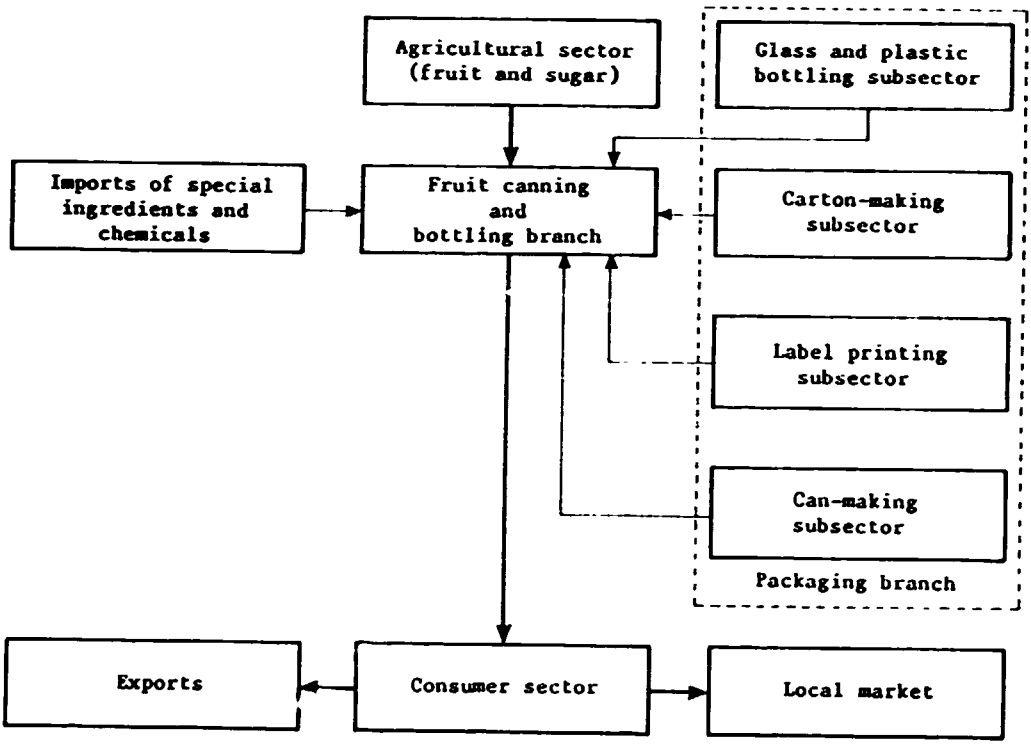
Of the 26 reported units, many of which are not operating, 6 are registered as public companies and 20 as private enterprises.

Linkages

The fruit and vegetable processing branch in the United Republic of Tanzania has backward linkages with domestic agriculture and with the packaging branch. Commercial fruit farming takes place on a very limited scale, so processing plants are almost entirely dependent on small-scale subsistence farmers for their supplies. During the off-season they rely on imported supplies. Special ingredients, such as preservatives, are all imported, as indicated in figure IV.

The country has only one supplier of cans and one of glass bottles, but neither can meet peak demand for its products. Squash and sauce bottles, for example, must be bought at least six months in advance. Moreover, the quality of the cans is poor, and there are no pilfer-proof, recloseable caps of local manufacture for the glass bottles, which are required by the regulations of the United Republic of Tanzania Bureau of Standards. The crown caps used for beer and soft drinks bottles are not suitable for squashes and sauces. The processing units have therefore started to use moulded plastic bottles, made from imported granules and sealed with imported aluminum roll-on caps or locally made plastic flip top closures. Cartons tend to be expensive, and their quality is inadequate. The poor quality of packaging materials is a major constraint to the development of exports by the branch.

Figure IV. United Republic of Tanzania: linkages in fruit and vegetable processing



Source: "The regeneration of the Tanzanian manufacturing industry with emphasis on agro-based industries", Report of the field mission to the United Republic of Tanzania in February-March 1988 (PPD/R.26, p. 49).

2. Major problems and constraints

The main constraints facing the branch in the United Republic of Tanzania are the poor quality, irregular supply and high price of its primary packaging materials (cans, glass and plastic bottles, caps and labels). The same problems apply to cartons. None of the processing units has cold storage facilities, an indispensable requirement because of the irregular deliveries of inputs. Shortages of foreign exchange severely limit imports of otherwise unobtainable inputs such as preservatives, analytic reagents for quality control, plastic granules for bottles and caps, boiler water treatment chemicals and mechanical spare parts.

Shortages of well-trained and qualified management and of all other higher level staff (accountants, technologists, engineers and

chemists), as well as the lack of training facilities, pose serious problems for the branch.

There is also a critical shortage of double-refined sugar, which is required for conservation. If, as has been predicted, production ceases altogether, fruit processors would need to import white sugar to maintain their standards. Domestically produced single-refined sugar could be used by the branch, but this is also in short supply.

D. Animal feed manufacturing

1. Characteristics of the branch

Inputs

This branch was covered in Liberia, United Republic of Tanzania and Zambia. It uses a wide range of inputs, including cereals and cereal bran, oil-seed cake, fishand bone-meals, offal, salt and other minerals. Most of the inputs could be procured locally, but the condition of the agricultural sector and of upstream industries is such that the branch must live with a high degree of import dependence. In all three countries, the branch imports all its essential vitamin requirements.

The stock feed manufacturing branch in Liberia has been acutely dependent on imports for its major raw materials (maize, soya-meal, fish-meal and concentrates). Between 1981 and 1984, 20 per cent of Liberian demand for stock feed was met by domestic millers, who imported 80 per cent of their inputs. However, the last Liberian mill was closed in 1984, and the country has since relied almost totally on imports.

Bright layer farm, a poultry operation in Kakata mentioned in section B.1, is in the process of installing a feed mill, which was due to start production at the end of 1989. Although the mill plans to use imported maize initially, it hopes to work in the long term with supplies purchased from local contract growers under arrangements that have not been specified. There are no data on maize production.

Cassava chips, pellets or flour could substitute for imported cereals and other local filler materials for part of the feed. Rice bran is also a potential input. Much of the rice is milled in villages and the bran fed to farm animals. However, the bran that is the residue of commercial rice milling should be collected for further processing. Other potential inputs that are domestically available are pulses, slaughterhouse by-products and fish-meal.

In the United Republic of Tanzania the branch relies mainly on local supplies for maize, oil seed cake, wheat bran, fishand bone-meal, limestone and salt, supplemented by imports of vitamins, amino acids and trace minerals.

Fish-meal has been in short supply since the plant at Mbeya halted regular operations in 1986. The branch now depends on

irregular supplies of small dried fish from the lakes purchased from fishermen and from middlemen at wildly fluctuating prices. Offal and bone-meal have been unobtainable since the abattoir was closed in 1984. Access to oil-seed cake is also limited because several oil-seed processors have closed. At the same time, supplies of oil-seeds are scarce, mainly as a result of transport constraints.

Imports of essential vitamins, amino acids and trace minerals were severely limited until recently, when supplies began to come from Canada under an aid programme. Branch performance is generally weakened by the low productivity of the agricultural sector and of upstream processing operations and by the shortage of transport facilities.

As in the two other countries, the animal feed branch in Zambia depends on imports of the same essential ingredients, mainly minerals and vitamins. The domestic processing of by-products from slaughterhouses, such as offal, blood and bones, and, to some extent, condemned meat and carcasses, could provide the branch with considerable volumes of inputs. This possibility has apparently not received much attention, and existing rendering plants are not operating efficiently. Cereal inputs are normally produced domestically, but the quality of the maize, for example, is generally poor, as the set prices paid to farmers do not take into account quality. Lucerne-meal and fish-meal are not currently used by the branch but could serve as raw materials.

Output and markets

The domestic output of animal feed in Liberia is presently minimal. Only the National Milling Company, mainly a producer of wheat flour for human consumption, is manufacturing some bran and compound feeds for stock-breeding. The raw material, wheat, is entirely imported. The animal feed production level of the company is not known. The new Bright feed mill will have a theoretical capacity of 3 tonnes per hour. The Liberian market for stock feed is estimated at 12,000 tonnes per year, one third of which is imported, which indicates the opportunities for new domestic units.

The branch in the United Republic of Tanzania is dominated by the Tanzania Animal Feeds Company Ltd. (TAFCO), a parastatal with total installed capacity of 170,000 tonnes per year. Its largest plant, in Dar es Salaam, has a capacity of 10 tonnes per hour. The smaller, privately owned companies in the branch have an estimated combined capacity of 80,000 tonnes per year. In 1988, the output of TAFCO amounted to a little more than 15,000 tonnes, of which the Dar es Salaam unit accounted for 8,000 tonnes. The private sector contributed an estimated 50,000 tonnes towards domestic demand of about 220,000 tonnes.

About 95 per cent of output consists of poultry feeds, the balance being for pigs and cattle and for special experimental feeds. Sales take place predominantly at the factory gate. There are no imports to cover the large gap between supply and demand. Consequently, many farmers mix their own feed, using imported minerals and vitamins. Given the unfulfilled demand in the

domestic market for animal feed and also the fact that TAFCO prices exceed those on the international market, prospects for exports by the branch are remote.

The production of stock feed in Zambia fell from 192,000 tonnes in 1980 to 140,000 tonnes in 1987. Aggregate nominal capacity is put at 244,000 tonnes. The most important producers are E. C. Milling Ltd., National Milling Ltd., Zatco, Indeco Milling Ltd., Chimanga, and Kabwe Milling.

Total demand is estimated at 3,000,000 tonnes per year but fluctuates with product quality and prices, which are fixed by the Government. There is some interest in Zambian stock feeds in the United Republic of Tanzania and Botswana, and the branch is exploring regional export possibilities. However, domestic shortages, combined with the current export clearance and licensing system, are expected to constrain export development.

Spatial distribution

No feed manufacturers are presently operational in Liberia, although the Bright feed mill was scheduled to start production in late 1989. The latter is privately owned, as were those units at Monrovia and Gbarnga that have closed down.

There are 24 feed plants on the mainland of the United Republic of Tanzania, 14 in Dar es Salaam, two in Moshi, two in Arusha and one each at Lindi, Mbeya, Mtwara, Mwanza, Kigoma and Shinyanga. In addition there is one unit at Zanzibar. The four largest plants, located at Dar es Salaam, Moshi, Mbeya and Mwanza, are owned by Tafco, a subsidiary of the parastatal National Milling Corporation. A study of industrial licenses issued shows that there are at least 16 privately owned units, many of which are newly established but small.

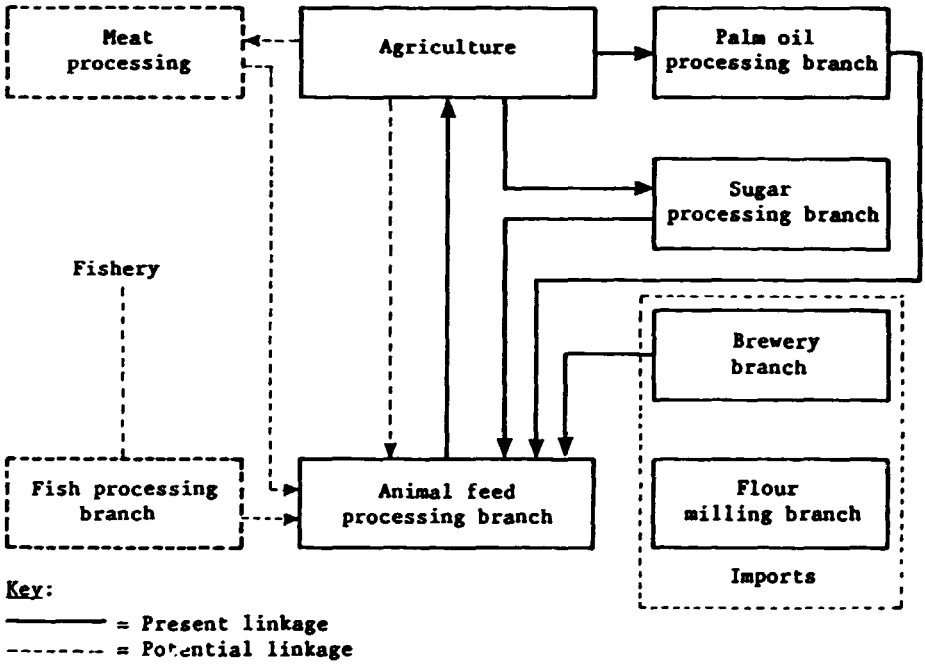
Most of the stock feed plants in Zambia are found along the line-of-rail, with the exception of some small units that are owned by the Cooperative Unions. Of the total processing capacity in Zambia, 50 per cent is located at Lusaka, 8 per cent elsewhere in Central Province, 30 per cent in the Copperbelt, 11 per cent in Southern Province and 1 per cent in other provinces. Parastatals account for 95 per cent of output.

Linkages

A well developed feed industry normally involves a network of backward linkages. The branch may use inputs from the agricultural sector and food-processing industries.

In Liberia, where the branch is still in its infancy, the backward linkages are less pronounced. This is indicated in figure V. It should be remembered that the branch is important for boosting the earnings of many food processing industries by providing a ready market for their by-products and wastes. The present linkages refer to the plants that are currently operational.

Figure V. Liberia: linkages in animal feed manufacturing

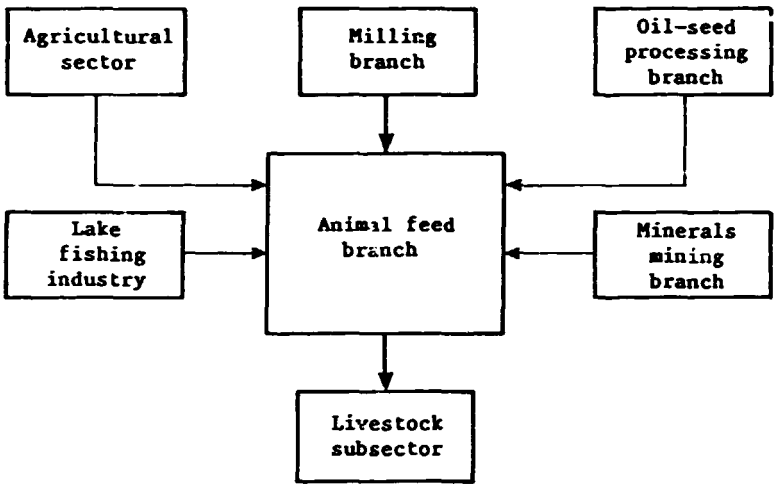


Source: "The regeneration of the Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Liberia in January-February 1989 (PPD/R.23, p. 64).

The animal feed branch in the United Republic of Tanzania has backward linkages to the agricultural sector for grains, the milling branch for brans, the oil-seeds processing branch for seed-cake and the fishing industry for dried fish. The forward linkage is to the livestock subsector, as indicated in figure VI.

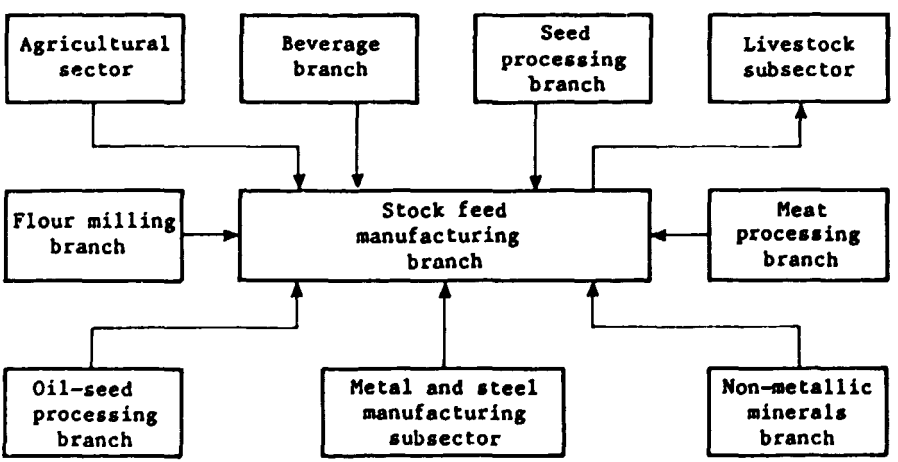
The branch in Zambia has backward linkages to the agricultural sector and other manufacturing subsectors, notably flour milling, oil-seed processing and meat processing, as illustrated in figure VII.

Figure VI. United Republic of Tanzania: linkages in animal feed manufacturing



Source: "The regeneration of the Tanzanian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to the United Republic of Tanzania in February-March 1989 (PPD/R.26, p. 54).

Figure VII. Zambia: linkages in animal feed manufacturing



Source: "The regeneration of Zambian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Zambia in October 1988 (PPD/R.19, p. 27).

2. Major problems and constraints

The branch in Liberia has four principal constraints. There is a shortage of domestic inputs, since farmers have few incentives to grow and market the necessary products. The branch must also live with a shortage of spare parts and equipment as a result of limited access to foreign exchange. In addition, it suffers from the present weakness of commercial meat production, which results in low demand for animal food. Fourthly, capable managers, technicians and skilled workers are in short supply. The constraints are all inevitable consequences of the low level of economic development. The branch will have to be entirely rebuilt, which itself requires the return of stable economic conditions.

Some of the constraints on the branch in the United Republic of Tanzania have already been highlighted in the section on inputs. The shortage of key inputs, notably the animal protein supplements, means that branch output often breaches the specifications of the Tanzanian Bureau of Standards. The absence of regular preventive maintenance and the shortage of foreign exchange to purchase spare parts have led to increasingly regular plant breakdowns and complete stoppages. Inadequate roads and the lack of lorries are also substantial constraints.

In Zambia there are the same foreign exchange constraints on the imports of inputs. With offal, there is the additional problem that the structure of relatively small slaughterhouses militates against producers making economies of scale. The branch has the same problems of spare parts shortages and irregular plant maintenance that have been noted in the United Republic of Tanzania.

Laboratory facilities do not exist in most Zambian plants. Given the uneven quality of feed ingredients, this is a major obstacle to quality control. In the absence of adequate monitoring, the finished product is not uniform, and an excessively high fibre content is found in poultry and pig feeds. Protein deficiencies also create lower quality stock feeds, which has adverse effects on the quality of the animals that consume them. The Zambian Standards Institute has established national standards for the different types of stock feed, but these are not enforced by regulations, apparently because there is no body to administer a control system. There are no established national standards for inputs, with the exception of maize.

The pricing of ingredients is set irrespective of the level of impurities, or of protein and fibre content. Consequently, quality suffers as producers have the incentive to keep their costs down. Prospects for the branch would be enhanced if national standards for inputs were established and if stock feed prices were related to quality. These changes assume the creation of a qualified, independent laboratory to serve the national stock feed branch. This need is clear in view of the weaknesses of the few existing laboratories: test samples are not always quickly assessed, results are not always passed to the appropriate parties and there is a low level of coordination between quality control centres and individual plants. These quality-related constraints hold back livestock development and weaken efforts to develop export markets once domestic demand is met.

E. Wood processing

1. Characteristics of the branch

Inputs

This branch was covered in Liberia, the only country with large forestry resources. Almost half of Liberia's territory is covered with forest. Timber harvesting within national forest areas and other productive forest land is regulated on the basis of the Forest Management Plan and other Government policies. These regulations restrict cutting to cases when the trees felled are replaced by replanting and/or natural regeneration. In reality, however, mining, road construction, urbanization and shifting cultivation patterns have continued to erode forestry resources. While the depletion of reserves has been even more severe elsewhere in West Africa, such as in Côte d'Ivoire, where an estimated two thirds of the forest has been cut down since 1956, it is nonetheless obvious that measures must be taken in Liberia to reverse the trend.

An increased volume of wood processing would help to preserve forests for the simple reason that fewer trees need to be felled to attain the same level of earnings from unprocessed timber. This would encourage better forest conservation practices per se. A similar policy could also be applied to other African countries that still retain significant forest cover, such as Gabon, Congo and Zaire. A new regulation on exports of wood came into effect in Liberia in March 1988. It imposed an obligation on logging companies to process 10 per cent of extracted logs locally. If implemented, this could boost operational sawmilling capacity by an estimated 25-50 per cent. It is difficult, however, to enforce such a regulation, since authorized logging companies generally operate in remote areas, where they cannot be easily supervised.

Current sawmilling operations in Liberia are inefficient. Slabs and off-cuts are used as fuelwood, and large quantities of wood residues and waste are left to rot. Productivity is low and installed machinery is normally underutilized, mainly because roads and logging trucks are poorly maintained. In these circumstances sawmills cannot be properly supplied. This, in turn, constrains the performance of the secondary wood-processing industry, which uses the primary products for further manufacturing and assembly into standard products such as scaffolding, partial frames, beams and formwork; non-standard building components such as doors, windows and mouldings; furniture; packaging (crates, boxes and pallets); and other products such as hatches and boats.

Similar problems are reported from the branch in other timber-producing countries in Africa. The Government of Equatorial Guinea set itself a target: by 1990, 60 per cent of its timber should be exported in processed form. However, this schedule has not been met, partly because of deficiencies in the sawmilling industry and partly because of changes in the world market, which are explained in the next section. In the Congo, a plantation company has shown flexibility: its eucalyptus interests near

Pointe-Noire, which are ideally located for exports, were intended for a paper and pulp industry that has not materialized, but the company is now establishing a joint venture to market a system of cloning that produces hybrid eucalyptus trees that grow as much as four centimetres per day.

Output and markets

Output data in Liberia are available only for sawn wood, of which about 14,000 cubic metres are produced monthly. The export component of this total is not known. The domestic market for wood products is modest, given the weakness of the economy, which contracted each year from 1983 to 1988. Secondary wood products usually cannot compete with imports, which are less expensive and of better quality. In this context, an encouraging example has been set by Ghana, which has developed a furniture industry and started to penetrate overseas markets with products of proven quality. The small scale of the Liberian market is another obstacle to increased processing, although it is not a constraint for other African producers, such as Nigeria and Côte d'Ivoire, whose scale is large enough to make a modest secondary processing industry viable for domestic consumption.

Changes in the developed country market for tropical timber should have benefited African producers that export their timber principally in log form. This is because the South-East Asian producers have introduced, and largely enforced, bans on exports of unprocessed logs. However, freight charges to Europe, the principal market for African countries, make African exports less competitive than those of South-East Asia. Furthermore, the European market has changing needs: in 1980 it imported 62 per cent of its tropical timber in unprocessed form, but by 1987 the proportion had fallen to 39 per cent. This trend makes still more urgent the development of the wood-processing branch in Liberia.

Spatial distribution

Most logging and wood-processing operations are located in the major forest reserves in the north-west and south-east of Liberia. The plants are situated at the points of access to main roads or ports, as the branch is heavily dependent on the export market. In terms of the number of companies and employees, primary processing dominates the branch, with exports largely in raw log form. In 1986-1987, there were 17 operational sawmills producing sawn timber, veneer and plywood.

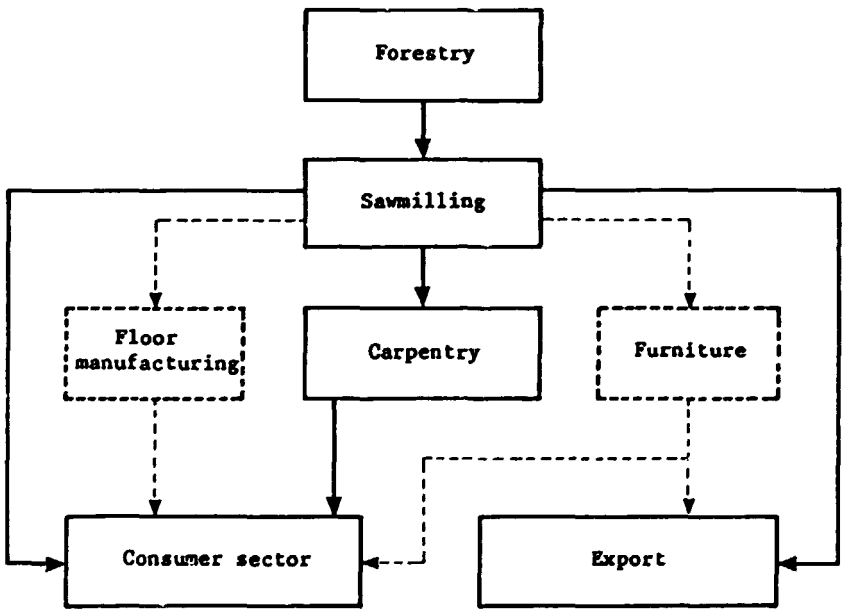
Seven sawmills were not operational in 1987. The branch also has secondary processing units, all owned by Liberians: 167 were registered with the Liberian Wood and Carpentry Industry Association in the Greater Monrovia area in 1987. Such units are found in other major towns, but their exact numbers are not known. Private ownership is predominant, with only one sawmill fully Government-owned. The location of units mirrors that in Nigeria, Côte d'Ivoire and Cameroon and is more logical than in the key producing countries of Central Africa, such as Congo and Zaire: sawmills are generally found at points of good access in forest areas, with secondary activities located in or near urban centres.

Linkages

Forward linkages are not well developed in Liberia. Doors, panels, crates and pallets are examples of manufacturing, but the volume of production is modest.

As illustrated in figure VIII, sawn timber is also sold to carpenters working for the domestic market. Potential forward linkages are shown in the figure, including export-oriented knock-down furniture industries and the manufacture of floorboards and parquet floors for direct installation. Market surveys would have to be carried out to identify products that can be manufactured at competitive prices and of export quality, but the overall potential for forward linkages is considered good.

Figure VIII. Liberia: linkages in wood processing



Key:

———— = Present linkage
- - - - - - - = Potential linkage

Source: "The regeneration of Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Liberia in January-February 1989 (PPD/R.23, p. 53).

In other West African countries, a common forward linkage is to the fibreboard, plywood and veneer industry. The furniture industry is dominated by artisanal production, with the exceptions of Ghana and, to a lesser extent, Nigeria and Côte d'Ivoire. As already noted in the section on output and markets, linkages to export markets are weak. Competition from South-East Asia and Europe in secondary wood processing leaves a formidable challenge for African producers such as Liberia. The potential of regional markets should be explored.

2. Major problems and constraints

The branch in Liberia faces substantial constraints in all areas. Supplies of wood inputs at competitive prices are inadequate because of the inefficient extraction and transport of logs. Productivity in the sawmills is very low, and secondary processed wood is both non-standardized and of low quality. Operators have great difficulty in reaching the break-even point because of high production costs and low prices in the domestic market.

Lesser known and relatively inexpensive species of wood are poorly promoted on the local market. The branch suffers from a lack of experienced and trained management and skilled personnel. Operators have not often recognized the need for shortand long-term planning and have a poor grasp of pricing considerations and record-keeping procedures. The units tend to be undercapitalized and have restricted access to foreign exchange, so that plants are poorly maintained owing to a shortage of spare parts. Institutional credit facilities are scarce, especially for Liberian-owned operations, and loan applications are processed slowly.

These constraints are covered in other studies of wood processing in West Africa,* but their gravity differs from country to country. They are often more serious for secondary than for primary processing, two examples being transport (because the products require more care and more packaging) and trained manpower (because of technical and marketing needs).

F. Vegetable oil milling

1. Characteristics of the branch

Inputs

This branch was surveyed in Angola, Liberia and Zambia. Vegetable oil mills can use a variety of inputs: palm-oil fruit and kernels, cotton seeds, sunflower seeds, soya beans, olives, groundnuts and coconuts. With this wide range of options for inputs, the branch can operate in most climatological zones in Africa, although the type of technology used will depend on the nature of the input.

*See, for example, the country reports submitted to the regional meeting for Africa, held in 1982 at Vienna, to prepare for the First Consultation on the Wood and Wood Products Industry.

At the village level, small quantities of the local oleaginous crop are sufficient to permit artisanal processing. Larger scale operations require access to greater volumes of inputs of relatively uniform quality. Supplying the larger plants on this scale often presents difficulties.

In Angola the branch used to have access to locally produced raw materials, such as sunflower seed, palm-oil seed and cotton seed, for all its needs. Before the civil war it could not use all the inputs, and palm-oil seeds were exported (11,500 tonnes in 1970). The massive dislocation and the near-abandonment of many rural areas in the war have severely curtailed this supply (Ministry of Planning data show that only 1,190 tonnes of palm oil were marketed in 1985), making the branch dependent on imports. The single unit operating in the branch cannot function at a profit due to the fixed price structure imposed by the Government, and it may well decide to abandon the grinding, pressing and chemical extraction of seeds. In this case, it would refine crude oil into edible oil and soap. The oil-seeds-processing branch would then cease to exist.

In Liberia, palm cultivation and palm-oil processing are carried out by both modern plantations and mills and cottage industries. No area estimates are available for wild palm groves, but a World Bank report claimed that almost 45 per cent of agricultural households traditionally make palm oil from wild fruits. There is no refinery for crude palm oil. The value of imports of refined oil for local consumption averaged 3.85 million Liberian dollars ($L) per year in 1983-1987.

In the late 1960s and 1970s the Government became directly involved in the modern cultivation of oil-palms. Its target was to satisfy domestic need and then produce for export. In this objective it has been only partly successful. Exports are negligible, and the private sector dominates the branch.

Estimates of the Ministry of Planning and Economic Affairs suggest that the area planted with oil-palms currently amounts to 19,600 hectares, of which 5,600 hectares are run by smallholders under the Government-operated oil-palm scheme (the mills on smallholder farms are owned and operated by the Government). The remaining hectares consist of plantations, which are largely Government-owned. The condition of State-managed branch operations gives cause for alarm. Most plantations are approaching the end of their natural life of 15-16 years and are poorly maintained, as evidenced by the absence of fertilizer, the low rate of replanting and irregular and inadequate upkeep. One reason for this decline is that the mills, both small and large, operate at a fraction of their capacity and have done so for several years, thereby eroding the incentive to replant oil-palm. The yields on smallholders' farms compare unfavourably with those on wild palm groves, primarily owing to poor site selection and management, although the planting material, which is of the fenera variety, usually gives good results.

In Zambia, the investment plan of the Ministry of Agriculture and Water Development Task Force projected the production of oil-bearing seeds at 106,000 tonnes by 1988. However, the Ministry's final crop estimate put the total crop yield of sunflower seed, soya bean and cotton seed at 82,000 tonnes in that year. The output of groundnuts from oil extraction appears to be about 1,000 tonnes per year. Sunflower production fell dramatically in the first half of the 1980s, from 40,000 tonnes per year to 10,000 tonnes, but is now recovering under the stimulus of higher producer prices.

In the 1988-1989 growing year there were sizeable increases in producer prices for oil-seeds, amounting to 80 per cent for hybrid and composite varieties of sunflower seed, 43 per cent for unclassified sunflower seed, 29 per cent for soya beans and 52 per cent for cotton seed. These increases and subsequent ones are expected to lift production levels, allowing higher capacity utilization in the industry. Currently, large volumes of comparatively inexpensive crude vegetable oil are imported, but they are on an insufficient scale to meet the needs of the branch.

Output and markets

The sole operational oil mill in Angola has a capacity of 5,000 tonnes of refined edible oil per year, with a crushing capacity of 30 tonnes per day. Its output in 1987 was 2,461 tonnes of refined oil and 65 tonnes of palm kernel oil. Such data as are available suggest a sharp fall in output since the early 1980s. Mills not currently operational are thought to have a total capacity of 5,000 tonnes per year.

The Angolan market for edible oils is estimated at 30,000 tonnes per year and is largely met by imports, to the extent that foreign exchange availability permits. Domestic sales are normally made at the factory gate. Vegetable oil is considered an essential commodity, and owing to the extreme shortage, a license is required for exports. The manufacturer does not presently envisage exports.

Zambia's oil-seed-processing capacity was estimated at about 214,000 tonnes by a study of the United States Agency for International Development (USAID) in 1987.* The two largest operators, Refined Oil Products and Premium Oils, accounted for about 73 per cent of the total, or 157,000 tonnes per year. Medium-size firms processed about 50,000 tonnes of oil-seeds per year. The balance was processed by roughly 40 small-scale cottage industries, some of them working by hand, with capacities varying from 12.5 to 180 kilograms per hour. The Interim National Development Plan, unveiled in August 1987 and since reversed in some key policy aspects, urged encouragement for enterprises producing essential consumer goods such as cooking oil. It envisaged additional supplies of oil-cakes for farmers and the stock feed industry, which currently meets about one third of demand.

*USAID, Study of the oil-seeds in Zambia, Report to the Ministry of Commerce and Industry of Zambia.

The installed modern oil-milling capacity in Liberia amounted to some 44 tonnes per hour in eight plants. The larger part is accounted for by three plants at Grand Cape Mount, Sinoe and Grand Bassa. Output is low, since some units have been closed down and others operate intermittently. In 1987, modern mills produced about 5,000 tonnes of vegetable oil. The greater part of domestic demand, estimated at 25,000 tonnes per year, is met by traditional village processing. There is no palm-oil refinery in Liberia, so refined palm oil must be imported. Sales of vegetable oil are effected at the factory gate, and exports are a distant prospect, given the production constraints.

Spatial distribution

The only oil-seed-processing company in Angola is Induve, located about 10 kilometres north of Luanda. It has been operating at a loss for many years. Before independence, a number of other crushing plants were in operation, five of the most important being located at Benguela, Malanje and Luanda. None of these plants is operational. The Benguela unit has very old equipment that could not be restarted if sunflower seeds were to become available again.

The branch also includes the following factories producing soap from vegetable oil: Induve, Luanda; Olmag, Luanda; Barata and Barata, Benguela; Sodete, Huambo. They are all said to be operational.

State-owned companies account for 36 per cent of branch employment, and the private sector, 64 per cent. The largest producers of edible oils and/or soaps are the privately owned Induve and the State-owned Olmag.

The palm-oil-processing branch in Liberia consists of a few modern crushing mills as well as many small village units that crush by hand for local consumption. A kernel-crushing mill is situated in the Monrovia Free Zone. As already noted, the larger units are either closed or running at very low capacities.

The Government operates oil mills on smallholder farms, which account for 73.7 per cent of the existing planted area, and on concessions. It owns, or is the majority shareholder in, 73.8 per cent of the total milling capacity in the country. Libinc, a private company located at Buchanan, supplies industrial oil to Rainbow Industries for soap manufacture and appears to be the most successful operation.

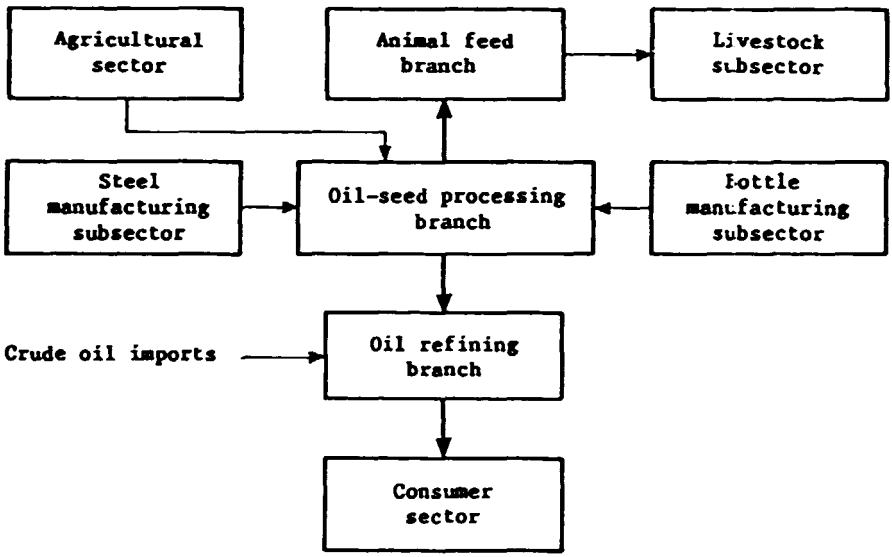
In Zambia about three fourths of the oil extraction capacity is accounted for by a small number of plants situated in the Lusaka region and Central and Southern provinces. Southern Province by itself produces about one third of the total domestic output.

Oil-seed processing in Zambia is dominated by the parastatal Indeco, which accounts for 75 per cent. The balance of 25 per cent is privately owned.

Linkages

In Angola the oil-seeds branch has a potentially strong backward linkage with the agricultural sector for its raw materials. As indicated in figure IX, there is an existing backward linkage with the bottle manufacturing industry for its container needs and to the steel manufacturing subsector for its spare parts. The branch has a direct forward linkage to consumers and the animal feed industry and, because oil-seed cake is a by-product of milling, to the livestock subsector. It also has an indirect forward linkage to consumers through soap manufacturing.

Figure IX. Angola: linkages in oil-seed processing

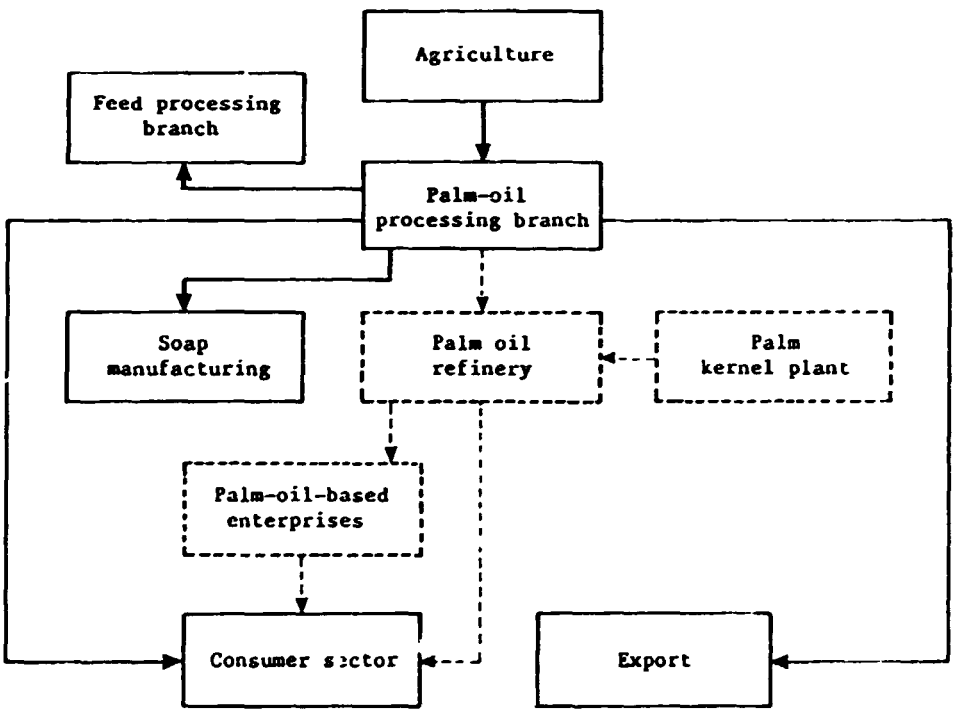


Source: "The regeneration of Angolan manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Angola in September 1988 (PPD/R.21, p. 53).

There is at present no domestic backward linkage, as raw materials are imported. Previously, inputs were available on the domestic market. The forward linkages to consumers and the animal feed/livestock industry have been greatly weakened and now depend on one processor, Induve. This linkage will disappear if Induve decides to abandon the grinding, pressing and chemical extraction of seeds and starts to import oil for refining. In the short term, the manufacturing capacity in this branch could be strengthened by technical assistance for the rehabilitation of Induve.

In Liberia, the branch has a backward linkage to agriculture and two forward linkages to soap manufacturing and stock feed processing. Some crude palm oil is sold directly to consumers, and the small balance is exported. Present and potential linkages are shown in figure X. To strengthen linkages, MVA and employment, rehabilitation of the existing palm-kernel processing plant should be considered. This would give the palm-oil extraction units a market for the kernels, which are presently used as fuel or discarded.

Figure X. Liberia: linkages in palm-oil processing



Key:

——— = Present linkage

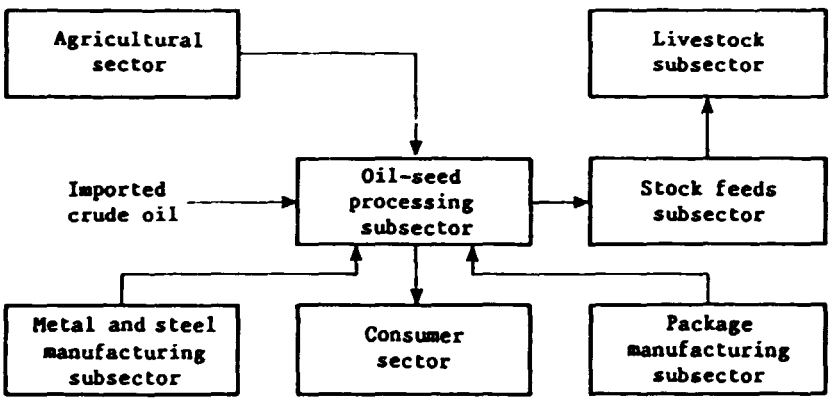
- - - - - - - = Potential linkage

Source: "The regeneration of Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Liberia in January-February 1989 (PPD/R.23, p. 58).

A palm-oil refinery has been under consideration by the Government. The survey concluded that demand in the domestic market and in the Mano River Union would justify such a plant. Refined oil availability would enable the branch to exploit further forward linkages.

The major linkages in the oil-seed processing branch in Zambia are highlighted in figure XI. The pattern is straightforward and similar to that in Angola and Liberia, although the backward linkage to agriculture is better developed in Zambia than in the other countries. The linkage with the stock feed industry is also strong: in several cases, the latter operate adjacent to oil-seed processing in the same plant.

Figure XI. Zambia: linkages in oil-seed processing



Source: "The regeneration of Liberian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Zambia in October 1988 (PPD/R.19, p. 24).

2. Major problems and constraints

The major problem facing the branch in Angola is the pricing of its main product, edible oil, which is termed a strategic commodity. The controlled prices are so low as to discourage any new investment in the branch, even assuming the removal of other constraints, since there are no prospects of making a profit from the business. At the same time, investors would have to achieve an unrealistically high level of capacity utilization to compensate for the low prices, but this is not possible because the seeds have to be imported and foreign exchange is not regularly available to the branch.

Having no access to locally produced raw materials or to adequate foreign exchange for spare parts and experienced expatriate engineers to train local personnel, the branch allowed its plant to deteriorate and may start to import crude oil for refining. Internal stability would initially free foreign exchange resources presently allocated to military expenditures and then, over a longer period, create an environment in which Angolan agriculture could again become a supplier of inputs. The renewal of rural communities would also necessitate large public investment in roads and power supplies. The Government has various policy options that are widely believed to offer encouragement for the industry: one example is the removal of price subsidies, such as that on edible oil, and tentative steps towards economic reforms have been hinted at.

The principal constraint on the branch in Liberia is the lack of coherent development policies and targets. This lack is crippling the whole economy, with the possible exception of some raw materials extraction industries such as iron ore. The branch is also constrained by flaws in present and potential linkages. Most plantations are poorly managed, while oil-palm reserves have been partly destroyed by inadequate upkeep and harvesting techniques. Uncollected crops have sometimes been left on the trees because of the insufficient capacity of the mills. A potentially strong raw material base has become neglected and underutilized.

Deficiencies of management and working capital mean that all plants operate intermittently, at very low output levels, resulting in high production costs and operating losses. Furthermore, the prevailing low level of skills and, more importantly, the lack of motivation on the part of employees, owing to low salaries and the non-payment of wages, also reduce productivity. Plant breakdowns and closures are common because of foreign exchange shortages, poor planning or the unavailability of imported spare parts.

Major constraints to the full utilization of capacity in Zambia are inferior equipment, including non-existent or poor cleaning facilities, the lack of spare parts, the poor working environment and the irregular supply of raw materials.

The oil mills tend to be technically unsophisticated and ill-suited to the type of input, and the equipment is generally old. The efficiency of oil extraction suffers accordingly. The inadequate cleaning facilities mean that impurities enter the machinery along with the seeds. The shortage of spare parts is accentuated by the advanced age of most of the machinery. There is no spare parts manufacturing industry in Zambia, which leaves the branch vulnerable to the familiar problem of securing foreign exchange for imports.

Domestically produced oil cannot compete effectively with low-priced imports of crude oil, illustrating the need for some incentives for growers of oil-seed. In any event, the quality of the local inputs is inadequate (the presence of impurities that damage all moving parts, especially the expeller screws, has already been noted). This invariably leads to poor equipment performance and increases maintenance needs and breakdowns.

Many mills have the additional problem of price controls. There is usually a time-lag between an increase in the price of inputs and a rise in the price of edible oils. The resulting losses in earnings have led to some production stoppages. Companies combining the production of oil-seeds and stock feed have been able to absorb the losses by raising their stock feed prices.

G. Packaging materials

1. Characteristics of the branch

Inputs

This branch was surveyed in Angola, the United Republic of Tanzania and Zambia. The branch offers a wide range of products and uses inputs from a variety of sources, including agriculture, paper-mills and the glass and chemical industries. This discussion concentrates on materials with a potential linkage to agriculture and forestry. Sheet polyethylene bags are important as lining for fertilizer bags but much less utilized for other agricultural and agro-industrial purposes.

Bag manufacturing in Angola is based mainly on synthetic materials. Bags for cereals and coffee used to be made of jute, but in 1975 the only production line was closed. The raw materials for natural fibre bags used also to be produced locally, but the disruptions of the civil war brought total dependence on imported synthetic substitutes, mainly from the Federal Republic of Germany.

In the United Republic of Tanzania, paper bags and cardboard boxes are produced by the paper and pulp branch. The principal input, pulp, is manufactured within the branch. The main supplier is Southern Paper Mills (SPM) at Mufindi. It has an installed capacity of 90,000 tonnes per year of newsprint, kraft, machine-finished paper and pulp.

Most other converters rely on SPM to a great or lesser extent for paper and/or pulp. The paper and pulp mill division of Kibo Match Corporation at Moshi is independent of SPM, but it has difficulty in securing reliable and reasonably priced supplies of waste paper from Dar es Salaam. It manufactures board for conversion to plain cartons.

Kibo Paper Industries at Dar es Salaam relies on SPM for unbleached pulp for the manufacture of its corrugated carton board, as well as kraft paper for conversion to cement and grain sacks. It procures thicker, white-lined board from Kibo Match Corporation.

Twiga Paper, also located at Dar es Salaam, is almost entirely dependent on SPM for supplies of kraft liner and test liner for corrugated board manufacture and of kraft paper for conversion into grocery and other bags. It also uses some yellow machined paper from SPM for tea bags. The quality of the paper is inadequate for exports, and the company uses imported machine-glazed paper in its place.

The bag manufacturing industry in Zambia is almost exclusively dependent on imported raw materials, making it very vulnerable in view of the foreign exchange constraints. The UNIDO survey found in mid-1988 that the foreign exchange cost of these imports was estimated at 45 million kwacha (K) per year, although subsequent currency devaluations have boosted these costs. Polypropylene and polyethylene granules are imported from Europe, and there has been a steady increase in the price of polypropylene.

Alternative sources of natural fibre have been investigated in an effort to save foreign currency. Kenaf has been identified as the most suitable substitute for jute. Its fibre is of similar colour, length and smoothness, and it is stronger and more resistant to decomposition. It can be easily grown in Zambian agro-climatic conditions and processed with the same type of equipment as jute. A kenaf development programme has been launched. It is the Government's view that Zambia should become self-sufficient in natural fibres for the manufacturing of bags for grain, coffee, hessian cloth and twine. The survey concluded that the Government should consider possibly cheaper alternatives to jute, such as sisal, before funding programmes to produce kenaf.

The production target for kenaf during phase I of the plan (1987-1988) was 360 tonnes, estimated to require the cultivation of 450 hectares. In phase II (1989-1993), 1,500 tonnes would be produced on about 1,900 hectares. In 1987-1988, 400 small-scale farmers were recruited to grow kenaf on 200 hectares. Their output was estimated at 160 tonnes, assuming an average crop yield of 800 kilograms per hectare. This output was less than half the level targeted. In 1988-1989, the producer price of kenaf fibre was raised to K 6 per kilogram, which was then equivalent to $US 0.67. This price was set considerably higher than the cost of imported jute, reflecting the Government's wish to boost kenaf production and rural incomes and to save foreign exchange.

The results of phase I suggest that the targets for phase II may also fall short of expectations if no additional efforts are expended. Further producer price increases are necessary to persuade the small-scale farming community to extend its cultivation of kenaf. If it is to be successful, the kenaf development programme should also include the following elements: the supply of seed and fertilizer, extension services and research. The branch must improve coordination between the increase in kenaf cultivation and the planned rehabilitation of the Kifco jute line. Failure to do so is expected to prove costly.

Output and markets

The nominal production capacity and the output of bags in Angola are widely divergent. While nominal capacity was almost 12,000 tonnes, the output of raffia bags amounted to 679 tonnes in 1987, equivalent to about 4.2 million 50-kilogram bags. If the two operational manufacturers were rehabilitated and able to function without any major constraints, their output could rise to 2,280 tonnes per year, corresponding to about 40 million bags. The domestic market has been estimated at 6.5 million bags per year.

The return of internal stability would lead to a strong expansion of economic activities, including an increase in the demand for bags.

At present, bags are principally sold to Government agencies in Luanda, usually at the factory gate. The unmet domestic demand and the erratic quality of the product have deterred any serious consideration of exports.

The total output of paper packaging materials in the United Republic of Tanzania cannot be accurately estimated, because data on the smaller enterprises are not available. The four largest producers have a combined capacity of 112,000 tonnes per year. The branch has two very different elements: a highly competitive, limited market for cardboard boxes and an undersupplied, less competitive market for paper bags. The market for products of the branch is dominated by Dar es Salaam, although the proposed rehabilitation of the national transport network should broaden it. The quality of the materials is presently too low for export markets.

In Zambia, total demand for woven bags is estimated at 70 million, of which about 60 million are made from synthetic materials and 10 million from natural fibres, mostly jute. The domestic output of polypropylene and jute bags runs at 22-30 million and 0.25 million, respectively.

Although imports fill the gap, there is a good market for synthetic bags in Zaire and Burundi during the three or four months when demand in Zambia is low. The market for jute bags in neighbouring countries is especially encouraging. However, inefficient methods of purchasing raw materials and other production constraints currently prevent exploitation of these markets.

Spatial distribution

The five bag-manufacturing enterprises in Angola, largely privately owned, are located at Luanda, Lobito, Huila and Huambo. The four cities were formerly important manufacturing centres. The only two firms making raffia bags that are currently operational are situated at Luanda. The location of the plants at Luanda and Lobito, which are not operational, should facilitate their importation of raw materials (plastics) since both cities are also ports, but their supplies have regularly been interrupted by transport and payment delays.

Most units in the branch in the United Republic of Tanzania are small to medium in size and concentrated at Dar es Salaam because it constitutes a very large market. Eight units are located at Dar es Salaam and one each at Tanga, Arusha, Moshi, Zanzibar, Iringa and Mosi.

The four largest processors are Southern Paper Mills (SPM) at Mufindi, 720 kilometres from Dar es Salaam; Kibo Match Corporation, situated on the outskirts of Moshi, about 560 kilometres from

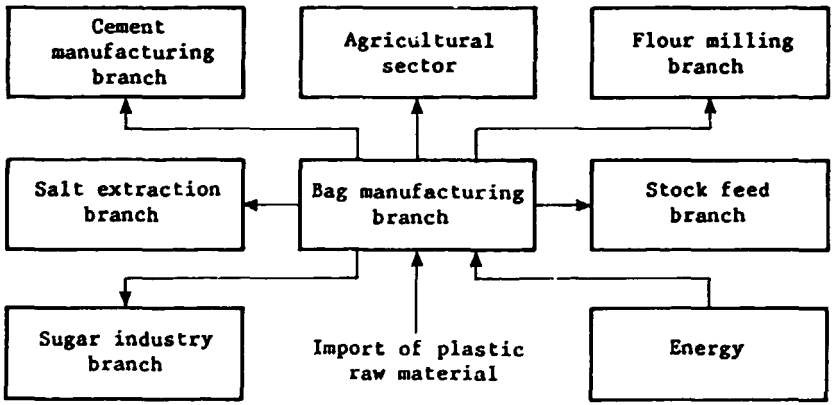
Dar es Salaam; and Kibo Paper Industries and Twiga Paper Products, both at Dar es Salaam. Of the largest enterprises, only Kibo Paper Industries and SPM are publicly owned.

Information on the spatial distribution of the branch in Zambia is limited. One bag manufacturer is located at Kabwe and another along the line-of-rail connecting the Copperbelt with Lusaka and its environs. Privately owned firms produce 86 per cent of branch output.

Linkages

The branch in Angola has strong forward linkages to the agriculture sector and to the food industry and o her subsectors, as illustrated in figure XII. Backward linkages are weak since the branch is largely dependent on imports of plastic raw materials.

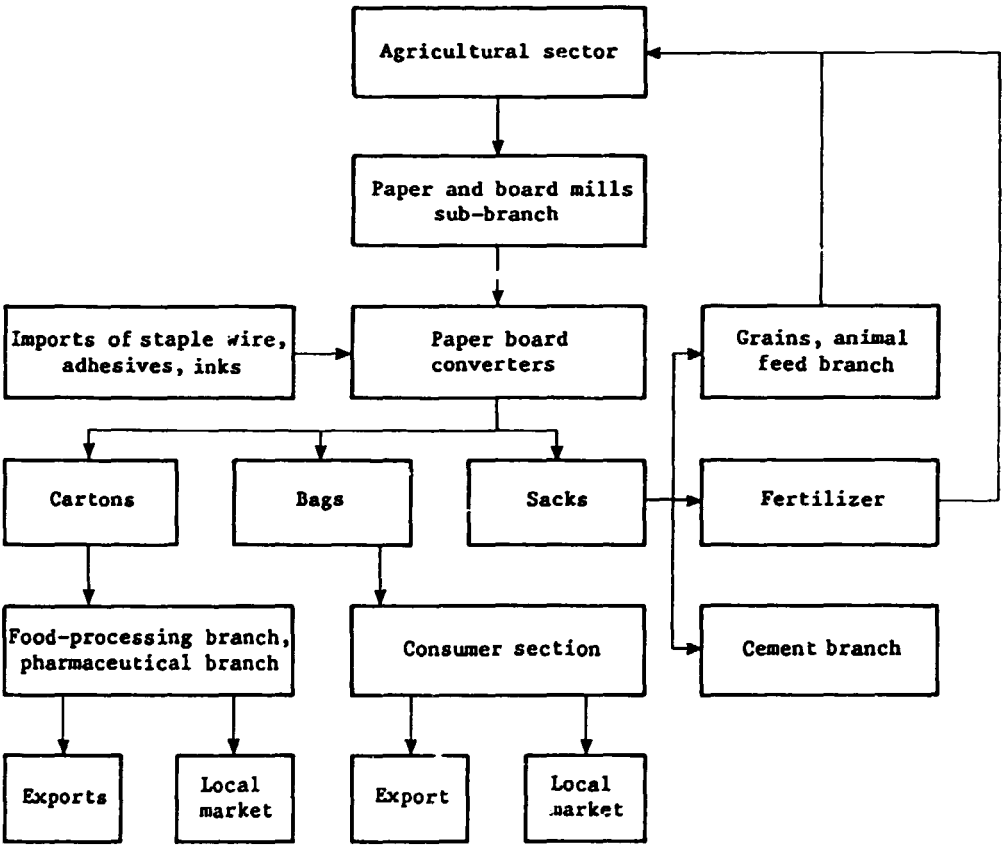
Figure XII. Angola: linkages in bag manufacturing



Source: "The regeneration of Angolan manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Angola in September 1988 (PPD/R.21, p. 61).

Linkages in the paper-processing branch in the United Republic of Tanzania are shown in figure XIII. As well as backward linkages to the paper and board mills sub-branch and indirectly to the agriculture and forestry sector, there are numerous forward linkages to the food processing, pharmaceutical, fertilizer and cement branches, all of which serve domestic and export markets. It should be recalled that one input is waste paper, which cannot be classified as a product of any branch.

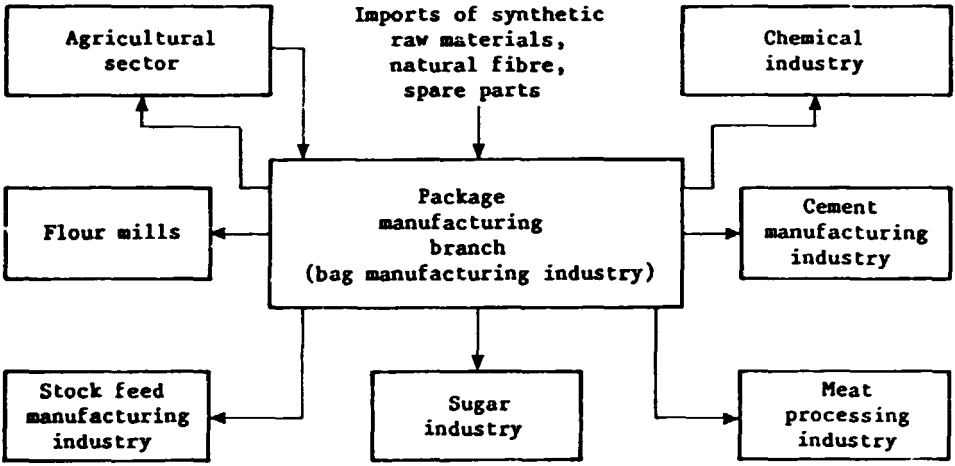
Figure XIII. United Republic of Tanzania: linkages in paper processing



Source: "The regeneration of Tanzanian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to the United Republic of Tanzania in February-March 1989 (PPD/R.26, p. 52).

Bag manufacturing in Zambia has a large number of forward linkages, although its backward linkages are extremely weak. Figure XIV shows the situation and points to the importance of the branch to a comparatively large number of manufacturing subsectors.

Figure XIV. Zambia: linkages in package manufacturing



Source: "The regeneration of Zambian manufacturing industry with emphasis on agro-based industries", Report of the UNIDO field mission to Zambia in May-June 1988 (PPD/R.19, p. 29).

2. Major problems and constraints

Plastic raw materials for the branch in Angola have become increasingly difficult to obtain. This is partly the consequence of import regulations stipulating that Angolnave, a State-owned company, must handle the sea transport. The arrival of its vessels in the port of shipment is often delayed and poorly coordinated with the delivery of the cargo to the dockside by the supplier. Payment, which is due when the cargo is loaded on board the vessel, is regularly delayed, and it is likely that the supplier gives priority to other customers with better records of payment.

In common with other manufacturing branches, the production of raffia bags is beset by mechanical deficiencies in equipment. Spare parts have proved difficult or impossible to obtain on the domestic market, while foreign exchange constraints have prevented the acquisition of adequate imports. A shortage of sufficiently trained personnel at many levels has accentuated maintenance problems.

The two raffia bag manufacturers have nonetheless achieved about 50 per cent capacity utilization, which is a high rate in the circumstances. However, synthetic bag manufacturers tend to concentrate on the production of other plastic goods, since the selling price set by the Government is low.

New agricultural output directives call for increased volumes of marketed crops, such as cereals, coffee, groundnuts and sunflower seeds. If implemented, this would boost demand for bags. If agricultural raw supplies were again normalized, mechanical breakdowns would become more frequent and prolonged because the deficient equipment would be in greater use. The Government has not projected the demand for bags in coming years, but it is obvious that rehabilitation of the branch, notably the raffia bag manufacturing sub-branch, is essential to meet higher demand.

The branch in the United Republic of Tanzania has two major constraints, the high cost and unreliability of road and rail transport and the high prices charged by SPM for its products. This high tariff stems from heavy production costs, which are further increased by the need to subsidize foreign exchange. All operators face stiff competition from better quality, lower-priced imports.

A further constraint common to all the countries under review in this branch is the acute shortage of foreign exchange to procure essential spare parts. Two other constraints are the shortage of heavy road and rail transport for ferrying raw materials and finished goods and the shortage of storage space to accommodate the fluctuating deliveries of inputs and the dispatch of finished goods.

The bag manufacturing branch in Zambia suffers from a number of problems similar to those in Angola and the United Republic of Tanzania, although the transport and input constraints are less marked than in Angola. Raw material supplies are a problem: 98 per cent of the branch's input needs are imported. Prices of synthetics and jute increased greatly in 1983-1988, leaving the branch short of its import requirements at a time when general economic difficulties in any event reduced the availability of foreign exchange.

The branch also relies on imports of spare parts for almost all equipment and will continue to do so, except for some simple parts that could be locally manufactured. This dependence has created further problems. When spares have been unavailable, some pieces of equipment have gradually been dismantled. In consequence, capacity has fallen and import needs risen.

H. Conclusions

Although this paper is limited in scope, some broad conclusions can be drawn, with regard to both individual branches and general issues. The meat processing branch in Angola has access to some inputs, although the plants have become isolated from rural areas by transport breakdowns. A return to stability would free these inputs for utilization by the branch. Farmers are reluctant to sell their stocks as the currency has become virtually worthless. The proposed massive devaluation will not ease this problem unless the farmers can buy consumer goods with their revenue from selling animals. In Zambia, the survey found that the Integrated Pig Management Scheme was motivating farmers to produce better bred pigs, and further assistance could be provided to the Scheme.

The animal feed manufacturing branch in Zambia currently imports key ingredients such as vitamins and minerals. The survey pointed to the possibility of processing slaughterhouse by-products to obtain the vitamin and protein needs of the branch. Finished products are often poor and are not of standard quality, pointing to the need for an independent central laboratory.

Also in Zambia, the survey found that producer price increases had boosted the output of raw materials for the vegetable-oil-milling branch and had lifted capacity utilization.

In Liberia, weaknesses were found in all aspects of the wood-processing branch, a dire state of affairs that cannot be improved by changes at the branch level.

In the United Republic of Tanzania, the survey came across a formidable pricing constraint in the packaging materials branch. The latter depends heavily on one company for its inputs. This company charges high prices because it is directed by the Government to subsidize its export prices for the sake of competitivity, at the expense of domestic consumers.

The four countries of sub-Saharan Africa are bedevilled by raw material shortages that result from the poor economic performance of the countries for most of the 1980s. Domestic inputs are often in short supply, sometimes because of poor harvests and sometimes because of poor Government policy in pricing and the allocation of public resources. This raw materials gap cannot generally be met by imports because of foreign exchange shortages, which have been caused by a combination of weak prices for Africa's commodity exports, debt service requirements and the allocation of resources to unproductive projects. Improved incentives for farmers and an improved rural infrastructure, including producer services, would help to solve this problem.

Spare parts are also in short supply. The scale of the needs is not large enough to justify the establishment of large spare parts industries in individual countries. However, the establishment of a significant spare parts industry on a regional basis may be justified, since many countries struggle with the same problem. At the national level, small units could be set up to manufacture the simpler spares. This shortage is also explained by foreign exchange constraints. While these constraints will remain in the foreseeable future, there are ways of alleviating their impact. For example, Zambia and the United Republic of Tanzania are members of the Preferential Trade Area for East and Southern Africa (PTA), which operates a mechanism to handle trade between members without drawing on foreign currency. This mechanism is being put to growing use, and undoubtedly the scope exists for its further expansion.

Another common weakness in the branches is management. This is a common problem in parastatals, where management often has too little freedom to act. In other cases, in Angola and Liberia, the managers have abandoned the units. This constraint is reflected in poor marketing, weak planning, inadequate quality control and

insufficient records on which to base management decisions. Selective technical assistance programmes would remedy the situation in individual units.

The constraints mentioned above are felt most strongly in Angola, where the civil war has destroyed many rural communities, dispersed hundreds of thousands of people, reduced agricultural production to a fraction of its former levels and obliged the Government to devote massive resources to military needs.

Angola, unfortunately, is no exception. Countries like Uganda, Mozambique and Somalia have suffered from similar disruption. While those countries also need the type of assistance referred to above, special efforts are required to restore the infrastructure and to provide skilled and managerial personnel for the regeneration of manufacturing. While domestic markets in Africa are often undersupplied, the usually small domestic buying power and heavy competition from industries on other continents set a limit to what a regenerated agro-processing subsector will be able to sell. Expansion of PTA-type regional market arrangements should help to create a larger market for the food products of sub-Saharan Africa. It should be realized that sub-Saharan Africa is a latecomer to overseas markets. Special efforts are therefore needed to identify market niches and to attain internationally acceptable quality standards.

Finally, despite what has been achieved by the analyses referred to in this paper, it is clear that a much more detailed branch-level analysis of African manufacturing industry needs to be carried out. This paper could provide the basis for such in-depth research.

A NOTE ON MEASUREMENT AND POLICY IMPLICATIONS OF EFFECTIVE PROTECTION OF INDUSTRY

J. Cody*

A. Purpose, definition and assumptions

A tariff, or a non-tariff import restriction such as a quota, raises the price of imports and creates an incentive for competing domestic production by allowing higher prices. Tariffs on a producer's inputs, however, create a disincentive. The combined effect on domestic value added of output and input tariffs, measured in terms of the possible increase in unit value added, i.e. the price effect, is called effective tariff protection.

Industrial subsidization, which can be measured by effective protection when all relevant government policies are included, is increasingly becoming a matter of political interest as well as economic analysis. This note describes the basic concept of effective protection, proposes (section D) an adjustment regarding non-traded inputs and suggests (section E) a system of product taxation attractive from the viewpoints of economic efficiency, government revenue and industry promotion. It is not intended as a general review of effective protection. In particular, the many empirical studies are not discussed. Mainly it aims at promoting a few simple but important policy points that can be analysed using data on effective protection.

Since the 1960s, the effective protection measure has become widely used in both developed and developing countries because it provides valuable information on tariff structure and production incentives and is not very difficult to estimate if a decent input-output table or a census of production and inputs, as well as revelant price data, is available. This note is mainly concerned with developing countries for two reasons:

(a) Effective protection levels in many of these countries are still high, on average, even after the trade liberalization of the 1980s, and they vary greatly by activity;

(b) Tariffs continue to be a major source of government revenue and industrial protection.

The assumptions presented below are also probably more realistic for developing than developed countries.

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The effective rate of tariff protection (ERP) afforded domestic producers of good j in terms of value added is defined as

$$ERP_j = \frac{t_j - \Sigma\, t_i a_{ij}}{1 - \Sigma\, a_{ij}} \qquad (1)$$

where t_j is the nominal ad valorem import tariff, t_i is the input tariff and a_{ij} is the input coefficient (as in an input-output table).* This definition assumes the following:

(a) The country is a price-taker without market bargaining power (the small-country assumption), i.e. import supply elasticities = ∞, and imports are perfect substitutes for domestic supplies and goods j, i remain importables with tariffs (thus, the domestic price of j, i is equal to the import (border) price plus tariff, protection is not passed on, or back, and non-tradeables are ruled out);**

(b) The technology is price-inflexible (so that a_j is unaffected by tariffs) and $0 \leq a_{ij} < 1$, which rules out mathematical-economic anomalies where $ERP_j = \infty$ or $-\infty$, or where t_j gives negative ERP_j.***

The small-country and perfect-import-substitutability assumptions are the key assumptions not only for the ERP concept but also for modern trade policy and cost-benefit analysis in general, which build on the principle that border prices equal shadow (efficiency) prices of traded goods.**** ERP simply focuses on the consequences of products being separable into value added and purchased inputs, as well as being importable.

As it is defined above, this basic ERP concept has three attributes:

(a) It is positive rather than normative (in the sense that it indicates production incentives, not necessarily efficiency, and primary factors of production are market priced);

(b) It is partial equilibrium (the resource allocation effects of ERP are not included);

*For simplicity, the summation sign is dropped in this paper except where it is explicitly needed; a_{ij} should be expressed in tariff-free prices.

**Adjustment for non-traded inputs is discussed in section D.

***If $a_{ij} > 1$, the denominator in equation (1) is negative, so t_j can give negative ERP_j. This (statistically observed for some countries) phenomenon implies absolute resource wastage.

****In developed countries, recent trade policy has tended to focus on the implications of imperfect competition and "strategic industry" support, and cost-benefit analysis on environmental impacts and valuation of non-marketed goods.

(c) Possible non-tariff interventions by government (e.g. quotas, export or direct protection subsidies) are omitted.*

For practical policy purposes, a major limitation of ERP is that it is essentially a static analytical tool. It does not indicate dynamic comparative advantage, for example, although it can indicate the static costs of dynamic policies.

B. Basic analysis

ERP_j can be separated into two components: protection (subsidy) for activity (value added in) j afforded by t_j; and disprotection (tax) by t_i. Thus, ERP_j becomes

$$ERP_{jj} - ERP_{ij} = t_j\left(\frac{1}{1 - a_{ij}}\right) - \Sigma\, t_i\left(\frac{a_{ij}}{1 - a_{ij}}\right) \qquad (2)$$

This separation is useful for the analysis of ERP because it distinguishes the impact of individual policy measures and for the setting of tariff rates when, for example, industry j wants t_i low and industry i wants t_i high.

It can be seen that the difference between nominal and effective protection depends on the values of a_{ij} and t_i. The equation can be extended to include, separately, other policy interventions that alter prices. If $t_i = t_j$ or if $a_{ij} = 0$, then $ERP_j = t_j$. If $t_i = t_j$, equation (2) condenses to become

$$t_j\left(\frac{1 - a_{ij}}{1 - a_{ij}}\right) = t_j$$

In this case, there is uniform nominal protection of activities i, j (and uniform effective protection if the tariff on i inputs equals t_i) and a tax on consumption of j at the same rate, t_j. If $a_{ij} = 0$, in equation (2), $1/(1 - a_{ij}) = 1$ and $a_{ij}/(1 - a_{ij}) = 0$, so that $ERP_{jj} = t_j$ and $ERP_{ij} = 0$ (or, in plain English, the ERP concept is relevant only if j has inputs).

In practice, final goods tend to have higher nominal tariffs than intermediate goods.** This is called tariff escalation. If $t_j > t_i$, then $ERP_j > t_j$. In this case $(ERP_{jj} - ERP_{ij})/t_j$ must

*In principle, all of these could be included, but then the meaning of ERP changes considerably and measurement becomes more complicated. For the most comprehensive analysis, see [1].

**In the early stages of development, consumer goods tend to be easier candidates for import substitution than capital and intermediate goods. And, once imposed, tariff structures tend to be "sticky" because of vested interests. An early use of ERP measurement was to show that tariff escalation by developed countries

continued

be >1. Dividing through equation (2) by t_1, we get $[1 - (t_i/t_j)a_{ij}]/(1 - a_{ij})$, which is >1 if $t_j > t_i$.

The table illustrates how the value of a_{ij} influences the impact of t_j and t_i on ERP_j. The example assumes that both t_j and t_i = 10 per cent and that the second through fifth columns reflect ERP as expressed in equation (2).

Impact of t_j and t_i on ERP_j in relation to the value of a_{ij}

a_{ij}	$1/(1 - a_{ij})$	$a_{ij}/(1 - a_{ij})$	ERP_{jj}	ERP_{ij}
0	1	0	0.1	0
0.1	1.11	0.11	0.111	0.011
0.25	1.33	0.33	0.133	0.033
0.5	2	1	0.20	0.10
0.75	4	3	0.40	0.30
0.9	10	9	1.00	0.90
0.99	100	99	10.00	9.99

It can be seen that as a_{ij} increases, the impacts on ERP_j of t_j and t_i increase exponentially (the impact of t_i is greater than that of t_j). Thus when a_{ij} becomes high, only a small difference between t_j and t_i can give a very high ERP_j. Furthermore, disprotection (ERP_{ij}) due to t_i (when $t_i = t_j$) exceeds t_j, the nominal protection, only when $a_{ij} > 0.5$. ERP_j remains at 10 per cent regardless of the value of a_{ij} because in the table, t_j and t_i are assumed equal.

It is therefore essential for tariff policy makers concerned with production incentives to know the value of a_{ij} at least approximately. Even a moderate level of nominal protection can provide, perhaps quite unintentionally, a high production incentive when value added is a small proportion of output. Labour productivity comparisons and other economic indicators may also become distorted by differences in effective protection.*

(continued) impeded attempts by developing countries to export manufactures, rather than primary products, by adding processing value. Such escalation was reduced by the Kennedy and Tokyo tariff-cutting rounds, held within the General Agreement on Tariffs and Trade (GATT).

*International comparisons of labour productivity, i.e. value added per employee, are frequently used to support economic analysis or policy positions. Since such comparisons are based on actual data, which reflect government market interventions, they do not provide real cost comparisons. Adjustment for EP, broadly defined, would eliminate this distortion.

C. Effective rate of tariff protection and tariff reform

ERP provides a criterion for assessing the extent of industry support, but the same ERP can be achieved in a number of ways with differing effects on consumers, input suppliers and taxpayers. For instance, again letting $t_j = t_i = 0.1$ and $a_{ij} = 0.5$, so that $ERP_j = 0.1$, assume that industry j makes a convincing case (e.g. learning-by-doing, scale or technological change arguments) for an increase in its value-added protection to 0.2. This increase can be achieved in four ways. First, raise t_j to 0.15. This penalizes consumers. Secondly, reduce t_i to 0. This penalizes industry i. Thirdly, provide industry j with a direct subsidy equivalent to 10 per cent of base value added ($s_j = .05$).* This penalizes taxpayers, although it should be remembered that tariff revenue is available equivalent to 10 per cent of imports of j and i, so that a direct subsidy could be linked to the tariff revenue. Fourthly, the first, second and third possibilities could be combined so as to spread losses among consumer j, industry i and taxpayers. For example, increasing t_j to 0.13 and decreasing t_i to 0.06 gives $ERP_j = 0.26 - 0.06 = 0.2$, and the tariff changes could be further reduced by a production subsidy out of tariff revenue. The balance-of-payments effect of tariff reform will usually also need to be considered.** Note that a_{ij} is not a policy variable.***

At this point a few complications and useful, often-proposed suggestions for policy analysis will be interjected. In many countries, total effective protection is derived from the sum of many policies besides tariffs (quotas, licenses, domestic taxes or subsidies etc.). For most policy purposes, it is this sum plus the effect of the components that is important. The analysis of effective protection should attempt to do this, separating individual policy measures as in equation (2) (t_j and t_i effects), so that policies can be fine-tuned.

But when many policy measures interact or there are non-transparent measures such as quotas, it is necessary to calculate their effects by directly comparing border (c.i.f. import) prices

*Note that the direct subsidy is the best choice in terms of standard optimal taxation theory. In the example, since the initial tariff is assumed to remain, the direct subsidy might be only second best.

**Tariffs are usually imposed for any of three reasons: industry protection, government revenue and balance of payments. In principle, better (more efficient) policy instruments are available to achieve each of these objectives, so that the ideal uniform tariff is usually zero (no distortion). See [2].

***For some governments following a dynamic technology policy (Japan and the newly industrializing countries of East Asia), a_{ij} is an important variable, but this is beyond the scope of the present paper.

with domestic prices. Empirical studies have shown this to be the best way to capture full policy effects, including policy redundancies.* Under complicated tax systems the simple measurement of tariff effects does not mean much.

Emphasis should be on identifying reasons for high rates, which lead to import prohibition and lack of competition, and widely variable rates, which lead to large resource allocation distortions, as well as negative rates (mostly agricultural exports) and rates with negative value added at world prices.** If irrational (as may be in many cases), they should be altered.

D. Non-traded inputs

Non-traded inputs (NTIs) comprise mainly utilities (e.g. electricity), construction materials (e.g. cement) and services (e.g. finance and insurance). NTIs exist because of their high cost of international transfer and are often a significant proportion of total intermediate input costs. Adjustment for them has been a matter of some debate in the ERP literature. Empirical estimates of ERP have almost without exception used either the Balassa or Corden methods of dealing with NTIs (and in both cases indirect inputs are usually ignored because of data difficulties).

NTIs have sometimes been assumed equivalent to traded inputs with zero tariffs. This assumption is not correct, however: being non-traded, supply elasticities need not be infinite (i.e. the small-country assumption does not apply), so that their value added can be affected by t_j. This is the simple method of treatment suggested by Balassa. (Later, Balassa added that tariffs on traded inputs to NTIs should be included in the calculation of ERP_{ij}.)

Corden argues that value added by domestic primary factors (labour, capital) is value added, whether in good j or in good h (an NTI). Since the small-country assumption cannot apply to h, its supply elasticity can be assumed to be finite and its price can be affected by t_j. Thus in the Corden method, VA_j and VA_h are lumped together, with the benefits of t_j distributed according to (unknown) relative supply elasticities, just as within VA_j the benefits are distributed to the primary factors. Tradeable inputs, direct and indirect, are deducted from VA_h.

If good h were used only in the production of good j, the Corden method would be the correct way of dealing with non-tradeables. Logically, VA_j and VA_h should then be considered

*Chris Edwards, of East Anglia University, emphasized the point in a recent discussion regarding his work on a South-East Asian economy.

**For example, in Burundi, of 46 products, 16 were reported to have had an ERP of 100-500 per cent in 1985, 6 had an ERP of >500 per cent or negative value added and 2 had negative effective protection. See [3].

together, as a vertically integrated unit. However, because of the nature of NTIs, mentioned above, good h will be used throughout an economy, i.e. in Σ j, not j alone. The effect of t_j on VA_h becomes marginal, and VA_j and VA_h cannot be considered a unit; the Corden method breaks down, and even the meaning of ERP_j becomes unclear.

The little-known Scott method resolves the problems mentioned above and thus is recommended here as the best way of dealing with NTIs.* The Scott method assumes that the price of h (h being used everywhere) is raised by the entire tariff structure, Σt_j, not t_j, so that h can be treated like Σ j and not included in VA_j when calculating ERP_j. An expression for Σt_j, taken from the Little-Mirrlees-type cost-benefit literature,** is the standard conversion factor (SCF), which is a way of expressing the shadow exchange rate. ERP calculations using the Scott method are thus consistent with that literature. As a result of cost-benefit studies, estimates of the SCF are now available for many developing countries, so that use of the Scott method should not impose empirical difficulties.***

Scott is more realistic than Corden in recognizing the empirical nature of NTIs, that is, that they are used in the production of all tradeable goods. Accordingly, their value added cannot be lumped together with value added in any particular tradeable, protection of which will have only a marginal effect on the NTI. In effect, the Balassa and Scott methods are in agreement on this point. Scott adds, however, that protection overall raises the price of NTIs, either directly or through an adjustment of the exchange rate, which thus alters the relative prices of tradeables and non-tradeables, a point agreed by Corden and modern trade and cost-benefit theory in general.

To sum up, ignoring indirect tradeables for simplicity, the three methods can be compared in terms of equation (1) with i referring only to tradeables and h to non-tradeables. In the

*See [4]. Scott barely explains his logic, which may account for its lack of popularity. He uses a proxy for SCF and does not define ERP_h or consider the implications of inputs to h. The method recommended here might thus be termed the revised Scott method. Corden [1], pp. 162-163, gives the Scott method two paragraphs, then drops it.

**See [5]. Many cost-benefit studies based on Little and Mirrlees have since been produced. As used here, SCF is assumed to be expressed in tariff equivalent, rather than exchange rate form.

***Recent studies have combined semi-input-output analysis with standard cost-benefit analysis to calculate the SCF and conversion factors for important non-tradeables. See, for example, [6].

Corden method, the formula remains as in equation (1). The Balassa and Scott methods are as follows:

$$\text{Balassa's } ERP_j = \frac{t_j - t_i a_{ij} - a_{hj}}{1 - a_{ij} - a_{hj}} \qquad (1a)$$

and

$$\text{Scott's } ERP_j = \frac{t_j - t_i a_{ij} - (SCF - 1)a_{hj}}{1 - a_{ij} - a_{hj}} \qquad (1b)$$

From equation (1b) it can be seen that the Scott ERP_h is equivalent to SCF - 1, i.e. general protection raises demand for h, allowing VA_h to increase by SCF - 1. Good h may, however, use tradeable inputs, e.g. capital goods and oil in electricity generation. Tariffs on these inputs may be assumed to be passed on to user industries Σ j, thus partly offsetting the benefit to them of SCF - 1.* Thus, in line with Corden's reasoning (on an aggregate scale), namely, that h can be divided into value added and tradeable inputs and that tariffs on those inputs tax j, equation (1b) can be rewritten as follows:

$$\text{Scott's } ERP_j = \frac{t_j - t_i a_{ij} - [(SCF - 1)(1 - a_{ih}) + t_i a_{ih}]a_{hj}}{1 - a_{ij} - a_{hj}} \qquad (3)$$

In practice, it would probably be sufficient to calculate the expanded term given above for just a few major NTIs, like electricity. This would then be used in all EP calculations, so that the adjustment should not be empirically difficult. Of course the expanded term collapses to SCF - 1 if t_i = SCF - 1.

E. Tariffs and policy design

Tariffs have long been used by almost all countries mainly because they require little administrative capacity. They are not an efficient policy instrument, however.** True, they raise government revenue, encourage domestic production and reduce foreign exchange expenditure - all more or less reasonable objectives of most governments - but they provide little policy control, for as Tinbergen pointed out, x number of objectives requires x number of policy instruments. A tariff of 10 per cent taxes consumption at that rate, subsidizes production by 0.1 : value added, raises revenue by 0.1 x adjusted imports and lowers imports by the sum of

*It would be more correct to consider that tariffs on inputs to h would not be passed in full to Σ j, reflecting relative supply elasticities. However, empirical measurement would be extremely difficult and unlikely to change the resulting ERP_j much.

**There are strong arguments for preferring ad valorem tariffs over import quotas, however. The effects of the latter are not transparent; they effectively decouple from international competition and provide no government revenue (unless auctioned).

the consumption decline and the production increase. None of these changes is likely to be exactly what the policy maker desires (Corden refers to by-product distortions; see [2], chaps. 1 and 4).

An extra degree of freedom is provided by introducing a tariff cum domestic production tax or subsidy (tD_j). If $tD_j = t_j$, the two taxes are equivalent to a consumption tax, which raises more revenue than t_j alone, especially where the import/consumption ratio is low. If $tD_j < t_j$, domestic production is effectively subsidized, even if tD_j is positive. If $tD_j < 0$, it adds to the production subsidy provided by t_j; thus, t_j could be reduced if protection is the objective, and revenue from t_j could offset the revenue loss from the direct production subsidy, as suggested in section C above (see the annex).

A basic tax level for t_j and tD_j can be envisaged that would meet general government revenue requirements, adjusted for specific products up or down for, say, distributional reasons (luxuries and basic goods). Thus, there might be three general tax rates, and further reduction of tD_j (not t_j) to promote specific (exceptional) industries or reduce imports, with t_j adjusted upwards, if needed, to provide offsetting revenue for domestic industry promotion. The general revenue tax would apply only to final consumer goods, with exports exempted. Intermediate products would not be taxed, eliminating a major problem in effective protection theory and conforming to the logic behind the value-added tax. Especially for those developing countries that still rely on tariffs as a major revenue source and a means of protecting industry, this tax system would be simple* but powerful and would allow multiple government objectives to be achieved with minimum economic distortions.**

It should be noted that for an infant industry, the ratio of production to consumption will be near zero, so that revenue raised from t_j will be equivalent to a consumption tax. A very low level of t_j would be needed if the revenue from it were used solely to provide a production (value-added) subsidy, especially if the value-added ratio is low. The revenue from t_j will decline as the infant grows, i.e. as the import ratio declines. However, the need for a subsidy should also decline, so that the level of t_j required

*The administrative system for taxing imports would already be in place, and taxing final domestic production at the factory gate should not be nearly as difficult as imposing a value-added tax, which would, however, have the advantages of cross-check accountability and taxation of value added after the port or factory gate.

**Computable general equilibrium (CGE) models based on assumed second-best conditions have been used to reach somewhat different conclusions (see [7]). In these models, tax structure is "made to measure" and substitutability between imports and domestic production is of major importance. The practicality of such models is moot.

to finance the subsidy could remain constant, dropping to zero when the industry becomes export-oriented or the infant fails to develop. In this case, the effective rate of subsidy (ERP including direct production subsidies) would be the appropriate measure of incentive for infant industries.*

F. Conclusion

In many developing countries, even after the trade policy reforms of the 1980s, effective protection remains high, on average, and is highly variable, thus significantly affecting industrial production decisions. This paper has tried to explain, briefly, the concept of effective protection in its simplest form, point out its implications for trade policy and production incentives and show how to adjust for non-traded inputs in a manner fully consistent with the general trade theory upon which the effective protection concept is based. Such an adjustment seems essential because any trade theory that fails to account for non-traded goods cannot be considered realistic. The realism of the small-country assumption may be questioned, but it provides the key by which consumption and production effects can be considered separately, with trade as the balancing variable.** Given its obviously strong analytical power, the assumption seems acceptable as a general rule. As long as the limitations of the effective protection concept are understood, including its function as an indicator of production incentives*** but not of production efficiency or national cost-benefits, it should be seen as a useful and rather easily quantifiable tool for economic policy-making. For a much more complete analysis of effective protection in the context of general equilibrium trade theory, the reader should consult Corden [1], who considers a wealth of complications.

*The direct value-added subsidy suggested here could be altered to correct for factor-level distortions if these cannot be corrected directly. If, as many studies indicate, interest rates are too low and unskilled wage rates too high in developing countries, thus favouring use of capital in the technology mix, then part of the value-added subsidy could be given in the form of a labour-use subsidy, thus correcting factor as well as product market distortions.

**In the recent public economic literature, as well as cost-benefit analysis, the assumption is used to equate shadow prices of tradeables to their world prices (e.g., see [8], pp. 17-18).

***It does not show the resource allocation effects of protection, which depend on relative incentives and supply elasticities. An activity may have a high effective protection, but similar activities might have an even higher effective protection, so that resources could be drawn from the former to the latter. Moreover, in imperfect competition, an incentive might raise profits or x-inefficiency (i.e. firm-level inefficiency related to lack of competition) rather than output.

The concept of effective protection, especially when divided into output and input tariff components as in equation (2), is particularly important for policy makers wishing to establish the levels of protection, promotion or incentive required to support a particular industry, perhaps because it is an infant industry or perhaps for strategic reasons. By combining tariffs with a domestic production tax or subsidy (tD_j), an improved, nearly ideal system of policy control can be achieved. Industrial promotion, rather than protection, would of course be the appropriate policy goal.

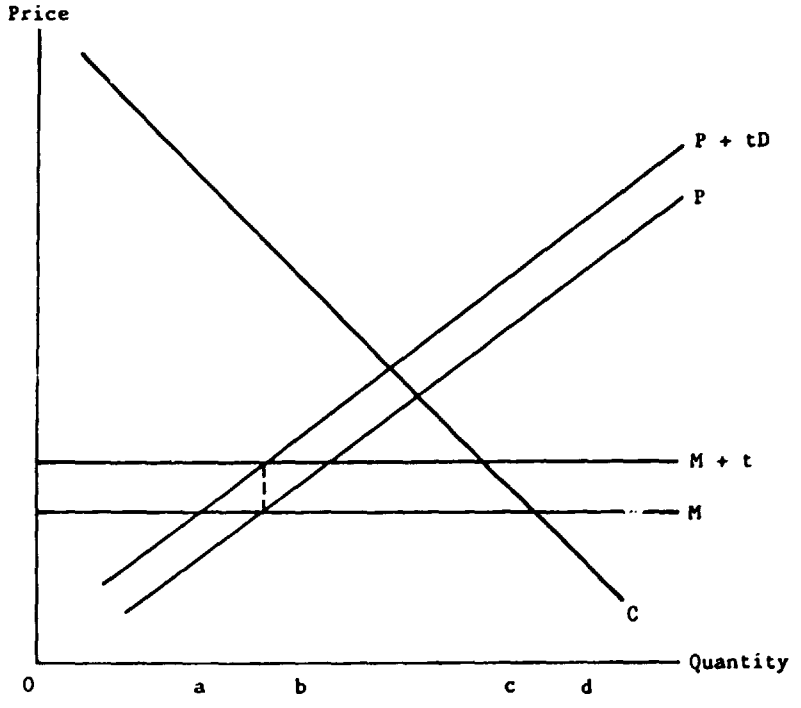
Finally, some wishful thinking. The measurement of effective protection and of many related indicators for policy decisions would be simplified or made possible, even in time-series, if countries would collect and report values of tradeable goods and value added in border (c.i.f. for imports) as well as domestic prices. Such information is urgently needed not just for the convenience of economic analysts but because separate nominal policy measures often do not, as a result of redundant policies, quotas etc., convert into direct domestic price equivalents. With the information in hand, the overall policy direction could be more easily measured. The use of such indicators and the collection of data could be an issue for discussion and might warrant collaborative support from potential users, including international organizations. Project level cost-benefit analysis would also become simpler.

Annex

EFFECTS ON PRODUCTION, CONSUMPTION AND IMPORTS OF INTRODUCING A DOMESTIC PRODUCTION TAX/SUBSIDY CUM TARIFF

The figure illustrates the effects on production, consumption and imports of introducing a domestic production tax/subsidy (tD_j) cum tariff. C and P are the domestic demand and supply curves, M is the (infinitely elastic) import supply curve at the (given) c.i.f. price. The tariff raises the domestic price paid by consumers to M + t. Consumption drops from d to c, production increases from a to b and imports drop by the sum of the consumption and production changes. Imposition of tD at the same rate as the tariff reduces the net price received by producers back to the border price level; the net supply curve becomes P + tD and production returns to a. Thus the tariff and tD at the same rate are equivalent to a consumption tax. If tD < tariff, the net price received by producers is greater than the border price, providing an effective subsidy. If tD < 0 (giving a direct subsidy), the P + tD curve moves to the right of the P curve, adding to the tariff protection. The tariff plus tD at the same rate is used, accordingly, to influence consumption (raising revenue etc.), and tD set below the tariff is used to influence production (promoting industry).

Effects on production, consumption and imports of introducing a domestic production tax/subsidy (tD_j) cum tariff



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INDUSTRIAL EFFICIENCY AND POLICY REFORM: THE CENTRAL AFRICAN CUSTOMS AND ECONOMIC UNION (UDEAC)

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Introduction

The question of improving industrial efficiency and reducing incentives has been a prominent topic of development policies in recent years. Cody, Kitchen and Weiss [1] discuss the main ideas and present some practical proposals for improving and reforming manufacturing sector policies. This paper extends the spirit of that work and shows how prices and tariffs might be reformed in the context of a customs union, the Central African Customs and Economic Union (Union Douanière et Economique de l'Afrique Centrale) (UDEAC). As most countries of the world are in regional trading agreements, this example has widespread relevance.

This paper is based on a consultancy assignment conducted in 1989 by Maxwell Stamp PLC [2] for UDEAC on the possibilities of reforming tariffs and other industrial incentives of UDEAC. The study was financed by the World Bank.***

The context of the consultancy was that the World Bank was developing structural adjustment programmes with some member States of UDEAC. Since the possibilities of trade and industrial policy reform in any individual country were severely limited by the UDEAC-wide treaty on tariffs and industrial incentives, the emphasis switched to exploring the possibilities of reform at the UDEAC level.

The views expressed in this paper are the author's alone and do not represent those of Maxwell Stamp, the World Bank, the UDEAC secretariat or the Governments of the member States. The authors would, however, like to thank Maxwell Stamp and its contractual client, the Government of the Central African Republic, for permission to use data from the study and to publish this paper.

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A sister paper entitled "Problems of regional integration in UDEAC", by Richard Kitchen, will appear in Case Studies in Economic Development; Policy Adjustment in Africa, C. Milner and A. Raynor, eds. (New York, Macmillan, forthcoming).

A. The development of UDEAC

The treaty establishing UDEAC* was signed on 1 January 1966, following an earlier protocol agreement signed in February 1964. The five founding members were Cameroon, the Central African Republic, Chad, the Congo and Gabon. The Central African Republic and Chad withdrew in 1968; the Central African Republic then rejoined later in the same year, but Chad did not re-enter UDEAC until 1985, when Equatorial Guinea also joined. The last two countries are currently being integrated into UDEAC, a process that will not be completed until the early 1990s.

The six countries had a combined population of some 24 million and a total gross domestic product (GDP) of about $20 billion (approximately one tenth that of Holland) in 1989. GDP per head varied from $2,960 in the oil-rich state of Gabon to a putative $200 in Equatorial Guinea. Three of the members, Cameroon, Congo and Gabon, are oil exporters and relatively wealthy; the others are the poor, land-locked States of the Central African Republic and Chad, plus Equatorial Guinea. Table 1 presents key indicators for the UDEAC members.

The members of UDEAC share a convertible currency, the CFA franc (CFAF), which has been pegged to the French franc (F) at CFAF 50 = F 1 since 1948. They also have a common central bank, Banque des Etats de l'Afrique Centrale, and a common development bank, Banque de Développement des Etats de l'Afrique Centrale. Five of the six members of UDEAC also share a common language, French, which is being increasingly used in the sixth, Equatorial Guinea.

UDEAC therefore has a very substantial base for operating a customs and economic union. Indeed, in terms of monetary and banking integration, and of language, it is well ahead of the European Communities (EC). Yet its performance in stimulating intra-UDEAC trade can only be described as disappointing. Table 2, taken from Robson [3], shows the relatively weak performance of UDEAC. It should be kept in mind, however, that trade data for UDEAC are unreliable because of poor collection procedures and smuggling, and those for 1983 seem particularly questionable.**

*UDEAC was, in fact, based on an earlier customs union, the Equatorial Customs Union (Union Douanière Equatoriale) (UDE), formed in 1959 by the Central African Republic, Chad, Congo and Gabon. In 1961, UDE and Cameroon agreed to integrate the latter gradually into the customs union. The members of UDE had been integrated to some extent since 1910, as they were the constituent parts of French Equatorial Africa, established in that year.

**Yeats [4] concludes that sub-Saharan Africa trade statistics are "almost useless", thereby lending authority to the long-held view of researchers in the area.

Table 1. Key indicators for UDEAC member countries

Country	Population, mid-1989 (millions)	GDP per capita, 1989 (dollars)	Growth in GDP, 1980-1989 (%)	Inflation, 1980-1989 (%)	GDP, 1989 (millions of dollars)	Share of total GDP of UDEAC (%)	Share of manufacturing in GDP, 1989 (%)
Cameroon	11.6	1 000	3.2	6.6	11 080	59	15
Central African Republic	3.0	390	1.4	6.5	1 050	6	8
Chad	5.5	190	6.5	1.5	1 020	5	16
Congo	2.2	940	3.9	0.3	2 270	12	9
Gabon	1.1	2 960	1.2	-1.0	3 440	18	..
	23.4				18 860	100	
Equatorial Guinea	0.3	..	..	..	..	..	..

Source: World Bank, World Development Report (Washington, D.C., 1991).

Table 2. Intra-trade of economic groupings of developing countries, 1960 and 1970-1983 (selected years) a/

Economic grouping b/	Intra-trade (millions of dollars)					Intra-trade of group as share of total exports of group (%)				
	1960	1970	1976	1980	1983	1960	1970	1976	1980	1983
ASEAN c/	839	860	3 619	11 918	17 080	21.7	14.7	13.9	17.8	23.1
UDEAC	3	33	75	200	80	1.6	3.4	3.9	4.1	2.0
CACM	33	299	653	1 141	840	7.5	26.8	21.6	22.0	21.8
CARICOM d/	27	73	212	354	360	4.5	7.3	6.7	6.4	9.3
LAIA	564	1 290	4 434	1 027	1 200	7.5	10.2	12.8	13.5	10.2
Of which, Andean Group	25	109	594	955	1 037	0.7	2.3	4.2	3.5	4.3
CEAO	6	73	177	296	406	2.0	9.1	6.7	6.9	11.6
ECOWAS	17	61	478	1 056	860	1.2	2.1	3.1	3.9	4.1
CEPGL	-	2	3	5	5	0.0	0.2	0.1	0.2	0.2
MRU	-	-	2	2	7	0.0	0.1	0.2	0.1	0.1
For reference: EEC e/	10 300	43 400	n.a.	747 000	298 900	34.6	48.9	n.a.	52.8	52.4

Source: P. Robson, The Economics of International Integration, 3rd ed. (London, Allen and Unwin, 1987).

a/ Based on export (f.o.b.) data.

b/ The full names of the groupings are as follows (the dates indicate the year of establishment):

ASEAN	Association of South-East Asian Nations, 1967
UDEAC	Central African Customs and Economic Union, 1964
CACM	Central American Common Market, 1960
CARICOM	Caribbean Community, 1973 (based on the Caribbean Free Trade Association (CARIFTA), 1968)
LAIA	Latin American Integration Association, 1980 (formerly Latin American Free Trade Association (LAFTA), 1960)
CEAO	West African Economic Community, 1974 (initially the West African Customs and Economic Union, 1959)
ECOWAS	Economic Community of West African States, 1975
CEPGL	Economic Community of the Great Lakes Countries, 1976
MRU	Mano River Union, 1973
EEC	European Economic Community (1957)

c/ Figures adjusted to exclude entrepôt trade.

d/ Excluding Eastern Caribbean Common Market.

e/ Data for six members before 1980; for nine members in 1980 and 1983.

The most obvious comparison for our purpose is between UDEAC and the West African Economic Community (CEAO). The latter, although established only in 1974, had by 1980 reached a figure of 6.9 per cent for intra-group trade as a percentage of total exports, compared with 4.1 per cent in UDEAC. The difference in the 1983 figures is even more striking, although the UDEAC data are questionable.*

Table 3 presents data on intra-UDEAC trade for the years before the creation of the customs union and for 1987. The UDEAC secretariat stopped collecting intra-UDEAC trade data in 1983, and it was only in 1986 and 1987 that individual countries resumed the collection of such data. Therefore comparisons with the pre-UDEAC years are crude. However, it is by no means obvious that intra-UDEAC trade has grown since 1963. Indeed, with the limited data available, one could argue that it has fallen. At best, the evidence on the growth of intraregional trade is ambiguous.

Table 3. UDE and UDEAC: intraregional exports and imports

Country	Exports to UDEAC as share of total exports (%)			Imports from UDEAC as share of total imports (%)		
	1958	1963	1987	1958	1963	1987
Cameroon	a/	a/	5.9	a/	a/	0.4
Central African Republic	12.9	9.9	2.4	7.8	14.7	7.8
Chad	10.0	18.9	3.8 b/	14.3	37.9	12.6 b/
Congo	32.5	22.0	27.4 c/	2.0	1.4	12.3 c/
Equatorial Guinea	a/	a/	0.2	a/	a/	18.6 d/
Gabon	0.6	0.0	0.6	7.4	2.9	22.0

Sources: 1963 data: F. Kahnert and others, Economic Integration among Developing Countries (Paris, OECD, 1969). 1985, 1986 and 1987 data: estimates, based on country trade data.

a/ Cameroon and Equatorial Guinea were not members of UDE in 1958 and 1963.

b/ 1985: data available for imports from Cameroon and Chad only.

c/ 1986: single tax products only.

d/ 1985.

*The reasons for intra-UDEAC trade not having grown as fast as that of CEAO would be an interesting subject to research but is beyond the scope of this paper.

B. Industrial incentives and policies

1. Tariffs and taxes

The main UDEAC-wide tariffs and taxes of interest here are (a) the components of the common external tariff, (b) the complementary tax (taxe complémentaire) and (c) the single tax (taxe unique).

The common external tariff

All UDEAC members share the three standard UDEAC external tariffs: the customs duty (droit de douane), the entry duty (droit d'entrée) and the import turnover tax (taxe sur le chiffre d'affaires à l'importation).

The explanation that is sometimes met for having three components of the common external tariff is that only the customs duty has a protective function; the entry duty and import turnover tax were imposed to raise revenues. While this explanation may be historically correct, all three duties have both protective and revenue effects and in practical terms are indistinguishable. The rates of the customs duty and the entry duty vary widely from commodity to commodity. The customs duty varies from zero to 30 per cent and the entry duty from zero to 120 per cent. The import turnover tax is universally 10 per cent, but is imposed on the c.i.f. price plus the customs duty and the entry duty.

The complementary tax

A fourth import tax, the complementary tax, exists in addition to the common external tariff. The member countries each establish their own rates for this tax and vary the rates independently. The complementary tax is used for both revenue and protective reasons and is imposed on the c.i.f. price. The consequence is that it varies from country to country and from good to good. Therefore, UDEAC does not have a true common external tariff once the complementary tax is taken into account. However, the latter is generally a relatively low import duty on most goods in most countries, even though its range is from 5 to 90 per cent.

2. Tariff levels

Table 4 summarizes the range of the different import tariffs, table 5 indicates the mean tariff by sector and table 6 indicates the mean rate of the complementary tax for each country. (Note that Equatorial Guinea does not yet have a complementary tax and that in Chad it is limited to a few products.)

The average rates of duty, including the complementary tax, are obviously high, and the duties at the upper end of the range are extravagantly so. These data indicate a high level of nominal protection for many goods. However, this is to some extent deceptive, as the numerous exemptions from duty reduce the apparent nominal protection substantially.

Table 4. Tariff levels in UDEAC countries a/
(Percentage)

Tariff level	UDEAC common external tariff b/	Cameroon	Central African Republic	Congo	Gabon
Maximum	153.0	197.0	222.0	172.0	196.5
Minimum	0	0	0	0	0
Mean	46.3	53.9	53.4	47.2	51.3
Standard deviation	18.0	21.1	21.4	18.6	19.4

Source: S. Samen, "The Central African Economic and Customs Union: a framework for tariff reform" (Washington, D.C., World Bank, 1987).

a/ For each country, the tariff level is equal to the UDEAC common external tariff plus the complementary tax. Data are based on the 1983 edition of the UDEAC tariff and exclude increases to the complementary tax by the Central African Republic and Congo in 1988 and 1989.

b/ Customs duty and entry duty plus import turnover tax.

Table 5. Mean tariffs of UDEAC members
(Percentage)

Sector	UDEAC common external tariff	Including the complementary tax: Cameroon	Central African Republic	Congo	Gabon
Whole economy	46.3	53.9	58.4	47.2	53.3
Agriculture	41.1	45.4	49.5	41.7	44.7
Mining	39.5	40.1	44.7	39.5	44.2
Manufacturing	47.2	55.5	60.0	48.1	52.4
Intermediate goods	45.1	50.5	53.4	45.4	51.1
Capital goods	41.0	50.6	54.5	41.8	45.8
Consumer goods	55.8	65.3	71.9	57.3	60.6

Source: S. Samen, "The Central African Economic and Customs Union: a framework for tariff reform" (Washington, D.C., World Bank, 1987), with adjustments to the Central African Republic figures to include the 1988 increases in the complementary tax, which added about 5 percentage points to each complementary tax rate. Increases in the complementary tax in 1989 in the Congo are not included.

Table 6. Mean rate of the complementary tax
(Percentage)

Country	Whole economy	Manufacturing
Cameroon	7.6	9.2
Central African Republic	12.1	12.8
Congo a/	0.9	0.9
Gabon	5.0	5.2

Source: Maxwell Stamp.

a/ The increases in the complementary tax in the Congo in February 1989 have not been included. Between 5 and 15 percentage points were added to the complementary tax on 34 articles.

3. Government revenues from tariffs, and the cost of exemptions

Table 7 shows the importance of tariff revenues in Government revenues. It indicates, too, the mean tariff collected, which varies from 4 per cent in Chad to 37 per cent in Gabon. These figures are well below the mean tariff rates, which indicates the extent of the exemptions.

The revenue yield of trade taxes is of obvious concern to all Governments. Yet it is notable in table 7 that the import turnover tax and the complementary tax yield relatively little.* Therefore the possible removal of the distortionary complementary tax would not lead to a large revenue loss.

The loss of revenue from exemptions is shown in table 7 for the four established members of UDEAC, in the form of an estimated exemption rate. Although these estimates should be treated with caution, they do show that for Cameroon, the Central African Republic and the Congo the loss of revenue from exemptions is greater than the revenue collected, as the exemption rates are in excess of 50 per cent.**

*Indeed, it appears that the increase in the complementary tax in the Central African Republic in 1988 caused the revenue yield to fall because it reduced legitimate imports and increased smuggling.

**An earlier study reached much the same conclusions, although it used different methodology: "A UDEAC simulation exercise has shown that for two countries (the Central African Republic and the Congo), only 30 per cent of the (recorded) imports were subject to taxation. Exemptions are almost the rule. It results in an exorbitant tax burden for those who are really taxed" ([5], author's translation).

Table 7. The importance of tariff revenues for each UDEAC member

Item	Cameroon, 1987/88	Central African Republic, 1988	Congo, 1988	Equatorial Guinea, 1987	Gabon, 1987	Chad, 1988
Value of imports (billions of CFAF)	512 610	80 900	154 450	15 065	219 900	124 893
Total tax revenue (billions of CFAF)	551 600	31 810	79 900	8 346	199 000 a/	18 461
Tariff revenues (billions of CFAF)						
Total	109 600	11 550	26 768	2 778	82 187	5 104
Customs duty and entry duty	63 700	5 955	15 820	not	..	3 652
Import turnover tax	24 200	1 875	5 106	in	..	1 176
Complementary tax	21 700	3 720	5 842	use	..	276
Average collection rate (%)						
Total	21.38	14.28	17.33	18.44	37.37	4.09
Customs duty and entry duty	12.43	7.36	10.24	0	..	2.92
Import turnover tax	4.72	2.32	3.31	0	..	0.94
Complementary tax	4.23	4.60	3.78	0	..	0.22
Tariff revenues as a share of total tax revenues (%)						
Total	19.87	36.31	33.50	33.29	41.30	27.63
Customs duty and entry duty	11.55	18.72	19.80	0	..	19.73
Import turnover tax	4.39	5.89	6.39	0	..	6.37
Complementary tax	3.93	11.69	7.31	0	..	1.53
Mean official tariff rate (%)	53.9	58.4	47.2	..	51.3	..
Estimated exemption rate b/	60.3	75.6	63.3	..	27.1	..

Source: Maxwell Stamp.

a/ Excludes revenues from oil production.

b/ Exemption rate = $\frac{\text{mean official tariff rate} - \text{average collection rate}}{\text{mean official tariff rate}}$

4. The single tax

Throughout UDEAC, companies that export to other member countries may be given single tax (taxe unique) status. Broadly speaking, this means that they may import all their materials free of the UDEAC common external tariff and the complementary tax. On domestic sales, they levy the single tax on their ex-factory sales, collect from their customers and pay it to the treasury. On exports, the single tax is collected by the importing country, and the revenue is passed to its treasury.

The rates of the single tax vary from product to product, from country to country and even from one manufacturer of a good to another in the same country. Although the single tax is a UDEAC-level tax, the basis for determining the rate, once a firm applies through its Ministry of Commerce for single tax status, is obscure.*

In the smaller economies, virtually all manufacturing enterprises of any size have been granted single tax status, even though in some cases their exports to other member countries of UDEAC are negligible. This state of affairs perhaps gave rise to the claim of a senior UDEAC official that single tax status was granted too readily.

The incidence of the single tax on the final good means that for some companies the exemption from import tariffs on inputs is an illusory concession. One manufacturer estimated that the impact of the single tax on his products was about the same as paying import duties on inputs. The consequence of the arrangement is that the level of protection afforded by the single tax depends on the value added by the enterprise: the higher the value added, the lower is the level of effective protection, which, from the economic standpoint, is perverse.

The single tax is also accused of conferring monopoly status on an enterprise. Once an enterprise in a country has obtained it, it becomes difficult for another firm to set up in competition, unless it too can obtain single tax status.

A further consequence of the single tax is that products from firms that do not have such status are charged the full common external tariff plus the complementary tax when exported from one UDEAC member to another. They therefore have to compete on the same terms as goods from outside UDEAC.

Above all, the single tax acts as a barrier to intra-union trade. In a customs union, this internal tax on intra-UDEAC trade runs counter to the objectives of increasing trade, output and

*Some of the considerations in determining the rate of the single tax are given in [6, pp. 38-40], which concludes: "At the end of the day, it always comes down to the value judgement of what will provide the necessary compromise".

employment within UDEAC. For this reason, as well as the other reasons cited, the authors feel that the single tax in its present form should not be retained.

Data on revenue from the single tax are given in table 8. The data are clearly not comparable, and those for Cameroon and Gabon are notably incomplete. However, Cameroon imports few single tax products from other members relative to its own production, while Gabon produces few goods with single tax status. In neither case is it likely that total single tax receipts would exceed 5 per cent of total tax revenue.* Only in Chad does the single tax produce over 10 per cent of total government tax revenue.

Table 8. Revenue from the single tax, 1987/1988

Country	Revenue (billions of CFAF) Single tax revenue	Total tax revenue	Single tax revenue as share of total tax revenue (%)
Cameroon a/	17 400	551 600	3.2
Central African Republic b/ (excluding beer) c/	2 200	31 810	7.2
Chad b/	2 000	18 461	10.8
Congo b/	6 700	79 900	8.4
Gabon d/	1 223	199 000	0.6

Source: Government budgets of the five countries.

Note: Equatorial Guinea does not yet have a single tax.

a/ 1987/1988; single tax revenue from domestic production only.

b/ 1988; single tax revenue from domestic production and imports.

c/ The figure for beer is CFAF 2,480 billion, but this is really an excise duty.

d/ 1987; single tax revenue from imports only.

*It should be recorded that for Cameroon the single tax revenue for 1987/1988 is substantially lower than in earlier years, when the single tax produced CFAF 30-40 billion, or about 5 per cent of total tax revenues, which in turn were more substantial. The lower figures for 1987/1988 probably reflect the impact of the recession in Cameroon and, perhaps, increased tax evasion.

Estimates based on data for a number of companies in the Central African Republic and the Congo indicate that the granting of single tax status results in a substantial loss of revenue to the Governments. In the Central African Republic, the single tax produced only 13 per cent of the revenue that the tariffs forgone would have produced, while the equivalent figure in the Congo was 34 per cent.

5. The problem of illegal trade

Anecdotal evidence suggests that smuggling is widespread, both within UDEAC and, especially, between UDEAC and the rest of the world. Informed estimates* suggest that smuggling accounts for 60 per cent of total trade in the Central African Republic and as much as 80 per cent in the Congo. Although the borders are undoubtedly difficult to police, there is a distinct impression that smuggling could be reduced substantially if customs officers enforced the rules properly and the importing companies were subjected to greater surveillance. As with exemptions, the government revenue forgone is considerable.

The main incentive to smuggling lies in the high level of trade taxes, raising the possibility that a reduction in these taxes, combined with efforts to reduce smuggling, could significantly increase the revenue collected.

The extent of exemptions and contraband also means that the rates of nominal and effective protection are much below those implied by the official tariff rates. This caused the manufacturing sector to achieve much lower rates of profit than would otherwise have been expected and there has been a reluctance to invest further. This state of affairs is very much in evidence in the Central African Republic, for example, where several bankruptcies occurred in recent years and much of the remaining manufacturing sector shows low profits or even losses.

The extent of exemptions, smuggling and customs fraud means that the economies of UDEAC are rather more open in practice than they are in principle. However, the manner in which this openness has been achieved perhaps leaves something to be desired.

6. Other incentives

The investment code

Although UDEAC has a uniform investment code, aimed at providing a "level playing field" for investors throughout the region, most member countries offer supplementary incentives. However, this does not seem to lead to serious distortions in the location of

*A special technical assistance project in the Central African Republic, financed by the World Bank, is attempting to estimate the true level of Central African Republic trade. However, the problems are considerable.

industrial investments. In effect, given the extent of contraband and the low level of profitability of much of the manufacturing sector, the investment code does not seem to be an effective instrument for attracting industrial investment.

Industries reserved for specific countries

The industrial dominance of Cameroon in UDEAC means that it is the main beneficiary of the customs union. To offset this, UDEAC has a policy of reserving certain industries for the less developed countries. Although considerable planning work has been done on a pharmaceutical industry for the Central African Republic and for a reinsurance company and a fish development company for Chad, no UDEAC-wide project has yet been installed.

7. Mobility of factors of production

Unlike many third world customs unions, UDEAC has to a very large extent freedom of movement of capital. This is one of the benefits of having a common, convertible currency. However, the same cannot be said of labour, in that it is very difficult for citizens of one member country to obtain a work permit in another member country. Although there is a certain amount of mobility, this generally takes the form of illegal employment without work permits.

C. Nominal and effective rates of protection

The high nominal rates of protection (NRP) prevailing will be apparent from the high tariffs already described. The NRP estimates for Cameroon in table 9 are based on comparisons of domestic and border prices. They therefore include the effect on prices of non-tariff barriers and smuggling. The NRPs for the Central African Republic, Congo and Gabon are based solely on scheduled tariffs and are therefore actually estimates of nominal tariff rates. Table 9 augments the NRP data with estimates of effective rates of protection (ERP)* for the four established members of UDEAC (Cameroon, the Central African Republic, the Congo and Gabon) and for a sample of industries. The results show generally very high levels of effective protection, but with substantial variations between products

*The effective rate of tariff protection (ERP) afforded domestic producers of goods j in terms of value added is defined as

$$ERP_j = \frac{t_j - \Sigma t_i a_{ij}}{1 - \Sigma a_{ij}}$$

where t_j is the nominal ad valorem import tariff, t_i is the input tariff and a_{ij} is the input coefficient for the input of i per unit of j at world prices.

For further discussion of the ERP, see the article by J. Cody (pp. 43-55).

and between countries. Thus, both nominal and effective protection are very uneven, representing substantial distortions in incentives.

Table 9. Nominal and effective rates of protection for a sample of industries
(Percentage)

Product	Cameroon		Central African Republic		Congo		Gabon	
	NRP	ERP	NRP	ERP	NRP	ERP	NRP	ERP
Chocolate	70	286						
Pasta	63	a/						
Beer			217	60				
Paint	36	a/	81	69			81	62
Cosmetics	184	a/	157	131				
Soap	39	7	75	54	65	46		
Matches	186	514						
Plastic goods	65	a/	76	76			76	67
Cartons	42	152						
Sewing thread	95	a/						
Printed fabrics			70	65	65	53	59	45
Shoes	143	a/	75	65				
Reinforcing rods	90	309						
Corrugated sheet			54	42	53	53		
Metal fabrications					53	53	70	48
Aluminium sheet	32	4			54	43		
Household goods	81	455	70	57	70	57	64	52
Agricultural tools	42	55						
Motor scooters			91	66				
Batteries	177	1 153					69	56

Source: Maxwell Stamp.

a/ Very high effective protection: value added at world prices is negative. Estimates are derived from company data for 1987 (Cameroon) and for 1988 for the other countries. In cases where company data were available for more than one year, the data were pooled.

D. Estimates of domestic resource cost ratios

The availability of the necessary data across UDEAC to calculate domestic resource cost (DRC) ratios* is uneven. Both industry

*The domestic resource cost is a measure of the domestic resources required in an activity to earn or save a unit of foreign

continued

data and shadow price estimates are needed, and shadow price calculations have been prepared for only two countries, the Central African Republic and Cameroon*. Given that Cameroon dominates UDEAC trade, the evidence from Cameroon and one other country is sufficient to show that the losses of trade diversion exceed the benefit of trade creation.**

This is evident from table 10, which shows that the vast majority of products have domestic resource cost ratios that are greater than 1, or negative, both of which imply that the industry is not internationally competitive. Therefore, in all but a few

(continued) exchange. Alternative definitions are available, with increasing degrees of complexity and data requirements. In this paper the Balassa definition has been used. This is simpler than the Cordon definition, which takes into account the indirect foreign exchange content with domestic resources, as well as the direct foreign exchange effects which the Balassa method is restricted to.

The Balassa definition of the domestic resource cost for output i is

$$DRC_i = \frac{\Sigma\, a_i L + \Sigma\, b_i K + \Sigma\, c_i N}{P_i - \Sigma\, d_i P_t}$$

where a_i, b_i and c_i are the units of labour, capital and non-traded goods, respectively, required to produce a unit of i; L, K and N are the unit prices of labour, capital and non-traded goods, respectively; P_i and P_t are the world prices of output i and traded input t, respectively; and d_i is the unit import of t per unit of i. (Adapted from Weiss [7], which discusses definitions and the application of domestic resource cost ratios at greater length.)

*Shadow prices for these two countries were estimated by the Maxwell Stamp teams during the UDEAC assignment and during an earlier assignment for UNIDO [8] to prepare an industrial sector master plan for Cameroon. The principal shadow prices were as follows:

	Central African Republic	Cameroon
Shadow exchange rate	1.2-1.5	1.1-1.25
Shadow wage rate	0.33	0.7
Social discount rate	8%	10%

Sensitivity analysis was applied to the estimates of the shadow exchange rate.

**Viner [9], in his classic work on the subject, defined trade creation as a shift in trade from a high-cost to a low-cost producer, and trade diversion as a shift in the reverse direction.

products, intra-UDEAC trade results in trade diversion rather than trade creation. Moreover, the efficient industries (beer, cigarettes, soft drinks and timber products) are common to most UDEAC countries, which reduces the scope for trade in these products.

The limited scope for trade creation explains why there has been little growth in intra-UDEAC trade. Moreover, the impact of the single tax further discourages intra-UDEAC trade. UDEAC is, therefore, a customs union where intra-union trade is very limited because of highly inefficient industries and a continuing barrier to trade.

Table 10. Cameroon and the Central African Republic: domestic resource cost ratios

Product	Cameroon	Central African Republic
Metal fabrications	-84.75	5.3
Tyres	1.33	
Cement	-1.42	
Cables	0.78	
Radios	-0.06	
Glass bottles	1.95	
Bakery products	1.37	
Dairy products	-3.78	
Beer	2.20	0.27
Mineral water	1.01	
Cotton cloth	4.61	-8.4
Shoes	1.98	Infinite a/
Sawn timber	0.96	0.87
Plywood	0.77	0.87
Cartons	1.26	
Matches	1.84	
Soap	2.34	
Batteries	-0.76	7.2
Paints		-8.7
Bicycles, motorcycles		3.3
Household aluminium goods	2.13	-0.42
Cigarettes		-2.35
Plastic products	-0.59	-0.93
Perfumes and cosmetics		12.70

Source: Maxwell Stamp.

Note: Negative figures indicate that value added at border prices is negative.

a/ Value added at border prices = 0.

E. Policy reforms

Clearly, UDEAC has not functioned satisfactorily as a customs union, in spite of its substantial advantages (a common language and a common currency). Furthermore, the similarity of the materials base and industries in member countries does not encourage trade, nor does the persistence of the conventional trading links with Europe. Nonetheless, there are a number of steps that can be taken to encourage trade and improve economic efficiency:

(a) A major step would be to replace the single tax, the import turnover tax and the internal production tax (import sur le chiffre d'affaires intérieur), a domestically levied sales tax, by a value-added tax (VAT). A VAT has been under serious consideration for some years,* the two main problems being the differing administrative capacities of the member countries and the relationship between a VAT and existing taxes. This measure could have the effect of eliminating that distortionary obstacle to trade, the single tax, and would convert the import turnover tax from a trade tax to a domestic VAT, thereby reducing the common external tariff by 10 percentage points.** The level(s) of VAT could be different in the different member countries, depending on revenue requirements;

(b) The abolition of the complementary tax would have the effect of creating a true common external tariff and at the same time of further reducing the level of trade taxes. Government revenue losses would not be great;

(c) A simplification of the common external tariff would be desirable. The customs duty and entry duty should be merged into a single common external tariff, and the number of tariff bands reduced to four, one of which would be a low uniform tariff. The widespread inefficiency of UDEAC industries suggests that uniform

*A recent major study [10] proposed the following timetable for introducing a value added tax (VAT):

From 1 January 1990: Cameroon, Congo and Gabon
From 1 January 1991: Central African Republic
From 1 January 1992: Equatorial Guinea and Chad

Although the first two dates have now passed, it is probable that UDEAC will introduce a turnover tax as a forerunner to a VAT.

**A VAT would apply initially only to manufacturers and traders whose turnover exceeded a certain level. It would not apply to the agricultural sector. Over the years, it could then be extended to smaller enterprises and other sectors. This is the approach that was adopted in Côte d'Ivoire and Senegal, although extension has been rather slow. By contrast, an attempt to introduce a widespread VAT in Niger in 1986 ran into substantial administrative difficulties from the outset.

nominal protection of, say, 20 per cent might be provided to all industries. This is in line with the authors' estimates of the shadow exchange rate premium, which is one measure of the over-valuation of the CFAF;

(d) A lower level of the common external tariff needs to be reinforced by a reduction in exemptions at the national level and by the stricter enforcement of the rules by customs officers, who might be given incentives to stop evasion (customs officers in Cameroon now receive 20 per cent of the value of any evasion they prevent);

(e) The harmonization of the investment code would ensure level playing fields for investments. UDEAC [6] has already discussed this issue in considerable detail;

(f) The Solidarity Fund could be replaced by a regional development fund. The Solidarity Fund is a means by which the coastal, more developed countries are intended to provide budgetary compensation to the poorer land-locked (or island) countries for their higher transport costs, so that their industries can compete on an equal footing. The amounts contributed are small and are received by the treasuries, not by the industries concerned. Greater contributions to a regional development fund could be used to improve infrastructure in the less-developed parts of UDEAC, not just in the poorer countries, in order to improve the competitiveness of those parts. The idea is based upon the EEC Regional Development Fund and could be administered by the Banque des Etats de l'Afrique Centrale or by the Banque de Développement des Etats de l'Afrique Centrale. Funds might be contributed both by the member States, and by multilateral and bilateral agencies.

Such a set of reforms would have to be phased in gradually, to allow time for the national economies to adjust to changes and to avoid the shock that would occur if UDEAC attempted to introduce them simultaneously. In any case, the slow and convoluted procedures of UDEAC will ensure that change is gradual at best. In the next section, the quantitative impact of some of the proposed reforms is examined.

A World Bank structural adjustment programme for UDEAC would be the first regional structural adjustment loan for the World Bank. Some funds would go to the UDEAC secretariat and others to the treasuries of member States. While it is an interesting idea, it raises problems of liability for loan repayment, as well as internal procedural problems for the World Bank.

F. Simulation exercise

In order to assess the impact of possible reform measures on import prices and values, the balance of trade, import duties and government revenues, a number of simulations were conducted. The three policy packages for which this was done were the following:

Scenario A A 10 per cent reduction in the customs duty and the entry duty

Scenario B — A 10 per cent reduction in the customs duty and the entry duty, plus the conversion of the import turnover tax into an equivalent internal sales tax

Scenario C — A 10 per cent reduction in the customs duty and the entry duty, plus the conversion of the import turnover tax into an equivalent internal sales tax, plus the elimination of the complementary tax

Scenario C comes nearest to the ideal reform, and the conversion of the import turnover tax under scenarios B and C comes nearest to the introduction of a VAT. It was difficult to simulate a VAT, because of the uncertain effects of the drawback mechanism.

The scenarios were run for alternative estimates to the price elasticity of demand for imports. Although important, little is known about this variable for the countries concerned. The best estimates from other countries and areas in Africa were provided by Pritchett [11]:

	Price elasticity of imports
Benin	-1.6
East Africa	-1.87
Gabon	-1.23
Gambia	0.002
Kenya	-1.48
Zambia	-1.14

Given the extent of illegal imports, the inclination of the authors is to take a relatively modest value for the price elasticity of demand (say, in the range -1.0 to -1.25), because price changes resulting from tariff changes are unlikely to have a major effect on imports, given the extent of smuggling. This range is also justified by Pritchett's value for Gabon (-1.23).

The results of the simulation exercises are presented in the annex, where each of the tables has a different price elasticity of demand. Although the results are clear, it is worth highlighting a few of them:

(a) All three reform scenarios unambiguously act to lower prices. Although this effect is not substantial, it has to be viewed against the inflation rate in UDEAC, which is generally less than 8 per cent per year. However, th reduction of import prices cannot be expected to act as a major stimulus to the export sector, especially as a parallel devaluation is not a realistic possibility;

(b) The effect on the balance of trade is again uniformly negative. However, with a price elasticity of demand of -1, only Equatorial Guinea is likely to be seriously affected. This is an argument in favour of compensation from a regional development fund. With lower values of the price elasticity of demand for imports, the trade balances are more seriously affected. However, the

-1.75 value is probably not realistic, and with the figure at -1.25, the only place, apart from Equatorial Guinea, where there is cause for alarm is the Congo;

(c) Although the impact on import duties is substantial in scenarios B and C, the losses are offset by the conversion of the import turnover tax to an interior sales tax. In no case does government revenue fall by as much as 9 per cent. In the transitional phase, such losses could be made good by grant support in the form of international aid and by judicious excise duties. Moreover, much of the shortfall may be made up by the channelling of illegal imports through official channels and by the fact that an internal sales tax may impinge on imports that evade the import turnover tax.

The impact of the reform measures on industrial profits and, hence, on industrial closures, is again probably not severe. Industrialists would much prefer a lower level of protection that is enforced to a high level of protection that is not effectively enforced, as at present. Because of the prevalence of smuggling, many firms in effect are competing in what is largely a free trade market. This in itself has caused much financial distress and numerous closures.

G. Concluding remarks

While the existence of the customs union presents an obstacle to structural adjustment in individual member countries, there are also obstacles to the reform of UDEAC. First, the fact that proposed changes require the agreement of all member States means that changes tend to take years rather than months to implement. Secondly, the most common reform package, tariff reductions combined with devaluation, is not seriously on the agenda, as devaluation of the CFAF is ultimately in the hands of the Bank of France rather than of the members of UDEAC or any international agency.* Moreover, UDEAC-level reforms cannot be tailored to meet the circumstances of individual members and are therefore unlikely to completely satisfy either the individual countries or the World Bank and other external agencies who are looking for reforms.

Nonetheless, the simulation shows that the deleterious effects of the proposed reforms are neither severe nor uneven in their impacts. This suggests that the reform packages, together with some compensatory measures, are feasible and that they could stimulate export growth and intra-UDEAC trade by reducing the prices of imports and the anti-export bias.

H. Reform postscript

Following the presentation of the Maxwell Stamp report in 1989, the World Bank and the UDEAC secretariat discussed its findings and

*Until recently, any suggestion of devaluation was almost taboo. However, over the last three years the subject has received an airing at certain regional conferences and meetings.

agreed to proceed with a UDEAC-wide Structural Adjustment Loan. A memorandum outlining broad areas of reform was agreed by the six member countries at Yaoundé in October 1990. Preliminary recommendations were presented for trade and industrial policy and for the transport sector and discussed in workshops involving delegations from all member States in March 1991. From these discussions, a series of more detailed fiscal impact analyses were commissioned under French government aid to examine the impact on revenues and protection levels of tariff and tax reform proposals in more detail. This analysis, started in May 1991, is seeking to identity the effects of the following reforms:

(a) The simplification of the tariff structure and the introduction of only three to four tariff bands;

(b) The abolition of the complementary tax and the import turnover tax and the unification of the customs duty and the entry duty into a single rate;

(c) The introduction of a turnover tax on all non-exempt imports and domestic goods;

(d) The replacement of the single tax (and the internal production tax in Cameroon) duty exemptions with a 15 per cent tariff on imported goods as one of the proposed tariff bands;

(e) The introduction of an excise tax on luxury items.

The proposed reforms are broadly in line with the Maxwell Stamp proposals outlined earlier. The main difference is the recommendation of a turnover tax as an intermediate step towards an administratively more complex VAT.

The exact level of the tariff and tax rates to be adopted will be decided in a second series of workshops involving delegations from each UDEAC member country later this year. The reforms will be phased in over a period of three or four years, with different schedules for each country. The common external tariff will consequently cease to exist for this interim period, reflecting the different adjustment requirements of each country.

Annex

RESULTS OF SIMULATION EXERCISES

Table 1. Price elasticity of demand = -1

Resulting change (%)	Cameroon	Congo	Gabon	Equatorial Guinea	Central African Republic	Chad
Scenario A						
Import prices	-0.96	-0.83	-2.40	-1.56	-0.63	-0.28
Import of goods	0.96	0.83	2.40	1.56	0.63	0.28
Trade balance	-1.03	-1.58	-3.17	-6.83	-0.96	-0.27
Import duties	-4.91	-5.13	-7.84	-8.60	-4.7	-6.91
Government revenues	-0.98	-1.72	-3.24	-2.86	-1.58	-1.91
Scenario B						
Import prices	-0.96	-0.83	-2.4	-3.11	-0.63	-0.28
Import of goods	0.96	0.83	2.4	3.11	0.63	0.28
Trade balance	-1.03	-1.58	-3.17	-13.66	-0.96	-0.27
Import duties	-27.20	-24.36	-18.08	-17.51	-21.04	-30.0
Government revenues	-1.02	-1.77	-3.43	-5.83	-1.62	-1.92
Scenario C						
Import prices	-4.22	-3.88	-4.80	-4.67	-1.82	-0.49
Import of goods	4.22	3.88	4.80	4.67	1.82	0.49
Trade balance	-4.56	-7.39	-6.33	-20.48	-2.78	0.47
Import duties	-45.49	-44.74	-26.64	-26.73	-30.24	-35.29
Government revenues	-1.02	-8.60	-6.87	-8.90	-4.72	-3.39

Source: Maxwell Stamp estimates.

Table 2. Price elasticity of demand = -1.25

Resulting change (%)	Cameroon	Congo	Gabon	Equatorial Guinea	Central African Republic	Chad
Scenario A						
Import prices	-0.96	-0.82	-2.40	-1.56	-0.63	-0.25
Import of goods	1.20	1.03	3.00	1.95	0.79	0.35
Trade balance	-1.29	-1.97	-3.96	-8.54	-1.20	-0.33
Import duties	-4.69	-4.94	-7.30	-8.25	-4.59	-6.83
Government revenues	-0.93	-1.65	-3.01	-2.75	-1.55	-1.89
Scenario B						
Import prices	-0.96	-0.83	-2.40	-3.11	-0.63	-0.28
Import of goods	1.20	1.03	3.00	3.89	0.79	0.35
Trade balance	-1.29	-1.97	-3.96	-17.07	-1.20	-0.33
Import duties	-27.03	-24.21	-17.60	-16.89	-20.95	-29.95
Government revenues	-0.98	-1.72	-3.14	-5.62	-1.59	-1.91
Scenario C						
Import prices	-4.22	-3.88	-4.80	-4.67	-1.82	-0.49
Import of goods	5.27	4.86	6.00	5.84	2.27	0.61
Trade balance	-5.70	-9.24	-7.92	-25.61	-3.47	-0.58
Import duties	-44.93	-44.23	-25.80	-25.91	-30.03	-35.21
Government revenues	-4.54	-8.43	-6.52	-8.63	-4.65	-3.36

Source: Maxwell Stamp estimates.

Table 3. Price elasticity of demand = -1.75

Resulting change (%)	Cameroon	Congo	Gabon	Equatorial Guinea	Central African Republic	Chad
Scenario A						
Import prices	-0.96	-0.83	-2.40	-1.56	-0.63	-0.28
Import of goods	1.67	1.45	4.20	2.72	1.10	0.49
Trade balance	1.81	-2.76	5.54	-11.95	-1.69	-0.47
Import duties	-4.23	-4.55	-6.22	-7.55	-4.36	-6.70
Government revenues	-0.84	-1.52	-2.57	-2.51	-1.47	-1.85
Scenario B						
Import prices	-0.96	-0.83	-2.40	-3.11	-0.63	-0.28
Import of goods	1.67	1.45	4.20	5.45	1.10	0.49
Trade balance	1.81	-2.76	5.54	-23.90	-1.69	-0.47
Import duties	-26.68	-23.90	-16.64	-15.64	-20.77	-29.86
Government revenues	-0.91	-1.62	-2.74	-5.21	-1.53	-1.88
Scenario C						
Import prices	-4.22	-3.88	-4.80	-4.67	-1.82	-0.49
Import of goods	7.38	6.80	8.40	8.17	3.18	0.86
Trade balance	7.98	-12.94	11.09	-35.85	-4.86	-0.82
Import duties	-43.83	-43.19	-24.12	-24.28	-29.61	-35.05
Government revenues	-4.32	-8.08	-5.83	-8.08	-4.51	-3.32

Source: Maxwell Stamp estimates.

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BETWEEN INWARD- AND OUTWARD-LOOKING DEVELOPMENT: INDUSTRY AND TRADE IN INDONESIA

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A. Industrialization strategies

1. Inward vs. outward orientation

Rapid industrial growth has been a major characteristic of most developing countries in the post-war period, especially in Asia. Empirical evidence indicates that a close and systematic relationship holds between a country's stage of development, size and natural resource base, and the size and structure of its manufacturing sector. This relationship is associated with long-term changes in the pattern of demand, relative factor endowments, technology, and trading opportunities in favour of manufacturing activities. Hence, successful development almost invariably implies a relative shift of resources from agriculture to industry as a central feature of the structural transformation of the economy.

Although industrialization is highly correlated with rising incomes, substantial intercountry variations occur due to differences in resource endowments, country size and policies pursued. For a given level of income, large countries with a broad resource base tend to specialize to a lesser extent in international trade, reflecting a more balanced pattern of domestic production. For this reason, the relatively less open economies of large countries are often more concerned with domestic development and therefore inclined to adopt inward-looking development policies. Many smaller countries with a more open economy have, by choice or necessity, developed internationally competitive industries based on comparative advantages. Such countries are obviously more outward-oriented, especially when a lack of natural resources has led to early industrialization. In Asia, India and Indonesia are examples of inward-oriented development and the East Asian developing countries, of outward-oriented development [1].

Attitudes and policies are equally important in shaping the degree of inward or outward orientation. Accordingly, Myint [2, p. 39] defines "inward-looking" as economic development through domestic industrialization and import substitution, with economic planning as a device to protect against undesired external influences, and "outward-looking" as development through the expansion of foreign trade and the maintenance of open-door policies towards

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private foreign investment, foreign aid and migration. Import-substitution thus emerges as a distinctive feature of inward-looking industrial development and export-oriented strategies are a feature of outward-looking development.

Import-substitution strategies are characterized by a high degree of protection for industries producing for the domestic market, by means of a wide range of import controls. Protection tends to be most stringent for consumer goods industries, at least during the earlier stages of such a strategy. There is fairly broad agreement on the disadvantages of a sustained import-substitution strategy, viz. the risk of inefficient allocation of resources in favour of large-scale, capital-intensive industries, many of which would not survive without protection. Therefore, while initially this strategy succeeds in accelerating industrial growth, manufacturing growth tends to stagnate once the easy possibilities for import substitution are exhausted.

Export-oriented industrialization requires the adoption of a more outward-looking trade strategy. There is an important condition for the success of such a strategy: the markets must generate correct price signals so that the manufacturing sector develops in line with a country's comparative advantage. In particular, the protection from imports should be moderate, exchange rates should be realistic, and special incentives for exports may have to be introduced to ensure that production for export is as profitable as production for the domestic market. Other factors contributing to a successful industrialization effort include foreign investment, the availability of credit, explicit government commitment, a good infrastructure, and access to and growth of foreign markets.

While acknowledging the potential benefits of an external orientation for most inward-oriented developing countries, Pack [3, pp. 371 and 372] cautions against optimism regarding the replicability and continuation of the spectacular growth of the East Asian countries. In the long run, he argues, gains from factor reallocation originating in market disequilibria cannot supplant real income gains from productivity growth. Unfortunately, neither the implications of an export-led strategy nor those of efficient import substitution for technological change and total factor productivity are at present very well understood [4]. Pack therefore concludes that sustained productivity growth in manufacturing may require an inevitable minimum period of experience, for which there may not be any short cuts, through trade or otherwise.

2. Industrial policy in Indonesia

Analysing Indonesia's development policies of the past two decades, Myint [2] argues that "the shift towards outward-looking policies which followed the change-over from the Sukarno to the Suharto era was mainly confined to the liberalisation of policies towards private foreign investment, while the old inward-looking attitudes persisted in the policies towards international trade and the domestic economy" and that "this has seriously limited Indonesia's capacity to pursue an effective long-term programme of economic development with equity ...".

Nevertheless, Myint concludes, Indonesia is "better served by a mixture combining outward-looking policies towards international trade and the domestic economy with inward-looking policies towards external capital ...".

Consistent with the protectionist policies prevalent since the late 1960s, the anti-export bias in the trade regime and the oil boom of the 1970s, Indonesia's industrial development until the early 1980s was almost exclusively based on import substitution. In contrast to some of its ASEAN neighbours and the East Asian countries, Indonesia proceeded in the mid-1970s with the second stage of import substitution by establishing "upstream" industries for intermediate and capital goods and durable consumer goods. Thus, having completed the relatively easy first stage of substituting mainly for imported consumer goods, Indonesia followed other inward-oriented countries (India, Nigeria, Pakistan and Latin American countries) rather than reassessing the economic benefits of further import substitution.

In other East and South-East Asian countries, the size of the domestic market constrained opportunities to realize scale advantages and made it important to reappraise development strategy after the first stage of import substitution. In most of these countries, the transition to a more outward-looking strategy went relatively smoothly, because the protective structure was still new and moderate and there were no vested interests in upstream industries. Thee [1] has shown that the continuation of import substitution in Indonesia beyond the production of consumer goods in many respects reflects industrial policy in India. Attitudes and ideas about the relative merits of free and fair competition versus government planning and regulation, as well as Indonesia's resource base and size, have resulted in a "structuralist" view of industrial development as formulated (and executed) by former Minister of Industry Soehoed. This approach to industrialization emphasizes resource-based, heavy industries and the deepening effect of inter-industry linkages between upstream and downstream industries, "proving the merits of an industrial development policy based on viable natural resources and basic commodities provided they are selected correctly, and with a long-term view" [5].

Only after the worldwide recession of 1982 did considerations of efficiency, including employment creation, and international competitiveness cause a gradual shift towards a more export-oriented strategy. By then, however, the vested interests of both domestic and foreign investors producing for a protected domestic market were firmly established. This complicated the transition towards a more outward-looking industrial policy, as economic reform measures introduced since 1983 have shown.

The remainder of this paper deals with the process of industrial development in Indonesia since the late 1960s and examines its nature and characteristics (sections B and C). Industrial strategies are analysed in detail on the basis of input-output data and related to Indonesia's overall economic growth and development. Finally, in the context of different development options, prospects for future industrial development are indicated. Results support

earlier findings [6] that a labour-intensive, resource-based, export-oriented industrialization strategy, combined with selective import substitution, is likely to hold the best promise for Indonesia's future development.

A detailed analysis of the issues discussed is given in Poot, Kuyvenhoven and Jansen [7], on which part of this paper is based. Recent data on the Indonesian economy are taken from Poot [8].

B. Growth and development of the Indonesian manufacturing sector

1. Industrial growth

For the Indonesian manufacturing sector, the 1970s were a decade of remarkably rapid growth and structural change. The liberalization of industrial and trade policies since the late 1960s and the favourable overall performance of the Indonesian economy, no doubt enhanced by the oil price increases of 1973 and 1979, resulted in high rates of growth for the manufacturing sector. Manufacturing value added at constant prices increased at an average annual rate of 15 per cent during the 1970s. As a result, its contribution to GDP at constant prices increased from 8.8 per cent in 1971 to 15.3 per cent in 1980. Due to terms of trade effects in favour of oil mining, the contribution of the manufacturing sector to GDP at current prices increased less markedly, to 11.6 per cent in 1980.

The performance of the manufacturing sector in the first half of the 1980s was strongly affected by the deteriorating macroeconomic situation, in particular by restraints on public development outlays, delays in the implementation of large new projects and restrictive monetary and fiscal policies. Between 1980 and 1985, manufacturing growth, excluding petroleum refining and liquefied natural gas (LNG), amounted to only 5 per cent per year on average. As petroleum refining and LNG still experienced quite favourable growth rates during this period, total manufacturing growth amounted to almost 8 per cent. A significant part of the increase in the share of manufacturing value added in GDP during the first half of the 1980s was therefore due to the growth of oil-related activities. In constant prices, the share of LNG and petroleum refining in GDP increased from 2.8 per cent in 1980 to 4.4 per cent in 1985. Manufacturing, excluding oil-refining and LNG, accounted for 8.8 per cent of GDP in 1985. Oil refining and LNG contributed one-third to manufacturing value added in that year.

2. Structural change

As a result of the rapid expansion of its manufacturing sector, Indonesia now has the tenth largest such sector in the third world. In absolute terms, Indonesia has the largest manufacturing sector in the Association of South-East Asian Nations (ASEAN), contributing about 30 per cent of the region's industrial value added. However, in relative terms, its manufacturing sector is still small, its share in GDP is lower than in other countries at a similar stage of development, and within ASEAN, Indonesia remains the least industrialized country. In 1985, per capita manufacturing value added

amounted to $US 70, or less than one fifth of that in Malaysia and less than one half of that in the Philippines and Thailand. In spite of rapid growth in recent years, manufactured exports amount, on a per capita basis, to only about one third of that for the Philippines and Thailand. Still a primary exporter, Indonesia's share of manufactures in total exports is well below that of its neighbouring countries.

The rapid growth of the manufacturing sector during the 1970s brought about significant changes in its structure and characteristics. Manufacturing development has emphasized the dualistic size structure of the industry: mediumand large-scale industries dominate in terms of value added, with a share of more than 80 per cent, while small-scale industries dominate manufacturing employment with a share of about 70 per cent.

The sectoral composition of the manufacturing sector has broadened considerably since the early 1970s. In the initial stage of industrial development, the manufacturing sector was strongly dominated by non-durable consumer goods industries, mainly food, beverages, tobacco and textiles. In 1975, consumer goods industries still accounted for 60 per cent of value added in mediumand large-scale industries. However, because industrial growth focused on the development of intermediate and capital goods industries, the share of consumer goods industries had declined to below 40 per cent by 1985.

Of the rapidly growing intermediate industries, fertilizer, cement, and iron and steel benefited from heavy government investment, while the chemical industry benefited from foreign investment. Wood-working, particularly plywood, benefited considerably from the government ban on log exports. In the capital goods industries, rapid expansion has taken place in electrical machinery and transport equipment. These industries benefited especially from rapidly growing domestic demand, the erection of high barriers against imports, and regulations regarding the domestic content of their products.

The brunt of the recession in the manufacturing sector, which began in the early 1980s, was felt by the intermediate and capital goods industries, a number of which, especially chemicals, cement, electrical machinery and transport equipment, experienced considerable decreases in their shares in manufacturing value added. The total share of intermediate and capital goods industries remained constant only because of the considerable expansion of the iron and steel industry. However, growth performance was not uniformly poor in the first half of the 1980s, and several industries managed to considerably increase their share of manufacturing value added, viz. clothing, leather, footwear, wood products, furniture and plastics, many of which are light, exportoriented industries.

3. Employment

The contribution of manufacturing to the creation of employment has been moderate, even in times of rapid growth. Between 1970

and 1980 the number of people working in the manufacturing sector increased from 3.1 million (7.8 per cent of the total number of employed) to 4.7 million (9.1 per cent of the total employed), an average annual growth rate of only 4.6 per cent. As a result of the relatively low rate of growth of employment in manufacturing, the sector could absorb just 14 per cent of the net increase in the total employed labour force between 1970 and 1980. From 1980 to 1985, about 1 million additional jobs were generated in the manufacturing sector, representing annual growth of 4.2 per cent and contributing 10 per cent to the total number of jobs created in that period. As the growth of total employment was slightly lower in 1985, 3.6 per cent per year, the share of manufacturing in total employment in that year increased to 9.3 per cent.

An important characteristic of the employment situation in manufacturing is that a considerable proportion (45 per cent) of the workforce is female. Two thirds of the workers are in rural areas. Moreover, while wage-earners have become the largest group of workers, self-employed and unpaid family workers, most of whom work in very small, informal enterprises, still account for about 45 per cent of manufacturing workers.

By comparing the growth rate of employment and the growth rate of GDP, employment elasticities can be derived. In the 1970s, employment elasticity for the manufacturing sector was 0.30, which reflects substantial increases in productivity during that period. Such a low elasticity is also evidence of a highly capital-intensive growth pattern. However, during the first half of the 1980s, the employment elasticity for manufacturing was substantially higher, 0.64, which would suggest a much more labour-intensive growth pattern and relatively limited increases in labour productivity. In fact, the increase in employment elasticity largely reflects the supply orientation of the labour market. Although production growth has declined, labour absorption continues to grow at a virtually unchanged pace. In such a low-growth situation, many entrants into the labour force are forced to accept low-productivity jobs.

The employment performance of mediumand large-scale industries varies substantially from one time period to the next. In the early 1970s employment growth in mediumand large-scale enterprises was quite rapid, about 7.5 per cent per year. In subsequent years, employment growth declined considerably, to only about 4.4 per cent annually, as the expansion of manufacturing was increasingly concentrated in large-scale, capital-intensive intermediate and capital goods industries. Somewhat surprisingly, employment growth increased again during the early 1980s, to about 6 per cent. However, in that same period productivity growth stagnated, especially among intermediate and capital goods industries, owing to deteriorating sales in the domestic market. Consumer goods industries continued to experience substantial increases in labour productivity.

The combination of low employment growth and substantial gains in productivity in the consumer goods industries during the past decade can probably be explained by the rapid introduction of new technologies and the slower growth of output. In the early stages

of industrial development, these industries generally applied traditional, low-productivity technologies, which were increasingly replaced by modern techniques of production generating more output per person employed. However, starting in the second half of the 1970s, the demand for consumer goods was adversely affected by low income elasticities of demand and by the exhaustion of import-substitution possibilities. As a consequence, the rapid growth of output could no longer be sustained in the consumer goods industries. Intermediate and capital goods industries experienced buoyant demand during the second half of the 1970s, stimulated by rapid import replacement. As these industries are highly capital-intensive, the rapid growth of output was accompanied by the rapid growth of labour productivity. After 1981, depressed demand reduced output growth in many intermediate and capital goods industries; at the same time, substantial investment programmes were completed, which led to continued growth in labour requirements and a decline in labour productivity.

Fragmentary evidence on employment growth in small-scale industries reveals a steady expansion of some 5 per cent per year. There are signs, however, that labour productivity has declined, especially in households and cottage industries, as this segment of the manufacturing sector is increasingly becoming a refuge for the underemployed.

C. Distribution and ownership patterns

1. Regional distribution

The importance of the manufacturing sector varies significantly from province to province in Indonesia. In many provinces the manufacturing sector is still very underdeveloped; in nine, the share of manufacturing in regional GDP is less than 3 per cent. Java is by far the most industrialized region in Indonesia, with three quarters of the manufacturing workforce and two thirds of manufacturing value added. With regard to mediumand small-scale industries, the dominant position of Java is even more pronounced, accounting for some 85 per cent of value added and employment. The highest concentration of mediumand large-scale manufacturing firms can be found in Jakarta.

The structure of the industrial sector also varies significantly by region. In Jakarta, modern industries, such as machinery, printing and plastics, dominate. In the other provinces of Java, the food and textile industries are most important. Plywood and sawmilling are among the largest industries in most of the Outer Islands, whereas rubber processing is important on Sumatra. In general, the industrial structure in most Outer Islands is still dominated by a few resource-based sectors.

A more even regional distribution of manufacturing activities is a major policy objective of the Indonesian Government. Clauses restricting the choice of location have been included in the investment priority regulations implemented by Badan Koordinasi Penanaman Modal (BKPM), and infrastructural facilities are being improved to increase the attractiveness of the less-developed

provinces for investors. Furthermore, efforts are being made to reduce transport costs between regions by, fo. example, liberalizing the maritime and air transport system. Macro-economic policies can have a nighly favourable impact on industrial development in the regions outside Java. In particular, the resource-based industries in the Outer Islands will benefit greatly from trade liberalization measures that reduce the cost of their inputs and enhance the competitiveness of their output on the world market.

2. Small-scale manufacturing

Small enterprises provide employment for most of the manufacturing workforce. The small-scale sector is also very important for the regional dispersion of manufacturing activities. In 1979, small enterprises, including household and cottage industries as well as small industries employing up to 20 workers, employed some 3.7 million workers (the preliminary results of the 1986 census show a somewhat lower number). Most workers are self-employed or are unpaid family workers. A large proportion is female, especially in the smaller household and cottage industries (65 per cent in 1975). Few of the very small enterprises hire workers. Employment in the small-scale sector is subject to substantial fluctuations depending on the agricultural season. Much of the work is part-time, especially in the rural areas, and often serves to supplement other sources of family income. The large majority of household and cottage industries, i.e. those employing almost 90 per cent of all workers, are based in rural areas. The predominance of Java, accounting for close to 70 per cent of the workers, is less pronounced than in the case of large-scale industries.

Small industries are engaged in a narrow range of activities including mainly food, textile, wood, and building material industries, which account for more than 80 per cent of value added and employment generated in the small-scale sector. Productivity is low in small-scale firms, reflecting the very limited use of capital equipment and the low levels of skill of the workers. The low productivity of small-scale industry workers also reflects the marginal nature of much of the employment in this segment, especially in rural areas, where the manufacturing sector often is an employer of last resort.

By the labour-intensive nature of their production, small industries have a substantial potential for employment generation. Moreover, they are dispersed throughout all the regions, largely in rural areas, have strong ties with the agricultural sector and are in general highly dependent on domestic resources. Nevertheless, it is generally recognized that there are serious obstacles to the development of small-scale industries. The main constraints relate to the lack of capital, the lack of information on markets, inefficiencies in the supply of inputs, the lack of access to more appropriate technologies, inadequate access to training and the lack of proper management and accounting practices.

Strategies to overcome these constraints and to promote small-scale industries have been based on the following main elements:

(a) The provision of extension services, especially through the Ministry of Industry's Industrial Extension Services for Small Industries Programme (BIPIK), which provides technical assistance, marketing and design assistance and entrepreneurial training. This programme is focused on centres of small-scale industries;

(b) The provision of concessional credit, in particular through the Kredit Modal Kecil (KMK)/Kredit Modal Kerja Permanen (KMKP) programme;

(c) Technological assistance by technological research institutes;

(d) The promotion of linkages between small and large firms, for example through the Foster-Parent programme of the Ministry of Industry (Bapak-Anak);

(e) The setting aside of certain manufacturing activities for small firms, by means of industrial licensing arrangements.

3. Ownership and investment

In spite of an increasing reliance on the private sector to play a leading role in the development of the manufacturing sector, the Government still controls a substantial proportion of this sector through its State enterprises. Until the early 1980s the industrialization strategy of the Government involved the development of state enterprises to occupy the commanding heights of the economy. In the framework of this strategy, State enterprises were meant to develop vital sectors in which the capacity of private investors was limited. Generally, this involved investment in basic intermediate and capital goods industries. In the course of time, private firms also invested in such industries, and the Government moved into larger and more capital-intensive projects such as the Krakatau steel plant and the Asahan project. The direct involvement of the Government in large-scale industrial projects was reversed in the wake of the economic crisis in 1982-1983, when, owing to budget cuts, the implementation of a large number of capital-intensive projects was canceled or rephased.

In 1980, the 375 publicly owned mediumand large-scale enterprises covered by the annual industrial survey employed 14 per cent of the workers in this segment of the manufacturing sector and generated 16 per cent of value added. This represents a decline as compared to 1974, when the public sector still generated 26 per cent of value added in mediumand large-scale manufacturing firms. Public enterprises are important in food processing (especially sugar), textiles, paper, industrial chemicals (especially fertilizer), cement, iron and steel and transport equipment. In addition, public enterprises dominate in such activities as oil refining, LNG and non-ferrous basic metals.

Within the private sector a distinction can be made between domestic and foreign investors. Wholly or partly foreign-owned enterprises contribute 30 per cent to the value added of medium- and large-scale manufacturing and 12 per cent to employment.

Foreign firms are present in most industries, especially textiles, other chemicals, glass, cement, metal products. electrical machinery and transport equipment. In general, foreign investment tends to be concentrated in the more capitaland technology-intensive sectors. Most foreign firms are still engaged in production for the domestic market, although increasingly, efforts are being made to attract foreign investment in export-oriented activities. The most important source of foreign investment is Japan, followed by the United States, the European Communities and Hong Kong. Domestic private enterprise accounts for the 54 per cent of manufacturing value added. An important characteristic of private domestic enterprises is that many are controlled by a small number of industrial groups.

Recent data on investment approvals processed by BKPM reveal that in recent years foreign investment has declined significantly in Indonesia as a consequence of the slump in the domestic market. Domestic investment has been much less affected by deteriorating economic conditions, although in 1986 private domestic investment also recorded a slight decline; data for 1987 suggest a recovery in both foreign and domestic investment.

D. Trade in manufactures

1. Performance and trade policy

As most manufactured goods are tradeables, international trade in them plays a key role in the process of industrialization. During the 1970s, industrial development was to an important extent based on import substitution, but in recent years the export of manufactures has been increasingly emphasized to compensate for reduced oil export revenues.

Manufactures are the largest item on the import bill of Indonesia, accounting for 72.5 per cent of total imports of goods in 1985. The most important manufactured imports include intermediates, mainly chemicals and oil products, and capital goods (metal products and machinery). Import substitution has contributed to a considerable decline in the share of consumer goods in manufactured imports, from 12.6 per cent in 1975 to 5 per cent in 1985. Imports of capital goods show the strongest increase, accounting for 55 per cent of the imports of manufactures in 1985. At present, imports meet about 31 per cent of the demand for manufactured goods in Indonesia. The share of imports in domestic demand is highest for capital goods (75 per cent), followed by intermediates (38.5 per cent), whereas the share of imports in the domestic demand for consumer goods is only 5 per cent.

In recent years manufactured exports have grown rapidly. In 1980 exports of manufactures, excluding petroleum products, still accounted for only 5 per cent of total exports as well as 5 per cent of total manufacturing output. By 1985 these shares had increased to over 15 per cent and 10 per cent, respectively. Major manufactured exports include a number of resource-based goods, such as rubber, tin and plywood, as well as a range of labour-intensive products including textiles, clothing and some electrical products. Exports of a number of heavy-industry products, such as fertilizer

and cement, have also grown in recent years. This development reflects both the rapid expansion of production capacity in excess of the growth of domestic demand and access to cheap energy resources, which enhances the sectors' international competitiveness. The most important markets for Indonesia's manufactured exports are developed market economies, in particular the United States, Japan and the European Communities, which together account for around 70 per cent of manufactured exports.

A country's trade performance is highly influenced by its trade regime. In Indonesia, a highly interventionist trade regime has been developed that is composed of such measures as import tariffs, import quotas, import bans, import licences, domestic content regulations, export taxes and export bans. These measures have resulted in the erection of high protective barriers favouring import-substitution industries. Especially in the early 1980s many non-tariff import barriers were introduced that further raised the effective rates of protection. However, in recent years several measures have been introduced to mitigate the importance of quantitative import restrictions.

To compensate for the declining oil export revenues that were a result of falling oil prices and the oil export quota imposed by the Organization of Petroleum Exporting Countries (OPEC), a more outward-looking industrialization strategy was adopted in recent years to promote the export of non-oil products. To this effect, a series of far-reaching trade policy reform measures were introduced. One important policy measure that has contributed to the growth in manufactured exports was the devaluation of the rupiah first in 1983 (from Rp 700 to Rp 970 against the dollar) and then in 1986 (from Rp 1,130 to Rp 1,640 against the dollar). Currently, the rupiah is being allowed to depreciate gradually against the dollar to maintain a stable real exchange rate.

In addition, a number of trade policy packages were introduced to liberalize trade, including a substantial reduction in the number of commodities subject to import quotas and import licensing and the granting of access to inputs at world market prices to exporters. The latter measure allows direct access to duty-free imports for producers who export more than 65 per cent of their output, as well as import duty drawback facilities for smaller exporters and indirect exporters (firms supplying inputs to producers of export goods). Measures have also been taken to facilitate port procedures and to liberalize sea transport.

Enforced export substitution is another important component of the Government's policy to promote manufactured exports. This policy was applied in favour of the plywood industry by banning the export of logs and has contributed significantly to the rapid growth of plywood exports. It is also being applied in the rattan industry, where progressive bans on the export of raw and semi-finished rattan have been imposed.

One possible obstacle to the growth of Indonesian exports to developed countries is the increasing pressure for higher protection. Protective measures include both tariff and non-tariff

barriers. Indonesia is being confronted by import quotas for several of its textile products under the Multi-Fibre Agreement in its markets in the United States, the European Communities and Sweden, although currently most of those quotas are not being filled by Indonesian exporters. Indonesian exports of plywood are affected by high import tariffs in the Japanese, Korean and Australian markets. Nevertheless there remains considerable scope to increase these exports as Indonesia's share of most markets is still small and the range of export products can be broadened considerably.

2. Revealed comparative advantage

Indonesia's potential to export manufactures has been analysed in more detail by assessing its comparative advantage and the prospective growth performance of its main export markets. The country's trade performance shows a strong revealed comparative advantage for a number of resource-based manufactures and, in recent years, for several non-resource-based exports. The revealed comparative advantage for the latter products can, to a large extent, be explained by Indonesia's factor endowments, as the net export performance of such industries is positively correlated with their labour-intensities. The potential comparative advantage has been analysed on the basis of the revealed comparative advantages of neighbouring countries at a simliar or somewhat higher stage of development but with a more outward-oriented trade policy. Once again, it is the more labour-intensive products that hold the best promise for export.

In order to assess the prospects for Indonesia's export markets, projections have been made of commodity-wise import growth in these markets. These projections are based on forecasts of GDP growth and estimates of product-specific import elasticities. For the most promising export products, the United States and the European Communities appear to be the markets with the highest growth potential. Surprisingly, the Japanese market shows good promise for a limited number of manufactured goods. Other potentially promising markets are ASEAN partners with relatively favourable growth performance. The exports for which demand is potentially great are the new export products, especially electronic components and equipment. The demand for more traditional products, such as textiles and clothing, is expected to grow only moderately.

To achieve a high and sustainable growth rate for exports of manufactures, appropriate export promotion policies need to be implemented. Export promotion policies in neighbouring countries are, broadly, similar. Most countries provide drawbacks on import duties on inputs and tax credit incentives and have established export-processing zones. In general, the successful promotion of exports requires that export industries receive the same effective protection as import-substitution industries. An important condition for achieving and sustaining the international competitiveness of export industries is a flexible exchange rate policy, which should be used to prevent the overvaluation of the domestic currency. Other important conditions include limitations on and the streamlining of bureaucratic procedures for the implementation of

incentives and the issuing of licenses; effective extension services to exporters; a good educational system; and the absence of labour unrest.

In addition to the recently introduced policy changes, there need to be some further adjustments to promote manufactured exports: the educational and economic infrastructure should be improved; the market price structure should reflect opportunity costs; and effective protection, as embodied in the trade regime, should be reduced. Specific measures could include the strengthening of technological institutes and productivity centres focusing on export industries, the strengthening of export marketing organizations, the introduction of measures for quality control and product standardization, the simplification of the import duty rate structure, improved efficiency for the capital market, the relaxation of industrial licensing requirements and improvements in the operation of export-processing zones.

E. Interindustrial linkages, factor intensities and growth

Productive activities in an economy do not operate in isolation: each production process normally requires inputs that are supplied either from domestic sources or from abroad. Through the use of intermediate products and capital goods, sectors are linked together. Industrial development usually leads to an increasing interdependency between sectors and is therefore an important means of generating overall economic development.

An analysis of linkages on the basis of Indonesian input-output data shows that the food industries and a number of mineral-based industries have the highest backward linkages. The lowest backward linkages can be found in the capital goods industries, which import a substantial portion of their inputs. The highest forward linkages are in intermediate industries such as chemicals, paper and building materials. Backward linkages will generally be strengthened when industries with strong forward linkages are expanded, as has been the policy for the past decade or so.

Capital goods and intermediate goods industries turn out to be the most import-intensive industries, whereas export industries are the least import-intensive. The import requirements of domestic industries are smaller than the hypothetical import requirements of products currently being imported, suggesting that further import substitution would increase the import dependence of manufacturing industry in terms of intermediate inputs. This could, of course, be outweighed by the reduction in import dependence owing to the output of the import-substitution industries. Nevertheless, it would be premature to conclude that further import substitution is justified if it results in reducing total import dependence and increasing domestic production linkages. Import-substitution projects also need to pass the test of economic costs and benefits.

An input-output framework has been used to examine the growth pattern of the manufacturing industry during 1971-1975 and 1975-1980, both taking into account interindustry linkages and not taking them into account. In the former case, the following com-

ponents of production growth were distinguished: final domestic demand, export, import substitution in final demand, import substitution in intermediate demand and changes in technology. In the first period, production growth in manufacturing was largely accounted for by increases in final demand. Furthermore, some import substitution occurred in final demand. In the second period, import substitution in intermediate demand became an important growth component; the importance of exports increased as well. Nevertheless, final domestic demand remained by far the most important source of growth for the manufacturing sector. At constant prices, final domestic demand accounted for 63 per cent of manufacturing output growth in 1975-1980, whereas import substitution in intermediates accounted for 18 per cent, exports for 11 per cent, changes in technology for 4 per cent, and import substitution in final demand for only 1 per cent. These growth patterns clearly show that throughout the 1970s the manufacturing sector benefited from a buoyant domestic economy. During the early 1970s, an additional stimulant to industrial growth was the import substitution of consumer goods; during the second half of the 1970s, the import substitution of intermediate goods occurred.

An analysis of the composition of final domestic demand reveals that increases in final demand for manufacturing products explain most, i.e. 80 per cent, of the total effect of final demand on the growth of output of the manufacturing sector. The only other sectors in which increases in the final demand for products had a measurable impact on the output of the manufacturing sector were construction, commerce and services. As far as exports are concerned, the output of the manufacturing sector is stimulated to some extent by exports of the mining and agriculture sectors, but by far the main source of output growth is direct (80 per cent) and indirect (6 per cent) export growth within the manufacturing sector. Thus it appears that the manufacturing sector receives only limited growth impulses from the expansion of other sectors. It can be expected that the expansion of the manufacturing sector has a more sizeable impact on other sectors, in particular agriculture, commerce, transport and financial services, as these sectors provide substantial intermediate inputs to the manufacturing sector.

The analysis of interindustry linkages has also been used to capture total factor requirements as a result of a unit expansion of a specific industry, including the direct impact as well as the impact on factor requirements elsewhere in the economy. Estimates have been made of total incremental labour-output, capital-output and labour-capital ratios. In addition, a measure of skill intensity has been presented.

Sector rankings according to direct and total factor intensities turn out to be quite closely correlated, although major rank reversals occur for natural resource-based industries, which, have much higher total than direct labour intensities. Total labour-output and total capital-output ratios are only weakly correlated and are negative, as expected, suggesting that in many cases a labour-intensive industry has a low capital intensity in terms of the capital-output ratio, although many exceptions occur. Labour-capital and labour-output ratios, as well as labour-capital and

capital-output ratios, are more closely correlated. In other words, industries that require a relatively large amount of capital per unit of output generally employ few workers per unit of capital; similarly, industries that require a relatively high labour input per unit of output require a relatively small capital input per unit of labour. Furthermore, skill-intensive industries occur in both (relatively) labourand capital-intensive industries.

A comparison of labour and capital intensities for groups of industries reveals that agro-based industries have especially high total labour intensities. Industries that are dominated by small-scale firms are also relatively labour-intensive. As a group export industries have an intermediate position in terms of labour intensity. Import-substitution industries have relatively low labour intensities. Generally, the findings with regard to capital intensities are the reverse, i.e. groups of industries with relatively high labour intensities experience low capital intensities and vice versa.

The evidence on factor intensities indicates that manufacturing industry in Indonesia is dominated by relatively capital-intensive industries. Also, the technology adopted by industries is frequently more capital-intensive than warranted by Indonesia's factor endowments. Moreover, many industries are characterized by a relatively low total factor productivity and a low efficiency with which inputs are used. An important factor in the capital-intensive nature of manufacturing industry in Indonesia is the import-substitution strategy that has been pursued; this has distorted factor prices, especially of capital, encouraged the adoption of capital-intensive technologies and raised the cost of inputs.

F. Implications for industrial development

In Poot, Kuyvenhoven and Jansen [7], a number of alternative projections of the Indonesian manufacturing sector based on different industrialization strategies are presented. The strategies chosen refer in particular to a continuation of the import-substitution strategy that prevailed until recently and to a more export-oriented strategy. In the projections, the impact of increases in domestic final demand, export and import substitution have been separately assessed. Growth in demand and import substitution are exogenously determined. Since estimates cover the period 1983-1994, they include the economic plans Repelitas IV and V.

The projections distinguish between medium-growth scenarios, which cause manufacturing value added to grow about 6.5 per cent annually, and high-growth scenarios, which cause it to grow nearly 8 per cent. In the mediumand high-growth scenarios, domestic final demand accounts for 53 and 43 per cent of output growth, respectively. Import substitution contributes 40 and 52 per cent, respectively, to output growth in the case of import-substitution strategies, whereas export growth contributes 21 and 35 per cent, respectively, to output growth in the case of export strategies.

Most striking are the substantial differences in the employment effects of both types of strategies. With the medium-growth export strategy, 3 million jobs will be created in the manufacturing sector, 0.5 million more than with the medium-growth import-substitution strategy. High export growth adds another 0.75 million jobs. Furthermore, significant employment gains could be achieved by adopting more labour-intensive technologies within industries (more than 0.5 million jobs in the medium-growth case). The export strategy can be shown to require substantially less capital per job than the import-substitution strategy. Not surprisingly, the net foreign exchange effect of the export strategy is superior to that of the import-substitution strategy. A labour-intensive, resource-based, export-oriented strategy combined with selective import substitution is therefore likely to hold more promise for Indonesia in terms of growth potential, employment and foreign exchange earnings than a continuation of the past import-substitution strategy.

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ECONOMIC INTEGRATION IN DEVELOPING COUNTRIES AND SOUTH-SOUTH TRADE

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Introduction

Although institutional and other non-price obstacles to South-South trade are real and, by some reckoning, far from negligible, they are not sufficient to explain why South-South trade in a global context remained marginal until recently. A more plausible explanation is that South-South trade was hampered in the past by the lack of viable industrial production in nearly all the countries of the South.** Because the rapid growth of demand for industrial goods in the South since at least the 1960s could be met only by expanding bilateral trade with the developed industrial countries, the preponderance of the North-South component in the South's total trade was inevitable. It is only with the emergence of newly industrializing countries (NICs) during the 1970s as efficient and competitive suppliers of manufactures to the world market that South-South trade in manufactures began to grow steadily.

The emergence of the NICs with their diversified endowment of skilled labour, capital and technology is a key factor in explaining the recent changes in the level and composition of South-South trade. And, more significantly, it is also the main reason for the greater integration of the heterogeneous economies of the South. The purpose of this paper is to shed light on the factors that underlie the emerging integration of the NICs and the rest of the developing countries.

The plan of the paper is as follows. Section A outlines the characteristics of South-South trade that appear to be essential to an interpretation of the trends in integration. Section B presents a model of integration in the context of three broad trading groups, viz. the NICs, the developing countries and the industrial countries of the Organisation for Economic Co-operation and Development (OECD). Section C, the last section, discusses important policy implications.

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**The relationship between the growth of industrial production in developing countries and the growth of South-South trade is examined by Ahmad [1]. A time series analysis shows that the growth of industrial production in the developing countries and the growth of mutual trade in manufactured products are positively and significantly correlated.

A. New elements in South-South trade

The increased share of total trade accounted for by inter-regional - as opposed to intraregional, preferential - trade and the marked orientation of the former towards manufactures traditionally imported into the South from the industrial countries of the OECD are among the newer elements that alter the prospect of integration among the Southern economies.* The enlargement of the geographical domain and the changing commodity composition of South-South trade are themselves linked to steadily rising industrial capacity in the NICs and near-NICs in the developing world.

The uneven nature of industrial development has sharpened the differentiation of the South into two broad groups, viz. the NICs and the near-NICs on the one hand and the rest of the developing countries of the South, on the other. An important characteristic of this differentiation is that while the NICs still retain small advantages of relatively abundant and low-wage skilled labour, their production capabilities vis-à-vis those of the rest of the developing countries have changed significantly through the sustained acquisition of physical capital, specialized skills and technology. These endowment traits favour the efficient production of a wide range of manufactured goods, with considerable variations in their capital-intensity. As highly competitive sources of manufactures on the world market, the NICs are more similar in their production structure to the industrial countries of the OECD than to the rest of the developing countries.** This difference in factor endowments and production patterns among the countries of the South is now beginning to be reflected in the pattern of their mutual trade. Predictably, a growing share of imports of industrial goods into the countries of the South is produced in the South.

Recent trends in the global exports of the NICs suggest that they have emerged as noteworthy competitors of the developed industrial countries of OECD as sources of manufactured goods in three distinct markets: (a) the domestic markets of the industrial countries of the OECD, as evidenced by the high import penetration ratios in the latter, (b) the markets of NICs themselves, which are trading increasingly with each other, and (c) the markets of the rest of the developing countries, where the NICs are steadily displacing the industrial countries as suppliers of manufactured goods. While the earlier export thrust of the NICs rested almost exclusively on the export of labour-intensive manufactures to the industrial countries, more recently a growing proportion of their global

*The characteristic features of the recent pattern of South-South trade are reviewed by Ahmad [2]. Also, see Cizeljc and Fuks [3] and Lall [4].

**For factor endowment and other characteristics of the NICs, see [5].

exports have been destined for other NICs as well as the rest of the developing countries.

The fact that the NICs are beginning to export to each other and to the developing countries a range of products which the latter have traditionally imported from the industrial countries of the OECD provides a singular clue to the future prospects for integrating the Southern economies. It is estimated that a growing proportion of the manufactured exports of the NICs to the countries of the South effectively displaces comparable exports to the South from the industrial countries of the OECD.* This displacement does not replace existing flows on a one-to-one basis; rather, what the South imports from the NICs in period t_1 would ordinarily have been imported from the industrial countries of the OECD in period t_0. Moreover, a comparison of the commodity composition and factor-intensity of the bilateral exports of the NICs and of the industrial countries of the OECD to the South reveals a significant degree of overlap. In other words, NICs export to the industrial countries of the OECD a range of products similar to those that other developing countries routinely import from the industrial countries of the OECD.

Thus, the South as a whole, i.e. the NICs and the rest of the developing countries, can be seen as both exporting and importing similar goods. This pattern of "cross-hauling" is not dissimilar from the one that frequently is observed in an individual country with pronounced regional characteristics, where one region exports to the rest of the world a commodity that another region of the same country imports from the rest of the world.

B. A model of integration of the Southern economies

The emerging complementarity between the NICs and the rest of the developing countries, outlined in the previous section, can serve as the building block of future integration. The essence of this process can be captured in a simple Heckscher-Ohlin-type model of bilateral trade with cross-hauling properties. Two groups of countries in the South are distinguished on the basis of relative factor endowments, viz. the NICs and the rest of the developing countries, which trade bilaterally with industrial countries of the OECD. There are two factors of production - physical capital, K, and labour, L - with the stipulation that

$$(K/L)_{NICs} > (K/L)_{DCs} \qquad (1)$$

where K/L is the relative factor endowment.

*For details of a three-tier model of bilateral trade and empirical estimates of the key variable of "trade deflection", see Ahmad [2].

The NICs are assumed to specialize (incompletely) in the production of a composite commodity M (a manufacture) that is relatively capital-intensive and the rest of the developing countries to specialize in the production of R (a resource-based commodity), which is relatively labour-intensive. Accordingly,

$$(k/\ell)_M > (k/\ell)_R \qquad (2)$$

where (k/ℓ) is the capital-labour ratio of production. It is further assumed that, owing to institutional and other barriers, NICs and the rest of the developing countries do not initially trade with each other.

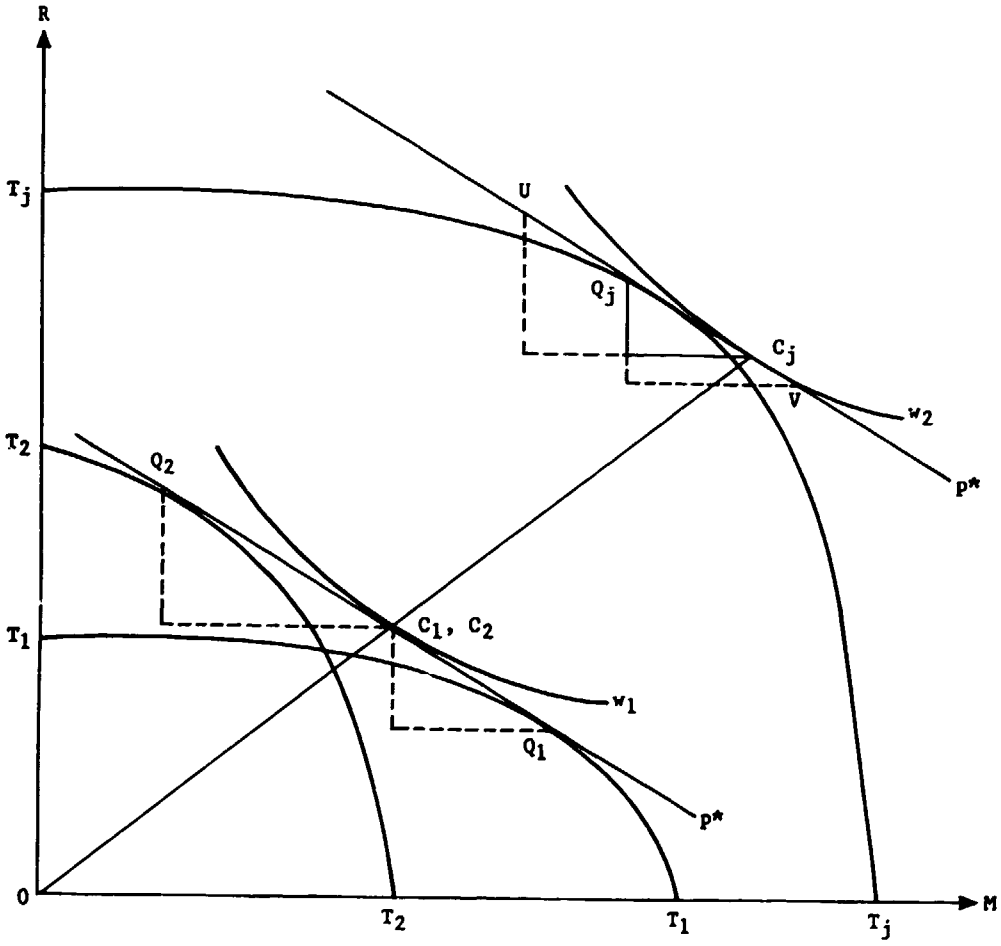
The figure shows the important properties of the model. The transformation surfaces for the NICs and the rest of the developing countries, are depicted as T_1T_1 and T_2T_2, respectively. The difference in the shapes of the two transformation surfaces reflects the assumptions in inequalities (1) and (2). The relative price ratio between M and R, given by the slope of the line p^*, is determined in the world market, since both commodities are internationally traded. Given relative prices imply production at Q_1 in the NICs and at Q_2 in the rest of the developing countries.* Consumption at given world prices takes place at C_1 and C_2 in the NICs and the rest of the developing countries, respectively. The trade vector, i.e. the difference between domestic production and consumption, for each tier is shown as Q_1C_1 for the NICs and Q_2C_2 for the rest of the developing countries. It should be noted that the exports and imports of each tier are the bilateral exports to and imports from the industrial countries of the OECD. Initially, the economies of the South are not integrated, and the NICs and the rest of the developing countries do not trade with each other.** Their separate welfare through bilateral trade with the developed countries of the OECD is maximized at w_1.

It can be seen that the NICs and the rest of the developing countries, each trading bilaterally with the industrial countries of the OECD, are trading in opposite directions: the NICs are exporting M and importing R, while the rest of the developing countries are doing the reverse. From the standpoint of the South as a whole, the trading pattern depicted in the figure is one of

*The two transformation surfaces are drawn in such a way that the common world price line p^* is tangent to both at Q_1 and Q_2. This is, of course, arbitrary and is done to keep the diagrammatic presentation simple.

**The introduction of some initial trade between the NICs and the LDCs does not alter the analysis. The assumption of the absence of initial trade between the two groups of countries keeps the diagram simpler.

Transformation surfaces for the NICs and the rest of the developing countries



cross-hauling.* Although simplified, the trilateral pattern of trade between the NICs, the rest of the developing countries and the industrial countries of the OECD is nevertheless consistent with the current pattern of international trade. The countries of the South have a greater degree of integration with the countries of the OECD than with each other.

This pattern is likely to change in significant ways when the possibility of mutual trade between countries of the South is allowed for. The joint transformation surface of the integrated economy of the South, i.e. the sum of the transformation surfaces T_1T_1 and T_2T_2 at prices p^*, is shown as T_jT_j.** At prices p^*, production and consumption in the now integrated economy of the South takes place at Q_j and C_j, respectively.*** The joint trade vector of the South, Q_jC_j, is smaller than the algebraic sum of the two separate trade vectors, viz. UV, where $VQ_j = Q_1C_1$ and $UC_j = Q_2C_2$. The overlap between VQ_j and UC_j gives the "shrunk" trade vector Q_jC_j. In other words, mutual trade between the NICs and the rest of the developing countries replaces a certain volume of their bilateral trade with the industrial countries of the OECD.

As the trade vector Q_jC_j shows, the NICs and the rest of the developing countries still trade with the industrial countries

*Cross-hauling in this analysis is broadly defined as two-way trade in similar products. More specifically, it refers to the common observation that a developing country among the NICs exports good M to the industrial countries of the OECD, while another developing country among the rest of the developing countries imports good M from the OECD. Cross-hauling or two-way trade in our model arises simply because of the absence of South-South trade. Two-way trade in similar goods can arise for a variety of different reasons, e.g. the presence of transport costs in spatial markets, product differentiation that leads to intraindustry trade and reciprocal dumping in segmented markets. The basic characteristic that one or the other economic factor causes a country or a region to both export and import a similar good is common to all variants of cross-hauling. Due to aggregation, the trade patterns shown in the figure resemble interindustry trade of the Heckscher-Ohlin type, being based on relative factor intensities of labour and capital. It should be noted that in any case two-way trade is not incompatible with Heckscher-Ohlin theory. For proof that intraindustry trade is possible in functionally identical commodities, see Greenway and Milner [6].

**T_j on each axis of the diagram is obtained by summing T_1 and T_2.

***As long as positive quantities of both goods are produced and consumed in both groups of countries, points such as Q_j and C_j are found simply by summing up the two production points Q_1 and Q_2 and the two consumption points C_1 and C_2 along T_1T_1 and T_2T_2.

of the OECD, but their combined trade with the latter is now less than when they were not integrated. What appears as cross-hauling in the figure, $UQ_j + VC_j$, is no longer traded with the OECD countries and instead becomes mutual trade between the NICs and the rest of the developing countries, i.e. South-South trade. The welfare implications at the joint transformation surface T_jT_j are clear: the joint economy of the South is at least as well off at w_2 as at w_1. In the integrated economy, the South is a net importer of manufactured goods and a net exporter of resource-based commodities.

A few pertinent features of the integration outcome depicted in the figure may be noted. First, a larger volume of mutual trade between countries of the South does not mean that there would necessarily be a decline in the overall volume of North-South trade. The substitution of South-South flows for corresponding North-South flows occurs only in the case of manufactured goods for which the NICs have credible production capacity and, hence, is unlikely to occur across the board. Moreover, as South-South trade substitutes for a particular North-South flow, North-South flows would emerge. In fact, the growth of South-South trade in the recent past has been accompanied by larger rather than smaller volumes of North-South trade.

Nevertheless, it would hardly be realistic to expect past patterns of global production and trade to continue unchanged as the Southern economies become more integrated. As is clear from the model in the figure, the impetus for integration in the South comes from goods that are traded in world markets, not from goods traded exclusively between the developing countries. Developing countries are gradually beginning to trade with each other in goods that in the past were imported from the industrial countries of the OECD. This process is likely to intensify pari passu with an increase in industrial capacity in the NICs and an increase in the number of NICs themselves. There is also a presumption that South-South trade will increase as growing protectionism in the OECD countries prompts the NICs to search for markets in the rest of the developing countries.

While, as pointed out earlier, integration in the South is unlikely to reduce the overall volume of North-South trade, there is a strong likelihood that its commodity composition will change. This could, for example, lead to a smaller proportion of manufactured goods in total OECD exports to the South. This is, indeed, a key proposition in the model in the figure, despite the fact that the South remains a net importer of manufactured goods. The growing South-South trade in differentiated products, not considered in the present analysis, may further reinforce this tendency.*

*For intraindustry trade among developing countries, see Erzan and Laird [7].

C. Conclusion

This paper presents a plausible scenario for integration in the economies of the South, which involves, on the one hand, changes in the pattern of trade between the NICs and the rest of the developing countries and on the other hand, changes in the pattern of bilateral trade of both with the industrial countries of the OECD. The qualitative implications of this analysis of the emerging pattern of South-South trade (its direction, volume and commodity composition) for traditional North-South trade differ significantly from the implications that would arise if South-South trade were to be confined to goods traded exclusively between countries of the South, leaving untouched the goods that were traded on the world markets. In a deeper sense, the impetus to South-South trade and economic integration in our analysis is the complementarity between the production structures of the NICs and the rest of the developing countries rather than, as is more commonly thought, their competitiveness.

The analysis in this paper justifies neither wild optimism nor undue pessimism on the future prospects of economic integration in the South. Future prospects will depend on the evolution of factor endowments and production in the NICs, and the competitiveness of the production relative to that in the industrial countries of the OECD. These trends can, of course, be strengthened by joint Southern policies to promote integration. Policy initiatives could, for instance, focus on lessening institutional barriers to South-South trade, such as the inadequacy of South-South transport networks, of means of financing and underwriting and of channels to coordinate information about demand and supply capabilities in the South. Similarly, integration could take the more formal route of a comprehensive scheme for preferential trading, such as the general system of tariff preferences under the auspices of the United Nations Conference on Trade and Development (UNCTAD), which encompasses all developing countries.

Regardless of the means by which integration is promoted, a clear understanding of the economic processes that generate South-South trade is essential in order to predict how it will respond to various stimuli. Whether integration is sought through preferential trading or through the removal of institutional barriers, the analysis in this paper pinpoints the directions and factors that need to be stressed, even though the welfare implications of the two approaches to integration are not identical. This analysis generates the empirical prediction that, regardless of the specific form the integration policies take, more South-South trade is to be expected in product categories where cross-hauling, as defined in this paper, is significant.

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SOMMAIRE

Profils de branches clefs des agro-industries en Afrique subsaharienne

George B. Assaf et Paul Hesp

Ces profils regroupent des analyses, conclusions et recommandations par branche fondées sur des études de pays effectuées par le Service des études par région et par pays de l'ONUDI. Ils constituent une première tentative de remédier au manque d'informations sur les différentes branches de l'industrie africaine et illustrent les liens existants et potentiels entre ces branches. Ils visent aussi à faire ressortir les contraintes et les virtualités communes à toutes les branches, afin de contribuer à la mise en place de stratégies de développement et d'activités de coopération nationales, régionales et internationales plus rationnelles et pertinentes. Ils couvrent quatre branches de l'industrie alimentaire - la transformation de la viande et du poisson, la transformation des fruits et légumes, la production d'aliments pour le bétail et la fabrication d'huile végétale - et deux branches qui lui sont étroitement liées - le traitement du bois et les matériaux d'emballage.

Les pays considérés sont l'Angola, le Libéria, la République-Unie de Tanzanie et la Zambie. Les problèmes communs à ces pays sont, d'après les analyses, de mauvaises stratégies dans le domaine des matières premières, le manque de pièces détachées, les faiblesses de la gestion et de la commercialisation, l'insuffisance de la maintenance des installations, et des problèmes de devises. Le document conclut que de meilleures aides à l'agriculture, la production régionale de pièces détachées et une assistance technique dans le domaine de la gestion, entre autres, contribueraient à résoudre ces problèmes.

Note sur la mesure de la protection effective de l'industrie et sur ses conséquences pour l'action des pouvoirs publics

John Cody

L'auteur examine brièvement les applications et les limites de la notion de protection effective, qui permet de déterminer la modification, en termes de prix, de la valeur ajoutée à un produit ou au niveau de tout un secteur, par suite de l'imposition de tarifs (ou de mesures similaires) aux extrants et aux intrants. Il propose de modifier les méthodes courantes d'ajustement pour tenir compte des intrants ne faisant pas l'objet d'échanges et d'appliquer une taxe ou une subvention à la production en conjonction avec un tarif. Pour de nombreux pays en développement, cette formule

aurait, par rapport à une taxe à la consommation ou à la valeur ajoutée, l'avantage de la simplicité et elle aurait en outre un rôle d'aide sélective à la production (accroissement de la valeur ajoutée unitaire) - distinct de la fonction "source de recettes" ou d'autres fonctions de l'imposition.

Efficacité de l'industrie et modification des orientations générales : Union douanière et économique de l'Afrique centrale (UDEAC)

Richard Kitchen et David Sarley

Les auteurs de ce document examinent la réforme des tarifs et d'autres incitations industrielles dans le cadre de l'Union douanière et économique de l'Afrique centrale (UDEAC). La croissance des échanges et de la production manufacturière au sein de l'UDEAC, depuis la création de cette dernière en 1966, est décevante.

Les auteurs examinent également les tarifs extérieur et intérieur pratiqués par l'UDEAC et présentent des estimations des taux nominaux et effectifs de protection et des rapports coût en ressources intérieures/gains en devises. Pour la quasi-totalité des produits, le rapport est supérieur à l'unité, ce qui montre que peu d'industries sont compétitives sur le plan international. Les causes de la faible progression des échanges entre les pays de l'UDEAC sont également expliquées. L'impact d'un tarif intérieur, la taxe unique, constitue un autre frein au commerce.

Il est donc peu probable que l'élimination des obstacles intérieurs et une réduction de la contrebande au sein de l'Union conduisent à une forte expansion des échanges. De même, un abaissement du tarif extérieur commun n'entraînera sans doute qu'un ralentissement limité des échanges à l'intérieur de l'UDEAC (il n'est guère question d'une réforme parallèle du Franc CFA).

D'après les simulations effectuées, de telles réformes tarifaires auraient peu d'effet sur les recettes de l'Etat et sur la balance commerciale. En outre, la contrebande revêt une telle ampleur que les entreprises industrielles sont déjà confrontées à un marché compétitif et qu'une réduction de la protection ne provoquerait également qu'un nombre limité de fermetures d'entreprises. Globalement, une réforme tarifaire aurait donc sans doute des effets favorables.

Entre un développement introverti et extraverti : industrie et commerce en Indonésie

Arie Kuyvenhoven et Huib Poot

L'industrialisation joue un rôle primordial dans le développement économique de l'Indonésie. On pense que dans les dix années à venir, le secteur manufacturier va devenir le secteur de

pointe de l'économie : sa part dans le PIB augmentera rapidement, il créera de nombreux emplois, procurera des recettes en devises considérables et donnera une forte impulsion à la croissance des autres secteurs.

Les auteurs du document s'efforcent de résumer l'expérience industrielle récente de l'Indonésie, notamment depuis le début des années 70, d'en examiner la nature et les caractéristiques, et de la relier au processus plus général de croissance et de développement économiques. Les perspectives de croissance sont examinées en partant de diverses options de développement.

L'accent est mis sur les questions suivantes : mutations structurelles du secteur manufacturier; répartition régionale des activités manufacturières; orientation commerciale du développement de l'industrie manufacturière; liens entre les industries manufacturières; activités manufacturières à petite et à grande échelle; intensités factorielles et incidences sur l'emploi du développement du secteur manufacturier.

Intégration économique des pays en développement et échanges Sud-Sud

Jaleel Ahmad

L'auteur de ce document examine le rôle des nouveaux pays industriels (NPI) dans l'expansion des échanges Sud-Sud de produits manufacturés. Pour aider à expliquer le processus, il établit un modèle d'échanges Heckscher-Ohlin avec des exportations et importations croisées (crosshauling) dans trois groupe de pays - les NPI, les autres pays en développement et les pays développés - et examine ses incidences sur l'orientation des échanges, leur volume, leur composition par produits de base et les politiques générales.

EXTRACTO

Perfiles de ramas agroindustriales clave del Africa subsahariana

George B. Assaf y Paul Hesp

En este documento se recogen análisis, conclusiones y recomendaciones, a nivel de rama industrial, procedentes de estudios de países realizados por la Subdivisión de Estudios Regionales y de Países de la ONUDI. Estos perfiles sectoriales se ofrecen como un primer intento por superar la actual escasez de información sobre la industria africana a nivel sectorial. Los citados perfiles permiten ilustrar las vinculaciones existentes, así como las potenciales, entre diversas ramas de la industria. También intenta con ellos determinar limitaciones y posibilidades comunes a las distintas ramas de producción como aportación analítica a la elaboración de estrategias y al establecimiento de cooperaciones, a nivel nacional, regional e internacional, más coherentes y pertinentes. Este documento se refiere a cuatro ramas de elaboración de alimentos: elaboración de carne y pescado, elaboración de legumbres y frutas, fabricación de piensos y producción de aceite vegetal. También trata de dos ramas industriales estrechamente relacionadas con la elaboración de alimentos: transformación de la madera y fabricación de materiales de envasado.

Los perfiles se refieren a los siguientes países: Angola, Liberia, República Unida de Tanzanía y Zambia. En el documento se identifican las desacertadas estrategias en lo relativo a materias primas, la falta de piezas de repuesto, la deficiente gestión y comercialización, el inadecuado mantenimiento de las plantas, y las limitaciones en lo tocante a divisas, como problemas comunes a todos los países estudiados. En el documento se llega a la conclusión de que, entre otras cosas, mejores incentivos agrícolas, la producción regional de piezas de repuesto, y la asistencia técnica en materia de gestión, ayudarían a solucionar esos problemas.

Nota sobre evaluación y consecuencias políticas, de una protección eficaz de la industria

John Cody

Breve examen, desde el punto de vista de su aplicación y limitaciones, del concepto de protección eficaz, que indica el cambio, basado en el precio, del producto o del valor añadido a nivel industrial debido a los aranceles aduaneros (o a medidas de política análogas) aplicados a la producción y a los insumos. Se propone una modificación de los métodos normales de ajuste para los insumos no comercializados. Se sugiere la introducción de un impuesto sobre la producción o de una subvención a ésta, en combinación con un arancel aduanero. Para muchos países en

desarrollo, esto tendría ventajas sobre un impuesto al consumo o al valor añadido en cuanto a sencillez y posibilidad de proporcionar -independientemente de la recaudación tributaria o de otras funciones fiscales- incentivos a la producción selectiva (un mayor valor añadido por unidad).

Eficiencia industrial y reforma política: la Unión Aduanera y Económica del Africa Central (UDEAC)

Richard Kitchen y David Sarley

En este documento se examina la reforma de aranceles aduaneros y otros incentivos industriales en el marco de una unión aduanera y económica: la Unión Aduanera y Económica del Africa Central (UDEAC). El crecimiento del comercio y de la industria dentro de la UDEAC viene siendo decepcionante desde su creación en 1966.

Asimismo se examinan los aranceles internos y externos de la UDEAC y se presentan evaluaciones de los tipos de protección nominales y reales y de los índices de costos en recursos nacionales. Con excepción de unos cuantos productos, estos índices son superiores a uno, lo que significa que pocas industrias son internacionalmente competitivas. También se explica por qué ha sido escaso el crecimiento registrado en el comercio entre los países miembros de la Unión Aduanera y Económica. Los efectos de un arancel interno -el impuesto único (taxe unique)- constituyen otro desincentivo al comercio.

Es poco probable, por tanto, que la supresión de las barreras internas y una reducción del contrabando en la UDEAC redunden en un aumento considerable del comercio dentro de la Unión. Además, es probable que los efectos de una reducción del arancel externo común sólo determinen hasta cierto punto una disminución del comercio dentro de la Unión Aduanera y Económica. (Difícilmente cabe prever una reforma paralela del franco CFA.)

Las simulaciones efectuadas sugieren que las repercusiones de esas reformas arancelarias en los ingresos públicos y en la balanza comercial no serían considerables. Además, la magnitud del contrabando significa que las empresas industriales ya se enfrentan a un mercado competitivo y que el número de tales empresas que hubieran de cerrar a causa de una reducción de la protección probablemente también sería limitado. Por tanto, bien pensado, los efectos de una reforma arancelaria probablemente serían favorables.

Entre un desarrollo orientado al interior y al exterior: la industria y el comercio en Indonesia

Arie Kuyvenhoven y Huib Poot

La industrialización desempeña un papel de vital importancia en el proceso de desarrollo económico de Indonesia. Se espera que durante el próximo decenio el sector manufacturero se transforme

en el sector más importante de la economía, aumentando rápidamente su participación en el PIB, creando considerables oportunidades de empleo, generando un considerable ingreso de divisas y dando un importante impulso al crecimiento de otros sectores de la economía.

En este documento se trata de resumir la experiencia industrial de Indonesia en el pasado reciente, sobre todo desde principios de 1970, con objeto de examinar la naturaleza y las características de dicha experiencia y de relacionarla con el proceso, de índole más general, del desarrollo y el crecimiento económicos. Asimismo, se examinan las perspectivas del crecimiento en el contexto de distintas opciones de desarrollo.

Entre los temas que se destacan figuran los siguientes: cambios estructurales en el sector manufacturero; la distribución regional de las actividades manufactureras; la orientación comercial del desarrollo del sector manufacturero; las vinculaciones entre las industrias manufactureras; las actividades manufactureras en pequeña y gran escala; la intensidad de los factores; y las consecuencias -para el empleo- del desarrollo del sector manufacturero.

La integración económica en los países en desarrollo y el comercio Sur-Sur

Jaleel Ahmad

En este documento se examina el papel desempeñado por los países de reciente industrialización en la expansión del comercio de manufacturas Sur-Sur. Para ayudar a explicar este proceso, se utiliza un modelo comercial Heckscher-Ohlin con transporte simultáneo del mismo tipo de mercancías en ambos sentidos y tres grupos de países -países de reciente industrialización, países en desarrollo y países desarrollados-, y se analizan sus consecuencias para los cambios de dirección y volumen del comercio y de la composición de las materias primas, así como las políticas pertinentes.

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