ECONOMIC PAPER 33

# Mauritius

## Dynamising Export Competitiveness

*Sanjaya Lall and Ganeshan Wignaraja*

COMMONWEALTH SECRETARIAT

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# Abbreviations

| | |
|---|---|
| ASYCUDA | Automated System for Customs Data |
| CAD | Computer-aided design |
| CAE | Computer-aided engineering |
| CAM | Computer-aided manufacturing |
| CEO | Chief Executive Officer |
| CIB | Central Informatics Bureau |
| CPC | China Productivity Centre (Taiwan) |
| COMESA | Common Market for Eastern and Southern Africa |
| CPI | Consumer Price Index |
| DBM | Development Bank of Mauritius |
| EU | European Union |
| EDF | European Development Fund |
| EPZ | Export Processing Zone |
| EPZDA | Export Processing Zone Development Authority (Mauritius) |
| ERP | Effective Rate of Protection |
| ERSO | Electronics Research and Service Organisation (Taiwan) |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| GATT | General Agreement on Trade and Tariffs |
| HKPC | Hong Kong Productivity Council |
| ICIC | Industrial Credit and Investment Corporation of India |
| IDC | Industrial Development Committee (Mauritius) |
| IPA | Investment Promotion Agency |
| III | Institute for the Information Industry (Taiwan) |
| ISO | International Standards Organization |
| IT | Information Technology |
| ITRI | Industrial Technology Research Institute (Taiwan) |
| IVTB | Industrial and Vocational Training Board (Mauritius) |
| MCA | Mauritius College of Art |
| MEDIA | Mauritius Export Development and Investment Authority |
| MEF | Mauritius Employer's Federation |
| MEPZA | Mauritius Export Processing Zone Authority |
| MFA | Multi Fibre Agreement |
| MGI | Mahatme Gandhi Institute (Mauritius) |
| MIE | Mauritius Institute of Education |
| MNC | Multi National Corporation |
| MSB | Mauritius Standard Bureau |
| MSTQ | Metrology, Standards, Testing and Quality |
| NAFTA | North American Free Trade Agreement |
| NCB | National Computer Board |
| NIC | New Industrial Countries |
| NIE | Newly Industrialising Economy |
| NIFT | National Institute of Fashion Technology |
| OECD | Organisation for Economic Cooperation and Development |
| PSDC | Penang Skills Development Centre (Malaysia) |
| PSE | Pioneer Status Enterprise |
| QC | Quality Control |
| R&D | Research and Development |
| RCA | Revealed Comparative Advantage |
| REER | Real Effective Exchange Rate |
| RHQ | Regional Headquarters |
| SADC | Southern African Development Community |
| SDR | Special Drawing Rights |
| SGS | Societe Generale de Surveillance |
| SIL | State Informatics Limited |
| SISIR | Singapore Institute of Standards and Industrial Research |
| SITC | Standard Industrial Trade Classification |
| SME | Small and Medium Enterprise |
| SMIDO | Small and Medium Industry Development Organisation (Mauritius) |
| SUBEX | Subcontracting Exchange and Industrial Partnership Centre |
| TC | Technological Capabilities |
| TDS | Technology Diffusion Scheme (Mauritius) |
| TQM | Total Quality Management |
| UN | United Nations |
| UNIDO | United Nations Industrial Development Organisation |
| UNDP | United Nations Development Programme |
| UoM | University of Mauritius |
| VCR | Video Cassette Recorder |
| WTO | World Trade Organization |
| WWW | World Wide Web |

# Tables, Figures and Boxes

## Tables

## Boxes



## Figures



# Currency Equivalents

***Rupees per US$***

| | End of period | Ave. of period |
|---|---|---|
| 1986 | 13.137 | 13.466 |
| 1987 | 12.175 | 12.878 |
| 1988 | 13.834 | 13.438 |
| 1989 | 14.996 | 15.250 |
| 1990 | 14.322 | 14.863 |
| 1991 | 14.794 | 15.652 |
| 1992 | 16.998 | 15.563 |
| 1993 | 18.656 | 17.648 |
| 1994 | 17.863 | 17.960 |
| 1995 | 17.664 | 17.386 |
| 1996 | 17.972 | 17.948 |

*Source:* IMF International Financial Statistical Yearbook, various

# Foreword

Since the 1970s, a number of developing economies in Africa attempted to replicate the export success of the East Asian newly industrialising economies (NIEs) by adopting outward-oriented trade and investment strategies. Mauritius is probably the most impressive "aspiring NIE" economy in the African region. Starting from a low productivity agricultural economy, it achieved rapid growth and an enviable developmental transformation to become a significant exporter of manufactures with an emerging service sector within a short space of time. Outward-oriented development has translated into a high per capita income with enviable living standards. With a per capita income of US$ 3,380 (1995), Mauritius is regarded as an upper-middle income economy. At the same time, there are still some weaknesses in its export performance. The country's dynamism depends on a few key exports, it faces a structural problem of rising wages and declining productivity, and foreign investment inflows have slowed down. In order to sustain its competitiveness in a more open global economy, Mauritius will need to take stock of these problems and confront the policy challenges in restructuring its economy and export sector.

This study was undertaken by the Commonwealth Secretariat at the request of the Ministry of Finance of the Government of Mauritius. It assesses export competitiveness and private sector development in the country with a view to developing a best practice competitiveness strategy. The study, which was prepared by Sanjaya Lall and Ganeshan Wignaraja, is the first of a multi-country project which also includes Zimbabwe and Pakistan. It was jointly funded by the Commonwealth Fund for Technical Co-operation and the Government of Mauritius. This study reviews Mauritius's competitive strengths and weaknesses at the national and enterprise-level; its policies for trade, industry, foreign investment, industrial technology, human capital and EPZ infrastructure; and provides a detailed strategy for sustaining future export competitiveness. It is hoped that the analysis would provide action points for the Government of Mauritius in a number of key areas as it attempts to look towards the 21st century. Amongst other things, the study recommends the following: a Mauritius Competitiveness Council to oversee all issues relating to sustaining competitiveness, a credible strategy of import liberalisation, a strong export drive, a targeted foreign investment strategy and enhanced technological support. The Mauritius experience of creating and attempting to re-engineer its competitiveness also offers many policy lessons for other developing and transition economies. On behalf of the Commonwealth Secretariat, I would like to thank the Government of Mauritius for the co-operation extended to the Commonwealth team in undertaking this study.

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Economic Affairs Division

# Executive Summary

## 1 Setting and Approach

Sustaining export growth in Mauritius calls for a strategy. The base of existing competitive advantages is narrow and eroding rapidly. It needs to be broadened if Mauritius is to cope effectively with the emerging post-Uruguay Round international trading environment and new technologies. While many of the determinants of competitiveness, such as the incentive regime, FDI promotion, physical infrastructure, skills, technology and information support, are good by developing country standards, there remain deficiencies that need to be remedied. More importantly, however, the country has reached a plateau in terms of how far it can go with its existing endowments, and it needs to alter the underlying structure.

National competitiveness is the sum of the efficiency and dynamism of individual firms, together with their interactions and synergy. Firm-level competitiveness cannot be taken for granted if the markets and institutions they draw upon are not efficient and responsive. Capability development can be a slow, often costly and risky process – a process of learning how to absorb new technologies and skills and managing continuous change and upgrading. The building of 'capacity' (i.e. the physical plant and equipment for production) is only a part of the process; what is often more important is the ability to operate this capacity at the levels of efficiency required to compete in changing world markets. The individual firm does not develop its capabilities in isolation; if it did, there would be little scope for policy support. It reacts to signals from the market, and draws upon other firms, factor markets and institutions. The need for policy support arises when these markets do not function efficiently, i.e. when they suffer from 'market failures'.

## 2 Export Performance in a Comparative Perspective

Over the last two decades, Mauritius has achieved considerable success in exporting manufactured products and altering the structure of its competitiveness. It has built up a significant base of export-related skills, information and institutions, far ahead of neighbouring countries in Africa. It has moved from a heavy dependence on foreign firms in EPZs to a position where the majority of exports now come from domestically-owned companies. Over time, as wages have risen, exporters have managed to substantially upgrade the quality of their products; some have built up their own design and marketing capabilities. These are impressive achievements.

At the same time, there are significant weaknesses in export performance. The range of exports is relatively narrow: there are many 'gaps' in the matrix of exports in comparison with other export-oriented countries. A highly concentrated structure has disadvantages. Heavy dependence on a few products renders the country vulnerable to unfavourable national and international developments in those activities. Mauritius is exceptionally vulnerable since over 80 per cent of its manufactured exports come from one product group – clothing. This degree of dependence is higher than other garment-dependent exporters (such as Sri Lanka and Bangladesh) and has not declined over time. The other feature of Mauritian exports is the virtual absence of more complex industrial goods, either sophisticated consumer or producer goods. It has 'missed the boat' on the semi-conductor

assembly boom that drove the growth of Singapore and, later, Malaysia, and led to a variety of related electronic and electrical exports.

Compared to South Asian garment exporters, Mauritius is specialised in a different, and generally higher quality, product range (though China is a major competitor in knitwear). However, this is not enough to ensure continued export growth. The activity is open to easy new entry because of low capital and skill requirements, and is more 'footloose' than many other similar activities. One of the main reasons for locating in Mauritius, to exploit MFA quotas (and EU market preferences), is set to disappear in the near future. A large and diverse textile industry can be a major source of competitive advantage for the garment industry, and after the MFA abolition it is likely that the competitive edge will move in favour of countries that have such an industry: China, Indonesia and India. All these countries also have relatively low wages, at least away from the main industrial centres, and large reserves of labour. They pose the main competitive threat to the smaller garment exporters in the region. What is required, and stated endlessly in Mauritius, is for the industry to make a significant jump in quality and design in order to maintain an edge over such low-wage competitors.

In the African context, *relative openness, export orientation and long industrial experience* places Mauritius in a strong position to take the lead in some types of export activity. The fact that East Asian NIEs have used a very similar initial base of exporting to build up dynamic, diverse and increasingly high-technology bases suggests that Mauritius has several options open to it. That it has not been able to exploit these in the past does not mean that it cannot do so in the future.

## 3 Trade and Industrial Policies

The trade regime in Mauritius, which previously emphasised import substitution and export incentives, is now fairly liberal and probably one of the most open in Africa. Though effective protection is still quite high and variable, its level has fallen since the 1980s, and its incidence (as far as the development of export-oriented activities is concerned) is fairly small. Nevertheless, efforts should be made to minimise this incidence and eliminate remaining distortions in resource allocation. There is a reasonable range of well-administered export promotion policies in place, but they need to be considerably strengthened if the competitive base is to be significantly upgraded. The main agency, MEDIA, undertakes too many functions; its effectiveness is held back by a lack of funds; it offers only a limited range of export marketing and information services with little attention to cost recovery; it does not have an overall export development plan or clear export targets; and the export marketing efforts of SMEs are very weak in relation to large firms.

Mauritius has been less aggressive in using exchange rates as a competitive tool than its main competitors. This may be particularly important for activities such as garments, characterised by small margins and mobile international investors. As far as bureaucratic procedures and regulations are concerned, there have been significant improvements with the abolition of import licensing, the freeing of foreign exchange transactions and streamlining of customs clearance at the port and airport. Nevertheless, enterprises complain about delays in the foreign investment approval process, obtaining refunds on import duties and getting work permits for technical staff.

The most pressing constraints to export growth and upgrading noted by enterprises are high interest rates and cumbersome bureaucratic procedures (particularly in relation to approvals for DBM loans and obtaining refunds on imported inputs). The appreciating exchange rate, policy uncertainty and lack of access to finance were also remarked on by some firms. Infrequent sailing and high sea freight costs were mentioned as the leading constraint to export growth and upgrading on the supply-side, followed closely by shortages of skilled labour and technical manpower; the lack of reliable suppliers of raw materials, parts and components; and inadequate technology institutions.

## 4 Human Resources

Mauritius has made impressive strides in improving its human resource base, and the 1996-97 budget, of 31 May 1996, extended free primary education to everyone in the country (this gives universal free education from pre-primary up to tertiary level for all those in full-time studies). However, shortages of both general and specific skills will be among the most critical constraints to its long-term export competitiveness. The base of literate and trainable manpower that drove its early export expansion is not adequate to cope with the needs of technologically sophisticated, flexible and design-intensive export activities in the future. There are lags in both the quantity and quality of education at the secondary and particularly at the tertiary levels, and these are most severe for technical subjects; the output of high level technical graduates, in particular, is abysmal for the size of the population. Teacher quality, materials and equipment are often poor, with a mismatch between the skills produced at schools and training institutes and those needed by industry. The reliance on rote-learning holds back the development of the skills and aptitudes needed for modern production. Many modern information technology skills are not provided by the training system.

Enterprise training is also inadequate. While some large firms have full-time training departments, most firms provide only the minimal training needed to achieve production standards. Because of the cost involved and high turnover rates for employees, firms tend not to invest in upgrading the capabilities of their workforce. SMEs spend the least on human capital. The training levy does not provide sufficient incentive to firms to develop the training programmes needed.

Human resource problems are exacerbated by a poor work ethic: productivity is low because of low motivation and weak discipline in EPZ firms, high rates of absenteeism and turnover, poor working conditions and antiquated methods of human resource management. This is a broader problem of improving labour management and relations systems, but it is perhaps as important to long-term success as the narrower ones of education and training

## 5 Industrial Technology Capabilities and Institutional Support

The manufacturing sector in Mauritius exhibits a strongly dualistic pattern of technological capabilities. On the one hand, there are a few large export-oriented firms with good technological capabilities by world standards: quality management, equipment maintenance and design capabilities. Several large firms have achieved IS09000 standards. Some have created independent product design capabilities by hiring trained designers and investing in computer-aided design. Such firms also have strong technological linkages with foreign buyers and make use of technical assistance contracts. On the other hand, most SMEs lag in technological terms and constitute a major competitive handicap for industry (see below). They have poor quality management, ad hoc equipment maintenance, rudimentary design capabilities and a low incidence of technology contracts.

The Mauritian system of technology support has several strengths, with several institutions involved in MSTQ, productivity improvement, training, SME support and diffusion. It has been improved in recent years, particularly the Mauritius Standards Bureau and the diffusion system (TDS), as part of a World Bank competitiveness upgrading project. The productivity improvement agency for export firms (EPZDA) is a relatively recent creation, and is doing an excellent job. The SME support agency, SMIDO, is doing useful work, but is inadequate in terms of what is needed to transform SMEs into efficient sub-contractors and make them export-oriented.

The institutional framework as a whole needs to be greatly improved and expanded if it is to play a full role in upgrading competitiveness. The size and resources that existing institutions command are not adequate to the challenges facing them. There are functions that no institution is currently

filling – the most prominent among these is research, development and design. Productivity raising and technical extension for SMEs are being addressed, but not fully. There is no institution capable of formulating comprehensive strategies and delivering the entire package of finance, training, information, extension and marketing support that firms need. The government should strengthen existing institutions greatly and set up new ones where needed to meet the array of needs.

## 6 Industrial Districts

An economic case can be made for encouraging industrial districts or clusters in Mauritius. In many developed and developing countries, these have been dynamic centres of competitive industrial development. In Mauritius, SMEs, scattered around the island, do not constitute 'industrial districts' in terms of network characteristics. They tend to be isolated from each other – there is no division of tasks among them, no exchange of ideas, information, skills or goods, and no long-term relationships of co-operation and trust among entrepreneurs that can lead to specialisation. They do not pool skills, knowledge, services and intermediate goods, and, partly as a consequence, suffer from high costs, risk, credit and marketing problems. In the clothing industry, subcontracting from large to small firms exists, but the latter are mainly firms with simple equipment undertaking low quality activities. There is little of the development of skills, technological capabilities and specialisation that marks industrial districts in more advanced countries.

The government is keen to promote subcontracting, but lacks a coherent strategy for the promotion of industrial clusters. Subcontracting may have been held back by the regulatory framework (in particular the structure of indirect taxes and duties and the duty drawback mechanism), which deters links with non-EPZ firms, and the lack of awareness among firms of the benefits of inter-firm co-operation. This lack of awareness is also related to the virtual absence of industry associations, which generally play a crucial role in fostering linkages and clusters.

## 7 Foreign Direct Investment

Average annual foreign direct investment (FDI) inflows in Mauritius in the 1990s are high by African standards, but low compared to Asian countries. Mauritian FDI remains highly concentrated in textiles and garments, and is experiencing a downturn at a time when FDI to developing countries is surging. Some of the locational advantages which attracted FDI to Mauritius – cheap, literate, bilingual labour; reasonable labour productivity and industrial discipline; preferential access to EC and US markets; political and macroeconomic stability; a low level of bureaucracy and a market-friendly business environment – have been significantly eroded. Moreover, the country is facing increased competition from lower cost producers including Madagascar, China, Vietnam, Bangladesh, India and Sri Lanka. Foreign investors from Hong Kong and France, who largely drove Mauritian success in textile and garment exports in the 1970s and 1980s, have begun to search for locations elsewhere. About half the foreign-owned firms surveyed indicated that they had begun, or were considering, re-locating to other manufacturing sites in the developing world and Eastern Europe.

Several structural factors explain why Mauritius has been relatively unsuccessful in diversifying and upgrading FDI, including its location, an inadequate supply of industrial skills, a lack of input and component suppliers, the limited technology infrastructure, and inadequate local demand for high technology products. At the same time, there are gaps in the FDI regime and promotion strategies. Investment incentives are not geared to actively targeting industrial sectors or major international investors; the eligibility requirements for investors to qualify for incentives are not clearly specified for some schemes; there are inadequate incentives to promote technological upgrading, increase value-

added, promote linkages with local industries and facilitate research and development. Similarly, there are several negative attributes in the current foreign investment promotion system and strategy in Mauritius: foreign investment approvals are slow by international standards; there are flaws in the new targeted investment promotion strategy which reduce its effectiveness; there is insufficient attention to the expansion of existing MNC affiliates; and there is the absence of new programmes, such as inducing MNCs to establish regional headquarters.

## 8 EPZ Infrastructure

Mauritius has an efficient and well developed EPZ infrastructure. It was the first African country to have an EPZ programme and, historically, both the public and private sectors have participated in industrial estate provision. In recent years, there have been improvements in EPZ infrastructure, particularly in the areas of the port and telecommunications. The country has a large number of telephone mainlines in operation and international call charges are low by international standards.

However, investments in EPZ infrastructure have lagged behind demand, and some problems are emerging with respect to utilities, industrial estates and other facilities. These include: high costs of raw industrial land and rental charges for factory space in EPZs by international standards; fluctuations in electricity supply and high electricity charges; high water charges and high rates for telephone installation in EPZs, compared to some Asian competitors; and infrequent sailings/ high sea and air freight costs.

## 9 Policy Recommendations

### *9a Goals, Activities and Institutional Setting*

The goals of the export strategy of Mauritius are to maintain the growth and market shares of products that *already have* a competitive advantage in world markets and to develop *new competitive advantages* in manufacturing and services. Both require expanding existing markets and seeking new ones. Geographical considerations require that attention be paid to neighbouring markets, where Mauritius has several competitive advantages and where export prospects improve as economic liberalisation continues, regional co-operation schemes gain significance and economic growth resumes (albeit at a modest pace).

This report has focused on manufacturing (though some attention has been paid to IT): this is not intended to suggest that other activities are less promising. On the contrary, several are thriving and offer excellent prospects for the future. As far as existing exports are concerned, the predominant activity – *textiles* and *clothing* – will continue to be central to the export effort and will retain a significant market niche. Many leading firms have already upgraded their quality and technology, though much remains to be done to raise competitiveness elsewhere, especially in SMEs. Considerable effort will be needed to further improve the skill, design and technology base in the industry, promote flexibility and specialisation and strengthen supporting institutions. High wages need not be a barrier to export competitiveness if quality is upgraded, and Mauritius has an edge over most developing countries in achieving such upgrading. What is needed is to maintain this edge.

In the manufacturing sector, the mission believes that the best prospects for future expansion lie, apart from textiles and garments, in **printing and publishing** and **electronics**.

Mauritius has already established a base of good *printing* technology, and firms have upgraded their facilities in recent years. The technology in place is fairly sophisticated and skills have developed to an impressive extent. The idea of attracting firms from East Asia in complex support services like colour separation, typesetting and advertising media is a good one, and the experience of Singapore

and Hong Kong suggests that even with very high wages there is a good chance of attracting significant business to Mauritius.

In *electronics*, the record in Mauritius has been less impressive. At present, the few export-oriented companies consist of electronic watch movement assembly, a pH meter assembly plant, a quality crystal preparation plant, a coil winding plant, assemblers of professional audio equipment and an assembler of photo-voltaic units. While this base is an advantage, there is no support in terms of component manufacturers or even a well-stocked distributor in Mauritius. This raises the costs of breakdown, compounded by the lack of service and maintenance facilities and capabilities.

However, the potential of the industry is immense, and in Asia there continue to be significant new investments in search of low-cost skills and facilities. The following products that may be profitably made in Mauritius, based on its location, capital and skill availability, enterprise size and the possibility of attracting foreign investors include: components for emergency lighting systems; delay lines; security panels; a 'flagship' project such as printed circuit boards. It may be useful, in view of the rapid technological changes in the industry and the dynamism of FDI, to take another look at the activities that Mauritius can get into. The possibilities offered by the African market should not be neglected: in view of recent events, it is also necessary to explore the new opportunities that may have arisen in the region.

As far as ***services*** are concerned, the export of *IT services* is often mentioned as a potential area for growth. However, it is difficult to see any competitive advantage that Mauritius offers, apart from a linguistic one, in comparison with countries with established software exports like India or the Philippines. While a start has been made in the Informatics Park, it is difficult to see it amounting to much more than a small fringe activity, unless a niche activity (e.g. desktop publishing) can be established as an area of excellence.

While it may be difficult to mount ambitious strategies in this area, it may be useful for Mauritius to launch a new and well-publicised initiative to catch the attention of potential investors. The regional card may be the base of such an initiative: MEDIA notes the possibility of Mauritius becoming a 'hub' for IT operations in the COMESA region. This would require the government to *target the specific skills and infrastructure* needed and to *develop these before other countries* in the region. The Asian example suggests that the investments required may be quite substantial, but a start has already been made to build up IT capabilities and this can be strengthened.

The other promising area of service exports is *consultancy* in the African region. Many of these service exports can be based on Mauritius' own experience of export-led growth, in which it has a lead over all neighbouring countries: liberalising the export sector, setting up EPZs, managing the development of buyer-seller relations, hosting international trade fairs in textiles and garments, streamlining bureaucratic procedures and operating incentive schemes and developing productivity improvement services. Since most other African countries are liberalising their economies and seeking to promote export-oriented manufacturing and service operations, they will seek expertise from other countries that have successfully managed the process. Not only will the advice be more appropriate, Mauritius has a significant advantage in its bilingual capabilities. It may also be able to exploit its membership of the Southern African Development Community (SADC) to develop marketing opportunities for consultancy services.

The experience of privatisation and restructuring of *public utilities and infrastructure* can also provide a valuable base for the export of services. In many Asian and Latin American countries, utility companies have become important investors and earners overseas on the basis of the lead they have established in their home countries. Chilean firms, for instance, are investing in neighbouring countries in power generation and telecommunications, as are Malaysian firms in Asia. Singaporean firms

are aggressive in setting up and managing EPZs. Where capital and skill needs are very large, Mauritian companies can act jointly with firms from other countries.

Finally, there are some prospects for *offshore financial services*. The country's past growth as an OFC has been helped by its stable political climate, a relaxed and open regulatory framework and a well-developed telecommunications system, while its attraction to funds wishing to invest in India derives more from its traditional ethnic links with India and the tax advantages offered by the double taxation agreement. However, with the globalisation of the world economy and the larger role played by private capital flows, Mauritius will face intense competition from established and new OFCs and these traditional advantages may not be sufficient to ensure future success. There are a number of possible policy initiatives for Mauritius: relaxing the regulatory framework for OFCs while maintaining soundness; devising a more aggressive approach to tapping new OFC business and gathering market intelligence; separating the regulatory and promotion functions of MOBAA, placing the former in the Bank of Mauritius; and dealing with skill shortages by investing in relevant education and liberalising work permits. The Government should consider launching a special study of the OFC in order to develop an appropriate competitive strategy.

### *9b Institutional Steps*

The design and implementation of an export development strategy may require institutional changes. The present structure of policy analysis and formulation is dispersed over several ministries and institutions, and lacks a central co-ordinating mechanism. It would be desirable to set up mechanisms to continuously monitor current competitiveness, analyse emerging trends and problems, devise appropriate solutions and implement them.

The recommendations are as follows:

- Set up a *Mauritius Competitiveness* Council to take charge of all issues pertaining to the maintenance and creation of export capability. This council should include representatives of the ministries and departments concerned with trade, industry, skills, productivity, finance, market intelligence, FDI and infrastructure, and have the authority to design and implement strategies that cut across all the relevant ministries. It is this Council that should formulate the choice of activities to be promoted and supported for future competitiveness.

- Under this Council, establish a *competitiveness monitoring* unit to continuously collect and analyse data on Mauritian export performance on a comparative basis. The benchmarking of national export performance should provide the basic information on which strategies are formed and adjusted over time.

- Set up a *technology assessment unit* that relates emerging technologies to the ability of Mauritian industry to keep up and utilise them to best advantage. Such an assessment should take place at the *cluster, industry* and *firm* level, and would form the core of competitiveness strategy. At the more operational level, there is the need for a manufacturing efficiency and response unit which collects information on day-to-day problems and feeds the information to the relevant ministries so that solutions can be devised.

- Develop a *manufacturing efficiency monitoring and response* capability that studies the productivity, efficiency, flexibility and innovativeness of industry in relation to international benchmarks, identifies problems and develops solutions. This would allow problems to be identified as they arise and address them immediately.

- *Involve the industrial sector* deeply in the analysis of competitiveness problems and solutions, and in the implementation of those solutions. An institutional mechanism such as monthly meeting of key ministers and heads of enterprises, chaired by the Prime Minister, may be useful to promote such participation on a continuous basis.
- Link the *technology infrastructure* institutions (MSB, UoM, EPZDA, SMIDO and others that may be set up) to the efficiency programme, ensuring that the private sector is willing to use their services and that they are able to respond effectively.
- Evaluate the results of these efforts on a continuous basis to ensure that they are efficiently carried out, are cost-effective, and meet the needs of private firms.

### *9c Setting Appropriate Trade and Industrial Policies*

- Persist with a credible, transparent strategy of *import liberalisation* to achieve a low and uniform level of effective protection. Set specific advance targets for phased reductions in import tariffs which will give firms strong signals to restructure. Phase out protection for highly protected activities without any clear economic rationale and support those that can develop into future exports within a relatively short period with supply-side measures to promote rapid restructuring and upgrading.
- Entrust the task of import liberalisation to a *single government* institution (such as the newly established Ministry of Industry and Commerce) which should draw up a simple, clear programme of future tariff reform. This institution should also maintain an up-to-date information system on import tariffs and other forms of non-tariff protection and develop strong in-house capabilities to carry out inter-temporal effective protection studies at regular intervals. These measures will provide the government with the relevant information to assess progress made in reductions in protection.
- Pay more attention to *monitoring cross-country behaviour* in exchange rate management and emulate the more aggressive real exchange rate posture witnessed in neighbouring African and Asian competitors. The Bank of Mauritius could take the lead role in this area and, if required, the collaboration of the IMF could be sought.
- Continue to strengthen the export drive through a significant *enhancement in the role of* MEDIA. An assessment should be undertaken, under the aegis of the Prime Minister's Policy Unit or the Ministry of Finance, to identify strategic institutional restructuring alternatives and carefully evaluate the costs and benefits of each approach. The assessment should explore the possibility of developing an institutional focus on export promotion alone; expanding its financial resources; formulating a mechanism for cost-sharing by recipients and developing commercial services for information and marketing; establishing a dedicated unit to help link SMEs with foreign buyers and large local firms and providing extension services to develop independent marketing capabilities in SMEs.
- Develop an *overall export development plan* and a system of *export targeting* as well as a monthly meeting between key ministers and the heads of firms to review progress made towards export targets and deal with pressing policy problems. The export planning mechanism could be located in the re-structured MEDIA and MEDIA's corporate plan should be developed in line with the overall national export development plan.

- Give due consideration to enhancing the *overseas marketing capabilities* of private business associations and attracting MNC service firms (for instance, to base regional operations in Mauritius). The important goal underlying these initiatives is that the effectiveness of MEDIA should be not only enhanced but also to make sure that it does not inadvertently "crowd out" potential private sector providers of export promotion services.
- *Streamline residual bureaucratic procedures and regulations*, especially those concerning foreign investment approvals and processing of refunds on duty drawbacks. Where possible, a single short form should replace multiple documentation requirements and unnecessary bureaucratic stages should be dispensed with. In this vein, a liberalisation of work permits for technical personnel would facilitate more rapid technology transfer. An appeals procedure should be established to deal with instances where foreign investment approvals are rejected or subject to delays in excess of four weeks (this should include the processing of work permit applications).
- Undertake a *regular annual survey* of enterprise perceptions of the policy and incentive regime and constraints, along the lines undertaken in this study, and feed the results into the export policy making process. This survey should cover enterprises from different industries, ownership forms, and size classes. The results of this survey would be an important input into the work of the proposed Competitiveness Council mentioned above and the high-level meeting between ministers and the heads of enterprises, chaired by the Prime Minister.

### *9d Improving Human Resources*

- Skill needs and provision must be *monitored and prioritised on a continuous basis*, with effective interaction between employers and training institutions. Skill needs should be assessed by continuous monitoring of international competitors. The setting up of a Manpower Co-ordination and Development Unit in the government in 1992 is a step in the right direction, and it is recommended that its achievements should be examined to date and its role strengthened.
- Examine carefully the IVTB's administration of the levy grant scheme and the relevance of its curricula.
- Consider the need to launch new types of training institutions more *directly linked with, and managed by, industry*.
- Focus education and training efforts on *particular skills*, such as IT, textile design and consultancy services that may be competitive activities in the near future.
- Encourage *firm-level training* by information and persuasion and, where desirable, by the setting up of institutions and programmes. These programmes should cover in-house training by firms for their own employees, by large firms for the employees of smaller firms (suppliers and subcontractors), and by industry associations for their members.
- Improve *information* on and *monitoring* of private sector training. At present there is little information available on this and no systematic measures to promote or improve it.
- Target SMEs by special information and incentive programmes to recruit better trained labour and to invest in formal training. Their method of skill transmission tends to be confined to apprenticeship systems, where craftsmen teach young workers, largely with little formal education, traditional methods that have been used over time without much change. The government may assist by providing subsidies to SMEs to invest in training and by setting up activity specific training centres.

### *9e Enhancing Technological Support*

- The MSB should establish its accreditation function as soon as possible.
- Some financial support for smaller enterprises to obtain ISO 9000 certification should be considered. One possibility would be to extend the TDS provision to meet half the costs of the consultancy services needed after the programme ends.
- The TDS scheme seems to be very effective, and its extension (or making a similar set-up permanent) should be considered. The extent of subsidy involved can be lowered over time as SMEs become more aware of the benefits of using the emerging market for technological services and consultants.
- Industrial R&D, which is practically nil, needs to be stimulated, and a stronger research culture created among the larger firms by a campaign to raise the consciousness of the benefits of in-house design and development activity. Linkages between large firms and technology support institutions should be strengthened.
- SMIDO is currently unable to meet the technological needs of SMEs in Mauritius, and the feasibility of setting up Technology Transfer Centres should be considered seriously. This would help SMEs in defining their technological needs and problems (by technology audits), providing them with relevant information on sources of technology, helping them with training, testing, CAD/CAM, equipment repair and maintenance and generally raising their awareness of technological activity. This would draw upon resources at the university and elsewhere in Mauritius, and could soon become self-financing. Such centres could take over several of the functions of SMIDO or be combined with it. The government should strengthen the provision of technological information to help firms learn about sources and prices of technologies along the lines pursued by Korea, Taiwan and Japan, where there are computerised on-line facilities to help enterprises to find and negotiate for new technologies.
- An institution needs to be set up to conduct R&D in collaboration with and on behalf of manufacturing firms. While the University does some applied research, and EPZDA has the function of conducing industrial R&D, neither is geared to assessing the technology needs of industry and meeting them. A mechanism also has to be set up to stimulate firms, especially SMEs, to contract technological activity to research institutes and the university. The Taiwanese example of research institutions importing new technologies, adapting them and then diffusing them to the smaller enterprises, with a package of finance, training, market and management assistance, is a model that the Mauritian government may follow.
- There is a need for a Productivity Centre which would conduct, on a larger and more comprehensive scale, the present functions of the EPZDA. Such a Productivity Centre would incorporate many of the functions of the Technology Transfer Centres noted above – the need for having one rather than several bodies needs to be examined. In this context the Minister of Finance has recently announced the intention of setting up a National Productivity Council; this team does not have the information to assess what this Council is to do.
- Textile and garment design skills need to be developed locally. The design content of export production has to be enhanced over the medium to long term if Mauritian firms are to maintain their upgrading, and a strong local training facility, such as a Textile Design Institute,

would greatly help in achieving this. EPZDA has a long-standing proposal for a Textile Institute which needs to be evaluated and, if found appropriate, acted upon.

- The government should consider establishing a *textile and garment restructuring* fund to help smaller enterprises to invest in new technologies and skills.

- Technology diffusion to smaller enterprises would be greatly helped if the *industry associations* concerned were strengthened, both to offer common services to their members and to act as a focal point for identifying and articulating their needs and for organising assistance from official agencies. In Korea, for instance, the small scale industries associations, initially promoted by the government, served such functions extremely effectively and helped policy formulation in the interests of their members.

- The promotion of *subcontracting* is an important element of the policy to promote SME competitiveness and develop industrial districts. The government should concentrate on raising the skill and technological level of local firms, and provide a pro-active programme of skills, technology and finance. The subcontracting exchange being set up by SMIDO should be promoted strongly. Foreign investors should also be encouraged to invest in diffusing technology locally by promoting subcontractors and suppliers, by providing special incentives to the MNCs related to local content and to programs for helping SMEs, and by investing directly in the upgrading of subcontractor capabilities (along the lines of the Local Industry Upgrading Programme in Singapore).

- Local public and private research institutes should be encouraged to *link up* with similar institutions in other countries (in particular in India) to exchange research results, materials, methodologies and personnel. The government should encourage the exchange of research personnel between laboratories and enterprises in different countries.

### *9f Promoting Industrial Districts*

- *Promoting the formation of industrial districts and clusters* is of crucial importance to the next stage of quality competitiveness and flexibility in garments and textiles in Mauritius. The SME sector is performing poorly at this time, but can be revitalised if appropriate information, skill and contractual interlinkages are created and exploited.

- **Provision of credit:** Access to credit is of key importance, especially for the SMEs and for the firms which try to expand and innovate. In Europe, local banks, consortia and co-operative banks have been the main source of credit to industrial districts. Because local banks know the environment well, they are in a better position to assess the personal qualities of the applicant and the prospects of the project. Other local credit initiatives are Consortia and Co-operative banks, in which the owners of firms are all indebted to each other, which creates an atmosphere of trust and reciprocity that affects the provision of loans and their repayment. Mauritius needs to foster localised intermediaries; commercial banks often do not have the branch network to reach local industry, and wherever the network exists there might be little attention to the need of the local small firms.

- **Training of entrepreneurs and workers:** Firms can play a big role in designing the content of training and in carrying out and monitoring programmes.

- **Provision of information services:** The provision of market information can help to move producers towards more sophisticated segments of the market. Such services are rarely provided by the public sector alone; there is generally strong support from private institutions, because of the sector specific expertise required and for financial reasons. In Ludhiana (Indian Punjab), the regional government established quality control, research and technology centres, vocational and industrial training centres, and encouraged the formation of sectoral and trade associations, through which local industries represent their interests to the State. In Mauritius, information services should be sector specific and specialise by function (e.g. testing facilities, design, legal stipulations, import and export regulations, technology transfer and so on).
- **Labour organisation:** The success of industrial districts in Europe is based not on low wages, but on strong but responsible labour unions that contribute to competitive behaviour and innovation. A flexible labour market, backed by a healthy and technologically progressive labour movement, is vital for export-oriented industrial districts in Mauritius.

### *9g Increasing Foreign Direct Investment*

- Establish a *new specialised agency* for foreign investment promotion, as indicated by the Finance Minister. This new agency should be staffed by people with the appropriate private sector experience and offer competitive pay, benefits and training.
- The new agency should place considerable emphasis on *targeting selected activities and investors*, revamping the current investment promotion strategy by carrying out an investor perception study and developing a pro-active approach to investment promotion. One key element in the new approach should be a regional headquarters (RHQ) programme to attract leading MNCs to set up bases for the African region.
- This agency should also provide high quality *post-approval investor services*, such as obtaining work permits and various infrastructure facilities.
- *MEDIA*, which currently undertakes investment as well as trade promotion and industrial estate management, should be transformed into a specialised trade promotion organisation, with its management and development of industrial estates hived off to the private sector.
- The approval *process must be greatly simplified and streamlined*, reducing the number of stages in the approval process to one, centring on one Foreign Investment Approval Committee. This committee should consist of high-level representatives from a maximum of six ministries, chaired by a senior Cabinet minister, and should meet twice a month. A target two to four weeks should be set for the completion of the investment approval process under normal circumstances. Difficult cases could be referred to a sub-group of the Foreign Investment Approval Committee which would draw on expertise in all areas of government. An appeals procedure should also be established for cases of investors which have been rejected. This should be followed by the abolition of all foreign investment approval processes and a concentration on investment promotion.

### *9h Improving the EPZ Infrastructure*

- Undertake a feasibility study for establishing a *small, national shipping line*. In addition, liberalise the entry of low cost air cargo operators to compete with Air Mauritius and expand the cargo capability of Air Mauritius.

- ❖ Undertake an *assessment of rents* in public and private industrial estates and link increases in rents to changes in the retail price index.
- ❖ Liberalise the entry of *overseas telephone providers*.
- ❖ Develop a *low interest loan scheme* for enterprises to purchase voltage stabilisers and power factor correctors. Establish a consultancy unit within CEB to install such equipment and help consultancy firms to undertake energy audits at competitive rates.

Table 1 **Main Recommendations for Competitiveness Strategy**

| *Category/Constraint* | *Recommendation* | *Implementing Agency* |
|---|---|---|
| **A. Comparative Advantage** | | |
| Need to develop new competitiveness in manufacturing activities | Best prospects lie in textiles and garments, printing and publishing; and electronics. | |
| Need to develop new competitiveness in new service activities | Best prospects lie in information technology and regionally-oriented consultancy services (e.g. liberalisation of the export sector, setting up EPZs, managing buyer-seller meets, hosting international trade fairs, streamlining bureaucratic procedures and operating incentive schemes, and developing productivity improvement services). | |
| Need to sustain competitiveness in offshore financial services (OFC) | Some prospects for further growth of offshore financial services. A more pro-active approach is needed to ensure success. Possible policy actions include: relaxing the regulatory framework for OFCs while maintaining soundness; devising a more aggressive approach to tapping new OFC business and gathering market intelligence; separating the regulatory and promotion functions of MOBAA, placing the former in the Bank of Mauritius; and dealing with skill shortages by investing in relevant education and liberalising work permits. A special study of the OFC is needed to develop an appropriate competitive strategy. | |
| **B. Institutional Setting** | | |
| Lack of a co-ordinating vision and mechanism | Establish a Mauritius Competitiveness Council to take charge of all issues concerning creation and maintenance of export competitiveness. | Prime Minister's Policy Unit/ Ministry of Finance with assistance from Commonwealth Secretariat |
| **C. Trade and Industrial Policies** | | |
| High and variable effective protection and lack of a strategy for future import liberalisation | Persist with import liberalisation to achieve low, uniform effective protection. Entrust import liberalisation to a single ministry which should develop a plan for tariff reduction, set up a data base on import protection measures and undertake effective protection studies | Ministry of Industry and Commerce with assistance from World Bank |

| *Category/Constraint* | *Recommendation* | *Implementing Agency* |
|---|---|---|
| **C. Trade and Industrial Policies** *(cont.)* | | |
| Persistence of anti-export bias and weak export drive | Undertake strategic re-appraisal of MEDIA; develop an overall export development plan and system of export targets; and set up a monthly meeting between key ministers and heads of enterprises (chaired by the Prime Minister) to review progress, deal with pressing problems and solicit views on economic policy management. The export planning mechanism could be located in the re-structured MEDIA and MEDIA's corporate plan should be linked to the national export plan. | Prime Minister's Policy Unit/ Ministry of Finance |
| Appreciating real exchange rate | Adopt a more aggressive approach to exchange rate management | Bank of Mauritius with assistance from IMF |
| Limited private sector participation in trade promotion | Enhance the capacity of private business associations and attract MNC service firms to set up regional offices in Mauritius | MEDIA/Board of Investment |
| Delays in FDI approvals, work permits and refunds on duty drawbacks | Streamline all residual bureaucratic procedures, use single forms and single approval stages, and establish an appeals procedure for delays in excess of four weeks. | Prime Minister's Office, Ministry of Labour and Customs |
| Lack of reliable information on enterprise views about policy regime | Undertake annual survey of enterprises in different export sectors, ownership forms and size classes to monitor the impact of changes of the policy regime. The survey results should be fed into the work of the proposed Competitiveness Council | EPZDA/MEDIA with Commonwealth Secretariat help |
| **D. Human Resources** | | |
| Lack of a focal point in skill development | Undertake an appraisal of the work of the Manpower Co-ordination and Development Unit and strengthen its role | Ministry of Education, Science and Technology |
| Weak administration of IVTB levy grant scheme and lack of focus of curricula | Undertake a re-appraisal of the administration of IVTB levy grant scheme and the curricula. Involve industry in the appraisal exercise. | Ministry of Education, Science and Technology |
| Lack of intermediate and high level skills in key, potential areas of comparative advantage | Establish degree and diploma courses in IT, design and consultancy services in the University of Mauritius and attract overseas education providers to undertake short, certified courses in Mauritius. Set-up an industry-led training centre for electrical and electronics industries. | Ministry of Education, Science and Technology, University of Mauritius, with assistance from the Penang Skill Development Centre of Malaysia and the Government of Singapore |
| Limited investments by SMEs in training | Undertake a public information programme to make SMEs aware of skill gaps for competitiveness. Provide subsidised consultancy services for in-plant training in SMEs. | Ministry of Industry and Commerce, SMIDO |
| Poor work ethic, absenteeism and high labour turnover | Extend current productivity awareness campaigns to industry and employee level. Strongly involve trade union movement in national productivity and competitiveness discussions. | Ministry of Labour, Employers' Organisations and Trade Unions |

| *Category/Constraint* | *Recommendation* | *Implementing Agency* |
|---|---|---|
| **E. Technological Support** | | |
| MSB lacks accreditation function | Take steps to develop accreditation function in MSB | |
| Difficulties in SMEs obtaining ISO 9000 certification | Extend TDS provision to meet half the costs of the consultancy services need after the programme runs out | MSB, TDS with assistance from World Bank |
| Weak technological capabilities in textile and garment SMEs | Establish a textile and garment restructuring fund to help SMEs invest in new technologies and skills | |
| Lack of technical extension services for SMEs | Consider making the TDS scheme permanent. The amount of subsidy can be lowered over time with increased technological awareness in SMEs. Consider setting up technology transfer centres along the lines of the Irish model | TDS with assistance from World Bank; Northern Ireland Technology Centre |
| Low level of industrial R&D | Stimulate industrial R&D by tax breaks and an awareness campaign directed towards large firms of benefits of in-house design and development work. Establish a separate institution to conduct R&D for industry | Ministry of Education, Science and Technology, EPZDA |
| Low industrial productivity | Establish a productivity centre which would incorporate and extend EPZDA | Ministry of Industry and Commerce |
| Weak design capabilities in textiles and garments | Establish a textile design institute for design and training | Ministry of Industry and Commerce with assistance from the Commonwealth Secretariat |
| Weak industry associations | Promote development of industry-specific associations | |
| Lack of subcontracting relations | Raise skills and technologies of local firms, as noted above. Strongly promote the sub-contracting exchange being set up by SMIDO. Adopt Variant of Local Industry Upgrading Programme in Singapore | Ministry of Industry and Commerce with assistance from UNIDO, Government of Singapore |
| **F. Industrial Districts** | | |
| Lack of industrial clusters | Attempt to create industrial districts by fostering local credit initiatives such as Consortia and Co-operative banks; launching systematic training schemes of entrepreneurs and workers; providing sector-specific information services; and encouraging a flexible labour market | Ministry of Industry and Commerce, DBM, Bank of Mauritius, Ministry of Labour |
| **G. Foreign Direct Investment** | | |
| Lack of incentives for target sectors | Undertake an appraisal of investment incentives focusing on providing some extra financial incentives (e.g. cash grants or equity participation schemes) to flagship MNCs; clarifying the eligibility requirements for investment incentive schemes; developing strong incentives to technological upgrading and local linkages; and creating an information system on investment incentives in competitors. | Ministry of Finance with assistance from the private sector |

| *Category/Constraint* | *Recommendation* | *Implementing Agency* |
|---|---|---|
| **G. Foreign Direct Investment** ***cont*** | | |
| Inadequate institutional focus on investment promotion | Create a specialised agency for foreign investment promotion staffed by people with private sector experience and offer a competitive package. This agency should also provide high quality post-approval services by the incorporation of the One Stop Shop. | Ministry of Finance |
| Weak inward-investment promotion strategy | New investment promotion agency should give emphasis to targeting selected activities and individual foreign investors, revamp the current investment promotion strategy and develop a pro-active approach to investment promotion. | Ministry of Finance with assistance from World Bank and Commonwealth Secretariat |
| Lack of a regional headquarters (RHQ) programme for MNCs | Devise a RHQ programme to induce MNC to establish headquarters in Mauritius for the African region, drawing on the Singaporean experience. | Ministry of Finance with assistance from Commonwealth Secretariat |
| Multi-function investment promotion, trade promotion and industrial estate management agency | Hive off management and development of industrial estates to the private sector and create a specialised trade promotion organisation. | Ministry of Finance |
| Cumbersome, bureaucratic multi-stage FDI approval process | Immediately create a single stage FDI approval process centring on one Foreign Investment Approval Committee with high level representation. Set a target of 2-4 weeks for normal FDI approvals. This should be followed by the abolition of all foreign investment approval processes and a concentration on investment promotion. | Ministry of Industry and Commerce |
| **H. EPZ Infrastructure** | | |
| Infrequent sailings/High freight costs | Undertake a feasibility study for establishing a small, national shipping line. Liberalise the entry of low cost air cargo operators to compete with Air Mauritius. Expand Air Mauritius cargo capability. | Ministry of Trade and Shipping/ Air Mauritius |
| High rental cost for factory space in EPZs | Undertake an assessment of rents in public and private EPZs and link increases to changes in the retail price index | DBM |
| High rates for telephone installation in EPZs | Liberalise entry of overseas telephone service providers | Ministry of Energy |
| Fluctuations in electricity supply and high electricity charges | Develop a low interest loan scheme for enterprises to purchase voltage stabilisers and power factor correctors. Set up a consultancy unit within the CEB to install such equipment and help firms undertake energy audits at competitive rates | DBM, CEB |

# 1

# Setting and Approach

## 1.1 Introduction

Mauritius is approaching a critical juncture in its economic development. It has successfully replicated the export-oriented growth and structural transformation of many 'Tiger' economies in East and South East Asia, the only country in the region to do so. It is, however, now completing the phase of export-driven growth based upon a handful of products whose competitive advantage lies in one natural resource and cheap semi-skilled labour. This is not undesirable in itself: the process of growth leads to the erosion of the edge in low wages. It is also due to factors beyond Mauritian control, such as impending changes in the trade environment that will reduce or eliminate its privileged access to certain export markets. The challenge now is to diversify and deepen the competitive base, and to create new skill and technological endowments that can allow it to continue to grow by selling high value added goods and services in world markets. It is not, however, something that can be taken for granted – a natural progression up the ladder of comparative advantage which will come about in response to rising wages – but something that has to be worked for. This is just what the Tigers did, each adopting a different strategy suited to its size, history and political economy.

This study examines the options open to the Mauritian economy with regard to *manufactured export development*. The strategic challenge of Mauritius is well recognised. Indeed, there is a large body of analysis on practically all aspects of the problem. Our study draws upon existing studies of Mauritius, field work in the country, an enterprise-level survey and puts the strategic issues in a comparative context, using data and policies pursued in some countries in East and South East Asia.

To sketch the background, a recent UNDP/World Bank report starts thus:

> *"Mauritius fared well during the 1980s. The economy grew at a rapid pace, and inflation and the fiscal and current account deficits were brought under control. Aided by a relatively well-developed human capital base, full employment and significant real increases improved the welfare of much of the population. Mauritius maintained its exchange rate at a level attractive to exporters and accumulated a comfortable volume of foreign exchange reserves. Trade taxes and restrictions were relaxed and rationalised, price controls and subsidies diminished in importance, and incentives were simplified. Exporters, especially firms in export processing zones (EPZs), took advantage of a favourable external and internal environment to propel exports into the forefront of economic growth.*

Recently, however, clouds have begun to form above this rosy picture of strong, steady growth. Full employment, while it has clearly brought many advantages, has in recent years become an impediment to continued easy growth. Land and capital also seem to be fully employed. Natural resources are scarce as well, and the country is already using them fully. The competitiveness of Mauritian exports is diminishing with the rapid growth of real wages. And the export base remains weak, with its heavy concentration on sugar and textiles and on particular markets. It seems likely that Mauritius' comparative advantage no longer favours labour-intensive activities as strongly as in the past. Consequently, growth

will be tied to the development of sectors with heavier requirements for education and training and based on more advanced technologies. Successful development of these activities hinges on large investments in human capital, on the right market signals to the direct productive factors to activities where their productivity is highest, and on ease of movement among sectors, activities, firms and regions. Bringing idle factors into production will contribute much less to growth than in the past. Growth will have to come instead from improvements in the quality of productive factors and from a new framework of incentives and regulations for encouraging better use of them." (UNDP/World Bank, 1993, page i)

While Mauritius can draw many lessons from the Asian Tigers, it cannot directly replicate their policies. Though it shares a similar experience of rapid growth driven by the export of labour-intensive manufactures, the nature of structural problems in Mauritius are different from those of Asia. They are as follows:

- First, Mauritius is much smaller than any of the 'Tigers'; even Singapore, the smallest, has a population over two and a half times larger.[1] The size of the economy (in particular the labour force and the manufacturing base) constrains the amount and spread of skills and inputs that it can provide, which, in turn, limits the kinds of manufacturing activities that it can efficiently foster. This becomes increasingly important in a world where flexible and efficient local supply linkages are becoming more important for competitiveness.
- Second, its location is far less favourable than that of the Tigers. Mauritius is ostensibly well-situated to serve a large potential market in sub-Saharan Africa, with considerable endowments of natural resources and labour. However, the low incomes and poor growth performance of the region, the weak human capital base, abominable infrastructure and lack of attractiveness for FDI mean that the 'pull' of a dynamic market and considerable spillovers of technology, capital and skills that helped the development of the Asian economies are lacking. This does not mean that a small economy like Mauritius cannot do quite well if it carves a niche in supplying goods and services to Africa (and, indeed, this has to be a major plank of any future development strategy), but that its external circumstances are not as favourable and that it will have to 'try harder'.

Much of the early export growth in East Asia from electronics took place at a time when the technology was exceptionally propitious for low cost assembly. Once established, the economies were able to diversify rapidly and build upon the base of capabilities that had developed. This option is no longer open to newcomers, though there are some small niches in which low cost assembly is still possible.

The leading Tigers had human resource endowments, especially of technical manpower, that were far more advanced than in Mauritius; this enabled them to take on complex technological tasks and so diversify their competitive range. The latecomers have far less by way of technical skills, but have been able to attract sufficient MNC interest that the firms themselves invest substantial amounts in training labour in-house for their own needs.

All this means that Mauritius can only borrow certain elements of Asian strategies that are suited to its size and relatively narrow range of future export activities. It has, of course, several advantages of its own, especially in relation to its neighbouring region. It has been able to tap the garment export boom as well as any other newly-industrialising country, and to enhance the quality of its output. It has used its experience of exporting, offshore financing and facilitating private sector development to develop valuable skills and capabilities that it could exploit in a number of ways. Its exceptionally open outlook and willingness to examine weaknesses and

experiment with new ideas are exceptional in the region, and are strong potential competitive strengths.

## 1.2 Objectives

The nature of export growth in Mauritius suggests that there is a strong need for an export strategy. The base of existing advantages, while valuable, is narrow and eroding rapidly; it needs to be broadened if Mauritius is to cope effectively with the emerging trading environment. While many of the economic determinants of competitiveness, such as the incentive environment, FDI attraction, physical infrastructure, finance, technology and information support are quite good by developing country standards, there are some deficiencies that remain to be remedied. This would not, however, amount to a proper export strategy: what is more important is to direct the limited strategic resources at some carefully selected export objectives.

This study is an attempt to assess the strengths and weaknesses of Mauritian manufactured exports. It starts with a 'mapping out' of its manufactured export performance relative to world markets and to the performance of selected countries in Asia that may be regarded as competitors, partners or useful role models. This is followed by an analysis of the main determinants of competitiveness in manufacturing. This is based on existing studies, comparisons with other countries, the results of an enterprise survey and, most important, interviews with a range of Mauritian firms, banks, officials and support institutions. Finally, the study presents a medium-term strategy for enhancing the country's export competitiveness.

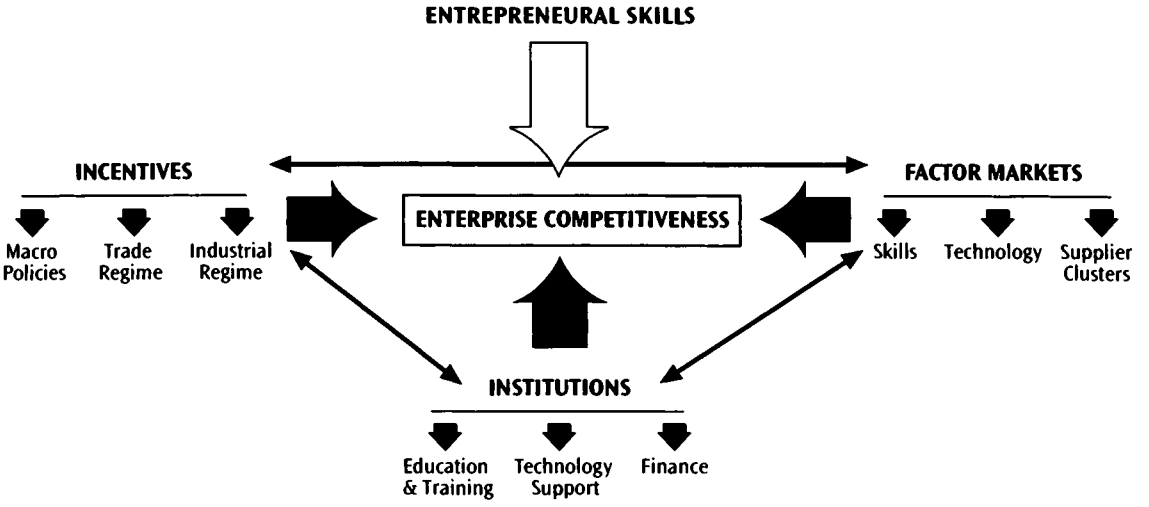
## 1.3 A Framework for Analysing Competitiveness

The analysis of competitiveness is a complex task. Changes in competitiveness are often analysed (mainly between OECD countries) by looking only at relative real exchange rates and wage costs in competing countries. This is useful, but in a narrow, relatively static context, where inter-country differences in technological change and productivity, quality, design, flexibility, skills and marketing can be taken for granted (though even here may be unwise). In a developing country like Mauritius, however, these technological and related factors are among the most important determinants of long-term export success. Macro-economic variables are of course of great importance, and this study examines them; but is important to pay attention to the structural aspects of the economy.

This section sets out a simple framework for analysing the main structural determinants of competitiveness, taking the broad macroeconomic aggregates as given. The framework is based upon recent research on how competitiveness develops in the *individual manufacturing firm*,[2] with national competitiveness taken as the sum of the efficiency and dynamism of component firms, together with their interactions and synergy. This interaction is important, since it explains how 'clusters' of firms and industries become world class producers and sellers. The individual firm does not develop its capabilities in isolation; if it did, there would be little scope for policy support. It reacts to signals from the market, and draws upon inputs, information and skills from other firms, factor markets and institutions. The final result depends on an interaction of several incentives, factor markets and institutions.[3] The role for policy support depends on the need to strengthen each of these.

This can be simply represented by a *triangle of competitiveness determinants* (Figure 1.1). At the firm level there are random entrepreneurial or managerial factors that are directly not amenable to policy influence; these are left outside the triangle (though entrepreneurial education and training can be used to influence these). The factors that policy makers can affect more directly are placed in the triangle, grouped under incentives, factor markets and institutions. Each can be sub-divided into three factors. Under

Figure 1.1 **Policy Traingle for Competetiveness**



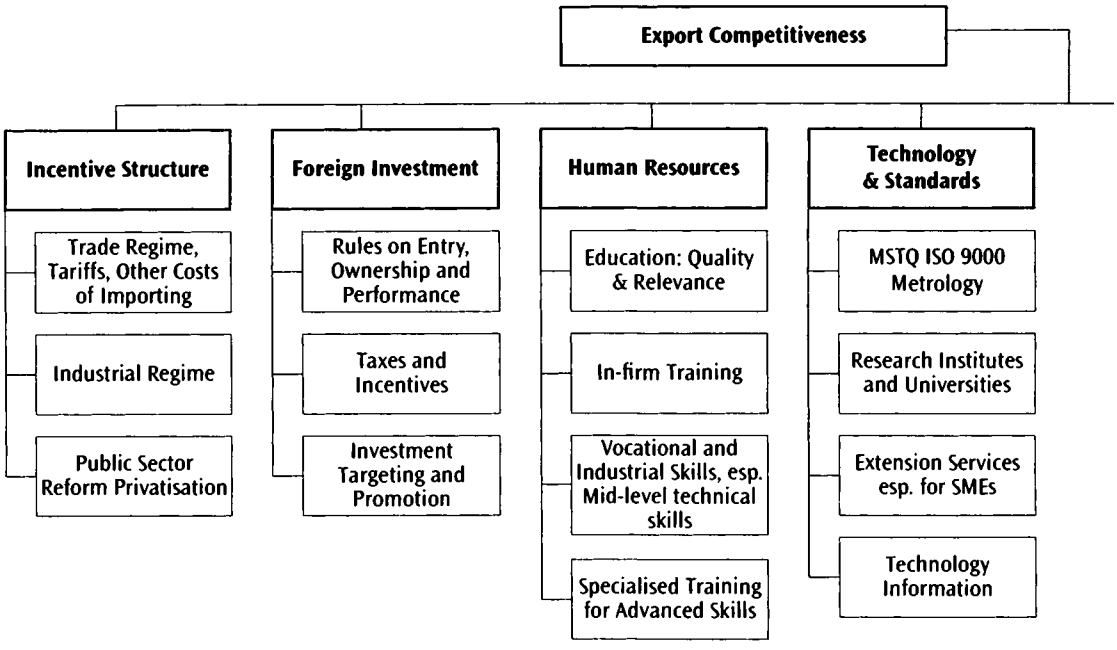

'incentives' are macroeconomic management, trade policy (including the transaction costs of trading), and industrial rules and regulations. Under 'factor markets' are skills, technology, and the supplier base (or 'clusters'). Under 'institutions' are education and training, technology support, and financial institutions.

Since each of the determinants effectively constitutes a market, the need for policy support in economic terms arises when these markets do not function efficiently, i.e. when they suffer from 'market failures'. Market failures can arise from the absence of markets in developing countries, or from markets that suffer from externalities, incomplete or asymmetric information, risk and uncertainty, unpredictable learning effects, technological linkages and so on. Market failures can lead to insufficient investment by individual firms in technological or skill upgrading when the rewards are uncertain or too far in the future. They can lead to firms being unable to co-ordinate their individual actions and plans, and so to insufficient development of activities that are socially desirable but not privately profitable in the short term. This is particularly important for a country like Mauritius which has to develop new areas of competence that require co-ordinated action by several firms, institutions and government agencies.

The policy 'triangle' can be spelt out in somewhat greater detail for the purposes of policy analysis (Figure 1.2). This anticipates the more detailed discussion below of the incentive environment for exporters, the attraction of FDI and the other supply-side determinants of competitiveness. This scheme illustrates the whole range of factors that a comprehensive policy analysis should address in seeking to build export competitiveness in Mauritius. All these factors cannot be covered fully in this study, but the following chapters seek to deal with the most important ones.

There are certain *prior steps* that may be useful in devising such a strategy. One is to conduct a *competitiveness analysis* of the main products that are exported (or exportable) from Mauritius in greater detail than this study was able to do. The analysis below of exports is a first step, but it needs to be fleshed out in much more detail at the product and market levels. More importantly, the competitive base of the industrial sector should be analysed at a fairly detailed level to understand its technology and skill needs, mar-

Figure 1.2 **Elements of Export Competitiveness Policy**

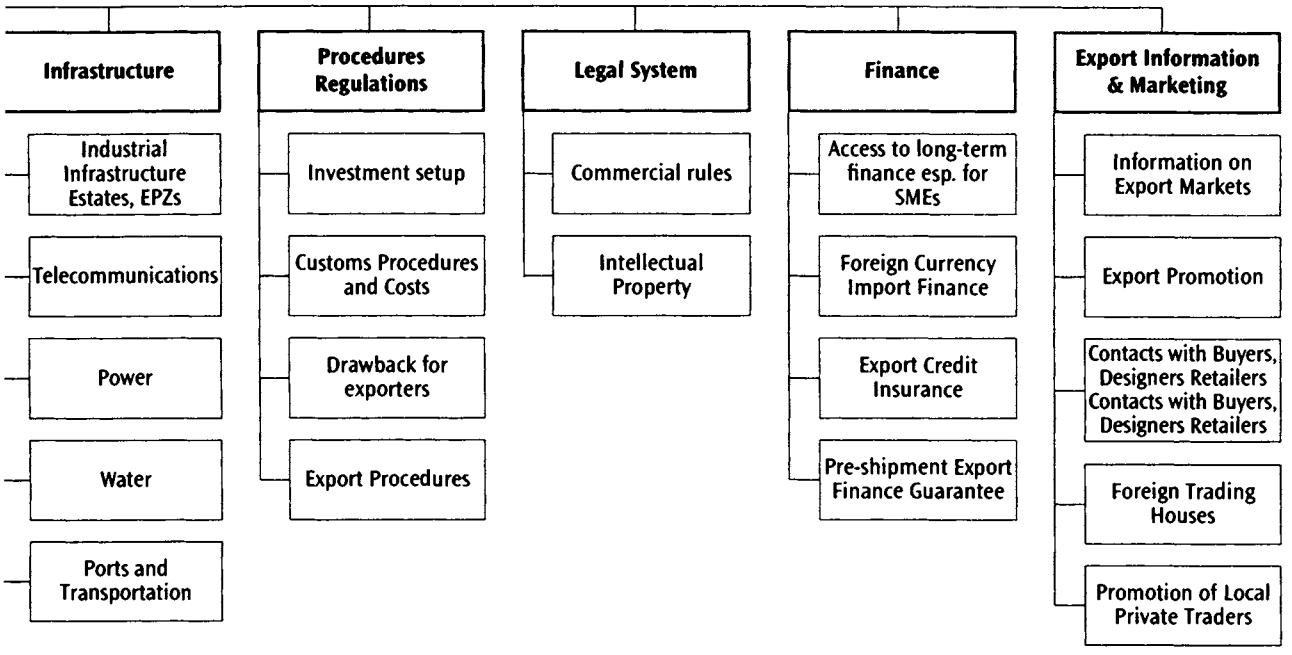



keting and managerial deficiencies, weaknesses in the value-added chain, institutional support gaps, and so on. The case studies carried out in this report are a preliminary attempt at this, but a full analysis would require much more field work and far greater resources than were available at this stage. The study also draws upon a large number of studies that have already been conducted in Mauritius, but which need to be added to and improved.

A proper competitiveness analysis would look, not only at the determinants of efficiency in individual activities, but also at *inter-industry relationships* where there are important inter-linkages between them, that is at industry 'clusters'. Considerable work suggests that the formation of clusters is a crucial part of competitiveness in many industries.[4] This is certainly true of engineering industries (such as transport equipment, electrical machinery, electronics and non-electrical machinery) where subcontracting and supply linkages are critical to delivery, quality and innovation. It is also true of light consumer goods like garments where upgrading to high quality segments calls for specialisation between different firms, flexible and reliable supply links, and close interactions with designers and upstream textile suppliers. The justification for looking at clusters is to identify and exploit externalities that flow between activities in the production chain and constitute essential elements of competitiveness and upgrading of technology.

## 1.4 Structure of Study

The study is laid out as follows. Chapter 2 of this volume sets out the comparative analysis of manufactured export performance in Mauritius and other countries. The data are obtained from the United Nations, but are available only up to 1992; the period chosen for this study starts in 1980. For Mauritius, however, there are more recent data. The data are analysed in various




ways to show the structure, technological composition, growth rates, 'revealed comparative advantage', concentration levels and strong and weak performers in Mauritian exports; comparisons are drawn to show its position in relation to neighbours and competitors. The next five chapters deal with the determinants of export performance: Chapter 3 deals with the trade and industrial regime facing exporters focusing on import liberalisation and export promotion efforts; Chapter 4 with human resources and industrial training; Chapter 5 with national technological performance, enterprise-level technological capability and institutional support; Chapter 6 with foreign direct investment patterns, fiscal incentives and the inward investment promotion strategy; Chapter 7 with the EPZ programme and the cost competitiveness of EPZ infrastructure. Finally, Chapter 8 draws upon the findings of the previous chapters to present a competitiveness strategy for Mauritius. It examines the goals of the competitiveness strategy, the prospects for different manufacturing and service activities, the institutional arrangements for an effective strategy and the main elements of the strategy. The appendices provide background information on the enterprise survey in Mauritius and a classification system for manufactured exports.

# 2

# Mauritian Manufactured Export Performance in Comparative Perspective

## 2.1 Introduction

This chapter evaluates the Mauritian export performance since 1980, analysing various characteristics of its manufactured exports, on their own and in relation to other countries: Singapore, Malaysia, Thailand, Taiwan, Sri Lanka, India and Bangladesh. These comparisons are useful and revealing: some of the selected countries (such as Bangladesh, India, Sri Lanka and to some extent Malaysia and Thailand) are actual or potential competitors in current export products like clothing. Some, in particular Singapore, Taiwan, Malaysia and Thailand are far more dynamic and advanced in their export development and spread, and offer useful lessons. And some, like India and perhaps the South East Asian countries, are already or may become partners in future industrial and trade development. A comparative examination is very useful in showing their relative strengths and weaknesses, and for devising a strategy for future export development.

"Manufactured exports" are defined here to include processed food and tobacco as well as the normal categories of industrial products. This is a broad definition, including some processed raw materials that are normally excluded from manufactures, but it is useful to include primary products that undergo some processing for export. Data were compiled at the 3-digit SITC level from the *UN Trade Statistics Yearbooks* (and, for Taiwan, from World Bank data banks) on manufactured exports in these countries and for the world as a whole, and were used to calculate growth rates, world market shares, trade structures, 'revealed comparative advantages' and export 'dynamism' of manufactured exports over 1980-92. In addition, more recent data on Mauritian exports are shown later.

The overwhelming majority of Mauritian manufactured exports come from its export processing zones (EPZs). In September 1997, there were 480 EPZ enterprises, employing 82,083 persons (of whom about 6,097 were foreign workers).[5] Most of the enterprises (81.5%) were large, and most (51%) were in the wearing apparel industry, with another 7% in textiles. Both the number of enterprises and employees had declined over time (though export values continued to rise): the peak in number of enterprises was 591 in 1988, and in employment 90,861 in 1991. The number of closures rose steadily over the 1990s, from 57 in 1990 to 69 in 1994, with a decline to 38 in 1995 and a slight increase to 43 in 1996.

## 2.2 Export Values and Structure

According to the World Bank's *World Development Report 1997*, Mauritian merchandise exports grew annually 10.4% per year during 1980-90, but slowed down to 4.8% during 1990-95. The engine of growth in the 1980s was manufactured products, which grew at 18.2% per annum; and it is the slowdown of these exports in the 1990s that account for the dramatic slowdown of overall export earnings. Table 2.1 shows the World Bank figures for manufactured exports for the comparator countries and the relative rates of growth.

While Mauritius has, as the smallest country in the group, relatively small exports by total value, in per capita terms it is significant, with 1995 exports of $912.9 per head of population. Singapore has the highest *per capita* exports in the group ($31.7 thousand), followed by Taiwan

Table 2.1 **Values and Growth Rates of Manufactured Exports (1980-95)**

| Country | 1980 ($ m.) | 1995 ($ m.) | Annual Average Growth Rate 1980-95 (%) | Per capita Manuf'd Exports, 1995 ($ m.) |
|---|---|---|---|---|
| Mauritius | 84 | 1030 | 18.2% | 912.9 |
| Singapore | 9700 | 94616 | 16.4% | 31675.9 |
| Taiwan | 17424 | 103774 | 12.6% | 4895.0 |
| Malaysia | 2470 | 48126 | 21.9% | 2389.6 |
| Thailand | 1823 | 41216 | 23.1% | 707.6 |
| India | 5068 | 23074 | 10.6% | 24.8 |
| Sri Lanka | 171 | 2774 | 20.4% | 153.1 |
| Bangladesh | 547 | 2568 | 10.9% | 21.4 |

*Source:* World Bank, *World Development Report 1997*

($4.9 thousand) and Malaysia ($2.4 thousand). At the other end are Sri Lanka ($ 153.1), India ($24.8 only) and Bangladesh ($21.4). Mauritius thus comes in at less than half the Malaysian level and just above the Thai level ($0.7 thousand). This signifies that Mauritius has built up a significant base of export-related skills, information and institutions in relation to the size of the economy, far ahead of neighbouring countries in Africa, and could be used to promote exports of a range of related services to the region.

An analysis of the **export structure** can be useful in devising strategy. The distribution of a country's exports reveals its competitive base in the manufacturing industry, and its evolution over time shows the ability to diversify and move from simpler, more vulnerable and lower value-added activities into more complex and higher value ones. It also shows where the gaps in past performance lie and where strategic resources should be focused to change the export structure.

Table 2.2 shows the broad export structure at the two-digit level in Mauritius and its comparators in 1980 and 1992.

Mauritius stands out because of the low degree of diversification of its exports: there are lots of 'gaps' in the matrix of exports in comparison with other countries. The contrast is particularly marked in relation to Singapore and Taiwan, both of which have very 'dense' (i.e. diverse) export structures. A highly concentrated structure has obvious disadvantages. Heavy dependence on a few products renders the country vulnerable to unfavourable developments in those activities. Mauritius is exceptionally vulnerable, since over 80 per cent of its manufactured exports (note that *sugar is excluded* here) come from one product group – clothing. This degree of dependence is higher than other garment-dependent exporters in the group, such as Sri Lanka (71%) and Bangladesh (69%). The other striking feature is the virtual absence of more complex industrial goods, either sophisticated consumer or producer goods. To the extent that the upgrading of exports depends on the existing base of skills and capabilities, this means that the existing base is very narrow.

There are numerous ways of analysing the export structure further to show their underlying competitive nature. This report uses *skill distribution* and a *technology-based* classification.

**Skill Categories:** Table 2.3 shows the distribution of export activities over *low and high skill products* in 1980 and 1992 for the selected countries. This classification is intended to show the sophistication of skills involved in the production process.[6] The first stages of export growth in a developing country generally tend to concentrate in low skill products, which generally involve simple technology and low value added. Over time, countries tend to graduate into more high skill products, with greater value added, higher labour productivity and more advanced technology. The categories are very broad, of course, and in some cases apparently 'low skill' activities (like textiles) have high skill segments, or when 'high skill' activities (like electronics) have labour-intensive assembly processes that require minimal worker skills. Nevertheless, the general classification is plausible and meaningful, and yields interesting strategic insights.

The share of *high skill products for the world as a whole* was 75.7% in 1980 and 75.4% in 1992, a

Table 2.2 **Structure of Manufactured Exports (Two-Digit ISIC Level) (%)**

| | Mauritius | | Singapore | | Sri Lanka | |
|---|---|---|---|---|---|---|
| | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 |
| Organic chemicals | | | 7.9 | 8.4 | | |
| Inorganic chemicals | | | | | | |
| Dyes, Tanning, Colour Prod. | | | | | | |
| Medicinal etc. Products | | | | | | |
| Perfume, cleaning etc. | | | | | 4.32 | |
| Other Chemicals | | | | | | 0.99 |
| Leather, dressed fur, etc. | | | | | | 0.06 |
| Rubber manufactures n.e.s. | | | | 0.4 | 2.89 | 1.92 |
| Wood, cork manufactures | | | 3.0 | 0.6 | | 0.82 |
| Paper, paperboard and mfr | | | 0.7 | 0.7 | | |
| Textile yarn, fabrics, etc. | n/a | 4.04 | 4.4 | 2.2 | 3.62 | 4.86 |
| Non metal mineral mfrs n.e.s. | 7.09 | 2.67 | 1.6 | 0.9 | 40.93 | 11.33 |
| Iron and steel | | | 2.5 | 1.1 | | |
| Metal manufactures mfrs n.e.s. | | | 2.5 | 1.5 | | 1.31 |
| Power generating equip. | | | 2.6 | 2.3 | | |
| Mach. for special industry | | 0.15 | 4.7 | 2.3 | 1.94 | 0.12 |
| Metalworking machinery | | | 0.7 | 0.4 | | |
| General industrial machinery n.e.s. | | | 4.9 | 4.4 | 0.60 | 0.14 |
| Office machines and equip. | | | 1.9 | 26.8 | | 0.92 |
| Telecom, sound equip. | | | 16.3 | 15.1 | | |
| Electric machinery n.e.s. | | | 20.6 | 17.4 | | 1.21 |
| Road vehicles | | | 2.8 | 1.5 | | |
| Other transport equip. | | | 7.1 | 2.0 | 1.69 | 0.10 |
| Plumbing, heating, lighting eqpt. | | | | | | |
| Furniture | | | | 0.5 | | |
| Travel goods, handbags | | | 3.1 | | | |
| Clothing, accessories | 87.30 | 81.28 | 5.1 | 3.7 | 41.10 | 70.94 |
| Footwear | | | | | | |
| Precision instruments n.e.s | | | 1.1 | 1.8 | | |
| Photo eqpt, optical goods | 2.68 | 4.39 | 2.4 | 1.9 | | |
| Misc. Manufactures | 2.93 | 5.24 | 4.2 | 4.0 | 2.91 | 5.27 |

distribution common to most developed industrial countries, and increasingly to the NIEs. Compare this to 2.7% and 5% for Mauritius: an overwhelming and continuing dependence on low skill exports. A similar structure is observed in the two smaller South Asian countries, with Bangladesh showing not only a practical absence of high skill exports but also, unusually, a deterioration in the structure over time; by the later year its high-skill exports are less than half a percent of its total manufactured exports. India has a more diversified export structure, but one which is still dominated by low end products. By contrast, the four NIEs and new-NIEs show much higher shares of high skill products: two (Taiwan and Thailand) show very rapid rates of upgrading during this period, while two (Singapore and Malaysia) already have very high-skill export structures at the beginning. Figure 2.1 shows graphically the evolution of

| India | | Bangladesh | | Malaysia | | Thailand | | Taiwan | |
|---|---|---|---|---|---|---|---|---|---|
| 1980 | 1992 | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 |
| 0.20 | 2.31 | 1.25 | | | 0.88 | | 0.77 | 0.61 | 0.62 |
| 0.58 | 0.53 | | | | | | | 0.28 | 0.20 |
| | 2.16 | | | | | | 0.47 | 0.14 | 0.53 |
| | | | | | | | | 0.15 | 0.07 |
| 0.76 | 0.76 | | | | 0.53 | | | 0.19 | 0.27 |
| | 0.75 | | | | 0.53 | | 2.35 | 1.50 | 3.11 |
| 3.59 | 4.50 | 11.33 | 8.55 | | | | 1.50 | 0.51 | 3.10 |
| 0.28 | 1.69 | | | 1.74 | 1.15 | 1.66 | 1.12 | 1.09 | 0.72 |
| | | | | 9.71 | 3.59 | 3.22 | 0.91 | 4.41 | 0.98 |
| | | 1.43 | 0.17 | | 0.81 | | 0.31 | 0.63 | 0.89 |
| 10.15 | 21.17 | 83.89 | 21.44 | 8.15 | 2.35 | 15.98 | 6.46 | 10.25 | 10.12 |
| 5.59 | 23.77 | | | | 1.39 | 9.12 | 6.75 | 2.17 | 1.60 |
| 0.34 | 3.84 | | | | 1.42 | 2.41 | 0.96 | 1.89 | 1.62 |
| 1.96 | 3.55 | | | 1.94 | 1.29 | 32.31 | 2.08 | 4.80 | 5.88 |
| 0.78 | 1.13 | | | 0.76 | 1.52 | | 0.84 | 0.88 | 0.61 |
| 0.58 | 0.02 | 0.63 | | 1.27 | 0.80 | | | 1.78 | 3.82 |
| 0.29 | 0.36 | | | | | | | 1.08 | 1.09 |
| 0.60 | 1.08 | 0.73 | | 2.46 | 3.03 | 0.67 | 3.39 | 1.12 | 2.73 |
| | 0.55 | | | | 9.38 | | 11.07 | 1.21 | 12.78 |
| | | | | 4.62 | 21.20 | | 8.80 | 11.78 | 6.61 |
| 1.01 | 1.51 | 0.39 | | 53.44 | 28.58 | 15.75 | 11.77 | 6.75 | 11.22 |
| 18.43 | 4.13 | | | | 1.06 | | 1.69 | 2.79 | 4.83 |
| 0.31 | | | | 4.12 | 4.89 | 0.41 | | 0.76 | 0.34 |
| | | | | | | | | 0.28 | 1.25 |
| | | | | | | | | 1.65 | 2.43 |
| | | | | | | | | 3.69 | 0.97 |
| 52.32 | 22.41 | 0.34 | 69.35 | 6.78 | 7.44 | 12.91 | 20.89 | 13.94 | 5.45 |
| | | | | | | | 4.99 | 8.10 | 2.18 |
| | | | | | 1.21 | 0.04 | 0.66 | 0.22 | 0.74 |
| 0.30 | | | | 2.03 | 1.54 | 1.05 | 2.07 | 2.21 | 1.88 |
| 1.96 | 3.79 | | 0.49 | 2.98 | 5.43 | 4.46 | 10.14 | 13.12 | 11.33 |

Fig 2.1 **Shares of High Skill Exports (%)**

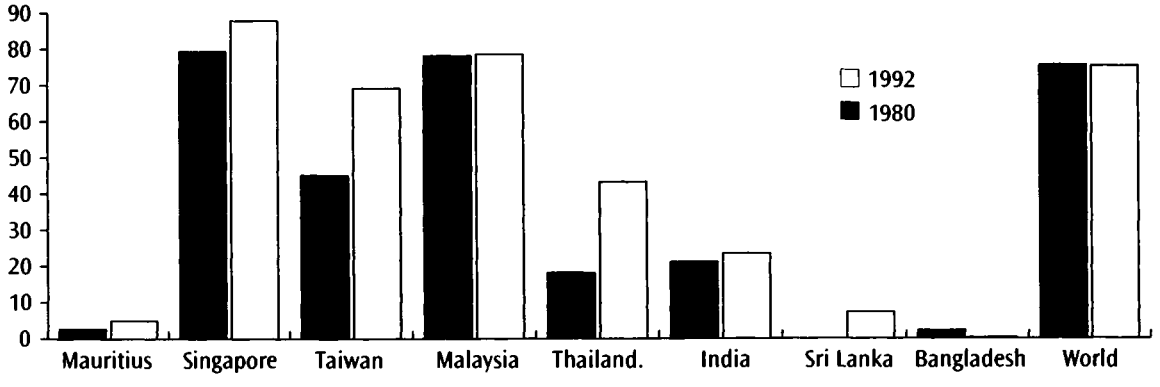


Table 2.3 **Skill Structure of Manufactured Exports (1980-92) (%)**

| | Mauritius | | Singapore | | Taiwan | | Malaysia | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 |
| Low skill | 97.3 | 95.0 | 20.6 | 12.1 | 54.9 | 30.8 | 21.8 | 21.4 |
| High skill | 2.7 | 5.0 | 79.4 | 87.9 | 45.1 | 69.2 | 78.2 | 78.6 |

| | Thailand | | India | | Sri Lanka | | Bangladesh | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 | 1980 | 1992 |
| Low skill | 81.8 | 56.7 | 78.8 | 76.5 | 100.0 | 92.7 | 97.8 | 99.8 |
| High skill | 18.2 | 43.3 | 21.2 | 23.5 | 0.0 | 7.3 | 2.2 | 0.2 |

high-skill products in manufactured exports.

The sub-group of economies specialised in low-skill products (Mauritius and the South Asian countries) have different structures and face different prospects for growth of their low skill exports. Sri Lanka and Bangladesh have relatively small (and uncompetitive) textile sectors, and have specialised in the low end of mass-produced garments. India, by contrast, has a large and increasingly efficient textile industry and its garment industry, while also in the low end at this time, is capable of higher quality production and specialisation. A large and diverse textile industry can be a major source of competitive advantage for the garment industry, and after the MFA abolition it is likely that the competitive edge will move in favour of countries that have such an industry: China, Indonesia and India. All these countries also have relatively low wages, at least away from the main industrial centres, and large reserves of labour. They pose the main competitive threat to the smaller garment exporters in the region. Mauritius is specialised in a different, and generally higher quality, product range (though China is a major competitor in knitwear) than the South Asian countries, but given the low entry barriers in the industry this is not an assurance of future export growth. What is required, and stated endlessly in Mauritius, is for the industry to make a quantum jump in quality and design in garments to approximate with developed country levels. What this requires is considered later.

The East Asian economies, despite their diversification into more complex products, also had sizeable garment exports in 1992: Thai exports of clothing came to $3.7 billion, Malaysia's $1.9 billion, Taiwan's $4.1 billion and Singapore's $1.8 billion (though the last figure may include a lot of re-exports from neighbouring countries), compared to $700 million for Mauritius. For most of these Asian countries, garments were regarded as a 'sunset' industry and

Table 2.4 **Technological Basis of Competitive Advantage**

| Activity Group | Major Competitive Factor | Examples | OECD exports 1985 |
|---|---|---|---|
| *Resource intensive* | Access to natural resources | Aluminium smelting, oil refining | 13.5% |
| *Labour intensive* | Cost of un/semi-skilled labour | Garments, footwear, toys | 9.8% |
| *Scale intensive* | Length of production runs | Steel, automobiles, paper, chemicals | 33.8% |
| *Differentiated* | Production tailored to varied demands | Advanced machines, generating equip. | 27.3% |
| *Science based* | Rapid application of science to technology | Electronics, biotechnology, medicines | 15.5% |

Table 2.5 **Shares of Manufactured Exports by Technological Categories (%)**

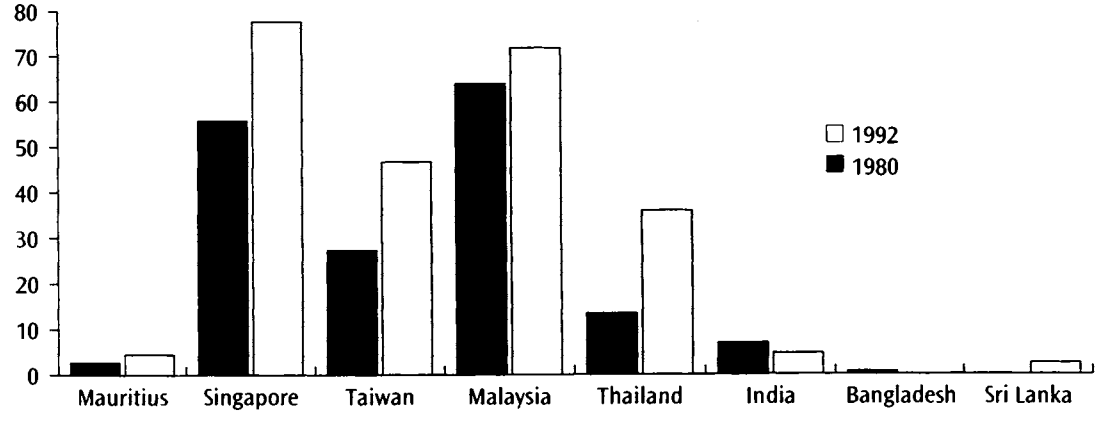
| | Mauritius | | Singapore | | Taiwan | | Malaysia | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 1992 | 1980 | 1994 | 1980 | 1994 | 1980 | 1992 |
| Resource- based | 7.1 | 4.9 | 6.5 | 3.3 | 9.4 | 6.8 | 11.0 | 5.4 |
| Labour intensive | 90.2 | 90.6 | 16.9 | 8.5 | 53.9 | 32.7 | 18.4 | 17.4 |
| Scale intensive | 0.0 | 0.0 | 20.9 | 10.5 | 9.4 | 13.9 | 4.9 | 5.3 |
| Differentiated | 2.7 | 4.5 | 50.3 | 46.3 | 23.7 | 30.9 | 60.1 | 29.6 |
| Science-based | 0.0 | 0.0 | 5.4 | 31.4 | 3.6 | 15.8 | 3.8 | 42.3 |

| | Thailand | | India | | Bangladesh | | Sri Lanka | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 1992 | 1980 | 1994 | 1980 | 1994 | 1980 | 1992 |
| Resource- based | 53.9 | 20.1 | 26.5 | 28.7 | 14.3 | 9.4 | 19.7 | 13.4 |
| Labour intensive | 28.4 | 38.3 | 55.4 | 49.6 | 84.9 | 90.6 | 73.6 | 78.2 |
| Scale intensive | 4.3 | 5.6 | 11.2 | 17.1 | 0.7 | 0.0 | 6.8 | 5.8 |
| Differentiated | 13.4 | 15.7 | 4.1 | 1.2 | 0.1 | 0.0 | 0.0 | 1.4 |
| Science-based | 0.0 | 20.3 | 2.8 | 3.4 | 0.0 | 0.0 | 0.0 | 1.1 |

treated with benign neglect by policy makers. The industry had provided the initial entry into large-scale manufactured export activity, a massive generator of employment and foreign exchange, as well as the base to diversify into other industries. The countries had used the 'rent' from a depleting 'resource' (cheap semi-skilled or unskilled labour) to build up other sources of competitiveness, moving towards more complex and higher value-added activities. In this they differ from Mauritius, Sri Lanka or Bangladesh, where the 'rent' has not been used to generate dynamic comparative advantage.

Why this concern with the skill structure of exports? After all, it may be argued that 'exports are exports' and their competitive basis is irrelevant as long as they exist and grow. This may be facile, since the skill (and technology) base affects both the sustainability of export growth as well as the beneficial spillovers that result from export activity. Low skill products are inherently more vulnerable to the entry of new competitors, since scale economies and technological requirements tend to be low and the main competitive advantage lies in low wages. They are also vulnerable to substitution by other products and by higher quality versions. Their 'learning' potential is limited, and they tend not to create skills and technical knowledge that has wider applications in other industries. All this is

Fig 2.2 **Shares of 'Technologically Advanced' Products in Manufactured Exports (%)**



on top of the risk of high dependence on a very narrow range of products.

The low-skill product driving Mauritian exports, garments, faces the additional handicap that the MFA, which induced the initial relocation of foreign producers in the island and which constrains open competition by the larger Asian producers, is about to end. This prospect causes enormous concern in competing low-end garment exporters. While garment exports from these countries will survive, and may even expand, after the MFA goes, it would be unwise to expect them to provide the dynamo of growth that they did in the recent past – unless they can manage a substantial jump in their quality and enter segments currently in the developed countries and a few high-end NIE producers.

As for skill and technological spillovers, garment exports do not seem to provide the basis for much export diversification. The technology of garment manufacture is very specific, and the skills and know-how it creates, even after decades of operation, have few applications to other manufacturing industries. A recent study of Sri Lanka (Lall, Rao and Wignaraja, 1996) finds that almost no new export-oriented manufacturing activities have emerged using the capabilities developed in the garment industry, and the country, while much larger (it has the same population as Malaysia) is facing a very similar strategic problem to Mauritius. What garment export does contribute is a generic 'learning to export', with new skills in searching for buyers, negotiating deals, meeting delivery deadlines and quality standards, financing, shipping and so on. These are valuable skills, and Mauritius now has an abundance of them: these need to be exploited in future strategy.

**Technology:** The export structure can be further analysed in terms of the technological base of the activity (the classification was developed for advanced industrial nations by OECD, 1987). Table 2.4 shows the categories used, their characteristics and examples and the share of total OECD exports accounted for by each. Appendix B shows the industries included under each heading.

The categorisation is not perfect. There are overlaps between the categories (e.g. resource-based industries can be very capital-intensive), and the groups are broad and can include many different processes (for instance, many electronics exports are labour-intensive). However, the classification is helpful if carefully used. As with skills, the technological categories have some implications for export sustainability and spillovers.

Labour-intensive products tend to be at the low end of the technology spectrum, with low requirements of technical skills (though in large scale production they often call for good organisational skills, and high fashion products call for difficult design skills). Resource-based products span a range of different technologies, but are not considered further for competitiveness analysis because their edge is too specific to merit generalisation. Products in the scale-intensive group tend to use complex, capital-intensive technologies with high skill requirements, but not usually at the cutting edge of innovation or change. Within this group, we should distinguish between process (chemicals) and engineering industries (automobiles); the latter tend to have more difficult learning requirements, be very linkage-intensive, and involve a larger variety of advanced skills. Some chemical industries are also highly innovative (fine chemicals and pharmaceuticals) and so appear under the science-based category. 'Differentiated' products are the sophisticated end of engineering products, involving advanced design, research and manufacturing skills, while 'science-based' products use leading edge technologies and have close relations with basic research. In broad terms, the last three categories together may be regarded as 'technologically advanced', and the last two as 'high-technology', products. It is these two groups of exports that have the best prospects for growth and beneficial spillover impacts on domestic industrial structure and activity.

Table 2.5 shows the structure of exports by

these categories for eight of the countries. The following points are worth making:

There are striking differences between the countries in their technological specialisation. At one end, Mauritius and Bangladesh are overwhelmingly specialised in labour-intensive products; at the other end, Malaysia has only 17% of its manufactured exports in this category. The contribution of differentiated products is highest in Singapore, Malaysia and Taiwan; over time, this has been falling in the former two and rising in Taiwan. Science-based products are highest in Malaysia, followed by Singapore, Taiwan and Thailand. All 'high-technology' (differentiated and science-based) products account for over 78% of Singapore's exports, 72% of Malaysia's, 47% of Taiwan's and 36% of Thailand's; they contribute nothing to Bangladeshi exports, 2.5% to Sri Lanka's and just under 5% to those of India and Mauritius.

Mauritian manufactured exports are overwhelmingly dominated by *labour intensive* products (over 90% in both 1980 and 1992). The contribution of resource based manufactured exports is falling over time and that of differentiated products is rising, but the contribution of the latter remains tiny. While the share of 'technologically advanced' (scale-intensive, differentiated and science-based) products in total exports for Mauritius (Figure 2.2) is not as low as most of South Asia, it is very low indeed in comparison to South East and East Asia. The upgrading of its export structure has also been rather weak. This pattern of specialisation is not conducive to a sustained expansion of exports in the emerging technological and trading environment.

The NIEs and new-NIEs are far more advanced than the others in the group in terms of upgrading their export structures. Malaysia reached a very high share for high-tech products earlier than the others (in the 1970s), with semi-conductor assembly leading its export boom rather than garments or footwear. Thereafter, the share of technologically advanced products has remained at a high level, but its further upgrading has been slow. Singapore has carried on up the technology scale in its export composition, and today has what is the most advanced export structure in the developing world (and possibly in the world as a whole), driven mainly by producer electronics and heavy chemicals. In the others, there is more gradual build-up as the structure moves from simpler to more complex technologies.

These differences between the NIEs are traceable partly to the different agents responsible for the export drive. Malaysian and Singaporean high technology exports are almost entirely in the hands of MNCs. In the former, many of these activities are still assembly operations with low local content and little indigenous technological input (though the latest wave of FDI into the country is moving more complex processes there). Singapore has greater local technological depth, and some strong local electronics companies (such as Creative Laboratories, one of the world's largest maker of sound cards for personal computers). Taiwanese exports are, by contrast, predominantly by local enterprises, and its high technology products actually embody indigenous technological effort and high levels of local content. The fact that much of this is carried out by SMEs is the result of intense support in technology, skill creation and marketing by the government; this clearly has important implications for Mauritius.

In terms of export 'agents', Mauritius has moved from a heavy dependence of foreign firms in the EPZs (over 80% of exports in the mid-1980s) to a position where the majority of exports now come from domestically-owned (mainly large) companies. This is an impressive achievement, especially since rising wages have entailed considerable upgrading of quality. While many garment exporters in the developing world are local firms, the proportion in Mauritius is relatively high, as is the quality of products and independent design and marketing capabilities.

India and Thailand are at different stages in the transition from exporting mainly low skill, low technology products to developing a comparative advantage in more demanding products. Thailand

Table 2.7 **Fifty Most Dynamic Exports to the OECD 1980-94**

| | | % Contribution | | % Growth 1980-94 | |
|---|---|---|---|---|---|
| *SITC* | *Group* | *1980* | *1994* | *Contribution* | *Value* |
| | I. Computers | 1.4 | 5.0 | 3.6 | 256.9 |
| 752 | Automatic data processing machines and units thereof | 0.9 | 3.2 | 2.3 | 271.6 |
| 759 | Parts, n.e.s. of and accessories for groups 751 or 752 | 0.5 | 1.8 | 1.3 | 233.4 |
| | II. Other Electrical Mach. and Electronic Eqpt. | 4.8 | 9.4 | 4.6 | 95.5 |
| 776 | Thermionic, cold cathode and photo-cathode valves | 0.8 | 2.3 | 1.5 | 181.0 |
| 773 | Equipment for distributing electricity | 0.2 | 0.5 | 0.3 | 178.5 |
| 771 | Electrical apparatus and parts | 0.1 | 0.3 | 0.2 | 131.3 |
| 764 | Telecommunication equipment, parts and accessories | 0.8 | 1.8 | 0.9 | 110.8 |
| 772 | Electrical apparatus for making and breaking electrical circuits | 0.6 | 1.1 | 0.5 | 79.6 |
| 778 | Electrical machinery and apparatus | 0.8 | 1.4 | 0.6 | 78.8 |
| 761 | Television receivers | 0.3 | 0.4 | 0.1 | 54.6 |
| 775 | Household equipment | 0.5 | 0.7 | 0.2 | 46.4 |
| 763 | Sound and video equipment | 0.3 | 0.5 | 0.1 | 39.7 |
| 762 | Radio receivers | 0.4 | 0.5 | 0.1 | 26.4 |
| | III. Clothing and Apparel | 2.2 | 3.9 | 1.8 | 81.7 |
| 844 | Under garments, of textile fibres, not knitted or crocheted | 0.2 | 0.3 | 0.2 | 93.3 |
| 845 | Outer garments and accessories, knitted or crocheted | 0.6 | 1.1 | 0.5 | 88.0 |
| 843 | Outer garments, for women, girls and infants, of textile fibres | 0.6 | 1.2 | 0.6 | 87.4 |
| 846 | Under garments, knitted or crocheted | 0.3 | 0.6 | 0.3 | 84.8 |
| 842 | Outer garments, for men and boys, of textile fibres | 0.5 | 0.8 | 0.3 | 60.4 |
| | IV. Non-electrical Machinery and Equipment | 3.1 | 4.4 | 1.3 | 42.4 |
| 714 | Non-electric engines and motors and their parts | 0.4 | 0.7 | 0.3 | 79.8 |
| 741 | Heating and cooling equipment and their parts | 0.3 | 0.5 | 0.2 | 52.0 |
| 716 | Rotating electric plant and parts | 0.3 | 0.4 | 0.1 | 45.5 |
| 743 | Pumps and compressors, fans and blowers, etc. | 0.4 | 0.6 | 0.2 | 44.0 |
| 742 | Pumps for liquids and liquid elevators | 0.3 | 0.3 | 0.1 | 31.7 |
| 749 | Non-electric parts and accessories of machinery | 0.8 | 1.1 | 0.3 | 30.6 |
| 728 | Other specialised machinery for particular industries | 0.6 | 0.7 | 0.2 | 29.5 |
| | V. Automobiles | 6.6 | 9.9 | 3.3 | 49.6 |
| 781 | Passenger vehicles | 3.8 | 6.0 | 2.2 | 56.0 |
| 713 | Internal combustion piston engines and parts | 0.8 | 1.1 | 0.4 | 45.7 |
| 784 | Parts and accessories n.e.s. of motor vehicles | 2.0 | 2.7 | 0.8 | 38.6 |
| | VI. Others | 10.9 | 18.6 | 7.7 | 70.2 |
| 553 | Perfumery, cosmetics and toilet preparations | 0.1 | 0.4 | 0.2 | 179.6 |
| 898 | Musical instruments, parts and accessories | 0.3 | 0.7 | 0.4 | 155.5 |
| 931 | Special transactions and commodities not classified by kind | 0.9 | 2.3 | 1.4 | 149.9 |
| 872 | Medical instruments and appliances | 0.2 | 0.4 | 0.2 | 131.2 |
| 541 | Medical and pharmaceutical products | 0.7 | 1.5 | 0.8 | 119.3 |
| 893 | Articles of plastics and resins | 0.5 | 1.0 | 0.5 | 103.7 |
| 894 | Games, sporting goods, toys and baby carriages | 0.6 | 1.1 | 0.6 | 100.4 |
| 812 | Sanitary, plumbing, heating and lighting fixtures and fittings | 0.2 | 0.3 | 0.2 | 90.0 |
| 831 | Travel goods, shopping bags, hand bags, etc. | 0.2 | 0.4 | 0.2 | 86.4 |
| 514 | Nitrogen-function compounds | 0.3 | 0.6 | 0.3 | 84.1 |

| SITC | Group | % Contribution 1980 | % Contribution 1994 | % Growth 1980-94 Contribution | % Growth 1980-94 Value |
|---|---|---|---|---|---|
| | VI. Others *Cont.* | | | | |
| 897 | Jewellery, goldsmiths' and silversmiths' wares | 0.3 | 0.4 | 0.2 | 72.2 |
| 821 | Furniture and parts | 0.7 | 1.1 | 0.5 | 69.3 |
| 899 | Other miscellaneous manufactured articles | 0.3 | 0.4 | 0.1 | 54.0 |
| 034 | Fresh fish, chilled or frozen | 0.4 | 0.6 | 0.2 | 50.6 |
| 036 | Crustaceans and molluscs, fresh | 0.3 | 0.5 | 0.2 | 50.5 |
| 642 | Articles of paper and paperboard | 0.3 | 0.4 | 0.1 | 50.4 |
| 874 | Measuring, checking, analysing and controlling instruments | 0.8 | 1.1 | 0.3 | 40.3 |
| 851 | Footwear | 0.8 | 1.1 | 0.3 | 39.0 |
| 515 | Organic-inorganic and heterocyclic compounds | 0.3 | 0.5 | 0.1 | 37.0 |
| 598 | Other chemical products | 0.5 | 0.7 | 0.2 | 35.7 |
| 583 | Polymerisation and co-polymerisation products | 0.9 | 1.2 | 0.3 | 32.0 |
| 792 | Aircraft and associated equipment and parts | 1.2 | 1.5 | 0.3 | 29.2 |
| 672 | Ingots and other primary forms, of iron or steel | 0.3 | 0.4 | 0.1 | 25.6 |
| **Total** | **28.9** | **51.1** | **22.2** | **76.6** | |

*Source:* UN ECLAC, Competitiveness Analysis of Nations (CAN) software, version 2.

is the closest to Malaysia in its export structure, and is upgrading rather rapidly, with a very large role for FDI (though not as overwhelming as in Malaysia). India is still fairly low technology in its specialisation despite a large and diversified industrial structure. Its strong inward looking bias still persists, and large areas of industry continue to suffer from technological lags.

## 2.3 Growth Rates

Table 2.6 shows the **growth rates** of manufactured exports by skill groups. During 1980-92, Mauritius had the third highest rate for total manufactured exports in this group, after Malaysia and Thailand. In low skill products its growth was just behind that of Malaysia, while in high skill products it came after Bangladesh and Thailand. However, these growth rates should be interpreted cautiously, since the size of the initial base affects the growth rates: Bangladesh, for instance, has a very high rate of growth of high skill exports, but the values involved are tiny, and the figure does not denote a strong overall performance in this category. By contrast, Taiwan and Singapore, with much higher values of high skill exports, show lower rates of growth.

Table 2.6 **Growth Rates of Manufactured Exports 1980-92** (% p.a.)

| | Mauritius | Singapore | Taiwan | Malaysia |
|---|---|---|---|---|
| Low skill exports | 21.0 | 10.7 | 7.0 | 23.5 |
| High skill exports | 27.6 | 16.7 | 16.4 | 23.8 |
| Total exports | 21.2 | 15.7 | 12.3 | 23.8 |

| | Thailand | India | Sri Lanka | B'desh |
|---|---|---|---|---|
| Low skill exports | 17.7 | 5.5 | 20.0 | 13.0 |
| High skill exports | 30.5 | 13.7 | - | 47.6 |
| **Total exports** | **21.4** | **5.7** | **20.8** | **15.2** |

Since Mauritian export growth is traceable to one product – **garments** – it is useful to remark briefly on this industry. The growth of garment exports, while dynamic and sustained for several decades, has been driven by an unusual process of structural adjustment in the global clothing indus-

Table 2.8 **Recent Manufactured Export Performance by Mauritius, 1980-96**

| *Item* | *Values ($ million)* | | | | | |
|---|---|---|---|---|---|---|
| | *1980* | *1985* | *1992* | *1994* | *1995* | *1996* |
| Fish & preparations | - | - | 18.7 | 28.6 | 36.7 | 40.1 |
| Pearls, precious stones | 5.9 | 8.3 | 22.5 | 25.2 | 27.8 | 28.4 |
| Textile yarn, fabrics | - | 5.2 | 34.0 | 39.1 | 59.5 | 80.6 |
| Clothing, accessories (a) | 73.1 | 155.9 | 683.2 | 716.4 | 792.6 | 901.9 |
| Toys, sporting goods | - | - | 10.7 | 9.0 | 11.9 | 10.8 |
| Gold, jewellery | 2.4 | 3.8 | 29.7 | 10.7 | 13.1 | 15.9 |
| Optical instruments | - | - | - | 10.5 | 13.5 | 11.8 |
| Watches, clocks | 2.2 | 9.8 | 26.0 | 28.5 | 11.9 | 22.6 |
| Other (b) | - | - | 15.7 | 3.0 | 3.0 | n/a |
| **Total** | **83.6** | **183.0** | **840.5** | **871.0** | **970.0** | **1112.0** |

| *Item* | *Annual growth rates (%)* | | | | |
|---|---|---|---|---|---|
| | *1980-85* | *1985-92* | *1992-96* | *1980-96* | *1995-96* |
| Fish & preparations | - | - | 21.0 | - | 9.2 |
| Pearls, precious stones | 7.0 | 15.3 | 6.0 | 10.3 | 2.0 |
| Textile yarn, fabrics | - | 30.9 | 24.1 | - | 35.5 |
| Clothing, accessories (a) | 16.4 | 23.5 | 7.2 | 17.0 | 13.8 |
| Toys, sporting goods | - | - | 0.3 | - | -9.2 |
| Gold, jewellery | 9.2 | 34.1 | -14.4 | 12.6 | 21.6 |
| Optical instruments | - | - | - | - | -12.9 |
| Watches, clocks | 34.2 | 15.0 | -3.5 | 15.7 | 89.6 |
| Other (b) | - | - | -42.4 | - | n/a |
| **Total** | **16.9** | **24.3** | **8.6** | **17.9** | **20.6** |

*Source:* Calculated from UN figures and data on EPZs and Pioneer Status Enterprises, Central Statistical Office, Mauritius. Rupee figures converted to US dollars at official rate given in IMF, *International Financial Statistics*.

Notes: (a) Data for clothing include the small value of non-EPZ exports. (b) 'Other' exports include chemicals and machinery.

try, a process that is now nearing maturity. Falling transport and communications costs, changing rules for trade and foreign investment, greater standardisation of technologies for the assembly of garments and improvements in production conditions in the developing world, have led to a massive relocation of the simpler end of textile and garment production from the OECD countries. In more recent years, this process is being repeated in the NIEs, which have been trying to move into the upper end of the industry. The location of textile and garment production was also driven by the allocation of quotas under the MFA. This succeeded in bringing into the export arena a number of new producers who may not otherwise have established a market presence, including Mauritius as well as Bangladesh, Sri Lanka, Thailand and Malaysia (and others in Asia and Latin America).[7] However, the OECD countries upgraded their production systems over time, and, despite high wages, remain major exporters of textiles and garments in the high quality and specialised segments.

Many of these 'latecomers' to the garment industry lacked a domestic base of raw materials (cotton, wool or synthetic fibres) and of textile production. Over time, they built up some genuine competitive advantages in garment production and increased the degree of backward integration. This means that a part of their export-oriented garment industry is likely to survive the removal of the MFA. However, most

analysts agree that there will be a substantial 'shake-out' in the industry. The larger producers, with a combination of substantial textile production capability, raw materials, low wages and the ability to enter into high quality segments and design, led by China and India, are likely to gain at the expense of the smaller latecomers that lack these advantages. Among the latter, only those that retain a large wage cost advantage or are able to move upmarket will remain as significant exporters in the post-MFA era. Others will lose their industries to cheaper areas or to the giants in the global industry.

For these reasons, past growth in garment exports is not a good indicator of their future potential. Total world consumption of textiles and clothing is not very income elastic, i.e. it does not rise rapidly with growing incomes, though in some poor countries there is fast growth in a 'catching up' stage (but most of these countries do not permit garment imports). Once an exporter's wage cost advantage is exhausted, therefore, export growth will depend upon the ability to add value by backward integration (into textiles) and, within clothing, to upgrade quality and flexibility. Neither is easy. Textile production is fairly capital intensive, and small producers like Mauritius have rather limited scope for meeting their varied needs from domestic production. The move up the quality ladder in garment requires investments, not just in equipment but also in organisational and labour skills and quality management, design, marketing and response capability. The Italian example suggests that the very top end of garment production needs a 'cluster' of producers in which medium and small sized enterprises collaborate with designers and retailers, as well as some large firms, in a pattern of very flexible and specialised production, with high levels of technical and other skills and advanced equipment. The growth of such clusters or industrial districts allows the combination of scale economies and individual flexibility, but needs very close collaboration and efficient means of transmitting information and technology. The fostering of clusters, which are practically non-existent in Mauritius, is one way forward in the garment industry, and the section on strategy returns to this.

It should also be reiterated that garment exports have relatively few spillovers in terms of catalysing the growth of related export activities. The technology and skills created are fairly specific to the industry, and the products do not (unlike electrical and non-electrical equipment) feed into production capabilities elsewhere. Nor does the industry generate a favourable 'image' of quality and reliability, especially at the low quality end. While all export activity creates some skills and knowledge that are helpful in expanding exports, this industry does offer relatively low externalities compared to more sophisticated industrial products.

Returning to export prospects, it is clear that future growth will have to be based on other dynamic products in world trade where the income elasticity of demand is higher, barriers to low cost entry by competitors greater, and prospects of diversification and technological spillovers better. It is useful in this context to look at the most dynamic products in world trade. Table 2.7 shows *the fifty most dynamic exports to the OECD* (including non-manufactured ones, from a total of over 230 at the 3-digit SITC level) in 1980-94. Since the OECD is the predominant market for Mauritius, as for most developing countries, this shows the products of export interest more generally.

These fifty products increased their total share of exports to the OECD from 29 to 51% over these 15 years, with an overall increase in value by 77%. The most dynamic products were in electronics and electrical engineering, accounting for nearly 15% of OECD imports in 1994. These are followed by automotive products, accounting for another 10%. Overall, the great majority of 'dynamic' traded products are technologically advanced, with significant economies of scale and high income elasticities of demand. However, there are some products whose trade has grown rapidly because of relocation of production rather than technological change or rising total demand

– garments, toys, travel goods and footwear are the main examples. These relatively 'simple' labour-intensive products together accounted for 7% of OECD imports in 1994. In addition, there are some resource-based exports like furniture, paper and fish products. It is important to bear these differences in competitive advantage in mind when assessing the prospects for *future* export growth. Clearly, the underlying advantage will affect the extent to which particular products, even though 'dynamic' in trade in the past, can be viable sources of future comparative advantage (this is taken up in the section on market positioning).

It should be noted that clothing, the product of interest to Mauritius, is the third most dynamic category, after computers and other electrical and electronic equipment. However, Mauritius does not have a market presence in practically any of the other dynamic exports. Nevertheless, Mauritius is well positioned in the clothing categories (SITC 842-846) that have grown rapidly: these categories account for *nearly 80 per cent* of its total manufactured exports in 1992. Table 2.8 shows the growth of Mauritian exports in the most recent period (for which comparable data are unfortunately unavailable for the other countries from UN sources).

Total manufactured exports grew fastest during 1985-92. There was a sharp drop in growth rates in 1992-94, then a revival in 1994-95, which seems to have accelerated in 1995-1996 (the latter short-term data should be treated with caution). However, 1992-96 as a whole shows rather modest growth, with some of the smaller exports declining significantly, and a significant slowing down of clothing exports. Clothing exports continue to dominate exports, with 81.1% of total manufactured exports in 1996.

As they stand, the growth figures are not bad, but they do not augur well for future export growth. Clothing exports are growing, and in the past year or so have accelerated; however, it does not appear likely that a sustained rise to growth rates seen in the late 1980s can be expected. The slow-down in garment exports seen in Mauritius is also found in similar exporters like Sri Lanka and Indonesia (in Indonesia in 1994, clothing exports, which totalled $2.3 billion, declined by 9.5%, to resume modest growth in 1995). At the same time, India had high rates of garment export growth (over 30 per cent per year in the past two years); while figures for China are not available, they are likely to be even higher. This suggests that the shift in export market shares forecast in the post-MFA period is already starting to occur, and may increase as trade in clothing is liberalised further and these two countries gear up their competitiveness in textiles and garments.

Table 2.9 **World Market Shares for Mauritius in Main Export Products, 1985-92 (%)**

| Product (SITC) | 1985 | 1992 | Change |
|---|---|---|---|
| Men's outerwear, non-knit (842) | 0.30 | 0.37 | 0.07 |
| Women's outerwear, non-knit (843) | 0.14 | 0.15 | 0.01 |
| Undergarments, non-knit (844) | 1.00 | 1.05 | 0.05 |
| Outerwear knit, non-elastic (845) | 0.88 | 0.72 | -0.16 |
| Undergarments, knitted (846) | 0.16 | 1.12 | 0.96 |
| Textile clothing (847) and accessories | | 0.25 | 0.25 |
| Headgear, non-textile clothing (848) | 0.09 | 0.03 | -0.06 |
| Textile yarn (651) | 0.04 | 0.04 | 0.0 |
| Cotton fabrics, woven (652) | - | 0.11 | 0.11 |
| Woven man-made fabric (653) | - | 0.02 | 0.02 |
| Watches and clocks (885) | 0.15 | 0.15 | 0.0 |
| Optical goods (884) | - | 0.20 | 0.20 |
| Pearls, precious stones (667) | 0.07 | 0.08 | 0.01 |
| **All manufactured products** | **0.02** | **0.03** | **0.01** |

## 2.4 Market Shares and Competitive Positioning

Given the size of its economy, it is to be expected that Mauritian exports account for minuscule

portions of total world trade in their respective categories. Thus, in 1985 its manufactured exports as a whole accounted for 0.02% of total world manufactured exports; by 1992, this share had risen to 0.03% (Table 2.9). In the main products of export interest, Mauritian market shares expanded slightly in most categories, with some decline in knit non-elastic outerwear and headgear, and stagnation in textile yarn and watches and clocks.

These minuscule shares suggest that Mauritius has enormous 'headroom' to grow in world trade if it can boost its competitive position in these (and new) products. The dominant exporter in the garment categories shown is generally *Hong Kong:* its world market shares in 1992 were as follows (by SITC categories): 842 – 12.6%; 843 – 15.2%; 844 – 18.0%; 845 – 18.7%; 846 – 13.6%; 847 – 7.5% and 848 – 12.0%. In four of these categories, Hong Kong is the world's largest exporter. Hong Kong is also not a large economy and has much higher wages than Mauritius (a growing proportion of its exports are sourced in China, though China appears as a very large independent exporter as well). Despite considerable deindustrialisation, the colony retains a substantial base in higher quality garment manufacture as well as services related to sourcing, design, marketing and shipping. Its example could serve as a model for Mauritius, if Mauritian producers are able to boost the quality of their products, and the government can launch similar support measures in human capital creation (especially for design), productivity support and export marketing. The African continent, with its large reserves of cheap labour and potential internal markets, can have a substantial potential for the export of such services. While Africa is not doing very well at this time, in the future its prospects are likely to improve, and Mauritius can play a role similar to Hong Kong in its neighbouring region.

An examination of a country's 'positioning' in world markets can indicate the strength of its export capabilities. Such positioning can be assessed by comparing changes in market shares over time and the dynamism of the products exported. Changes in a country's market shares indicate whether it is competitive in those products or not. The size of the market share indicates possibilities for further expansion: *ceteris paribus*, a country that already has large market share in a particular product should not expect large increases in the share. The specialisation of a country in fast or slow growing exports indicates how rapidly its total export earnings will grow in the absence of changes in market share.

The analysis uses a four-fold classification, based on whether or not exports are 'competitive' in world markets (i.e. whether Mauritius is gaining or losing world market shares in those products), and whether the products are themselves 'dynamic' (i.e. whether the products' own shares of world trade are rising). The four combinations are:

- "Rising stars" are exports with strong competitiveness (i.e. rising world market shares) in 'dynamic' products (which are growing faster than total trade). This is the most desirable, or 'optimal', export positioning.

Table 2.10 **Export Dynamism Classification**

| | **Share of Product in World Trade** | |
|---|---|---|
| **Share of country's export in world trade** | RISING | FALLING |
| RISING | Optimal *"Rising Stars"* | Vulnerable *"Falling Stars"* |
| FALLING | Weakness *"Lost Opportunity"* | Restructuring *"Retreat"* |

Table 2.11: **Dynamism of Manufactured Exports, 1985-92 ($ m. and %)**

| Country | Rising Stars | Falling Stars | Lost Opportunity | Retreat | Total | Missing Data |
|---|---|---|---|---|---|---|
| ***Mauritius*** | 549.90 | 32.68 | 228.26 | 0.00 | 810.84 | 29.69 |
| *% of total with data* | *67.8%* | *4.0%* | *28.2%* | *0.0%* | *100%* | *(3.5%)* |
| ***Taiwan*** | 38335.48 | 6935.35 | 15834.31 | 183.85 | 61288.99 | 1065.12 |
| *% of total* | *62.5%* | *11.3%* | *25.8%* | *0.3%* | *100%* | *(1.7%)* |
| ***Malaysia*** | 13409.90 | 2847.66 | 0.00 | 0.00 | 22497.53 | 815.74 |
| *% of total* | *59.6%* | *12.7%* | *27.7%* | *0.0%* | *100.0%* | *(3.5%)* |
| ***Thailand*** | 18656.46 | 2247.48 | 1827.16 | 0.00 | 22731.10 | 445.07 |
| *% of total* | *82.1%* | *9.9%* | *8.0%* | *0.0%* | *100%* | *(1.9%)* |
| ***India*** | 7285.95 | 2263.67 | 4078.87 | 311.50 | 13939.99 | 479.17 |
| *% of total* | *52.3%* | *16.2%* | *29.3%* | *2.2%* | *100.0%* | *(3.3%)* |
| ***Bangladesh*** | 904.13 | 0.00 | 453.31 | 161.36 | 1518.80 | 2.56 |
| *% of total* | *59.5%* | *0.0%* | *29.8%* | *10.6%* | *100.0%* | *(0.2%)* |
| ***Sri Lanka*** | 801.24 | 58.16 | 542.23 | 0.65 | 1402.28 | 28.28 |
| *% of total* | *57.1%* | *4.1%* | *38.7%* | *0.0%* | *100.0%* | *(2.0%)* |

- "Lost opportunities" are those with competitive declines (falling market shares) in dynamic products. This is the 'weakest' market position.
- "Falling stars" are those with rising market share in non-dynamic products. This indicates competitive 'vulnerability', and so is relatively undesirable.
- "Retreat" are those exports that are losing market shares in a non-dynamic products. This is relatively desirable, since it shows possible 'restructuring' away from a weaker position.

The distribution of a country's exports over these categories (Table 2.10) shows its overall export positioning. The significance of this positioning is that it shows how flexible and forward looking a country has been in benefiting from the dynamics of world trade. Since market positions are acquired over time, it is possible to maintain strong ones by appropriate policies and investments. Correspondingly, a weak market position may be difficult to change quickly. There may therefore be strategic implications in these positions.

Table 2.11 shows the results of classifying the exports of the selected countries. Changes in world market share are calculated for 1985-92 (however, some growth data are missing for each country). The table shows the percentages both for total manufactured exports and for the values for which the classification was made; 'missing data' are in the last column but they are relatively minor.

In this period, 1985-92, the average rate of growth for all manufactures in world trade was 12.5% *per annum*. The calculations suggest that Mauritius has a fairly strong market positioning, second only to Thailand's in this group. Some 68% of Mauritian exports are 'rising stars', and another 28% are 'lost opportunities', i.e. dynamically growing export products where Mauritius is losing market share. While this latter category is a cause for concern, it shows that Mauritius' export structure is overwhelmingly in products that have grown faster than world trade as a whole.

This strong 'positioning' should not, however, be a cause for complacency in Mauritius. 'Rising stars' can have different prospects for future

Table 2.12 **Breakdown by Rising Stars by Technological Characteristics ($m. and %)**

| | Mauritius | Taiwan | Malaysia | Thailand | India | Bangladesh | Sri Lanka |
|---|---|---|---|---|---|---|---|
| ***Resource – based*** | 41.2 | 2135.4 | 999.8 | 3079.5 | 3355.3 | nil | 185.5 |
| *% of Total* | *7.1* | *5.6* | *7.2* | *16.5* | *44.1* | *nil* | *22.8* |
| ***Labour intensive*** | 512.4 | 8335.8 | 2614.9 | 7123.8 | 2889.6 | 904.1 | 520.3 |
| *% of Total* | *88.4* | *21.7* | *18.7* | *38.1* | *38.0* | *100.0* | *64.1* |
| ***Scale intensive*** | nil | 2662.4 | 556.4 | 1107.7 | 868.0 | nil | 71.8 |
| *% of Total* | *nil* | *6.9* | *4.0* | *5.9* | *11.4* | *nil* | *8.8* |
| ***Differentiated*** | 26.0 | 9552.0 | 4996.2 | 2910.0 | nil | nil | 19.0 |
| *% of Total* | *4.5* | *24.9* | *35.8* | *15.6* | *nil* | *nil* | *2.3* |
| ***Science – based*** | nil | 15649.9 | 4799.3 | 4483.4 | 488.4 | nil | 15.3 |
| *% of Total* | *nil* | *40.8* | *34.4* | *24.0* | *6.4* | *nil* | *1.9* |
| **Total** | **579.6** | **38335.5** | **13966.6** | **18704.4** | **7601.4** | **904.1** | **812.0** |

growth and differing degrees of vulnerability to entry by competitors or changes in technology and market conditions. For instance, rising stars whose competitive advantage is based on cheap semi-skilled labour are less well-placed for long-term export growth than those based on scale and technological advantages, where entry is more difficult and technological leads can be maintained over long periods by appropriate investment. As noted, even though labour-intensive exports like garments have grown dynamically, they are inherently extremely vulnerable at the low quality end where most developing countries specialise.

It is thus useful to look at the *technological characteristics of the rising stars* for the group. Table 2.12 shows important technological weaknesses in Mauritian rising stars: 88% are labour intensive and a further 7% are resource-based. This weakness is shared by the South Asian countries (India has a very large weight of resource based rising stars), and stands in contrast to countries like Malaysia and Taiwan where nearly three-quarters of the value of rising stars comes from scale-intensive, differentiated and science-based products. Thailand comes in with a somewhat lower figure of 46%. These latter countries clearly have more sustainable and broader based competitive advantages for their rising stars.

Reliance on labour-intensive rising stars does not necessarily mean that all countries are equally vulnerable, or that all such exports are in the 'sunset' category. Countries *can* upgrade their competitiveness in these products by investing in quality and marketing, and, as noted, the fact that many developed countries remain major exporters of textiles and garments suggests that countries should invest in upgrading their industries rather than letting them fade away (as is happening in Malaysia). In South Asia, for instance, India should be able to sustain greater growth in textiles and garments than Bangladesh or Sri Lanka. Mauritius is better placed than most developing countries to improve clothing quality and marketing, and is already more advanced than most in its efforts and awareness. What it needs to do further will be explored later.

## 2.5 Revealed Comparative Advantage

The "revealed comparative advantage" (RCA) ratio shows the importance of a country's export of a particular product relative to its overall export performance. It is measured by the ratio of a country's world market share in a particular export to the world market share of its total manufactured exports. RCA indices range around unity, with figures below one

denoting a relative disadvantage in exporting that product, and those above one denoting a relative advantage.

In terms of broad skill categories, Mauritius' RCAs are, not surprisingly, very high in low skill exports (4.0 in 1980 and 3.9 in 1992) and minuscule in high skill exports (nil in 1980 and 0.1 in 1992). The South Asian countries show a very similar pattern, with very high low-skill and very low or zero high-skill RCAs, and with this pattern more or less constant over the period. By contrast, the NIEs show rising RCAs for high skill products and declining ones for low skill ones. The highest RCAs for high skill products (over 1) are in Singapore and Malaysia, while for Taiwan the high skill RCA reaches 0.9 in 1992 and for Thailand 0.6.

Table 2.13 **Evolution of Mauritian RCAs**

| | 1980 | 1985 | 1992 |
|---|---|---|---|
| Emerging Comparative Advantage | | | |
| Preserved fish etc. | | | 9.5 |
| Cotton fabrics, woven | | | 3.5 |
| Textile clothing and accessories n.e.s. | | | 8.2 |
| Toys and sporting goods | | | 12.3 |
| Optical goods | | | 6.4 |
| Continuing Comparative Advantage | | | |
| Textile yarn | | 2.5 | 1.3 |
| Pearls, precious and semi-precious stones | 3.7 | 4.6 | 2.6 |
| Men's outerwear non-knit | | 19.8 | 12.1 |
| Women's outerwear non-knit | | 9.0 | 5.0 |
| Undergarments non-knit | | 65.5 | 34.2 |
| Outerwear knit, non-elastic | | 57.8 | 23.4 |
| Undergarments knitted | | 10.4 | 36.3 |
| Works of art etc. | 5.8 | 3.7 | 6.2 |
| Watches and clocks | 3.6 | 9.6 | 4.9 |
| Comparative Disadvantage | | | |
| Woven man-made fabric | | | 0.8 |
| Civil engineering equipment | | | 0.2 |
| Other manufactured goods | | | 0.8 |
| Declining Comparative Advantage | | | |
| Headgear, non-textile clothing | | 5.7 | 0.8 |

Table 2.13 shows Mauritian RCAs at the product level. These are classified into four types:

- "Emerging comparative advantage", which indicates the 'dynamic' products that have raised their RCAs over time to unity or above. This category includes new entrants like preserved fish, cotton fabrics, toys and optical goods.
- "Continuing comparative advantage" comprises products that maintain RCAs above unity. These include most exports, bearing out the relatively static nature of Mauritian comparative advantage. Within this group, several products show declining RCAs in the last period.
- "Continuing comparative disadvantage" indicates below-unity RCAs.
- "Declining comparative advantage" shows RCAs falling from above to below unity. This has only one product, headgear.

In general, these calculations serve to reinforce that Mauritius is highly specialised in a few products, with the pattern remaining fairly static over time. The very high figures for some RCAs suggest an undesirable degree of concentration and dependence on a few sources of earnings. The highest figures (knitted and non-knitted undergarments) are in mass production, relatively low value added clothing items where Mauritius cannot expect to retain a long-term comparative advantage as its wages rise further.

## 2.6 Mauritian Competitive Advantages and Challenges

The previous analysis suggests that, despite (and partly because of) rapid export growth over the past two decades, Mauritius faces emerging *structural problems* in sustaining export growth in the future. Manufactured exports have so far exploited relatively static sources of comparative advantage, primarily semi-skilled or unskilled labour and natural resources – these sources are

eroding as a consequence of rising wages, emerging competition and changing external circumstances. The initial dominance of a few low value-added, low technology products has not declined over time. Within these, Mauritius depends on one particularly vulnerable activity, garments, where new entry is easy because capital and skill requirements are low and international investors and buyers relatively footloose. While it does lead to the development of some production and marketing skills, the activity does not provide large technological or other spillovers, and has not led to a natural broadening or upgrading of domestic capabilities. The initial spurt of FDI inflows that fuelled the boom is tapering off, and investors are relocating to cheaper areas (as are the larger domestic firms).

The government is aware of the structural problems involved. As the Ministry of Economic Development and Regional Co-operation's *Vision 2020 National Long-Term Perspective Study* (1997) puts it:

> *"While the success of the EPZ has been nothing less than spectacular, in recent years progress has been more uneven, and problems have begun to arise. With full employment, labour is no longer so plentiful and there have been times recently when labour had to be imported. And nor is labour any longer so cheap – wages have been rising faster than productivity – and there have been problems with absenteeism, sick pay, redundancy arrangements and attitudes. Employment has fallen from a peak of 90,900 in 1991 to 85,600 in 1993, although it is still larger than employment in agriculture and tourism combined. International competition has become tougher, European markets have been weakened by recession and several clothing companies have had to cease production. Inward investment has become more difficult to attract and the total number of EPZ enterprises has fallen from 591 in 1988 to 563 in 1993. However, exports have continued to rise to reach a record Rs15.8bn in 1993.*
>
> *There are some clouds on the longer-term horizon. The Uruguay Round GATT agreement provides for the phasing out of the Multi-Fibre Agreement, which previously restricted imports from countries not included in the Lomé Convention with the result that in the future Mauritian exports of clothing and textiles will face new competition from low-cost, high-volume producers in countries such as India, Pakistan and China. There is also the possibility of increasing pressure in future years to dismantle the special incentives on which the EPZ regime is based.*
>
> *More generally, there is the emergence of a global market system in which competition will be increasingly sharp, and increasingly dominated by giant multinational groups, with very large financial and R&D resources, very large production volumes, very strong market links and very wide choices of location. In some ways even more worrying than the emergence of a keenly competitive world market system is the possibility of warring regional economic blocs – with no certainty that Mauritian industry will have easy access to any of them." (pp. 102-3)*

The problem of upgrading export competitiveness in a globalizing world is not uniquely Mauritian. What is more interesting is that several other developing countries that have depended heavily on garment exports are also facing the problem of insufficient dynamism in their export pattern and a lack of technological upgrading. Mauritius is, however, under greater stress because of its high incomes and relatively unfavourable location. Countries such as Sri Lanka and Bangladesh (and others not considered explicitly here), also exhibit an emerging threat after the abolition of the MFA and from their static and narrow bases of comparative advantage. However, these countries have much larger reserves of cheap labour and larger domestic markets, and so greater potential for keeping on with low-end garment exports and diversification into other activities. Larger and more

industrialised countries such as India are, of course, well placed to integrate backwards and have already developed competitive advantages in a range of other, more advanced, manufacturing activities. They face difficulties in upgrading, but are not as *structurally constrained* as Mauritius.

The East and South East Asian NIEs present a very different pattern of export development. While they also started their export drives with low wage products, they used the period and the 'rent' yielded to upgrade and diversify rapidly into more complex products. In countries such as Taiwan (and Korea), such upgrading was accomplished by active industrial and technology policies aimed at promoting indigenous technological and other capabilities (Lall, 1996), with the domestic market serving as a learning base in many industries. By contrast, in Singapore and Malaysia (and to a lesser extent Thailand), it was accomplished mainly by attracting MNCs and inducing them to upgrade their export activities. The domestic sector remained relatively isolated from export activity, and developed its linkages with the export enclaves, and direct export capabilities in manufacturing, relatively slowly (Thailand did more in this respect). The FDI based strategy also required very active government intervention, particularly in Singapore, with considerable targeting of activities and incentives and the development of specific skills and institutions to allow dynamic exports to be established. To some extent, the South East Asian region was also 'lucky': it got into the export-oriented electronics assembly boom at the earliest stages, and the location factor was enormously important in attracting international investors.

Mauritius differs from both these types of NIEs. Its domestic capabilities have developed reasonably well within the garment sector, with some backward integration and the upgrading of design and higher quality manufacturing in the large firms. However, there is relatively little development of other manufacturing capabilities (sugar processing excepted); the small amounts of watch and optical assembly remains at simple technological levels. On the FDI front, despite nearly two decades of export activity, well-managed economic policies and a favourable regime for private and foreign business, Mauritius has not been able to use its good 'image' to foster an MNC-driven export sector in other activities. Its wages have not been low enough to attract other simple assembly activities, as in footwear or toys, to a significant extent; its location and skill base have not been sufficient to allow it to attract electronics, electrical or other engineering-based activities.

As matters stand at this time, it appears that clothing exports will continue into the future, but the emerging competitive situation is likely to leave only products that are in the upper quality segments. Export growth can only take place in this industry if there is a much faster rate of quality upgrading and skill development than evidenced in the recent past. It is possible that significant growth can be maintained if the textile and garment industry is able to reproduce a pattern of flexible specialisation along Italian lines, with clusters of highly skilled SMEs operating in close collaboration with each other, large firms and design and marketing houses. This is not impossible, but it would require a very different industrial structure, skill base, management methods and worker productivity. However, all other clothing exporters are attempting to do something very similar, and several have the size to mount large design development programmes (as in India). Mauritius has the advantage that the domestically owned sector is very strong, and the larger firms are relatively advanced: if this can be exploited to develop a more flexible base, the garment industry can provide practically unlimited export growth for Mauritius.

At the same time, it is vital for Mauritius to promote *other sources* of comparative advantage, in manufacturing as well as services. As far as manufacturing is concerned, given the level of Mauritian wages and the small size and limited manufacturing capabilities of its economy, the activities will have to focus on assembly activities

that require medium-high levels of technology and skills. In 'heavy' items, its competitive edge will lie in serving regional rather than more distant markets; here the growth of African markets, good infrastructure links and the progress of trade liberalisation by the countries concerned are of critical importance. In 'light' (and more high value) items it could serve more distant markets as well, with a focus on Europe and possibly East Asia. There are a number of feasible high value added products in the electronics industry where trade is very dynamic and producers are still actively relocating in search of lower costs (Kelly and Kelly, 1992, note a number of possible electronics exports for Mauritius). To achieve a market position in such industries would require several things: a much improved base of engineering, technical and managerial skills; a more productive and dedicated workforce; a supporting structure of efficient SME subcontractors and service firms; world-class transport, communications and IT infrastructure; a financial system geared to supporting such ventures; and stronger FDI targeting with more directed incentives. These points are taken up below.

As far as services are concerned, Mauritius already has already a flourishing offshore financial and an infant software industry, and reasonable prospects for becoming a trans-shipment centre for the East coast of Africa. These need to be strengthened in every way possible. It would also seem that Mauritius can develop new competitive advantages in services, exploiting its long experience of export growth, managing EPZs, design and marketing, improving government administration on trade and investment and so on, to earn significant revenues from liberalising Africa.

The experience of the successful Asian Tigers, in particular Singapore, suggests that two sorts of policies are needed to develop dynamic comparative advantage. The first is improving existing markets and institutions to raise investment, flexibility and competitiveness, lower artificial barriers to entry and exit and raise the quality of human capital. This may be termed *'tactical' interventions*. The second is to have a strategy to guide and co-ordinate resources to develop new competitive advantages in particular directions. Such *'strategic' interventions* involve the government in formulating a 'vision' of where future comparative advantage may lie and creating the human and physical infrastructure needed for those activities, mobilising domestic and foreign resources and technology as needed. This is not 'picking winners' at the level of particular firms or activities, but creating the enabling conditions for certain types of activities to flourish rather than spreading available resources thinly without a clear sense of direction. One important lesson of the East Asian 'miracle' is that such strategy can be carried out very effectively, if the government has a skilled bureaucracy, clear objectives, close interaction with the private sector and flexibility, together with the political strength and will to discipline agents that do not perform to required standards.

This report suggests that both tactical and strategic interventions will be needed by the Mauritian government to dynamise export competitiveness. To some extent these are already being practised, and the government's *Vision 2020* report contains various strategic ideas (Ministry of Economic Development and Regional Co-operation, 1997). Most of these are sensible, but a more detailed evaluation is conducted below.

# 3

# Trade and Industrial Policies

This chapter examines selected aspects of trade and industrial policies in Mauritius, those that are considered directly relevant to export competitiveness: import liberalisation, exchange rate management, export policies and incentives, bureaucratic regulations and procedures. It also examines enterprise-level perceptions of the policy and incentive regime, drawing on the findings of our firm-level survey. Where relevant, it makes comparisons with the trade and industrial policies of the Asian NIEs and other developing countries.

## 3.1 Import Liberalisation

Mauritius followed a mixed trade policy of import substitution coupled with incentives for exports through the Export Processing Zone (EPZ) in the 1970s. These two trade regimes co-existed, influencing enterprises producing for the small home market and those producing for export. Mauritius began trade liberalisation in 1983 as a part of its 1981 structural adjustment loan agreement with the World Bank.[8] We shall examine briefly the trade liberalisation process and then discuss the nature of the process.

Three episodes of trade liberalisation in Mauritius can be identified since 1983, each with a different speed and coverage of reform:

- The first episode, between 1983-85, consists of the rapid elimination of most quantitative restrictions on imports and their replacement by tariffs. Existing incentives for exporting, granted via the EPZ since 1970, were maintained.
- The second, between 1986-1993, tried to gradually reduce the dispersion of effective protection among industries and to promote exports more vigorously by providing exporters with overseas marketing support, preferential interest rates on development loans and tax concessions. Export and foreign investment promotion was strengthened by the creation of the Mauritius Export Development and Investment Authority (MEDIA) in 1985.
- The third episode, from 1994 to date, attempted to cut protection by reducing tariffs. The government seems committed to further reductions in protection but no specific targets seem to have been set.

The reforms have resulted in a notable reduction in tariff and non-tariff barriers to imports:

- *Quantitative restrictions* have been mostly eliminated. The share of imports covered by import licensing fell from 57 per cent of total import value in 1980 to under 5 per cent in 1986. The few that remain are largely on health, sanitary and security grounds and have little impact on manufacturing production. No new import licenses were applied since 1985 and the system of import licensing was abolished in 1991.
- Historically, there have been few *import prohibitions*. In 1994, with the elimination of import licensing, a handful import prohibitions were introduced including: second-hand motor vehicle spare parts, re-treaded rubber tyres, explosives, underwater fishing guns and water scooters. Again these are largely on health, safety and environmental grounds and have little effect on manufacturing.

- The level of nominal *tariffs* have fallen as well as its dispersion. A new single tariff system was introduced in mid-1994 which consolidated the old three column tariff (i.e. the fiscal duty, the general customs duty and the preferential duty). The number of tariff rates have been also cut to 8 from 60 and the maximum duty was fixed at 80 per cent.[9] The average tariff for manufacturing was 30.1 per cent in 1994 compared to 86.2 per cent in 1980.[10] The tariff schedule shows a trend towards escalation – the average tariff for raw materials (14.8 per cent) and semi-manufactures (17.2 per cent) was lower than that for finished goods (39.5 per cent) in 1994.

- In spite of the recent tariff changes, manufacturing as a whole is more protected than agriculture and mining (see Table 3.1). Within manufacturing some industries continue to receive higher nominal tariff protection than others. Four industries – clothing, furniture, footwear and rubber products – have average tariff rates in excess of 50 per cent, while electronics and plastics have tariff rates of over 40 per cent. The remainder have relatively low tariffs.

- The pervasive use of *duty exemptions and concessions* have made the tariff system less transparent and efficient in the 1990s. According to one estimate, there were about 400 exemption categories in 1991 of which 200 were commonly used.[11] The main exemptions are: (a) those under different investment incentives schemes, (b) duty reductions on inputs for various manufacturing industries, (c) firm-specific exemptions granted by the Ministry of Finance for one year on the expectation that domestic value-added or export potential will increase, and (d) unclassified exemptions (93 in 1994). Other surcharges were consolidated into the customs duty in 1994.

Table 3.1 **Nominal Tariff Rates (per cent) 1994**

| Industry | 1994 |
|---|---|
| Aggregate: | |
| Agriculture | 17.7 |
| Mining | 14.1 |
| Manufacturing | 30.1 |
| Industry-Level (Manufacturing Only): | |
| Food manufacturing | 21.1 |
| Textiles | 25.7 |
| Clothing | 71.8 |
| Leather products | 34.7 |
| Footwear | 57.0 |
| Wood products | 28.6 |
| Furniture | 74.6 |
| Paper products | 33.2 |
| Printing & publishing | 36.6 |
| Chemicals | 25.3 |
| Rubber products | 50.2 |
| Plastic products | 43.4 |
| Non-metallic mineral products | 33.0 |
| Iron & steel products | 26.0 |
| Fabricated metal products | 35.1 |
| Machinery (exc. electrical) | 21.0 |
| Electrical machinery etc. | 48.9 |
| Transport equipment | 37.1 |
| Optical goods, watches etc. | 31.8 |

*Source:* World Trade Organisation (1996).

- There are no *local content* programmes to assist local suppliers and subcontractors. Most of these measures are now frowned upon under the new rules of international trade and under the Uruguay Round their use will be prohibited in the near future.

- There are no official buy "Mauritius" *public procurement* policies. Foreign suppliers seem free to tender for government orders on similar terms as local enterprises and registration requirements for foreign suppliers do not exist. The one exception may be cases involving foreign aid where the international agency's procurement guidelines are followed. But this probably has little effect

Table 3. 2 **ERP Estimates for the Manufacturing Sector (per cent) 1983-1990 (a)**

| Source | Year | Average ERP | Range of ERPs | Selected Industry ERPs |
|---|---|---|---|---|
| World Bank (1985) | 1983 | 89(b) | -24 to 824 | leather (330), textiles and clothing (189), electrical machinery (824) |
| Woldekidan (1994) | 1987 | 57 (c) | 2 to 382 | clothing (2), leather (31), electrical machinery (157), beverages (382) |
| UNDP/World Bank (1993) | 1990 | 59 (d) | 27 to 259 | leather (27), clothing (53), electrical machinery (218), furniture (259) |

Notes: (a) All sales. (b) number of industries unknown. (c) 21 industries. (d) 35 industries.

on domestic manufacturing production.

- Mauritius does not employ *anti-dumping or countervailing duties* and has not enacted such legislation to date.
- Mauritius does not use technical standards or health and sanitary regulations as a means of non-tariff protection. Technical standards are largely voluntary and international standards are used where possible. In addition, the few health and safety regulations are confined to food, pharmaceuticals and chemical products and do not affect other areas of manufacturing.[12]

A few studies have attempted to estimate effective rates of protection (ERP) for the manufacturing sector in Mauritius. Table 3.2 shows estimates of average ERPs, the range of ERPs and selected industry-level ERPs from three major studies, two of which were sponsored by the World Bank. The studies confirm the impression from the nominal tariff data that average ERPs have fallen and that the range of ERPs has narrowed during 1983-1990. However, bearing in mind that even the most recent estimate (for 1990) is somewhat dated, given that a notable liberalisation took place in 1994, the average ERP still seems quite high.

Apart from the fact that no recent ERPs are available, the different estimates are not fully comparable. They seem to differ in methodology: one is based on tariffs only, while the other two include import restrictions and exemptions; two are largely based on import substituting industries and the other on both import substituting and export-oriented ones. Moreover, they differ in coverage: two are based on small samples of firms and industries while the other has a wider coverage of both. Thus, there seems to have been little attempt to apply a consistent methodology to appraise inter-temporal manufacturing ERPs in Mauritius.

One exception is Milner and McKay (1996), who draw together previous ERP work by Greenaway and Milner and Maxwell Stamp Consultants, for 1980 and 1990 (see Table 3.3). Although also somewhat dated, this study offers the best picture of the impact of trade reforms in Mauritius since 1980.

The average ERP for the manufacturing sector declined from 115 per cent to 65 per cent during 1980 to 1990. The latter is still high by most developing country standards and well above those in rapidly growing Asian NIEs. In addition, the reduction has only had a limited impact on the dispersion of ERPs. ERPs fell in 15 of the 19 product groups for which estimates were available and they rose in another 4. The largest reductions were recorded in optical goods and watches, wood products, fabricated metal products and clothing. Several industries, including some potential exports like beverages and tobacco, footwear, rubber products and electrical machinery remain highly protected. Other activities in which Mauritius seems unlikely to develop a comparative advantage in the near future are also highly protected such as iron and

steel products and non-metallic minerals. Six activities had ERPs of over 70 per cent. Thus, if the figures still hold true today, *trade liberalisation is still incomplete in Mauritius.*

Table 3.3 **Industry-Level ERPs in Manufacturing (per cent), 1980 and 1990**

| Industry | 1980 | 1990 | Change in protection since 1980 |
|---|---|---|---|
| Beverages & tobacco | 123 | 182 | 59 |
| Textile yarn/fabrics | 77 | 11 | -66 |
| Clothing | 99 | 4 | -95 |
| Leather products | 29 | 8 | -21 |
| Footwear | 158 | 88 | -70 |
| Wood products | 191 | 38 | -153 |
| Furniture | 130 | 241 | 111 |
| Paper products | 131 | 57 | -74 |
| Printing & publishing | 75 | 7 | -68 |
| Chemicals | 38 | 21 | -17 |
| Rubber products | 125 | 144 | 19 |
| Plastic products | 89 | 59 | -30 |
| Non-metallic mineral products | 77 | 48 | -29 |
| Iron & steel products | 154 | 73 | -81 |
| Fabricated metal products | 156 | 48 | -108 |
| Machinery (exc. Electrical) | 62 | 3 | -59 |
| Electrical machinery etc. | 179 | 189 | 10 |
| Transport equipment | 23 | 4 | -19 |
| Optical goods, watches etc. | 266 | 9 | -257 |
| **Arithmetic Mean [a]** | **115** | **65** | **50** |
| **Range [a]** | **23 to 269** | **11 to 241** | |

(a) Our estimates.
*Source:* Milner and McKay (1996).

Table 3.4 shows the import to GDP ratio which can be used as another measure of import liberalisation. Though this ratio also reflects the availability of foreign exchange, the data confirm that there was a notable liberalisation in Mauritius. The ratio of non-fuel imports to GDP nearly doubled between 1983 and 1989. The ratio declined slightly in the 1990s but remained above its 1983 level

Table 3.4 **Non-fuel Imports in Mauritius, 1983-1995**

| Year | Non-fuel imports (US$ Mn) | As a % of GDP |
|---|---|---|
| 1983 | 356 | 33 |
| 1986 | 645 | 43 |
| 1989 | 1214 | 58 |
| 1993 | 1593 | 51 |
| 1994 | 1790 | 52 |
| 1995 | 1780 | 46 |

*Source: Calculated from Government of Mauritius (1996); IMF International Financial Statistics, various*

The trade regime in Mauritius is now much more liberal than in the past and is one of the more open regimes in Africa. Although the effective protection data for 1990 suggest that the country is quite highly protected compared to the Asian NIEs, the level and dispersion of protection is likely to have fallen since the 1994 trade reforms. The country has also given considerable emphasis to export promotion policies and incentives to boost exports. Thus, it has creditable achievements in the area of trade policy reform. The more liberal trade regime makes Mauritius well set to sustain and diversify its export growth. It anticipates the demands of more international competition under the new international trading system under the WTO.

Nevertheless, the process of liberalisation and the sequencing of trade and other policies may need more attention. The evidence seems to suggest that it is not based on a coherent strategy when compared with the experience of successful East Asian economies (see Box 3.1)

Three weaknesses in Mauritius approach seem to be the following:

- The inherited structure of protection from the import substituting period, and maintained for some time thereafter, was inefficient and costly. It had been built up without any assessment of the nature and duration of protection required by infant industries. Unlike the dynamic NIEs such as Korea and Taiwan that fostered such infants

to build up a broad and deep industrial base, Mauritius seemed to give protection to most industrial activities that it set up. When liberalisation began, protection was reduced without a clear idea of restructuring needs. Some activities are being given protection without ensuring their restructuring while others suffered from exposure to international competition without measures to assist them.

- Export promotion efforts have been useful but are still insufficient to force protected firms into export markets. No performance requirements or contests were imposed in return for the privileges provided. Nor was there a monthly meeting between senior government officials and the heads of enterprises to review progress made towards export targets and solve pressing policy problems.
- Most importantly, supply-side measures (e.g. training, information and technical support) to help firms boost their competitiveness are deficient or absent (see Chapters 6 and 7) and, with some exceptions, are not geared to the liberalisation process.

Thus, *we recommend that Mauritius continues to attempt to achieve a low and uniform level of protection*. The task of import liberalisation should be entrusted to a single government institution (such as the newly established Ministry of Industry and Commerce) and it should draw up a simple, clear programme of future tariff reform. This institution should also keep an up-to-date information system on import tariffs and other forms of non-tariff protection and develop strong in-house capabilities to carry out inter-temporal effective protection studies.

Highly protected activities which have no clear economic rationale should be phased out in a systematic fashion over a short time period; those that can develop into future exports should be assisted by supply-side measures to promote rapid restructuring and upgrading. The signals given on the pace of trade policy reform should remain clear and strong so that industry can take appropriate steps to restructure. Industry should be informed in advance about plans for the pace of tariff reform at regular intervals. Three broad sets of policies would be needed to make the import liberalisation programme effective by helping industry to restructure: attracting FDI via a strong promotion and targeting strategy; export support of different kinds; and skill, technology and infrastructure upgrading. Each of these will be examined in other chapters of the report.

## 3.2 Exchange Rate Management

Since the mid-1970s, the Mauritian rupee was pegged to the SDR. Following devaluations of 30 per cent and 20 per cent in 1979 and 1981, respectively, Mauritius adopted a managed exchange rate policy in 1983[13] Under the new policy, the Bank of Mauritius intervened on the foreign exchange market to smooth out irregular fluctuations of its currency. An undisclosed basket of currencies of major trading partners was used to determine the value of the Mauritius rupee. Foreign exchange con-

### Box 3.1 Export Promotion Policies in East Asian NIEs

The entire system of incentives in NIEs like Korea and Taiwan was geared to forcing firms to export. Unlike most other developing countries, practically all privileges were tied to export performance and weak performers were penalised. In addition, all industrial policy measures, such as import protection, local content provisions, support of SMEs, technology support, human capital formation, infrastructure and financial policies were directed to the export drive and to deepening and widen-

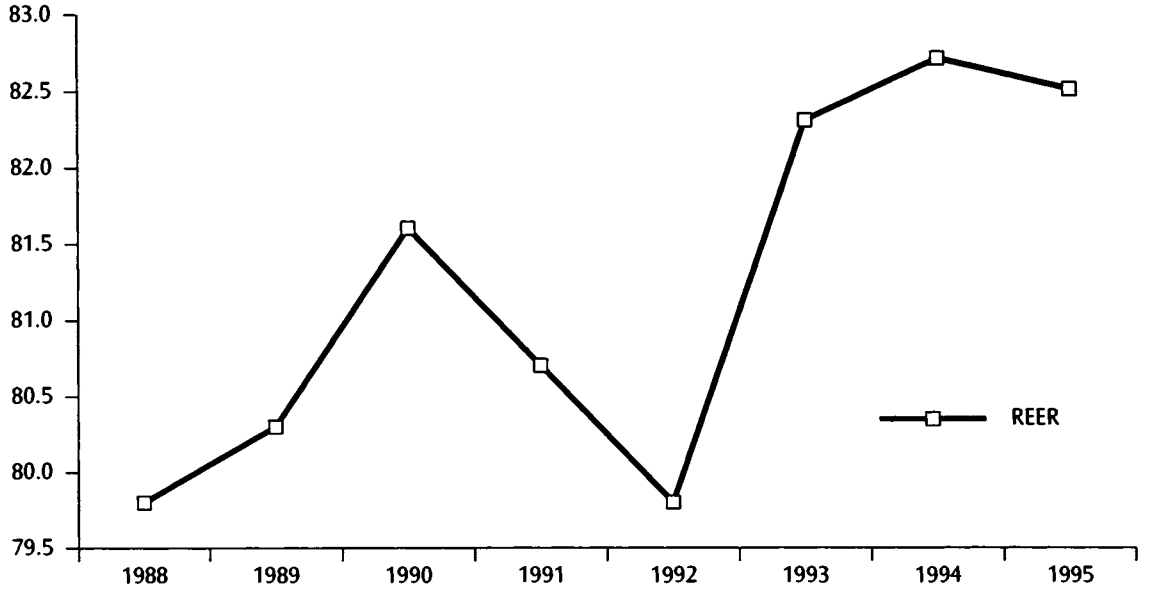
ing the export base (discussed elsewhere). In addition, Korea adopted specific measures to promote large private conglomerates, the chaebol, to lead the heavy industry and high technology drive. Both had strongly targeted R&D programmes, with considerable government investment in technology development. In free trade centres like Hong Kong and Singapore, governments relied more on supply side support, in the latter's case highly targeted.

The NIEs also adopted several *direct* measures for export promotion. The main ones were:

- *Export targets* were used as the basis for awarding access to imports, long-term credit and other incentives. In Korea and Taiwan, the system of export targeting was more elaborate than elsewhere. Export targets were set at the firm and industry levels and access to loans, tax breaks and imported inputs for domestic production were dependent on targets being met. The government established export targets in co-operation with firms and exporting associations. Although these targets were challenging, the tendency was for them to be bettered.
- *Credit* to exporters was often subsidised and targeted.
- Unsuccessful exporters faced *penalties* such as a reduction in export incentives, cuts in import licenses and stringent tax audits. President's prizes were given to the most successful firms.
- In Korea, monthly *meetings* between government officials and heads of firms, chaired by the President, carefully reviewed progress towards export targets.
- Access to duty free imported inputs and working capital loans was automatic and immediate. Recognising that potential exporters might be discouraged from export production if access to these export incentives was slow and discretionary, documentation requirements were kept to a minimum. Export letters of credit that exporters received from buyers were used to document actual orders for direct exports. To document actual orders for indirect exports, a domestic letter of credit was used. This provided indirect exporters automatic access to working capital loans and duty free imported inputs and helped to draw them into the export trade. It was originally adopted in Korea, but gradually adopted by other countries. The streamlined documentation requirements for export incentives in East Asia meant that direct exporters and indirect exports suffered few procedural delays.
- Strong institutional support was provided by the government for *export marketing*. Export offices were established by Korea and Taiwan in major overseas markets. The Hong Kong export development board provided a very active and efficient 'match-making' service between foreign buyers and local suppliers.
- *Private* information and specialised services were encouraged. Chambers of commerce, industry associations and other private service firms provided advice, training and information to exporters.
- Korea created giant trading houses to overcome the competitive disadvantages of entering new export markets. Many of these trading houses were part of the *chaebol*, which spearheaded the heavy industry drive.
- Singapore based its export drive on attracting *MNCs*, but not in a passive way. It targeted activities that lay in the future comparative advantage of the economy: higher value added electronics, advanced services and so on. MNCs were induced to upgrade their activities by incentives, rising wages and the provision of high-level skills and superlative infrastructure. The public sector played an active catalytic role.

*Sources:* Amsden (1989), Herderschee (1995), Hogan *et al.* (1991), Rhee *et al.* (1984), World Bank (1993), Stiglitz (1996), Wignaraja (1997a).

Fig 3.1 **Trade Weighted REER in Mauritius, 1988-95**




*Source: Enweze and others*

trols were partially liberalised in 1986 when commercial banks were allowed to undertake foreign transactions up to rupees 200,000 without Bank of Mauritius approval. A further liberalisation took place in 1994. The Exchange Control Act was suspended and free movement of foreign exchange was permitted. In addition, the Bank of Mauritius stopped setting rates and the rupee was floated with the creation of a new inter-bank foreign exchange market.

Most analysts seem to concur that exchange rate management in Mauritius was effective in maintaining a depreciated nominal and real exchange rate up to the mid-1980s.[14] However, several studies, including UNDP/World Bank (1993) and World Bank (1995), indicate that the real exchange rate tended to appreciate against major trading partners since the mid-1980s. One study estimated that the real exchange rate appreciated by 38 per cent during 1985-1991 (UNDP/World Bank, 1993, p. 2). Another study estimated that the real effective exchange rate rose by 9 per cent in 1989-1993 compared to 1984-1988 (World Bank, 1995, pp. 3-4). It went on to argue that "the sustained appreciation of the real exchange rate is a source of concern, as it is not backed by productivity gains and thus erodes the price competitiveness of Mauritian exports and threatens the survival of many firms" (World Bank, 1995, p.25).

Figure 3.1 shows the trade weighted real effective exchange rate (REER) for Mauritius vis-à-vis its four major trading partners (UK, France, Germany and the USA) for 1986-1995, using IMF data with 1980 as the base year. A fall in the index indicates a real exchange rate depreciation and a rise an appreciation. Overall, the rupee appreciated by 3.4 per cent against its major trading partners over 1988-1995.[15] Closer examination shows that the rupee actually appreciated by 2.3 per cent during 1988-1990 and depreciated by 2.2 per cent in 1990-1992. The depreciation was halted thereafter, with a sharp 3.4 per cent appreciation during 1995.

Figure 3.2 shows trade-weighted REERs for selected Asian and African countries which compete with Mauritius in international trade for 1989-1994.[16] The Mauritius, Sri Lankan and South African currencies appreciated during this period (by 3.5 per cent, 7.9 per cent and 3.5 per cent respectively) and were the only ones to do in the sample. Several countries were aggressive in depreciating their currencies, particularly Côte d'Ivoire (37.7 per cent), Zimbabwe (35.3 per

cent) and India (34.5 per cent). The remainder also depreciated their currencies to maintain export competitiveness including Pakistan (13.3 per cent), Bangladesh (10.7 per cent), Indonesia (3.9 per cent) and Thailand (3.5 per cent). Mauritius has generally been far less aggressive in using the exchange rate to improve its competitiveness than its African neighbours and its Asian competitors.

The weakness in the area of exchange rate management is a source of concern, particularly because Mauritius depends heavily on labour-cost sensitive industries like clothing. While a relative exchange rate appreciation can be beneficial in forcing exporters to upgrade quality, it imposes penalties on price sensitive items operating at low margins (which probably applies to a large proportion of Mauritius clothing exports). Our preliminary data suggests that the government, particularly the Bank of Mauritius, needs to pay more attention to monitoring cross-country behaviour in exchange rate management and emulate the more aggressive posture witnessed in neighbouring African countries and Asian competitors.

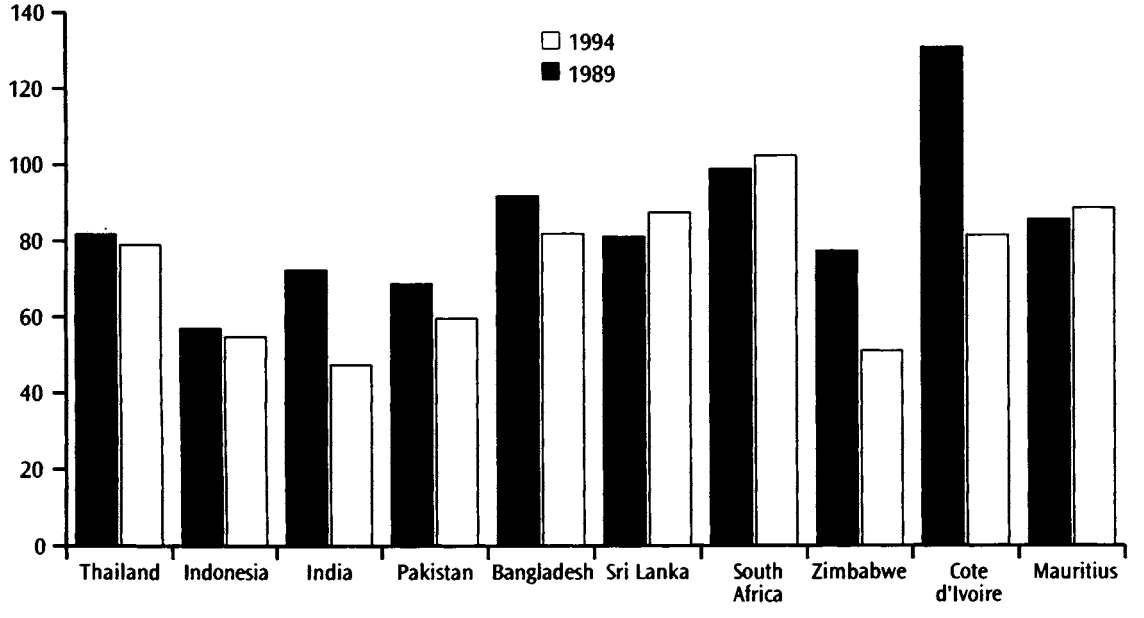
## 3.3 Export Policies and Incentives

By African standards and those of South Asia, Mauritius was an early promoter of exports and has maintained steady support. The Export Processing Zone Act was passed in 1970. In 1985 a public trade and investment promotion agency, the Mauritius Export Development and Investment Authority (MEDIA), was established. With the enactment of the Industrial Expansion Act in 1993, the incentive package for exporters was amended. Unlike African and South Asian competitors, EPZ status in Mauritius is not associated with a particular geographical location or foreign ownership. Any exporter in the country can quality for EPZ status and a package of incentives.

At present, there are four general measures to assist exporters in Mauritius:[17]

- *Duty free* access to "scheduled" imports of raw materials and equipment. EPZ firms can import a list of goods exempt from duties and sales tax while non-EPZ firms are entitled to a duty drawback on the proportion of imports used in making

Fig 3.2 **Trade weighted REERs of Competitors, 1989 and 1994**



exports. The refunds to non-EPZ firms have to be claimed from Customs within a six month period of importing.

- A *corporate tax holiday* for the entire life of an export-oriented project and tax exemption on distributed dividends for 20 years. This represents a significant improvement in tax incentives for exporters because previously the corporate tax rate was 15 per cent.
- An *export credit guarantee scheme and export credit insurance* is offered by the Development Bank of Mauritius (DBM). Under the former, the DBM offers credit guarantees to banks to cover pre-shipment and post-shipment loans to exporters. Under the latter, the DBM will cover an exporter against loss that may arise due to standard commercial and country risks for one year.
- *Overseas marketing support* for exporters is provided by MEDIA through organised participation in trade fairs and textile exhibitions, facilitation of contacts with foreign buyers, undertaking of market surveys and provision of trade information. In 1994-95, MEDIA organised the participation of exporters in 12 trade fairs and 4 buyer-seller meetings and 10 market surveys. In 1996-97, MEDIA plans facilitate participation in 11 trade fairs, 6 buyer-seller meetings and conduct 4 market surveys. Apart from exploring niches for garments in the traditional US and Western European export markets, MEDIA is actively targeting non-garment opportunities in the emerging regional COMESA market.[18] About half of MEDIA's promotion activities in 1994-95 and 1996-97 were oriented to COMESA countries and 6 out of 14 overseas offices/representatives were based in the region.

These policies seem to have been effective in providing a conducive environment for exports. However, there are few recent estimates of the trade bias facing the manufacturing sector based on either exchange rate measures or effective rates of protection. The latest available study based on effective protection estimates for 1990 by Maxwell Stamp concluded that in spite of the trade reforms of the 1980s, an anti-export bias still remained in the trade regime in Mauritius.[19]

MEDIA is the pivotal institution behind the country's drive for export growth and industrial upgrading. Previous studies, which examined MEDIA's effectiveness, have not found evidence that it was deficient in its export marketing function, but have recommended that it should maintain up-to-date and comprehensive data bases on trade and tariff data and enhance marketing functions within individual firms.[20] Our discussions with MEDIA staff and exporters indicated positive and negative elements in its capacity to support exports.

On the positive side, MEDIA has consistently provided relevant services – such as profitable buyer-seller meetings and high quality market surveys – which are well regarded by the private sector. The private sector is strongly represented in its Board (making up about half of the current 9 person Board). It is staffed with well educated people with international experience who enable it to deliver quality services – about one-third of its 50 strong team have university degrees (some from abroad). It benefits from a non-bureaucratic, market-oriented mind-set of its staff and dynamic top management which are conducive to organisational effectiveness and staff morale. By developing country standards, it has a relatively high ratio of total staff engaged in promotional activities (about 30 per cent of staff are directly involved in export or foreign investment promotion) rather than in unproductive, bureaucratic forms of work. It has begun to gather strategic business information about global and regional markets by establishing its own overseas offices/representatives in 14 countries (including the US, Europe and Africa).[21] In this vein, such offices seem to be staffed by aggressive and experienced sales employees capable of holding their own in foreign markets. It also has

a useful trade information centre (with a range of publications, journals and trade directories) which receives about 15 visitors per day.

However, there also seem to be several negative attributes. First, MEDIA is involved in an overly broad range of activities and may lack focus. Apart from export promotion, it undertakes foreign investment promotion and constructs and manages industrial estates. Some firms, particularly SMEs, complain that the weight of the two other functions may not permit it to devote sufficient resources to export promotion. Experience of other developing countries suggest that multi-function trade promotion organisations are rarely able to dedicate sufficient interest or resources to individual core activities.

Second, its overall effectiveness may be held back by a lack of funds. MEDIA's total budget nearly doubled from US$ 1.9 million to US$ 3.1 million between 1993-94 to 1995-96. Expenditures on export promotion alone more than doubled from US$ 0.20 million to US$ 0.55 million in the same period. In spite of the increase, available funds are a fraction the size of those spent by the Asian NIEs. For instance, the Hong Kong Trade and Development Council, which has a large network of overseas offices and staged 350 events around the world last year, had an annual budget of US$ 130 million in 1996.[22] Similarly, the Singapore Economic Development Board had an annual budget of US$ 45 million in 1995.

Third, MEDIA delivers nearly all of its marketing and information services free of charge which makes it reliant on central government grants and foreign aid and limits its autonomy from government interference in its operations. More generally, it has yet to develop a range of commercial services in relation to information and export marketing. In trade promotion organisations in developed countries, perhaps the most striking trend has been toward charging for services, i.e. cost-sharing by recipients. This facilitates the provision of a broad range of quality export information and marketing services and the entry of affiliates of MNC service firms and development of local private sector service providers. There seems to be little direct pressure on private business associations to take a more active role in trade promotion as in other developing countries and inadequate action seems to have been taken to encourage the entry of MNC service firms to set up regional service centres in Mauritius.

Fourth, MEDIA conducts useful surveys of overseas markets and produces a useful annual report, but it does not produce an overall national export development plan for the country with a set of export targets. The experience of the East Asian NIEs suggests that the formulation of an export development plan helps to focus the attention of exporters and the government on current and potential export growth, assists in identifying gaps in policies and other constraints to expansion and provides for collective solutions to problems. Export targets were used as the basis for awarding access to imports, long-term credit, tax breaks and other incentives. Korea and Taiwan, which had the most comprehensive systems of export targeting, set targets at firm and industry-level and made access to incentives dependent on targets being met. Such targets were set in collaboration with firms and industry associations. The top performers were rewarded with President's prizes while persistent under-performers were penalised. In Korea, monthly meetings between government ministers and heads of firms, chaired by the President, reviewed progress made towards export targets. Such meetings also rapidly found solutions to problems arising from infrastructural and policy bottlenecks as well as delays arising over procedural and regulatory issues.

Fifth, in spite of MEDIA's work, our firm-level survey indicates that the overseas marketing efforts of SMEs in Mauritius lag considerably behind those of large and giant firms in the whole sample.[23] Table 3.5 shows information on the average number of foreign buyers in 1995, average overseas marketing expenditures in 1992-95, and average attendance of overseas trade fairs in 1992-95 for SMEs (<250 employees) and large & giant firms (>251 employees).

Table 3.5 **Overseas Marketing Efforts in Mauritius SMEs and Large & Giant Firms**

| Category | Average number of foreign buyers, 1995 | Average overseas marketing expenditure (US$ Mn), 1992-95 | Average number of overseas trade fairs attended, 1992-95 |
|---|---|---|---|
| SMEs | 5.2 | 0.02 | 1.9 |
| Large & giant firms | 26.9 | 0.13 | 3.8 |
| All firms | 16.5 | 0.09 | 2.9 |

Like other developing country firms in the early stages of export development, Mauritius firms rely heavily on foreign buyers for the risky, costly and information-intensive activity of export marketing. With a few exceptions, there is little evidence of well developed independent marketing capabilities. Experience in Asian developing countries shows that intense buyer-seller relationships can involve considerable transfers of marketing know-how as well as detailed information on manufacturing technology, product designs, quality control systems and training.[24] The data suggest that large & giant firms in Mauritius deal with significantly more foreign buyers (26.9) than SMEs (5.2) indicating better capacities to discriminate between different kinds of buyers, strike better deals and, possibly, acquire a broader range of technological information. In addition, large & giant firms (US$ 0.13 million) spent more than six times on overseas marketing in 1992-95 compared with SMEs (US$ 0.02 million). Finally, large & giant firms (3.8) attendance of overseas trade fairs in 1992-95 is nearly double that of SMEs (1.9). These averages, of course, somewhat mask the great divide in export marketing capabilities between the giant firms and the small enterprises in Mauritius. The few giant firms in our sample dealt with over 100 foreign buyers in 1995, attended 10 or more trade fairs in 1992-95 and spent over US$ 0.5 million on overseas marketing in 1992-95. Meanwhile, the smallest firms dealt with one or two foreign buyers, attended one trade fair and spent a few hundred dollars on export marketing. Thus, the gaps in export marketing efforts between large & giant firms and SMEs are a major source for concern.

*Thus, we recommend that Mauritius continues to strengthen its export drive to offset the anti-export bias in the trade regime. In particular, MEDIA's useful contribution to the Mauritius export drive could be enhanced further and new institutional arrangements should be established to foster public-private sector partnerships in export development.* The government should undertake a detailed assessment of MEDIA with a view to transforming it into the pivotal institution for export growth and upgrading in the country. Such an assessment should identify strategic institutional restructuring alternatives and carefully evaluate the costs and benefits of each approach. Based on our preliminary work, we feel that the assessment should focus on whether MEDIA is spread too thinly across too many functions and should concentrate on export promotion alone; whether it is adequately financed to help exporters achieve their goals; whether mechanisms for cost-sharing by recipients and commercial services on information and export marketing could be developed by MEDIA; and whether a new dedicated SME unit should be established in MEDIA to help link the more successful firms in marketing contracts with foreign buyers and subcontracting relations with large local enterprises, and to provide extension services to develop their independent marketing capabilities. It is strongly recommended that such an assessment be conducted under the aegis of the Prime Minister's Policy Unit or the Ministry of Finance.

Apart from the assessment to strategically restructure MEDIA, we feel that consideration ought to be given to significantly enhancing the export marketing capabilities of private business associations and systematically attracting MNC

service firms (to establish regional operations in Mauritius). The important goal underlying these initiatives is that the effectiveness of MEDIA should be not only enhanced, but also to make sure that it does not inadvertently "crowd out" potential private sector providers of export promotion services.

Finally, we feel that consideration should be given to formulating an overall export development plan for the country (along with a system of export targeting) and calling a monthly meeting between key ministers and the heads of firms (chaired by the Prime Minister) to review progress made towards export targets and deal with pressing policy problems. The direct involvement of the highest levels of government and enterprises in the export drive would contribute towards building relationships of mutual trust and support, deal with practical export problems at a political and economic level, and continually re-focus attention on the importance of boosting national export competitiveness. The export planning mechanism could be located in the re-structured MEDIA and MEDIA's corporate plan should be developed in line with the overall national export development plan.

## 3.4 Regulations and Procedures

Export competitiveness is also influenced by the efficiency of bureaucratic regulations and procedures affecting imports, exports, foreign exchange allocations, foreign investment approvals and other public services. A streamlined, well functioning system of regulations and procedures enhances competitiveness.

Studies undertaken by the World Bank and the WTO found that firms in Mauritius were affected by bureaucratic delays in their day-to-day operations in the late 1980s and early 1990s.[25] These studies suggest that delays and red tape have had an adverse impact on enterprise-competitiveness through raising operating costs above optimum levels, employing extra clerical staff to deal with unnecessary paperwork and maintain good relations with the relevant officials, and acting as an obstacle to enterprise efforts to adopt quick response practices. It is also acknowledged that there has been a significant improvement with regard to procedures over the last few years. For instance, import licensing was abolished in 1991 and foreign exchange transactions no longer need Bank of Mauritius approval.

Table 3.6 **Average Processing Time for Selected Bureaucratic Procedures in Mauritius, Sri Lanka and Indonesia**

| Item | Mauritius | Sri Lanka | Indonesia |
|---|---|---|---|
| 1. Customs clearance at port | 4 days | 3-4 days | 4 days |
| 2. Customs clearance at airport | 2 days | N/A | N/A |
| 3. Refund of duties on imported inputs | 4-24 weeks | 2 weeks | 2-6 weeks |

How does Mauritius compare with aspiring Asian NIEs in relation to procedures and regulations? Table 3.6 provides comparable information on the average processing time involved in obtaining customs clearance at the port and airport and refund of duties on imports in Mauritius, Sri Lanka and Indonesia.[26] The data suggest the following:

- It takes about 4 days to receive customs clearance for goods at ports in all three countries (although Sri Lanka may be marginally faster) suggesting that Mauritius is as efficient as the other two. This represents a major improvement over time in Mauritius. A study by the World Bank found that in 1990 it took more than10 days for over half the country's imports to receive port clearance.[27] The reduction in processing time is attributed to the adoption of the computerised Automated System for Customs Data (ASYCUDA), with the assistance of consultants from Singapore, which can process import declarations in ten to fifteen minutes.

- ❖ It takes between 4 to 24 weeks to receive refunds of duties on imported raw materials and equipment in Mauritius compared to between 2 to 6 weeks in Indonesia and 2 weeks in Sri Lanka. This constraint is particularly severe on non-EPZ firms while EPZ firms are not affected.
- ❖ Finally, as discussed in Chapter 7, there are long delays in obtaining foreign investment approval in Mauritius (ranging from between 9 to 32 weeks) compared to countries in Asia. A related area of concern is long delays in the granting of work permits to expatriate staff.

Thus, while Mauritius has recently addressed bureaucratic procedures and regulations connected with the foreign exchange approval and customs clearance, others still pose a notable impediment to developing competitiveness in Mauritius. *We recommend that the government takes steps to streamline residual procedures and regulations, particularly in regard to foreign investment approvals, work permit applications and processing of refunds on duty drawbacks.* Where possible, a single short form should replace multiple, lengthy documentation requirements and unnecessary bureaucratic stages should be dispensed with. In addition, an appeals procedure should be established to deal with instances where foreign investment approvals are rejected or subject to delays in excess of four weeks (this should include the processing of work permit applications). These steps would significantly contribute to Mauritius moving towards an environment with a low-level of bureaucratic procedures.

## 3.5 Enterprise-Level Perceptions of the Policy and Incentive Regime

The mission gained some insights from enterprises on aspects of the policy and incentive regime and other factors. Table 3.7 lists the main constraints to exporting in Mauritius identified by the sample firms in decreasing order of importance. These constraints are grouped under three headings: policy and incentive framework, supply-side factors and other, and further differentiated by the degree of intensity into those regarded as "very negative" and those viewed as "moderately negative". The discussion below highlights those factors viewed as "very negative".

Contrary to expectations, the most widespread perception is a deterioration in supply-side factors since 1995. The leading constraint to export growth and upgrading is seen as an infrastructural bottleneck – the *infrequent sailings* and the *high sea freight costs* to established and potential markets[28] Large textile and garment firms indicated that over one-third of their business involves just-in-time production and short-cycle lead times where the speed at which orders and repeat orders from foreign buyers can be met is the key to success. Due to its geographical position and few shipping lines serving exports, Mauritian firms seem to suffer from relatively long shipping times and high freight costs compared to their competitors – for instance, the average shipping time from Mauritius to the USA (45-55 days) is double that from South-East Asia (25 days). Moreover, firms argue that international shipping operators are unreliable and often do not turn up when cargoes are small. These factors may have caused Mauritius firms to loose out on short-cycle orders from foreign buyers like mail order firms and retailers. One foreign firm suggested that Mauritius should set up a national shipping line to facilitate exports to large regional ports like Durban from where re-exports to the USA and Europe could take place. Another notable infrastructural constraint that was mentioned by some firms was *fluctuating electricity*.

Skill shortages and technological factors follow closely behind as significant constraints to export growth and upgrading. Firms reported that there was a *shortage of technical personnel* and a shortage of skilled labour reflecting in part an excess demand for labour caused by the almost full employment situation in the economy. In particular, firms argued that there were significant

Table 3.7 **Constraints to Competitiveness** (% of firms noting constraints)

| Constraint | All Firms | | Foreign | | Local | |
|---|---|---|---|---|---|---|
| | *Very Negative* | *Moderately Negative* | *Very Negative* | *Moderately Negative* | *Very Negative* | *Moderately Negative* |
| Policy & incentive framework: | | | | | | |
| High interest rates | 29 | 38 | 15 | 18 | 15 | 21 |
| Cumbersome bureaucratic procedures | 29 | 41 | 18 | 15 | 12 | 26 |
| Appreciating exchange rate | 18 | 18 | 6 | 9 | 12 | 9 |
| Lack of access to finance | 15 | 15 | 0 | 6 | 15 | 9 |
| Policy uncertainty | 12 | 26 | 6 | 9 | 6 | 18 |
| High sales tax | 6 | 21 | 0 | 15 | 6 | 6 |
| Supply-side factors: | | | | | | |
| Infrequent sailings & high freight costs | 47 | 29 | 26 | 12 | 21 | 18 |
| Lack of technical personnel | 35 | 35 | 24 | 15 | 12 | 21 |
| Lack of good local supplies | 32 | 29 | 21 | 18 | 12 | 12 |
| Lack of skilled labour | 29 | 38 | 18 | 21 | 12 | 18 |
| Low labour productivity and absenteeism | 26 | 35 | 12 | 24 | 15 | 12 |
| Fluctuating electricity | 21 | 32 | 15 | 18 | 6 | 15 |
| Excessive labour regulations | 18 | 21 | 9 | 18 | 9 | 3 |
| Inadequate technological support | 12 | 35 | 3 | 21 | 9 | 15 |
| Inadequate water & sewage supplies | 12 | 32 | 6 | 18 | 6 | 15 |
| Industrial unrest | 3 | 15 | 0 | 6 | 3 | 9 |
| Other factors: | | | | | | |
| Smuggled raw materials | 12 | 15 | 3 | 6 | 9 | 9 |
| Weak protection against counterfeiting | 6 | 0 | 6 | 0 | 0 | 0 |

gaps in the availability of specialised categories of technical manpower including chemical engineers, food technologists and watch-making technicians, as well as a shortage of production managers and designers. Moreover, they argued that there was a *lack of reliable suppliers of raw materials, parts and components* and that *technology institutions* were inadequate. A lack of reliable suppliers refers to both the absence of a plastics industry and precision injection moulding facilities to support electronics, the lack of a range of fabrics and accessories manufacturers for fashion-clothing and dying and finishing facilities.

Some concern was also expressed about *low labour productivity, absenteeism and excessive labour regulations*. As discussed below, several MNC affiliates in different industries said that the labour productivity of their Mauritius affiliate was below that of affiliates in other developing countries, that absenteeism rates tended to be higher and that there were more labour regulations.

On the policy and incentive side, *high interest rates and cumbersome bureaucratic procedures* are viewed as major constraints. Firms argued that the cost of domestic borrowing is relatively high due to interest rates of 12 per cent on working capital loans and 15 per cent for long-term finance from commercial banks, coupled with high bank charges. The cost of borrowing may have deterred some firms from investing in new equipment, technologies and marketing methods to compete effectively overseas. The Development Bank of Mauritius offers long-term finance at 10 per cent but its bureaucratic procedures for loans are viewed as cumbersome and approvals can take up to four months. Firms also pointed to long delays in obtaining refunds on duties on imported inputs.

In contrast, there seems to have been a streamlining of export and import procedures at customs; it only seems to take an average of 8-10 days to clear goods by sea and 2 days for those by air. Finally, some firms pointed to an *appreciating exchange rate, policy uncertainty and lack of access to finance* as obstacles.

Interestingly, the *high sales tax, smuggled raw materials, inadequate water and sewage supplies, weak protection against counterfeiting*, and *industrial unrest*, while mentioned as constraints, were not given a high priority. The low ranking given to water and sewage problems may reflect improvements in this type of infrastructure, particularly in private EPZs. Only two firms complained about competition from smuggled textiles indicating that it is a minor problem compared to the destructive impact that illegal second hand garment imports from East Asia have had on the textile and garment industries of Ghana and Kenya.[29] The single garment firm that mentioned counterfeiting had its designs on T-shirts pirated by other local firms and argued that cases under the Trade Mark Act took six years to be judged.

Turning to ownership differences, foreign firms pointed to the shortages in skilled labour and technical manpower, lack of suppliers and high sea freight costs/infrequent sailings as the most pressing constraints to export growth and upgrading. This is followed by low labour productivity and absenteeism, cumbersome bureaucratic procedures and high interest rates. Local firms viewed high sea freight costs/infrequent sailings as the most pressing constraint, followed by low labour productivity, high interest rates and a lack of access to finance. The difference in emphasis given to interest rates and access to finance may reflect the fact that since 1993 off-shore borrowing was permitted and several large firms have taken advantage of low interest rates (6-8 per cent for working capital) but SMEs, which may be less able to borrow off-shore, still complain about the high cost of domestic borrowing and difficulties of access. Similarly, the difference in emphasis given to the important area of shortages in skills and a lack of suppliers may reflect the fact that foreign firms have a longer industrial experience than local firms and therefore a better understanding of such constraints to export growth and upgrading.

These results may be compared with a similar survey of constraints to exporting in Sri Lanka in 1996 (see table 3.8).[30] As in the Mauritius survey, the constraints are grouped under policy and incentive framework, supply-side factors and other constraints, however, they are not differentiated by the degree of intensity into "very negative" and "moderately negative".

Table 3.8 **Constraints to Competitiveness in Sri Lanka 1996 (% of firms noting constraints)**

| Constraint | All firms |
|---|---|
| Policy & incentive framework: | |
| Policy uncertainty | 35 |
| Appreciating real exchange rate | 30 |
| High interest rates | 25 |
| Cumbersome bureaucratic procedures | 20 |
| Supply-side factors: | |
| Heightened industrial unrest | 60 |
| Low labour productivity | 55 |
| Inadequate technological support | 50 |
| Excessive labour regulations | 45 |
| Lack of suppliers | 40 |
| Lack of skilled labour | 30 |
| Fluctuating water supply | 25 |
| Fluctuating electricity supply | 15 |
| Other factors: | |
| Difficult security situation | 20 |
| Excessive holidays | 30 |
| Smuggled raw materials | 5 |

*Source:* Lall, Rao and Wignaraja (1996).

The main findings are as follows:

- Unlike the situation in Mauritius, labour related factors – *industrial unrest, labour regulations and low productivity* – are viewed as the leading constraints to export growth and upgrading in Sri Lanka. Industrial

unrest reflects the wave of politically motivated strikes that affected the country in late 1995 which resulted in plant closures for several months, lost production and cancellation of orders. Labour regulations refer to the government's support for the Termination of Workmen Act and the adoption of the Workers' Charter which firms argue make it difficult to rationalise the work force and adopt new technologies. As a result of these factors, firms argue that labour productivity has declined.

- Unlike the situation in Mauritius, firms pointed to *policy uncertainty* and *an appreciating exchange rate* as key constraints on the incentive and policy framework side to exporting in Sri Lanka. Policy uncertainty concerns the government's hesitant, somewhat slow response to industrial unrest. Some firms argued that an appreciating exchange rate in the 1990s had deterred investments in new capacity and new technology.
- Unlike the situation in Mauritius, *excessive holidays* are also noted as an obstacle in Sri Lanka; with 30-40 annual public holidays, the latter has one of the shortest working years in the developing world. Some firms also mentioned the *difficult security situation* which deterred potential foreign investors and buyers and worsened Sri Lanka's image.
- In contrast to Mauritius, *high sea freight cost/infrequent sailings* were not mentioned at all in Sri Lanka. Similarly, *cumbersome bureaucratic procedures* and *high interest rates* were accorded a lower priority in Sri Lanka which may reflect the fact that improvements have taken place in these areas.
- In common with Mauritius, technological factors and skill shortages were emphasised as significant constraints in Sri Lanka, notably, *a lack of suppliers* and *skill shortages* as well as weak technology institutions.

Thus, from the perspective of enterprises, the policy and incentive regime in Mauritius is conducive in some areas and weak in others. Unlike competitors such as Sri Lanka, Mauritius is fortunate not to be adversely affected by factors such as like a difficult security situation, industrial unrest, labour regulations, excessive holidays, policy uncertainty and a sharply appreciating exchange rate. The most pressing constraints in Mauritius seem to be the following: high interest rates, cumbersome bureaucratic procedures and regulations, high cost of freight/infrequent sailings, a lack of reliable suppliers and skill shortages. We recommend that the government *undertake a regular annual survey of enterprise perceptions of the policy and incentive regime and constraints, along the lines undertaken in our study, and feed the results into the export policy-making process*. Needless to say, this survey should cover enterprises from different industries (i.e. those with a current comparative advantage and those in emerging areas), ownership forms (foreign, local and joint ventures) and size classes (giant, large and SMEs). The results of this survey would be an important input into the work of the proposed Competitiveness Council (see Chapter 8) and the high-level meeting between ministers and the heads of enterprises, chaired by the Prime Minister.

# 4

# Human Resources for Competitiveness

## 4.1 Introduction

This chapter reviews the human capital base in Mauritius in a comparative perspective. It is widely acknowledged in Mauritius that its future comparative advantage does not lie in cheap labour but in an advanced base of skills, which it presently lacks. It is also accepted that worker attitudes and motivation are deficient, and that future competitiveness will require a more hard-working and dedicated work-force. The creation of skills, in educational institutions and specialised worker training facilities, could itself become an exportable resource.

## 4.2 Labour Costs and Productivity

The value of the educated, reliable and cheap labour force that drove Mauritian export growth is indicated by the existence of full employment and rising wages over time. Table 4.1 shows comparative annual average wages in a number of countries, including some major Asian garment exporters as well as the leading Tiger economies. Unfortunately, the UNIDO data that are used for all the other countries only go up to 1990 for Mauritius; the figure for 1993 is taken from Mauritian government sources, and may not be precisely comparable to the earlier data. Some of the other data may also not be fully accurate. Nevertheless, as they stand, they are useful for broad indicative comparisons.

The table confirms that low wages are no longer a source of competitive advantage for Mauritius: there are several countries in Asia with much lower wages and much larger stocks of employable labour. However, Mauritius is considerably cheaper than the NIEs and new-NIEs, and can serve as a competitive base for export activity if it can provide comparable skills, infrastructure and transport costs.

Table 4.2 shows more detailed comparisons on a range of employee costs. The advantage of this table is that it concentrates on wages in light manufacturing activity rather than averaging over the whole industrial sector – it is thus more relevant to the export activity that Mauritius is engaged in.

The table suggests the following:

- Compared to countries in East Asia in 1994, wages for *unskilled labour* in Mauritius are higher than in China, Vietnam, Indonesia and Philippines, are comparable to Malaysia, and are lower than in Thailand and much more so than in Taiwan (and presumably the other Tigers). They are also higher than South Asia. The lowest wages in the group are in Vietnam, Sri Lanka and Bangladesh.[31]
- Average wages for *skilled and technical workers* in Mauritius are generally much higher than in South Asia but comparable to South East Asia and much lower than in Taiwan.
- *Engineers* are similar to technicians: they are much more expensive in Mauritius than in South Asia but somewhat cheaper than in Taiwan.

Figure 4.1 shows the evolution of the indices (1982=100) of manufacturing production, unit labour costs and labour productivity in the Mauritian EPZs.[32] It shows that rising production has been accompanied by rising unit labour cost (defined as the labour cost index divided by the production index), while productivity has

Table 4.1 **Relative Annual Wages in Manufacturing**

| | Wages (US$ p.a.) | | | Mauritian Wages | Growth Rate (% p.a.) | |
|---|---|---|---|---|---|---|
| | *1985* | *1990* | *1993* | *as % of others, 1993* | *1985-90* | *1990-93* |
| *Mauritius* | *1063* | *1904* | *2998* | - | *12.4%* | *16.3%* |
| Sri Lanka | 529 | 604 | 738 | 406.2 | 2.7% | 6.9% |
| India | 1298 | 1592 | 1230 | 243.7 | 4.2% | -8.2% |
| Pakistan | 1323 | 1769 | 2030 | 147.7 | 6.0% | 4.7% |
| Bangladesh | 557 | 854 | 905 | 331.3 | 8.9% | 2.0% |
| Malaysia | 3375 | 3240 | 4148 | 72.3 | -0.8% | 8.6% |
| Thailand | 2422 | 3523 | 4661 | 64.3 | 7.8% | 9.8% |
| Indonesia | 921 | 925 | 1128 | 265.8 | 0.1% | 6.8% |
| Philippines | 1257 | 1968 | 2433 | 123.2 | 9.4% | 7.3% |
| China | 384 | 500 | 656 | 457.0 | 5.4% | 9.5% |
| Singapore | 7290 | 10800 | 15393 | 19.5 | 8.2% | 12.5% |
| Hong Kong | 4808 | 9161 | 13220 | 22.7 | 13.8% | 13.0% |
| Korea | 3476 | 9353 | 12269 | 24.4 | 21.9% | 9.5% |
| Taiwan | 3862 | 10168 | 14017 | 21.4 | 21.4% | 11.3% |

*Sources:* For 1993 Mauritius figure, Mauritius Central Statistical Office, Annual Digest of Statistics 1995. Table 8.3. All other data, UNIDO, Industrial Development Global Report 1994 and 1995.

Table 4.2 **Wage Levels, Mauritius and Selected Asian Countries** (1994)

| | Total Labour force (million) | Unemployment Rate (%) | Min Wage Unskilled (US$/day) | Average Unskilled (US$/day) | Average Skilled (US$/day) | Average Technicians (US$/month) | Average Middle Manager/Engineer (US$/month) |
|---|---|---|---|---|---|---|---|
| Mauritius | 0.54 | 2.0 | 2.66 (a) | 5.5-6.8 (b) | 6.8-10.3 | 210-400 | 560-1,100 |
| Taiwan | n/a | 3.1 | 22.50 | 32.50 | 42.50 | 1,300 | 1,500-2,500 |
| Malaysia | 7.4 | 2.8 | No min wage | 5.20-8.08 | 12.86 | 321 | 780-1,150 |
| Thailand | 36.8 | 4.4 | 5.22 | 9.05 | 15.72 | 274-630 | 730-964 |
| China | 723 | 2.3 | n/a | 2.05-5.18 | 4.03-9.65 | n/a | n/a |
| Philippines | 26.8 | 9.7 | 4.00 | 4.00 | 7.00 | 237 | 625 |
| Indonesia | 84.3 | 8.0 | 0.60-2.62 | 2.00-2.87 | 5.98 | 215 | 359 |
| Vietnam | 34.4 | 10 | 0.70 | 1.15-1.22 | 1.75-1.90 | 55-150 | 152 |
| Sri Lanka | 6.5 | 13.0 | 1.15 | 1.25 | 2.20 | 90-279 | 210-400 |
| Bangladesh | 34 | 3.2 | 1.58 | 1.66 | 2.33 | 63(min) | n/a |
| India | 344.3 | 5.7 | 0.82-1.17 | 2.40-3.33 | 4.2-6.2 | 128-200 | 285-430 |
| Pakistan | 37 | 6.2 | 1.44 | n/a | n/a | n/a | n/a |

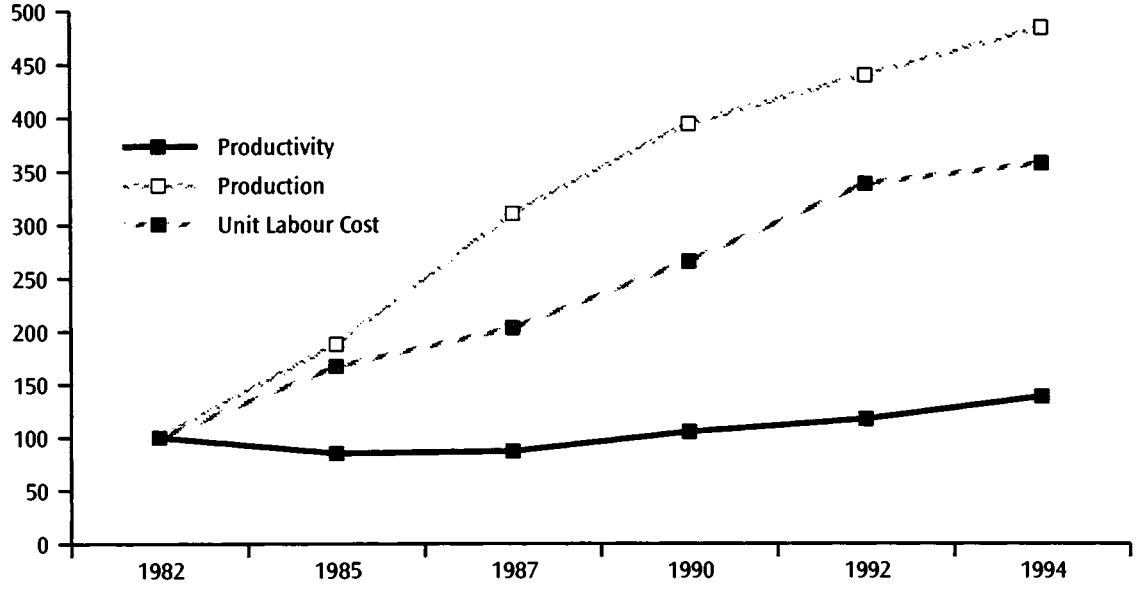
*Sources:* Interviews, various official and private publications. Wage rates are prevailing averages for workers in light manufacturing; for China, wages are for Special Economic Zones.

Notes: (a) Statutory minimum daily wage in 1995 for export enterprise factory workers in Mauritius. This rate is much lower than minimum wages in other industrial and non-industrial activities. From Central Statistical Office, *Annual Digest of Statistics 1995*, Table 8.9.

(b) Mauritian data on average wage rates in different occupations from Central Statistical Office, *Digest of Labour Statistics 1995*, Table 3.4.

barely risen. While the larger garment firms have raised productivity recently by improving quality, training and management techniques, this has not kept pace with wage costs. Average productivity levels are lower than in the NIEs: for instance, productivity in the Mauritian EPZ was $3,247 per man year in 1991, compared to $12,157 in the Singaporean garment industry.[33]

Fig 4.1 **Index Numbers of Mauritian EPZ Production, Productivity and Unit Labour Costs, 1982-94**




One of the leading textile firms noted that productivity was only about 50% of that in Italy or France, due to worker rather than equipment deficiencies. Smaller firms lag more than large ones, and the closure of several in recent years illustrates their difficulties in upgrading. In general there appears to be considerable scope for productivity improvement.

Table 4.3 shows the evolution of monthly earnings in large establishments and EPZs since 1991 and gives the breakdown of wages by EPZ activity. Non-EPZ firms (the data are for large firms only) pay higher rates than EPZ firms: in 1995 the average difference was 8%. Within the EPZ, the lowest salaries are earned by wood and jewellery employees, the highest by 'other' and textile workers. In nominal terms, wages have risen at 11% per annum in the EPZ firms, with the highest rates of increase in wood and furniture (which has the lowest levels) and the lowest in jewellery. The textile and garment sector has increases of around 10-12% per annum.

The fact that EPZ wages are below other wages suggests that labour markets are segmented and that in a more efficient market EPZ wages would be even higher (a conclusion supported by a recent World Bank report).[34] This is particularly true of various types of skilled labour which are in short supply, but whose wages have not kept up with their scarcity either because workers are not sufficiently mobile or face rigidity in work contracts. A recent survey of training needs by the Ministry of Manpower Resources, and Vocational and Technical Training (1995) points to widespread skill shortages in various export-oriented sectors (more on this below).

Worker productivity is determined by a large number of factors: capital intensity of the process, age and nature of the equipment, process/product/industrial engineering capabilities, organisation and management practices, worker attitudes, worker skills and provision of training. Technological factors are taken up below, here the focus is on *worker attitudes and skills*. Problems with these crop up with surprising regularity and emphasis in Mauritius in the context of manufacturing industry. A number of factors are mentioned by official surveys in respect of worker attitudes:

- **High rates of absenteeism:** Official surveys indicate rates of absenteeism (around 5-10% in the EPZ), in turn reflecting difficult working conditions, long hours and perhaps inadequate wages.

Table 4.3 **Average Monthly Earnings, March 1991-March 1995** (Rupees)

| | 1991 | 1992 | 1993 | 1994 | 1995 | Rate of annual growth (%) |
|---|---|---|---|---|---|---|
| All sectors in Mauritius | 4080 | 4530 | 4779 | 5786 | 6288 | 11.4 |
| Large manufacturing establishments | 3684 | 4016 | 4411 | 5162 | 5659 | 11.3 |
| EPZ manufacturing firms | 3440 | 3875 | 4287 | 4955 | 5257 | 11.2 |
| Textiles | 3500 | 3900 | 4323 | 5072 | 5452 | 11.7 |
| Apparel | 3500 | 3850 | 4302 | 4956 | 5156 | 10.2 |
| Wood and furniture | 2500 | 3655 | 3607 | 4405 | 4677 | 17.0 |
| Jewellery | 3800 | 4010 | 4521 | 4136 | 4789 | 6.0 |
| Other manufacturing | 3010 | 4005 | 4104 | 4944 | 5526 | 16.4 |

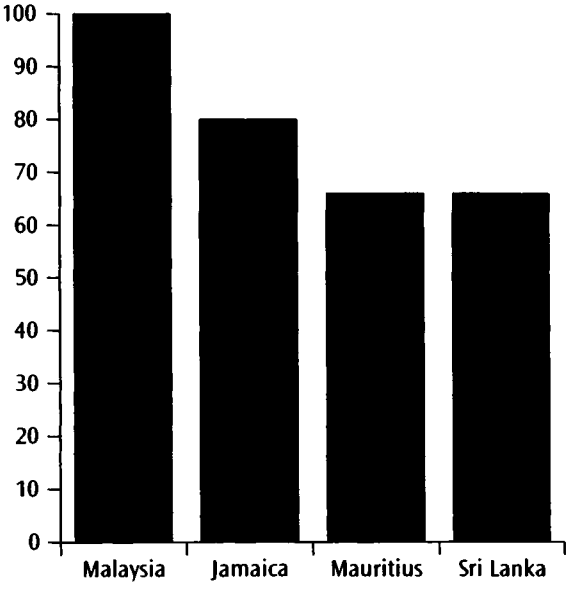
*Source:* Central Statistical Office, *Annual Digest of Statistics 1995*, Tables 8.3 and 8.5

- **High rates of turnover:** There is a considerable turnover of workers, especially among new and young recruits (7-10% was mentioned by some firms, but one firm claimed that up to 50% of new recruits left in the first year). While high turnover rates are common in the garment and other assembly industries in developing countries, and reflect the tightening of the labour market as well as the low levels of skills required, they are undesirable as far as quality and technological upgrading is concerned. Employers tend to give minimum training in these conditions, and commitment to improvement remains low.
- **Poor work discipline:** Many firms complain of poor worker motivation and discipline, and those with foreign workers draw unfavourable comparisons between them and Mauritian employees. This may be a major factor in holding back productivity, and observers feel that firms need to mount much more advanced human resource management policies. The traditional worker management practices in place in the majority of firms are not suited to the extent of upgrading needed by Mauritian export industry.
- **Insufficient differentiation in wages to reflect skill levels:** The wage and promotion structure does not fully reflect skill levels and productivity, again reducing employee effort and motivation and encouraging turnover.

In an attempt to compliment the findings from official surveys, our enterprise survey collected some information on labour productivity, absenteeism and labour turnover in Mauritius. Our data indicate the following:

**Labour productivity.** About 61 per cent of the sample firms (largely MNC affiliates) felt

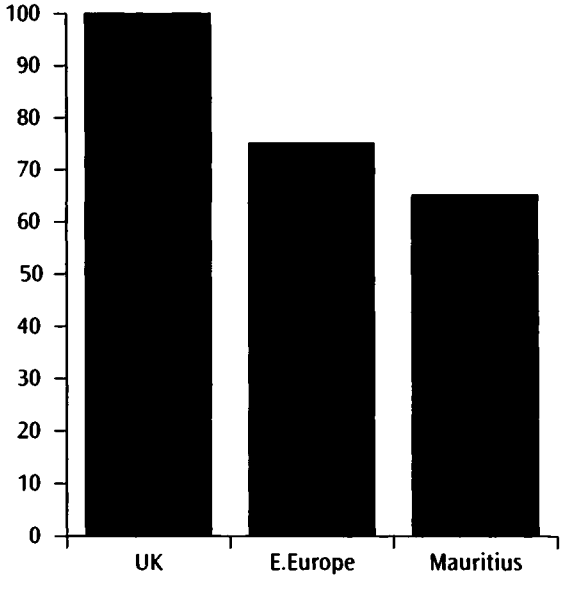
Fig 4.2 **Productivity in a Hong Kong MNC**



that the decline in labour productivity (and high absenteeism) was a negative constraint to export competitiveness. To shed further light on this issue, we asked the Chief Executive Officers (CEO) of a large Hong Kong garment MNC affiliate to rank the productivity of its Mauritius plant with their overseas plants and the CEO of a large local textile firm to compare its productivity with overseas plants that he had visited. These results are shown in Figures 4.2 and 4.3, with the Mauritius plant ranked against the best overseas plant (Malaysia = 100 in Figure 4.2 and the UK = 100 in Figure 4.3).

The labour productivity comparison for the Hong Kong *garment* MNC shows that the Mauritius and Sri Lankan affiliates (both at 66 per cent of Malaysian levels) had the lowest productivity of its operations internationally. Of the four affiliates, the Malaysian one came top and was almost at Hong Kong levels while the Jamaican one reached 80 per cent of Malaysian levels. The Jamaican affiliate was expected to significantly increase its productivity over the next five years, the Mauritian one to record a small improvement and the Sri Lankan one to remain static.

Fig 4.3 **Productivity Impressions of a Mauritius Garment Firm**




A similar picture emerges from labour productivity comparison of the local *textile* firm. The Mauritian plant (65 per cent of the UK level) records a lower level of productivity than the plant in Eastern Europe (75 per cent of UK level). The Eastern European plant was expected to reach UK levels within ten years, but the Mauritian plant was likely to only record small increases in productivity.

One *textile* affiliate said that the productivity of its Mauritian plant was lower than those of plants in India and China. One of the *electronics* affiliates said that the productivity of its Mauritian plant was 75 per cent of that of plants in China.

Although these enterprise-level productivity rankings are impressionistic, they are worrying for the development of future competitiveness in Mauritius. MNC affiliates were attracted to the country in the 1970s and 1980s largely because of cheap labour and preferential market access to the European market, which were sufficient to offset low levels of productivity. However, rising wages and the possibility of a phasing out of preferences in the late 1980s and 1990s dictate that productivity levels need to similarly increase in manufacturing enterprises. Unfortunately, this does not seem to have happened to date and the country seems to have lagged behind its major competitors. There is a danger that Mauritius may lose its competitive edge in labour-intensive industries as lower cost countries enter the export scene with comparable levels of infrastructure and skill. The country's long-term export growth clearly lies in dynamising the process of productivity growth.

**Absenteeism and turnover rates.** Table 4.4 provides information on absenteeism and turnover rates for workers and technicians. Absenteeism is high and often exceeds 10 per cent in some firms. Those in textiles and garments (5-10 per cent) seem to have somewhat higher absenteeism rates than those in electronics (5-8 per cent). Unfortunately no information was available for food products and chemicals. Firms argued that absenteeism was common following a weekend shift or a night shift, indicating

Table 4.4 **Absenteeism and Turnover in Enterprises**

| | Absenteeism rates as % of employment | Worker turnover rates as % of employment | Technician turnover rates as % of employment |
|---|---|---|---|
| | *1996* | *1995* | *1995* |
| *Industry:* | | | |
| Food Products | n.a | 1.0 | 0.2 |
| Textiles & Garments | 5-10 | 5.0 | 0.4 |
| Chemicals | n.a | 10.4 | 2.6 |
| Electronics | 5-8 | 8.6 | 0.0 |

a general reluctance to work unsociable hours even for higher wages. One textile MNC affiliate argued that it was working at only 80 per cent of its capacity utilisation rate rather than 90 per cent because of a 10 per cent rate of absenteeism. Several firms maintained that high absenteeism contributes to high overheads and a lack of competitiveness.

Worker turnover varies considerably between the industries. It is quite high in chemicals (10.4 per cent) and electronics (8.6 per cent), moderate in textiles and garments (5.0 per cent) and low in food products (1.0 per cent). However, the industry-averages tend to mask firm-level differences. Some textile and garment firms reported very high worker turnover rates in the range of 50 per cent within the first year. These firms argued that after this period, there was a decline in worker turnover rates. The high worker turnover rates particularly within the first year seem due to factors like rigid factory discipline, demanding work, long working hours, high living costs, poor living conditions and limited transport to factories. Interestingly, technician turnover rates are much lower than those for workers in the same industries indicating that poaching of technical manpower is not a serious problem.

The high rates of absenteeism and worker turnover are likely to be a major disincentive to skill accumulation and upgrading in industry.[35] The move to more complex technologies and high value added products needs a stable, hard working labour force in whose skills firms invest. In an attempt to overcome the problems caused by absenteeism and high turnover, some firms were recruiting a small proportion of foreign workers (from China or India) on short contracts. Foreign workers were said to be more productive than local workers, more willing to work longer hours (10-12 hours as opposed to 8 hours) and less likely to be absent. These are issues which merit urgent government reflection and action.

## 4.3 Skills

### 4.3.1 Formal Education

Mauritius is justifiably proud of its record on education, and in the regional context it has a good base of schooling. Table 4.5 shows enrolment rates at the three levels in comparison with some Asian countries. Mauritius is in advance of South and South East Asian countries in secondary schooling, with the exception of Sri Lanka. Its adult illiteracy rates are far lower than in India and Bangladesh, and somewhat better than Malaysia's. In all these, it scores far better than most sub-Saharan African countries (not shown in this table, but see Lall, 1992, for detailed data).

However, there remain several major problems with the education and training system, which were noted in a comprehensive study of industrial training by Bheenick and Hanoomanjee (1988). Many of the findings of this study remain valid today. Mauritius lags well behind the Tigers in secondary-level, and behind all the comparators in tertiary-level, enrolments. The secondary education system is biased against

Table 4.5 **Educational Enrolments in Mauritius and Asian Countries**

| | Numbers enrolled in school as percentage of age groups | | | | | | Tertiary level students per 100,000 inhabitants | | Adult illiteracy rate (recent) |
|---|---|---|---|---|---|---|---|---|---|
| | *Primary* | | *Secondary* | | *Tertiary* | | *Numbers* | *Year* | |
| Country | 1970 | 1993 | 1970 | 1993 | 1980 | 1993 | | | |
| Mauritius | 94 | 106 | 30 | 59 | 1 | 2 | 208 | 1990 | 17% |
| Singapore | 105 | 107 | 46 | 78 | 8 | 9 | N/A | N/A | 11% |
| Korea | 103 | 101 | 42 | 93 | 16 | 48 | 4208 | 1992 | 2% |
| Taiwan | (d) 97 | (e) 100 | (d) 66 | (e) 92 | 18 | (e) 31 | 2919 | 1993 | 6% |
| Malaysia | 87 | 93 | 34 | 59 | 4 | 7 | 679 | 1990 | 16.5% |
| Thailand | 83 | 98 | 17 | 37 | 13 | 19 | 1763 | 1989 | 6% |
| Indonesia | 80 | 114 | 16 | 43 | 4 | 10 | 1032 | 1992 | 16% |
| India | 73 | 103 | 26 | 44 | (a) 6 | (f) 10 | 556 | 1989 | 59% |
| Sri Lanka | 99 | 106 | 47 | 74 | 3 | 6 | 505 | 1991 | 10% |
| Bangladesh | 54 | (f) 77 | (c) 13 | 19 | (a) 3 | 12 | 382 | 1990 | 63% |

Note: (a) 1970; (b) 1991; (c) 1965; (d) 1976-77; (e) 1989-90; (f) estimate.

*Sources:* UNESCO, Statistical Yearbook, 1996; World Bank, *World Development Report* (1992-97); Ministry of Education, *Educational Statistics of the Republic of China*, Government of Taiwan, 1991.

technical subjects, reducing its relevance for competitiveness development. The tertiary-level enrolment rate, at the level of most sub-Saharan African countries, appears grossly inadequate to its income level and to the need for modern industrial and management skills. Taking account of students in tertiary education abroad (78% of the domestic rate, from UNDP 1996) raises the figure to 3.6%; however, even this adjusted figure is far below the levels in the other countries (note that Singapore and Malaysia also have substantial proportions of students overseas, 25% and 38% respectively). There appears to be a clear correlation between tertiary-level enrolments and the development of technological capabilities: the countries that have developed the most advanced industrial structures and indigenous capabilities, Korea and Taiwan, have very high enrolment rates, matching those reached by developed countries.

At the tertiary level, it is useful to look further at enrolments in technical education, especially in natural sciences and engineering (Table 4.6). This shows clearly an enormous lag by Mauritius. Enrolments in the three core technological subjects together account for only 0.04% of the population, only 2.8% of the level reached by Korea (1.45% of the population), and only 31% of the proportions reached in poor countries such as India and Indonesia. Even Bangladesh achieves double the proportion reached by Mauritius. If Singapore is the model for Mauritius to emulate, its technical enrolments would have to be 14 times higher as a percentage of the population to provide comparable levels of technological human capital.

Korea stands out by virtue of its enormous investments in high-level technological skills; it is noteworthy that it has enrolled far more engineers in its universities than India, in *absolute* numbers. Taiwan is just a little further behind. A recent paper (Lall, 1996) finds that these two Tigers now have much higher technological enrolments than any developed country (including Japan), generally *twice* the proportion of population. Singapore is particularly interesting because like Mauritius, it inherited a British education system with its emphasis on arts subjects. As part of its industrial strategy, it was able to switch this 'ethos' in its university system to one

Table 4.6 **Tertiary Level Students in Technical Fields (numbers and % of population) in Mauritius and Asian Countries**

| Country | Year | Natural Science | | Maths & Computers | | Engineering | | Total | | Population (m.) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *Nos.* | *% of pop.* | *Nos.* | *% of pop.* | *Nos.* | *% of pop.* | *Nos.* | *% of pop.* | |
| Mauritius | 1991 | 86 | 0.01% | 130 | 0.01% | 249 | 0.02% | 465 | 0.04% | 1.1 |
| Singapore | 1994 | 1281 | 0.05% | 1420 | 0.05% | 13029 | 0.47% | 15730 | 0.56% | 2.9 |
| Taiwan | 1993 | 16823 | 0.08% | 32757 | 0.16% | 179094 | 0.86% | 303964 | 1.45% | 20.9 |
| Korea | 1993 | 75778 | 0.17% | 145948 | 0.33% | 367846 | 0.83% | 589572 | 1.34% | 44.5 |
| Malaysia | 1990 | 8776 | 0.05% | 4557 | 0.02% | 12693 | 0.07% | 32222 | 0.17% | 19 |
| Thailand | 1992 | 77098 | 0.13% | 1292 | 0.00% | 105149 | 0.18% | 249952 | 0.43% | 58.1 |
| Indonesia | 1992 | 22394 | 0.01% | 13117 | 0.01% | 205086 | 0.11% | 240597 | 0.13% | 187.2 |
| India | 1988 | 800266 | 0.09% | ./. | | 201289 | 0.02% | 1138812 | 0.13% | 898.2 |
| Bangladesh | 1989 | 75503 | 0.07% | 7523 | 0.01% | 5830 | 0.01% | 96793 | 0.08% | 115.2 |
| Sri Lanka | 1991 | 8228 | 0.05% | 366 | 0.00% | 3901 | 0.02% | 21234 | 0.12% | 17.9 |

Note: Data from the field of study in which the symbol ./. appears are included with the figure on the left.
*Sources:* UNESCO, *Statistical Yearbook*, 1994; Taiwan, *Statistical Data Book*, 1994

geared to technology. The courses were focused on technologies targeted for future promotion, with tight control over the content and quality of the training, and generous finance for selected fields of technology.[36] To prepare its workforce, Singapore also invested in an extensive and state of the art system of technical training and encouraged in-house training by firms (those that do not train enough are penalised). Its polytechnic was built up to provide mid-level skills. Box 4.1 highlights some aspects of its training.

Enrolment data by themselves do not indicate the quality, relevance and content of the education system in Mauritius. There are also problems here. It is worth quoting a recent World Bank report on these issues:

> *"Despite this progress, the education system has not kept pace with the human resource requirements of the country's economy. Mauritius currently faces shortages of skills that would enable the economy to move to, and keep up with, international technological best practice in its industries. The causes lie in insufficient general and specialised education and training which, in turn are the results of limited opportunities for secondary and higher education, in particular scientific and technological education, and the relatively low quality of the output of most of the institutions.*
>
> *Limited capacities of secondary and post-secondary institutions have limited the numbers educated. Varying levels of access to education between urban and rural areas and between elite (public or private) and less well-regarded (predominantly private) schools have also played a part in limiting the numbers educated. As a result, the work force has a mean educational attainment of only 6.9 years of schooling, compared with about 9 years in Taiwan, Korea or Hong Kong. Six years of primary education is still the terminal point for about one-third of the children. Secondary enrolment is 56 per cent ... and has remained stagnant because of high repeater and dropout rates and capacity constraints ...*
>
> *Skills produced are below requirements because of low quality of input and instruction. Three-fourths of secondary school teachers have inadequate teaching skills; the curriculum pays insufficient attention to the acquisition of basic cognitive skills, science and mathematics, while a rigid*

## Box 4.1: **Singapore's Training System**

Singapore is a regional leader in employee training programmes held outside the firm. The Vocational and Industrial Training Board (VITB) established an integrated training infrastructure which has trained and certified over 112,000 individuals, about 9% of the existing workforce, since its inception in 1979. The VITB administers several programmes. The Full-Time Institutional Training Programme provides broad-based pre-employment skills training for school leavers. The Continuing Skills Training Programme comprises part-time skills courses and customised courses. Customised courses are also offered to workers based on requests from companies and are specifically tailored to their needs. Continuing Education provides part-time classes to help working adults.

VITB's Training and Industry Programme offers apprenticeships to school leavers and ex-national servicemen to undergo technical skills training while earning a wage. The programme consists of both on-the-job and off-the-job training. On-the-job training is carried out at the workplace where apprentices, working under the supervision of experienced and qualified personnel, acquire skills needed for the job. Off-the-job training includes theoretical lessons conducted at VITB training institutes or industry/company training centres. Unusually, the government collaborated with MNCs (one Indian, one German and one Dutch) to jointly set up these centres, funding a large part of employee salaries while they are being trained (below) in state of the art complex manufacturing technologies. Later the Singapore government worked jointly with foreign governments (Japan, Germany and France) to provide technical training.

Under the Industry-Based Training Programme, employers conduct skills training courses matched to their specific needs with VITB assistance. VITB also provides testing and certification of its trainees and apprentices as well as trade tests for public candidates. The Board, in collaboration with industry, certifies service skills in retailing, health care, and travel services. Using various grant schemes, the National Productivity Board's Skills Development Fund (SDF) created 405,621 training places in 1990. The initial impact of the programme was found mostly in large firms; however, efforts to make small firms aware of the training courses and provide support for industry associations has increased SDF's impact on smaller organisations. SDF is responsible for various financial assistance schemes to help SMEs finance their training needs and to upgrade their operations (for instance, the Training Grants Scheme pays out between 30 and 90% of training costs borne by SMEs). It has also introduced a Development Consultancy Scheme to provide grants to SMEs for short-term consultancy for management, technical know-how, business development and manpower training.

The Training Voucher Scheme supports employers with training fees. This Scheme enabled the SDF to reach more than 3,000 new companies in 1990, many of which had 50 or fewer employees. The Training Leave Scheme encourages companies to send their employees for training during office hours. It provides 100% funding of the training costs for approved programmes, up to a maximum of $20 per participant hour. In 1990, over 5,000 workers benefited from this Scheme. The success of the Skills Development Fund is due in part to a strategy of incremental implementation. Initially, efforts focused on creating awareness among employers, with ad hoc reimbursement of courses. The policy was then refined to target in-plant training, and reimbursement increased to 90% of costs as an additional incentive. Further modifications were made to encourage the development of corporate training programmes by paying grants in advance of expenses, thus reducing interest costs to firms.

*Source:* Lall (1996).

*examination system encourages memorisation of facts rather than ability to analyse and solve problems; and at the post-secondary level, programmes in mathematics, science, engineering and technology are not sufficiently developed, and students tend to favour liberal education programmes. Most private schools provide lower quality education than state schools, due to poor physical conditions, lower-quality teachers, and lack of specialised facilities such as laboratories and libraries ...*

*Higher education (offered through four tertiary level institutions – UoM; Mauritius Institute of Education, MIE; Mauritius College of Art, MCA; and Mahatma Gandhi Institute, MGI) has not been planned and made to produce enough scholars in the physical and mathematical sciences ... Among [degree level programmes] very few are in scientific and technological disciplines; in 1992-93, only 44 per cent of the students were enrolled in these areas. Furthermore, the UoM has operated mainly as a teaching institution and its research performance has been very modest. These shortcomings in tertiary education are due to the fact that until recently, there was no co-ordinating body to guide the development of higher learning and research... With the creation in 1992 of a Tertiary Education Commission this situation may be changing.*

*Technical education has also not produced an adequate number of skilled workers. The Industrial and Vocational Training Board (IVTB) is conceived as a joint venture between the private and public sectors to support, encourage and finance training in the private sector, and to provide a place for training for the smaller segments of the industrial and service sectors ... Two factors hamper the public technical training institutions from operating efficiently – the shortage of trained teachers and the lack of equipment and training materials. With the industrial sector developing, there is an escalating demand for technical training at the very time that there is increasing demand from the factories for technicians."*[37]

The government is acutely aware of the skill shortages, and has set up a national Task Force to examine training needs and develop programmes to alleviate shortages. Half the planned investments in education are aimed at expanding access to secondary education, raising enrolments by 20 per cent (from 81 to 96 thousand students). However, building up effective educational institutions necessarily takes time, and the technical skill bottleneck may prove a crucial one for export strategy.

### 4.3.2 Employee Skills and Training

Formal education is only part of the process of creating skills relevant to industrial competitiveness. A significant part, sometimes the most significant part, comes from training and learning during the course of employment. This can be done at training institutions and by programmes undertaken in-house by industrial firms. In a world of rapidly changing technologies and new organisational methods, such as multi-skilling, and total quality management, it is essential for industrial firms themselves to invest continuously in training their employees, both on-the-job and in formal courses. In industrialised countries like Japan, the investment each year by enterprises on training exceeds the government's entire education budget. In the USA, firms spend around 7% of sales on training. NIEs like *Korea* also invest heavily in employee training, pushed along by policies such as a 5% payroll levy for training imposed on medium and large firms since the 1970s. *Malaysia* offers a double (200%) tax deduction for approved training expenditures by industrial firms, and for large firms has recently substituted this with a 1% payroll levy for training. It has also sponsored the setting up of industry led training centres which charge full cost for their services; the model pioneered by the Penang Skills Development Corporation (see Chapter 8) is now being replicated by all the

other states in Malaysia. *Singapore* has in place a Joint Government-Industry Training Scheme, in which firms provide training programmes and facilities (including foreign instructors) and the government ensures that trainees stay with the firm afterwards. As noted in Box 4.1, the Singapore government subsidises training by smaller firms, paying between 30 and 90 per cent of the costs under the Training Grants Scheme.

The findings of a recent World Bank study of the effects and determinants of training in several developing countries in Asia and Latin America is worth considering. This study, based on a large questionnaire survey of enterprises (including over 50,000 firms in Taiwan), used production function analysis, with training as one of the inputs along with technology. The main conclusions are summarised in Box 4.2.

Mauritius also has a training promotion scheme in place, administered by the Industrial and Vocational Training Board, IVTB. The government now emphasises skill upgrading within a broader concept of 'human resource development' (which also includes incentives, remuneration, job satisfaction and so on). Industry is also participating; the Mauritius Employers' Federation (MEF) has issued a guide on the training scheme and conducts periodic surveys of training by its members.[38] The IVTB scheme started in 1989, with a 1% levy on basic salaries used to give incentive grants to firms for training on a *cost-sharing* basis. The amount of the grant bears no specified relationship to the amount contributed to the levy, only to expenses on training. For firms that spend nothing on training, the levy is a net tax. The amount of the grant is *related to the company's corporate income tax bracket*, with lower tax payers receiving higher grants (see Table 4.7). Companies listed on the stock exchange pay rates of 25%; EPZ firms were generally in the 15% bracket, but the budget in 1996 abolished all income taxes on these firms (if the training provisions do not change, they will receive the highest rate of refund). In addition, training costs are given double tax-deduction, as in Malaysia.

Table 4.7 **IVTB Training Grant and the Employer's Tax Rate**

| Income tax rate | Grant (% of training expenses) |
|---|---|
| 35 | 17 |
| 25 | 50 |
| 15 | 64 |
| 0 | 75 |

The IVTB scheme applies to approved in-house training schemes as well as to training in institutions registered by the IVTB, and includes overseas courses. The trainers have to be registered with the IVTB, and details of all the courses, costs and participants have to be submitted for refund. The scheme is similar to that in use in many countries, though, as noted, some countries have stronger incentives (Korea's 5% levy on its larger firms). The IVTB has five vocational training centres: electronics, jewellery, footwear and leather craft, hotels and tourism and textiles. New courses have been added in

## Box 4.2 Enterprise Training in Developing Countries

A World Bank study of enterprise training, the largest and most comprehensive of its kind for developing countries, is based on data from large samples of firms in Taiwan, Malaysia, Indonesia, Colombia and Mexico. It finds that firm-level training has a significant and positive effect of productivity for all types of firms: large and small, domestic or export oriented, foreign and local and high or low tech. This evidence, supported by econometric analysis, provides a powerful case for the promotion of employee training at all levels of development.

The study finds that training and technology development tend to be closely related: the firms that invest in training also tend to invest in R&D, undertake quality control activities and use existing technology services. In contrast, the firms that do little training also tend to face technical problems and undertake little in-house technological activity. This supports the findings of the technological capability literature that training and technical effort are an intrinsic part of the same set of capability building activities.

Despite its benefits, training is relatively neglected in most developing countries: the study finds that *50 to 80 per cent of SMEs*, and *20 to 70 per cent of large firms*, provide no training apart from informal on-the-job instruction that consists of watching and imitating experienced workers. This type of informal training is found to have no significant effects on firm productivity. It is *formal and structured training*, in-house or outside, that is important for efficiency.

Some of the important findings of the analysis with respect to formal training are:

- Training of skilled workers yields more productivity improvement than of unskilled workers
- In-house training has larger effects than training provided externally
- Lower income countries enjoy greater productivity benefits from training than high income countries
- SMEs have higher productivity benefits from training than larger firms, presumably because they start from a lower base
- High technology industries have larger productivity gains from training than low technology industries.
- Training leads to higher wages for all workers, but technological change tends to lead to greater inequality between skilled and unskilled workers.

On the incidence of formal training, the study finds that the following types of firms train more than others:

- Large firms
- Export-oriented firms
- Foreign owned firms
- Technology intensive firms

The types of training *policies* that work well are those that provide for skill development funds, financed by a levy on payroll and refunded for approved training efforts. Tax incentives for training are used mainly by large firms and MNCs, who would invest in training in any case – its effects on raising overall training levels are dubious. Non-trainer firms do not undertake training because of tax incentives.

The study finds that the majority of public training institutes are not very effective; they tend to be unresponsive to industrial needs, with outdated curricula and poor equipment and teachers. Private training institutions tend to be better received by industry. Institutions that are led by industry are the most responsive and effective.

Finally, the study notes that SMEs need special support to train. They face greater market failures than large firms in terms of information, access to credit and technology support services. It is critical to convince SMEs of the importance of training and to provide packages of training, credit, technical support and marketing assistance. The government has an important role to play because of the need to subsidise SME training for extended periods.

*Source:* Tan and Batra (1995).

construction, printing, IT and automotive fitting.

During 1994-95, Mauritian firms reported training of 1.24% of the wage bill in manufacturing, 1.20% in financial services, 1.01% in the EPZ and 0.38% in hotels and restaurants (sample of firms which responded to 1995 MEF questionnaire). The numbers of employees receiving training (8,064) had increased by 57% over the previous survey in 1994. The surveyed firms spent Rs. 49.4 million on training as compared to Rs. 25.7 million on the IVTB levy; thus, own training expenditure was about twice that spent on the levy. The MEF also notes delays in obtaining refunds from the IVTB as a problem, as in the construction and retail sectors which received only 5% and 12.4% respectively of their claims; at the other end, transport, storage and communications firms received 73.1%. Some firms complained of the time needed to fill out the forms.

In manufacturing, of the 36 firms responding to the survey, training cost per employee came to Rs. 7.8 thousand (around $450); by comparison, construction (Rs. 20 thousand) and transport etc. (Rs. 9.8 thousand) had the highest training expenditures. Around 23% of the refund claims made by the manufacturing firms had been refunded. Some 44% (16) firms in the manufacturing sector had in-house training, and *only 11% (4) had training departments*. These are relatively low figures; since the survey presumably covers mainly the larger firms, there are probably large training gaps among the smaller firms. Small firms everywhere spend relatively little on training, for obvious reasons, but it is important for governments to supplement their efforts by providing both targeted training provision and a stronger base of relevant education.

Nevertheless, the growth in training among the Mauritian sample firms is very welcome: the percentage of firms with training departments overall has risen from 21 to 23% over the two MEF surveys. However, the proportion sending personnel to external institutions has declined, from 60 to 46%. Several firms sent their personnel abroad. In general, the courses offered by the IVTB were rated 'good' or 'very good'.

According to the IVTB itself, the most serious constraint on its training activities is a shortage of qualified trainers, especially in new fields such as plastic processing, precision engineering, hydraulics and pneumatics. Fresh university graduates tend to have little practical technical knowledge, and the institution relies on overseas trainers a great deal (there were about 15 at the time of the mission). The equipment used is being modernised.

The high worker turnover rate at the low levels, especially within the free trade zones, constitutes a major deterrent to mounting more sustained and expensive training programmes. There also needs to be a more comprehensive, regular survey of training in Mauritius, providing information for fast and effective policy responses in this critical area of competitiveness policy. One idea proposed by Bheenick and Hanoomanjee (1988) which merits close examination is that closely monitoring skill provision by competing nations. This report makes a number of detailed recommendations for improving industrial training, most of which appear to be as relevant today as when they were written.

Figure 4.4 **Percentage of Engineers in Electronics Firms**

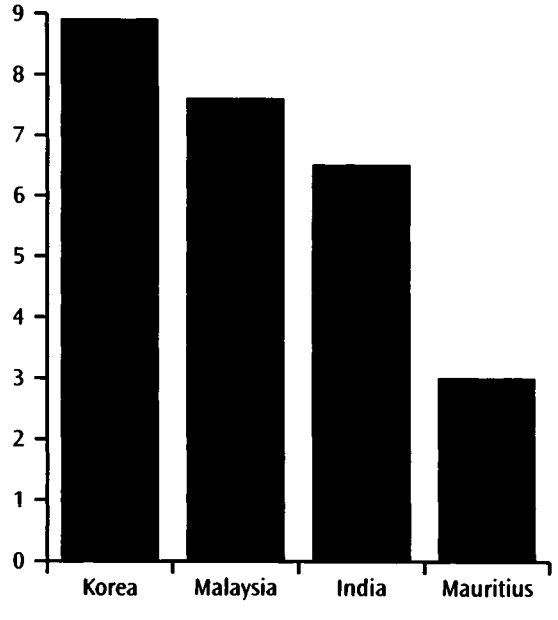


Table 4.8: **Technical Manpower and Linguistic Skills in Enterprises**

| | Scientists, Engineers & Technicians as % Employment | Scientists as a % Employment | Engineers as a % Employment | Employees with English % |
|---|---|---|---|---|
| Industry | | | | |
| Food Products | 5.6 | 1.4 | 0.4 | 50.0 |
| Textiles & Garments | 1.3 | 0.1 | 0.4 | 40.8 |
| Chemicals | 12.9 | 5.9 | 2.7 | 62.5 |
| Electronics | 7.3 | 0.0 | 3.0 | 75.0 |

The team collected some evidence on technical manpower and training in enterprises in the four industries in Mauritius (textiles and garments, food products, electronics and chemicals) as well as data on technical manpower and training gaps between large firms and SMEs in the textile and garments industry.

**Technical manpower.** Table 4.8 shows the breakdown of employment of scientists, engineers and technicians; scientists only; and engineers only. It also shows the percentage of workers with a working knowledge of English.

The share of scientists, engineers and technicians is the highest in chemicals (12.9 per cent) and is followed by electronics (7.3 per cent), food products 5.3 per cent) and textiles and garments (1.3 per cent). Most of the technical manpower in the sample firms are technicians rather than scientists or engineers. For instance, the share of engineers in employment is 3.0 per cent in electronics, 2.7 per cent in chemicals, 0.4 per cent in food products and 0.4 per cent in textiles and garments. This may be compared with some figures for the employment of engineers in electronic and engineering firms in Korea, Malaysia and India (see Figure 4.4) where the average percentages are Korea (8.9 percent), Malaysia (7.6 per cent) and India (6.5 per cent).

These figures should not be taken as direct indications of the skill gaps in Mauritian firms, since the technological levels of the other countries is far higher than those of the Mauritius sample. The data do nevertheless illustrate the kind of skill upgrading that may be needed by Mauritian industry if it were to enter more complex activities.

**Employee training.** Table 4.9 shows information on the number of firms with in-house training programmes and the share of employees sent on training in Mauritius and overseas in 1990 and 1995. The data on training suggest that firms invest relatively little in skill formation and upgrading. Of the 34 firms, only 18 had formal in-house training programmes of any kind and only 9 had independent training budgets and even fewer had a specialist training officer. The average training budget for the 6 textile and garment firms which kept training records was only 0.52 per cent of sales, for the two chemical firms it was only 0.33 per cent, and for the single food products firm it was only 0.11 per cent. A textile and garment firm had the largest training budget in the sample, but even this firm only spent 1.24 per cent of sales while the smallest, also a textile and garment firm, spent only 0.04 per cent. None of the electronics firms had independent training budgets. In contrast, in developed countries like the US and Japan, the training budget is 7 per cent or more of sales.

About 20 sample firms undertook external training of any form in 1996. The data suggest that there has been an improvement in external training incidence since 1990. The share of employees sent on external training courses increased from 0.56 per cent to 1.55 per cent in food products, from 0.40 per cent to 1.61 per cent in textiles and garments, from 2.0 per cent to 7.93 per cent in chemicals and from 0 per

Table 4.9 **Enterprise Training Efforts**

| | No. of firms with in-house training programmes | % of Work force sent on external training | |
|---|---|---|---|
| | *1996* | *1990* | *1995* |
| Industry | | | |
| Food Products | 2 | 0.56 | 1.55 |
| Textiles & Garments | 12 | 0.40 | 1.61 |
| Chemicals | 3 | 2.00 | 7.93 |
| Electronics | 1 | 0.00 | 0.32 |

cent to 0.32 per cent in electronics. The figure for chemicals should be interpreted with caution because it reflects a very large increase in one firm.

In spite of the increase, the extent of external training in the Mauritian electronics industry is very low by Korean standards. A recent study by Yun (1996) reports that the average percentage of employees sent on external training in five Korean-owned electronics and engineering firms was 29.2 per cent in 1993. There was a tendency for most of the training provided by Mauritian firms to be in management rather than technical training, and this was infrequent rather than sustained. With the exceptions of the IVTB and the University of Mauritius, there are few institutions in Mauritius that can provide industry-specific training.

**Intra-firm differences in skill and training in textiles and garments.** Very little is known about skill and training differences between large firms and SMEs in Mauritius. In order to shed some light on the issue, some skill and training indicators of large firms (above 251 employees) and SMEs (less than 250 employees) in textiles and garments were compared. The results suggest that large firms devote more resources to training and hiring technical manpower than SMEs. The detailed findings are as follows:

- Large firms had a considerably higher share of engineers (including textile engineers) in their workforces than SMEs (the means are 0.59 per cent and 0.07 per cent, respectively).
- Large firms placed more emphasis on formal employee training than SMEs. Of the 22 garment firms, only 7 firms had independent training budgets; 6 of these were large firms (which spent an average of 0.23 per cent of sales on training). The top two large firms each spent 1.24 per cent and 0.80 per cent of their sales on training.
- Large firms gave more emphasis to overseas training than SMEs. The large firms typically sent their employees for in-plant training in factories belonging to their foreign buyers (or parent companies) and for specialised courses in overseas technical institutes in areas like quality control product and design. The SMEs, with less resources and information than large firms, typically sent workers to courses at local institutions such as IVTB or EPZDA.

## 4.4 Training Needs by Main Exporting Activities

The 1995 survey of training needs by the Ministry of Manpower Resources and Vocational and Technical Training provides valuable insights into some of the specific skill needs of industries of main interest to this study: textiles and garments, electronics, and information technology. These are reviewed briefly and selectively below, with the addition of insights from other reports.

### 4.4.1 Textiles and Clothing

The Ministry survey describes the industry as follows: "15% of local enterprises are vertically integrated in the textile and fabric sub-sector where automation has led to higher productivity. In the garment sub-sector installation, training and technical support from equipment manufacturers and local representatives have helped to modernise. Computerised precision cutting has

Table 4.10 **Emerging Skill Needs in Textile and Garment Manufacture**

| Occupation | New Skills Needed |
|---|---|
| Knitting, dyeing and spinning operators | Technical skills for operating and maintaining automatic and semi-automatic machines. |
| Garment assembly operators | Multi-skilling to be able to operate different kinds of machines |
| Maintenance technicians | Knowledge of new machines and materials. Ability to train operators. |
| Designers and product developers | Computer aided design, more imaginative designs |
| Pattern makers, graders and cutters | Computerisation of systems |
| Supervisors | Engineering skills for line balancing and work loading; cost and quality consciousness; team leadership; train operators. |
| Time and motion study technicians | Upgrading skills to meet market changes. |
| Engineers | Greater productivity consciousness; adapt machines to gain flexibility; develop preventive maintenance; training |
| Quality controllers | Higher levels of quality consciousness; familiarity with ISO 9000 standards and system needs. |
| Sales executives and merchandisers | Customer driven, computerised information systems. Ability to do market research and follow competitive trends |

been introduced in one or two large firms only. The use of such technologies can bring up to 15% gains on material usage and reduce waste." (p. 114). Each activity is undergoing technological innovation and demands improved skills on the part of operators, technicians, supervisors, cutters, designers, engineers and quality controllers. The following table sets out the new skills needed.

The survey finds that existing training facilities cannot meet the changing demands on all these new skills: IVTB and university courses do not cater for the whole range. Many operators have low educational attainments, and need special courses to upgrade not just their working skills but also their team spirit and quality awareness. Since working in the EPZ sector is not considered prestigious, few places are created at the education and training institutions. Moreover, the provision of training by itself is unlikely to be enough to raise skill levels sufficiently; changes in remuneration and promotion practices, worker attitudes and the status of EPZ work will also be very important.

The World Bank (1994a) report on 'Technology Strategy for Competitiveness' notes the emerging *skill requirements* in EPZ firms, grouped by the following categories:

- **Linkage capabilities:** Clever marketing will be needed to respond to fast-changing markets, and developing a marketing capability would be needed to increase, even maintain, value added. Good sourcing skills and information will be essential for obtaining the best fabrics needed to respond to changing market conditions.
- **Pre-production:** Mastery of CAD/Cambridge to minimise the time needed to generate new styles, save waste and produce samples quickly. Testing capabilities to ensure that fabrics meet customer requirements and to produce counter-samples of products where specifications are not provided by buyers.
- **Production:** More sophisticated sewing machine operators to make more complex

patterns and motifs. Flexible, 'polyvalent' operators able to switch quickly between different lines and patterns. Optimisation of production organisation, in particular conveyor systems. Advanced maintenance skills to keep capital-intensive facilities running smoothly. Improved quality management skills, backed by efficient cost accounting, inventory management and production control systems.

- **Innovation and adaptation:** Fashion design capabilities and R&D are needed to raise value added. Technology intelligence is needed to keep up with changing technologies and equipment. Imported equipment has to be adapted to local conditions to optimise performance.

In terms of the *supply of skills* for the industry, the Textile Unit at the University of Mauritius offers a Certificate in Design (1 year) and a Diploma in Textile Technology (2 years) since 1986. There are around 20 places for each course, but demand for new places is not large as candidates tend to prefer management rather than technical courses: this is an undesirable perception that needs to be changed if the industry is to undergo sustained upgrading.

The IVTB Textile Training Centre has offered training since 1989 in garment making, including (1) pattern making, cutting and design; (2) grading and sewing; and (3) construction of apparel, together with supervisory training and training for trainers. There are around 30 applicants for each of these three courses.

Most employers prefer to give in-house training rather than send workers to other institutions. The larger firms have their own training centres, and in 1991 around 93% of trainees received in-house training. However, SMEs cannot provide such training and need easily accessible centres rather than one central one in Coromandel. Releasing staff for external training is an important problem, and is one reason why in-house training is preferred.

Apart from the two main training institutions above, there are several other centres that offer related training not specifically oriented to textiles: MEPZA, MEF, EPZDA, MSB and SMIDO. Of these, the ones worth noting are MEPZA, which offers courses in quality control and productivity measurement, EPZDA, which trains designers and product developers, production control and planning, engineering skills and testing and TQM. The MSB gives training on ISO 9000 and statistical process control.

Taking all these provisions together, however, there remains a wide gap between the need for skilled operators (estimated at 12,000) and the number of places (30 candidates twice a year). The use of foreign labour does not provide a long-term solution, though it does meet the immediate need for skilled personnel such as engineers, dyeing masters, technicians and production managers. The Ministry report gives various proposals for different types of diplomas and certificates that will be needed. It also notes the proposal for setting up a Textile Institute and the need for a general adult literacy programme to prepare people better for future skill needs.

Given the central significance of the textile and garment sector to future export growth, it is crucial to take these proposals seriously. The setting of a Textile Institute would seem to be a particularly good one, especially in order to provide *design training*. As the World Bank (1994a) argues:

> *"The experience of the Asian NIEs suggests that developing local design capabilities can play a key role in helping firms to increase value-added and sustain their competitiveness despite high labour costs. Over the span of a decade or so, Hong Kong and Singapore have succeeded in developing local brand names and are now recognised as distinctive and innovative design centres... The experience of both Hong Kong and Singapore shows that building an internationally recognised design*

*capability may require substantial financial and promotional assistance from the government. Such assistance would involve sending local designers abroad for training, and attracting a few foreign designers to teach and operate in the island for a period of time... It is clear that building capability and reputation in fashion design is likely to be a long, difficult and costly process during which many of the trainees may initially seek jobs overseas rather than contribute to local upgrading." (paras. 6.33, 6.35)*

The Indian government has also sponsored a National Institute of Fashion Technology (NIFT) which is regarded within the country as a great success in upgrading the quality of garment design. Box 4.3 describes the NIFT and a recent World Bank project that is helping it to reach out to small garment firms.

The assessments made of training needs by the Ministry are naturally based on the existing structure of the textile and garment industry. However, one of the arguments of this study is that a long-term upgrading of the industry to

## Box 4.3 National Institute of Fashion Technology, India

The National Institute of Fashion Technology (NIFT) was started in 1986 by the Indian government, under the Ministry of Textiles, in New Delhi to train fashion technologists, provide industry with up-to-date information and help craftsmen and manufacturers, with the main focus on the textile and garment industries. It received collaboration from the Fashion Institute of Technology, New York, the Nottingham Trent University (UK) and IFM, Paris. Within a few years its services were in such demand that various regional centres have been set up, including Bombay, Ahmedabad and Bangalore.

NIFT offers diploma and certificate courses to full and part-time students as well as training to industry personnel. The main campus has 40 faculty, around 70 specialised guest teachers and 486 students. The main programme is a three year diploma on fashion design, whose trainees find instant employment in industry as designers, pattern makers, stylists, co-ordinators and fashion illustrators. There is also a 3 year diploma in accessory design. It is not just the garment industry which seeks these skills but also makers of costume jewellery, leather goods, precious jewellery and other accessories. NIFT also offers a number of 2 year courses: apparel marketing and merchandising; garment manufacturing technology; leather garment design; knitwear design and technology; textile design and development. Admission is purely on merit, and a number of the top designers in India today are graduates of the NIFT.

NIFT has a well stocked library on Indian and foreign designs and materials. Its Resource Centre conducts fashion forecast seminars in major garment manufacturing centres in the country, and has compiled a directory of resources used by the garment industry. It gets constant feedback from industry on its designs and training programmes, and is constantly redesigning its courses to meet industrial needs.

NIFT is implementing the World Bank project to improve its CAD training facilities for industry and to provide design consultancy services for smaller garment firms. There has been growing demand for such consultancy as SMEs have sought to upgrade their export activities, and NIFT plans to develop a network of linked computer design facilities with manufacturers (initially in the region near to Delhi). This would greatly speed up the process of disseminating new design concepts to firms, improving their flexibility and response times.

levels of quality and design found in Europe would require a shift in the structure to more flexibility and specialisation, with clusters of SMEs working around design houses and larger firms. Without such a development it is difficult to see how Mauritian firms will maintain a competitive edge after the MFA goes. To foster Italian-style industrial districts (it should be noted that such clusters are now found in several activities industries in many developing countries, see Schmitz, 1995) would require a broader base of technical, design and entrepreneurial training, as well as other measures to promote subcontracting, financing and infrastructure. These will be taken up later.

### 4.4.2 Information Technology (IT)

One of the important avenues of future development in Mauritius has to be based on the extensive use of IT (World Bank, 1994a), defined as "the use of computer technology to process and distribute information" (p. 63). The pervasive use of IT means that it will cut across all economic sectors, from manufacturing and tourism to transport, design, banking, education and health, all potential areas in which Mauritius could develop a comparative advantage in the region. The Mauritian government needs to formulate a bold and comprehensive strategy to develop the human resources for the IT sector. Concepts such as Singapore's 'intelligent island' and Malaysia's 'multimedia super-corridor' are examples of how other forward-looking governments are gearing up to provide both the physical infrastructure as well as the skill needs of this emerging technology.

The Mauritian government has been encouraging computerisation and has set up several institutions to promote IT: National Computer Board; Central Informatics Bureau; State Informatics Limited; and Sitrac Limited. The NCB is responsible for developing a computerisation strategy for the nation. CIB co-ordinates the Civil Service computerisation programme. SIL is responsible for systems design, development, implementation and maintenance of computerised information in various bodies. Sitrac is charged with the training of the Civil Service and the public at large. The private sector also has a number of training centres and several firms dealing with hardware and software. However, these are mainly sales and service agents: domestic development of software is very limited. This is important because the government hopes to promote software exports as an important form of diversification.

The government has removed all duties from imports of computer hardware and software and offers financial and fiscal facilities for the development of the IT industry in Mauritius. However, there is a general lack of awareness of the benefits of IT and so a lack of commitment to its development. Total expenditures on IT development come to less than 1% of GDP; less than 10% of the total turnover of the IT industry come from software development. Companies lack the expertise to develop large-scale and complex computerised information systems. The cost of telecommunications services for the dissemination of computer data are high.

Currently there are about 1200 people working in the IT industry, of whom about 300 are graduates and 230 are diploma holders in computing. In more recent years, the setting up of the Informatics Park in 1994 has attracted foreign investors into the software industry. The Informatics Park, which cost US$ 2.7 million, provides good infrastructural facilities for data transmission including integrated services digital network (ISDN), high speed international digital leased lines, and a video-conferencing studio. Enterprises located within the Informatics Park are also eligible for fiscal incentives under the Export Enterprise Scheme and the Pioneer Status Enterprise Schemes (see Chapter 7) as well as subsidised dedicated telephone lines. By late 1996, there were 15 firms located in the park employing 225 people (including 45 software engineers). Of these, 4 are from the UK, 2 from France, 3 are French-Mauritius joint ventures, 1 is from Singapore, 1 is a US/UK joint venture and 1 is a US/Mauritius joint venture. This is a

promising start that needs to be strengthened to generate a new export based industry. However, it is difficult to see it becoming a major employer source of export revenue in the short-term, given the intensity of competition in this industry throughout the developing world and the relatively high wages in Mauritius. The small size of the economy and the paucity of training facilities means that the range of skills and specialisations that can be developed are limited, in comparison, say, to the industry in India (which is now claimed to employ some 700,000 software personnel). Smaller competitors are emerging in Latin America, the Caribbean and South East Asia, and East Europe offers strong prospects for high skill IT work in the future. Mauritius would not have a comparative advantage in low-end data entry work, for which there would be many cheaper locations available. For more advanced work, its competitive edge can only lie in some very special niche markets; publishing is an area that has been identified and seems to hold promise.

However, the real potential for IT in Mauritius lies in developing a competence in using it across the whole range of economic activities; this would enhance the competitive edge of Mauritian industry and services in international markets in many different ways. Financial services, transport and shipping, education and training, design and marketing, technology transfer, and other forms of trade facilitation could become important export activities to the African mainland if Mauritius could establish and maintain a lead in IT skills and infrastructure. At this time, this is certainly a real possibility.

On training needs specifically, the Ministry report notes that the University of Mauritius offers a four-year course on Computer Science and Computer Engineering, which started in 1990 and offers 25 places per year. In addition, about 20-30 graduates in this field return from overseas universities. This comprises a very small amount of high level IT training. The Centre for Business Studies of the Mauritius Chamber of Commerce and Industry offers a 2 year full time course (called BTS), as well as a 1 year diploma. There are 28 training institutions registered with the IVTB, but only a few offer award courses in computer studies. The rest offer short term courses in word processing, database programming and elementary programming. These courses need to be thoroughly and regularly monitored and evaluated. World Bank (1994a) noted that IVTB programmes themselves were at a low level and did not include courses in computer hardware, software or networking; it is not known how much better the situation is today. The Lycée Polytechnique is to be upgraded to diploma level in this field under the education master plan. The Mauritian Chamber of Commerce and Industry Business Training Centre offers a 2 year programmer analyst programme and a 1 year diploma.

In general, there is a lack of co-ordination in strategy formulation for IT human resource development in Mauritius, and insufficient commitment of resources for this purpose. This can be contrasted to Singapore where a strategy was formulated in the early 1980s to increase the number of IT specialists produced annually from 800 to 8000 within a decade. *The goal was achieved ahead of schedule:* by 1990 there were 1200 IT graduates being produced each year from the university and two polytechnics.

In the private sector, industrial firms are reluctant to invest heavily in employee training because of the cost and high turnover rates (World Bank, 1994a). Some official intervention is needed to subsidise and encourage such training, along the lines adopted in Singapore. In addition, special provisions may be needed to improve IT skill formation in SMEs.

On the demand side of training are the government, banking, manufacturing, agriculture and tourism. The training has to start at the secondary school level, and this has been tackled in the Education Master Plan subject to the availability of trained teachers. Many young graduates in IT lack the experience to be employed in this field by enterprises. There is no standard job clas-

sification in this field, making it difficult to assess the competence of IT professionals. It is important to develop such a classification and set up minimum criteria that must be met. These criteria have to be constantly adapted to changing technological needs. The Ministry recommends comprehensive training programmes at all levels.

### 4.4.3 Electronics

The electronics industry is under-developed in Mauritius. It consists of 17 enterprises employing around 1 thousand persons. The domestic market oriented sector consists of firms assembling TV sets, domestic appliances, alarm systems and PABX systems. There is only one printed circuit board manufacturer. The export-oriented sector consists of electronic watch assemblers, PH meter assemblers, a quality crystal preparation plant and a high precision coil winding operation. There is also a service segment that consists of supply, installation and maintenance activities.

Mauritius has not got into the export-oriented electronics activities that have driven export growth in South East and East Asia, such as semiconductors, components or consumer electronics. The boom in relocation of these activities to take advantage of lower production costs is far from over. It still continues in Asia, with Philippines the last entrant into the field (its cheap and well educated workforce is now attracting Japanese and other firms into not just assembly, but also design and other high level activities). Mauritius' unfavourable location (and the limited incomes and growth prospects in neighbouring Africa) and its relatively expensive labour are important explanatory factors, but the *lack of technical skills and supporting industries and services* also contribute to explaining why electronics has not followed the garment industry into the country. The fiscal incentives and infrastructure are not deficient, and workers seem to prefer the electronics to the garment industry.

The Ministry report notes that existing electronics firms seek to minimise labour turnover, so emphasise training, both formal and informal. Enterprises note four types of technical deficiencies:

- Insufficient practical knowledge among newly recruited technicians;
- Absence of reliable approach to diagnosing technical defects and ensuring repairs;
- Difficulties in adapting to changing technologies and products;
- Poor marketing skills.

Training is provided at the certificate level by 7 private training centres registered with the IVTB. At the certificate and diploma levels, the main training centres are: IVTB Electronics Training Centre; Lycée Politechnique Flacq; and the Sir Kher Jagatsing and Professor Uppadaya Training Centres. The University of Mauritius offers electrical and electronic engineering degrees, with around 15-20 degree holders qualifying each year. The total number of electrical and electronics engineers registered with the Council of Professional Engineers is around 100.

The Ministry report proposes automation of industrial processes as a major priority for skill development, as well as the training of trainers and of marketing personnel. Again, the assessment of skill needs is based on the existing industrial structure and the perceptions of firms in the country, rather than a strategic one of what Mauritius may need in order to attract electronics firms to the country.

A report prepared by two Irish consultants is more revealing in terms of strategy (Kelly and Kelly, 1992). Drawing upon the experience of their home country in attracting leading electronics MNCs, and on the strategies of some East Asian countries, this report lists products that are likely candidates for export-oriented production in Mauritius (the list is considered in the previous chapter). This list may be out of date now, and in this fast changing industry it is imperative to take stock again of what may be feasible for Mauritius, and the policy actions needed to build up the skill base. This report

comments favourably on the skills produced for the industry by the Siemens Training Centre at the IVTB, with its blend of practical and theoretical instruction.

It is suggested here that the electronics industry should not be underestimated for future export growth, though there seems to be a general impression that Mauritius has 'missed the boat'. The continuing relocation of facilities in Asia (and parts of Latin America) suggest that there is plenty of scope still for export-oriented FDI. If Mauritius could build up the human capital base in IT and improve its SME structure so that a domestic supplier and service base develops, it is possible that it could become a staging post for the African continent. As with most of Mauritian strategies, much depends on the future growth in Africa, but even modest, if sustained, rates of growth can offer enormous opportunities for a small economy.

# 5

# Technological Performance and Support

## 5.1 Introduction

Technological effort in manufacturing may be formal – research and development (R&D) in facilities separate from production, devoted to analysing the underlying basis of product and process technology and developing new technologies – or informal, at all points of the system as part of production – shop-floor layout and maintenance, process optimisation, quality management, industrial engineering, procurement, raw material adaptation and so on. Both are important to competitiveness. In developing countries, it is clearly informal forms that predominate, though productivity raising efforts are very important in all countries. Formal R&D efforts are mainly concentrated in the advanced industrial countries, but they also become important in developing countries as the industrial structure evolves and more complex processes are adopted. R&D is needed, not to 'innovate' but to absorb new technologies and keep up with technological trends.

Informal technological effort is vital to the building of competitiveness at all levels of development and for all types of industries. It is the enterprises that gain greater efficiency that succeed in competitive markets, and it is countries that produce a larger proportion of efficient firms that become major exporters. Mastery, adaptation and improvement of technology require conscious effort and investment. They involve risk and waiting, even if the technology is well-diffused elsewhere. They require the creation of new skills and information, by investments in training, searching for new technical knowledge and experimentation. Much of the effort takes place within individual firms, but a vital part depends on drawing upon other firms and upon institutions that provide inputs that industrial firms cannot. It is now widely accepted that the success of the NIEs has been driven by such investments in building technological capabilities, and that government policies have been vital in giving firms the signals to invest in capabilities and providing support for training and technology development.

*The official technology support system plays a vital role in enabling firms to undertake the kinds of technological effort that they cannot manage individually.* It provides the basic infrastructure of technological activity, a common 'language' for firms to base their technology (for instance by setting common standards), information that is not otherwise available and a means of undertaking research and troubleshooting on a contract or shared basis. For SMEs, clearly, an effective technology support service can be an invaluable input into technology upgrading. As shown later, the NIEs, even the *laissez faire* Hong Kong, mounted comprehensive measures to help SMEs, generally with generous financial support and subsidies.

## 5.2 Comparative Technological Performance

Table 7.1 shows R&D expenditures in Mauritius in comparator countries as a percentage of GDP for the most recent available year. Korea is included in the comparison, since it has the highest R&D expenditures in the developing world (and ahead of most OECD countries with the exception of the few technological leaders). Bangladesh is left out because there are no data available, but the figures are likely to be very low. Total R&D is shown separately from that performed by productive enterprises. It is the

latter that is most significant for industrial performance, since total R&D includes work on non-manufacturing activities and even when it is ostensibly on industry, tends to be fairly isolated from industrial needs.

Table 5.1 **R&D Expenditures as Percentage of GDP in Mauritius and Selected Asian Countries**

| | Total RD | Enterprise RD |
|---|---|---|
| Mauritius | 0.37 | 0.01 |
| Singapore | 1.0 | 0.6 |
| Taiwan | 1.7 | 0.8 |
| Korea | 2.1 | 1.8 |
| Malaysia | 0.4 | 0.2 |
| Thailand | 0.2 | 0.03 |
| India | 1.0 | 0.2 |
| Sri Lanka | 0.18 | 0.02 |

*Source:* UNESCO (1995).

The table shows that Mauritius has the lowest proportion of R&D financed by productive enterprises in the group (though its total R&D is higher than Sri Lanka and Thailand, because of R&D in sugar). Singaporean enterprises spend 60 times more on R&D as a proportion of GDP than Mauritian ones; the Singapore government also invests a lot in R&D, and targets areas for development, such as biotechnology in the 1990s, setting up public sector research institutions, attracting the best people worldwide and encouraging link-ups with industry. It also gives strong incentives to MNCs to set up R&D facilities in the island. Note that Thailand also performs very little enterprise R&D (0.03%), but has managed considerable diversification, based on FDI-driven assembly activities; however, the lack of local technological capabilities is now restricting its ability to diversify and upgrade its industrial structure. Malaysia is slightly better, since over time, assembly has deepened into more complex activities that require local research into process design (Lall *et al*, 1994).

The export-oriented Tigers, Korea and Taiwan, with the deepest local technological bases and strongest indigenous enterprises, invest most in R&D: this is what drives their export engine into more and more sophisticated activities. It is interesting nevertheless to note the differences between them. Some 80% of Korean R&D comes from enterprises compared to around half for Taiwan. The difference is due to the industrial structure: Korea is dominated by the government created chaebol, Taiwan by SMEs. The former are large enough to internalise the risk and investment involved in massive R&D, while the latter depend heavily on official institutions to do their R&D for them. For this reason, Taiwan has the most effective technology extension and contract research service anywhere in the developing world.

While the low levels of R&D spending by Mauritian enterprises may not be a cause for concern at this time, two things have to be borne in mind:

- Given the rapid pace of technological upgrading needed, the private sector should invest more in R&D as it moves into more complex technologies.
- The SME sector should be supported by effective technology support, including design and development services, by public institutions.

## 5.3 Technological Capabilities in Mauritian Firms

About half the garment industry in Mauritius operates at the low-quality segment and the remainder at the medium-quality segment (World Bank, 1994.a, pp. 13-15). In the former (T shirts and garments using synthetics), skill, equipment and design requirements are minimal; competitiveness depends mainly on price, i.e. on low wages and low margins. These firms are suffering the most from the erosion of wage advantages and in the long-term they are not expected to survive in this segment. In the medium quality segments, competitiveness "is a function of design, quality and delivery, as well as price. Since the

1980s, these requirements have prompted progress in international technology, notably the computerisation of design, cutting, sewing/stitching and production/organisational techniques" (World Bank, 1994.a, para. 2.25). How do Mauritian firms rank in respect of these technological advances? To sum up the findings of the World Bank (1994.a) survey of technology:

**CAD:** A number of medium and large Mauritian firms have adopted computer-aided design and manufacturing. Computer aided cutting is rarer, since it is much more expensive; however, some large firms have made the necessary investment; wider application of this technology is, however, needed if quality is to be raised in general.

**Sewing and stitching:** Computerised sewing and stitching reduces labour costs, cuts defects, realises more complex designs and compresses switch-over time. The bulk of Mauritian firms still rely on outdated basic sewing machines, where they cannot really compete with cheaper labour. The move to more expensive machines is constrained not just by the high cost, but also by the work culture (the need to work night shifts to justify the cost) and the need for maintenance services.

**Automation of peripheral activities:** Pressing, folding and packaging are generally manual, though their automation could yield significant gains in productivity at prevailing wage levels.

**Production organisation:** Work-flow organisation and production control have a critical impact on efficiency and costs in the garment industry, especially in large firms with complex production lines. Most firms in Mauritius follow the traditional 'bundle' rather than computerised routing systems, leading to creasing, soiling, long through-put times and high in-process inventories. One firm which adopted automated conveyors achieved considerable productivity gains. However, the systems are skill and management intensive, and their adoption would necessitate significant upgrading of both. On the shop floor, traditional 'taylorian' assembly lines are common, with each worker engaged in a narrowly defined task and with minimal training and skill requirements. This system requires a large number of sequential work stations (e.g. 10-15 for shirts), which slows down the production cycle, increases quality control problems and raises inventory requirements. It is also relatively inflexible when new production runs are needed. In modern organisation systems, workers are involved in several operations, with shorter turn-around times, better quality control and greater flexibility. This calls for higher levels of skill and motivation than is presently available in Mauritius: achieving it would call for much more training and education effort.

**Quality management:** This, according to the World Bank, "needs dramatic improvement". Average reject rates in Mauritius are around three times higher than in developed countries, despite the use of considerable numbers of QC personnel on the line. Few firms have good systems that would prevent the defects from arising. As will be discussed in Section 5.4.1, the spread of ISO 9000 accredited quality management systems is greatly to be welcomed in this context. Foreign buyers arrange for pre-shipment quality inspection tests of products, but do not provide other quality control services. The International Wool Secretariat provides quality inspection for the Woolmark label and its visiting experts also provide advice: their help has improved the pass rate for Woolmark licenses in Mauritius from 60% in 1988 to 95% in 1992.

**Management information and production control:** Cost accounting and 'early costing' are not common, but need to be increasingly used to allow firms to quantify precisely the profitability of various products, to target costs that need to be decreased and to discontinue unprofitable lines. Computerised inventory control is necessary to speed up response and cut costs. Computer integrated manufacturing techniques are necessary to monitor work in progress, assist production planning and check operator performance.

Our enterprise-level survey sheds recent additional insights into the nature of imported

Table 5.2 **Contractual Technology Imports in Textile and Garment Enterprises**

| Category | No. of licences over last 5 years | No. of times foreign technical consultants were used in last 5 years | Expenditures on foreign technical consultants in 1995 (% of sales) |
|---|---|---|---|
| SMEs | 0 | 0.5 | 0.23 |
| Large & giant Firms | 1 (a) | 5.8 | 0.41 |

Notes: (a) Trade-mark.

technology and technological capabilities in large & giant firms (above 251 employees) and SMEs (below 250 employees) in the textiles and garment industry. The discussion falls under three main headings: contractual and informal technology imports, process technology and product technology.

**Contractual and informal technology imports.** In the NIEs, formal technology contracts have been a crucial means of acquiring technology from abroad and upgrading local technological capabilities. However, this was less so of the Mauritius sample. Table 5.2 provides information on two forms of technology contracts (foreign licences and foreign technical consultants) used by the sample firms.

There was only one licence in the sample and it was held by a large, foreign affiliate rather than an SME. The use of foreign technical consultants was more widespread but large & giant firms (5.8 times in the last five years) made significantly more use of them than SMEs (0.5 times). As a percentage of sales in 1995, the large & giant firms (0.41 per cent) also spent nearly double that of the SMEs on foreign technical consultants (0.23 per cent). The best firm, a majority-foreign owned firm, used foreign technical consultants 21 times in the last five years and spent 1.6 per cent of its sales on foreign technical consultants in 1995.

The MNC affiliates also obtained regular technical assistance on all aspects of textile and garment production from their parent companies; four MNC affiliates said that they received at least three visits from their parent's technical staff in 1995. Of these, one affiliate received 12 such visits and another 9 visits. There was also some evidence of use of more informal sources of technical assistance in the sample. Some large local firms and MNC affiliates said that they received technical assistance from their foreign buyers. One garment MNC affiliate said it was involved in a stable, long-term marketing arrangement with a well known fashion house in Europe which bought 40 per cent of its output in 1995-96. In an attempt to ensure that the affiliate's quality conformed to the demanding international standards in the medium to high quality segment of garments, it insisted that the affiliate set up a dedicated production line for its order and it stationed five technical personnel in the Mauritius plant for the duration of the order. By the end of the order, the affiliate's average reject rate fell to 0.5 per cent and there was a general improvement in its process technology. There were similar instances of technologically dynamic buyer-seller relationships involving large local firms, but such relationship seemed to be less common in SMEs.

**Process technology.** Process technology can be considered under several headings such as quality control, maintenance, inventory control. We shall focus largely on quality control, maintenance and improvements to equipment and processes because of the lack of data on inventory control and improvements to equipment and processes in the sample firms. Table 5.3 presents information on average internal defect rates for the main products, the number of ISO9000 certified firms and the share of full-time maintenance manpower.

The data suggest that there has been an improvement in quality control efforts in both large & giant firms and SMEs since 1993, as evidenced by the fall in defect rates. However, large

Table 5.3 **Quality Control and Maintenance in Textile and Garment Enterprises**

| Category | No. of firms recording defects | Av. internal defect rates for main product (a) | | No. of ISO 9000 certified firms (b) | Full-time maintenance manpower (% emp.) |
|---|---|---|---|---|---|
| | 1996 | 1993 | 1996 | 1996 | 1996 |
| SMEs | 8 | 8.0 | 3.9 | 0 | 1.8 |
| Large & giant firms | 10 | 6.9 | 2.6 | 2 | 2.4 |

Notes: (a) Internal defect rates are the % of finished products which are rejected at final inspection.
(b) Apart from these, 4 large firms and 1 SME was in the process of ISO 9000 certification.

and giant firms (2.6 per cent) still currently record lower defect rates than SMEs (3.9 per cent). In addition, more large and giant firms have moved into comprehensive quality management by adopting the ISO 9000 quality management standards to enhance their export competitiveness than SMEs; 2 large and giant firms have been certified and another 4 are in the process of obtaining such certification. One large garment MNC affiliate, which had ISO 9000 certification, had a full-time quality control team of 350 people (equivalent to 6.1 per cent of total employment). In contrast to the large and giant firms, the SMEs seemed to pay less attention to quality management. Most SMEs tended to rely on final inspection only rather than a comprehensive quality management system and employ only one or two full-time personnel. In some cases, the entrepreneur did *ad hoc* checks on finished goods and reject rates were not recorded. Only one SME was in the process of obtaining ISO 9000 certification. A few of the SMEs that the mission interviewed seemed unaware of the existence of the ISO 9000 system and its many advantages, including the improvement of quality, more rapid productivity growth and increasing the attractiveness to foreign buyers. One SME said that the cost of implementation was too high for it to adopt.

Moreover, large & giant firms seemed to have better maintenance capabilities than SMEs. Nearly all the large & giant firms had a regular routine for maintenance and servicing of equipment, a maintenance shop with specialised equipment and a relatively high ratio of maintenance personnel in employment (2.4 per cent). For instance, one large local textile firm had a maintenance department of 100 technicians and a textile affiliate had one with 61 technicians. By comparison, with some exceptions, the SMEs tended to undertake repairs when their equipment broke down, had a lower ratio of maintenance personnel in employment (1.8 per cent) and lacked a maintenance shop with specialised equipment.

**Product technology.** There is considerable variation in the emphasis paid to product technology in the sample firms. At one end are the large and giant firms which use foreign buyers for their new products and designs and have attempted to create independent design capabilities by hiring trained designers and investing in computer-aided design (CAD) systems. On the other are SMEs which rely heavily on foreign buyers or local local firms for products and designs, but typically lack independent design capabilities. Table 5.4 provides information on the number of firms with product designers and the number of major new products introduced per firm in 1993-96. The data indicate that more large and giant firms have full-time designers than SMEs and that large and giant firms have created more new products than SMEs.

The mission was particularly impressed by the acquisition of design capabilities in large local firms. For instance, one large local garment firm had set up a fully-equipped design centre with the latest CAD facilities from Japan and employed two overseas trained designers and 10 assistants. The firm said that it was able to offer several styles of a particular garment for foreign buyers to choose from. This was by no means an insolated case.

Another large local garment firm had a CAD system and a nine-strong in-house design team. Such design capabilities seem to put Mauritius garment firms ahead of rival garment exporters in competitors like Sri Lanka, Bangladesh and Vietnam. Recent studies of garment firms in Sri Lanka found that even large local firms tended to rely heavily on foreign buyers for new products and designs and have not invested very much in creating independent design capabilities (see Box 5.1).[39]

Table 5.4 **Designers and New Products in Textile and Garment Firms**

| | No. of firms with full-time designers 1996 | Average number of new products introduced per firm 1993-96 |
|---|---|---|
| SMEs | 2 | 1.3 |
| Large & giant firms | 8 | 3.2 |

## Box 5.1 Industrial Technological Capabilities in Exporting Enterprises in Sri Lanka

After liberalisation in 1977, Sri Lanka's manufactured exports grew at 20.7% per year in 1980-95. By 1995, the country's per capita exports were US$ 153.1, the highest in South Asia. Much of the export growth was due to the rapid expansion of a single dominant export, garments, while the other manufactured exports (including technologically sophisticated items like electronics and engineering products) have grown relatively weakly and account for small export shares.

A recent study relates the pattern of export growth and upgrading to enterprise-level technological factors in the three Sri Lankan industries (garments, electronics and light engineering). The study found that operating capabilities in all three Sri Lankan industries seem to be quite good at low levels of technological sophistication. However, the ability to develop new products is weak and none of the firms appears to undertake process-centred R&D activities. Industrial engineering as a distinct category does not exist. There are few inter-firm linkages (in the form of supplier or subcontracting relations) or linkages between firms and technology institutions.

The study also highlighted industry-wise differences in technological capabilities in the sample firms which seem to be related to their export performance.

- *Garments* firms, which have shown the strongest export growth, seem to have the best technological capabilities. They are quite efficient at selecting technologies, quality control and maintenance. They have good linkages with technology institutes (particularly the Clothing Industry Training Institute) and have initiated some sub-contracting relations with smaller local firms. However, their ability to design new products seems to be weak and they do not conduct any process (or product) centred R&D activities.
- *Electronics* firms, which have grown relatively slowly, have demonstrated fairly efficient quality control and maintenance capabilities. However their ability to select new technologies, design new products and strike local linkages, is weak. Furthermore, they have only just begun to undertake, on a very small scale, some product-centred R&D.
- *Light engineering* firms, which have grown relatively slowly, have shown reasonable capabilities to select technologies and some ability to design new products. However, basic process engineering capabilities in the form of quality control and plant layout changes seem weak. In addition, there has been little attempt to strike local subcontracting linkages or make use of technology institutions.

*Source:* Wignaraja (1997a).

In general, while a few large garment firms in Mauritius are adopting best practice management techniques, the industry as a whole lags behind – a major competitive handicap as it moves into the higher value added segments of activity. Many of the techniques and systems are fairly costly, and almost all require upgrading of management, operative, supervisory and maintenance skills. It would seem that all but the largest firms would need government assistance in restructuring and investing in these new techniques and skills. Many governments in East Asia have launched special textile programmes to fund their industries in precisely such efforts.

The main gap is for the smaller enterprises which are presently low level subcontractors for foreign buyers or for large local firms. These firms are rapidly 'going under' whereas they could form the backbone of a long-term response strategy. As noted below, the fostering of flexible specialisation in the form of industrial districts would seem to be one important way forward for upgrading the Mauritian garment industry, but the tendency has been the opposite, with the larger firms doing much better than small ones.

## 5.4 Technology Support Institutions

### 5.4.1 MSTQ: MSB

The Mauritian Standards Bureau (MSB) is the official body in charge of MSTQ (metrology, standards, testing and quality) services in the country. There are also a number of other testing laboratories in the country, some within the larger companies and others in the local SGS (*Societé Generale de Surveillance*) office and Industrial Wool Secretariat. MSB was set up in 1975 under the Ministry of Commerce and Industry, and was made into a corporate body in 1993. It has a total staff of 63, including some 30 scientists, engineers and technicians. Its recurrent budget in 1995-96 was Rs. 15 million ($800 thousand), of which its own earnings contributed Rs. 3 million (20%).

The MSB was assisted by a World Bank project on 'Technical Assistance to Enhance Competitiveness': this component consisted of a loan of $3.5 million plus $1.4 million from the government. This allowed its equipment to be upgraded, a new purpose-built headquarters to be set up and its staff trained. A twinning arrangement was made with the Singapore Institute of Standards and Industrial Research (SISIR) to upgrade its expertise. The project and the twinning arrangement have greatly enhanced its capabilities.

There are 6 divisions in the MSB:

- Standards development division: which plans, co-ordinates and supervises the formulation of national standards. It has formulated 96 standards, mainly for products aimed at the national market. It is also the repository for international standards, and participates in technical committees of the International Standards Organisation (ISO).
- Quality assurance division: which operates the Bureau's certification marking scheme and national quality system certification scheme, giving a two year renewable licence when a producer meets its quality tests. This division certifies firms with ISO 9000 quality management systems, but to prevent conflict of interest does not give consultancy services.
- Metrology division: provides calibration services and is the repository of national standards of measurement for mass, length, voltage, force, pressure and temperature.
- Engineering division: with three sections on civil engineering, electrical and electronic engineering and mechanical engineering. These divisions provide specialised testing services, technical advice, and help to the quality assurance division.
- Chemical division: which deals with chemical technology, food and agriculture and fibre technology. As with the engineering division, this provides testing services and technical advice.

- Documentation and information centre: which has a collection of over 125 thousand standards from 400 standards bodies around the world on CD ROM. It is also the designated enquiry point for standards, technical regulations and conformity assessment procedures in force in Mauritius under WTO rules.

The Bureau finds that while some (mainly the largest) firms are quality conscious and use its services, most have to be educated in modern concepts of quality awareness. It took some 3-5 years to persuade firms of the importance of getting ISO 9000 certification; there are now 25-30 firms in Mauritius with the certificate of which 9 were certified by the MSB; practically all the certificates are held by large firms, in textiles, food processing and services. The cost of maintaining an ISO certificate with MSB comes to around Rs. 25-30 thousand per year, and is generally higher for large companies. The total cost of obtaining consultancy services, hiring a full-time person and setting up the system comes to Rs. 200-300 thousand for a large firm. While smaller firms need to spend less, even so the costs are high enough to deter most SMEs from aiming to obtain ISO 9000 certificates. However, it is becoming increasingly important in export markets to obtain this certificate even for SMEs, and is important for the government to promote it among them with appropriate incentives.

In testing, the MSB provides services mainly to the textile, chemicals, food and mechanical engineering industries (around nearly 2000 tests and 156 calibrations were done in 1994-95). The quality assurance and testing services of MSB are self-financing, and the degree of dependence on the government has been diminishing over time. The Bureau plans to reach 50% self financing overall soon. The World Bank project has helped it greatly to improve its capabilities to meet the needs of the industrial sector. It competes in the market with private testing laboratories. It is planning, with World Bank advice, to set up a National Accreditation System for testing and calibration laboratories (there are currently over 25 private laboratories interested in accreditation). The quality of some of the private testing laboratories is questionable, and this accreditation service would seem to be a matter of some urgency. The World Bank (1994.a) also noted that there is a lack of testing services in industries such as electronics, and may be deterring inward investment.

MSB runs training programmes on quality management, with the participation of a Scottish firm (Quality Consultancy Services), jointly with MEF, which is its designated local partner in quality training.

We were able to gather some information on the intensity of linkages between the sample enterprises and the MSB from the enterprise survey. Our data showed that of the 34 sample firms, 9 (i.e., 26.5 per cent) had used the MSB at least once in 1995. This included 5 firms in textiles and garments, 2 in food products, 1 in electronics and 1 in chemicals. We also asked firms to rate the usefulness of the quality of service provided by the MSB on a scale of 1 to 5 (where 1 is not useful and 5 was very useful). The results of the average ranking of the quality of service provided suggested that the MSB was rated by the sample firms as useful (4) and three firms rated it as very useful (5).

In general, the mission was favourably impressed with MSB's facilities and dedication, and the growing quality awareness among the larger Mauritian firms. The government has already adopted rules whereby all public purchases have to specify Mauritian standards in their tenders. The only area of possible concern is the expense involved for SMEs in getting ISO 9000 certification and the possible need for government assistance in this (under the Technology Diffusion Scheme, they can get 50% of the cost of technical consultancy). If the idea of promoting flexible specialisation in clusters is go any further, a scheme to promote quality management skills in the SME sector will have to be promoted and financed.

### 5.4.2 Helping SMEs: SMIDO

There are around 4,500 SMEs in Mauritian manufacturing (units that use production equipment of up to $300 thousand), employing 30,000 workers and contributing around 6% of GDP. The institution charged directly with assisting the technology upgrading of SMEs in Mauritius is SMIDO (Small and Medium Industry Development Organisation), which started as the Small Industry Development Organisation in 1983, and took its present name in 1993 when it was made autonomous. The mission of SMIDO "emphasises consolidation, modernisation and enhanced competitiveness of the SMEs with a view to creating a modern, strong, efficient and export-oriented SME sector in the country."

All countries, developed and developing, have in place schemes to meet the special needs of SMEs for information, skills, finance, management training, market information and technology support. Among the Asian NIEs, the Taiwan case is perhaps the most interesting because of the central role of SMEs in the industrial and export growth of the Taiwanese economy. Box 5.1 describes some ways in which the Taiwan government helps its large number of SMEs.

SMIDO has strong private representation, with half its Board composed of private sector representatives. It provides extension services, training, information, marketing assistance and export support for SMEs, encourages subcontracting and provides common facilities. Most of its emphasis is on promoting SME exports, and to this end it helps them in various dealings with the bureaucracy and arranges for buyer-seller meetings (it has also taken Mauritian firm representatives to African countries, with some modest success in creating orders). It is setting up a Subcontracting Exchange and Industrial Partnership Centre (SUBEX) with UNIDO assistance, though at the time of the mission it had not raised the finance needed ($556 thousand). The exchange will start by promoting subcontracting within Mauritius, and after about 4 years is expected to become privately owned. SMIDO is building up a database on contractors, by equipment available, expertise, capacity, technological specialisation and quality of product.

SMIDO has 35 technical and administrative staff (of which, 12 are graduates). It operates a common facilities centre to provide hands-on training and use by SMEs and for the manufacture of spares. While some of SMIDO's budget is earned, nearly 95% comes from a government grant. This is not surprising in view of the nature of its functions and responsibilities, and SME support agencies everywhere receive considerable subsidies (the case of Hong Kong

**Box 5.2 Taiwanese Support for SMEs**

Taiwan has around 700,000 SMEs, accounting for 70% of employment, 55% of GNP and 62% of manufactured exports, and has an impressive set of programs to support them. In 1981, the government set up the Medium and Small Business Administration to support SME development and co-ordinate the several agencies that provided them assistance. Financial assistance was provided by the Taiwan Medium Business Bank, the Bank of Taiwan, the Small and Medium Business Credit Guarantee Fund, and the Small Business Integrated Assistance Centre. Management and technology assistance was provided by the China Productivity Centre, the Industrial Technology Research Institute (ITRI) and a number of industrial technology centres (for metal industry, textiles, biotechnology, food, and information). The Joint Services Centre of the Ministry of Economic Affairs acts as a source of information on SME assistance. The government covers 50-70% of consultation fees for consultancy services for SMEs. The Medium and Small Business Administration has a fund for

SME promotion of NT$10 billion. The "Centre-Satellite Factory Promotion Program" of the Ministry of Economic Affairs integrates smaller factories around a principal one. This program involves vendor assistance and productivity raising efforts, and a rational sharing of tasks between participating enterprises. By 1989 there were 60 networks with 1,186 satellite factories in operation, mainly in electronics.

ITRI was established to do R&D considered too risky for the private sector. While it was to cover a range of industrial technologies (metals, chemicals, energy, and aerospace), electronics has been its principal focus. Its Electronics Research & Service Organisation (ERSO) division accounts for two-thirds of the Institute's $450 million budget. ERSO develops new electronics technologies and diffuses it to industry. It licenses out its technologies and sets up joint-venture companies with funding provided by the government and technical support from its engineers (with private partners taking the majority stake). Its laboratories set up private manufacturing enterprises: six major IC manufacturers in Taiwan are such spin-offs, including the most successful IC makers. In addition, as noted above, the government enters into a joint ventures directly, as with Philips to set up wafer fabrication.

Other institutions include the Institute for the Information Industry (III), complementing ITRI's work on hardware by developing and introducing software technology. The Taiwan Handicraft Promotion Centre supports handicraft producers, particularly small ones with export potential. The Program for the Promotion of Technology Transfer maintains close contact with foreign corporations that have developed leading-edge technologies in order to facilitate the transfer of those technologies to Taiwan. The China Productivity Centre (CPC) is well known for its efforts to promote automation to cope with rising wages and needs for precision and quality. The CPC sends out teams of engineers to visit plants throughout the country and demonstrate the best means of automation and solve relevant technical problems. Over two years the CPC visited over 1000 plants and made over 4000 suggestions for improvement. It also carried out more than 500 research projects on improving production efficiency and linked enterprises to research centres to solve more complex technical problems.

The government encourages private industry to contract research to universities. Half of the National Science Council's research grants (about $200 million per year) funds such contracts, with enterprises providing matching funds. There are four main R&D institutes in Taiwan concerned with manufacturing. The *China Textile Research Centre* was set up in 1959 to inspect exports, but over time expanded to include training, quality systems, technology development and directly acquiring foreign technology. The *Metal Industries Development Centre* was set up in 1963 to work on practical development, testing and quality control work in metal-working industries. It later established a CAD/CAM centre to provide training and software to firms in this industry. The *Precision Instrument Development Centre* fabricates instruments and promoted the instrument manufacturing industry, and had moved into advanced areas like vacuum and electro-optics technology. *ITRI* has already been referred to above. The government set up a science town in Hsinchu (in which it invested US$500 m. in the 1980s), with 13,000 researchers in two universities, six national laboratories (including ITRI) and a huge technology institute, as well as some 150 companies specialising in electronics. The science town makes a special effort to attract start-ups and provides them with prefabricated factory space, five year tax holidays and generous grants.

*Source:* Lall (1996).

Productivity Council is noted below). Over time, as SMEs upgrade and establish themselves in export markets, and the institutional structure develops, the subsidy element is likely to decline, but there is no urgency to raise self-financing at this time.

SMIDO appears to be too small to be able to satisfactorily discharge its mandate. It has only 7 officers to give technical extension: clearly not enough to meet the technological needs of the SME sector. It admits that its common facilities need to be upgraded and its library improved. It needs its own testing laboratory. It also needs to build up a design capability to help SMEs make better, more competitive products. The mission could not assess how pro-active the organisation was in terms of reaching out to its constituency and helping them identify and resolve their technical and skill problems. Apparently a number of studies have been carried out on how to upgrade technology in SMEs in Mauritius, but implementation seems to be lagging.

### 5.4.3 Diffusing Technology: TDS

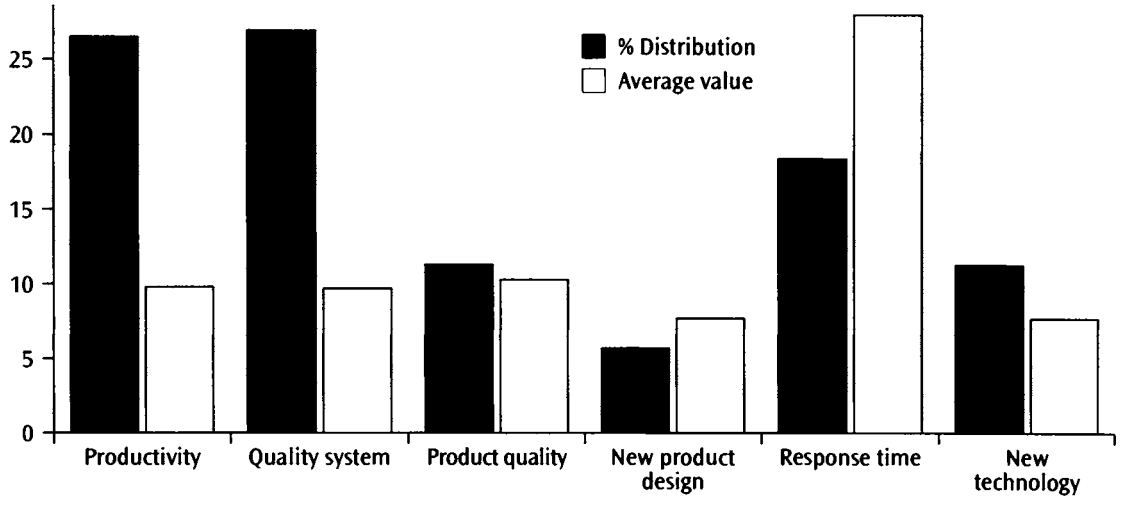
The Technology Diffusion Scheme (TDS) was set up under the World Bank project to grant private firms (51% or more privately owned) half the costs of buying services for raising competitiveness – improved productivity, quality and design services, and information on new technologies. The total funding was $2.7 million, to be disbursed with a four-year period (i.e. until May, 1998). It was expected that 350 EPZ firms would use the scheme, at an average of $10 thousand per grant; in addition, around 50 non-EPZ firms were expected to use the grant to around $5 thousand each. The scheme was to also cover supporting enterprises in manufacturing and trading, that is firms selling at least half their output to these activities, including export services. The TDS was set up under the Ministry of Industry and Industrial Technology, but is managed by a private sector contractor.

The reasoning of the scheme was that "in the face of labour shortages and increased international competition, and resultant pressures to enhance value-added and productivity, there is growing demand for technology support services in the areas of productivity, quality and design." A number of institutions in the country, such as EPZDA, MSB, SMIDO, and MEPZA provide technology support services to their respective constituencies, but there is a need to promote their use and acceptance by industry. The World Bank project intended to create a market in technology services by lowering the cost of purchasing these services for some time. The strong demonstration effects created would spill over to other firms. Firms receive one grant per service (i.e. a firm could receive more than one grant to cover different services), and thereafter would have to pay the full market cost of the service. The scheme covers both local and foreign consultants.

- The qualifying activities for the scheme were as follows:
- Labour or capital productivity, to reduce costs per unit of output;
- Product quality, uniformity and reliability;
- Product design, including grading, counter sampling, packaging design and modifications;
- Improved response time to orders;
- Introduction and adaptation of new technologies.

As of end July, 1996, 339 firms were interviewed by TDS, 129 applications were approved, 12 were in progress, 3 had withdrawn and 7 rejected. Money had been disbursed on 61 projects for the sum of $624 thousand, an average of $10.6 thousand each. Most projects were small – there is only one with a grant of over $50 thousand. EPZ manufacturing firms accounted for 57% of the grants and other manufacturing 28%. The total sum approved was $1.4 million (37% of the total), with slightly over half the duration of the project completed. This means that approvals were running behind schedule, but this

Fig 5.1: **Distribution and Values of TDS Grants**




may have been expected in view of the time needed to get the process launched for the first time. The rate may speed up as firms become familiar with the scheme and its benefits.

The scheme registered 120 consultants of 169 that have been in contact with it. Of the 129 approved projects, 53% are with Mauritian consultants and 47% with foreign consultants; however, the value of the contracts placed with foreign consultants is somewhat higher (51.7%). By types of project approved, productivity improvements and quality system (mainly to introduce ISO 9000) each account for 29% of the number of projects (and 26.5% and 26.9% of the value of grants); product quality for 12% of the number of projects (11.3%); new product design for 8% (5.7%); response time 7% (18.4%), and new technology 16% (11.3%). The highest value of grants per project was for response time ($28 thousand) and the lowest for new technology ($7.7 thousand). Figure 5.1 shows the relative distributions of total project grants (%) and the value per project ($ thousand) by these activities.

According to preliminary indications, the TDS has been very successful. The initial expectation was that it would generate $2 of additional sales or exports for every dollar of grant support given (based on experience in other countries); in fact, it has generated between $9 and $22. More detailed data collection and analysis are needed, however, before any firm conclusions can be reached. The predominance of smaller projects is probably welcome, since the market for technology services is unlikely to involve very large sums.

The original TDS scheme is about to end soon, and it would seem desirable to make a thorough assessment of its achievements to see if it should be renewed in its original or some new form. This assessment would hinge on whether the objective of stimulating the creation of a new market in technology services has been achieved in the first four years, whether the grants have in fact been as rewarding as the initial figures suggest and whether renewing them would help in further developing the consultancy services sector. It may also look at which form of technology service is most in demand and most conducive to competitiveness.

### 5.4.4 Productivity Enhancement: EPZDA

The Export Processing Zone Development Authority started in 1992 to provide productivity, quality, design and other services to EPZ firms in order to improve their competitiveness. The timing of its inception reflected the government's belief that EPZ activities in Mauritius had 'matured' and that the impending new challenges to exporters required a more coherent response. It was aimed at helping mainly the smaller EPZ

firms, which account for the bulk of its numbers (there are only 13 enterprises of the total of nearly 500 with over 1000 employees each); within these, needless to say, its main focus is on the garments subsector.

EPZDA has a staff of 25 persons, of whom 7 are at the management level. It draws upon other organisations for specialised services and expertise, including international ones like UNIDO (during 1995-96 it used around 10 consultants). It also publishes a bi-monthly magazine, *Industry Focus*, which provides information and analysis on issues of productivity, benchmarking, exports and competitiveness of Mauritian firms.

The activities of the EPZDA, as described in its *Annual Report 1994-95*, are as follows:

a **Productivity improvement programmes:** EPZDA provides free audits and evaluations and helps firms to reorganise their plant. It has two main instruments: in-plant continuous programmes and modular productivity programmes. The former is to thoroughly reorganise a factory, the latter to tackle key areas where companies need improvement. The in-plant programme, developed in conjunction with UNIDO, was intended to train EPZDA consultants on productivity enhancement, produce manuals and conduct seminars, increase productivity in selected garment factories, build up a library on sewing machine attachments, prepare the setting up of a CAD/CAM facility, and promote female entrepreneurs. Most of these objectives were achieved by end-1994. The modular productivity programme, funded jointly by the EPZDA with CDI and EDF, provided 12 modules to improve productivity, from work measurement to sewing techniques, work place engineering, layout, cutting practices, labour cost control and quality control and general management. Eleven companies had benefited from this programme by 1995, with significant increases in productivity, ranging from 10% to 60% (with one failure where there was a lack of management commitment). The increases in productivity came from the following:

- Changing garment process technology, reducing throughput times;
- Better utilisation of equipment in sequential format, reducing rejects at each stage;
- Reduced handling times;
- Streamlined floor layout;
- Improved sewing skills by training.

The cutting room productivity programme improved fabric usage in garment firms by means of a 11 week in-plant consultancy programme in organisation and fabric optimisation. Five companies were involved in this programme, and enjoyed savings in fabrics from 1% to 6% in addition to other benefits like improved storage, housekeeping, better recording and reduction of time losses. This programme received the 50% grant under the TDS.

b **Quality enhancement:** EPZDA conducted a survey in 1993-94 of the quality of cotton yarns used and fabrics knitted and finished in Mauritius. The findings were used to sensitise firms on the importance of quality in terms of the quality of raw materials and in knitting/dyeing processes. The Institut Textile de France is providing follow-up action and consultation. One of the important findings of the survey was that "middle management and technicians needed substantial training to upgrade skills", and an action plan for training and consultancy has been formulated.

c **Creativity, design and product development:** EPZDA organised workshops with French collaboration on fashion design and marketing. A Trend Forum was also organised to develop design skills and expose local firms to the latest styles and colours as well as marketing on a continuing basis.

d **Sensitisation and information dissemination:** A number of activities are organised in addition to the publication of Industry Focus. Meetings are arranged with industrialists as well as between them and the government. A CAD demonstration was arranged.

e **Technology Resource and Documentation Centre:** EPZDA provides various information services, including international electronic mail, data banks, WWW and so on.

f **Training:** Courses are provided for the textile and garment industry, for instance in 1994-95 on in-plant work study course in clothing and production planning and control course for textiles and garments.

g **R&D projects:** In the absence of a technology institution catering for the R&D needs of industry, the EPZDA also has the task of carrying out R&D for EPZ firms. Much of this work is an extension of the productivity improvement efforts noted above rather than technology development proper. Two projects are contemplated, on textile effluent discharge and fabric waste reprocessing.

EPZDA is clearly making a positive and valuable contribution to raising the competitiveness of the export sector. Its combination of productivity improvement efforts, consciousness raising, input of foreign expertise and hands-on assistance to exporters, is needed to make Mauritian industry, in particular the small and medium sized firms, aware of their competitive needs. It is starting to meet some of the most pressing needs of quality and productivity enhancement. However, as with some of the other support organisations in Mauritius, EPZDA does not have the size, resources or capabilities to deliver the whole array of services needed (on a sustained basis) to help exporters to enter and stay at higher segments of the market. What seems to be needed (this view is endorsed by EPZDA) is a full-scale *Productivity Centre* in Mauritius. Such centres have served valuable functions in raising the efficiency of export-oriented SMEs in many East Asian NIEs (see Box 5.3 on the Hong Kong Productivity Council, and also Box 5.2 on SME support in Taiwan).

A Productivity Centre in Mauritius can become a central agency in mounting a competitiveness strategy for the next century. It could become the repository for knowledge and expertise locally, and, with due financial backing, could provide the entire package of services and finance that small exporters need to manage the transition from low to medium levels of quality. At this time, a great deal of resources are spent on flying in expensive foreign experts in all fields; a productivity centre would be able over time to supplant these with domestic expertise, both in-house and by fostering a private consultancy capability in areas where there are presently weaknesses.

The EPZDA has been planning to set up a Textile Institute for some time (World Bank,1994.a), and this seems to be very desirable for developing design capabilities (as mentioned in the previous chapter); however, a comprehensive service, with a focus on out-reach to SMEs (such as Taiwan's China Productivity Centre), would be a complementary institution. To make it effective, a *Productivity Fund* should also be considered to provide firms with credit at special terms; as noted above, many restructuring measures can be quite expensive and time-consuming. In addition, the Centre should have as a major component a R&D arm that can undertake technology development on behalf of industrial firms and develop new products and processes. This vital function is currently going by default: only some large firms have R&D departments while the vast bulk of the industrial sector does no R&D at all. A contract research services would seem to be increasingly needed as the technological status of Mauritian enterprises improves. This service does not, of course, have to be housed in a Productivity Centre: in Singapore and Malaysia, the standards bodies

## Box 5.3 The Hong Kong Productivity Council

Despite its *laissez faire* approach to industry, Hong Kong provides strong technical support to its SMEs through the *Hong Kong Productivity Council* (HKPC). HKPC was the first support institution of its kind in the region, started in 1967 to help the myriad small firms that constitute the bulk of the industrial sector. Its focus has been to help firms upgrade from declining labour-intensive technologies to more advanced, high value-added activities. It provides information on international standards and quality and gives training, consultancy and demonstration services on productivity and quality to small firms at subsidised rates, serving over 4,000 firms each year. Its on-line information retrieval system has access to over 600 international data bases on a comprehensive range of disciplines. Its technical library takes over 700 journals and has over 16,000 reference books.

The HKPC acts as a major technology import, diffusion and development agent for all the main industrial sectors in the economy. It first identifies relevant new technologies in the international market, then builds up its own expertise in those technologies, and finally introduces them to local firms. Successful examples of this approach include surface mount technology and 3-D laser stereo-lithography. HKPC has also developed a number of CAD/CAM/CAE systems for the plastics and moulds industry, of which over 300 have been installed already. HKPC provides a range of management and technology related courses, reaching some 15,000 participants per annum. For firms unable to release staff, it organises in-house training programmes tailored to individual needs. To help the dissemination of information technology, the council has formed strategic alliances with major computer vendors, and provides specially designed software for local industry, consultancy and project management in computerisation. HKPC provides consultancy services in ISO 9000 systems, and has helped several firms in Hong Kong to obtain certification. It assists local firms in automation by designing and developing special purpose equipment and advanced machines to improve process efficiency.

HKPC is a large organisation, with over 600 consultants and staff, a laboratory and a demonstration centre that can show the application of new technologies (in CAD/CAM, advanced manufacturing technology, surface mount technology, micro-processor technology, rapid prototyping and so on). In 1993-94, it undertook 1,354 consultancy and technology assistance projects, trained over 15,000 people and undertook 2,400 cases of manufacturing support services.

Because small firms experience difficulties in getting information on, and adopting, new technologies, and are exceptionally averse to the risk and cost involved, the HKPC has always had to subsidise the cost of its services. Despite the growth in the share of revenue-earning work and its withdrawal from activities in which private consultants have appeared, the government still contributes about half its budget. It is important to note that technological information market failures and the need for subsidised services occur even in a highly export-oriented economy, with highly developed financial services, like Hong Kong.

The Hong Kong government also supports local design capabilities. It joined the private sector in starting a school of design, and financed the Hong Kong Design Innovation Company because private sector design services were lacking and local firms were not aware of their value. After four years of operation (mainly on government financing) this value has been recognised, but the HKDIC (now under the HKPC) is still not financially self supporting. Nevertheless, the growth of garment design capabilities in Hong Kong has helped its exporters to upgrade their products and start to establish their own brands in international markets.

*Source:* Lall (1996).

combine industrial research with their MSTQ functions.

### 5.4.5 Conclusions

The Mauritian technology system has many strengths. In particular, its institutions have a sense of purpose and dedication, and are fully aware of the nature and complexity of the problems facing them if they are to move the manufacturing sector to a higher plane of competitiveness. The personnel are well-trained and motivated, and open to ideas and expertise from the outside. The industrial sector itself is feeling increasingly the need to upgrade itself; only a handful of the larger firms are in a position to upgrade on their own, the remainder will need strong and sustained institutional support.

The existing institutional system is not, however, geared to providing such support at the level and intensity that is clearly going to be needed. The size and resources that the institutions command are not adequate to the challenges facing them. There are functions that no institution is currently filling – the most prominent among these is research, development and design. Productivity raising and technical extension for SMEs are being addressed but not fully. There is no institution capable of formulating comprehensive strategies and delivering the entire package of finance, training, information, extension and marketing support that firms need. It would seem, therefore, that the government should both strengthen existing institutions greatly and also set up new ones that can meet the whole array of needs.

## 5.5 Promoting Industry Clusters

### 5.5.1 The Nature of Industrial Clusters

Industrial clusters or districts are geographically concentrated groups of firms, generally SMEs, that are specialised in one activity (or closely related group of activities), and where the firms are vertically, laterally and diagonally linked to each other. Firms specialise in particular stages of the production process, and their needs are met by the proximate presence of related industries in the vertical value chain (see Table 5.7 below). Industrial districts offer several advantages of 'clustering' or agglomeration (Porter, 1990). Downstream industries benefit from the vicinity of suppliers, having more rapid and preferential access to their inputs and machinery; and co-ordination with local suppliers increases their ability to introduce new technologies and make their technological needs felt. Horizontal co-operation between related firms or industries allows them to share or co-ordinate activities (such as R&D, technology, distribution, marketing, services), while intense competition stimulates more rapid innovation and diffusion of new technologies. For SMEs clustering can reduce the individual costs and risks of various critical activities while retaining the flexibility and initiative of small size. Such flexibility and specialisation are increasingly important for competitiveness in high quality segments of activities like garments.

As far as skills are concerned, industrial districts promote mutual training, learning by doing and incentive to work. Information about demand and supply of skilled labour is increased by the aggregation of specialised industries in the same area. Skilled workers seek employment and concentrate in the industrial districts in which their skills are required and better appreciated, where it is likely that they will find a good market for their labour. The transfer of technology is eased by economies of scale and scope and the ease with dealing with a concentrated group of users. Internal technological upgrading is faster when accumulated know-how and technical skills are shared and the feedback from buyers and suppliers is diffused. In marketing, clustering favours the emergence of specialised traders with knowledge of distant markets. Finally, clustering can lead to the development of specialised producer services in technical, financial and accounting matters.

While the benefits of industrial districts have been discussed since the days of Marshall, recent interest in Europe also focuses on the benefits of

Table 5.5 **High Technology and Other SMEs in the UK**

| | High technology SMEs | Non-high technology SMEs | Significance Level of d differences |
|---|---|---|---|
| Employment growth % (1987-90) | 99.2 | 70.3 | *** |
| Sales growth % (1987-90) | 233.1 | 146.2 | * |
| Innovation rate (a)(% firms) | 76.2 | 57.8 | *** |
| Technological expertise (b)(% firms) | 83.4 | 50.7 | *** |
| R&D employment % total, 1990 | 19.6 | 10.0 | *** |
| Size: Sales 1990 (£ million) | 2.05 | 3.32 | ** |
| % of new firms (post 1980) | 66.1 | 46.9 | *** |
| Exports (% sales), 1990 | 13.4 | 9.5 | *** |
| Subcontracting (% sales) 1990 | 15.4 | 22.7 | *** |
| Niche markets (c)(% firms) | 52.5 | 41.8 | ** |
| Collaboration (d) (% of firms) | 49.5 | 28.5 | *** |

a Innovation rate measured by number of firms that have introduced major new products or services in last 5 years.
b Technological expertise considered 'very important' to firms' success.
c Niche markets are defined as 'fewer that five serious competitors'.
d Formal or informal collaboration/partnership with other organisations.
*Source:* Cambridge University Small Business Research Centre SME Survey, 1991

clustering for promoting innovation as well as flexibility and adaptability. It has been noted that several clusters of *technology-intensive* SMEs has emerged over time, with enormous benefits in terms of networking, information sharing, 'collective learning' and the use of technology institutions. High technology SMEs have also been more able than other SMEs to create exports, employment, growth and innovation. Table 5.5 shows some data on the UK on high-technology and other SMEs.

In general, a well-functioning industrial district will have greater flexibility, technological strength, marketing capability and skill base than a group of SMEs that are not organised on 'cluster' lines. However, co-ordination within an industrial district involves more than geographical proximity: it requires *close and prolonged relationships of trust* among the entrepreneurs, supported by commonly accepted *codes of behaviour*, with appropriate rules and sanctions. It is a means of 'internalising' beneficial externalities that result from agglomeration, and is based on a fine balance between individualism and co-operation, sharing and the individual pursuit of profit. The promotion of successful clusters is thus not a straightforward task, since it involves more than setting up an infrastructure of industrial estates. It requires the provision of facilities that SMEs can share and draw upon collectively, such as marketing, technology or training, and incentives for them to act in groups rather than individually.

### 5.5.2 The Case for Industrial Districts in Mauritius

The best known industrial clusters in the world are in Northern Italy, where firms in high-skill fashion products have achieved international competitiveness, high employment, and growth in times of economic crisis (Goodman and Bamford, 1989, Schmitz and Musyck, 1994, Pyke, Becattini and Sengenberger, 1990). The experience of several developing countries has also been positive. Brazil, for example, has become the third largest exporter in the world of leather shoes, and more than two-thirds of its exports come from one industrial district, which has attracted a number of export agents, design consultants, specialised producer service units, and runs weekly papers and bimonthly technical magazines specialised in the shoe and leather trade. There are also successful clusters in India (in cotton knitwear and diamond polishing indus-

tries), Indonesia, South Korea and Pakistan (Nadvi, 1994, Schmitz, 1995, Pedersen and Sverisson, 1994).

To date little work seems to have been done on the nature of intra-firm linkages and clusters in Mauritius. Our firm-level survey sheds some light on the nature of local supplier and subcontracting relationships in the country. The data confirm the mission's impression that the *local supply base in key industries is weak*. As expected, the average local content is high in natural-resource based industries like food products (26-50 per cent) but very low in others like textiles and garments (1-25 per cent), electronics (1-10 per cent), and chemicals (1-10 per cent). Garment firms complained about the lack of accessories (particularly for fashion clothing), electronics firms about the absence of a local plastics industry (particularly with precision injection moulding facilities) as well as other component industries, and chemical firms about the gaps in ancillary chemical industries. Evidence also suggests that quite a high proportion of local incoming raw materials, accessories and components are defective. One chemical firm reported that, on average, 10-12 per cent of its raw materials were defective in 1995 while the average for three textiles and garment firms was 5 per cent in 1995. Enterprises, particularly MNC affiliates, emphasised that the prospects for sustaining the growth of high-end garments and developing electronics and chemicals from Mauritius depended crucially on a well developed, reliable system of local suppliers.

Table 5.6 **Quality of Subcontracting in Enterprises (a)**

| Industry | Price | Quality of output | Delivery deadlines |
|---|---|---|---|
| Food products | 2.5 | 2.8 | 2.3 |
| Textiles and garments | 2.2 | 2.5 | 2.2 |
| Chemicals | 3.0 | 2.0 | 1.0 |
| Electronics | 2.8 | 2.5 | 2.8 |

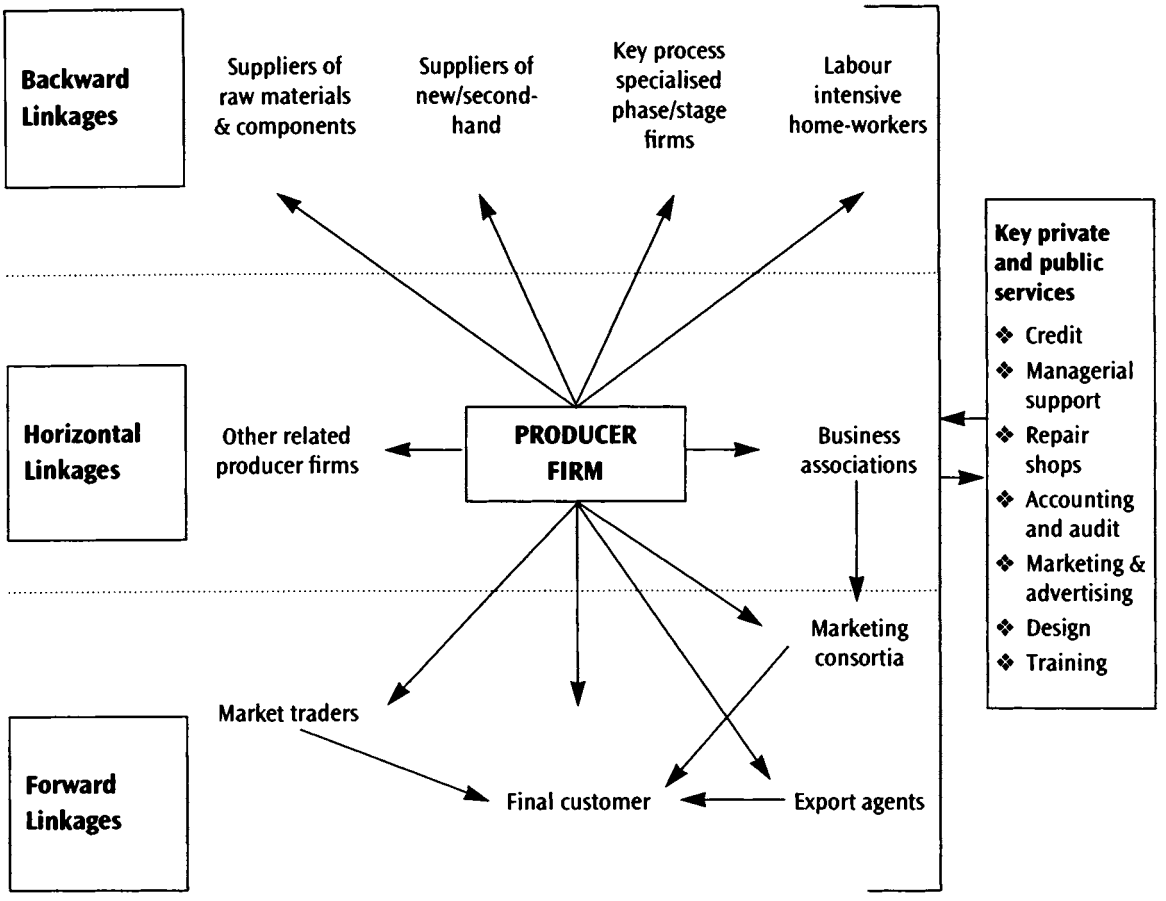
Note: (a)The ranking system is as follows: 1 is very poor and 5 is very good.

There is some sub-contracting activity in the sample. Of the 34 sample firms, about one-third seemed to undertake intermittent sub-contracting to SMEs. In textiles and garments, subcontracting included activities like dying of fabrics, embroidery and sewing. In electronics, it included the manufacture of some parts; for instance, one firm subcontracted the making of dials on instruments to an SME. In food products, some firms get their labels printed locally.

Table 5.6 provides information on the sample firms' ranking of the quality of service provided by their subcontractors. The findings are quite striking. There were concerns expressed in all four industries about the prices charged, the quality of output, and delivery deadlines. Subcontractors in chemicals perform best on price (but worst on delivery and quality of output) while ones in food product perform the best on price and ones in electronics the best on delivery deadlines. It is significant to note that the subcontractors in textiles and garments do not perform particularly well on the basis of price, quality or delivery deadlines. Two large garment MNC affiliates had subcontracted orders to SMEs previously, but finding that the quality of output was below international standards (and the SMEs were unable to meet tight deadlines) had stopped subcontracting to SMEs altogether. Similarly, one large local garment firm reported that the quality of subcontractors output was very irregular; it rejects 20 per cent of its subcontractors' output on an average order. The evidence suggests that subcontracting arrangements in all four industries are typically arm's length relationships that rarely involve significant transfers of information, skills and technology. The net result is that there are few spillovers of technological capabilities from large firms to SMEs.

In Mauritius, SMEs, scattered around the island, do not constitute 'industrial districts' in terms of network characteristics. They tend to be isolated from each other – there is no division of tasks among them, no exchange of ideas, information, skills or goods, and no long-term relationships of co-operation and trust among

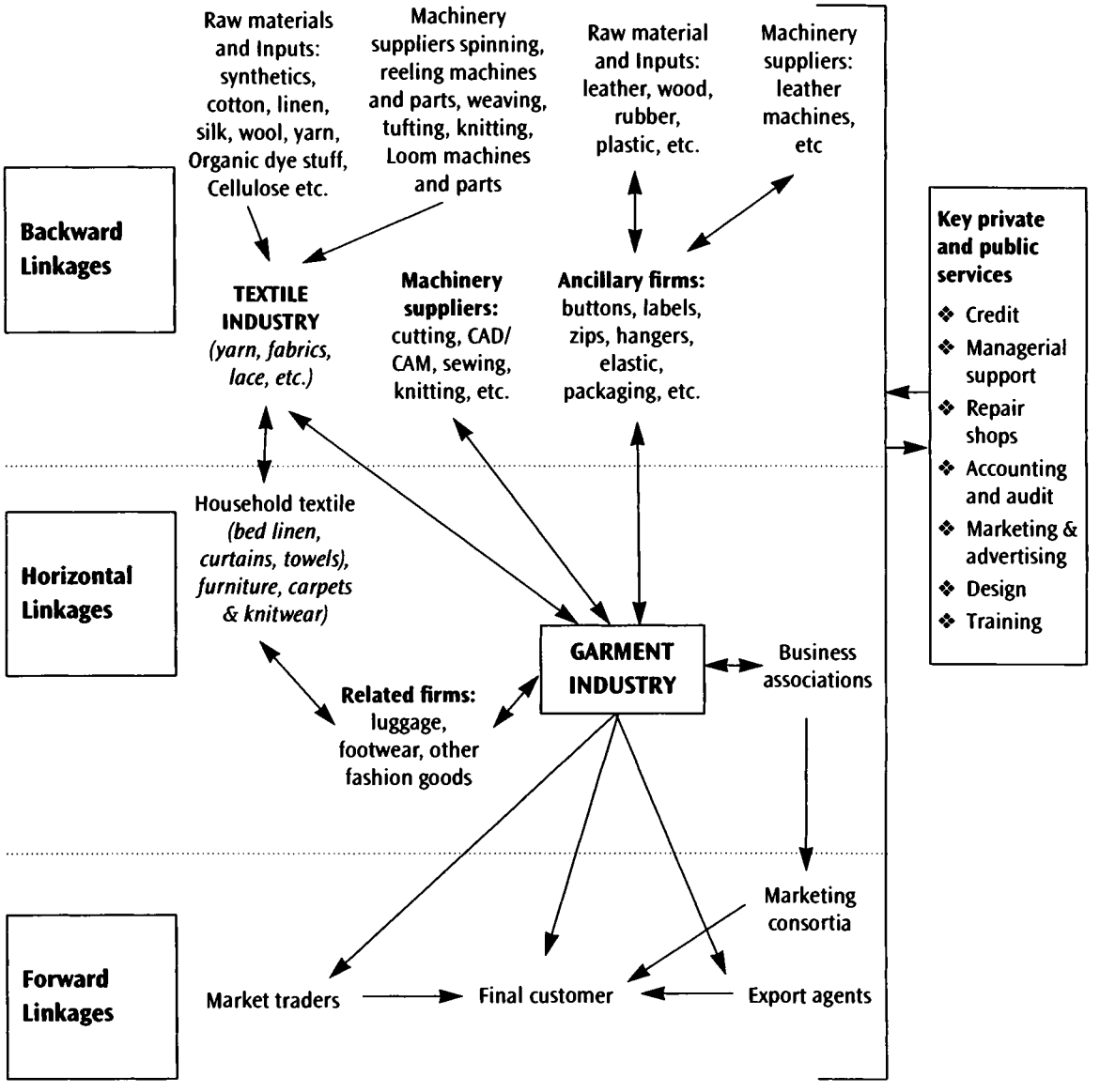
Table 5.7: **Production and marketing Chain**




entrepreneurs that can lead to specialisation. They do not pool skills, knowledge, services and intermediate goods, and, partly as a consequence, suffer from high costs, risk, credit and marketing problems. In the clothing sector, subcontracting mainly takes the form of contracts with foreign buyers, who provide the design, specifications, production schedules, quality control and other types of technical assistance, and all the marketing. This is common throughout the developing world in this industry, and provides an invaluable entry point for exporters: however, the linkages run from buyers to individual contractors, with little development of clusters between the latter. Domestic garment subcontracting, from large to small firms, also exists, but the latter are mainly firms with simple equipment undertaking low quality activities (World Bank, 1994.a, para. 2.49). There is little of the development of skills, technological capabilities and specialisation that marks industrial districts in more advanced countries; as noted, institutional support is weak. These are the firms that have been worse hit by the recent intensification of competition. Yet experience suggests that such districts, if they could be fostered, could become a major source of competitiveness enhancement in the country.

The Mauritian government is keen to promote subcontracting, but has no coherent strategy for the promotion of industrial districts. The World Bank (1994.a, para. 6.46) notes that subcontracting is held back by the regulatory framework (in particular the structure of indirect taxes and duties and the duty drawback mechanism), which deters links with non-EPZ firms, and the lack of awareness among firms of

Table 5.8: **Production and marketing Chain for Garments**




the benefits of inter-firm co-operation. This lack of awareness is also related to the virtual absence of industry associations, which generally play a crucial role in fostering linkages and clusters.

Table 5.7 and 5.8 above show the potential links that this industry can have with the rest of the economy. The input suppliers to garment firms are textile producers (led by fabrics, but also including yarn, lace, ribbons and so on) and accessory firms producing buttons, labels, zips, packaging, and the like. Garment firms would not be the only ones benefiting from the presence of such ancillary industries, since they can provide inputs to other industries as well, e.g. household textiles, furniture and carpets would also benefit from the production of yarn and fabrics. Moreover, these can share some services with related industries such as footwear or luggage. The latter are not export activities in Mauritius at this time, but a cluster based devel-

opment can allow them to grow, sharing some common skills and facilities with garment firms.

The accessory industry also offers considerable scope for raising beneficial linkages. If it could by upgraded, garment firms could be more flexible and efficient. Items could be more quickly to order according to buyer design. Documentation, charge payments, insurance and inventories would all be reduced. Defective products could be changed quicker. Labour-intensive ancillaries would generate employment. Some ancillaries (like labels) would benefit other industries as well.

While efficient industrial districts cannot be created by an 'act of will' by the government, both public institutions (especially at the local level) and private industrial associations can have a very important role in fostering industrialisation where small firms already exist (Humphrey and Schmitz, 1996). Joint public/private initiatives can support and develop industrial clusters, especially with the provision of credit, technical support services, and training (both of entrepreneurs and of workers). Industrial districts generally have institutions (generally under the local government) that supports them, and the provision of common technical facilities, educational institutions or infrastructure have been particularly important. However, it is fundamental that entrepreneurs and workers are actively involved in the design, financing and implementation of the schemes supporting industrial clusters. In fact, the cases in which attempts to foster clusters have not worked have been where there was little or no private sector participation. In some cases, as in Korea, clusters have formed around a large firm that sets up close subcontracting relations with SMEs and helps them to form an efficient pattern of specialisation.

# 6

# Foreign Direct Investment and Competitiveness

## 6.1 Introduction

Foreign direct investment (FDI) in the EPZ sector has played a pivotal role in the rapid structural transformation of the Mauritian economy away from sugar towards manufacturing for export over the last two decades. It has been an important engine of export growth, domestic capital formation, technology transfer and employment creation. This chapter examines the role of FDI in developing export competitiveness in Mauritius. It begins with an examination of recent trends in FDI in Mauritius and some Asian economies by industrial branch and investor nationality. It then analyses the determinants of foreign investment in the country. Finally, it focuses on foreign investment incentives and the effectiveness of foreign investment promotion efforts in a comparative perspective.

## 6.2 Trends in Foreign Investment

Mauritus is one of the earliest economies in Africa to develop as a significant location for export-oriented FDI in manufacturing; foreign investment now makes an important contribution to Mauritian economic activity. In 1995, the ratio of foreign affiliate employment to total employment in Mauritius was 27.7 per cent compared with 5.5 per cent in Malawi, 3.4 per cent in Egypt, 2.5 per cent in Kenya and 0.1 per cent in Algeria.[40] By the standards of Asian comparator countries, however, Mauritius has not been a significant destination for foreign investment. Table 6.1 shows data on foreign investment inflows for Mauritius and Asia for 1985-90 and 1991-96.

Mauritius attracted an average of US$ 18.2 million per year in 1991-96, a small decline from US$ 22.0 million per year in 1985-90. In relation to gross domestic investment, The Mauritian reliance on foreign direct investment (1.9 per cent in 1991-95) is comparable to that of Taiwan, Thailand, India and Sri Lanka, but considerably less than Singapore and Malaysia.

FDI inflows to Mauritius have grown relatively sluggishly during the 1990s, at a time when flows to developing countries in general have been increasing dramatically. Total FDI flows to developing countries nearly trebled from US$ 36.8 billion per year in 1988-92 to a historic record level of US$ 128.7 billion in 1996 (from 21 per cent of global FDI to 37 per cent).[41] If the present trends continue, FDI in the developing

Table 6.1 **Inflows of FDI in Selected Countries(1985-96)**
(US$ mn and % of Gross Domestic Investment)

| | Mauritius | Singapore | Taiwan | Malaysia | Thailand | India | Sri Lanka |
|---|---|---|---|---|---|---|---|
| Average annual inflows (US$mn) | | | | | | | |
| 1985-90 | 22 | 2952 | 879 | 1054 | 1017 | 169 | 37 |
| 1991-96 | 18.2 | 5601 | 1233 | 4660 | 1935 | 1132 | 127 |
| Av. ann. inflows (% of GDI) | | | | | | | |
| 1985-90 | 4.5 | 59.3 | 5.1 | 43.7 | 10.2 | 1.2 | 6.9 |
| 1991-95 | 1.9 | 23.3 | 2.4 | 21.3 | 3.6 | 1.5 | 5.1 |

*Source:* UN World Investment Report, 1997.

Table 6.2 **Distribution of FDI Arrivals in Mauritian Manufacturing 1985-1997** (US$ mn)

| Industry | Annual FDI Arrivals | | | | | | | Cumulative FDI Arrivals | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1985-89 (a) | 1990-92 (b) | 1993 | 1994 | 1995 | 1996 | 1997 | 1984-89 | | 1990-97 | |
| | | | | | | | | US$ mn | Share % | US$ mn | Share % |
| Textiles | 3.9 | 1.2 | 2.5 | 2 | 20.7 | 0 | 0 | 19.6 | 30.6 | 33.7 | 43.7 |
| Garments | 5.3 | 10.7 | 1.2 | 1.1 | 0.6 | 0 | 0 | 26.4 | 41.1 | 22.4 | 29.1 |
| Leather, rubber & plastics | 0.3 | 0.8 | 0.2 | 0 | 0.6 | 0 | 0 | 1.5 | 2.3 | 1.7 | 2.2 |
| Fancy goods, maquettes & toys | 0.1 | 0.1 | 0 | 0.1 | 0.1 | 0 | 0 | 0.3 | 0.4 | 1.1 | 1.4 |
| Precious stones & jewellery | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 1.1 | 1.7 | 0.6 | 0.8 |
| Electrical & electronic components | 0.2 | 0 | 0 | 0 | 0.1 | 0.6 | 0.3 | 0.9 | 1.4 | 1 | 1.3 |
| Watches & clocks | 0.1 | 0 | 0 | 0 | 0.3 | 0 | 0 | 0.3 | 0.5 | 0.6 | 0.8 |
| Miscellaneous mfg. | 2.8 | 5.3 | 1.4 | 0.2 | 1.2 | 2.5 | 1.5 | 14.1 | 22 | 16 | 20.7 |
| **Total manufacturing** | **12.8** | **18.2** | **5.4** | **3.3** | **23.6** | **3.1** | **1.8** | **64.2** | **100** | **77** | **100** |

*Notes:* (a) Average annual FDI inflow, 1985-89. (b) Average annual FDI inflow, 1990-92.
*Source:* Bank of Mauritius

world may exceed that of the developed world within two decades. South, Southeast and East Asian economies (including those shown in Table 6.1) have been the largest developing country recipients of foreign investment, accounting for US$ 81 billion in 1996 (about two-thirds of total developing country FDI) while African economies (including Mauritius) only received US$ 4.9 billion.

FDI in Mauritius is concentrated in manufacturing. However, manufacturing FDI has been more sluggish than total FDI since 1985. Table 6.2 shows data on FDI arrivals in manufacturing by industry which was obtained from the Bank of Mauritius. Between 1985-89 and 1990-97, total manufacturing FDI fell from $12.8 million to $8.4 million per year, a low figure by international standards. A major concern is that the declines in manufacturing FDI reflect sharp falls in inward investment in the traditionally most dynamic sectors for FDI, garments during 1991-97 and textiles during 1992-94 and 1996-97. FDI arrivals in manufacturing as a whole fell between 1993-94 and 1996-97, but rose between 1990-92 and 1994-95; the increase during 1994-95 should, however, be viewed with caution because it is due to one large textile project from India.

Table 6.3 **Top Five Foreign Investors in Mauritius, 1985-97** (US$ mn)

| Country | Total Investment | | Annual Investment | |
|---|---|---|---|---|
| | 1985-89 | 1990-97 | 1985-89 | 1990-97 |
| Hong Kong | 18.7 | 10 | 3.7 | 1.2 |
| China | 1.9 | 1.9 | 0.4 | 0.2 |
| France | 4.6 | 9.1 | 0.9 | 1.1 |
| UK | 3.6 | 4.5 | 0.7 | 0.6 |
| Germany | 3.8 | 5.6 | 0.8 | 0.7 |
| **Total** | **32.6** | **31.1** | **6.5** | **3.9** |

*Source:* World Bank (1994a) and Bank of Mauritius.

Low skill activities accounted for 98.1 per cent of the value of FDI actuals in 1985-89 and for 97.9 per cent in 1990-97 while high skill activities accounted for 1.9 per cent and 2.1 per cent respectively in the two sub-periods. There is thus little diversification and upgrading of FDI since 1985. Textiles and garments account for 72.8 per cent of cumulative FDI in 1990-97, followed by miscellaneous manufactures (20.8 per cent), leather and rubber goods (2.2 per cent), fancy goods and toys (1.4 per cent) and precious stones and jewellery (0.8 per cent). Within high skill items, electric and electronic components (1.3 per cent)

Table 6.4 **Sectoral Distribution of FDI in Malaysia and Thailand**
(Share of Cumulative FDI Approvals by Value)

| **Malaysia** | | **Thailand** | |
|---|---|---|---|
| ***Sub-Sector*** | ***Share*** | ***Sub-Sector*** | ***Share*** |
| Transport Equipment | 19% | Trade & Services | 31% |
| Basic Metal Products | 15% | Electric Appliances | 16% |
| Non Metallic Minerals | 12% | Construction | 9% |
| Electrical/Electronics | 12% | Chemicals | 7% |
| Paper, Printing & Publishing | 11% | Finance & Banking | 6% |
| Food Industry | 6% | Mining | 6% |
| Fabricated Metal Products | 5% | Metal & Non Metals | 4% |
| Textiles & Apparel | 3% | Textiles & Apparel | 4% |
| Chemicals | 3% | Machinery & Transport Equip. | 4% |
| Rubber & Rubber Products | 3% | Food Industry | 3% |
| Other | 11% | Other10% | |
| Top Foreign Investors | *code* | Top Foreign Investors | *code* |
| Transport Equipment | 1,2,8 | Trade & Services | N/A |
| Basic Metal Products | 4,1 | Electric Appliances | 1,2,4 |
| Non Metallic Minerals | 1,5,3 | Construction | N/A |
| Electrical/Electronics | 1,4,5 | Chemicals | 1,7,2 |
| Paper, Printing & Publishing | 3,2,8 | Finance & Banking | 2,6 |
| Food Industry | 3,1,2 | Mining | N/A |
| Fabricated Metal Products | 4,1,3 | Metal & Non Metals | N/A |
| Textiles & Apparel | 4,6,1 | Textiles & Apparel | N/A |
| Chemicals | 7,1,2 | Machinery & Transport Equip. | N/A |
| Rubber & Rubber Products | 4,1,7 | Food Industry | 1,2,7 |

Note: Malaysian data is from MIDA , covering 1985-93. Thai data from BOI for 1970-91. Countries define product segment composition of each sub-sector differently. Malaysia excludes FDI in hotels & tourist complexes. Method of calculating FDI is different in each country. Codes: 1 = Japan; 2 = USA; 3 = Singapore; 4 = Taiwan; 5 = South Korea; 6 = Hong Kong; 7 = Europe; 8 = Australia. Strongly-export oriented activities (above 75% for export) are shaded. N/A = not available.

and watches and clocks (0.8 per cent) are both very small. Although electric and electronic components have declined slightly as a share of cumulative FDI in 1990-97 compared to 1985-89 and watches and clocks have increased. Given that these changes individual high skill activities are very small, the trends should be interpreted with caution.

Inward investment in Mauritius has been dominated by a handful of East Asian and European countries. Table 6.3 shows that the top five investors are: Hong Kong, France, Germany, UK and China. These five investors accounted for 40.4 per cent of cumulative FDI in1990-97 compared to 47.7 per cent in 1985-89. Hong Kong (by far the largest single investor, primarily in textiles, garments and sporting goods) has significantly reduced its annual investment between 1985-89 and 1990-97. Chinese, UK and German annual investment have also fallen. Meanwhile, France significantly increased its annual investment over the two periods. French investors are probably the most diversified and have entered garments, leather products, sporting goods, jewellery, watches and clocks and electronic components. German investors have favoured textiles, garments and sporting goods while British investors have focused on textiles and garments. Apart from these, since 1990 there has also been some new Indian investment in textiles, some Malaysian investment in garments and some Japanese investment in fishing and processing of fish.

It is interesting to note the contrast between Mauritius and Malaysia and Thailand in the dis-

tribution and origin of FDI (Table 6.4). FDI in both the Asian countries has been concentrated in manufacturing: in Malaysia, it is clustered in transport equipment, basic metal products, non-metallic minerals and electronics, while in Thailand it is more diversified, with trade and services accounting for a large percentage.

The main foreign investors in many of the leading sub-sectors are the same in both countries. Japan is the largest foreign investor, generally concentrating within resource processing industries (chemicals, paper, food); labour-intensive industries (electronics, electrical products, fabricated metal products); and transport equipment. Of other OECD investors, U.S. favours banking and finance, mining and oil and gas industries, and has also been strong in electronics in Thailand, Malaysia and the Philippines; European investors concentrate in chemicals, food and other resource-based activities; and Australian in mining and related activities. NIE outward direct investment tends to be mostly in light manufacturing activities: Korean FDI in footwear, clothing, wood products, and electronics/electrical products; Taiwanese in electronics and other light manufacturing, real estate and pulp and paper products; Singaporean in electronics, food processing and industrial infrastructure.

FDI inflows in Sri Lanka have some similarity with Mauritius, with over 81 per cent of investment in manufacturing (largely textiles, garments and jewellery). Such foreign investment is dominated by Japan and the East Asia NIEs (Hong Kong, Korea, Taiwan and Singapore). Sri Lanka's success in attracting light industrial FDI is noteworthy in view of the prolonged civil conflict; it may be traced to its open door policy towards FDI, unutilised MFA quotas, cheap English-speaking labour, a reasonably efficient bureaucracy, and a good living environment for expatriates.[42]

## 6.3 Determinants of Foreign Direct Investment

What explains the extent and pattern of inward-investment in Mauritius? In general, international experience suggests that foreign investors go through a three-stage process to select a particular industrial estate location, as summarised in Table 6.5.[43]

- The first stage is an analysis of the large number of the firm-specific variables which push or pull the investor to make the initial decision to invest (through relocation, expansion or consolidation) in a new offshore production location.
- The second stage is the selection of an individual country where a number of national locational factors are examined, including such investment fundamentals as political stability, investment policies, physical infrastructure, skills, a low level of bureaucracy and red tape and the like.
- The third stage, the search for a particular site within a host country, begins usually only once a particular country has been chosen. Depending on the needs of their particular business, investors will evaluate site suitability, distance from transport, labour and input sources, availability of local inputs & distribution network, reliability and cost of utilities services, lease rates and facilities, among other factors.

The mission's interviews with foreign investors and the few available studies suggest that the determinants of foreign investment in Mauritius differ somewhat by industrial activity, market served and nationality of the investor.[44] Export-oriented FDI in textiles, garments and other simple, low skill manufacturing activities were attracted in the 1970s and early 1980s by cheap, literate and bilingual labour; reasonable labour productivity and industrial discipline; preferential access to EC and US markets; political and macroeconomic stability; a low level of bureaucracy and a market-friendly business environment.

Agro-processing investments were induced by the availability of natural resources (like fish);

Table 6.5 **Investment Location Decision-making Process for Foreign Investors**

| Location Decision-Making Stages | Factors Affecting Location Decision-making Process |
|---|---|
| *Stage 1:* Initial Decision to Invest in an Offshore Location | • Better access to end-user markets |
| | • Global or regional production and supply strategy |
| | • Staying ahead of the competition |
| | • Lowering per unit production costs |
| | • Technological changes affecting competitiveness |
| | • Securing access to raw materials |
| | • Gaining access to technology or skills |
| *Stage 2:* Selection of National Location | • Political and macroeconomic stability |
| | • Favourable foreign investment policies |
| | • Preferential access to target end-user markets |
| | • Adequate physical infrastructure and transport services |
| | • Good supply of trainable labour and adequate skill base |
| | • Good supplier network and support services |
| | • Lack of red tape and streamlined procedures |
| | • Competitive set of investment incentives |
| *Stage 3:* Selection of Individual Site | • Physical suitability of the site for industrial process |
| | • Distance from labour pools & transportation hubs |
| | • Availability, cost and quality of area labour supply |
| | • Condition of transportation network and frequency and cost of ground, air & sea freight services |
| | • Cost and quality of utilities |
| | • Access to raw material and other inputs |
| | • SFB and land lease rates and conditions |
| | • Facilities, services and amenities |
| | • Capabilities and reputation of management group |
| | • Good supplier network and support services |

*Source:* Lall, Rao and Wignaraja (1996).

varied micro climates; cheap labour and preferential access to the EC market.

Investments in software activities, (particularly in data entry and labour-intensive developmental work) were induced by cheap, literate, bilingual labour; a spring board to the African market; and a pleasant expatriate living environment.[45] Hong Kong and French investors led the way and others followed.

In the late 1980s and 1990s, however, there has been a significant erosion in the country's locational advantages. As highlighted in Chapter 5, labour costs have risen significantly, labour productivity has declined, and absenteeism and turnover rates have increased. In addition, there is the threat of a reduction or gradual elimination of preferential access to the EC and US markets with the likely re-examination of the Lome Treaty, and there are indications that excessively cumbersome bureaucratic procedures (particularly on investment approvals and work permits for expatriate staff) are a barrier to more inward-investment. Moreover, Mauritius is facing increased competition from lower cost producers in Africa (Madagascar, Kenya and Zimbabwe) and Asia (China, Vietnam, Laos, Bangladesh, Sri

Lanka and India). Of concern is the emerging trend that some leading Hong Kong and French investors, engaged in low skill assembly operations, have begun switching out of Mauritius to other low cost locations in the developing world. Interestingly, about *half the foreign-owned firms in our firm-level survey indicated that they had begun or were considering relocating to other more attractive manufacturing locations in the developing world and Eastern Europe.*

In the medium-term, Mauritius must attract more FDI inflows to maintain manufactured export growth and employment creation. The quality of FDI also matters and it is essential for Mauritius to upgrade FDI from low to high skill activities. The East Asian experience has underlined the link between FDI and growth of merchandise exports, particularly for higher value-added manufactures. FDI has dominated industrial segment such as electronics and electrical machinery; precision assembly and engineering; metal fabrication. The dramatic upgrading of manufactured exports from Thailand and Malaysia, starting from apparel, footwear, electrical appliances and simple machinery in the 1980s, to silicon wafer fabrication, telecommunications and office electronics machinery, and high-end electronics products in the 1990s – was directly the result of increasing sophistication of existing foreign affiliates of MNCs and sustained increases in new FDI.

The mission's interviews with foreign investors shed some light on important structural factors which may indicate why Mauritius has been unsuccessful in diversifying and upgrading FDI as compared with Malaysia, Thailand and other East Asian economies. These include:

- An inadequate *supply of industrial skills*. It is increasingly recognised that a broad range of managerial, financial and technical skills are necessary to support enterprise competitiveness in skill and technology-intensive activities (especially those in electrical and electronics products, machinery and precision instruments) for export markets. While MNCs can provide many high-level managerial and engineering skills from abroad, this is expensive and does not compensate for a lack of skills in the shop-floor and technical labour force. Thus, East Asian host countries that have large supplies of trained and trainable labour (that is, with education and discipline to absorb new skills) have attracted more and higher quality FDI than Mauritius.
- A lack of *suppliers of raw materials, parts and components*. With the adoption of lean manufacturing methods, a base of competitive suppliers becomes of significance to attracting FDI in industries that are highly linkage-intensive. In engineering and electronic activities, for instance, the availability of a range of local upstream industries and small and medium subcontracting activities are vital to flexibility and cost competitiveness. The importance of this is rising as MNCs introduce management techniques like just-in-time deliveries and total-quality-control to their affiliates in order to become cost efficient. In addition, the existence of a strong supplier base permits the host economy to reap more beneficial spillover effects from MNCs and lowers the initial cost to foreign investors of setting up facilities there. Thus, East Asian economies with a strong base of suppliers have attracted more high quality FDI than Mauritius.
- Limited *technological infrastructure*. The importance of an efficient physical infrastructure is for attracting FDI into high skill activities is evident. Less so is the need for a good technology infrastructure for sophisticated FDI. A capable technology support system with good standards, metrology, quality assurance and applied R&D institutions, able to undertake contract research and provide an information base, can allow foreign affiliates to carry out more advanced technological

tasks in the host country and raise the technological capabilities of local suppliers and competitors. Thus, East Asian economies with an efficient and comprehensive technology infrastructure have attracted more high quality FDI than Mauritius.

- Inadequate *local demand* for high technology products. The constraints created by the relatively small domestic market in Mauritius and the lack of dynamism in African regional market are well known and has been addressed elsewhere in the report.

Competing with the increasing number of emerging competitors in Asia and Africa for export-oriented FDI will require a more intensive effort from the Mauritius government than has been the case to date. Mauritius must actively target FDI in the manufacturing sector to upgrade the technology content of its non-traditional exports. This will require a keener understanding of the determinants of foreign investment, and the significant variations according to investor size, industry sub-sector and nationality. It will also require a streamlining of the investment policy regime; a radical transformation of the country's investment promotion strategy and MEDIA; and the development of a strong technical skill, supplier and technology institutional support base.

## 6.4 Foreign Investment Policy Regime

Investment incentives are widely used by developed and developing countries, with varying degrees of success, as an important element in their inward investment strategies. In the context of globalisation and increasing competition for FDI, many countries are now using fiscal, financial and other investment incentives to divert production from rival locations. There is a wide range of investment incentives in use and for simplicity, they can be divided into three categories:[46]

- *general incentives* – those available to all promoted investments regardless of export-orientation, industrial sector or other specific eligibility requirements;
- *incentives for promoted activities* such as export manufacturing, high technology or strategic industries; and,
- *incentives for specific industries targeted for promotion*, such as electronics, food processing, among others.

While there are significant variations among the profiled countries, in general, most countries have tended to de-emphasise general incentives in favour of targeted activities and specific industries. The most common promote (i) export production; (ii) capital investment and industry upgrading; (iii) advanced technology industries; and (iv) project location in less developed areas or industrial zones. In most cases, the specific measures utilised include income tax holidays and reductions; targeted deductions, credits and allowances; import duty exemptions or reductions; liberal foreign exchange and capital and profits repatriation policies; personal income tax benefits for mangers; government grants; subsidised credit; government equity participation; and other miscellaneous benefits.

The investment incentive environment for Mauritius is still largely governed by the 1993 Industrial Expansion Act. There are six main incentive schemes for foreign and domestic investors which are provided under the Act: Export Enterprise, Pioneer Status Enterprise, Strategic Local Enterprise, Modernisation and Expansion Enterprise, Industrial Building Enterprise, and Small and Medium Enterprise. Table 6.6 shows recent information on the general investment incentives and those for promoted activities for Mauritius, one South Asian country (Sri Lanka) and three East Asian countries (Taiwan, Thailand and Malaysia). Other South Asian economies like India and Pakistan were excluded from the analysis because historically they have not been major recipients of FDI.

Recent tax changes have made the Mauritian package of investment incentives for EPZs very competitive in one major respect in relation to all the Asian comparators. EPZ firms in Mauritius *currently pay no corporation tax over the life of the company* (down from 15 per cent previously) compared to 3-8 year tax holidays in Thailand, 5 year tax holidays in Taiwan and Sri Lanka, and low corporation tax rates in Malaysia. In the case of non-EPZ projects (e.g. those under the Pioneer Status Enterprise Scheme, Agricultural Development Scheme and Offshore Companies Scheme), Mauritius offers a reasonably attractive 15 per cent flat tax rate and a 10 year tax holiday on dividends as well as free repatriation of capital and profits for non-residents. The main advantages of low corporate tax rates is that compliance and administration is much simpler than other schemes and it acts as a significant incentive because it allows investors to keep a larger proportion of profits. However, particularly compared to the East Asian comparators (Taiwan, Malaysia, Thailand), the Mauritius investment incentive regime has *four major weaknesses*:

First, the limited extent to which Mauritius customises and fine tunes investment incentives to attract investors in targeted industrial activities. As discussed in Section 6.5, there is a long list of targeted industrial activities covering 7 industrial sectors – printing & publishing, information technology, jewellery, light engineering, pharmaceuticals, electronics and agro-industry – and the country's outbound investment missions are attempting to attract potential investors in these areas. However, the problem with the current approach is that it does not pro-actively gear up investment incentives to target industrial activities or major international investors. In a world of increasing competition for FDI, there may be a need to attempt to devise tailor-made incentives for a few particularly attractive potential investments. Success in attracting a few flagship MNCs in new areas is likely to translate into others showing interest in the country. Developed countries like the UK and the US have a long history of tailoring their investment incentives to attract specific activities and firms. Singapore is a famous example of an Asian NIE which has tailored its fiscal incentives to flagship MNCs in specific industries as well as offering large government grants and government equity participation. The lesson of the Singaporean experience is that these measures are typically not given in an unconditional fashion but are linked to specific performance requirements. In 1996, for instance, the Singapore announced a cash-grant based US$ 357 million Innovation Development Scheme to attract MNCs in high-technology activities. The Economic Development Board also has a Co-Investment Programme which takes up equity positions in risky projects with foreign and local investors using a US$ 1 billion fund (by the end of 1995, US$ 410 million had been committed to about 24 projects).

Second, the eligibility requirements for investors to qualify for the incentives are not clearly specified for some schemes. The best illustration of this is the Pioneer Status Enterprise (PSE) Scheme which seeks to promote activities which "involve technology or skills which are above the average existing in Mauritius" and speed up technological upgrading. The requirements to be considered for an enterprise using higher technology or skills are not transparent and can leave room for administrative discretion and uneven application of incentives.[47] In addition, there are no evident performance requirements. By early 1995, over 100 projects with varying degrees of technological sophistication have been awarded certificates under the PSE Scheme including those in watches and clocks, informatics, support services to jewellery, support services to printing and publishing, service firms and others. In contrast, the approach adopted by countries like Malaysia and Thailand is to govern access to incentive packages through very detailed list of eligible activities, specified at the 6-7 digit SIC level. These lists are revised periodically, in line with governmental priorities. In the case of Thailand, more labour-intensive activities are not allowed

to locate in the already well-developed Bangkok Metropolitan Area.

Third, unlike the other comparator countries, Mauritius has generally not developed strong incentives to promote technological upgrading, increased local value-added, promote linkages with local industries, and facilitate research and development. This is especially true in comparison with Singapore, Malaysia and Thailand, who have actively modified their incentives packages to support favoured activities. Moreover, they have augmented their tax incentives with well-funded programs of technical and financial support to target industries. The gap between Mauritius and these countries is most evident with respect to support for R&D activities, manpower development and linkages with local industry:

- R&D: Malaysia permits a double deduction of approved R&D expenditures; a 10 per cent industrial building allowance for specialised facilities; capital allowances for plant and machinery; double deduction of cash contributions made to approved research institutes; 5 year tax holiday for R&D companies, as well as permission to carry-forward accumulated losses to the post tax holiday period. While the offering of tax incentives to foreign investors ceases to be relevant in Mauritius in view of the permanent tax exemption granted, this increases the value of other incentives to engage in technological effort.
- Manpower development: Malaysia and Singapore offer a double deduction of approved training expenses conducted within factories or at approved training centres, plus direct support from well administered central manpower development funds.
- Development of local linkages. In addition to providing direct incentives to indirect exporters and local suppliers, Malaysia, Singapore and Thailand have well-funded

### Box 6.1 East Asian Approaches to Developing Industrial Linkages

In an attempt to spread the technological benefits from inward investment, several East Asian economies have designed impressive programmes to foster the creation of intra-firm linkages between MNC affiliates and local SMEs. Such programmes have contributed to increased local content, improved local technological capabilities, more employment and the creation of additional export capacity in these economies. Well known industrial linkage programmes include the following:

- *Production Networks for Exports, People's Republic of China.* China developed networks of local suppliers by targeting local enterprises in selected provinces into training collaborations with MNCs, focusing on light industrial products, textiles, machinery and electronic goods for export. Over 200 rural export enterprises have benefited.
- *BUILD Program, Thailand.* Under this initiative, active match-making, brokering, technical assistance and information dissemination activities are provided by the Thai BOI to encourage industrial linkages between MNCs and local industries.
- *Vendor Support Program, Malaysia.* The Malaysian program is a comprehensive approach to upgrading local supplier capabilities. Debt financing is available on a preferential basis to participating enterprises, venture capital is provided to local firms. Technical assistance is encouraged through active collaboration with MNCs, and industry-led training initiatives, such as the Penang Skills Development Centre.

Table 6.6 **General Investment Incentives and Incentives for Promoted Activities and Industries, Selected Countries**

**A General Investment Incentives**

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 1. Corporate Taxation | *Standard Tax Rate*<br>35% standard rate plus a surcharge of 15% resulting in maximum rate of 40.25% | *Standard Tax Rate*<br>35% | *Standard Tax Rate*<br>30% regular tax rate; 40% for petroleum companies | *Standard Tax Rate*<br>30% regular tax rate | *Standard Tax Rate*<br>25% regular rate |
| | *Taxable Basis*<br>world-wide income for resident companies<br>locally sourced income for non-resident companies | *Taxable Basis*<br>resident and non-resident companies are taxed on their net profits earned in Mauritius | *Taxable Basis*<br>locally sourced income for resident companies | *Taxable Basis*<br>world-wide income for resident companies<br>locally sourced income for non-resident companies | *Taxable Basis*<br>world-wide income for resident companies<br>locally sourced income for non-resident companies |
| 2. Income Tax Reductions & Holidays | None | 15% flat tax rate and 10 year tax holiday on dividends for companies operating under the (i) Pioneer Industries scheme; (ii) Agricultural Development scheme; (iii) Industrial Buildings Incentive scheme; (iv) Export Services Zone scheme; (v) Film Development Scheme; (vi) Hotel Management scheme; (vii) Offshore Companies scheme; (vii) Offshore Banking scheme<br>0 % income tax rate over the life of the company in EPZs and 10 year exemption on income tax on dividends | 15% income tax rate for 5 years for promoted industries under Pioneer Status or Investment Tax Allowance | 3-8 year income tax holiday depending on geographical location<br>Zone 1 – 3 year exemption for 80% exporters & those in IEs and IZs;<br>Zone 2 – 3-7 year holiday for 30% exporters & those in IEs and IZs;<br>Zone 3: 8 year holiday & 50% reduction thereafter for 5 years<br>exclusion of dividends from taxable income during income tax holiday | 5 year tax holiday with a four year deferral provision or a five year period of accelerated depreciation on production equipment<br>4 year tax holiday with deferral provisions on expansion projects, or a 15% investment credit on such projects |
| 3. Income Tax Deductions, Credits and Allowances | *Income Tax Credits*<br>none<br>*Income Tax Deductions/Investment Allowances*<br>200% deduction of overseas promotional expenses | 30% tax credit on the purchase of stock of companies engaged in non-sugar, agricultural, shipping, industrial, manufacturing or tourist activities<br>tax credit based on proportion of each | *Income Tax Credits*<br>None<br>*Income Tax Deductions/Investment Allowances*<br>Investment Tax Allowance: 60% of qualifying capital expenditure for 5 years | *Income Tax Credits*<br>None<br>*Income Tax Deductions/Allowances*<br>Zone 3: double deduction of water, power & transport costs for 10 years from first sales date | *Income Tax Credits*<br>None<br>*Income Tax Deductions/Investment Allowances*<br>5-20% deduction from income tax for investments in automation equipment or |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 3. *Income Tax Deductions, Credits and Allowances (Cont.)* | 200% deduction of R&D expenditures<br>3 year, 100% depreciation allowance on plant, machinery and equipment | enterprise's export sales: 10-30% export sales receives a 30% credit; 30-50% export sales gets a 45% credit; exports above 50% receive a 60% credit<br>*Income Tax Deductions/Investment Allowances*<br>50% initial allowance for plant (excluding building) machinery, equipment, and 10-20% straight line depreciation<br>additional 20% depreciation for (i) capital expenditures on industrial premises and hotel construction; (ii) cost of new machinery or plant<br>expenditures on repair of premises are deductible<br>200% deduction of qualifying export promotion expenses and export credit insurance premiums | Reinvestment Allowance: 50% of capital expenditures<br>100% industrial adjustment allowance<br>accelerated depreciation for plants & machinery | Zone 3: 25% deduction from net profits costs of project's infrastructure and facilities<br>5% depreciation for buildings & 20% for machinery | technology, R&D outlays, training or international brand image establishment |
| | *Loss Carry-Over Provision* | *Loss Carry-Over Provision* | *Loss Carry-Over Provision* | *Loss Carry-Over Provision* | *Loss Carry-Over Provision* |
| | indefinite loss carry-forward period | subject to certain conditions, the previous year's losses can be carried-forward one year | indefinite loss carry-forward period | net losses can be carried forward a period of 5 years | net losses can be carried forward a period of 5 years |
| 4. Import Duty Exemptions | no general reductions or exemptions except through EPZs, duty drawback scheme and other export mechanisms | none, except for companies engaged in direct or indirect exports under the EPZ, ESZ, Pioneer Status schemes | 100% exemption for all goods not produced locally<br>2% maximum duty on raw material imports | Zones 1 and 2: 50% reduction of duties on machinery with 10% or above duty rate located in IE or IZ<br>Zone 3: 100% exemption on machinery; plus 5 year, 75% exemption of raw and "essential" materials not produced locally | 100% exemption for raw materials, parts and machinery imports |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 5. Foreign Exchange Controls Capital & Profits Repatriation | no exchange controls on current account transactions repatriation of profits, dividends, royalties and interest are unrestricted, but subject to 15% withholding tax | *Exchange Controls*<br>virtually no exchange controls – (i) rupee is convertible on current account; only capital transactions require authorisation; (ii) export and non-resident companies can maintain foreign currency accounts in Mauritius or externally; (iii) export and non-resident companies can borrow freely overseas<br>*Remittance and Repatriation Rules*<br>no restrictions on profits and royalties remittances, and capital repatriation, subject to exchange controls and withholding taxes<br>EPZ and Pioneer Status companies are guaranteed free repatriation of capital (excluding appreciation), profits and dividends<br>withholding taxes for non-treaty countries are 20% on dividends and royalties | no exchange controls on current account transactions<br>no restrictions on repatriations<br>85% withholding tax on royalties and 10-15% on interest remittances | no exchange controls on current account transactions<br>no restrictions on repatriations<br>5 year exemption on royalty, goodwill, dividend taxes of 10% | no exchange controls on current account transactions<br>no restrictions on repatriations for FIA companies, subject to 20% withholding tax on dividends<br>FIA firms can repatriate capital gains or capital within 1 year of start-up |
| 6. Personal Income Tax Benefits | None | None | None | None | None |
| 7. Other Incentives | any company under Section 17 of BOI law creating 100 new jobs after 8/11/95 will be eligible to import a duty-free vehicle worth US$30,000 | None | capital gains exemption on real property held for a minimum of 5 years<br>additional export incentives (through duty/indirect tax | additional export incentives (through duty/ indirect tax drawback, bonded warehouse, bonded manufacturing warehouse, EPZ); export | additional export incentives (through duty/ indirect tax drawback, bonded warehouse, bonded manufacturing warehouse, EPZ); export |
| 7. | | | | | |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| *Other Incentives (cont)* | minimum investment entry requirement for foreign investments to receive BOI incentives is reduced from US$150,000 to US$50,000<br>requirement to remit export proceeds to Sri Lanka within 180 days will "be relaxed"<br>additional export incentives (through EPZ, bonded manufacturing warehouse, bonded warehouse, duty drawback/ exemption schemes); export credit guarantee & insurance scheme | | drawback, licensed manufacturing warehouse, bonded warehouse, free industrial zone, free commercial zone schemes); export credit, credit guarantee & insurance; export-import bank | credit, credit guarantee & insurance; export-import bank | credit, credit guarantee & insurance; EX-IM bank<br>various provisions relaxing equity restrictions, nationality requirements for FIA companies<br>national treatment and protections extended to FIA companies |
| **B Incentives for Promoted Activities** | | | | | |
| 1. Income Tax Reductions and Exemptions | *Export Manufacturing and Services Projects Using "Higher Technology"*<br>5 year profits & dividends tax holiday for new & existing firms, followed by 15% tax rate for 15 years<br>exemption from income tax on capital gains resulting from transfer of shares of an enterprise<br>*Large Scale Development Projects*<br>export-oriented & flagship companies: 10-20 year income tax holiday for export-oriented companies, followed by a 15% tax rate for 20 years<br>no income or turnover taxes on income sourced from Sri Lanka for non-resident persons or partnerships engaged | *Export Activities*<br>EPZs – 0 % income tax rate over the life of the company and 10 year exemption on income tax on dividends<br>ESZs – 15% income tax rate over the life of the company and 10 year exemption on income tax on dividends<br>*Strategic Industries*<br>Pioneer Industries – 15% income tax rate over the life of the company and 10 year exemption on income tax on dividends | *Environmental Protection*<br>15% income tax rate for 5 years for companies involved in storage, treatment & disposal of toxic & hazardous wastes<br>*Research and Development*<br>5 year income tax holiday for companies undertaking R&D for a specified industry; dividends to shareholders are tax exempt<br>*Small Scale Industries*<br>automatic Pioneer Status (15% income tax rate for 5 years)<br>*Strategic Industries*<br>10 year income tax holiday or Investment Tax Allowance | *Enterprises Relocating from Zone 1 to Zone 2*<br>3 year income tax holidays<br>7 year income tax holiday if they relocate to IEs or IZs[a]<br>*Enterprises Relocating to Zone 3*<br>8 year income tax holiday, followed by a 50% reduction for 5 years<br>*Research and Development Activities*<br>3 year extension of income tax holiday period, not to exceed 8 years b<br>*Priority Activities* c<br>8 year income tax holiday, regardless of location | *Export Activities and High Technology*<br>lower income tax rate for EPZ industries, exemption from VAT and commodity taxes<br>5 year holiday with four year deferral provision for enterprises in the Hsinch Science-based Industrial Park |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| | by the company<br>non export-oriented: 10-20 years, followed by a 15% rate for 15 years thereafter<br>*Projects Using Higher Technology, Not Meeting Export Requirement*<br>case-by-case decision by the BOI<br>*Projects Meeting Export Requirement, not High Tech*<br>15% tax rate for 20 years | | *High Technology Projects*<br>5 year income tax holiday or Investment Tax Allowance | | |
| 2. Income Tax Deductions, Credits & Allowances | *Research and Development*<br>200% deduction of R&D expenditures<br>*Export Activities*<br>200% deduction of overseas promotional expenses | none for specific activities | *Environmental Protection*<br>40% initial and 20% annual allowance on capital expenses on facilities for toxic/hazardous waste<br>*Research and Development*<br>50% capital allowance for plant & machinery used for approved R&D for a period of 10 years<br>Investment Tax Allowance of 100% of R&D activities expenditures of holding or affiliate companies for 10 years<br>10% initial, and 2% annual Industrial Building Allowance<br>200% deduction of cash payment for contracted R&D services<br>*Training Activities*<br>Investment Tax Allowance of 100% for 10 years for companies which | *Enterprises Relocating to Zone 3*<br>double deduction of water, power & transport costs for 10 years from first sales date<br>25% deduction from net profits costs of project's infrastructure and facilities | *Research and Development & Energy Conservation*<br>2 year accelerated depreciation for machinery designed for R&D, conservation energy<br>20% deduction from income for R&D outlays<br>5 year accelerated depreciation on production equipment for firms in the Hsinchu Science-based park<br>15% investment tax credit for expansion projects in the Hsinchu Science-based park |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| | | | undertake technical or vocational training<br>100% single deduction of cash contribution made to a technical or vocational training institution<br>200% deduction of expenses incurred on approved training given to manufacturing and non-manufacturing companies employing less than 50 workers<br>10% initial, and 2% annual Industrial Building Allowance<br>*Small Scale Industries*<br>50% reinvestment allowance<br>*Research and Development*<br>accumulated losses during tax relief period can be carried-forward<br>*Export Activities*<br>200% deduction of export credit refinancing premium & export promotion expenses d<br>10% initial Industrial Building Allowance | | |
| 3. Import Duty Exemptions | *For export-oriented projects*<br>100% exemption from duties & related charges on plant, machinery & equipment, and on raw materials & other project related goods, for the life of the project<br>*For other projects*<br>100% exemption for duties & related | *Export Activities*<br>EPZs: exemption from customs duty, import levy and sales tax on plant, equipment, spares, raw materials and components<br>*Strategic Industries*<br>Pioneer industries: exemption form customs duty, import levy and sales tax on plant, equipment, | *Small Scale Industries*<br>100% of duties on raw materials, components, machinery & equipment not available locally<br>*Environmental Protection*<br>100% of duties on raw materials, components, machinery & equipment | *Research and Development Activities*<br>100% exemption from duties on machinery & equipment for 8 years<br>*Priority Activities*<br>Zones 1 & 2: 50% import duty reduction on machinery subject to duty rates 10% or more<br>Zone 3: 100% import duty exemption on machinery | *Export Activities & High Technology Activities*<br>exemption from duties on raw material, parts & machinery imports in EPZs and Hsinchu Science-based Industrial Park |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 3. *Import Duty Exemptions (cont)* | charges on plant, machinery & equipment, and on raw materials & other project related goods, during the project implementation period, as approved by BOI | spares, raw materials and components | *Export Manufacturing*<br>100% of duties on raw materials, components, machinery & equipment not available locally or of inadequate price/quality<br>*Training Institutions*<br>100% of duties on raw materials, components, machinery & equipment | | |
| 4. Foreign Exchange Controls/ Capital and Profits Repatriation | *Export-oriented projects*<br>exemption from Exchange Control Act<br>ability to (i) operate foreign currency account; (ii) borrow offshore; (iii) access domestic credit market<br>unrestricted repatriation of profits and capital, subject to 15% withholding tax<br>*Large Scale Development Projects*<br>eligibility for exemption from Exchange Control Act | None | None | None | None |
| 5. Personal Income Tax Benefits | *Export-oriented projects*<br>expatriate employees receive 15% income tax rate during first 3 years of project operation<br>*"Flagship Companies"*<br>expatriate employees receive a 15% income tax rate during the tax holiday period | None | None | None | None |
| 6. Other Incentives | *Export-Oriented Enterprises Using Higher Technology*<br>exemption from the Import & Export Control Act | Electronics, jewellery, and engineering firms are allowed to sell unlimited quantities in the domestic market. | None | *Priority Activities*<br>no limit on the percentage of equity held by foreign share- | low-interest financing, cash grants and venture capital investment in the Hsinchu Science-based park |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| | *Export Activities* | 50% reduction in registration fee on land & buildings for agricultural holdings | | holders that are submitted to the BOI within 1996 | equity capitalisation of investors' patents or know-how in the Hsinchu Science-based park |
| | duty-free imports of raw materials, intermediate goods, inputs, and capital equipment available through various schemes administered by the EDB, Customs and others | EPZ and ESZ firms can sell 10-15% of their production in the domestic market, with the permission of the ministry of trade | | | |
| | various EDB schemes: (i) low cost financing up to Rs 1 million to meet 50% of certain export project costs for qualifying export manufacturers and processors; (ii) equity investment for small scale exporters exporting at least 50% of production; (iii) preferential loans for financially ailing export projects; (iv) provision of Pioneering Status for qualifying export projects, providing for equity investment and 50% of costs of technical assistance; product design; seed planting material & breeding stock; airfares for promotion & training; 100% of freight & insurance costs of samples; 100% of cost of product testing; 50% of costs of export packaging; 50% of advertising costs; (iv) 80% grant assistance for Pioneering Export Project Ideas scheme; (v) cash assistance to SMEs to participate in trade fairs; (vi) preferential loans to SME exporters; among other schemes | Pioneer Status industries can sell 100% to the local market under certain conditions | | | |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| **C Incentives for Specific Industires** | | | | | |
| 1. Income Tax Reductions or Exemptions | *Large Scale Infrastructure Projects*<br>10-20 year tax holiday depending on project size, followed by 15% tax rate for 20 years<br>*Small Scale Infrastructure Projects*<br>15% tax rate for a period of 7-10 years depending on project type and size<br>*Tourism, Recreation and Leisure Projects*<br>15% tax rate for 15 years<br>*Agriculture Sector Projects*<br>5 year profits & dividends tax holiday; 90% export activities have an additional 15% tax rate for 15 years<br>*Dairy & Livestock Projects*<br>15% tax rate for 15 years<br>*Training Institutions*<br>15% tax rate for 10 years<br>*Mining and Non-Renewable Resource Processing Projects*<br>case-by-case decision by the BOI and MOI | | *Venture Capital*<br>100% income tax exemption for venture capital companies<br>*Operational Headquarters Companies*<br>lower income taxes for operational headquarters companies<br>*Forest Plantations*<br>10 year income tax holiday | *Priority Activities* [c]<br>8 year income tax holiday, regardless of location | *Emerging Industries*<br>telecommunications<br>information products<br>consumer electronics<br>semiconductors<br>precision machinery & automation<br>aerospace<br>advanced materials<br>fine chemicals and pharmaceuticals<br>healthcare<br>pollution control<br>*Key Technologies*<br>optical electronics<br>computer software<br>applications of advanced materials<br>biotechnology<br>energy conservation<br>advanced sensors<br>industrial automation<br>resource exploitation |
| 2. Income Tax Deductions, Credits & Allowances | None | | *Agriculture*<br>5% allowance on fob value of agricultural product exports<br>50%/year allowance on crop planting & building/road construction | None | *Venture Capital*<br>20% tax credit for investments in high-tech or venture capital business for at least 2 years |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 2. *Income Tax Deductions, Credits & Allowances* | | | accelerated depreciation of agricultural buildings<br>abatement incentive for integrated agricultural projects<br>*Forest Plantations*<br>100% Investment Tax Allowance for 5 years<br>*Tourism*<br>10% initial and 2% annual allowance on capital expenditure on hotel buildings<br>double deduction of approved training expenditures | | |
| 3. Import Duty Exemptions | *Large Scale Infrastructure Projects and Export-Oriented Agriculture, Dairy & Livestock Projects*<br>100% exemption for duties & related charges on plant, machinery & equipment, and on raw materials & other project related goods, for the life of the project<br>*Small Scale Infrastructure, Tourism, Training, and Non Export-Oriented Agriculture, Dairy & Livestock Projects*<br>100% exemption for duties & related charges on plant, machinery & equipment, and on raw materials & other project related goods, during the project implementation period, as approved by BOI | | None | *Priority Activities*<br>Zones 1 & 2: 50% import duty reduction on machinery subject to duty rates 10% or more<br>Zone 3: 100% import duty exemption on machinery | None |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| | *Mining and Non-Renewable Resource Processing Projects*<br>case-by-case decision by the BOI and MOI | | | None | None |
| 4. Foreign Exchange Controls/Capital & Profits Repatriation | *Large Scale Infrastructure, Agriculture Sector, Dairy & Livestock Projects*<br>eligibility for exemption from Exchange Control Act<br>*Tourism, Recreation and Leisure Projects*<br>eligibility for foreign borrowings to meet the cost of imported operational items with the prior approval of the Controller of Exchange<br>*Mining and Non-Renewable Resource Processing Projects*<br>case-by-case decision by the BOI and MOI | | *Operational/Head-quarters Companies*<br>ability to hold and operate foreign exchange account in Malaysia<br>ability to borrow freely in Ringgit up to a maximum of M$10 million in Malaysia<br>ability to borrow freely in foreign exchange overseas or in the Labuan Offshore International Financial Center | | |
| 5. Personal Income Tax Benefits | *Large Scale Infrastructure Projects (<US$50 million)*<br>expatriate employees are subject to 15% tax rate during first three years of operation<br>*Large Scale Infrastructure Projects (Flagship Companies >US$50 million)*<br>expatriate employees are subject to 15% tax rate during corporate income tax holiday period<br>*Small Scale Infrastructure, Tourism, Training Projects*<br>expatriate employees are subject to 15% tax rate during first three years of operation | None | None | None | None |

| | Sri Lanka | Mauritius | Malaysia | Thailand | Taiwan |
|---|---|---|---|---|---|
| 6. Other Incentives | *Rubber Products*<br>cash grant from EDB based on volume of raw rubber used by exporters<br>*Gems and Jewellery*<br>preferential debt funding for (i) technical assistance; (ii) specialist courses; (iii) product improvement programs from EDB<br>*Electronics*<br>EDB cash grants limited to a maximum of 3% of fob value of annual exports or Rs30 million during first year of commercial operation for new investors;<br>EDB cash grants limited to 3% of the increase in annual export value over the previous year<br>EDB cash reimbursements of various training and testing activities<br>*Spices, Essential Oils, Oleo Resins, Cashew, Herbs and Papain for Export*<br>EDB loans for 50% of buildings, machinery & equipment cost of new processing facilities & cultivation of value-added crops<br>*Fruits, Vegetables, Cut Flowers & Foliage*<br>EDB loans for 50% of costs to procure/produce inputs such as seeds, planting materials<br>EDB loans for 50% of costs to procure/ produce inputs such as seeds, planting materials for nucleus farms & contract growing | None | None | *Priority Activities*<br>no limit on the percentage of equity held by foreign shareholders that is submitted to the BOI within 1996 | None |

*Notes:*

*a Thailand: in the case of relocated enterprises, the tax holiday period starts from the first day the relocated enterprise generates revenue.*

*b Thailand: income tax incentives for R&D activities require benefiting projects to make investment in R&D activities equivalent to the income tax exemption. Machinery, equipment & Thai personnel used must be approved by the BOI.*

*c Thailand: "Priority Activities" are (i) basic transportation systems; (ii) public utilities; (iii) environmental protection/restoration; (iv) direct involvement in technological development – e.g., mould, die, jig, fixture, casting industries; (v) basic industries (tools; cutting tools; grinding tools; sintered products; surface treatment; heat treatment; centres for precision machining; electronic connectors; Ni-Cd & rechargeable batteries; batteries or cells; engineering plastics.*

*d Malaysia: Eligible export promotion expenses include (i) overseas advertising; (ii) supply of free samples abroad; (iii) preparation of tenders for supply of goods overseas; (iv) supply of technical information; (v) exhibits or participation in overseas exhibits approved by MITI; (vi) public relations expenditures; (vii) business travel expenses; (viii) accommodation & sustenance expenses (limited to M$200/day); (ix) cost of maintaining sales offices abroad for promotion of exports.*

*e Sri Lanka: Export-oriented projects include (i) manufacturing and services projects using higher technology; (ii) large scale development projects; (iii) projects satisfying export requirement but not using higher technology.*

*Source: Sri Lankan information from "BOI Incentives," 9 November 1995 and "Incentives for the Sri Lankan Exporter", EDB. Other data compiled from various official sources.*

programs to develop linkages between direct and indirect exporters through direct financial support, provision of technical assistance, venture capital, and industry-led training initiatives (Box 6.1)

Fourth, there is insufficient monitoring within Mauritius of the investment incentive regimes of competitor countries for foreign direct investment, particularly those in South and East Asia. The Commonwealth mission did not find any evidence of the existence of an up-to-date information system for investment incentives (fiscal incentives, financial incentives and other incentives) in competitor countries nor of local institutional capability within government to compute effective corporate tax rates.[48]

To address these weaknesses, we recommend that *Mauritius undertake a comprehensive appraisal of its investment incentives in a comparative perspective with a view to streamlining and modernising the foreign investment policy regime*. Based on our preliminary work we feel that the appraisal should focus on the issue of providing a limited number of extra financial incentives (e.g. cash grants or equity participation schemes) for particularly attractive potential investments in the target industrial sectors; the issue of clarifying and simplifying the eligibility requirements for the investment incentive schemes (particularly the PSE Scheme); the issue of developing strong incentives to promote technological upgrading, increased value added, and local linkages; and the issue of creating an up-to date information system on investment incentives for competitor countries.

## 6.5 Effectiveness of Foreign Investment Promotion

There is a wide range of functions which have been undertaken by investment promotion systems in developing countries, reflecting differences in historical circumstances, policy emphasis, resource availability and the capabilities of the government and the private sector. In general, the primary functions can be grouped under four headings:[49]

- investment approval and regulation (e.g. screening and approving investments; monitoring compliance; compiling statistics on investment impact);
- investment facilitation (e.g. trouble shooting problems of investors; assisting in securing of all secondary licenses and permits);
- research and development (e.g. investment policy impact analysis, policy development and advocacy, publications);
- investment promotion (image building, investor services and investment generation).

The foreign investment promotion system in Mauritius, which is highly decentralised and not under the preview of a single agency, currently involves three principal institutions:[50]

- The *Industrial Development Committee* (IDC) screens all new foreign investment applications. This inter-ministerial committee, which is chaired by the Minister of Industry and Commerce and composed of representatives from at least 9 government institutions, only has the authority to recommend investment applications.[51] Final approval to invest needs authorisation from the Prime Minister's Office and a host of secondary clearances are required from other government bodies.
- A *One-Stop Shop*, created in 1990, which provides post-approval services to investors particularly to obtain various government clearances and permits to establish enterprises (including building and work permits and local authority licenses). This institution also provides information on available incentive schemes, advises investors on procedural issues and attempts to resolve bureaucratic problems.

- *MEDIA* which carries out foreign investment promotion and research and development activities. Formerly, MEDIA had a generalised investment promotion approach which highlighted the locational advantages which Mauritius has and did not emphasise specific activities or markets which offered the highest prospects of success. Recently it has attempted to shift to a more targeted investment promotion strategy which focuses on 7 specific sectors (including printing & publishing, information technology, jewellery, light engineering, pharmaceuticals, electronics and agro-industry). With a small investment promotion budget of US$ 0.4 million in 1995-96, MEDIA commissioned studies highlighting investment opportunities in the target sectors, prepared promotional material, undertook outbound investment promotion missions, participated in overseas trade fairs and provided information to visiting overseas investor delegations.[52] In 1994-1995, MEDIA organised five outbound missions to India, France, UK, Germany and the USA and serviced three inward investment delegations from France, UK and India. It has also commissioned sectoral studies from overseas consultants on several target sectors and attempts to keep them up-to-date. In 1996-97, MEDIA plans to carry out 8 outbound investment promotion missions (including ones to Malaysia, Hong Kong, India, France, Germany and Australia).

The purpose of a country's investment promotion system is clearly to attract concrete investments. Although there have been numerous attempts, it is quite difficult to accurately gauge the effectiveness of a country's investment promotion efforts. Two summary indicators are shown in Table 6.7 for Mauritius and selected Asian countries. The investment realisation rate (i.e. the share of investment approval that is implemented in a given period) is an aggregate measure of effectiveness which is commonly used. The investment realisation rate in Mauritius is quite good; it is below established East Asian NIEs like Thailand and Malaysia, but above new entrants such as Vietnam, the Philippines and Sri Lanka. Another measure of effectiveness is the return on investment promotion agency (IPA) running costs (defined as the ratio of FDI to the annual IPA budget in a given period). This measure should be interpreted with caution because the figures do not take account of the share of investment which a given agency was actually involved in.

Table 6.7 **Investment Realisation Rates and Return on IPA Running Costs, Selected Countries**

| Country | Investment Realisation Rate (a) | Return on IPA Running Costs (b) |
|---|---|---|
| Mauritius | 60% | 8.1 |
| Malaysia | 72.2% | 481.8 |
| Thailand | 67.4 % | 230.0 |
| Philippines | 58.2% | 500.0 |
| Vietnam | 48.7% | N/A |
| Singapore | N/A | 276.0 |
| Sri Lanka | 27.1% | 39.0 |

Note: (a) Based on 1994 performance data. Figures for Mauritius are for 1991-94 and for the rest are the latest estimates.

(b) Ratio of FDI inflow to Investment Promotion Agency (IPA) Budget in1995.

*Source:* Lall, Rao and Wignaraja (1996); UNCTAD (1996); *Industry Focus*, Jan-Feb 1995 p. 4; BOI (Sri Lanka).

Bearing this in mind, the return on IPA running costs in Mauritius turns out to the lowest among the Asian sample. A final measure of effectiveness is the number of site visits by foreign investors per outbound investment promotion mission. In 1995, for instance, there were only about 11.5 site visits by foreign investors per outbound mission which is a small number by Asian standards.[53] As a comparison, Sri Lanka and Bangladesh receive over 50 site visits by foreign investors per outbound mission. Thus, *according to these simple measures of effectiveness, the record of the Mauritius foreign investment promotion system is rather mixed by Asian standards and there is scope for improvement.*

Our discussions with foreign investors and the government have indicated several negative attributes in the current foreign investment promotion system and strategy in Mauritius.

Table 6.8 **Average Processing Time for Foreign Investment Approvals in Selected Countries**

| | |
|---|---|
| Mauritius | 9-30 weeks |
| Singapore | 3-4 weeks max |
| Sri Lanka | 4 weeks |
| Thailand | 4-5 weeks |
| Indonesia | 5-6 weeks |
| Taiwan | 4-8 weeks |
| Malaysia | 8-12 weeks |

*Sources:* Enterprise-Survey of the Commonwealth Mission; Asiaweek, October 13, 1995; Lall and Rao (1995).

First, there are relatively long delays in getting foreign investment approvals in Mauritius by international standards. Table 6.8 shows the average processing time for FDI approvals in Mauritius (from our enterprise survey) and six other Asian countries.[54] The data indicate that it takes between 9 to 32 weeks to obtain approval in Mauritius compared to 3 to 4 weeks in Singapore, 4 weeks in Sri Lanka, 4 to 5 weeks in Thailand, 5 to 6 weeks in Indonesia, 4 to 8 weeks in Taiwan and 8 to 12 weeks in Malaysia.[55] Singapore is generally regarded as having one of the most rapid FDI approval processes in the World and, in some cases, approval is granted within one week. Impressionistic evidence suggests that a major streamlining of approval procedures has taken place recently in Sri Lanka with an increase in the power and autonomy of the Board of Investment which has cut approval times down to a few weeks compared to several months previously.[56]

The approval process in Mauritius involves several stages and seems over-elaborate. A foreign investor has to submit a detailed proposal to the Industrial Development Committee, receive further clearances from Customs and the Ministry of Labour and final authorisation to invest from the Prime Minister's Office. The Industrial Development Committee stage generally takes about 4 weeks but major delays, sometimes lasting 12 weeks, seem to occur at the Ministry of Labour over the issue of granting of work permits to expatriate technical staff and at the Prime Minister's Office over the issues connected with security clearances for workers and the foreign investor. In contrast, it takes only about one week to get an electricity connection and two weeks for a telephone connection indicating that post-approval services are generally quite efficient.

Second, the Mauritian new targeted investment promotion strategy contains serious design flaws which reduce its effectiveness. Table 6.9 shows the details of FDI targeting strategies in Mauritius, Ireland, Wales, Malaysia and India. Ireland, Wales and, to a lesser extent, Malaysia, are generally regarded as having successful investment targeting strategies, while India has a largely passive and non-selective approach. The data on Mauritius is from the mission's interviews with MEDIA and data on the other countries are from Tillet (1996).

On the basis of the information in Table 6.9, we ranked the overall effectiveness of FDI targeting strategies in the five sample countries. The results indicated that compared to those of more successful countries (e.g. Ireland, Wales and Malaysia), the investment promotion approach in Mauritius could benefit from some "strategic re-engineering". The data show that the targeting strategies of the three successful countries had several features in common: they tended to operate through longer planning cycles (typically 5 years) which gives sufficient time for the initiation, development and implementation of a strategic programme to take effect; they tended to set clear targets and have a range of monitoring criteria which facilitates transparent performance measurement; they tended to have a clear focus with defined target sectors and markets so that resources were effectively allocated; they tended to be very active in targeting potential foreign investors and developing long-term relationships with them in order to induce new investment. The

Table 6.9 **Effectiveness of FDI Targeting Strategies in Selected Countries**

| Criteria | Ireland | Wales | Malaysia | India | Mauritius |
|---|---|---|---|---|---|
| Length of planning cycle (a) | Long | Long | Long | Short | Short |
| Clear targets set? | Yes | Yes | Yes | No | Yes |
| Number of primary target sectors | 5 | 5 | 20 | None officially | 7 |
| Examples of target sectors | Electronics, software medical equipment, Finance services | Electronics, Plastics, Vehicles, Business Services | Financial services, Food processing, Telecom Services, HQ operations | — | Printing & publishing, Information technology, Jewellery, Light engineering, Pharmaceuticals, Electronics, Agro-industry |
| Number of target countries | N/A | 4 main, 5 secondary | 6 main, 2 secondary | 6 main, 4 secondary | 10 main, several secondary |
| Individual firms targeted? | Yes | Yes | Rarely | No | Sometimes |
| Market awareness of target sectors | High | Medium to High | Low to Medium | Low | Low |
| Overall rating (b) | 1 | 2 | 2 | 3 | 3 |

Note: (a) Long term is defined as 3 years plus and short term is one year. (b) Our score based on available information in the table where 1 is good, 2 is satisfactory, and 3 needs improvement.

*Source:* Adapted from Tillet (1996); Interviews with MEDIA, September 1996.

net result is that the market had a good awareness of target sectors in successful countries.

In contrast, the Mauritian FDI targeting strategy operated on the basis of a short, planning cycle which is closed linked to MEDIA's annual Actions Plans. A one year planning cycle is an insufficient time horizon for formulating and implementing a strategic programme, particularly to attract technologically sophisticated foreign investment. The country's limited financial and manpower resources were also spread too thinly for the strategy to have much impact because of an emphasis on too many varied sectors and target markets (in 1996 there seemed to be 7 target sectors covering much of manufacturing and about 10 main target markets covering Asia, Australia, the US and Europe). There were wasted attempts to try to develop industrial sectors where the island has no obvious short or medium-term comparative advantage (e.g. light engineering) and attract investors from countries were there is likely to be little interest (e.g.

Australia). Additionally, there seemed to be the virtual absence of a regular monitoring exercise to evaluate the performance of the FDI strategy and a lack of basic monitoring criteria in place. Finally, there was a rather passive approach to dealing with potential high profile investors in target sectors and inadequate emphasis on developing long-term relationships with them to induce sustained inward investment. This may stem from an absence of detailed and up-to-date overseas intelligence about potential investors in particular target activities. The net result is that the market had a low degree of awareness of the country's target sectors.

Third, there seems to be insufficient attention paid by the Mauritian government to encouraging expansion by existing MNC affiliates, widely recognised as a crucial aspect of investment promotion in the Asian NIEs and developed countries. MEDIA and other government institutions have tended to focus their financial and manpower resources on attempting to attract new foreign investors to Mauritius and there has been a tendency to overlook the potential for significant new investment by existing affiliates. As discussed in Chapter 4, the mission's interviews with MNC affiliates indicated that some of them felt that the government had lost touch with investor concerns about the environment, particularly in relation to policy uncertainty, cumbersome bureaucratic procedures, lack of skilled manpower, rising labour costs and high sea freight costs/infrequent sailings. The costs associated with encouraging such expansions are

## Box 6.2 Singapore's Regional Headquarters Programme

Singapore has one of the most impressive programmes in Asia to attract MNCs to establish regional headquarters (RHQs) in the county. By the end of 1996, over 100 companies had set up RHQs under the programme. The RHQs, which are concentrated in high growth industries (e.g. electronics, chemicals, engineering services, hospitality and franchise management services), carry out a wide range of activities ranging from servicing regional customers to R&D work. In 1996, total business spending by the RHQ sector amounted to S$ 712 million (a 10 % increase over 1995) and 3000 new jobs were created. Of the 22 RHQs awarded in 1996, over half were either Fortune Global 500 firms or leaders in their respective industries (9 of European origin, 6 from the USA and 4 from Japan).

Singapore's relative attraction compared to other Asian centres like Hong Kong is due to several advantages: a strategic geographical location, well-educated professional manpower, excellent infrastructure, low property tax rates, a rapidly growing financial and RHQ sector, and a high quality expatriate lifestyle and attractive tax incentives under the RHQ programme. The Government of Singapore has devised three types of incentive schemes under the RHQ programme: the operational headquarters scheme (OHQ), the business headquarters scheme (BHQ) and the manufacturing head quarters scheme (MHQ). The OHQ scheme offers a 10 % tax rate for corporate income from approved services provided in Singapore and no taxation for income earned by overseas subsidiaries. The BHQ scheme offers incentives under the Economic Expansion Act and tax exemption for offshore companies. The MHQ scheme for firms, which have a significant manufacturing presence in Singapore and provide regional technical services, offers incentives like low corporate tax rates and double deduction of qualifying R&D expenses against income. The RHQ programme is administered by the Economic Development Board and strongly supported by the other government agencies such as the Inland Revenue Authority and the Ministry of Finance.

*Source:* Singapore Economic Development Board.

Table 6.10 **Characteristics of Investment Promotion Agencies**

| Name | Type of Organisation | Annual Budget (Latest Year) | Functional Structure | Private Sector Participation | Civil Service Pay Scale | Investment Screening |
|---|---|---|---|---|---|---|
| CINDE, Costa Rica | Private Association | US$11 million | Facilitator | Yes, private board | No | No |
| Foreign Investment Promotion Board, India | Government organisation | US$ 2.4 million | Single ministry | No | Yes | Yes |
| Irish Development Authority, Ireland | Quasi-Government | US$75 million | One-stop shop | Yes | Yes, but with adjustments | Yes |
| Malaysian Industrial Development Authority, Malaysia | Quasi-government | US$15 million | Facilitator | No | Yes, but with adjustments | Yes |
| Mauritius Export Development & Investment Authority, Mauritius | Quasi-Government | US$ 3.1 million | Facilitator | Yes, 50% of board consists of private sector | Yes | Yes |
| Board of Investment, Sri Lanka | Quasi-Government | N/A | One-stop shop | No | Yes | Yes |
| Board of Investments, Thailand | Government Organisation | US$10 million | Facilitator | Yes | Yes, but with adjustments | Yes |
| Economic Development Board, Singapore | Quasi-Government | US$45 million | One-stop shop | Yes | Yes, but with adjustments | Yes |

*Source:* Adapted from Lall, Rao and Wignaraja, 1996; Interviews with MEDIA, September 1996.

typically lower than the marketing costs needed to attract new foreign investment while the economic benefits and the effects on the country's image can be significant.

Fourth, a notable gap in the investment promotion strategy of Mauritius is the absence of a programme to induce MNCs to set up regional head quarters for Africa in the country (see Box 6.2 on Singapore's successful regional head quarters programme). Mauritius has the potential to become one of the more attractive sites in Africa for locating regional head quarters. The two important regional competitors are Johannesburg and Harare. Johannesburg's claim comes from a pool of professional manpower and good infrastructural facilities, but it suffers from a negative image problem caused by a high crime rate and highly political trade unions. Harare has a base of educated manpower, good infrastructure, little trade union activity and a pleasant expatriate living environment, but there is some uncertainty in the foreign investment climate due to the Government of Zimbabwe's new indigenisation policy. By comparison, Mauritius offers educated manpower, good infrastructure, little trade union activity, a pleasant expatriate living environment and a stable foreign investment regime. The locational disadvantages – including high labour costs, high air fares and limited land for expansion – are not so significant relative to the many advantages and could be offset by appropriate policy actions including the formulation of a programme to attract MNCs to set up RHQs.

Fifth, although MEDIA has a private sector-oriented Board and a high share of university graduates amongst its staff, it still lacks sufficient autonomy and power to undertake pro-active

investment promotion activities. In particular, staff remuneration, budgeting and procurement requirements are subject to public sector rules, and flexibility in hiring, compensating and firing staff is somewhat limited. This makes the process of reforming the organisation from within and hiring and retaining high calibre staff quite difficult. International experience suggests that good practice IPA's are increasing getting more autonomous and powerful and are moving away from standard Civil Service practices governing pay and other operational issues (see Table 6.10).

Thus, we recommend that Mauritius takes steps *to increase the effectiveness of its foreign investment promotion strategy*. It should establish a new specialised agency for foreign investment promotion, as indicated by the Finance Minister. This new agency should be staffed by people with the appropriate private sector experience and offer competitive pay, benefits and comprehensive training. The new agency should place considerable emphasis on targeting selected activities and investors, re-vamping the current investment promotion strategy by carrying out an investor perception study and developing a pro-active approach to investment promotion.

One key element of the pro-active role to investment promotion should be a regional headquarters (RHQ) programme to attract leading MNCs to set up bases for the African region. In this vein, Singapore's RHQ programme offers valuable insights on detailed incentive packages and institutional support.

The current One Stop Shop should be incorporated into the new agency and provide high quality post-approval investor services, such as obtaining work permits and various infrastructure facilities. MEDIA, which currently undertakes investment as well as trade promotion and industrial estate management, should be transformed into a specialised trade promotion organisation, with its management and development of industrial estates hived off to the private sector.

Apart from the above, the approval process must be greatly simplified and streamlined immediately, reducing the number of stages in the approval process to a single stage, centring on one Foreign Investment Approval Committee. This committee should consist of high-level representatives from a maximum of six ministries, chaired by a senior Cabinet minister, and should meet twice a month. A target 2-4 weeks should be set for the completion of the foreign investment approval process under normal circumstances. Difficult cases could be referred to a sub-group of the Foreign Investment Approval Committee which would draw on expertise in all areas of government. An appeals procedure should also be established for cases of investors which have been rejected. This should be followed by the abolition of all foreign investment approval processes and a concentration on investment promotion.

# 7

# EPZ Infrastructure

## 7.1 Introduction

Industrial estates (IEs) and export processing zones (EPZs) can reduce the capital and operating costs of exporting enterprises by providing developed physical facilities and efficient infrastructure facilities. This chapter reviews EPZ development in Mauritius and examines the cost competitiveness of the EPZ infrastructure (particularly raw land and building costs, electricity and telephone charges, water and freight rates) in a comparative perspective.

## 7.2 A Brief Review of EPZ Development

Mauritius is probably the first African country to have launched an EPZ programme.[57] Although its EPZ programme formally dates back to the 1970 Export Processing Zone Act, the first industrial estate at Plaine Lauzun was initiated by the government in 1968. As Table 7.1 shows, the Mauritius EPZ programme began around the same time as those in Taiwan and Malaysia and pre-dates those of many other Asian countries including Indonesia, Thailand, Sri Lanka and

Table 7.2 **Private and Public Industrial Estates (IEs) in Mauritius, 1995**

| IE | Total no of enterprises | Total no of employees |
|---|---|---|
| PUBLIC IEs: | 105 | 31,500 |
| Coromandel (DBM) | 60 | 10,000 |
| Plaine Lauzun (DBM) | 35 | 8,000 |
| Vacoas – Phoenix (DBM) | 10 | 2,500 |
| 16 MEDIA IEs | 35 | 11,000 |
| PRIVATE IEs: | 340 | 57,500 |
| Floreal Group IE | 1 | 11,000 |
| Summit Textile IE | 1 | 14,000 |
| Bonair Group IE | 1 | 4,800 |
| Afasia Group IE | 1 | 2,800 |
| 16 Other Private IE | 336 | 24,900 |
| **GRAND TOTALS** | **480** | **80,500** |

*Source:* MEDIA Data base, August 1996. Data refer to 1995 December.

Table 7.1 **International EPZs and EPZ Areas Within Industrial Estates**

| Country | Programme Start Date | No. of Private Zones | No. of Public Zones | Total Direct Employment | Annual Exports (US$ millions) |
|---|---|---|---|---|---|
| Mauritius | 1970 | 20 | 19 | 80,500 | 902 |
| Indonesia | 1985 | 8 | 1 | n/a | 1,200 |
| Malaysia | 1971 | 2 | 13 | 230,000 | 2,000 |
| Thailand | 1981 | 7 | 8 | 70,000 | 550 |
| Taiwan | 1966 | 0 | 3 | 300,000 | 13,000 |
| Sri Lanka | 1978 | 0 | 3 | 86,539 | 3,845(b) |
| India | 1965 | 0 (a) | 7 | n/a | 700 |
| Bangladesh | 1983 | 0 | 2 | 17,728 | 128 |

Note: Mauritius data as of September 1996 (export and employment data for 1995). Sri Lanka data is as of July 1995. Indonesia for 1992; Bangladesh for 1993; all other figures for mid -1994.

(a) private zones are recently allowed. (b): cumulative.

*Sources:* MEDIA, Aug 1996; the Services Group, Inc., Washington DC, and official sources.

Bangladesh. One feature of the Mauritian EPZ programme is that enterprises are not typically located in large, geographically specific export processing zones, but scattered through the island in small industrial estates or individual industrial sites. In effect, the whole country serves as an export processing zone. Another feature is the mixture of public and private provision of industrial estates since the early 1970s. By the end of 1995, there were 19 public and 20 private industrial estates.

There are three types of industrial estates: those run by Mauritius Export Development and Investment Authority (MEDIA), those run by the Development Bank of Mauritius (DBM) and those run by the private sector. The DBM and the private sector built only 6 industrial estates during 1968-1978. Following a period of inactivity in 1979-1983, there was an acceleration in industrial estate construction driven by an increase in inward investment in Mauritius. From the mid-1980s, MEDIA (rather than the DBM) was empowered to build additional industrial estates and large local private firms (such as Floreal and Bonair) were also encouraged to follow suit. However, little attempt has been made to rationalise the ownership pattern under a unified management structure. Three of the larger industrial estates built by the DBM in the past have remain under its management. Today, the DBM has about 110,000 $m^2$ of factory space compared to about 100,000 $m^2$ for MEDIA.

MEDIA has been actively developing the EPZ infrastructure in the 1990s, particularly for specific industrial and service activities. As discussed in Chapter 4, it set up an Informatics Park in 1994, in which about 15 firms, employing 225 people, had begun operations by mid 1996. It also plans to set up a pharmaceutical village, an exhibition park and an industrial park for light industrial activities.[58]

Table 7.2 shows the number of enterprises and employment in public and private industrial estates. At present, the private industrial estates account for a larger number of enterprises and employment than the public industrial estates. The single largest industrial estate (in terms of number of enterprises), Coromandel, contains 60 enterprises and employs 10,000 persons. This is much smaller than those in Asian countries such as Indonesia, Malaysia and Sri[59]

## 7.3 The Cost Competitiveness of EPZ Infrastructure

This section examines three key aspects of the cost competitiveness of EPZ infrastructure in Mauritius compared with our Asian comparator countries: raw land purchase and building rental costs; utilities charges (electricity, water and telecommunications); and air and sea freight rates.

First, raw land purchase costs and building rental costs. Table 7.3 shows the purchase price of raw industrial land (i.e. without utilities and transport connections) and the rental costs for single floor concrete factory shells.[60] Unfortunately, reliable data on the sales price of serviced industrial land (i.e. land improved with utilities and transport connections) and building construction costs were not available for Mauritius.[61]

Table 7.3 **Comparative Industrial Estate/EPZ Land and Building Costs, Latest**

| Country | Raw Industrial Land Purchase Price (US$/m²) | SFB Rental Rate (US$/m²/year) |
|---|---|---|
| Mauritius | 12-36 | 2.5-3.5 |
| Indonesia | 5-100 | 1.20 |
| Malaysia | 8-60 | 2.20-4.30 |
| Thailand | 49-80 | n/a |
| Taiwan | 40-200 | 4.00-6.00 |
| India[62] | n/a | n/a |
| Sri Lanka | 5-35 | n/a |
| Bangladesh | n/a | 2.50 |

*Source:* For Mauritius from MEDIA and for the other countries from The Services Group, Inc., Washington DC. Mauritius data is for mid-1996 while the other data is as of mid-1994. SFBs refer to one story, concrete block factory shells. Raw land is unimproved land. Industrial infrastructure costs are for locations within industrial estates.

Table 7.4 **Comparative Utilities Services Costs**

| Country | Off Peak Electricity Rate for Industry (US$/kWh) | Water Rate for Industry (US$/m³) | Telecom Rate (US$/minute for call to USA) |
|---|---|---|---|
| Mauritius | 0.08-0.16 | 0.44 | 1.73 |
| Indonesia | 0.044-0.076 | 0.92-1.21 | 2.21 |
| Malaysia | 0.027-0.062 | 0.46-0.69 | 1.92 |
| Thailand | 0.004-0.12 | 0.20-0.44 | 2.40 |
| Taiwan | 0.08 | 0.40 | 1.59 |
| India | 0.059-066 | n/a | 2.09 |
| Sri Lanka | 0.043-0.063 | 0.39-0.50 | 2.42 |
| Bangladesh | 0.69 | 0.32 | n/a |

*Source:* Mauritius: Government of Mauritius (1996b); Pakistan: BOI, Pakistan; Sri Lanka: BOI; Other Countries: World Bank (1994 c). The data for Mauritius related to mid-1996 and those for the other countries for 1994-95.

Between 1988 and 1996, the cost of raw industrial land in Mauritius increased *six times* from 2-4 US$/m² to between US$ 12-36 US$/m². The cost of raw land purchase price in Mauritius is significantly lower than in the Asian NIEs but somewhat above South Asian economies like Sri Lanka. Although no data are available, impressionistic evidence suggests that raw land purchase prices in large South Asian economies like India and Bangladesh are lower than in Mauritius. On MEDIA-run industrial estates, buildings are provided on three year lease terms, which are renewable. The rental rates in Mauritius vary between 2.5-3.5 US$/m² (rents are increased by 6 per cent per year regardless of the rate of inflation).[63] Mauritian building rental rates are higher than in Indonesia, Malaysia and Bangladesh, but lower than in Taiwan.

Second, *utilities services costs*. Table 7.4 gives relative off-peak electricity rates for industry, water rates for industry and telephone call rates to the USA. The Central Electricity Board is the sole provider of electricity in Mauritius. The bulk of this (80 per cent) comes from thermal power (based on imported oil) and the remainder from hydroelectricity or bio gas. Of the 34 sample firms in the enterprise survey undertaken for the mission, 53 per cent said that fluctuating electricity supplies had a negative effect on competitiveness. In part, the perceived seriousness of the problem was a function on the location of the enterprise. Enterprises located further away from Port Louis complained more about problems of unreliable electricity supplies than firms located closer to the capital. With the exception of Bangladesh, Mauritian electricity rates (0.08-0.16 US$/kWh) are much higher than in Asian countries (table 7.4).[64]

The Central Water Authority is responsible for providing and maintaining industrial water supplies and sewage systems. It is also responsible for environmental standards, monitoring and impact assessment in regard to industrial water supplies. The Central Water Authority is quite strict about enforcing standards regarding industrial effluents. About 36 per cent of the sample enterprises in our survey said that inadequacies in water and sewage systems hindered their competitiveness. One large textile affiliate said that there were large disparities in the water and sewage systems in public and private industrial estates (IE), but it was not specific about which IE was better. The water rate in Mauritius is lower than in Indonesia and Malaysia, but higher than in Taiwan, Sri Lanka, Bangladesh and Thailand.

By the standards of the Asian NIEs and South Asia, Mauritius has a large number of telephone main lines in operation. UN estimates indicate that in 1994 Mauritius had 117 mainlines per thousand population in operation compared with 147 in Malaysia, 47 in Thailand, 13 in Indonesia, 111 in India, 0 in Sri Lanka and 2 in Bangladesh.[65] Mauritius Telecom, the main provider of basic telephone and fax connections

Table 7.5 **Sea and Air Freight Rates for Garments, Latest (a)**

| Country | Air Freight Rates (US$/kg to USA) | Sea Freight Rates (US$20' to East Coast USA) |
|---|---|---|
| Mauritius | 4.80 | 2,000-2,600 |
| Malaysia | 6.94 | 2,500 |
| Thailand | 6.11-6.55 | 2,500 |
| Taiwan | 10.91 | 2,000 |
| India | 5.09 | 2,000 |
| Sri Lanka | 6.67 | 1,910 |
| Bangladesh | 5.00 | n/a |

Note: (a) inclusive of port and insurance charges, mid 1994.
*Source:* MEDIA; Lall, Rao and Wignaraja (1996).

in the island, seems to be quite an efficient service provider. For instance, foreign investors reported that it takes only two weeks to get a telephone line connected and that international direct dialling works well throughout the island. Moreover, international call charges in Mauritius are relatively competitive – the cost per minute for a call to the USA is US$ 1.73, 15-30 per cent cheaper than the call rates in Thailand, Indonesia, Sri Lanka and India. Interestingly, Taiwan is significantly cheaper than Mauritius in this regard. However, one notable problem relates to high charges for telephone installation, rental and security deposits for foreign industrial enterprises. In 1996, the total charge amounted to about US$ 450 (made up of a telephone installation charge of about US$ 70 for each exchange line as well as a US$ 300 security deposit and an annual rental charge of about US$ 80). This is nearly double that of Sri Lanka and two thirds of that of Malaysia.

Third, *sea and air freight rates*. Mauritius has a single international port which handles about 60 per cent of the value of exports while the remainder is air freighted from the sole international airport.[66] The country is in the process of modernising and expanding the port in order to enable it to handle transhipment. Given the small size of the island, these facilities are probably sufficient to handle the volume of international trade. In 1996, there were about 7-8 international air lines and shipping lines from about 19 different countries servicing the country's cargo trade. The country has a national air line, but lacks a shipping line. Mauritius' distance from markets and suppliers of raw materials means that it requires a cheap and efficient overseas transportation system. As we noted in Chapter 3, however, *the most significant obstacle to competitiveness in Mauritius mentioned by the export enterprises was infrequent sailings and high freight costs*. About 76 per cent of the sample enterprises considered this to be a serious problem (47 per cent said that it was very negative and 29 per cent said that it was moderately negative). The lack of a national shipping line dedicated to serving major markets at regular intervals is viewed as a major problem by industrial enterprises. For instance, firms argue that shipping lines, which connect South Africa to Europe, frequently do not pick up cargo at Mauritius if only a few containers are involved. This can cause cancellation by foreign buyers and significant delays to small export orders. Transport bottlenecks also hinder the ability of Mauritius to deal with business based on quick response times.

What do the comparative cost data show? Table 7.5 provides information on sea and air freight rates for garment exports to the USA for Mauritius and several Asian countries. Garments were selected because they constitute the country's major manufactured export.[67]

The Mauritian air freight rates (4.80 US$/kg to the USA) are the lowest of the sample countries. However, air freight rate figures for Mauritius provided by MEDIA indicate a much larger range for garments, from 3.7-11.0 US$/kg, indicating that some negotiation takes place, which adds a premium to the published rates depending on the availability of air cargo space. Export enterprises argue that this may be due to the fact that Air Mauritius is somewhat protected against foreign competition with regard to its air cargo business.68 Nevertheless, no information was available to the mission on the details of such protection. Our data also indicate that sea freight rates for Mauritius are slightly more

expensive than some Asian countries. Like air cargo, sea freight charges seem to vary, depending on the number of containers and the strength of the loyalty arrangement between the agent and the shipper.

Thus, in recent years, there has been an improvement in physical infrastructure, particularly in the areas of port and telecommunications. However, more remains to be done. The existing problems include: infrequent sailings/ high sea and air freight costs; high rental costs for factory space in EPZs, high rates for telephone installation in EPZs, fluctuations in electricity supply and high electricity charges.

We recommend the following measures to improve the country's infrastructure: (1) Undertake a feasibility study for establishing a national shipping line. In addition, liberalise the entry of low cost air cargo operators to compete with Air Mauritius and expand the cargo capability of Air Mauritius. (2) Carry out an assessment of rents in public and private industrial estates and link increases in rents to changes in the retail price index. (3) Liberalise the entry of overseas telephone providers. (4) Develop a low interest loan scheme for enterprises to purchase voltage stabilisers and power factor correctors. Establish a consultancy unit within CEB to install such equipment and help consultancy firms to undertake energy audits at competitive rates.

# 8

# Policy Recommendations for a Competitiveness Strategy

## 8.1 Introduction

Mauritius is at a crucial stage in the evolution of its export competitiveness. Export growth, driven in the past by a combination of good economic management, favourable external circumstances and a cheap, literate workforce, is running out of steam. The competitive base has to be transformed, with existing exports raised to a higher 'plane' of quality and new exportable products and services added. This requires improving further the enabling conditions for private sector activity and investment,[69] and helping it to develop new competitive advantages in line with high and rising wage levels. Such a transformation poses major challenges for a small economy located on the edge of a large and potentially rich but economically under-performing region. At the same time, there are several advantages that Mauritius can exploit: its human capital, its experience of exporting, the flexibility and openness of government structures, and the range of supporting services that are taking root. Even its location can be a source of strength.

## 8.2 Goals, Activities and Institutional Setting

### 8.2.1 Goals

The goals of export strategy are straightforward: to maintain the growth and market shares of products that *already have* a competitive advantage in world markets and to develop new competitive advantages in manufacturing and services. Both require expanding existing markets and seeking new ones. Geographical considerations require that considerable attention be paid to the neighbouring region, where Mauritius has several competitive advantages and where export prospects are steadily improving as economic liberalisation continues and economic growth is resuming, albeit at a modest pace. The moves for regional co-operation and the likelihood of South Africa becoming an engine of development add to the attractions.

### 8.2.2 Activities

Which export activities are likely to thrive in the future? As far as existing exports are concerned, the predominant activity – *textiles* and *clothing* – will continue to be central to the export effort and will retain a significant market niche. Many leading firms have already upgraded their quality and technology considerably, though much remains to be done to raise competitiveness elsewhere, especially in SMEs. Considerable effort will be needed to further improve the skill, design and technology base in the industry, promote flexibility and specialisation and strengthen supporting institutions. High wages need not a barrier to export competitiveness if quality is upgraded, and Mauritius has an edge over most developing countries in achieving such upgrading. What is needed is to maintain this edge.

The potential for new export products and services has been analysed on several occasions. The Minister of Finance mentions the following[70]:

- In the *agro-based sector*, activities such as fishing, fruits and horticulture offer scope for direct export and for further processing.
- *Tourism* offers the potential for further expansion in a number of areas such as eco-tourism, leisure parks, pleasure boating, island cruising and handicrafts.
- In the manufacturing industry, possibilities include *pharmaceuticals*, *printing* and *publishing*, *jewellery* and *light engineering*.

- In services, IT offers scope, particularly in the area of 'back-office work' for major firms in the industrialised countries. The start made in the Informatics Park will be aided by liberalisation of the telecommunications industry.
- There are opportunities for the sale of *consultancy services* through the region.
- The *free port* sector can be encouraged by investment in the development of regional shipping and airline services.

In addition, much discussion in Mauritius has revolved around prospects for the *electronics industry* in[71] and *offshore banking* in services.

This report has focused on some manufacturing, though some attention has been paid to IT: this is not intended to suggest that the other activities noted are less promising. On the contrary, several are thriving and offer excellent prospects for the future. The choice reflects only the capabilities of the team.

In the manufacturing sector, the mission believes that the best prospects for future expansion lie, apart from textiles and garments, in **printing and publishing** and **electronics**.

Mauritius has already established a base of good printing technology, and firms have been upgrading their facilities in recent years. The technology in place is fairly sophisticated and skills have developed to an impressive extent. The idea of attracting firms from East Asia in complex support services like colour separation, typesetting and advertising media is a good one, and the experience of Singapore and Hong Kong suggest that even with very high wages there is a good chance of attracting significant business to Mauritius.

In *electronics*, the past record in Mauritius has not been very impressive. Some failures have had "a traumatic effect on attitudes to the electronics industry" (Kelly and Kelly, 1993, p. 22). One large firm, Litronics, which employed 2000 people at its peak, went out of business in 1981 because of the decline of its main product (light emitting diodes) and its failure to develop new products. Two other electronics firms failed, one because it failed to realise economies of scale and the other because it had old, used equipment. At present, export-oriented companies consist of electronic watch movement assembly, a pH meter assembly plant, a quality crystal preparation plant, a coil winding plant, assemblers of professional audio equipment and an assembler of photo-voltaic units. Of these, the four watch assemblers are the largest component and have led to the development of a base of skills in micro-assembly.

While the small base of skills in electronics is an advantage, there is no support base of component manufacturers or even a well-stocked distributor in Mauritius. This raises the costs of breakdown, compounded by the lack of service and maintenance facilities and capabilities. However, the potential of the industry is immense, and in Asia there continue to be significant new investments in search of low cost skills and facilities. An appendix to this chapter provides some recent information on the industry in Asia. The study by Kelly and Kelly (1993) notes the following products that may be profitably made in Mauritius, based on its location, capital and skill availability, enterprise size and the possibility of attracting foreign investors: components for emergency lighting systems; delay lines; security panels; a 'flagship' project such as printed circuit boards. It may be useful, in view of the rapid technological changes in the industry and the dynamism of FDI, to take another look at the possible activities that Mauritius can get into. The Kelly and Kelly report downplays the potential of the African market, though it does say that the possibilities should not be neglected: in view of recent events, it is also necessary to explore the new opportunities that may have arisen in the region.

As far as ***services*** are concerned, the export of ***IT services*** is often mentioned in Mauritius as a potential area for growth, though it is difficult to see any competitive advantage that it offers, apart from a linguistic one, in comparison with coun-

tries like India (Vietnam is now being mentioned as a potential new entrant). While a start has been made in the Informatics Park, the team is not convinced that it will amount to much more than a small fringe activity unless a particular niche activity (e.g. desktop publishing) can be firmly established as an area of excellence.

It is worth noting the efforts by *Singapore* and *Malaysia* to develop their IT capabilities: Singapore by its strategy of developing an 'intelligent island' and Malaysia by its strategy of building a 'multimedia super-corridor'. Both governments are investing heavily in the infrastructure needed. According to a recent report in the *Financial Times*, Singapore is "integrating the entire island into a high capacity multimedia cable network capable of carrying television, cable TV and Internet signals to a wall socket in every home... Last year, Singapore announced it was doubling the value of research and development grants to companies, foreign or local, on the island to S$4bn (£1.7bn) over the next five years. Senior executives in foreign corporations said the generous grants, as well as the island's reliable infrastructure, computer-literate people and highly efficient work force were the city state's strongest

## Box 8.1 The Prospects for Offshore Financial Services in Mauritius

Since the late 1980s the Government of Mauritius has promoted the export of financial services, especially through an off-shore financial centre (OFC). The financial and business services sector has grown impressively over the past five years at an average rate of 10% per year (but from a low base), and contributed 5% of GDP in 1994. It has attracted some 3300 establishments engaged in a variety of activities, ranging from offshore funds and investment holding to international trading, offshore trusts and offshore banking. The offshore banking sector consists of 7 banks with a total base of US$ 790 million (mid 1995). About 80% of all offshore companies incorporated on the island were set up to invest in India, with 45 mutual funds incorporated in Mauritius investing $3.5 billion. An additional $1 billion has been channelled into India by multinational and non-resident Indians. Mauritius has thus emerged as the fourth largest foreign investor in India. The OFC is viewed, after garments, tourism and sugar, as the fourth pillar of the Mauritian economy.

The government took several policy actions to create the OFC including:

- The amending of the Companies Act in 1990 to allow the operation of non-financial offshore companies.
- The Mauritius Offshore Business Activities Act, under which the Mauritius Offshore Business Activities Authority (MOBAA) was created to promote and oversee all non-bank offshore companies, and Offshore Trust Act provided the legal framework for Trusts.
- The Double Tax Agreement (DTA) with India, under which only a 5% withholding tax is imposed compared to 20% under Indian law.
- Providing OFC enterprises complete exemption from capital gains taxes and withholding taxes on interest payments to Mauritian creditors.
- The Banking Act, 1988, laid the framework for offshore banks and assigned supervisory authority to the Bank of Mauritius. The offshore banks have few regulations; are exempt from reserve and prudential requirements; only face a 15% tax on their profits; are exempt from stamp duty and withholding taxes on interest payments to non-residents; and permitted to lend to residents and non-residents in foreign currencies.

While the country's growth as an OFC has been helped by its stable political climate, a relaxed and open regulatory framework (with a supervisory regime capable of preventing illegal activities like money laundering) and a well-developed telecommunications system, its attraction to funds wishing to invest in India derives more from its traditional ethnic links with India and the tax advantages offered by the DTA.

However, these advantages may prove evanescent. With the globalisation of the world economy and the larger role played by private capital flows, Mauritius will face intense competition from established and new OFCs. There are presently 25 major OFCs, the most prominent being Bahamas, Bahrain, the Cayman Islands, Hong Kong, the Netherlands Antilles, Panama, Singapore, and Cyprus (a significant newcomer).

There are, in this context, several aspects of its location and policy and institutional framework that may hinder Mauritius' growth as an OFC:

First, its remoteness from major markets. OFCs tend to locate in clusters around the major and richer markets of Europe, the Americas and Asia. Mauritius' natural potential markets are Eastern and Southern Africa and the Indian Sub-continent. However, the volume of business transacted here is relatively small, and the establishment of a freeport to complement the financial operations is unlikely to significantly improve its attraction as an OFC.

Second, the regulatory framework. There are considerable variations in the extent of regulation internationally. Some centres, like Hong Kong, are lightly regulated, and take a laissez-faire approach; others, such as Singapore, have tighter regulations. Mauritius has chosen a regime closer to that of Singapore, in order to build up an image and reputation as a safe haven. It has taken account of the loss in confidence that follows in the wake of allegations of money laundering, as has been the case in some Caribbean centres. This choice, while rightly cautious, may be regarded as too strict in comparison with that of some other centres and may prove a competitive handicap.

Third, regulation and promotion. MOBAA is responsible for both regulation and overseas promotion of the OFC. International experience suggests that such arrangements tend to result in a conflict of interests and reduce the effectiveness of both functions. MOBAA, with only 11 professional staff, may also have insufficient resources for effective overseas promotion and collection of market intelligence.

Fourth, human capital. Mauritius has a modest base of skills and experience in finance, law and accounting. Current rates for auditing services are high in relation to other off-shore centres, while expatriate work permits are relatively difficult to get. There is also a shortage of information technology specialists, impeding the growth of support services for offshore operations. Other successful OFCs such as Hong Kong and Singapore have benefited from electronics-related FDI which has contributed to the upgrading of information technology skills – Mauritius lacks this source of skill creation.

There are a number of possible policy initiatives for Mauritius: relaxing the regulatory framework for OFCs while maintaining soundness; devising a more aggressive approach to tapping new OFC business and gathering market intelligence; separating the regulatory and promotion functions of MOBAA, placing the former in the Bank of Mauritius; dealing with skill shortages by investing in relevant education and liberalising work permits; and continuing to upgrade the telecommunications system. The Government should consider launching a special study of the OFC in order to develop an appropriate competitive strategy.

points."[72] Malaysia "aims to create Asia's leading silicon valley in a 750 sq km zone near Kuala Lumpur ... The rivalry between Malaysia and Singapore has meant not only that potential investors are being offered some unprecedented incentives, but also that each country is coming under increasing pressure to soften foreign media controls". The incentives offered by Malaysia include a 10 year tax holiday, freedom to employ unlimited numbers of foreign staff and to own 100 per cent of the facilities. Foreign companies will be allowed to bid for projects in the corridor on preferential terms. Malaysia is planning to build a new "multimedia university" in a planned futuristic city, Cyberjaya; the first foreign company to be approved for investing in the corridor is Nippon Telephone and Telegraph of Japan.

While Mauritius may find it difficult to mount such ambitious initiatives, it would be important to launch a clear initiative, with ample publicity, that will catch the attention of potential investors. For Mauritius, what may be very important is the regional card: MEDIA notes the possibility of Mauritius becoming a 'hub' for IT operations in the COMESA region. This would require the government to target the specific skills and infrastructure needed and to develop these before other countries in the region. The Asian example suggests that the investments required may be quite substantial, but a start has already been made to build up IT capabilities and can be strengthened.

The other promising area of service exports is *consultancy* in the African region. Many of these service exports can be based on Mauritius' own experience of export led growth, in which it has a lead over all neighbouring countries: liberalising the export sector, setting up EPZs, managing the development of buyer-seller relations, hosting international trade fairs in textiles and garments, streamlining bureaucratic procedures and operating incentive schemes and developing productivity improvement services. Since most other African countries are liberalising their economies and seeking to promote export-oriented manufacturing and service operations, they will seek expertise from other countries that have successfully managed the process. Not only will the advice be more appropriate, Mauritius has a significant advantage in its bilingual capabilities. It may also be able to exploit its membership of the Southern African Development Community (SADC) to develop marketing opportunities for consultancy services.

The experience of privatisation and restructuring of public utilities and infrastructure can provide a valuable base for the export of services. In many Asian and Latin American countries, utility companies have become important investors and earners overseas on the basis of the lead they have established in their home countries. Chilean firms are investing in many neighbouring countries in power generation and telecommunications. Malaysian firms are involved in similar activities in Asia. Singaporean firms are aggressive in setting up and managing EPZs. Where capital and skill needs are very large, Mauritian companies can act jointly with firms from other countries.

A final area of service exports is *off-shore financial services*, particularly offshore banking which the government has attempted to develop in recent times (see Box 8.1).

### 8.2.3 Institutional Setting

The design and implementation of an export development strategy may require institutional changes. The present structure of policy analysis and formulation is dispersed over several ministries and institutions, and lacks a central co-ordinating mechanism.[73] It would be desirable to set up mechanisms to continuously monitor current competitiveness, analyse emerging trends and problems, devise appropriate solutions and implement them.

The steps involved are as follows:

An agency like the proposed *Mauritian Competitiveness Council* is necessary to act as the focal point to manage, monitor, devise and implement policies that at this time are being

- Set up a *Mauritius Competitiveness Council* to take charge of all issues pertaining to the maintenance and creation of export capability. This council should include representatives of all the ministries and departments concerned with trade, industry, skills, productivity, finance, market intelligence, FDI and infrastructure, and have the authority to design and implement strategies that cut across all the relevant ministries.
- Under this Council, establish a *competitiveness monitoring* unit to analyse the trade climate and assess options for Mauritian exports, existing and potential.
- Set up a *technology assessment unit* that relates emerging technologies to the ability of Mauritian industry to keep up and utilise them to best advantage.
- Develop a *manufacturing efficiency monitoring and response* capability that studies the productivity, efficiency, flexibility and innovativeness of industry in relation to international benchmarks, identifies problems and develops solutions. This would allow problems to be identified as they arise and they could be addressed immediately.
- *Involve the industrial sector* deeply in the analysis of competitiveness problems and solutions, and in the implementation of those solutions.
- Link the *technology infrastructure* institutions (MSB, UoM, EPZDA, SMIDO and others that may be set up) to the efficiency programme, ensuring that the private sector is willing to use their services and that they are able to respond effectively.
- *Evaluate* the results of these efforts on a continuous basis to ensure that they are efficiently carried out, are cost-effective, and meet the needs of private firms.

performed by several different agencies in an unco-ordinated fashion and without full analysis. The emphasis should be on securing full private sector participation from the start, with a commitment by the government that their needs will receive precedence. One of the major functions of the Competitiveness Council should be to develop a *monitoring unit* that keeps track of Mauritian export performance in all major markets, tracks its market shares, watches emerging competition and feeds back market information to the government and exporters.

*Technology assessment* is concerned with the more immediate technological needs and problems of industry. Such an assessment should take place at the *cluster*, *industry* and *firm* level, and would form the core of competitiveness strategy. At the more operational level, there is the need for a manufacturing efficiency and response unit which collects information on day-to-day problems and feeds the information to the relevant ministries so that solutions can be devised. The model for this may be the Korean 'Export Situation Room' where a team kept constant track of export performance (data were updated every day) by all major industries at the detailed (product and firm) level, and monitored problems that prevented export targets from being met. The minister would visit the room regularly and intervene as necessary. Such constant high level intervention was useful in keeping the pressure on both the firms and the bureaucrats concerned with the export effort. This suggests that the Mauritian Competitiveness Council should work closely with the Prime Minister's Policy Unit to ensure that its work has maximum effectiveness.

Needless to say, any sustained export strategy can work only if the private sector is fully informed and involved, and participates in the decision-making process. An institutional mechanism such as the monthly meeting of key ministers and heads of enterprises, chaired by the Prime Minister has to be evolved to enable such participation to occur on a continuous basis.

## 8.3 Trade and Industrial Policies

The trade regime in Mauritius, which previously emphasised both import substitution and incentives for exports, is now fairly liberal and probably one of the more open in Africa. Though effective protection is still quite high and variable, its level has fallen since the 1980s. The incidence of protection as far as the development of export-oriented activities is concerned is not very large, though clearly sustained efforts should be made to minimise this incidence and eliminate any remaining distortions in resource allocation. There is a reasonable range of export promotion policies by developing country standards, which are quite well administered, but the overall export push and MEDIA need to be considerably strengthened. Our work suggests that MEDIA undertakes too many functions; its effectiveness is held back by a lack of funds; it offers only a limited range of export marketing and information services with little attention to cost recovery; it does not formulate an overall export development plan for the country and a set of export targets; and, in spite of its work, the export marketing efforts of SMEs are very weak relative to large and giant firms.

With regard to exchange rate management, the country has been less aggressive in devaluing than its main competitors. This is likely to affect cost-sensitive industries such as garments, characterised by small margins and mobile international investors. As far as bureaucratic procedures and regulations are concerned, there have been significant improvements, with the abolition of import licensing, the freeing of foreign exchange transactions and streamlining of customs clearance at the port and air port. Nevertheless, enterprises complain about delays in the foreign investment approval process, in obtaining refunds on import duties and in getting work permits for technical staff.

The team was able to gather some impressions on the nature of the policy and incentive regime and supply-side factors from enterprises. On the policy and incentive side, the most pressing constraints to export growth and upgrading appeared to be high interest rates and cumbersome bureaucratic procedures (particularly in relation to approvals for DBM loans and obtaining refunds on imported inputs). The appreciating exchange rate, policy uncertainty and lack of access to finance were remarked on by some firms. Infrequent sailing and high sea freight costs were mentioned as the leading constraint to export growth and upgrading on the supply-side, followed closely by shortages of skilled labour and technical manpower; the lack of reliable suppliers of raw materials, parts and components; and inadequate technology institutions.

The main recommendations on trade and industrial policies are as follows:

- Persist with a credible, transparent strategy of import liberalisation to achieve a low and uniform level of effective protection. Set specific advance targets for phased reductions in import tariffs. This will give firms strong signals to restructure. Phase out protection for highly protected activities without any clear economic rationale and support those that can develop into future exports within a relatively short period with supply-side measures to promote rapid restructuring and upgrading.
- Entrust the task of import liberalisation to a single government institution (such as the newly established Ministry of Industry and Commerce) which should draw up a simple, clear programme of future tariff reform. This institution should also maintain an up-to-date information system on import tariffs and other forms of non-tariff protection and develop strong in-house capabilities to carry out inter-temporal effective protection studies at regular intervals. These measures will provide the government with the relevant information to assess progress made in reductions in protection.
- Pay more attention to monitoring cross-country behaviour in exchange rate

management and emulate the more aggressive real exchange rate posture witnessed in neighbouring African and Asian competitors. The Bank of Mauritius could take the lead role in this area and, if required, the collaboration of the IMF could be sought.

- Continue to strengthen the export drive through a significant enhancement in the role of MEDIA. An assessment should be undertaken, under the aegis of the Prime Minister's Policy Unit or the Ministry of Finance, to identify strategic institutional restructuring alternatives and carefully evaluate the costs and benefits of each approach. The assessment should explore the possibility of developing an institutional focus on export promotion alone; expanding its financial resources; formulating a mechanism for cost-sharing by recipients and developing commercial services for information and marketing; establishing a dedicated unit to help link SMEs with foreign buyers and large local firms and providing extension services to develop independent marketing capabilities in SMEs.

- Develop an overall export development plan and a system of export targeting as well as a monthly meeting between key ministers and the heads of firms (chaired by the Prime Minister) to review progress made towards export targets, deal with pressing policy problems and solicit views on economic policy management. The export planning mechanism could be located in the re-structured MEDIA and MEDIA's corporate plan should be developed in line with the overall national export development plan.

- Give due consideration to enhancing the overseas marketing capabilities of private business associations and attracting MNC service firms (to establish regional operations in Mauritius). The important goal underlying these initiatives is that the effectiveness of MEDIA should be not only be enhanced, but also to make sure that it does not inadvertently crowd out potential private sector providers of export promotion services.

- Streamline residual bureaucratic procedures and regulations, especially concerning foreign investment approvals and processing of refunds on duty drawbacks. Where possible, a single short form should replace multiple documentation requirements and unnecessary bureaucratic stages should be dispensed with. In this vein, a liberalisation of work permits for technical personnel would facilitate more rapid technology transfer. An appeals procedure should be established to deal with instances where foreign investment approvals are rejected or subject to delays in excess of four weeks (this should include the processing of work permit applications). These steps would significantly contribute to Mauritius moving towards a environment with a low-level of bureaucratic procedures.

- Undertake a regular annual survey of enterprise perceptions of the policy and incentive regime and constraints, along the lines undertaken in this study, and feed the results into the export policy making process. This survey should cover enterprises from different industries, ownership forms, and size classes. The results of this survey would be an important input into the work of the proposed Competitiveness Council mentioned above and the high-level meeting between ministers and the heads of enterprises, chaired by the Prime Minister.

## 8.4 Human Resources

While Mauritius has made impressive strides in improving its human resource base, and the 1996-97 budget of 31 May 1996 extended free

primary education to everyone in the country (this gave universal free education from pre-primary up to tertiary level for all those in full-time studies)[74] shortages of both general and specific skills will be among the most critical constraints to its long-term export development. The base of literate and trainable manpower that drove its early export expansion is not adequate to cope with the needs of technologically sophisticated, flexible and design-intensive export activities in the future. There are lags in both the quantity and quality of education at the secondary and particularly at the tertiary levels, and these are most severe for technical subjects; the output of high level technical graduates, in particular, is abysmal for the size of the population. Teacher quality, materials and equipment are often poor, with a mismatch between the skills produced at schools and training institutes and those needed by industry. The reliance on rote learning holds back the development of the skills and aptitudes needed for modern production. Many of the modern information skills needed are not provided by the training system.

Enterprise training is also inadequate. While some large firms have full-time training departments, most firms provide only the minimal training needed to achieve production standards. Because of the cost involved and high turnover rates for employees, firms tend not to invest in upgrading the capabilities of their workforce. SMEs spend the least on human capital. The training levy does not provide sufficient incentive to firms to develop the training programmes needed for Mauritian firms to move up to a higher level of technology.

Problems of skill development are exacerbated by a poor work ethic: productivity is low because of low motivation and weak discipline in EPZ firms, high rates of absenteeism and turnover, poor working conditions and antiquated methods of human resource management. This is a broader problem of improving labour management and relations systems, but is perhaps as important to long-term success as the narrower ones of education and training.

All these deficiencies can deter any sustained effort to upgrade exports, and it is critical for the government to address them at all levels. This study concurs with the *National Long-Term Perspectives* Study (Volume II) in its conclusion:

> *"To equip people for the future opportunities with jobs which need new technology skills it will be necessary to provide for a major expansion of high quality, job-related training, both by employers and by specialist training institutes for key industrial sectors, through the IVTB... High level training will only work if based on a high level of general education and, in particular, an adequate level of mathematics, informatics and natural sciences. It will be important to press ahead with the implementation of the Education Master Plan and to give priority to improving on the present 30 per cent of students in secondary schools who take science up to 'O' level and the 15 per cent of university students who choose science or engineering as a career."*[75]

The recommendations on human resource development are as follows:

- It is essential that skill needs and provision be *monitored and prioritised on a continuous basis*, with effective interaction between employers and training institutions. Skill needs should be assessed by continuous monitoring of international competitors. The setting up of a Manpower Co-ordination and Development Unit in the government in 1992 is a step in the right direction, and it is recommended that its achievements should be by examined to date and its role strengthened.
- The IVTB's administration of the levy grant scheme and the relevance of its curricula need to be looked at closely.
- There may be a need to launch new types of training institutions more *directly linked with, and managed by, industry*[76]

- There is a need to focus education and training efforts on particular skills, such as IT, textile design and consultancy services (as discussed earlier), that will provide competitive advantages in the near future.

*Firm-level training* must be encouraged by information and persuasion and, where desirable, by the setting up of institutions and programmes. These programmes should cover in-house training by firms for their own employees, by large firms for the employees of smaller firms (suppliers and subcontractors), and by industry associations for their members.

There must be better *information* on and *monitoring* of private sector training. At present there is little information available on this and no systematic measures to promote or improve it.

SMEs have to be targeted by special information and incentive programmes to recruit better trained labour and to invest in formal training. Their method of skill transmission tends to be confined to apprenticeship systems, where craftsmen teach young workers, largely with little formal education, traditional methods that have been used over time without much change. The government should assist by providing substantial subsidies to SMEs to invest in training and by setting up activity specific training centres.

## 8.5 Technology Support

The Mauritian system of technology support has several strengths, with several institutions involved in MSTQ, productivity improvement, training, SME support and diffusion. It has been improved in recent years, particularly the MSB and the diffusion system (TDS), as part of a World Bank competitiveness upgrading project. The productivity improvement agency for export firms (EPZDA) is a relatively recent creation, and is doing an excellent job. However, the institutional framework needs to be further improved and expanded if it is to play a full role in the upgrading industrial competitiveness. The following are the main needs:

- The MSB should establish its accreditation function as soon as possible.
- Some financial support for smaller enterprises to obtain ISO 9000 certification should be considered. One possibility would be to extend the TDS provision to meet half the costs of the consultancy services needed after the programme ends.
- The TDS scheme seems to be very effective, and its extension (or making a similar set-up permanent) should be considered. The extent of subsidy involved can be lowered over time as SMEs become more aware of the benefits of using the emerging market for technological services and consultants.
- Industrial R&D, which is practically nil, needs to be stimulated, and a stronger research culture created among the larger firms by a campaign to raise the consciousness of the benefits of in-house design and development activity. Linkages between large firms and technology support institutions should be strengthened.
- SMIDO is currently unable to meet the technological needs of SMEs in Mauritius, and the feasibility of setting up Technology Transfer Centres (along the lines proposed by Beatty and Sims, 1996, based on the experience of Northern Ireland) should be considered seriously. This would help SMEs in defining their technological needs and problems (by technology audits), providing them with relevant information on sources of technology, helping them with training, testing, CAD/CAM, equipment repair and maintenance and generally raising their awareness of technological activity. This would draw upon resources at the university and elsewhere in Mauritius, and could soon become self-financing. Such centres could take over several of the functions of SMIDO or be combined with it. The government should strengthen the provision of technological *information* to

help firms learn about sources and prices of technologies along the lines pursued by Korea, Taiwan and Japan, where there are computerised on-line facilities to help enterprises to find and negotiate for new technologies.

- An institution needs to be set up to conduct R&D on behalf of manufacturing firms. While the University does some applied research, and EPZDA has the function of conducing industrial R&D, neither is geared to assessing the technology needs of industry and meeting it. A mechanism also has to be set up to stimulate firms, especially SMEs, to contract technological activity to research institutes and the university.[77] The Taiwanese example of research institutions importing new technologies, adapting them and then diffusing them to the smaller enterprises, with a package of finance, training, market and management assistance, is a model that the Mauritian government may follow.

- There is a need for a Productivity Centre which would conduct, on a larger and more comprehensive scale, the present functions of the EPZDA. Such a Productivity Centre would incorporate many of the functions of the Technology Transfer Centres noted above – the need for having one, rather than several, bodies should to be examined. In this context the Minister of Finance has recently announced the intention of setting up a National Productivity[78]; this team does not have the information to assess what this Council is to do.

- Textile and garment design skills need to be developed locally. The design content of export production has to be enhanced over the medium to long term if Mauritian firms are to maintain their upgrading, and a strong local training facility, such as a Textile Design Institute, would greatly help in achieving this. EPZDA has a long-standing proposal for a Textile Institute which needs to be evaluated and, if found appropriate, acted upon.

- The government should consider establishing a textile and garment restructuring fund to help smaller enterprises to invest in new technologies and skills.

- Technology diffusion to smaller enterprises would be greatly helped if the *industry associations* concerned were strengthened, both to offer common services to their members and to act as a focal point for identifying and articulating their needs and for organising assistance from official agencies. In Korea, for instance, the small scale industries associations, initially promoted by the government, served such functions extremely effectively and helped policy formulation in the interests of their members.

- The promotion of *subcontracting* is an important element of the policy to promote SME competitiveness and develop industrial districts (see 8.6). The best policy would be to concentrate on raising the skill and technological level of local firms, and to provide a pro-active programme of skills, technology and finance as noted above. The subcontracting exchange being set up by SMIDO with UNIDO assistance should be promoted strongly. Foreign investors should also be encouraged more strongly to invest in diffusing technology locally by promoting subcontractors and suppliers. This may be done by providing special incentives to the MNCs related to local content and to programs for helping SMEs, and by investing directly in the upgrading of subcontractor capabilities, along the lines of the Local Industry Upgrading Programme in Singapore.[79]

- Local public and private research institutes should be encouraged to link up with

similar institutions in other countries (in particular in India) to exchange research results, materials, methodologies and personnel. The government should encourage the exchange of research personnel between laboratories and enterprises in different countries.

## 8.6 Promoting Industrial Districts

The promotion of industrial 'clusters' or districts is proposed as one important way for Mauritius to improve the flexibility and quality of its export industries. In terms of policy support, the experience of developed and some developing countries suggests that strong support from the *local government* and *banks* has been very important.[80] Joint public/private initiatives are also needed to provide technical support services and training (both of entrepreneurs and of workers). Local governments generally play a very important role in creating support institutions, such as the provision of common technical facilities, training institutions or infrastructure; they are generally better informed about local conditions and also better able to mobilise local support and participation. It is fundamental that entrepreneurs and workers are also actively involved in the design, financing and implementation of the schemes supporting industrial clusters. In fact, the cases in which attempts to foster clusters have not worked have been where there was little or no private sector participation.

Some suggestions for promoting industrial districts in Mauritius are as follows:

- **Provision of credit:** Access to credit is of key importance, especially for the SMEs and for the firms which try to expand and innovate. Many SMEs do not have access to credit because of the high commercial risk associated with their projects. In Europe, local banks, consortia and co-operative banks have been the main source of credit to industrial districts. A local bank is "an organism, born and bred in the district, that is very closely linked with local entrepreneurs (..) and deeply involved in local life, which it knows in detail, and to which it gives direction to a considerable extent.[81] Because local banks know the environment well, they are in a position to assess better the personal qualities of the applicant and the prospects of the project. Other local credit initiatives are Consortia and Co-operative banks, in which the owners of firms are all indebted to each other, which creates an atmosphere of trust and reciprocity that affects the provision of loans and their repayment. Mauritius needs to foster localised intermediaries; commercial banks often do not have the branch network to reach local industry, and wherever the network exists there might be little attention to the need of the local small firms.
- **Training of entrepreneurs and workers:** Firms in European industrial districts play a big role in designing the content of training and in carrying out and monitoring programmes.
- **Provision of information services:** In the Italian garment industrial districts, the provision of information regarding other countries helped to move producers towards more sophisticated segments of the market. Such services were rarely provided by the public sector alone; there was generally strong support from private institutions, because of the sector specific expertise required and for financial reasons. In Ludhiana (Indian Punjab), the regional government established quality control, research and technology centres, vocational and industrial training centres, and encouraged the formation of sectoral and trade associations, through which local industries represent their interests to the State. This plus a tradition of reverse engineering fostered the dynamism of the local metalworking and textiles industries

(organised in clusters). This suggests that in Mauritius, information services should be sector specific and should specialise in the weak areas of the industry to be helped (e.g. testing facilities, design, legal stipulations, import and export regulations, technology transfers, etc.).

- **Labour organisation:** The success of industrial districts in Europe was not based on low wages, but on strong but *responsible* labour unions that contributed to competitive behaviour and innovations: the pressure of high wages on enterprises forced them to raise productivity. It need hardly be stressed that a flexible labour market, and a healthy and technologically forward-looking labour movement, will be vital for the development of export-oriented industrial districts in Mauritius.

## 8.7 Foreign Investment Attraction and Promotion

Average annual foreign direct investment inflows (FDI) in Mauritius in the 1990s are high by African standards, but low compared to Asian countries. Mauritian FDI is highly concentrated in the textiles and garments industry, which is experiencing a downturn in inward investments and there has been little spillover of FDI into other activities. The decline in foreign investment is taking place at a time when FDI to developing countries is surging. Many of the locational advantages which attracted FDI to Mauritius – including cheap, literate and bilingual labour; reasonable labour productivity and industrial discipline; preferential access to EC and US markets; political and macroeconomic stability; a low level of bureaucracy and a market-friendly business environment– have significantly eroded. Moreover, the country is facing increased competition from lower cost producers including Madagascar, China, Vietnam, Bangladesh, India and Sri Lanka. Foreign investors from Hong Kong and France, who largely drove Mauritian success in textile and garment exports in the 1970s and 1980s, have begun to search for low cost locations elsewhere in the developing world. About half the foreign-owned firms in our firm-level survey indicated that they had begun or were considering relocating to other more attractive manufacturing locations in the developing world and Eastern Europe.

Several structural factors may indicate why Mauritius has been unsuccessful in diversifying and upgrading FDI as compared with East Asian economies including: an inadequate supply of industrial skills; a lack of suppliers of raw materials, parts and components; limited technology infrastructure; and inadequate local demand for high technology products. At the same time, there are also gaps in the foreign investment policy regime and the inward investment promotion strategy. Our preliminary analysis suggests that investment incentives are not pro-actively geared up to target industrial sectors or major international investors; the eligibility requirements for investors to qualify for incentives are not clearly specified for some schemes; there are inadequate incentives to promote technological upgrading, increase value-added, promote linkages with local industries and facilitate research and development. Similarly, there are several negative attributes in the current foreign investment promotion system and strategy: there are relatively long delays in getting foreign investment approvals in Mauritius by international standards; there are serious design flaws in the new targeted investment promotion strategy which reduce its effectiveness; there seems to be insufficient attention paid to encouraging the expansion of existing MNC affiliates; and there is the absence of a programme to induce MNCs to establish regional headquarters for Africa. There is an urgent need to stimulate greater FDI inflows particularly to diversify and upgrade the technology and skill content of exports. Bold actions are required for success in the current context.

Some suggestions for attracting and promoting FDI in Mauritius are as follows:

- Undertake a comprehensive appraisal of the investment incentive regime in a comparative perspective with a view to streamlining and modernisation. This appraisal should focus on the following strategic issues: providing a limited number of extra financial incentives (e.g. cash grants or equity participation schemes) for particularly attractive potential investments in the target industrial sectors; clarifying the eligibility requirements for the investment incentive schemes (particularly the PSE Scheme); developing strong incentives to promote technological upgrading, increased value added, and local linkages; and creating an up-to date information system on investment incentives for competitor countries.
- Establish a new specialised agency for foreign investment promotion, as indicated by the Finance Minister. This new agency should be staffed by people with the appropriate private sector experience and offer competitive pay, benefits and comprehensive training.
- The new agency should place considerable emphasis on targeting selected activities and investors, revamping the current investment promotion strategy by carrying out an investor perception study and developing a pro-active approach to investment promotion.
- One key element of the pro-active approach to investment promotion should be a regional head quarters (RHQ) programme to attract leading MNCs to set up bases for the African region. In this vein, Singapore's RHQ programme offers valuable insights on detailed incentive packages and institutional support.
- The current One Stop Shop should be incorporated into the new agency and provide high quality post-approval investor services, such as obtaining work permits and various infrastructure facilities.
- MEDIA, which currently undertakes investment as well as trade promotion and industrial estate management, should be transformed into a specialised trade promotion organisation, with its management and development of industrial estates hived off to the private sector.
- The approval process must be greatly simplified and streamlined immediately, reducing the number of stages in the approval process to a single stage, centring on one Foreign Investment Approval Committee. This committee should consist of high-level representatives from a maximum of six ministries, chaired by a senior Cabinet minister, and should meet twice a month. A target 2 to 4 weeks should be set for the completion of the foreign investment approval process under normal circumstances. Difficult cases could be referred to a sub-group of the Foreign Investment Approval Committee which would draw on expertise in all areas of government. An swift appeals procedure should also be established for cases of investors which have been rejected. This should be followed by the abolition of all foreign investment approval processes and a concentration on investment promotion.

## 8.8 EPZ Infrastructure

Mauritius has an efficient and well developed EPZ infrastructure by African standards. It was probably the first African country to have launched an EPZ programme and, historically, both the public and private sectors have participated in industrial estate provision. In recent years, there have been improvements in EPZ infrastructure, particularly in the port and telecommunications areas. The country has a large number of telephone mainlines in operation and international call charges are low by international standards. However, investments in the EPZ infrastructure have lagged behind demand

and there are some problems with utilities, industrial estates and other facilities. These include: relatively high costs by international standards of raw industrial land and rental charges for factory space in EPZs; fluctuations in electricity supply and high electricity charges; high water charges and high rates for telephone installation in EPZs compared to some Asian competitors; and infrequent sailings/ high sea and air freight costs. Several suggestions can be made to improve the country's infrastructure:

- Undertake a feasibility study for establishing a small, national shipping line. In addition, liberalise the entry of low cost air cargo operators to compete with Air Mauritius and expand the cargo capability of Air Mauritius.
- Undertake an assessment of rents in public and private industrial estates and link increases in rents to changes in the retail price index.
- Liberalise the entry of overseas telephone providers.
- Develop a low interest loan scheme for enterprises to purchase voltage stabilisers and power factor correctors. Establish a consultancy unit within CEB to install such equipment and help consultancy firms to undertake energy audits at competitive rates.

# Appendix A
# The Enterprise Survey

Using a postal questionnaire administered with the help of EPZDA and face-face interviews, the team was able to collect detailed quantitative and qualitative information from 34 enterprises in Mauritius. The information covered firms' perceptions of export prospects and constraints; government policies and institutions; technological capabilities; linkages between firms and technology institutions; labour productivity, skills and training; and finance. The survey, which included firms from food products, textiles and garments, chemicals, and electronics, attempted to cover firms from all size, ownership and export categories. The firms surveyed were located in industrial areas all over the island. Table A1 shows the main features of the sample firms.

Table A1: **Characteristics of the Mauritius Enterprise Sample**

| **Industry** | **Number of firms** |
|---|---|
| Food Products | 5 |
| Textiles and garments | 22 |
| Chemicals | 3 |
| Electronics | 4 |
| Size (by employment) | *% Distribution* |
| Giant (above 501) | 9 |
| Large (251-500) | 41 |
| Medium (51-250) | 38 |
| Small (<50) | 12 |
| Ownership | *% Distribution* |
| 100% foreign owned | 18 |
| Forieign-local joint ventures | 32 |
| 100% local private | 50 |
| Export-orientation | *Exports as % of sales* |
| Food Products | 54 |
| Textiles and garments | 80 |
| Chemicals | 14 |
| Electronics | 75 |

**Industry:** Textiles and garments, which have driven the country's entry into manufactured exports since the 1970s, are still the leading manufactured export. Included here are a combination of garment factories and integrated textile-garment production units. Food products (including fish and preparations) have performed quite well and are a significant export item today. Electronics (including components, instruments and watches and clocks) have remained a relatively minor export to date but offer considerable scope for future export growth. Chemicals (including fertilisers) have also remained a relatively small export and offer some scope for future export growth. The four industries exhibit different degrees of technological complexity. Electronics and chemicals generally require a higher levels of skills and technology than the other two. Textiles and garments typically require the lowest.

**Ownership:** Half the firms have some proportion of foreign ownership (i.e., 17 out of 34). There are 6 wholly foreign-owned firms, 11 joint ventures (with foreign and local equity) and 17 wholly privately-owned local firms. The foreign firms include some of the largest MNC affiliates in Mauritius in textiles and garments, electronics and food products while the local firms include the largest firms in textiles and chemicals as well as small and medium enterprises in the four industries.

**Firm size:** Measured by employment, the sample contains 3 giant enterprises (>1000 employees), 14 large enterprises (251-1000 employees), 13 medium enterprises (51-250 employees) and 4 small enterprises (<50 employees). The giant and large firms include both foreign and local firms.

**Age in production:** Nine of the sample firms are over ten years old and the rest less than 10 years old. The average age of the sample firms is 12.8 years.

**Exports:** The sample firms' exports in 1995 totalled just over US$ 350 million. The average value of exports was US$ 10.8 million; however, the average conceals large differences and without the three largest exporters it falls to US$ 6.6 million. Thirteen of the firms are 100 per cent export-oriented, six export more than 50 per cent of their sales and the rest less than 50 per cent. Of the four industries, the textiles and garments and electronics firms are the most export-oriented while chemicals are the least. Food products come in between these extremes. Several of the sample firms are among the top 25 exporters in Mauritius. The US and the EU are the main markets, largely reflecting preferential market access under the Lome Agreement, but there is a growing share of exports going towards the regional African market.

# Appendix B
# Technological Classification of Manufactured Exports

**SITC number and product**

| *Resource intensive* | *Labour intensive* | *Scale intensive* | *Differentiated* | *Science based* |
|---|---|---|---|---|
| 014 meat prepd, prsvd, nes etc. | 651 textile yarn | 621 materials of rubber | 711 steam boilers & aux. plant | 893 articles of plastic nes |
| 037 fish etc. prepd, prsvd nes | 652 cotton fabrics, woven | 625 rubber tyres, tubes etc. | 712 steam engines, turbines | 541 medicinal, pharm products |
| 054 veg etc. frsh, simply prsvd | 653 woven man-made fib fabric | 628 rubber articles nes | 713 internal combus piston engine | 751 office machines |
| 056 vegetables etc. prsvd, prepd | 654 other woven textile fabric | 662 clay, refractory bldg prd | 714 engines and motors nes | 752 automatic data proc equip |
| 058 fruit preserved, prepared | 655 knitted, etc fabrics | 666 pottery | 716 rotating electric plant | 759 office, adp mach pts, acces |
| 098 edible prodcts, preps nes | 656 lace, ribbons, tulle, etc | 522 inorg elemnts, oxides, etc | 718 oth power generatg mach | 764 telecom eqpt, pts, acc nes |
| 122 tobacco, manufactured | 657 special txtl fabrc, prods | 523 othr inorg chemicals etc. | 721 agric machy, exc tractors | 776 transistors, valves, etc. |
| 334 petroleum products, refin | 658 textile articles nes | 524 radioactive etc. material | 722 tractors non-road | 792 aircraft etc. |
| 335 residual petrlm prod nes | 659 floor coverings, etc | 531 synt dye, nat indgo, lakes | 723 civil engneerg equip etc. | 871 optical instruments |
| 611 leather | 691 structures and parts nes | 532 dyes nes, tanning prod | 724 textile, eather machnry | 872 medical instruments nes |
| 612 leather etc. manufactures | 692 metal tanks, boxes, etc | 533 pigments, paints, etc | 725 paper etc. mill machinery | 873 meters and counters nes |
| 613 fur skins tanned, dressed | 693 wire products non electr | 551 essentl oils, perfume etc | 726 printg, bkbindg machy, pts | 874 measuring, control instruments |
| 633 cork manufactures | 694 stl, coppr nails, nuts, etc | 553 perfumery, cosmetics, etc | 727 food machry non-domestic | |
| 634 veneers, plywood, etc | 695 tools | 554 soap, cleansing etc. preps | 728 oth mach for spcl indus | |
| 635 wood manufactures nes | 696 cutlery | 562 fertilizers, manufactured | 736 metalworking mach-tools | |
| 641 paper and paperboard | 697 base mtl household equip | 572 explosives, pyrotech prod | 737 metalworking machnry nes | |
| 642 paper, etc, precut, arts of | 699 base metal mfrs. nes | 585 plastic material nes | 741 heating, cooling equipmnt | |
| 661 lime, cement, bldg prods | 821 furniture, parts thereof | 591 pesticides, disinfectants | 742 pumps for liquids etc. | |
| 667 pearl, prec-,semi-p stone | 831 travel goods, handbags | 592 starch, inulin, gluten, etc | 743 pumps nes, centrfuges etc. | |
| 511 hydrocarbons nes, derivs | 842 men's outerwear not knit | 598 miscel chem. products nes | 744 mechanical handling equ | |
| 512 alcohols, phenols etc. | 843 women's outerwear non-knit | 663 mineral manufactures nes | 745 nonelec machy,tools nes | |
| 513 carboxylic acids etc. | 844 under garments not knit | 664 glass | 749 nonelec mach pts, acc nes | |
| 514 nitrogen-fnctn compounds | 845 outerwear knit non-elastic | 665 glassware | 761 television receivers | |
| | 846 under garments | 671 pig iron etc. | | |

***SITC number and product (cont.)***

| *Resource intensive* | *Labour intensive* | *Scale intensive* | *Differentiated* |
|---|---|---|---|
| 515 org-inorg compounds etc. | 847 textile clothing acces nes | 672 iron, steel primary forms | 762 radio broadcast receivrs |
| 516 other organic chemicals | 848 headgear, nontxtl clothing | 673 iron, steel shapes etc. | 763 sound recordrs |
| 582 prod of condensation etc. | 851 footwear | 674 irn, stl univ, plate, sheet | 771 electric power mach nes |
| 583 polymerization etc. prods | 892 printed matter | 675 iron, steel hoop, strip | 772 switchgear etc, parts nes |
| 584 cellulose derivatives etc. | 676 railwy rails etc. irn,stl | 774 electro-medcl,xray equip | 773 electr distributng equip |
| Science based | 894 toys, sporting goods, etc | 677 irn, stl wire(excl w rod) | 775 household type equip nes |
| 893 articles of plastic nes | 895 office supplies nes | 678 iron, stl tubes, pipes, etc | 778 electrical machinery nes |
| 541 medicinal, pharm products | 896 works of art etc. | 679 irn, stl castings unworkd | 812 plumbg, heatng, lghtng equ |
| 751 office machines | 897 gold, silver ware, jewelry | 781 pass motor veh exc buses | 881 photo apparat, equipt nes |
| 752 automatic data proc equip | 898 musical instruments, pts | 782 lorries, spcl mtr veh nes | 882 photo, cinema supplies |
| 759 office, adp mach pts, acces | 899 other manufactured goods | 783 road motor vehicles nes | 883 developed cinema film |
| 764 telecom eqpt, pts, acc nes | | 784 motor veh prts, acces nes | 884 optical goods nes |
| 776 transistors, valves, etc. | | 785 cycles, etc motrzd or not | 885 watches and clocks |
| 792 aircraft etc. | | 786 trailers, nonmotr veh, nes | |
| 871 optical instruments | | 791 railway vehicles | |
| 872 medical instruments nes | | 793 ships and boats etc. | |
| 873 meters and counters nes | | | |
| 874 measuring, control instruments | | | |

# Bibliography


Amsden, A. H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, New York: Oxford University Press.

Aubeeluck, A. K. (1994), *The impact of Manufacturing: A Comparative Study of Manufacturing Developing with Special Reference to Mauritus*, unpublished PhD thesis, Department of Economics, University of Queensland.

Bank of America (1996), *World Export Credit Guide 1996-97*, Bank of America.

Beatty, E. K. and Sims, G. D. (1996), 'Technology Transfer Centres', Report of a consultancy.

Becattini, G. (1990), 'The Marshallian industrial districts as a socio-economic notion', in F. Pyke *et al.*(eds.), *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva: ILO.

Bheenick, R. (1996), Budget Speech 1996-97, Port Louis: Government of Mauritius.

Bheenick, R. and Hanoomanjee, E. (1988), *Mauritius: Towards an Industrial Training Strategy*, Port Louis, Ministry of Economic Planning and Development.

Bell, M. and Pavitt, K. (1993), 'Technological Accumulation and Industrial Growth: Contrasts Between Developed. and Developing Countries', *Industrial and Corporate Change*, 2(2).

Cassen, R. and Mavrotas, G. (1997), 'Education and Training for Manufacturing Development' in M. Godfrey (ed.), *Skill Development for International Competitiveness*, Cheltenham: Edward Elgar (UK).

Dabee, R. and Milner, C. (1995), 'Evaluating Trade Liberalisation in Mauritius', Paper presented at AERC workshop on Regional Integration and Trade Liberalisation in Sub-Saharan Africa, Harare, March 18-20, 1995.

Dahlman, C. J., Ross-Larson, B. and Westphal, L.E. (1987) 'Managing Technological Development: Lessons from Newly Industrialising Countries', *World Development* 15(6).

Enweze, C. and others (1995), 'Mauritius: Background Papers and Statistical Annex', Africa Department, Washington DC: International Monetary Fund.

EPZDA (1996), *Productivity Awareness Campaign: Summary Report of Findings and Discussions of Phase I*, Port Louis, Campaign Secretariat, EPZDA.

Fry, M. (1995), 'Foreign Direct Investment in Mauritius and the Far East', International Finance Group, Birmingham: University of Birmingham.

Goodman, E. and Bamford, J. (eds.) (1989), *Small Firms and Industrial Districts in Italy*, London: Routledge.

Government of Mauritius (1995), *Survey of Training Needs in 24 Sectors of the Economy*, Port Louis: Ministry of Manpower Resources, and Vocational and Technical Training.

Government of Mauritius (1996), *State of the Economy January 1996*, Government of Mauritius: Port Louis.

Government of Mauritius (1996b), *Task Force on Competitiveness in the EPZ Sector: Sub-Committee on Cost of Inputs and Services*, Government of Mauritius: Port Louis.

Greenaway, D. and Milner, C. (1996), 'The Uruguay Round: Its Impact and Implications for Mauritius', A Report Prepared for the Commonwealth Secretariat, London: Commonwealth Secretariat.

Gulhati, R. and Nallari, R. (1990), 'Successful Stabilization and Recovery in Mauritius', Economic Development Institute of the World Bank, *Analytical Case Studies* No. 5.

Haque, I. (ed.)(1995), *Trade, Technology and International Competitiveness*, World Bank: EDI Development Series.

Herderschee (1995), *Incentives for Exports: A Case Study of Taiwan and Thailand, 1952-87*, Aldershot (UK): Avebury.

Hogan, P, Keesing D.B and Singer, A. (1991), *The Role of Support Services in Expanding Manufactured Exports in Developing Countries*, Washington DC: World Bank.

Humphrey, J. and Schmitz, H. (1996), 'The Triple C Approach to Local Industrial Policy', World Development, 24 (12).

Kelly, N. and Kelly, D. (1992), 'Sectoral Study for the Mauritius Export Development and Investment Authority: Electronics', Dublin: International Development Ireland.

Lall, S. (1990), *Building Industrial Competitiveness in Developing Countries*, Paris: OECD

Lall, S. (1992), 'Structural Problems of African Industry', in F. Stewart, S. Lall and S. Wangwe (eds.), *Alternative Development Strategies in Sub-Saharan Africa*, London: Macmillan.

Lall, S. (1996), 'Coping with new technologies in emerging Asia', *Asian Development Review*, special issue to commemorate the Asian Development Bank's 30th anniversary.

Lall, S. (1997), 'Attracting Foreign Investment: New Trends, Sources and Policies' *Commonwealth Secretariat Economic Paper* No. 31, London, Economic Affairs Division, Commonwealth Secretariat.

Lall, S. (1997b), Learning from the Asian Tigers: Studies in Technology and Industrial Policy, Macmillan Press: London.

Lall, S. and Rao, K. (1995), *Indonesia: Sustaining Manufactured Export Growth*, Draft, Asian Development Bank.

Lall., S and Wignaraja, G. (1994), 'Foreign Involvement By European Firms and Garment Exports By Developing Countries', *Asia-Pacific Development Journal*, 1 (2).

Lall, S., Barba-Navaretti, G., Teitel.,S. and Wignaraja, G. (1994), *Technology and Enterprise Development: Ghana Under Structural Adjustment*, Macmillan Press: London.

Lall, S., Rao, K. and Wignaraja, G. (1996), *Building Sri Lankan Competitiveness: A Strategy for Manufactured Export Growth*, Oxford and Washington: Oxford University and The Services Group, Report for the National Development Council, Government of Sri Lanka.

Najmabadi, F. and Lall, S. (1995), *Developing Industrial Technology: Lessons for Policy and Practice*, World Bank, OED Study.

Navaretti, G. B., Faini, R. and Silberston, A. (eds.)(1995), *Beyond the Multifibre Arrangement*, Paris: OECD.

McQueen, M., Phillips, C., Swinbank, A., and Hallam, D. (1997), Options for Post-Lomé IV Arrangements, Economic Affairs

Division, Commonwealth Secretariat.

MEDIA (1995), *The Mauritius Textile and Clothing Industry*, Report by S. Gopaul and N. Noordali, ITC-COMESA Programme.

MEDIA (1995b), MEDIA: *Action Plan 1995*, MEDIA: Port Louis.

MEDIA (1996), MEDIA: *Action Plan 1996*, MEDIA: Port Louis.

MEDIA (1996b), *Annual Report 1994/95*, MEDIA: Port Louis.

Ministry of Economic Development and Regional Co-operation (1997), *National Long-Term Perspective Study*, Port Louis: Ministry of Economic Development and Regional Co-operation.

Meisenhelder, T (1997), 'The Developmental State in Mauritius', *Journal of Modern African Studies*, 35 (2).

Milner, C. and McKay, A. (1996), 'Real Exchange Rate Measures of Trade Liberalisation: Some Evidence for Mauritius', *Journal of African Economies*, 5 (1).

Ministry of Manpower Resources, and Vocational and Technical Training (1995), *Survey of Training Needs in 24 Sectors of the Economy*, Government of Mauritius.

Nadvi, K. (1994), 'Industrial district experiences in developing countries', in UNCTAD, Technological Dynamism in Industrial Districts: *An Alternative Approach to Industrialisation in Developing Countries*, Geneva: UNCTAD.

OECD (1987), Structural Adjustment and Economic Performance, Paris: Organisation for Economic Co-operation and Development.

Pedersen, P. O., Sverisson, A. *et al.* (eds.), (1994), *Flexible Specialisation: The Dynamics of Small-Scale Industry in the South*, London: Intermediate Technology Publications.

Porter, M. (1990), *The Competitive Advantage of Nations*, New York: Free Press.

Pyke, F., Becattini, G. and Sengenberger, W. (eds.) (1990), *Industrial Districts and Inter-Firm Cooperation in Italy*, Geneva: ILO.

Rhee, Y., Ross-Larson, B. and Pursell, G. (1984), Korea's Competitive Edge, Baltimore: Johns Hopkins.

Schmitz, H. (1995), 'Collective efficiency; Growth path for small-scale industry', *Journal of Development Studies*, 31(4).

Schmitz, H. and Musyck, B. (1994), 'Industrial districts in Europe: Policy lessons for developing countries?', *World Development*, 22(6).

Selvaratnam, V. (1994), *Innovations in Higher Education: Singapore at the Competitive Edge*, Washington, DC: World Bank, Technical Paper No. 222.

Stein, H. (1995), "Policy Alternatives to Structural Adjustment in Africa: An Introduction", in Stein, H. (1995 ed.), Asian Industrialisation and Africa, St Martins Press: New York.

Stiglitz, J. (1996), "Some Lessons from the East Asian Miracle", World Bank Research Observer, vol. 11, no. 2;

Tan, H. and Batra, G (1995), *Enterprise Training in Developing Countries*, World Bank, Private Sector Development Department, Occasional Monograph, Washington, DC.

Tillet, C. (1996), 'Foreign Investment: Targeting and Promotional Strategies', *Occasional Paper* No. 2, London: Economic Affairs Division, Commonwealth Secretariat.

UNCTAD (1994), *Technological Dynamism in Industrial Districts: An Alternative Approach to Industrialisation in Developing Countries*, Geneva: UNCTAD.

UNCTAD (1996), *World Investment Report 1996*, New York: UN.

UNCTAD (1996 b), *Incentives and Foreign Direct Investment*, New York: UN.

UNCTAD (1997), *World Investment Report 1997*, New York: UN.

UNDP/World Bank (1993), *Mauritius: Toward the 21st Century*, UNDP/World Bank Trade Expansion Program Country Report 12, Washington DC: World Bank.

UNDP (1996), *Human Development Report*, New York: UN.

UNIDO (1994), *Industry and Development Global Report*, Vienna: UN.

UNIDO (1995), *Industry and Development Global Report*, Vienna: UN.

UNESCO (1997), *Statistical Yearbook 1996*, Paris: UN.

UN (1996) *Statistical Yearbook 1994*, New York: UN.

Wells, L.T. and A.G. Wint (1991), "Facilitating Foreign Investment: Government Institutions to Screen, Monitor and Service Investment from Abroad", *FIAS Occasional Paper* No. 2.

Wignaraja, G. (1997a), *Trade Liberalization in Sri Lanka: Exports, Technology and Industrial Policy*, London: Macmillan Press.

Wignaraja, G. (1997b), "Globalisation and Manufacturing Competitiveness in Small States", in Commonwealth Secretariat, *Small States: Economic Review and Basic Statistics*, Annual Series: Third Volume, London: Commonwealth Secretariat.

Wignaraja, G. and G. Ikiara (forthcoming), "Adjustment, Technology and Enterprise Dynamics in Kenya" in S. Lall (ed.), *Opening Up and Shutting Down? Import Liberalisation and Industrial Technology in Kenya, Tanzania and Zimbabwe*, Macmillan Press: London.

Woldekidan, B (1994), *Export-led Growth in Mauritius*, Indian Ocean Policy Paper 3, National Centre for Development Studies, Australian National University: Canberra.

World Bank (1985), *Mauritius: Adjustment and Growth*, Washington DC: World Bank.

World Bank (1993), *The East Asian Miracle: Economic Growth and Public Policy*, New York: Oxford University Press.

World Bank (1994.a), *Mauritius: Technology Strategy for Competitiveness*, Washington, DC, Report No. 12518-MAS, Washington DC: World Bank

World Bank (1994.b), *Republic of Mauritius: Technical Assistance to Enhance Competitiveness Project*, Industry and Energy Operations Division, Africa Regional Office, Staff Appraisal Report, 12693-MAS, Washington DC: World Bank.

World Bank (1994. c), *India and Bangladesh: A Survey of Asia's Energy Prices*, Washington, DC: World Bank.

World Bank (1995), *Mauritius Country Economic Memorandum: Sharpening the Competitive Edge*, Washington, DC, Report No. 13215-MAS, Washington DC: World Bank.

Word Trade Organisation (1996), *Trade Policy Review: Mauritius 1995*, Geneva: World Trade Organisation.

# Notes

1 Hong Kong is much larger, with over 6 million people; Taiwan has nearly 20 million and Korea over 42 million. The 'new Tigers' are also substantially larger: Malaysia with around 20 million, Thailand with 58 million and Indonesia with 190 million.

2 For reviews see Bell and Pavitt (1993), Haque (1995), Dahlman *et al.* (1986), Lall (1992) and Wignaraja (1997 a and b).

3 See Lall (1990), Najmabadi and Lall (1995) and Lall, Rao and Wignaraja (1996).

4 Porter (1990).

5 Central Statistical Office, *Economic Indicators*, Issue No. 232, 12 July, 1996 and unpublished data CSO.

6 The classification of skill levels in manufacturing is based upon average wages in the relevant industries in the USA, with above average wages signifying high and below average low skills. The use of US data makes for greater inter-country comparability and also indicates skill distributions at technological frontiers.

7 See Navaretti, Faini and Silberston (1995).

8 Gulhati and Nallari (1990), Woldekidan (1994), Dabee and Milner (1995), Greenaway and Milner (1996), World Trade Organisation (1996), Meisenhelder (1997).

9 The eight duty bands which escalate, by degree of processing, from low tariffs on raw materials to high ones on finished goods are: 0%, 5%, 15%, 20%, 20%, 30%, 40%, 55% and 80%.

10 The 1980 figure, from Dabee and Milner (1995), is for all import-specific taxes including fiscal and customs duties.

11 UNDP/World Bank (1993), p. 47.

12 See World Trade Organisation (1996) for a complete list of these products.

13 See UNDP/World Bank (1993); Enweze and Others (1995).

14 See, for instance, Woldekidan (1994).

15 The REER indicator in Figure 3.1 is based on the consumer price index (CPI). The extent of real exchange rate appreciation is much more marked if deflators other than CPI are used. Enweze and Others (1995), p. 25 also calculate an export-deflator-based real exchange index and a unit-labour-cost-based real exchange rate based index (only for industrialised countries). The former indicates a strong appreciation of about 40 per cent between 1987-1993 and the latter an appreciation of 20 per cent. These could not be updated to 1995 as the relevant data were not available.

16 In the case of the Asian countries, data from the Asian Development Bank were used (1985=100) while in the case of the African countries, data from the World Bank (1987 =100) were re-based to 1985 = 100.

17 *Industry Focus*, January-February 1995, Bank of America (1996), MEDIA (1995) and interviews with MEDIA officials during the Commonwealth Mission to Mauritius.

18 The Common Market for Eastern and Southern Africa (COMESA) includes: Mozambique, Malawi, Tanzania, Uganda, Kenya, Zimbabwe and Zambia.

19 The original Maxwell Stamp study was not available The quotation from this study given below is from Greenaway and Milner (1996), p. 67. "Protection rates in domestic markets for many industrial activities are still high and considerably in excess of the relative incentives to produce for the export market. The policy regime therefore either continues to act as an important source of anti-export bias or to protect activities of comparative disadvantage without export potential". Woldekidan (1994) also relying on effective protection data, found an anti-export bias in the trade regime in 1987.

20 See, for instance, Greenaway and Milner (1996).

21 This consists of 6 overseas offices with full-time MEDIA staff (in the UK, France, Germany, India, South Africa and Kenya) and 8 local representatives in the other locations. The UK, French and German offices had the largest budgets in 1995 in excess of US$ 180,000 each, which reflects the importance of these markets.

22 *The Economist*, 1 February 1997, p. 22.

23 The details of our enterprise survey are given in Appendix A, but suffice it to note for present purposes that the sample consists of 34 firms in textiles and garments, food products, electronics and chemicals.

24 See Lall and Wignaraja (1994) and Wignaraja (1997a).

25 See World Bank (1994) and WTO (1996).

26 The data on Mauritius for 1996 is from our enterprise-survey while Sri Lanka's is from Lall, Rao and Wignaraja (1996) also for 1996 and Indonesia's is from Lall and Rao (1995) for 1995.

27 World Bank (1992), p.40, cited in WTO (1996), p. 44.

28 Firms argued that shipping problems are even worse when it comes to potential African markets; there are few regular sailings to Mombassa, Dar es Salaam, and Mozambique and sea freight costs are very high.

29 A recent study of garment firms in Kenya found that illegal second hand imports are one-third cheaper than local retail prices (Wignaraja and Ikiara, forthcoming). Out of 20 firms surveyed, 16 said that they had been negatively affected by imports of second-hand garments since 1990 and several were thinking of closing down. On a similar study of Ghana, see Lall et.al., (1994).

30 The survey consisted of 20 large exporters in textiles and garments, electronics and engineering, rubber products, wooden toys, ceramics, soap and soap products. Half of the firms had some proportion of foreign equity and the average value of exports was US$ 17.5 million. See Lall *et al.* (1996).

31 Wages in Asia can be compared to the following daily rates for garment manufacture in Latin America: Mexico $15; Costa Rica $17.8; Jamaica $12.3; Guatemala $10.2; and Honduras $9.1. This places these countries in the Thai range, much above most of the major garment exporters in Asia.

32 Data from the Central Statistical Office, *Digest of Industrial Statistics 1994*, Tables 23c and 24c.

33 World Bank (1994), para. 2.10.

34 World Bank (1995), para. 6.6.

35 See Cassen and Mavrotas (1997) for a survey of evidence in developing countries.

36 Selvaratnam (1994).

37 World Bank (1995), para. 7.8-7.12.

38 MRF, *The Training Grant Scheme of the Industrial and Vocational Training Board: The Employers' Guide, undated, and A Survey Report on Training*, 1994 and 1996.

39 See Lall, Rao and Wignaraja (1996) and Wignaraja (1997a).

40 UNCTAD *World Investment Report* 1996, p. 62.

41 UN *World Investment Report* 1996 and 1997.

42 See Wignaraja (1997a).

43 See Lall (1997) for a detailed discussion of the determinants of FDI in developing economies.

44 Studies which have examined foreign investment include: World Bank (1994), Fry (1995), McQueen *et al.* (1997), Wignaraja (1997b).

45 One UK-owned software firm that the mission interviewed was engaged in developmental work in Mauritius on an integrated software package for managing production and service operations which was created by the UK parent. The software package requires periodic upgrading and because software skills in Mauritius were only 25% of UK labour costs, the firm undertook the labour-intensive aspects of work locally and the skill-intensive aspects in the UK. They were hoping to sell versions of this package to MNC affiliates in Mauritius and in other African countries.

46 See UNCTAD (1996 b) for an overview of advantages and disadvantages of different fiscal incentives.

47 As a recent World Bank study put it "Pioneer and similar schemes tend to lack transparency in the eyes of the public, however well they are administered. This is because decisions are based on subjective judgement rather than objective criteria such as export performance, degree of effective protection, or the level of R&D expenses. Ministerial discretion decides what technologies are eligible for Pioneer status..." (World Bank, 1994a, p. 39).

48 The effective corporate tax rate is traditionally defined as the corporate income tax rate adjusted for expected inflation, nominal interest rates, investment tax allowances, tax depreciation rates, dividend withholding taxes, tax holidays and other incentives. This measure is used by MNCs to gauge the relative attractiveness of tax policies of different investment locations

49 See Wells and Wint (1991).

50 There is also a privately funded Mauritius Export Processing Zone Association (MEPZA) which makes representations to government on behalf of EPZ firms and runs training courses for its members. MEPZA is also sometimes involved in foreign investment promotion on an informal basis.

51 The Industrial Development Committee includes representatives from the Ministry of Finance, the Ministry of Economic Planning and Development, the Ministry of Industry and Commerce, the Ministry of the Environment, MEDIA, DBM, the Bank of Mauritius, Customs and MEZDA.

52 MEDIA's foreign investment promotion budget has doubled between 1993-94 and 1995-96 from US$ 0.2 million to US$ 0.4 million, but is still very small by international standards.

53 Commonwealth mission estimates based on MEDIA (1995b) and MEDIA (1996b).

54 The data for Indonesia is from Lall and Rao (1995) while those for the other Asian countries is from Asiaweek, October 13, 1995.

55 The information refers to approvals for EPZ status and pioneer status enterprises.

56 See Lall, Rao and Wignaraja (1996).

57 EPZs are a relatively recent addition to the African industrial infrastructure. Several other African countries with notable industrial sectors – like Kenya, Ghana and Zimbabwe only began EPZ programmes as late as the 1990s. In part, this is due to the persistence of inward-oriented development strategies in these countries which emphasised domestic market production rather than exports.

58 See MEDIA (1996).

59 There is a wide variation in the size of EPZs in Asia ranging from the giant Batam Island EPZ in Indonesia (4,496 enterprises), to medium sized EPZs like Bayan Lepas Free Industrial Zone in Malaysia (472 enterprises) and the smaller Katunayake EPZ in Sri Lanka (100 enterprises). See Asiaweek, October 13, 1995.

60 The data for Mauritius were provided by MEDIA while that for other countries was from the database of the Services Group, an international consultancy firm.

61 Take, for instance, the construction cost of a one story concrete block factory shell. MEDIA estimated this to be between 24-29 US$/m$^2$ . This is considerably lower than even cheap building cost locations like Sri Lanka (146-176 US$/m$^2$) and China (180 US$/m$^2$). Given higher wages and other costs in Mauritius relative to the two Asian countries, the mission felt that the Mauritius figure for building constructions costs underestimated the real figure.

62 Foreign firms may acquire land and buildings with the permission of the Reserve Bank of India.

63 Rents in the Informatics Park are higher than those in the other industrial estates. The monthly rental of a unit in the Informatics Park was US$ 1000 (103 m m$^2$ ). This reflects the higher level of infrastructural facilities afforded to sites in the Informatics Park (see Chapter 4).

64 The Mauritius figures refer to the maximum demand rate for EPZs and the flat rate for industrial use.

65 UN (1996).

66 Estimates from Government of Mauritius (1996b).

67 The data were taken from a study by Lall, Rao and Wignaraja (1996).

68 This view is well known in policy circles and is mentioned in government reports. See, for instance, *Government of Mauritius* (1996 b).

69 According to the Minister of Finance, the Honourable Vasant Kumar Bunwaree, "We have set a target of 30 per cent of GDP for the investment ratio by 1999, out of which we expect 80 per cent to come from the private sector. Presently the private sector share in total investment, both local and foreign is, as we know, 65 per cent, that is around 16 per cent of GDP". Speech to the Joint Economic Council, 21 January, 1997.

70 Ibid.

71 See MEDIA Action Plan 1996.

72 'Mahathir woos America's IT giants', *Financial Times*, London, February 26, 1997, page 4.

73 As the World Bank (1994.a) says, "Although Mauritian authorities recognise the importance of technology and competitiveness for industrial development, policy formulation and planning in this area is weak, partly due to the multiplicity of institutions involved, which has resulted in lack of co-ordination and absence of overall strategic focus." (para. 8.2) The institutions involved in policy making in technology related areas include: the Ministry of Industry and Industrial Technology, the Ministry of Trade and Shipping, the Ministry of Education and Science, the Ministry of Manpower Resources, the Ministry of Finance, the Ministry of Economic Planning and the Ministry of Labour. *De facto* strategies for technology development and diffusion also involve institutions like the MSB, MEDIA, SMIDO, EPZDA and IVTB. In addition there are advisory bodies such as the National Economic Development Council, the Mauritius Research Council and the National Pay and Productivity Council.

74 *Budget Speech* of the Honourable Minister of Finance, Rundheersingh Bheenick, 31 May, 1996, p. 44.

75 Ministry of Economic Planning and Development (1996), Volume II, p. 137.

76 Malaysia, which also suffers from the shortage of high level technical and managerial manpower, set up *industry-led training centres* in some major industrial areas to provide the required specialised training that is by industry. The first of these was the Penang Skills Development Centre, launched in 1989 in response to the growing skill shortages in the main electronics centre. The initiative and land came from the state government, which provided modest seed money (around US$24 thousand) and induced three leading electronics MNCs in Penang to participate. The MNCs formed a steering committee, contributed finance and gave full access to their own training programs and methods. Other MNCs and local firms then started to participate and private industry continued to play a leading role in the Centre, with a strong sense of 'ownership' and commitment. PSDC borrowed trainers from the companies, and devised a range of training programmes that industry needed for its operations and for which full costs were charged. The programmes were changed constantly to meet evolving needs, and the centre has a very pro-active approach to its curricula. It is entirely autonomous in its operations and decision making. Sophisticated machinery was obtained from equipment suppliers for free, and some firms even moved their own training facilities to PSDC. The Board of the PSDC consists mostly of private industrialists, with some representation by technology institutes but *not* from the central government. Industry continues to give grants, as do the state government of Penang and aid donors. The government is now emulating the PSDC model in every other state.

77 The Indian government has adopted a programme to promote linkages between industry and research institutions and universities, supported by a World Bank industrial technology development project. One component of this project was aimed at promoting industry-sponsored research at a number of research institutes as well as the Indian Institutes of Technology, other universities and private research foundations. This component, the Sponsored R&D Promotion Fund, was initially allocated US$15 million, and was later allocated another $10 million and renamed the "Sponsored Research and Development (SPREAD)" program. The SPREAD component was aimed at promoting research awareness especially among *small and medium-sized* companies and changing the *'research culture'* among the research laboratories and higher education establishments to greater industry orientation. The funds to finance the contracting of research were provided on a *subsidised* basis, at 6% initially and 15% subsequently or with a royalty option. The finance was to cover *up to 50 per cent* of the cost of the research project contracted by industry, with the resources given as conditional loans (with eventual repayment at market rates if successful and written off if not). The projects could cover pre-feasibility studies, laboratory trials, prototype building and pilot plant operations for the development of new products and processes, significant improvements to existing products/processes and scaling up of a technology. The fund was administered by ICICI, a leading private sector development finance company (also set up earlier by the World Bank, and regarded as one of the best of its kind). The research projects had to be clearly defined, and appraised by ICICI's Technology Group; they had to be carried out *within two years*. Firms receiving support had to show that their sponsorship was additional to what they were doing earlier. ICICI had intimate knowledge of the private industrial sector and promoted the project widely.
By mid-1995, 53 firms had contracted 55 projects under the SPREAD program, with an average project size of $400 thousand and a loan component of $170 thousand (42.5%). Of these, 27 were completed or nearly so; 15 had made 'substantial progress', 21 had just commenced and 7 had been delayed. So far, there have been *no failures*, but some 3-4 projects are likely to be cancelled. Most of the companies using the program had never contracted research to a PRI before; of the 53, 23 were small, 22 medium and 10 large. Their activities were spread over a broad range of industries: pharmaceuticals, electrical/electronics, chemicals, machinery, metallurgy, automotives, biotechnology, food processing, paper, rubber and polymers. Some 60 different technology institutes were been involved, including 16 Institutes of Technology/Science, 12 universities, 4 private research foundations, and 28 government laboratories. A broad range of new or improved technologies have been developed, some fairly sophisticated. Overall, the project is regarded as highly successful, and the subsidy element has been minimal.

78 Speech of the Minister of Finance, the Honourable Vasant Kumar Bunwaree, to the Joint Economic Council, 21 January, 1997.

79 Under this programme, the government encourages MNCs to source components locally by 'adopting' particular SMEs as subcontractors. In return for a commitment by the MNCs to provide on the job training and other assistance to subcontractors, the government provides a package of assistance to the latter, including cost sharing grants and loans for the purchase of equipment or consultancy and the provision of training. By end-1990, 27 MNCs and 116 SMEs had joined this programme.

80 One interesting example comes from Chile (Humphrey and Schmitz, 1996). The SME promotion agency there set up Proyectos de Fomento (PROFOs) in 1990 to promote networks, and found that this was instrumental in starting a dynamic process of upgrading. The PROFO programme promoted direct co-operation between SMEs and acted as a focus for the provision of support services by the government. The first stage was for the PROFO to identify a promising cluster (usually 10-30 firms), then appoint a manager who would interface between the SMEs and the market and support institutions. The manager would ensure that the delivery of finance and support services was improved and taken up better. He would also improve relations between the firms themselves by visits, workshops and group travel. There would be bi-annual evaluations of progress, with a focus on such areas as quality, design and human resource management. The early results of the PROFO initiative were found to exceed expectations.

81 Becattini (1990) p. 47.

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