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Export Processing Zones For Growth and Development:
The Mauritian Example

Prepared by Rolf G. Alter*

Authorized for distribution by Reimer O. Carstens

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Abstract

This paper examines the role that the Export Processing Zone (EPZ) in Mauritius has played in the growth and development of the country. The EPZ's success in contributing to a substantial diversification into manufactures, creating employment on a large scale, and becoming an important source of exports and foreign exchange earnings is attributed not only to a very competitive policy package, but also to the market-oriented, outward-looking macroeconomic policies and to a favorable global environment. The Mauritian EPZ could thus serve as a model for growth and development in other developing economies that are seeking to diversify beyond the export of commodities.

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Summary

The export processing zone in Mauritius has assisted the growth and development of the country's economy. Although its expansion has been neither uninterrupted nor flawless, it has made the manufacturing sector a substantial source of employment and of exports in this previously sugar-based economy. Indirectly it may have helped to create an internationally oriented business climate in the country. Nonetheless, backward linkages with the domestic economy have remained limited, and the export processing zone's concentration on textile production is a continuing source of external vulnerability that requires a policy response. This evaluation, based on limited data and straightforward criteria, makes no judgment about the superiority of the export processing zone concept to other strategies for diversification, growth, and development.

Several factors have contributed to the success of the Mauritian export processing zone. It benefited from surplus labor, domestic start-up funds from a profitable sugar sector, and a competitive policy package, as well as from market-oriented, outward-looking macroeconomic policies and a generally favorable global economic environment, which were probably even more important for the export processing zone's good performance.

The apparent success of the zone does not justify overly optimistic conclusions about its applicability to other countries whose economies are based essentially on primary commodities. Where similar economic, political, and social conditions prevail, and the government is equally determined to support such a zone as well as to pursue sound macroeconomic policies, the export processing zone concept could be of considerable help in the early phase of liberalization. A gradual increase in external exposure can help overcome actual or perceived constraints and make liberalization a viable policy option; moreover, the zone allows a concentration of resources and, as a marketing instrument, provides higher domestic and foreign visibility for the reorientation of economic policy.

I. Introduction

In 1990 an estimated 150 export processing zones (EPZs) existed in developing countries; most of them were already in operation, although some were still under construction or in the planning stage (Appendix I). Commodity-exporting countries in particular seem to be inclined to make use of the concept of preferential treatment of domestic and foreign investment, with the aim of raising the share of manufactures in production and exports. Mauritius is one prominent example of a successful EPZ that helped to diversify a primarily sugar-based economy into an export-oriented producer of manufactures. In view of the mixed experience that countries all over the world have had with EPZs, ^{1/} three questions arise: What are generally the best criteria by which to assess the performance of EPZs? What are the major factors that contributed to the "success" of the EPZ in Mauritius? What are the lessons to be learned from the Mauritian experience for other developing countries?

This paper addresses these questions in three steps: first, there is a general introduction to the EPZ concept, including a discussion of appropriate criteria to be used in assessing the EPZ performance; this is followed by a review of the development and role of the Mauritian EPZ since its establishment in 1970, and the analysis of determining factors is extended beyond the narrowly defined EPZ policy package; and finally, consideration is given to the ways in which the Mauritian EPZ experience could serve as a model for other developing countries.

II. The EPZ Concept

1. Characteristics and objectives

EPZs are "designated, specialized, industrial estates which produce mainly for export and which constitute an enclave from the trade and customs regime of a country in which free trade applies" (ESCAP/UNCTC, 1985). Dating back to the free ports of city states in medieval Europe, trade zones free of customs were originally formed to facilitate entrepôt trade. The basic idea has been adjusted to the needs of developing countries that wish to initiate or foster economic diversification, create employment, and promote exports, but face actual or perceived constraints in pursuing a comprehensive liberalization policy, such as a low level of foreign exchange, limits on borrowing, or social and

^{1/} See, for example, studies on EPZs in Malaysia (Warr, 1987b), Mexico (Nieto and Saavedra, 1987), the Philippines (Warr, 1985 and 1987a), Singapore and Taiwan (Spinanger, 1984), and Liberia and Ghana (Botchie, 1984).

political considerations. 1/ EPZs have therefore been characterized as "a second-best type solution for a country to profit from a greater and more efficient integration into the international division of labor without subjecting the whole economy to trade liberalization and deregulation" (Spinanger, 1984).

The individual elements of the concept vary from country to country. In some cases, EPZs are defined in a legal sense only, giving the enclave status to individual companies rather than geographical areas. Very often, the attraction of foreign investors is the primary objective of the initiative, but the participation of domestic entrepreneurs is generally not excluded. Typically, the liberal trade regime surrounding EPZs is supplemented by some sort of preferential treatment of investors with regard to national tax laws of the host country, by liberal ownership policies that allow foreign investments to reach the 100 percent level, and by unlimited and free transfers of profits. A physical infrastructure package and simplified bureaucratic regulations are also very often part of the incentive system. 2/

EPZs are generally expected to contribute directly and indirectly to the growth and development of the host economy. Direct objectives of EPZs are typically to generate employment in the manufacturing sector and to foster foreign exchange earnings through the diversification and expansion of exports beyond the country's traditional trade, which is very often in primary commodities. Indirect benefits include the backward linkages between the EPZ and the host economy, the enhancement of the skills of the domestic labor force, and the improved access to advanced technology. Moreover, the EPZ is frequently expected to serve as the mainspring behind the country's evolution toward an entrepreneurial climate. Externally, the creation of an EPZ is seen as a "marketing instrument" to signal to international investors an inherent economic policy shift in the host country that would increase its attractiveness as a production location. To the extent that the desired effects of the gradual external exposure of the host economy materialize, the integration of the country as a whole into the global economy is facilitated.

2. Evaluation of EPZ performance

Any comprehensive evaluation of the economic impact of EPZs should include an analysis of their welfare effects. A few theoretical

1/ For the empirical evidence of the relationships between export diversification, export growth, and domestic growth, see Bond and Milne (1987); and Otani and Villanueva (1988).

2/ Theoretically, there is no clear-cut answer to the question of what encourages foreign direct investment. "Instead, there are various hypotheses emphasizing different microeconomic and macroeconomic factors that are likely to have an effect on foreign direct investment" (Lizondo, 1990).

attempts have been carried out in a Heckscher-Ohlin framework, but the analyses have depended primarily on the assumptions of the underlying factor mobility and the results have thus remained inconclusive. ^{1/} Moreover, the inherent assumption of full employment considerably reduces the empirical relevance of the results.

The number of empirical assessments of the economic welfare implications of EPZs has been equally small. Both Spinanger (1984) and Warr (1989) suggest using net foreign exchange earnings of the EPZ as the evaluation criterion, although Warr refines the analysis through the application of shadow exchange rates and shadow factor prices. While the latter approach is theoretically superior, the question arises as to whether the substantial uncertainties associated with the use of shadow prices in developing countries actually improve the quality of the empirical evaluation. ^{2/}

An approach that is less ambitious, but that would seem to produce more reliable results, would concentrate on the contribution of EPZs to individual economic targets, such as employment, growth, exports, and foreign exchange earnings. While the measurement of EPZ employment and EPZ exports does not create major difficulties, the determination of foreign exchange earnings is somewhat more problematic.

The systematically high import content of EPZ production and the typically substantial foreign ownership of EPZ firms are the major factors that prevent the use of gross export earnings as an evaluation criterion. In principle, there are two ways to calculate the net earnings actually accruing to the host country; one could either add up the equivalent of the individual components of national value added and of local input of EPZ exports in foreign currencies, or one could subtract from gross earnings the EPZ imports and those elements that accrue to the foreign investors/producers and expatriates in the EPZ. Given the lack of reliable and sufficiently detailed data, in most cases net exports (the difference between exports and imports) will be the best proxy for net earnings. This also provides the basis for calculating the net export coefficient as the share of net foreign exchange earnings in total EPZ earnings. To obtain a more comprehensive measurement of the net foreign exchange earnings of the host country, there would be a need for additional refinements, such as the subtraction of the import content of publicly provided infrastructure investment in the EPZ and of local input.

^{1/} See Hamada (1974), p. 226; Rodriguez (1976); and Hamilton and Svenssen (1982; 1983).

^{2/} Warr (1989) notes that "their quality (i.e., estimates of the shadow prices) varies widely ... they were sometimes updated, corrected, or amended to a form more suitable for evaluating EPZs" (p. 81).

In light of the expectations regarding the contribution of the EPZ to the overall economy of the host country, particularly over the medium term, the effects of the EPZ on the macroeconomic performance of the country as a whole cannot be completely neglected in an evaluation. Unfortunately, the indirect effects on growth, employment, exports, or foreign exchange earnings through backward and forward linkages of EPZ production, crowding out, and second-round or multiplier effects are quite difficult to identify. Apart from the lack of data, the conceptual difficulties are similar to those encountered in the welfare analysis; consequently, the analysis has to be limited to some characterization of the relative importance of the EPZ in the host economy by calculating simple ratios, such as the share of the EPZ in total employment, in GDP, or in exports. Caution is needed, however, in the interpretation of these ratios; they are descriptors, but by no means do they explain causal relationships or represent the net impact of an EPZ on the macroeconomic performance of the host country.

III. The Mauritian EPZ

1. Background

In the early 1960s the Mauritian Government embarked on a program of diversification of the island's economy in order to encourage industrial development, reduce its dependence on sugar, and provide increased employment for a fast-growing labor force. The development of local industries was encouraged by a system of "Development Certificates" granting tax exemptions, long-term loans at favorable rates, and protective import duties and quotas to enterprises. Given the small size of the domestic market and the negative experience elsewhere, import substitution was not regarded as a viable long-term strategy; therefore, as soon as import-substitution opportunities were exhausted, Mauritius switched to an export-oriented development policy, with the EPZ as the main element of its new industrial policy. The legislative framework was created in 1970, guaranteeing firms in the EPZ a large variety of fiscal, credit, and regulatory incentives (C. Hein, 1988; Lamusse, 1987).

Since the creation of the EPZ, official government policy has continued to support its development. Regardless of the divergent political stances of successive governments, the importance of the sustained growth of the EPZ to the overall development of Mauritius was recognized. In 1981, the concept was extended to the service sector (Export Services Zones Act) to include activities such as management and engineering consultancy, re-exports, insurance and reinsurance, trans-lation, offshore banking, and the like.

Throughout the period that EPZ policies have been in place, investor confidence has been enhanced by political stability and the continuity of social and economic policies, both of which are critical

factors in foreign investment decisions and are particularly important in the case of EPZs, since many investment incentives are dependent on government legislation and its implementation.

Mauritius is a parliamentary democracy with numerous political parties, regular elections, and complete freedom of the press. The laws of the country are upheld by an independent judicial system, which provides for the possibility of appeal to the Privy Council in the United Kingdom. Mauritius has great ethnic diversity, with most of the population being fluent in English and French, and in some cases, Chinese, Hindi, and Tamil, as well as local dialects.

2. Past and present performance

Four stages can be differentiated in the history of the EPZ in Mauritius, the first being characterized by a rapid expansion following the EPZ Act in 1970; the second starting in 1978 and lasting until 1983--a period during which the EPZ experienced a number of domestic and external difficulties; the third covering 1983-88 when an extraordinary boom was registered; and finally the present period, probably best characterized as a period of consolidation and reorientation.

a. Stage I: The "take-off," 1970-77

With the passage of the EPZ legislation, the number of companies increased impressively (Table 1); by 1977, there were nearly 90 domestic- and foreign-owned companies in operation. Employment growth was even stronger, with the number of jobs created--more than 17,000 by the end of 1977--implying an average annual growth rate of close to 70 percent over the seven-year period. The average size of EPZ companies increased quickly, and reached nearly 200 employees per firm in 1977. The strongest expansion, however, was registered in EPZ exports, which rose by nearly 120 percent per annum, reaching more than Mau Rs 430 million in 1977 and accounting for more than 20 percent of the country's total exports.

Although the data for this period are incomplete, it appears that net exports of the EPZ were quite low, with the net export coefficient being far below 10 percent during the first part of the period (Table 2). Given the lack of domestic supply of plant and machinery for investment in the EPZ, capital goods for EPZ production had to be imported, thus lowering the coefficient. Local investment seems to have been the major source of growth, although foreign investment accounted for between one third and one half of the total toward the end of the period (Table 3).

b. Stage II: External and internal problems, 1978-82

In this second phase the expansion continued, but at a much slower pace. The number of EPZ companies actually fell to 85 in 1978, but then rose to 115 by end-1982 (Table 4). Employment expanded at an annual

Table 1. Mauritius: Key Indicators for the EPZ, 1971-90

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^{1/}
Companies	9	19	32	45	66	85	89	85	94	101	107	115	146	195	277	408	531	591	563	570
Annual change (in percent)		111	68	41	47	29	5	-4	11	7	6	7	27	34	42	47	30	11	-5	1
Employment	644	2,588	5,721	10,669	11,407	17,403	17,474	18,323	20,742	21,642	23,607	23,870	25,526	37,472	53,951	74,015	87,905	89,080	88,650	88,800
Annual change (in percent)		302	121	86	7	53	—	5	13	4	9	1	7	47	44	37	19	1	—	—
Average size of company (in employees per company)	71	136	179	237	172	204	196	215	220	214	220	207	174	192	195	181	165	150	157	155
Exports (in millions of Mau Rs)	4	12	45	136	196	309	433	484	620	894	1,087	1,235	1,307	2,151	3,272	4,951	6,567	8,179	9,057	9,700
Annual change (in percent)		208	275	201	45	57	40	12	28	44	22	14	6	65	52	51	33	25	11	7

Sources: Digest of Industrial Statistics, Ministry of Economic Planning and Development, various issues; Hein (1988); Lamusse (1987); Economic Indicators—An Occasional Paper, Ministry of Economic Planning and Development; International Monetary Fund.

^{1/} Estimate.

Table 2. Mauritius: Exports and Net Foreign Exchange Earnings of the EPZ, 1975-90

(In millions of Mauritian rupees)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^{1/}
Exports	196	309	433	485	620	895	1,087	1,236	1,307	2,151	3,272	4,951	6,567	8,179	9,057	9,200
Imports																
Total	190	273	302	304	395	658	682	743	847	1,650	2,524	3,863	4,801	5,890	7,502	...
Of which:																
intermediate goods	(...)	(...)	(...)	(...)	(...)	(592)	(621)	(707)	(785)	(1,491)	(2,280)	(3,427)	(4,296)	(5,160)	(...)	(...)
capital goods	(...)	(...)	(...)	(...)	(...)	(66)	(61)	(36)	(62)	(159)	(244)	(436)	(505)	(730)	(...)	(...)
Net exports, based on total imports ^{2/}	6	36	131	181	225	237	405	493	460	501	748	1,088	1,766	2,289	1,555	...
Annual change (in percent)	—	456	269	37	25	5	71	22	7	9	49	45	62	30	-32	...
Net exports, based on imports of inter- mediate goods ^{2/}	303	466	529	522	660	992	1,524	2,271	3,019
Net export coefficient																
Based on total imports) ^{3/}	0.03	0.12	3.30	0.37	0.36	0.26	0.37	0.40	0.35	0.23	0.23	0.22	0.27	0.28	0.17	...
Based on imports of intermediate goods) ^{3/}	0.34	0.43	0.43	0.40	0.31	0.30	0.31	0.35	0.37
Memorandum items:																
EPZ value added ^{4/}	321	421	449	548	865	1,332	1,900	2,585	3,125	3,150	3,145

Sources: Digest of Industrial Statistics, Ministry of Economic Planning and Development, various issues; International Monetary Fund.^{1/} Estimate.^{2/} Exports minus respective imports.^{3/} Net exports/exports.^{4/} Derived from the production accounts worked from data obtained through the Annual Survey of Manufacturing Industries; see Digest of Industrial Statistics.

Table 3. Mauritius: Investment in the EPZ, 1976-89

(In millions of Mauritian rupees)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total investment	205	340	560	655	815	845
Of which:														
plant, machinery	(54)	(37)	(38)	(58)	(66)	(61)	(35)	(62)	(160)	(260)	(450)	530	675	785
buildings	(...)	(...)	(...)	(...)	(...)	(...)	(...)	(...)	(45)	(80)	(110)	125	140	60
Foreign investment	18	18	9	8	5	—	9	10	53	122	72	183	230	298
Foreign investment as share of plant and machinery investment	0.33	0.49	0.24	0.14	0.08	—	0.26	0.16	0.33	0.47	0.16	0.35	0.34	0.38

Sources: Central Bank of Mauritius; International Monetary Fund.

Table 4. Mauritius: Sectoral Structure in the EPZ, 1980-90

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^{1/}
Number of EPZ companies	101	107	115	146	195	277	408	531	591	563	570
Annual change (in percent)	7	6	7	27	34	42	47	30	11	-5	1
Of which: number of textile companies ^{2/}	(78)	(78)	(83)	(84)	(113)	(184)	(294)	(387)	(435)	(389)	(...)
Annual change (in percent)	...	—	6	1	35	63	60	32	12	-11	...
Share of textile companies in total EPZ companies ^{2/}	0.77	0.73	0.72	0.58	0.58	0.66	0.72	0.73	0.74	0.69	...
Total EPZ employment	21,642	23,607	23,870	25,526	37,472	53,951	74,015	87,905	89,080	88,650	88,800
Annual change (in percent)	4	9	1	7	47	44	37	19	1	—	—
Of which: employment in textiles ^{2/}	(17,711) ^{3/}	(20,010) ^{3/}	(19,409) ^{3/}	(20,068) ^{3/}	(32,514)	(48,351)	(67,721)	(80,716)	(81,043)	(79,452)	(...)
Annual change (in percent)	...	13	-3	3	62	49	40	19	—	-2	...
Share of employment in textile companies in total employment ^{2/}	0.82	0.85	0.81	0.78	0.87	0.90	0.91	0.92	0.91	0.90	...
Employees per textile company	227	256	233	238	288	263	230	208	186	204	...

Sources: Digest of Industrial Statistics, Ministry of Economic Planning and Development, various issues; International Monetary Fund.

^{1/} Estimate.

^{2/} Textiles and wearing apparel.

^{3/} September.

rate of about 7 percent, reaching 24,000 at the end of the period, although there was little change in the number of employees per EPZ company. In local currency terms, exports nearly tripled, growing by roughly Mau Rs 800 million; in U.S. dollar terms the rise was about \$35 million, which still represented an increase of one half over the 1978 level. As could be expected during a deceleration of expansion, net exports were consistently rather high, and the net export coefficient based on total imports was close to 40 percent in all but one year. The share of EPZ exports in the total exports of Mauritius increased from about 25 percent to about 30 percent, but the share of net exports remained fairly small at some 10 percent.

For most of these years, foreign investment did not play a major role; only in 1982 was a slight recovery registered. The preponderance of textile industries in the EPZ became well established in this phase, accounting for two thirds of the number of companies and more than 80 percent of employment in the EPZ.

c. Stage III: Revival of the boom, 1983-88

In the mid- and late 1980s, in particular, the EPZ once again recorded rapid expansion. The number of companies surged from 115 in 1982 to nearly 600 in 1988, and employment expanded by 250 percent to 89,000, indicating an increase of smaller enterprises in the EPZ. The average size of the EPZ companies fell from about 175 employees to 150 during these years; this trend was even stronger in the textile companies, where the number of employees per firm fell from nearly 240 to 190. Exports, however, expanded by more than 600 percent in local currency terms, and quadrupled in U.S. dollar terms, accounting for 64 percent of the country's total exports at the end of the period (Table 5); the share of EPZ net exports in the total increased to 18 percent.

The net export coefficient based on total imports decreased from 40 percent in 1982 to about 26 percent on average during the period 1983-88; this decline has to be seen against the background of strongly increasing capital imports in connection with the renewed expansion. Accordingly, the net export coefficient, based on intermediate imports only, recorded much smaller fluctuations over the period.

While the share of the EPZ value added in total GDP had been constant at about 4 percent between 1980 and 1983, it widened to about 12 percent by 1988. The share of foreign investment recovered substantially, particularly in 1984/85, accounting on average for 25 percent of total EPZ investment. The concentration of EPZ production in textiles showed little change compared with the previous period in terms of the number of companies, but in terms of employment it did become more pronounced.

Table 5. Mauritius: Macroeconomic Impact of the EPZ, 1978-90

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^{1/}
EPZ exports (US\$ millions)	79	98	116	122	114	112	156	212	368	510	609	594	662
EPZ net exports (US\$ millions)	29	36	31	45	45	39	36	48	81	137	170	102	...
(Mau Rs millions)	179	227	238	402	489	456	497	741	1,090	1,764	2,284	1,555	...
Total exports of Mauritius (US\$ millions)	315	364	406	361	380	344	379	376	528	806	955	1,003	1,042
EPZ/Total exports	0.25	0.27	0.29	0.34	0.30	0.33	0.41	0.56	0.70	0.63	0.64	0.59	0.64
EPZ net exports/ Total exports	0.09	0.09	0.07	0.12	0.11	0.11	0.09	0.12	0.15	0.17	0.18	0.10	...
GDP, at current prices (Mau Rs millions)	5,832	6,808	8,395	9,266	10,815	12,333	13,453	15,247	17,892	21,493	25,683	29,507	33,009
EPZ value added ^{2/} (Mau Rs millions)	321	421	449	548	865	1,332	1,900	2,585	3,125	3,150	3,415
EPZ value added/GDP	0.04	0.05	0.04	0.04	0.06	0.09	0.11	0.12	0.12	0.11	0.10

Sources: Digest of Industrial Statistics, Ministry of Economic Planning and Development, Central Statistical Office, various issues; International Monetary Fund.

^{1/} Estimate.

^{2/} Derived from the production accounts based on data obtained through the Annual Survey of Manufacturing Industries; see Digest of Industrial Statistics.

The data available for 1980 onward make it possible to undertake a more detailed examination of two issues that are relevant not only to the case of the Mauritian EPZ but also to the evaluation of the EPZ concept in general: the questions of backward production linkages and a more accurate assessment of the contribution of EPZs to growth.

In another attempt to overcome the empirical difficulties that usually hamper the effort to establish clear proof of the existence of backward production linkages between EPZs and the host economy, net exports and EPZ value added were compared for the Mauritian EPZ. Assuming that a positive difference could be interpreted as the domestic intermediate input, substantial linkages were observed only in 1982; in all other years in the period 1980-90, net exports were smaller than the value added. However, it would be going too far to conclude from this result that there are basically no backward linkages in the case of the Mauritian EPZ. First, the lack of even a small positive difference in most of the years--which would reflect at least the existence of basic services provided by the domestic economy, such as water and electricity--must raise doubts about this approach or about the quality of the data. Second, a "certain degree of integration" between the EPZ and the domestic economy was found in a recent analysis by P. Hein (1989), who examined the production accounts of the Mauritian EPZ for 1982. Interestingly enough, his results confirm the observation above; reservations remain, however, because the analysis was based on one year only.

With regard to the measurement of the contribution of the EPZ to economic growth, the domestic value-added concept overstates the contribution to the extent that profits are repatriated abroad. Thus, if profits are repatriated, the national value added concept provides the more accurate measure of the EPZ's contribution. When profits accruing to foreign investors are included, as in the domestic value-added concept, the EPZ overstates the contribution by up to 20 per-cent. 1/ 2/ The calculation of the difference between national and domestic value added is based on a comparison of the value added per worker and the labor cost per worker (Table 6), in order to determine the nonwage elements of the EPZ value added; then, the nonwage value added is divided into national and foreign components, according to the share of local and foreign investment in the EPZ. 3/

1/ The need to modify the value added as suggested is, of course, subject to the ultimate use of profits by foreign investors. To the extent that profits are not repatriated, but are instead reinvested domestically, the distinction becomes of lesser importance.

2/ The assumption is also made that the wage bill reflects the compensation of nationals, and that there are no salaries to expatriates.

3/ Mauritius does not compile depreciation, and thus profits are overstated when estimated as a residual.

Table 6. Mauritius: Domestic and National Value Added in the EPZ, 1980-90

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Domestic value added (Mau Rs million)	321	421	449	548	865	1,332	1,900	2,585	3,125	3,150	3,415
Value added per worker (Mau Rs)	14,832	17,834	18,810	21,468	23,084	24,689	25,670	29,407	35,081	35,533	...
Annual change (in percent)	...	20	5	14	8	7	4	15	19	1	...
Labor cost per worker (Mau Rs)	7,300	8,300	9,300	10,400	10,900	12,100	13,500	15,000	17,400	20,700	...
Annual change (in percent)	...	14	12	12	5	11	12	11	16	19	...
Nonwage value added per worker (Mau Rs)	7,532	9,534	9,510	11,068	12,184	12,589	12,170	14,407	17,681	14,833	...
National value added (Mau Rs million)	261	338	365	443	696	1,081	1,567	2,116	2,542	2,663	...

Sources: Digest of Industrial Statistics, Ministry of Economic Planning and Development, Central Statistical Office, various issues; International Monetary Fund.

d. Stage IV: Consolidation and reorientation, 1988-present

The Mauritian EPZ now accounts for more than 60 percent of total exports, more than 30 percent of total employment, and more than 85 percent of total foreign direct investment. Despite these impressive achievements, however, the performance of the EPZ in 1989/90 has given cause for some concern. The rate of growth in export value fell from 25 percent in 1988 to 11 percent in 1989, and to an estimated 7 percent in 1990. Net exports accounted for about 28 percent of EPZ exports in 1987 and 1988, but dropped to 17 percent in 1989, owing to a sharp increase in EPZ imports that still remains to be fully explained. Furthermore, employment has shown little growth since 1988. Finally, the number of firms fell from the peak of 591 in 1988 to 563 in 1989. This net decline resulted from the closing of 46 textile firms and the creation of 18 new companies in other sectors.

On the other hand, a number of positive developments indicated some strengthening of the textile sector and some progress in diversification. Since the contraction of the textile sector is concentrated among small subcontractors--the average number of employees in companies of the textile sector rose from 186 in 1988 to 204 in 1989--the shakeout should eventually result in a stronger and more robust sector that would be able to invest in upscale production lines and be better prepared to face increased global competition. While the number of employees in the textile sector decreased slightly in 1989, there was an expansion of employment in other industries, such as leather, printing, and jewelry, reflecting greater diversification of the EPZ. Although this expansion nearly compensated for the loss of jobs in textiles, the nontextile sector still accounts for only about 10 percent of total EPZ employment. Foreign investment in the EPZ grew in 1988 by 26 percent and in 1989 by nearly 30 percent, to about Mau Rs 300 million, accounting for nearly 40 percent of total investment. Investment in the nontextile sector has been rising substantially, albeit from a very low base.

3. Key factors affecting EPZ performance

In the attempt to explain the overall extraordinary expansion of the EPZ in Mauritius, two approaches are feasible: one could either try to identify major factors that might have influenced the EPZ performance on a year-by-year basis, or instead try to estimate an equation, where, for example, export growth is linked to a number of independent variables.

The results of the second approach--the regression analysis--provide a partially useful answer (see Appendix II for more details). As expected, the real effective exchange rate, export demand, and wage rates are among those key factors that have affected the EPZ performance in the past. However, the relative significance of these factors varies considerably with the observation period chosen; although not surprising in itself, this variation would call for an examination of other explanatory variables in some periods. The relevance and impact of

additional variables could not be determined, however, reflecting either the lack of appropriate time series or the lack of adequate numerical proxies.

In order to avoid an analysis that risks narrowing the scope of explanatory variables too much, a combination of the two original approaches has been devised. Around the independent variables identified in the regression analysis, three categories of factors have been defined, namely, the macroeconomic conditions of the host country, the external economic environment, and the EPZ policy package. The impact of these factors is discussed in greater detail below.

a. The macroeconomic conditions

Throughout the years of operation of the Mauritian EPZ its development and the macroeconomic conditions of the domestic economy seem to have benefited mutually (see Tables 5 and 6). In the early and mid-1970s the Mauritian economy grew rapidly, thanks largely to a number of good sugar crops and a surge in world sugar prices. Profits made in the sugar sector were a substantial source for local EPZ investment. Exports were encouraged when the real effective exchange rate depreciated between 1970 and 1973 by about 12 percent and, despite some appreciation in 1974, remained at a lower level thereafter (Table 7; Chart 1). Total exports increased impressively from US\$69 million in 1970 to more than US\$300 million in 1975, resulting in approximate balance in the current account for a number of years. Most of the local EPZ investment was financed by the large profits made in the domestic sugar industry.

With the decline in sugar prices in 1974/75, Mauritius witnessed the emergence of serious economic and financial imbalances. Fiscal policies remained expansionary, spurred by an ambitious public investment program and the rapid growth of current expenditure. The current account deficit as a share of GDP increased from 5 percent in 1976 to 12 percent in 1979, reflecting mainly the second oil price increase. Both local and foreign investment in the EPZ fell.

After 1979, the Government, with the support of five stand-by arrangements from the Fund and two structural adjustment loans from the World Bank, implemented a macroeconomic stabilization program and a number of structural reforms. While tighter fiscal and monetary policies and flexible management of the exchange rate made substantial contributions to the reduction of external and internal imbalances, the success of those policies was aided by specific measures to strengthen the sugar and tourism sectors and to encourage private foreign investment, such as a tariff reform and the elimination of quantitative import restrictions. "A keystone of the Government's economic strategy was its reliance on market forces and pricing policies in the allocation of scarce resources....The Government's main role was limited to providing infrastructure and a policy framework within which the private sector could function as the main engine of growth" (Kakoza, 1987).

Table 7. Mauritius: Selected Macroeconomic Indicators, 1980-90

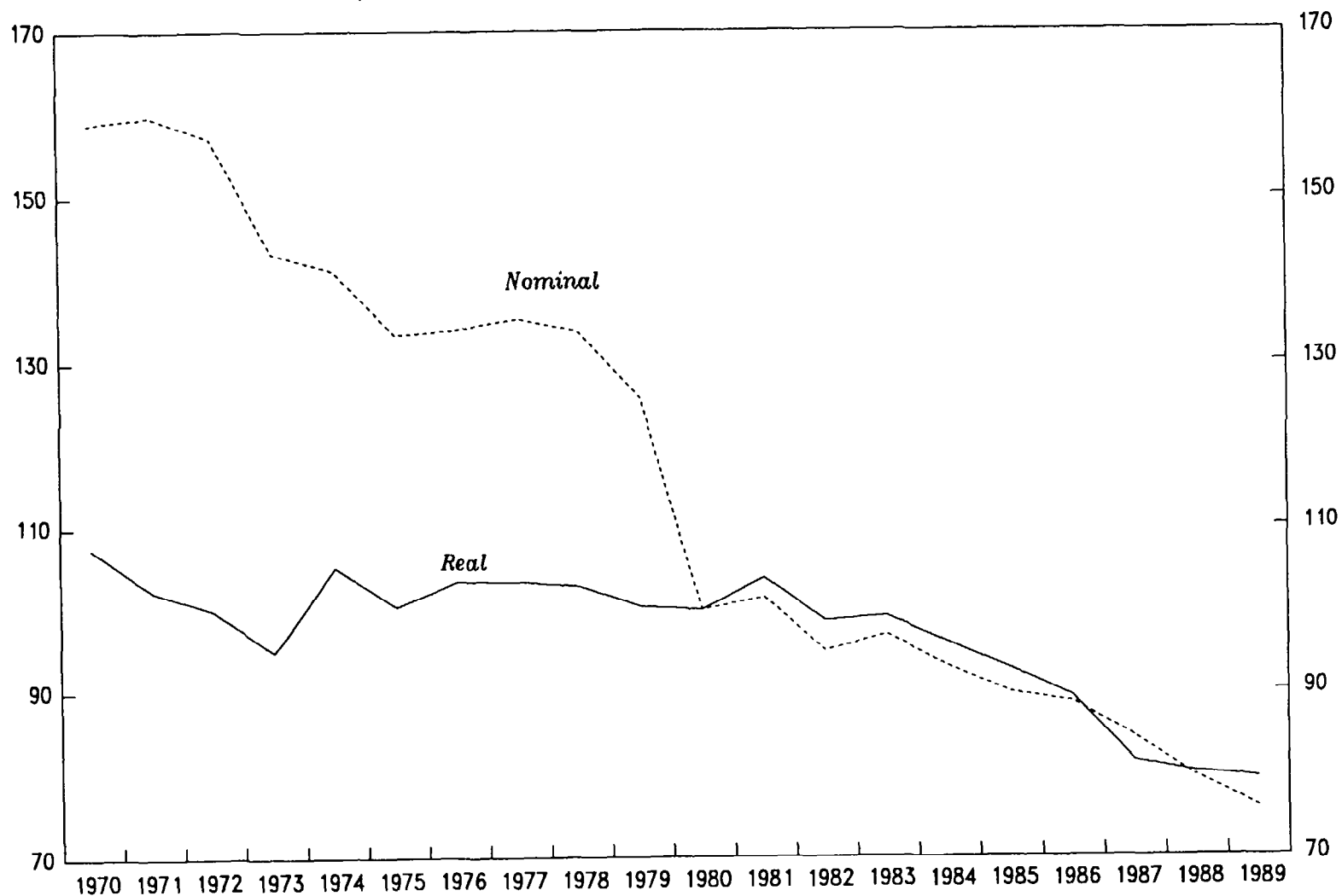
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990 ^{1/}
GDP, annual change (in percent) ^{2/}											
Nominal	23.3	10.4	16.7	14.0	9.1	13.3	17.3	20.1	19.5	14.9	11.9
Real	-2.6	-0.5	4.2	3.2	0.7	5.0	8.5	10.8	8.6	5.5	3.7
Exports, annual change (in percent) ^{2/}	11.8	-11.1	5.3	-9.4	9.9	-0.7	40.4	52.7	18.5	5.0	3.9
Exports of manufacturing sector, annual change (in percent) ^{2/}	—	7.4	7.1	-13.7	22.0	26.8	72.3	52.6	30.5	8.8	7.3
Volume of non-oil merchandise imports of trading partners (annual change)	-1.7	-2.9	2.1	5.6	10.8	4.0	7.7	7.3	10.5	8.5	6.2
Current account deficit as percent of GDP ^{2/}	-10.7	-15.3	-5.7	-5.0	-2.6	-3.8	1.0	7.3	-3.7	-0.4	-3.7
REER index	100.0	103.8	98.8	99.3	96.0	93.1	89.9	81.7	79.5	80.0	...
Consumer prices, annual change (in percent)	33.0	26.4	13.4	7.5	5.5	8.3	4.3	0.7	1.5	16.0	11.2
Unemployment rate	11.1	13.2	15.1	19.4	17.1	14.2	9.6	4.9	3.0	2.7	...

Source: International Monetary Fund.

^{1/} Estimate.^{2/} Based on data in U.S. dollar terms.

CHART 1
MAURITIUS
NOMINAL AND REAL EFFECTIVE EXCHANGE RATES, 1970-89

(Period average, 1980=100; foreign currency per Mauritian rupee.)



Sources: IMF Information Notice System; and staff estimates.

Although the basis had been created for the second phase of rapid expansion of the EPZ, the Mauritian economy experienced some difficulties in the early 1980s, reflecting not only an adverse external environment, but also the lag between the implementation of the adjustment measures and the realization of their positive results. Nominal and real GDP growth had recovered by 1982, but did not resume an expansionary trend until 1985, and a similar pattern was recorded for exports of manufactures. The current account deficit peaked at about 15 percent of GDP in 1981, but improved thereafter. The rate of consumer price inflation was a disturbing 33 percent in 1980, but it dropped back to the single-digit level by 1983, and was only 0.7 percent in 1988.

Even though the second EPZ boom continued until 1988, signs of a retrenchment were already appearing in the overall economy of Mauritius by that year. Real GDP growth fell from about 11 percent in 1987 to less than 9 percent in 1988, and the downward trend has persisted. The growth in exports plunged from nearly 53 percent in 1987 to 18.5 percent in 1988 and then to 5 percent in 1989. The real effective exchange rate of the Mauritian rupee, which had depreciated by 18 percent between 1983 and 1987, declined by only 2.7 percent in 1988, and appreciated by 0.7 percent in 1989, returning to its 1987 level in the first quarter of 1990. As a result, the relative position of Mauritius vis-à-vis some of its competitors--such as Indonesia, Malaysia, and Sri Lanka--deteriorated. The external current account shifted back into deficit in 1988, and is not expected to change in 1990.

Finally, a major shift in employment had occurred by the late 1980s. Stemming in large part from the expansion of the EPZ, the country essentially reached full employment by 1989, with an unemployment rate of only 3 percent compared with 19 percent in 1983. Furthermore, there was a significant increase in the participation rate of female workers in the labor force, which reached 43 percent in 1989, up from 28 percent in 1983. As a result, there was stiff competition among employers for workers, particularly skilled ones, and labor costs increased substantially. Rising wages, import prices, and strong internal demand fueled inflation, which increased from about 1 percent in 1987 to 11 percent in 1989.

b. The external environment

In the category of the external economic environment, two subsets of factors have affected the EPZ performance; one is the actual development of the demand for Mauritian exports worldwide, and the other includes the bilateral and multilateral agreements that Mauritius has concluded with a number of countries in different areas.

(1) Export market growth

The changes in the global demand for Mauritius's exports can once again be closely aligned with the four stages of the EPZ. In the early 1970s, Mauritius experienced a strong surge in demand from its trading partners, and registered double-digit growth rates in volume terms in 1972 and 1973. After 1979, the effects of the world recession were also seen in the growth in demand for Mauritius's exports, which slowed to minus 3 percent in 1981. The resumption of growth in the industrialized countries resulted in a remarkable growth of exports of Mauritian products, which averaged 8 percent between 1983 and 1988, in parallel with the revival of the expansion of the EPZ.

Presently, overall demand growth for Mauritius's exports shows some easing; the international market for textiles and garments--still by far the predominant industry in the Mauritian EPZ--has suffered from weakening demand in Europe and North America during the past two years, and competition has increased, particularly in the range of simple products.

(2) International agreements for investments and exports

In addition to the general protection of investments against nationalization, Mauritius has bilateral agreements with various countries--including France, the United Kingdom, and the Federal Republic of Germany--for supplementary protection. Mauritius has also signed double taxation agreements with the United Kingdom, France, the Federal Republic of Germany, and India.

However, the most important consideration from the investors' point of view has very likely been the fact that Mauritian products enjoy duty-free access to the European Community (EC) through the Lomé Convention. Mauritius was, in fact, the first member of the British Commonwealth to become an associate member of the EC and has had duty-free access since 1972, when it was a signatory to the Yaoundé Convention. It should be noted that two major provisions in the Lomé Convention--the so-called rules of origin and a safeguard clause--can hinder exports from ACP countries. ^{1/} Mauritius has managed to deal with these issues successfully, however, thereby giving it an advantage over its competitors in the field of wearing apparel (World Bank, 1989). Nevertheless, it has not been entirely able to avoid the imposition of quotas in certain overseas markets, which has contributed to some reduction in export growth.

Mauritius has also benefited from the U.S. import regulation scheme for clothing; restrictions on the volume of imports to the United States are negotiated when certain categories of clothing imports from any

^{1/} ACP, African, Caribbean, and Pacific States.

given country reach 1 percent of U.S. production. Thus, when Hong Kong producers were looking for new sites in countries that had not yet become subject to the U.S. import quotas, and that could serve as an alternative location when Hong Kong is returned to the People's Republic of China in 1997, Mauritius's EPZ became a preferred place for the relocation of investment.

c. The EPZ policy package

The centerpiece of the EPZ policy is, of course, the set of measures that has been designed to create an economic environment in the EPZ that is attractive for domestic and foreign investors and producers alike. Three categories of measures have been differentiated: the conditions created in the labor market, the fiscal and financial incentives, and the infrastructure provided by the Government for EPZ production facilities.

(1) Labor market

It can be assumed that the availability of surplus labor was originally among the principal attractions for investment in the Mauritian EPZ. Data from 1980 onward reveal that unemployment remained rather high until 1985, after which it declined rapidly, to less than 3 percent in 1989.

Regarding the level of wages, Mauritian wages at the time of the establishment of the EPZ were substantially lower than in other countries, and even in 1988 Mauritian labor costs were about 25 percent of those in Hong Kong and Singapore (Kearney, 1990). The minimum wages legislated for the EPZ were at first generally lower than in other formal sectors of employment. Since 1984, however, minimum wage legislation has been maintained only for female workers. Apart from those times when the Government decreed substantial wage hikes, mainly in 1974 and in the early 1980s, nominal wage increases in the EPZ remained rather moderate, particularly in view of the rate of inflation as measured by the CPI. Consequently, real wages (as calculated in relation to the CPI) did not change much. However, with another major wage hike decreed and the economy approaching full employment in 1987, wages in the EPZ reacted strongly (Table 8); even if the data on labor productivity have to be interpreted cautiously, indications are that there was a substantial widening of the negative differential between productivity and the growth of real wages.

With respect to the quality of labor, the free and universal education in Mauritius, and the successful campaigns promoting adult literacy and free health care have created a "literate, trilingual, and adaptable workforce" (Kearney, 1990). At the upper end of the spectrum there are highly qualified professionals, such as accountants and lawyers, who facilitate the operation of a business, and who cannot be found easily in other developing countries.

Table 8. Mauritius: Average Earnings by Sector,
Monthly Paid Employees, 1984-89

(Annual changes in percent, as of September)

	1984	1985	1986	1987	1988	1989
Manufacturing						
Nominal	7.6	7.4	6.0	16.0	8.1	16.3
Real	-2.0	1.5	5.9	16.7	-7.8	7.4
EPZ						
Nominal	--	--	4.1	14.0	13.6	18.7
Real	--	--	4.0	14.7	-3.1	9.6
All sectors	5.9	5.8	6.8	20.9	7.8	18.4
<u>Memorandum items:</u>						
Annual unemployment rate	17.1	14.2	9.6	4.9	3.0	2.7
Labor productivity						
In the EPZ (annual change in percent)	0.5	-10.6	-7.3	-0.8	1.7	4.7

Sources: Bi-Annual Surveys of Employment and Earnings, Ministry of Economic Planning and Development, Central Statistical Office; International Monetary Fund.

The labor laws introduced for the EPZ have provided another incentive for the establishment of EPZ enterprises. Two major differences exist between the conditions of employment in the EPZ and those in other sectors of the economy (C. Hein, 1988). The first concerns the greater flexibility given to EPZ employers to terminate employment, in that they have faced fewer constraints--vis-à-vis reductions in their labor force and the accompanying termination benefits--than in other sectors, particularly in the early years. Secondly, overtime work, if requested, has been made compulsory in the EPZ and is computed on a weekly basis rather than on the daily basis that applies in other sectors.

(2) Fiscal and financial incentives

Fiscal incentives include income tax relief and exemptions from customs duties on EPZ-related imports and exports. Industries operating within an EPZ are completely exempt from corporate income taxes during the first ten years; from the eleventh to the fifteenth year they are subject to 50 percent of the corporate tax rate; and from the sixteenth to the twentieth, to 75 percent. During the first ten years, dividends paid out by EPZ firms are exempted from income tax for five consecutive years beginning with the first year of dividend payment. Profits reinvested in new manufacturing enterprises in Mauritius enjoy partial exemption from income taxes. Foreign technical personnel and managers employed by EPZ firms are given a global individual income tax exemption on the first Mau Rs 15,000 of their salaries and 30 percent relief on the balance. Capital equipment, spare parts, and raw materials needed by EPZ firms are exempted from all import and other duties.

Starting on July 1, 1985, the income tax regime was modified, and tax incentives under various incentive schemes were standardized and extended to exporting non-EPZ companies. EPZ companies starting up business after July 1, 1985 became subject to a lifetime corporate tax rate of 15 percent with dividends exempted from income tax for the first ten years of the firm's operation. Existing EPZ firms were given the option of continuing with the original tax benefits or joining the new scheme. This change in the tax status of EPZ companies was prompted in part by the desire to stop the EPZ companies from dissolving themselves at the expiration of their tax holiday and re-emerging as new companies. A rebate scheme, introduced in 1984/85, provided that any non-exempted firm ^{1/} that exported part or all of its output would receive a corporate tax rebate of 2 percentage points for each 10 percentage points of output exported. Thus, a nonexempted company exporting 100 percent of its output would also be subject to a corporate tax of 15 percent.

^{1/} Exemptions include sugar, molasses, and tea companies.

Profits and dividends of EPZ companies may be freely repatriated, and capital brought into Mauritius (excluding capital appreciation) may also be freely taken out the country (capital appreciation is subject to exchange control and the normal rate of stamp duty). Both these provisions, which were meant to encourage foreign investment, may also have played an important role in the widespread emergence of joint ventures in the Mauritian EPZ.

The Development Bank of Mauritius (DBM) gives priority in its lending to the financing of EPZ industries, and local commercial banks extend credit to EPZ industries at preferential rates: EPZ firms are treated as priority borrowers for credit control purposes and EPZ export bills are rediscounted by the Bank of Mauritius at preferential rates. Export firms are provided with government assistance in negotiations to receive freight rebates from major shipping companies serving Mauritius and its trading partners. The Government provides considerable direct and indirect aid in arranging trade missions and trade fairs abroad to promote Mauritius's manufactures.

(3) Infrastructure

The EPZ in Mauritius is not restricted to designated industrial estates or enclaves, but is instead dispersed throughout the island. The Government and government agencies have provided the majority of EPZ firms with ready-made industrial estates, which are rented to them at subsidized rates. EPZ companies also benefit from subsidized electricity tariffs.

On the administrative level, the Government reacted to complaints about difficult procedures for foreign investors by creating the Mauritius Export and Investment Authority (MEDIA) in 1984. Among the many responsibilities of this parastatal, three key tasks are to attract investors in the EPZ, to promote Mauritian products abroad, and to manage and develop industrial estates owned by the Government.

The geographical dispersion of the EPZ has benefited the investors, the workers, and the environment. Fortunately, it was possible to effect this dispersion without an undue burden on the government budget, since the basic infrastructure (e.g., water, electricity, telecommunications, roads, and bus services) was already in place throughout the country, and the existing facilities needed only to be upgraded.

The availability and cost of air and sea transport are critical issues for export-based industrialization in an island like Mauritius, which is far from its main markets and sources of supplies. These transport facilities are available, although not without problems. During the 1970s, EPZ industries were hit by rising freight costs and there were frequent complaints about the high cost of local port services and the chronic congestion in the port. The construction of deep-water quays and a separate bulk sugar terminal solved the problem of port congestion and reduced the turnaround time for ships; but, given

the distance from Europe--the main export market--freight costs remain an important issue that the Government has promised to address, for example, through improving productivity in the Port Louis harbor via the Cargo Handling Corporation.

The use of air freight has become increasingly common among EPZ industries, given that many of the products, particularly fashion garments, must reach their markets quickly. Since Mauritius is a tourist destination with regular flight connections with Europe, the need for larger air freight capacity could be accommodated rather easily. Moreover, the proximity of Mauritius to the island of Réunion, a French overseas département with large import requirements (and few exports), has made it possible to have regular air cargo service to Europe under relatively favorable terms.

4. Outlook

Although the Mauritian EPZ has responded reasonably well thus far to the challenges posed by the domestic and global changes over the medium term, the prospects for its effective restructuring and future development will depend to a substantial degree on the progress made in two areas: (i) the consolidation of the macroeconomic conditions and (ii) the successful implementation of policy initiatives promoting the specialization, diversification, and upgrading of the zone. These two elements will not only determine the course of the adjustment process in the existing EPZ--from a labor-intensive, low-technology production base to a more capital-intensive, high-technology, skill-intensive one--but also the status of the Mauritian EPZ as a globally competitive location for new investors.

As far as the EPZ is concerned, the consolidation of the macroeconomic conditions must achieve a deceleration of domestic inflation and a certain liberalization of wage-setting policies. Wage adjustments must be increasingly linked to productivity growth; however, some reduction of wage differentials for low-income earners may also be needed as an incentive for phasing out low-wage, labor-intensive activities. The regular tripartite negotiations between the employers, the unions, and the Government on overall wage adjustments must be de-emphasized, with a greater emphasis being put on sectoral negotiations. An additional element of the needed consolidation is the introduction of measures to free up labor markets and promote movement of labor from lower to higher productivity sectors. For example, the recently introduced labor laws in the sugar sector must be implemented in such a way as to discourage the retention of unneeded workers in that sector.

In addition to the necessary macroeconomic consolidation, the authorities will have to continuously review and refine the package of policy initiatives directed specifically at the EPZ. At present, this package is focused on three major objectives: (i) increased specialization in the textile industry; (ii) diversification into new industries;

and (iii) the development of export services. The progress made in realizing these objectives must be closely monitored and adaptations made in the light of experience.

a. Increased specialization in the textile industry

The experience and skills in textile production accumulated in Mauritius over the last ten years should give the textile manufacturers a comparative advantage in the global competition for more upscale markets. Production for such markets should increase domestic value added. However, it will require higher labor productivity and hence increased investment in capital-intensive production facilities. Marketing efforts will also have to be stepped up, not only in traditional markets but also in new ones, such as Spain and Portugal.

b. Diversification of the EPZ into new industries

In addition to the progress already made in developing new lines of production in Mauritius, the potential of two other avenues for diversification should be explored. First, an attempt should be made to develop industries in the EPZ that would complement existing production and create "advantages of conglomeration." Second, there should be room for backward and forward linkages between EPZ production and the domestic economy. For example, the failure of an earlier attempt to produce buttons for the clothing industry should not prevent new initiatives to increase the share of domestic input into EPZ production, as long as such local supply is internationally competitive. In the same vein, production in the EPZ could provide additional inputs for the tourism and agricultural sectors, such as equipment for hotels and restaurants or packaging for the export of sugar and other high-value products. In all cases, however, priority should be given to investment in relatively labor-saving and knowledge- and skill-intensive activities.

c. Development of export services

The most ambitious policy goal is the creation of a more service-oriented export industry. The stage of development of the Mauritian economy and the characteristics of the Mauritian people, including their multilingual abilities, should provide a sound basis for service industries, with the emphasis on services such as data entry functions, translations, and the like. An Export Services Zone would fit well with the envisaged expansion of offshore banking. However, substantial investment, particularly in telecommunications, would be necessary.

In order to realize the three EPZ objectives of specialization, diversification, and reorientation toward services, the authorities will also have to implement additional policies that are more general in scope. Given the need for a highly qualified, highly skilled work force in the evolving EPZ, labor skills have to be improved at all levels-- which will involve on-the-job training as well as outside training

schemes. The establishment of the IVTB (Industrial and Vocational Training Board) is an appropriate start for concerted action by the private sector and the Government, but the effectiveness of this institution will require the setting of clear objectives and close coordination among all parties involved in training. Although efforts have been made to obtain external resources for training, including the convening of a donors' meeting in April 1990 in Geneva, it is clear that Mauritius will have to rely mainly on its own resources in this area. Through the Mauritius Export Development and Investment Authority (MEDIA), the Government has been making efforts to attract new investors by contacting high-quality manufacturers in Europe; however, care must be taken to ensure that such pre-selection of potential investors does not exclude suitable candidates in other sectors as well as in other countries. The incentive package for EPZ investment should be kept under constant review, particularly in respect of the tax provisions, to ensure that they attract more capital-intensive investment. Upgraded prefabricated production facilities for lease and other site services and infrastructure should continue to be made available to prospective investors.

Two other options to support the restructuring of the EPZ have been considered by the Mauritian authorities, but their potential contribution remains uncertain. One option is the movement of Mauritian low-technology and labor-intensive textile production into third countries, in particular to Madagascar. So far only one Mauritian manufacturer has invested in Madagascar, and it is still too early to assess its success. Moreover, any assessment would have to take into account the degree to which the investment actually leads to an efficient division of labor between the countries; the mere transfer of production does not necessarily mean that any advantage would accrue to the Mauritian economy, although maintaining and expanding managerial activities in Mauritius would be a significant benefit from such a development.

The other option is the import of labor; the authorities have developed a model-contract that limits the stay of foreign workers to the duration of the particular project. No information is available yet on the degree of use of this option. However, importing labor should be considered only as a temporary measure to overcome bottlenecks in the labor market rather than as a long-term solution, because an increase in the supply of labor could contribute to a relatively greater increase in the output of labor-intensive goods, while the incentives for capital-intensive investment are reduced. Thus, importing labor could become counterproductive for the medium-term objectives of the restructuring efforts.

IV. Considerations for a Wider Use of EPZs

The success of the Mauritian EPZ has been manifold, even to the point where the EPZ is now the origin of some constraints on the labor market. Such success could easily result in a very optimistic assessment of this policy concept. The performance of some EPZs, particularly

in Asia, seems to support the view that EPZs are a straightforward policy instrument for diversification, export growth, and development. The fact that a fast-growing number of countries are determined to apply the concept demonstrates this widespread perception. However, the analysis of the Mauritian EPZ shows clearly that there are a number of qualifications and requirements associated with the EPZ concept that should actually limit its wider use substantially.

1. Targets are achieved to different degrees

It should be clear that even an overall positive performance of an EPZ does not prevent weaknesses from occurring during a number of years, or targets from being achieved only partially. In the particularly difficult take-off phase, the Mauritian EPZ benefited tremendously from the sugar sector, which had been the backbone of the economy and which was enjoying a very profitable period in the early 1970s. Instead of having to rely primarily on foreign investment, which can very well prolong the initial stage, the EPZ in Mauritius was able to rely on local investors, who were prepared to take advantage of the incentives. The fact that Mauritius has the largest sugar quota of all the ACP countries, with highly favorable prices well above the world market prices, should be regarded as another critical advantage that increases the availability of domestic capital to be invested in the EPZ.

From the Mauritian example it is also quite clear that an EPZ's contributions to the creation of employment and, at a later stage, the reduction of unemployment, are likely to be the most unequivocally positive effects; furthermore, the better the overall educational level of the labor force, the stronger these effects will be. Regarding foreign exchange earnings, more cautious expectations appear appropriate; EPZ exports are a misleading evaluation criterion for the contribution of the EPZ to the foreign exchange earnings of the host country. A net export coefficient of about 30 percent would seem to be a good basis for an estimate of the actual additional EPZ-generated foreign exchange earnings that accrue to the host country. Caution is also recommended concerning the direct contribution of EPZs to growth, as can be seen from the Mauritian EPZ's share of the value added in total GDP, which was consistently in the 10 percent range. Indirect effects on growth, employment, or exports have, of course, not been taken into account.

Regarding the emergence of backward and forward linkages with the host economy, expectations should also be rather guarded. Forward linkages are unlikely to be created as long as EPZ companies are obliged to export their production completely. ^{1/} The potential for backward linkages is at least limited, even in a reasonably well-developed economic environment like that of Mauritius. There are a number of explanations,

^{1/} Mauritian EPZ companies have only recently been permitted to sell in the domestic market.

particularly in those cases where the investment is basically expected to come from abroad. First, linkages will typically be concentrated in the labor market, which is after all an important consideration for foreign investors. Second, foreign investment might very often be determined by the twin plant concept, meaning that production is shared between the main factory in the investor's home country and the assembly line at the EPZ location, leaving little room for local input. Third, unlimited foreign ownership of EPZ companies, while on the one hand clearly an incentive for foreign investment, can on the other hand reduce the willingness to buy locally, sometimes simply because of the lack of information about domestic supply. And finally, local supply might face difficulties in meeting the requirements of quality, timeliness, and quantities of input for EPZ production.

Instead of diversification into a broad range of manufactures within an EPZ, there is apparently a tendency for a heavily concentrated sectoral structure to emerge, an experience that has been documented in Asian EPZs as well as in Mauritius. The most likely reason for this phenomenon is the fact that only a few kinds of industries are EPZ-compatible, meaning that they can be relocated easily and that they do not require highly skilled workers. For EPZ host countries, this fact results in potentially continued instability of export earnings and external vulnerability. This includes not only the impact of the export prospects of one particular range of commodities, even if they are manufactured products; it also means that EPZ industries might be lost rather quickly, if the conditions deteriorate in the world market, in the host country, or in the EPZ.

2. EPZs are no substitute for general liberalization

Despite its enclave status, the performance of the Mauritian EPZ has always reflected--even if to different degrees--the macroeconomic conditions of the whole economy; in fact, the EPZ was part of the market-oriented, outward-looking reorientation of the macroeconomic policies. Therefore, it is essential to remember that sealing off an enclave does not diminish the importance of macroeconomic policies; in particular, it does not reduce the need for effective and sound monetary and fiscal policies, an outward-looking external policy stance, and the promotion of an entrepreneurial climate.

Although there is no one answer regarding the timing and sequencing of liberalization, EPZ policies are very likely to fail if they are regarded as a substitute for, rather than as a first phase of, a broad-based, outward-looking policy for the economy as a whole. In essence, therefore, the EPZ concept holds promise of only temporary advantages; however, the possibility of concentrating resources (see below), smoothing and facilitating the internal adjustment process, and creating greater internal and external "visibility" for the policy reorientation may very well represent a valid basis on which a country decides to adopt the EPZ concept.

3. Preferential external market access may be critical

The Mauritian example seems to indicate that, over and above the growth of external market demand, the availability of preferential market access will be another decisive factor in the performance of an EPZ. However, just as it can accelerate the expansion, it can also become a limiting factor once this advantage is exhausted--for example, in cases of a fully used import quota. In addition, bilateral agreements (more so than multilateral agreements) can be subject to rather unpredictable political considerations in the countries that have granted preferred status to some of their trading partners, a characteristic that might add another dimension of vulnerability to the host countries of EPZs.

4. The costs of EPZs can be substantial

The fiscal burden can be substantial, depending especially on the overall availability of infrastructure throughout the country. Mauritius was in the fortunate position of already having a widespread network of basic infrastructure, thus requiring additional investment only for the prefabricated production facilities. Where this is not the case, resources for establishing, operating, and maintaining EPZs will generally have to be drawn from the budget. EPZs represent a substantial burden not only in the establishment phase but also on a more permanent basis, such that the host country often has little room to reduce its financial contributions without endangering what has been achieved to date. However, the EPZ is still very likely to be the more economic approach in comparison with the provision of infrastructure throughout the country. Tax holidays for EPZ companies can represent another substantial source of costs associated with the adoption of the EPZ concept, in the form of tax revenue forgone; however, without an EPZ there would be no such source of taxes at all.

It has recently been suggested that EPZs could be established and run on a commercial basis, with private investors being responsible for the investment in infrastructure and other elements of the incentive package. This approach would reduce the drain on the host economy's budget and could help test the chances of a positive response to an EPZ policy at a very early stage; the evidence of commercial interest in setting up EPZs would indicate that a country is seen as offering competitive advantages as a production location. On the other hand, private EPZs could create conflicts with the sovereignty of a country, and the application of commercial terms to the use of EPZ facilities might make an EPZ less attractive to investors.

5. EPZs are facing stronger international competition

The more countries that adopt the EPZ concept, the stronger the competition will be among EPZs--those that already exist and those still to be established. In the case of Mauritius, new competition can be

expected from neighboring Madagascar, which has just passed legislation for an investment code that also offers a number of substantial incentives.

Given the increasingly competitive environment for the internationally traded goods EPZ (UNCTC/ILO, 1988), the responsibilities of the governments of present and prospective EPZ host countries have become even more important, with respect to the design of the EPZ policy package and the macroeconomic policies.

Regarding the EPZ policy package, competition will tend not only to force host countries to offer ever more generous incentives to investors in financial and fiscal terms, but also to improve the quality and quantity of infrastructure facilities at concessional rates. It is widely accepted that Mauritius offers very generous conditions in many respects. Apart from the financial burden involved, potential host countries need to address the question as to whether the administrative procedures are sufficiently streamlined. The establishment of "one stop" agencies dealing with potential investors could represent a substantial advantage vis-à-vis competing countries that have a poor bureaucratic organization. Since a number of obstacles typically have to be overcome before a consensus can be reached among all government agencies concerned, the design of the administrative procedure should be an important consideration in the earliest planning stage of an EPZ.

Table I. Export Processing Zones in Developing Countries, 1990 1/

Region	Country	Location
Africa	Cameroon	Port Douala
	Cote d'Ivoire	Abidjan
	Egypt	Alexandria, Port Said, Cairo, Suez, Adabiya, Ismailia, Damietta
	Ghana	Tema
	Liberia	Liberia Industrial Free Zone (in Monrovia)
	Madagascar	
	Mauritius	83 export processing zones in 23 government-designated areas
	Morocco	Tangier
	Senegal	Dakar Free Trade Zone, Dakar Transit Zone
	Togo	Lomé
	Tunisia	14 government-designated areas
Latin America	Chile	Iquique, Punta Arenas
	Colombia	Barranquilla, Buenaventura, Cali, Cartagena, Cucuta, Santa Marta, San Andres Island, Providencia Island, Amazonas
	Costa Rica	Moin, El Roble, Cártago
	Dominican Republic	La Romana, Santiago, San Pedro de Macoris, Herrera, Haina, San Cristobal, Barahona, Puerto Plata, San Isidro
	Guatemala	Santo Tomás de Castillo
	Haiti	Parc Industriel Metropolitaine

Table I (continued). Export Processing Zones in
Developing Countries, 1990 ^{1/}

Region	Country	Location
Latin America (continued)	Honduras	Puerto Cortés, San Pedro Sula
	Mexico	Coatzacoalcas (also called Puerto Mexico and includes Veracruz), Salina Cruz, Baja California Sonora, Quintana Roo, U.S.-Mexican Border, Chihuahua
	Nicaragua	Apex
	Panama	Colon
	El Salvador	San Bartalo
	Venezuela	Margarita Island, Paraguana
Asia	Bangladesh	Chittagong
	People's Republic of China	Shekou (SKIZ), Shenzhen, Zhuhai, Xiamen (Amoy Island), Shantou
	Hong Kong	Hong Kong (entire territory)
	India	Kandla, Santa Cruz, Calcutta Falta, Chochin, Madras, Noida
	Indonesia	Jakarta, Batam Island, Surabaya, Sabang
	Republic of Korea	Masan, Iri
	Malaysia	Bayan Lepas (Penang), Sungei Way, Batu Berendam, Tanjung Kling, Labuan, Prai, Ulu Klang, Pasir Gudang, Johor Port
	Pakistan	Karachi
	Philippines	Bataan, Mactan, Baguio, Cavite, Pampanga
	Singapore	

Table I (concluded). Export Processing Zones in
Developing Countries, 1990 ^{1/}

Region	Country	Location
	Sri Lanka	Katunayake, Biyagama
	Taiwan	Kaohsiung, Nantze, Taichung
	Thailand	Bangkok
Middle East	Gulf States	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates
	Jordan	Aqaba, Jaber Jordan-Syria Border Zone
	Syria	Damascus, Adra, Aleppo, Tartons, Latakia, Jordan-Syria Border Zone
West Indies	Bahamas	Freeport, Grand Bahama Industrial Free Zone
	Jamaica	Kingston, Montego Bay, Spanish Town (Reserved)
	Trinidad and Tobago	Point Lisas

Sources: UNCTAD (1985), *Journal of Commerce* (10/9/90): Free Trade Zones; ILO (1988), pp. 164-65; Holmes and Meo (1989).

^{1/} Information about individual sites is not complete and differences in definitions of EPZs exist, both resulting in discrepancies about the exact number of EPZs and host countries.

Determinants of EPZ Export Growth

In an attempt to determine those factors that have been crucial for the actual performance of the Mauritian EPZ since 1970, a number of equations were estimated; some of those that satisfied the statistical tests are discussed in more detail below. In all the regression equations, growth of EPZ exports was used as an evaluation criterion, while the selection of the independent variables was based not only on the probability of their impact on EPZ export growth but also on the availability of appropriate time series. These requirements were met by data for (i) the real effective exchange rate, (ii) growth of non-oil import demand from the trading partners of Mauritius, and (iii) nominal increases of average wages in the manufacturing sector until 1984, and in the EPZ thereafter.

The best estimate for the export performance of the Mauritian EPZ during the entire period 1971-90 was generated by equation (1), as follows:

$$(1) \quad EXP = 0.02793 * IDNO [-1] - 0.03881 * REER [-1] - 0.0039 * W$$

(1.95183) (2.38777) (0.25348)

R sq	0.7765	R BAR sq	0.7021
D.W.(1)	1.9858	D.W.(2)	1.6825
F 4 , 12	10.4258		
AR_0 =	+0.77991 * AR_1		
	(5.79441)		

with

EXP = annual changes in export growth of the EPZ
 IDNO = annual changes in the non-oil import demand by
 the trading partners of Mauritius
 REER = annual changes in the index of the real
 effective exchange rate
 W = annual changes in the average wage in the
 manufacturing/EPZ sector

Apart from the previous year's export performance, the changes in the real effective exchange rate and in import demand for Mauritian products, both being lagged by one period, are the key determinants for EPZ export growth. Changes in nominal wages seem to have had only a minor impact - a result that may also be attributable to the length of the observation period, the lag structure, or problems with the variable itself. Regarding the latter, one might argue that it is not the absolute change in the average wage that has influenced EPZ production and exports, but the change relative to those in other countries or in other sectors, to the change in productivity in EPZ production, or to the

change in the domestic consumer price inflation rate. It could also be argued that one should use the wage rate of the daily paid workers, which is more typical for EPZ employment. Efforts to improve or refine the variable itself in one of these ways were, however, hindered by the lack of appropriate data.

An attempt was made to identify the impact of different observation periods and the lag structure on the estimated equation. Because of the limited number of observations, dividing the estimation period, for example, into the four phases of the EPZ, as discussed in Chapter III, did not appear to be a particularly promising undertaking. However, some shortening of the estimation period seemed to be possible without losing too much of the statistical viability of the regression. Some modifications of the lag structure were also attempted, except for the export market growth variable, which did not respond positively to a cancellation of the one-period lag. The results obtained after the changes indicate that indeed the relative weight of the key factors may have varied substantially over time.

Equation (2) is based on the observation period of 1978-90, which excludes the first boom period (1971-77) when high EPZ export growth rates were also reflecting the narrow base; in addition, it incorporates the unlagged changes of the real effective exchange rate as an argument. In this case, changes in import demand have a higher relative weight than those in the exchange rate, and the sign of the coefficient of the wage variable was not in agreement with the expectation.

$$(2) \quad EXP = 0.04451 * IDNO [-1] - 0.02811 * REER + 0.00256 * W$$

$$(2.75575) \quad (1.38283) \quad (0.22733)$$

$$-0.05723$$

$$(0.28358)$$

Sum sq	0.1569	Std Err	0.1617	LHS Mean	0.3200
R sq	0.5593	R Bar Sq	0.2655	F 4, 6	1.9037
D.W.(1)	2.2260	D.W.(2)	1.5421		

$$AR_0 = -0.25801 * AR_1$$

$$(0.75629)$$

Equation (3), covering the shorter period 1980-90 and excluding the wage variable altogether, confirms the greater relative importance of the substantially fluctuating import demand over the rather smoothly depreciating real effective exchange rate; the previous year's exports are even more important.

$$(3) \quad \text{EXP} = 0.04715 \cdot \text{IDNO} [-1] - 0.02482 \cdot \text{REER} - 0.01548$$

	(4.33231)		(2.20881)		(0.20038)
Sum sq	0.0880	Std Err	0.1327	LHS Mean	0.3467
R sq	0.7143	R Bar Sq	0.5429	F 3, 5	4.1675
D.W.(1)	1.8610	D.W.(2)	1.8888		

$$\text{AR}_0 = -0.70013 \cdot \text{AR}_1$$

(1.96083)

Equation (4)--covering the same period and excluding the real effective exchange rate from the set of exogenous variables, and lagging the wage variable by one period--shows that in this case the wage variable becomes more influential than import demand, while the previous year's exports have a much smaller impact. One reason for the greater weight of the wage variable might be the fact that the changes in average wages also reflect the tightening of the labor market, while in the early period of the EPZ wage increases were basically the result of governmental decrees; moreover, during the early phase wages were perhaps so low that their changes, even if remarkable in absolute terms, were not decisive for investment or production and export decisions.

$$(4) \quad \text{EXP} = 0.00323 \cdot \text{IDNO} [-1] - 0.02222 \cdot \text{W} [-1] + 0.53417$$

	(0.14899)		(1.88925)		(2.10115)
Sum sq	0.2543	Std Err	0.1906	LHS Mean	0.2955
R sq	0.4245	R Bar Sq	0.1779	F 3, 7	1.7212
D.W.(1)	1.8854	D.W.(2)	2.3720		

$$\text{AR}_0 = +0.05627 \cdot \text{AR}_1$$

(0.13784)

Equations (5) and (6), again covering 1980-90, concentrate on the wage variable. Although the statistical tests indicate a poorer quality of the estimate, they seem to underline the relative weight of the lagged wage variable at least during this period as compared with the import demand growth and the real effective exchange rate changes.

$$(5) \quad \text{EXP} = -0.02303^* \quad W [-1] + 0.56624 \\ (2.32279) \quad (4.35298)$$

Sum sq	0.2552	Std Err	0.1786	LHS Mean	0.2955
R sq	0.4225	R Bar Sq	0.2781	F 2, 8	2.9266
D.W.(1)	1.8816	D.W.(2)	2.4893		

$$\text{AR}_0 = +0.05241 \text{ *AR}_1 \\ (0.14413)$$

$$(6) \quad \text{EXP} = 0.00692^* \text{ IDNO} [-1] - 0.01840 \text{ *W} [-1] \\ (0.31006) \quad (1.15048) \\ -0.00012^* \text{ REER} [-1] + 0.47872 \\ (0.00526) \quad (1.50427)$$

Sum sq	0.2359	Std Err	0.1983	LHS Mean	0.3230
R sq	0.3419	R Bar Sq	0.0128	F 3, 6	1.0389
D.W.(1)	1.8755	D.W.(2)	2.3746		

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