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Export processing zones in Sri Lanka: a cost - benefit appraisal

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Abstract

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Keywords

sri, benefit, appraisal, cost, processing, lanka, export, zones

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Business

EXPORT PROCESSING ZONES IN SRI LANKA: A COST–BENEFIT APPRAISAL

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Abstract: Like many countries, Sri Lanka has used Export Processing Zones as a means of promoting manufactured exports. This article uses a cost–benefit approach to estimate the returns to the national economy from the main zones. Overall, the zones are found to be economically efficient with an economic rate of return of 23 per cent. The zones are dominated by textile and clothing firms, however, and returns in other sectors are considerably lower. Unlike zones elsewhere, profits to local investors are a significant part of national benefits. © 1997 by John Wiley & Sons, Ltd.

1   INTRODUCTION

Export processing zones (EPZs) were used by a number of countries in the 1980s as a means of boosting their export sectors and increasing employment (Spinanger, 1984). For some countries EPZs were seen as a 'partial' form of trade liberalization that encouraged exports from within the zone, while not fully exposing the economy to trade liberalization reform. This paper examines the case of Sri Lanka, an economy that began its process of trade liberalization in 1977 in a limited and hesitant way (Lal and Rajapatirana, 1989) and which first introduced EPZs in 1978 (Ramanayake, 1982). The paper uses a cost–benefit framework, drawing on recent shadow price estimates for Sri Lanka to assess the net economic returns to the national resources committed to the zones. In particular, it examines the various mechanisms whereby positive returns are created and the returns to different forms of investment in the zones.

Section 2 describes the arrangements in the Sri Lankan zones and their significance for the economy. In Section 3 the methodology used to derive a cost–benefit estimate is discussed. This methodology is a modified version of the 'enclave

economy' approach set out in Warr (1989). In Section 6 the results of the cost–benefit calculations are given and some conclusions are drawn.

2   EPZs in Sri Lanka

As a part of its wider policy of export diversification and expansion, in 1978 the government of Sri Lanka established its first EPZ at Katunayake under the authority of the Greater Colombo Economic Commission (GCEC). In addition, two further zones became operational: one at Biyagame in 1986 and the other at Koggala in 1991.[1] Foreign investment was expected to play a key role in the zones and, in addition to the normal practice of access to duty-free imports of inputs required for production, significant tax concessions were offered to attract investors.

A 100 per cent tax exemption for up to 10 years was offered to all manufacturers who entered into agreements with GCEC. Initially, the minimum eligible tax holiday period was determined by considering the level of employment that the enterprise created, with a minimum of 5 years for those creating more than 500 jobs. This tax holiday is applicable to corporate and personal income, royalties and dividends. The minimum period can be extended for up to 10 years depending on factors such as net foreign exchange earned on export sales, the extent of employment created, the extent of new technology brought and the magnitude of capital investment.

At the end of the tax holiday period, a further concessionary tax period follows up to a maximum of 15 years. During this period, a tax based on turnover of only 2–5 per cent comes into effect in place of income and corporate tax. The exact tax rate will be determined on a case-by-case basis.

In addition, the following incentives were announced:

- no limits on the equity holdings of foreign investors;
- free transfer of shares within or outside Sri Lanka;
- no tax or exchange control on such transfers;
- dividends of non-resident shareholders exempt from any taxes and remittances of such dividends exempt from exchange control;
- no import duty on machinery, equipment, construction materials and raw materials;
- all imports and exports to and from the zone to be exempt from normal import control and exchange control procedures;
- transfer of capital and proceeds of liquidation exempt from exchange control.

To attract foreign investors, the GCEC, in its advertisements, publicized not only the comparatively high tax concessions, but also the comparatively low public utility and labour costs. A free water facility and relatively low electricity cost (2.2 US cents per kilowatt–hour) was offered initially. Also, relatively low average labour costs (US$ 0.13 per hour for unskilled, US$ 0.16 per hour for semiskilled and US$ 0.19 per hour for skilled labour) were advertised. The above costs were lower than in other Asian countries such as India, Malaysia, the Philippines, South Korea and Taiwan (Bastian, 1980). Also, EPZ enterprises received developed factory sites with all infrastructure requirements at a nominal charge. As a late

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[1] Construction works of Katunayake and Biyagame zones commenced in 1978 and 1979 respectively.

starter among the countries with EPZs, it was felt that these concessions were necessary to attract foreign investors.

Local currency financing of GCEC enterprises was discouraged by law in the hope of obtaining foreign capital, and still is possible only with special exemptions which normally relate to locally owned firms that invest in the zones. It is expected that this arrangement will allow domestic investors to invest in the zones with rupee financing, while preventing foreign investors from borrowing locally and thus diverting rupee financing from other local projects. Also, offshore banking units were established to service zone enterprises. By law all establishments in the zone are required to bring their export proceeds to the bank within a period not exceeding 180 days from the date of export. The proceeds are then expected to be converted into rupees at the prevailing exchange rate and can be used for domestic purposes such as payment of wages, utilities and interest. No restrictions are placed on taking this money out of the country.

GCECs capital expenditure of Rs 514.4 million on the zones has mostly been met by annual grants from government. Further, a sum of Rs 276.6 million has been incurred by other departments such as the Ceylon Electricity Board, National Water Supply and Drainage Board, Department of Highways, Water Resource Board and Department of Post and Telecommunications. These have been met by the departments from their budgetary allocations.[2]

In the period up to 1988, 80 firms came into operation within the zones, although the numbers approved were significantly more than this. By 1988, total employment in the zones was around 45,000 workers and around 75 per cent of equity in the zones was foreign owned.[3] There are two striking features of Sri Lankan EPZs in the 1980s. First, in terms of type of activity, there was a heavy concentration on one sector — textiles and clothing: a feature also found in zones elsewhere (Mody and Wheeler, 1987). Second, in terms of employment, there was a clear tendency for workers to be young, female and unskilled (Weerasinghe, 1989): again this is a familiar finding.

Table 1 brings together some basic data on EPZ firms. By 1988 they contributed just under 20 per cent of total exports of Sri Lanka and just under 30 per cent of non-traditional exports. In 1988 net foreign exchange earnings as a proportion of zone exports was just under 30 per cent, while local purchases were only around 5 per cent of export value. Although there was some modest production diversification during the 1980s, exports from the zones remained dominated by textiles and clothing, which provided over 80 per cent of EPZ exports at the end of the 1980s[4] (see Table 2).

This study considers enterprises in the Katunayake and Biyagame EPZs, which were the only zones in operation in the 1980s. The 64 firms for which data are available are categorized by ISIC classifications and by ownership (see Table 3). The majority of firms (44 out of 64) fall under ISIC-32 'textiles and wearing apparel', with the bulk of locally owned firms also in this sector.

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[2] The results and data in this paper come from Jayanthakumaran (1994). Capital costs refer to the period up to 1990, by which time most expenditure on the zones had been completed.
[3] The data used in this paper go up to 1988 and cover the two zones that were in operation by that date. Of the 80 firms in operation in 1988, adequate data were available on 64, so it is these 64 that are examined here.
[4] This category covers diverse items such as garments, gloves, socks, towels, knitwear, footwear, sheets and raincoats.

Table 1.   The economic impact of export promotion zones, 1979–88[a].

Description	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
No. of firms	12	22	37	46	57	67	62	72	75	80
No. employed	5876	10,291	19,078	21,500	24,093	26,291	28,686	36,592	42,186	45,728
Value (Rs mn) investment[b]										
Foreign	245	685	164	362	162	213	128	86	225	882
Local	219	223	68	192	66	156	60	50	79	476
No. of firms studied	11	19	28	35	40	46	49	56	60	64
Value (Rs mn) exports	145	479	937	1325	1895	2803	3229	4404	6375	8045
Net earnings	29	100	252	295	546	900	1050	1143	1700	1636
Local purchase										
Raw material	–	–	37	59	77	108	114	135	231	267
Capital good	–	–	–	16	17	26	17	15	37	30
Imports										
Raw material	174	379	735	869	1304	1842	2122	3158	4510	5051
Capital good	44	60	127	56	74	95	73	184	236	708

[a] The number of firms examined in less than the total number of firms in operation owing to lack of data in some cases.
[b] Contracted number of projects.

Source: Jayanthakumaran (1994) compiled from GGEC data.

Table 2.   The sectoral share of EPZ exports, 1981 and 1988.[a]

Sectors	ISIC	1981	1988
Food, beverages and tobacco	31	1.5	3.8
Textiles and wearing apparel	32	97.0	81.0
Wood products	33	0	0.6
Basic metal	37	0	5.0
Fabricated metal	38	1.4	2.5
Other	39	0.08	7.1

[a] The number of firms studied is same as in Table 1.

Source: Jayanthakumaran (1994).

3 METHODOLOGY OF COST–BENEFIT CALCULATION

Warr (1989, 1990) sets out the basic framework, following what he terms an enclave economy approach. The central insight here, which follows directly from the conventional cost–benefit literature, is that direct financial flows, such as foreign investment inflows or profit repatriations, have no welfare effect for a host economy. What matters in a national cost–benefit calculation is the use of local resources in an EPZ and the net income that remains within an economy as a result of the activities of firms in the zone. Thus, for example, reference to an EPZ generating a certain value of exports or a particular number of jobs is irrelevant for cost–benefit calculations. These effects, and others, are only important in so far as they create net income gains for groups in the economy.

Table 3. The ownership structure of establishments by sectors, 1988.[a]

Sectors	ISIC	Foreign	Ownership joint ventures	Domestic	Total
Food, beverages and tobacco	31	3	3	–	6
Textiles and wearing apparel	32	9	28	7	44
Wood products	33	–	1	–	1
Basic metal	37	2	–	–	2
Fabricated metal	38	3	2	–	5
Other	39	3	2	1	6
Total		20	36	8	64

[a] Foreign firms are operating from Belgium, Hong Kong, Holland, Taiwan, Norway, West Germany, Singapore, Denmark, Japan, Luxembourg, Ireland, United States of America, Pakistan, United Kingdom, India, South Korea, Australia, New Zealand and Saudi Arabia. Foreign firms are 100 per cent foreign equity.

Source: Jayanthakumaran (1994).

In Sri Lanka, as elsewhere, EPZs can be thought of as a national investment with the economy providing infrastructure and administrative facilities as capital costs, and labour, public utilities and some limited local inputs during the operations of firms in the zones. In return the economy will receive wage payments to local workers, payments for public utilities and local inputs and tax revenue. Where local investors are involved with EPZs there will also be an equity or loan commitment, as part of capital costs and income receipts as dividends or local repayments.

In our analysis we adopt the following definitions of costs and benefits.

1. Costs: These are: (a) the capital infrastructure costs involved in setting up the zones (K) and (b) the administrative costs of zone operations (A). As we explain below we adjust these costs for divergences between market prices and shadow prices.
2. Benefits: These are: (a) the difference between wages paid to local labour (MWR) and the national opportunity costs of this labour, as measured by the shadow wage (SWR); (b) the difference between payments by firms for public utilities (principally electric power) and locally purchased inputs (DP) and the marginal social costs of these utilities and local inputs (MSC); (c) all tax payments by firms not covered in the prices of utilities or local inputs (T); (d) net profit income accruing to local shareholders as a result of their equity contribution to EPZ firms (NP); this is profit net of the original equity contribution.[5] Thus employment and local purchases do not inevitably create income

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[5] Net profit (NP) is calculated from the following formula:

$$\text{NP}_t = a(\text{EXP}_t - \text{IMP}_t - \text{DP}_t - W_t - D_t - M_t)$$

where t is year t, a is the proportion of equity held by local shareholders,
EXP is export sales,
IMP is import cost,
DP is domestic purchase,
W is wages costs,
D is annual capital charge based on a capital recovery factor at 6 per cent discount rate and
M is a managerial charge paid to foreign partners (set at 2 per cent of turnover). In this expression D reflects the annual charge for the local equity contribution.

gains for the economy. It is only the difference between actual payments at market prices and the opportunity costs of the items concerned that creates gains. If EPZ firms are subsidized, so that the payments made for labour, local inputs or utilities are below opportunity costs, the economy will lose from such transactions, whenever the recipients of the subsidy are foreign investors.

The implicit assumption in our methodology is that local investment in the zones is diverted from the rest of the economy, where it would have earned the marginal rate of return as measured by an opportunity cost discount rate. On the other hand, we assume that foreign investment in the zones is incremental to the economy. Our treatment of local investment may overstate net benefits created by the zones if local investors in textiles and wearing apparel, who are the main domestic investors in the zones, would otherwise have invested in similar activities outside the zones, generating a non-marginal rate of return. However, in the absence of data on possible non-marginal returns, this possibility is ignored.

The net cost–benefit position in any year (NCB) can be expressed for year t as

$$NCB_t = (MWR - SWR)_t\, L + (DP - MSC)_t\, Q + T_t + NP_t - K_t - A_t \quad (1)$$

where MWR and SWR are market and shadow wages respectively, DP is the cost at domestic prices of public utility and other locally purchased inputs, MSC is the marginal social cost of these public utility and other locally purchased inputs, T is all tax payments not already covered in the prices of utilities or local inputs, NP is the net profit accruing to local shareholders, K is the infrastructure cost of the zones, and A is their administrative costs. L refers to numbers of workers and Q to units of domestic inputs. For simplicity of expression in equation (1) L and Q are treated as homogeneous.

Efficiency of an EPZ requires that NPV > 0, where

$$NPV = \sum^{t} \frac{NCB_t}{1 + r} \quad (2)$$

NPV is net present value of the zone, r is the opportunity cost discount rate for the economy.

Efficiency also requires EIRR > r, where EIRR is the economic internal rate of return of the EPZ and EIRR meets the condition

$$\sum^{t} \frac{NCB_t}{1 + EIRR} = 0 \quad (3)$$

4 SOME SIMPLIFICATIONS

A number of simplifying assumptions are adopted in the analysis. Data on capital costs of the EPZs (K) are provided by GCEC. To conduct a comparative analysis between sectors, these capital costs must be allocated between firms in different sectors. Here, in the absence of further data, this is done on the basis of the number of firms in each sector.

Secondly, two minor elements of EPZ activity are ignored. The small amount of

rupee borrowing that has been permitted is not included in the analysis. Also, domestic sales from EPZs are allowed only where goods fail export quality standards. Any such sales are ignored and all output is assumed to be sold for export.

Thirdly, any possible learning or training effects for firms outside the zones, arising as externalities from operations within the zones, are omitted. Although potentially important, such external effects are notoriously difficult to quantify and are unlikely to be great in the case of EPZ firms. This is because the skilled labour content of production in the Sri Lankan EPZs is low and technological secrecy is a normal feature of production in the zones.

5   SHADOW PRICE ESTIMATES

Wherever market and opportunity costs diverge it is necessary to appraise activities at shadow rather than market prices. Warr (1989), for example, uses the shadow price estimates of others in his work on South East Asian EPZs. Here, we draw on a recent detailed study of shadow pricing for Sri Lanka (Curry and Lucking, 1991). This estimated a set of conversion factors (CFs) in a world price system for the base year 1988.

A CF is defined as the ratio of a shadow to a domestic market price. Thus for good i

$$CF_i = \frac{SP_i}{MP_i} \tag{4}$$

where SP and MP are shadow and market prices respectively. In a world price system all shadow prices are expressed in a world price numeraire; this means that all traded goods are valued directly at world prices and non-traded goods are converted into world price equivalents, normally on the basis of their marginal costs of production at world prices (Curry and Weiss, 1993).

The use of national CFs for Sri Lanka in our analysis assumes that conditions in the EPZs, in terms of the relation between shadow and market prices, approximate the national average. Further, use of the CFs for 1988 assumes that conditions in that year can be projected back over the rest of the decade. Table 4 indicates the CFs used in our calculations.

The labour CFs of 0.72 and 0.78 which are applied to unskilled and skilled labour respectively indicate that on average actual wage payments are above the opportunity cost of employing workers. Thus between 0.28 and 0.22 of the market wage becomes a gain from the employment created in the EPZs.

Electricity is the only public utility input shown separately in our calculations (others such as water are grouped under domestic purchases). A CF above 1.0 implies that an item is subsidized since its market price is below its opportunity costs. In Sri Lanka in the 1980s, on average power tariffs were no more than two-thirds of generation and transmission costs (CF = 1.572), so that users in the EPZs were receiving a significant subsidy, which was a cost to the economy.

A capital cost CF of 0.906 is applied to the EPZ capital infrastructure expenditure. This is a national average ratio for capital expenditure in general. Other domestic purchases are adjusted by the average economy-wide CF of 0.78. Use of

Table 4. Selected conversion
factors for Sri Lanka, 1988.

Description	CFs
Unskilled labour	0.720
Skilled labour	0.780
Electricity	1.572
Capital	0.906
Domestic inputs	0.785

Source: Curry and Lucking (1991).

both of these CFs implies net gains to the economy from the purchase of capital goods and local inputs. For the former this is approximately 10 per cent of the goods' market value and for the latter around 22 per cent; this could arise where, for example, the divergence between shadow and market prices is due to a tax.

Finally, it should be noted that our approach departs from that of Warr (1989) in one important methodological respect. Foreign firms operating in EPZs are normally required to convert foreign exchange to local currency to meet their expenses on wages, public utilities and domestic inputs. Thus, wherever the official exchange rate (OER) used in such currency transactions does not reflect the scarcity value of foreign exchange, what we will term the shadow exchange rate (SER), the economy will gain the premium (SER − OER). In Warr (1989) all foreign exchange converted to local currency creates a benefit to the national economy of (SER − OER) × F, where F is the sum of foreign exchange converted at the official exchange rate. This benefit does not appear in equation (1). This is because we use shadow prices derived in a world price system, in which no separate foreign exchange premium is used when SER and OER diverge. In a world price system, as an alternative to applying a foreign exchange premium, all non-traded shadow prices are reduced relative to world prices (Curry and Weiss, 1993). Thus our CFs already incorporate an adjustment for a scarcity of foreign exchange and any separate use of the premium (SER − OER) would be double counting.[6]

6 COST–BENEFIT ANALYSIS: THE RESULTS

To test for the welfare effects of EPZs in Sri Lanka cost–benefit calculations are carried out for the zones in the aggregate and for individual sectors within the zones. The test of efficiency at a given discount rate is if the sum of the discounted benefits exceeds the sum of the discounted costs. In other words, EPZ investment will be beneficial to the host country if its net present value (NPV) is greater than zero. Also, it is common to evaluate projects in terms of the economic internal rate of return (EIRR). A new project should generate an EIRR at least as great as that in alternative investment. To compute NPV and as a test for the EIRR, an

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[6] It is recognized in the cost–benefit literature that use of a single premium on foreign exchange is only a crude means of picking up divergences between domestic and foreign prices (Little and Mirrlees, 1974). It is more accurate to use individual CFs for specific items or sectors, so that our approach is more rigorous than that set out by Warr (1989).

Table 5. Welfare impact of EPZs, Sri Lanka 1978–83 (RS mn).[a]

Components	CF[b]	Ownership structure				Sectors[c]					
		Domestic	Joint	Foreign	All	(31)	(32)	(33)	(37)	(38)	(39)
Local purchase	0.785	43	187	125	355	16	313	4	11	2	9
Employment	Skilled 0.78										
	Unskilled 0.72	109	382	403	894	34	805	8	13	4	30
Electricity	1.572	−29	−108	−134	−271	−22	−231	−1	−7	−2	−7
Tax	1	21	39	37	97	1	96	0	0	0	0
Domestic profit	1	652	470	0	1122	11	1111	3	0	−8	5
Capital and infrastructure	0.906	−166	−369	−229	−764	−35	−639	−12	−12	−31	−35
NPV		630	601	202	1433	5	1455	2	5	−35	2
EIRR		27.9	22.4	20.8	23.0	7.0	25.5	7.0	10.0	<0	7.0

[a] Computed at constant (1988) prices. The estimation is based on 15 years life. The number of firms studied is the same as in Table 1.
[b] CFs were obtained from Curry and Lucking (1991).
[c] (31) Food, beverages and tobacco, (32) textiles and wearing apparel, (33) wood products, (37) basic metal, (38) fabricated metal, (39) other.
Source: Jayanthakumaran (1994).

economic discount rate of 6 per cent is used in this study as the rate of discount. This is the rate estimated in Curry and Lucking (1991) based on estimated real costs of foreign borrowing for Sri Lanka.

A 15-year economic life is assumed for the zones. The implication is that the national investment in zones will have to be rehabilitated after this period — with further infrastructure and administrative expenditure. Therefore for each enterprise cost and benefit figures refer to their operations during the 15-year operating life of the zones. Returns generated by enterprises after the end of the 15-year period are ignored. As 1988 is the last year for which detailed information was available for the study, costs and benefits in that year are projected over the remaining years of operation. The analysis is at 1988 constant prices and the CFs used are assumed to be constant over the operating period.

The overall results suggest that the effect of the two EPZs, when aggregated, is strongly positive, with an NPV of Rs1,433 million at constant prices and an EIRR of 23 per cent (see Table 5). When the different types of benefit are considered it is clear that the two main benefits are profits to domestic shareholders and gains to labour from the divergence between market and shadow wages. The former is around 45 per cent of gross benefits in present value terms and the latter is around 36 per cent. Local purchases of inputs are relatively small, so that the divergence between their shadow and market prices creates only a modest effect. However, this varies between sectors. In the aggregate local purchases (excluding electricity) create only 14 per cent of gross benefits: nonetheless they are more than 25 per cent in three sectors — food, beverages and tobacco (ISIC-31), wood and wood products (ISIC-33) and metal products (ISIC-37) — indicating greater backward linkages in these sectors. Similarly, with the generous tax concessions on offer, tax payments are small. Electricity transactions are subsidized and thus create costs for the national economy.

When firms are separated by ownership, wholly owned domestic firms show higher returns — with an average EIRR of 28 per cent, compared with 22 per cent for joint ventures and 21 per cent for wholly owned foreign firms. This is the result of the influence of domestic profits as a source of benefits.

Since unskilled workers in the EPZs are predominantly female, use of a national average labour CF may be misleading. To test for the sensitivity of the results to the treatment of unskilled labour we also apply two alternative CFs of 0.65 and 0.78 (rather than the national figure of 0.72). The overall EIRR for the zones is 25 per cent with the lower CF of 0.65 and 21 per cent with the higher CF of 0.78; the calculation reported in Table 5 with the national average CF of 0.72 for unskilled labour gives an overall EIRR of 23 per cent. Thus, the overall judgement on the relatively high economic returns to the zones is not affected by the alternative treatment of unskilled labour.

High returns are not distributed evenly between sectors. Textiles and wearing apparel dominates in terms of the NPV and EIRR. Other sectors show low returns — EIRR of 7–10 per cent — and metal products has negative economic returns because enterprises in this sector were still in the initial phases of production at the time data were collected. The other sectors, apart from textiles, have low returns but are nonetheless still efficient by our criteria, since the test discount rate is 6 per cent. They are also likely to be privately profitable for their owners, as the enterprises themselves do not have to meet the capital costs of the EPZs, which are the main cost element in our calculations. However, it is important to stress that, from a national point of view, apart from textiles and clothing activities, other investments in the EPZs do not show high returns.

7 CONCLUSIONS

These results for Sri Lanka confirm the positive returns to EPZs found in other countries. For example, Warr (1989) finds zones to be economically efficient in Malaysia, Korea and Indonesia. More recently, Chen (1993) finds an EIRR of 11 per cent for the Shenzhen Special Economic Zone in China. Warr does find a negative NPV in the case of the Philippines, primarily because of the very high infrastructure costs involved in setting up the zone. What is the most distinctive feature of our results for Sri Lanka is the important role of profits to domestic investors in the zones. These are omitted by Warr, for example, on the grounds that they are both difficult to quantify and unlikely to be very significant. Domestic profits are included in the Chinese case, but their impact is small in all but one year (Chen, 1993). This result suggests that at least in Sri Lanka such incomes have been an important source of benefit to the economy. Our distinction between sources of national benefits implies that a policy of heavy reliance on foreign investors is unlikely to maximize national returns to the zones and that local investment should be encouraged.

Although in the aggregate the Sri Lankan EPZs have generated returns well above the estimated opportunity cost of capital of 6 per cent, activities aside from textiles and clothing have generated only modest returns. This raises the question of the scope for further textile and clothing exports. This is likely to depend largely on Sri Lanka's quota under the Multi Fibre Arrangement and her access to markets once trade in garments has been integrated into the GATT system.

The zones have been an important source of employment and income gains to labour, as wage rates on new projects in Sri Lanka generally exceed opportunity costs. However, if employment opportunities outside the EPZs improve and labour markets function more effectively, one would expect the gap between market and shadow wages to narrow. Nonetheless, with the continued existence of surplus labour in Sri Lanka, one would not expect this gap to be removed entirely in anything but the very long term.

Finally, we can confirm the view that EPZs are not a short-run panacea for all employment and balance of payments problems (Warr, 1989). However, they can make a positive economic contribution as part of an export diversification strategy, and in Sri Lanka in the 1980s we show that they generated returns above those available on alternative investments.

REFERENCES

Bastian, S. (1980). 'Free trade zone at a glance: some preliminary observations'. In Bala-suriya, T. (ed.) *Free Trade Zone*. Colombo: Centre For Society and Religion.

Chen, J. (1993). 'Social cost–benefit analysis of China's Shenzhen special economic zone', *Development Policy Review*, **11**(3), 261–71.

Curry, S. and Lucking, R. (1991). Report on Shadow Prices for Sri Lanka. A Report Prepared for National Planning Department, Ministry of Policy Planning and Implementation. University of Bradford: Development Project Planning Centre.

Curry, S. and Weiss, J. (1993). *Project Analysis in Developing Countries*. New York: St. Martin's Press.

Jayanthakumaran, K. (1994). 'Trade liberalization and performance: the impact of trade reform on manufacturing sector performance – Sri Lanka 1977–89' (unpublished PhD thesis). University of Bradford: Development Project Planning Centre.

Lal, D. and Rajapatirana, S. (1989). *Impediments of Trade Liberalization in Sri Lanka*. London: Thames Essay, Gower.

Little, I. M. D. and Mirrlees, J. A. (1974). *Project Appraisal and Planning for Developing Countries*. London: Heinemann Educational.

Mody, A. and Wheeler, D. (1987). 'Towards a vanishing middle: competition in the world garment industry', *World Development*, **15**, 1269–1280.

Ramanayake, D. (1982). 'The Katunayake investment promotion zone'. In Lee, E. (ed.) *Export Processing Zones and Industrial Employment in Asia: Papers and Proceedings of a Technical Workshop*. Bangkok: ILO/ARTEP.

Spinanger, D. (1984). 'Objectives and impact of economic activity zones: some evidence from Asia', *Weltwirtschaftliches Archiv*, **120**, 64–89.

Warr, P. (1989). 'Export processing zones: the economics of enclave manufacturing', *The World Bank Research Observer*, **4**(1), 65–87.

Warr, P. (1990). 'Export processing zones'. In Milner, C. (ed.) *Export Promotion Strategies*. New York: Wheatsheaf.

Weerasinghe, R. (1989). 'Women workers in the Katunayaka investment promotion zone (KIPZ) of Sri Lanka: some observations', International Seminar on The Status of Women and their Role in Development, 24th and 25th of January 1989.