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Keywords
asian, selected, zones, overview, export, countries, processing

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An Overview of Export Processing Zones: Selected Asian Countries

by

Kankesu Jayanthakumaran*

ABSTRACT

This paper surveys the literature on the performance of Export Processing Zones (EPZs) that have used a benefit-cost analytical framework. The survey reveals that as industrial development proceeds, the gap between market and opportunity cost of labour narrows and the interest on EPZs tends to disappear. Interest on EPZs may hold only if the zones generate private profit to domestic shareholders. Recent policy measures of World Trade Organisation may eventually result in lower rates of private returns and may become a threat to existing and new EPZs.

INTRODUCTION

The literature on Export Processing Zones (EPZs) compares descriptive, theoretical and benefit-cost analysis. Descriptive studies carried out by international organisations and academics focus on conceptualisation, objectives, incentives, developmental effects and performance of EPZs. Although most of these studies concern net benefits to the host economy they lack appropriate analytical frameworks (Warr 1989: 66). Theoretical studies focus on factor movements and use the Heckscher-Ohlin (H-O) framework. The standard H-O model assumes factors of production are immobile. These studies fail to capture the international mobility of capital by assuming implicitly that the capital used in the EPZ is domestic capital in fixed supply that has moved from the host economy. Conventional benefit-cost analysis captures the economic welfare of citizens of the host country by incorporating the benefits and costs for the entire lifetime of the project. The advocates of this framework believe the benefits and costs can be identified conceptually and quantified empirically.

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This paper is a comprehensive survey of the literature on the EPZs, in Malaysia, Indonesia, South Korea, Sri Lanka, China and the Philippines, that have used a benefit-cost analytical framework. The background of EPZs is discussed in the following section. Sections three and four analyses the benefit-cost framework and shadow price estimates. Section five reports on the economic performance of selected Asian countries. Section six surveys the results of benefit-cost analysis. Section seven discusses recent policies of the WTO and their impact on EPZ. The last section summarises the conclusions.

BACKGROUND

Terms such as Export Processing Zones (EPZ), Free Trade Zones (FTZ), Special Economic Zones (SEZ) and Export Processing Factories (EPF) refer to similar concepts with variations determine by policy prescriptions and objectives (Madani 1999: 10-20). Given the fact that EPZ is the most commonly used word, this paper uses EPZ interchangeably with FTZ, SEZ and EPF. EPZs are a recent phenomenon which allow for the creation of an 'enclave', isolated from the domestic economy, within which export-oriented manufacturing activities can freely operate without state interference. Within the zones, economic and foreign trade activities are freed from controls. It may be convenient for developing countries to invite foreign investors to undertake manufacturing activities without subjecting the entire economy to a liberalised and deregulated system. Foreign investors in the zones are given favoured treatment with respect to taxation, infrastructure, import controls and industrial regulations. In return, investors are expected to process all intermediate imports within the zone and to export without adversely affecting the domestic economy.

Zones have goals such as promoting linkages with domestic economies, encouraging technology transfer and promoting new industrialisation strategies. Zones encourage employment and foreign investment. By definition, EPZs are not eligible to produce any form of forward linkages, but backward linkages are not ruled out. The higher the isolation from the domestic economy the lower will be the backward linkages. The goals vary among zones, and over time, depending on

the needs of the host country. For example, zones in Thailand have the additional goal of decentralising industries from Bangkok to overcome problems of congestion and pollution. Most EPZs engage in labour-intensive light manufacturing such as garment production, assembly of light electrical goods and electronics. Industries can easily be relocated, as production technologies are standardised with low-skilled workers. This is known as foot loose manufacturing.

The role assigned for the EPZs differs considerably from country to country. In Singapore, the EPZs were originally meant as part of a package intended to attract investment to a strategically located economy already free of import/export regulations. Economies in transition, for example South Korea, Malaysia and Thailand initiated EPZs as part of a shift in policy from an inward to an outward orientation. In these countries EPZs represent just one of the steps taken towards becoming more efficiently integrated into the world economy. By efficiently integrating with domestic economy, EPZs in South Korea evolved to the stage where they were no longer enclaves. Mason in South Korea, facilitated the development of surrounding regions. The Philippines and Indonesia represent inward-oriented countries where the EPZs were introduced to create at least some areas free from the distortions still affecting the rest of the economy. China initiated its open-door policy and ongoing economic reforms by introducing Special Economic Zones (SEZ) in 1979. Initially, China promoted investment in a few carefully selected areas without promoting linkages with its domestic economy. The level of infrastructure development and the level of involvement of foreign investors attracted the further development of SEZs.[1]

EPZs combine the international mobility of capital with domestic workers and export traded goods. Firms located in the zone transfer capital goods and semi-processed goods to countries where they can earn a rate of return greater than in

[1] SEZs were expanded to include 14 coastal cities (1984), three delta areas (1985) and all of Hainan Island (1988). At the policy level, China promoted linkages between SEZs and firms from inland, and sectors such as agriculture, services and tourism.

the home country. Manufacturing activities within the zones often involve traded intermediate inputs, capital and workers. This is in contrast to international trade theory which focuses on final goods and fails to capture the international mobility of footloose activities. Warr (1989: 66-68) related EPZ activities to Vernon's (1966) 'product life cycle' process, stating that there occurred a migration of newly developed manufacturing processes from developed countries to developing countries as international competition targeted the unit value-added generated by these processes. In this process, developed countries used scarce capital goods efficiently. Later the manufacturing process shifted to developing countries to offset the growing differences in labour cost between developing and developed countries.

Johansson (1994: 394-95) believed that neoclassical models failed to consider the spill-overs from foreign direct investments (FDI) within EPZs, and advocated new growth theory literature. According to him the enclave nature of EPZs and the low-skilled production process do not promote technology transfers and associated externalities. However, EPZs do promote the role of externalities such as learning-by-doing and on-the-job accumulation of human capital. New growth theory focuses on three issues that have often been neglected in the neo-classical literature. First, domestic firms lack needed technical, marketing and managerial know-how, and FDI within the zones fills this gap. Second, domestic firms seldom have access to international distribution channels and need support from international or joint-venture companies. Finally, entry into international markets would be difficult without access to established foreign firms with wide international business dealings. Any EPZ which incorporates the above factors may be beneficial to a country because of spillovers and their catalytic impact.

In the light of new growth theory, Johansson and Nilsson (1997: 2121-23) tested the catalyst effect of EPZs on ten countries and found that the export-generating effect of the Malaysian EPZs was large, indicating the presence of a catalyst effect. Foreign affiliates attracted to the EPZs stimulated local firms to begin to export by

showing them how to produce, market and distribute manufactured goods internationally. Authors failed to find similar catalyst effects in the other countries. [2]

BENEFIT-COST FRAMEWORK

A few empirical studies attempt to quantify the benefits and costs of EPZs within the framework of an 'enclave model' and use conventional benefit-cost analysis to do so. A general understanding of this approach indicates that EPZs generate only a limited backward linkage to the host country's economy. Forward linkages are dubious. Warr (1989) has specified an 'enclave model' which provides a framework to identify the benefits and costs to the citizens of the host country (Figure 1).

[2] Johansson and Nilsson included the following countries in their analysis; Dominican Republic, Egypt, Hong Kong, Malaysia, Mauritius, the Philippines, Singapore, South Korea, Sri Lanka and Tunisia. EPZs played a minor role in South Korea relative to overall economy.

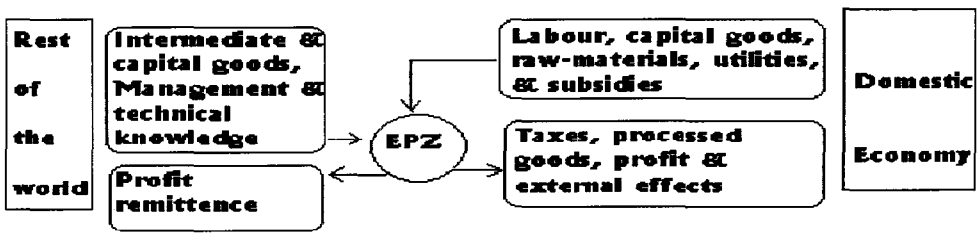

Figure 1: Enclave Model

The flow of goods and services and the financial flows between the rest of the world and EPZs are irrelevant in evaluating the welfare impact of the host country citizen. These transfers are taking place within the 'enclave' nature of zones but not within the rest of the host economy. When EPZ firms purchase intermediate and capital goods from their subsidiaries abroad it is an inter-industry transaction and a matter of transfer pricing. When a firm transfers profits to a home country, there is no welfare impact on the host country's citizens. However, if there is tax on profit, then the transfer is relevant to the host economy.

The flow of goods and services and the financial flows between the host economy and EPZ are relevant for the welfare of citizens. The domestic economy provides capital, infrastructure and administrative expenditures, workers, public utilities and

some limited local input. In return, the host economy receives wages, electricity tariffs, taxes, profits channelled to domestic shareholders and payment for local inputs. EPZ employees receive skills. It is likely that local middle managers gain training, modern managerial practices and the notion of quality control. Domestic borrowing by EPZ firms would enhance banking activities within the host economy. These relationships are relevant for the welfare of citizens. Domestic sales from EPZ firms are usually prohibited. They occur sometimes where goods rejected by quality controls are allowed to be sold domestically. The proceeds are a small percentage of total sales and are subject to duty. This indicates that the 'enclave' nature of EPZ does not promote forward linkages in most cases. The above relationships provide the basis for a conventional cost-benefit analysis, by comparing the observed situation with the hypothetical results of not having a zone.

The focal point of Warr's (1989) approach is that direct financial flows, such as foreign investment inflows or profit repatriation, have no welfare outcome for a host country. It is the use of local resources and the net benefit to the host economy as a result of EPZ activities that need to be focused on. Descriptive analyses such as export performance or number of jobs created is inappropriate for benefit-cost calculations. The net effect of these activities on groups in the host economy is of greater interest. This benefit-cost calculation further assumes that backward linkages such as employment and local purchases do not always add benefits to the local economy. It is the excess of actual payments at market prices and the opportunity costs of the respective items that generate benefits to the citizen. For example, in economic terms, there will be a net benefit if a worker's actual market wages exceed the social opportunity cost of employment (shadow wages) in the zone. This indicates that social benefits derived from generating an additional job outweigh the costs. In contrast to this, there will be a net loss if a host government subsidises utilities to EPZ firms and the market price is below opportunity costs.

The 'enclave model' recognises the following anticipated benefits and costs.

Anticipated benefits are:

- the difference between wages paid to local labour (MWR) and the shadow wage (SWR),
- the difference between payments by firms for public utilities and locally purchased inputs (LP) and the opportunity cost of these public utilities and locally purchased inputs (MSC),
- all tax payments by firms (TAX), and
- net profit income that goes to local equity shareholders in the EPZ firms (NP).

Anticipated costs are:

- capital infrastructure cost (CAP) of establishment of EPZs, and
- administrative expenditure for zone operation (ADM).

Thus, an economic net benefit-cost position in any year may be expressed for year t as;

$$NBC_t = (MWR - SWR)_t L + (LP - MSC)_t Q + TAX_t + NP_t - CAP_t - ADM_t$$

Where market and shadow wage is referred to as MWR and SWR respectively. Domestic price of locally purchased inputs and public utilities is referred to as LP and opportunity costs of locally purchased inputs and a public utility is referred to as MSC. L and Q refer to the number of workers and units of domestic inputs respectively. Tax payments and net profits accruing to local shareholders are referred to as TAX and NP respectively. CAP and ADM refer to the infrastructure cost of the zones and operational costs respectively. The main drawback to this approach is that costs are readily available for analyst but the benefits are more difficult to obtain. Some benefits such as transfer of skills and technology associated with employment and local purchases need to be estimated.

In economic terms, there will be a routine contribution to net benefit if a worker's wages exceed the social opportunity cost of employment in the zone, if average electricity tariffs exceed the opportunity cost of supplying the additional power, and if the prices paid by the firms for purchases exceed the opportunity cost of

supplying them. Tax earnings generated by EPZ firms represent a clear economic benefit for the host economy. In the absence of the EPZs, these firms are unlikely to operate and there would be no taxes. The share of profits going to domestic shareholders remains in the country and is another benefit.[3] The foreign-owned share of profits will not come into our calculations, as it has no welfare impact on the domestic economy. The EPZ firms convert foreign currency into local for the payments of local purchases and wages. The difference between the opportunity cost of exchange rate and the official exchange rate can be a benefit/cost to the domestic economy if the domestic price system is used for calculations.

If net benefit (NBC_t) is positive, it reflects an excess of benefits and costs for the year studied. If the sum of the discounted benefits exceeds the sum of the discounted costs with the given discount rate, a project is viable. For an EPZ to be efficient, it is required that NPV > 0, where NPV is the net present value of the zone, r is the shadow cost discount rate for the economy as a whole.

$$NPV = \sum^{t} \frac{NBC_t}{1+r}$$

In addition, it is a general practice to evaluate projects in terms of Economic Internal Rate of Return (EIRR). A new project should generate an EIRR at least as great as that generated by alternative investments. Efficiency requires that EIRR > r, where EIRR refers to the economic internal rate of return of the EPZ and EIRR meet the following condition:

$$\sum^{t} \frac{NBC_t}{1+EIRR} = 0$$

[3] Jayanthakumaran and Weiss (1997) estimated net profit (NP) using the following formula;

$$NP_t = a(EXP_t - IMP_t - LP_t - W_t - D_t - M_t)$$

where 'a' is the proportion of equity held by local shareholders,
EXP is export sales, IMP is import cost, LP is domestic purchase, W is wage cost, D is annual capital charge based on a capital recovery factor at current discount rate, and M is a managerial charge paid to foreign partners. In this expression D reflects the annual charge for the local equity contribution.

SHADOW PRICE ESTIMATES

In cases where market prices diverge from opportunity costs it is necessary to appraise activities at shadow prices rather than market prices. The estimated set of conversion factors (CF) can be used either in a world price system or in a domestic price system. In a world price system, shadow prices are shown in world price numeraire indicating that traded goods are estimated directly at world prices and non-traded goods are converted into world price equivalents, usually on the basis of their marginal costs of production at world prices. In a domestic price system domestic prices are the numeraire, the world price of these traded goods must be expressed as equivalent to a value in units of domestic prices (Curry and Weiss, 1993). In a world price system CF is defined as the ratio of shadow price (Sp_i) to a domestic market price (MP_i).

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

Table 1 indicates selected conversion factors for Indonesia, South Korea, Malaysia, the Philippines and Sri Lanka. Warr (1989) and Chen (1993) have used the estimated conversions factors based on the domestic price system. The analyses disregard income distributional considerations weighting all nationals equal in each country. Jayanthakumaran and Weiss (1997) have obtained the estimated conversion factors from Curry and Lucking (1991) based on the world price system. Basically, above studies have modified already existing a set of shadow price estimates parametrically around the values to determine the sensitivity of the overall results.

Generating employment is one of the major objectives of establishing EPZs. Conversion factors for labour for the range of above countries indicate that the opportunity cost of labour, as measured by the shadow wages, is less than the

market wage rates.[4] In the Philippines this is approximately 0.64, implying a net gain of around 36 per cent. The indication is that this benefit will disappear if employment opportunities outside the zone improve. Considering the fact that EPZs attract relatively more unskilled workers and women, benefit-cost analysis recognises the variations of social value among skilled and unskilled and male and female workers. For example, in Sri Lanka the conversion factor of skilled and unskilled workers is 0.785 and 0.722 respectively (Curry and Lucking 1991: 59). The parameter is likely to vary, if one assumes that all the women workers are drawn from the unemployed. However, it is likely that rural women are involved in some kinds of jobs domestically, which are mostly unaccounted for in the national accounts, and whose value is difficult to measure since there is no clear basis for identifying their contribution to the national economy. Considering the difficulties of measuring the actual conversion factors for female workers from the economy, these studies test the sensitivity of the results to the use of the conversion factors assigning a range of values.[5] Managerial training and skills achieved through training are benefits to the host economy. Managers trained by EPZ firms are likely to receive higher salaries in domestic firms operating outside the zone. To capture this externality effect one can in principle lower the parameter of the opportunity cost of labour.

Domestic purchases are another component and such links transfer technology to domestic firms. Domestic firms are expected to access technical know-how through the process of sub-contract. The opportunity cost of supplying locally produced inputs to EPZs can be derived by using the average conversion factor for

[4] A simple method of calculating the shadow prices is that to divide the wage that would have been earned in alternative employment by the wage earned in the project being evaluated.

[5] Summerfield (1995) studied the shadow price of men and women workers in the zones in Mexico and China and recommended equal shadow prices. He argued that the labour involved is at or below market wage regardless of whether the worker is male or female. This was contrary to the ILO's recommendation for valuing a different shadow price for women based on the fact that the young female workers would not have been in the labour force otherwise.

the whole economy to revalue their domestic market price value. To capture the technology transfer one can in principle lower the parameter of the opportunity cost of supplying locally produced inputs. In Table 1, the opportunity cost of domestic inputs is less than the market prices, indicating the benefits to the host country. For example, the conversion factor is 0.85 in Indonesia, implying a net gain of around 15 per cent. In practice, technology transfer of EPZ firms to domestic firms through local purchases was not substantial. EPZ firms either use universally available technology, as in the garment industry, or if they use advanced technology, as in the electronic industry, it is heavily guarded and its dissemination is highly restricted.

Table 1: Selected conversion factors: Indonesia, South Korea, Malaysia, the Philippines and Sri Lanka

Category	Indonesia*	Korea*	Malaysia*	Philippines*	Sri Lanka**
Labour	0.75	0.91	0.83	0.64	
Skilled					0.79
Unskilled					0.72
Foreign exchange	1.00	1.08	1.11	1.25	-
Domestic raw-materials	0.85	0.92	0.90	0.96	0.78
Domestic capital	0.85	0.98	0.91	0.96	0.91
Electricity	1.05	1.33	0.93	1.30	1.57

Source: * Warr (1989) and **Curry and Lucking (1991)

EPZ enterprises are provided with developed factory sites having infrastructure requirements such as power, roads, a container yard for sea-going containers and an air-cargo terminal. Most of these services are subsidised for the sake of promoting local investments. Foreign firms benefit from subsidised tariffs for the public utilities. For example electricity consumption by EPZ firms generates linkages with the host economy. If the average tariff is less than the opportunity cost of supplying additional power, there is a subsidy to the EPZ firms. The national conversion factor for electricity is used to revalue electricity charges at market prices to obtain the economic opportunity cost of supplying the power. The conversion factors for most of the countries are above 1.0, implying that firms receive subsidised power. All countries other than Malaysia have generated costs in this regard.

Warr (1989) has used the domestic price system in his benefit/cost analysis and incorporated the shadow exchange rate. Foreign firms in EPZs are expected to convert their foreign exchange to local currency to meet their expenses, such as wages, electricity tariffs, local purchases and taxes. According to Warr, the difference between the official exchange rate (OER) and the shadow exchange rate (SER) arising from the currency conversion can be a benefit/cost to the host economy. In other words, if the OER used in such currency transaction does not reflect the opportunity cost of foreign exchange, referred to as SER, the economy will increase the premium. All foreign exchange converted to local currency creates a benefit to the host economy, indicated by the formula (SER - OER)* F, where F is the sum of foreign exchange converted at the official exchange rate. Jayanthakumaran and Weiss (1997) used the world price system as an alternative, where all non-traded shadow price is reduced relative to world prices. In this study, 'Conversion Factors' already incorporated an adjustment for a scarcity of foreign exchange.

ECONOMIC PERFORMANCE: SELECTED ASIAN COUNTRIES

Table 2 reports selected descriptive performance indicators of EPZs of South Korea, Malaysia, Sri Lanka, Indonesia, China and the Philippines. A meaningful comparison may not be possible as there is no comprehensive data. As far as profile of EPZ firms are concerned majority of the EPZs are within the two extremes, on one extreme 100 per cent of foreign/joint venture firms in Malaysia and the other extreme 70 per cent local firms in China. As noted, EPZ firms in South Korea and Indonesia have relatively linked with local economy through subcontracting and domestic purchases and have performed positively in generating net exports. Following the trade and investment liberalisation in 1977, Sri Lanka has promoted manufacturing exports, especially in garments and footwear products, by encouraging foreign investors within EPZs. As a result, the exports of EPZs to manufacturing exports and foreign direct investment of EPZs to

all foreign direct investment were relatively high in the 1980s.[6] In 1982, Malaysia became the world's largest exporter of electronic components, of which EPZs contributed about 90 per cent.

Table 2: Selected Performance Indicators of EPZs: Korea, Malaysia, Sri Lanka, Indonesia, China and the Philippines

Details	Korea	Malaysia	Sri Lanka	Philippines	Indonesia	China
Per cent of EPZs employment to national employment (1995)		2.1	4.4	0.3	-	12.0
Profile of EPZ firms In percentage (1995)		100	60	70		30
• Foreign/ Joint Venture			40	30		70
• Local						
Per cent of EPZs exports to manufacturing exports	1 (1986)	49 (1982)	44 (1990)	16 (1990)	-	12 (1989)
Per cent of EPZs net exports to gross exports	53.2 (1982)	33 (1978)	27.9 (1980)	26.2 (1982)	62.4 (1982)	16.4 (1990)
Per cent of EPZs FDI to national FDI	4 (1985)	13.4 (1983)	73.8 (1982)	22.6 (1983)	5.5 (1983)	11.6 (1988)
Domestic share in total raw materials	34 (1982)	4 (1982)	5.3 (1988)	6 (1982)	41 (1982)	-

Source: Data on percent of EPZ employment to national employment and profile of EPZ firms from ICFTU/APRO (1995). Data on percent of exports to gross manufacturing, EPZs net exports to gross exports and percent of EPZs FDI to national FDI from Amirahmadi and Wu (1995). Domestic share in total raw materials for Korea, Malaysia and Philippines from Warr (1989) and for Sri Lanka from Jayanthakumaran and Weiss (1997).

As noted, the advocates of benefit-cost framework concern more on benefits to the citizens such as employment, payments to local purchases, technology transfer and tax revenue. An important benefit is the number of jobs generated by EPZ firms and subsequent transfer of skills. EPZs have generated employment of about 0.3 to 12.0 per cent of national employment in the countries studied. Foreign investors within EPZs were attracted to labour-intensive, low-skilled workers available for low-wages while local investors were attracted to differential policy treatments. Wages within the zones tend to be slightly higher on average than wages outside the zones. For example, they were 30 per cent higher in Malaysia in the early

[6] In 1994, EPZs exports per worker in Sri Lanka were $6700 compared to $8858 in the Philippines and $4250 in China (ICFTU/APRO 1995: 14).

1990s and 10 per cent higher in the Masan zone (South Korea) between 1971 and 1987 (Madani 1992: 43-49). In Sri Lanka, overtime working in the zones allows workers to earn the national prescribed rate for the job.[7]

Unskilled female workers account for the majority of the jobs in EPZs. The nature of employment within the zone is similar to that of the employment outside the EPZs and therefore it was unlikely that additional skills were created and transferred to the domestic economy.[8] Workers in the EPZs were ignorant of their legal rights of compensation, protection at the work place and trade union activity. They were also unaware of the methods of occupational health and safety and precautions necessary at the work place (ICFTU/APRO 1995: 18-19). One would expect that externalities in the form of managerial skills, practices and notion of quality control would occur. However, evidence shows that workers in EPZs are employed under very strict factory discipline. If there is a transfer of managerial skills and practices, including quality control, it may be small and not quantifiable (Warr 1989: 78).

Two dominant industries within EPZs are textiles, clothing and footwear, and electronics. Healy and Lutkenhorst (1989: 50) have shown significant linkages in terms of purchases of domestic raw materials and domestic services such as transport, finance, insurance and packaging in South Korea. Manufacturing of footwear exhibited the highest domestic purchases. They argued that sub-contracting was exceptionally high, especially in the electronics industry, as compared with EPZs in other Asian countries. Domestic firms are expected to access technical know-how through the process of sub-contract.

In the situation where EPZ firms purchase locally produced goods, such links transfer technology to domestic firms. Warr (1989: 70-71) found that Indonesian

[7] ICFTU/APRO 1995: 12) shows that at least one third of workers in EPZs receive rates below the minimum wage for the particular sector in Sri Lanka, China and the Philippines with the exception of Malaysia.

zones are highly reliant on the garment industry and foreign firms increasingly purchased local textiles. Zones in Malaysia highly focused on the electronics industry and local purchases constituted less than 5 per cent of the total. In the Philippines, local purchases to total raw materials were below 10 per cent most of the years between 1972-82. In Sri Lanka, most of the local purchases were sub-products, or services, of wearing apparel. These purchases were at a small level and the percentage of domestic purchases to total raw materials remained static at around 5 per cent in all sectors (Jayanthakumaran 1995: 14). Attempts to promote sub-contracting were not successful for a number of reasons. First, EPZ firms mostly buy their inputs from the cheapest source outside the country, utilising facilities offered to them, such as tariff free import of raw materials, parts and components. Second, EPZ firms have no direct contact with domestic firms. Finally, linkages of zone enterprises with local industries are limited, as there is a low level of industrialisation in the country and the nature of import-based manufacturing processes that they adopt. As far as technology transfer is concerned, technology used for the garment industry is simple and universally available, while for electronics it is heavily guarded (Warr 1989: 75).

EPZs are, in general, offering generous tax concessions for foreign investors. Malaysia, Indonesia, Sri Lanka and the Philippines had almost zero tax revenue during the first few years of operation of the zones. Even after this period, a very little tax income has been recorded. EPZ firms have got bargaining strength to negotiate successfully to extend already existing tax holidays. EPZ firms, also, declare overall trading losses sometimes more than a decade while expanding successfully (Warr, 1989: 69).

RESULTS: BENEFIT-COST ANALYSIS

Spinanger (1984), Warr (1989 and 1990), Chen (1993) and Jayanthakumaran and Weiss (1997) have used conventional benefit-cost analysis by quantifying benefits

[8] See Jayanthakumaran (1995: 21-25) for Sri Lanka, Warr (1989: 75) for the Philippines

and costs and computed net benefits assuming life for the zones concerned of 25 years. EPZs studied are Masan in South Korea, Penang in Malaysia, Bataan in the Philippines, Jakarta in Indonesia, Shenzhen in China and Katunayake and Biyagama in Sri Lanka.

Spinanger (1984) formed two hypotheses, one of which displays a static and the other a dynamic effect. Static benefits occur via increases in the supply of foreign exchange, remuneration of factors of production and suppliers of intermediate and other inputs, as well as via the achievement of economies of scale in developing land, infrastructure and government services. Dynamic benefits occur through promoting essential conditions for the industrialisation of the host country in the form of linkages effects, such as demonstration effects, skills and technology. Spinanger (1984) obtained a positive impact in Penang in Malaysia in a benefit-cost analysis, assuming the lifetime of machinery was 8-12 years in Malaysia. Further, he found a slightly positive impact in Bataan in the Philippines. This analysis itself has some drawbacks. As Spinanger admitted, the infrastructure cost was not included and if included there would be a negative impact in Bataan's case (Warr 1990). There are strong reasons for believing that the market prices of these countries are distorted, so it is more appropriate to use shadow prices however, Spinanger's analysis was based on market prices.

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and Summerfield (1995: 30) for China and Mexico.

Table 3: Welfare Impact of EPZs: Net Present Value and Components – in million 1982 $ US (except China in million 1988 $ US and Sri Lanka in million 1988 Rupees)

Category	South Korea	Philippines	Indonesia	Malaysia	Sri Lanka	China
Employment	39	59	4	111	894	
Foreign exchange earnings	65	72	0	94	-	
Domestic raw-materials	16	3	5	18	355	
Domestic capital equipments	0	0	0	10	0	
Taxes and other revenues	18	11	23	10	97	
Domestic Profit		-	-	-	1122	
Electricity use	-13	-4	-1	-53	-271	
Infrastructure & administrative costs	-85	-219	-16	-47	-764	
Domestic borrowing	0	-147	0	0	0	
Net Present Value	40	-225	15	143	1433	58.6
Internal Rate of Return (%)	15	-3	26	28	23	10.7
Economic Discount Rate (%)	7.5	7.5	7.5	7.5	6	7.5
Project life (years)	25	25	25	25	15	25

Source: South Korea, Philippines, Indonesia and Malaysia from Warr (1989), Sri Lanka from Jayanthakumaran and Weiss (1997), and China from Chen (1993).

Table 3 indicates measures of the welfare impact of EPZs. Warr (1989, 1990) has done extensive work in formulating benefit-cost methodology and applying it in four Asian countries: Indonesia (the Jakarta EPZ), South Korea (the Masan FEZ), Malaysia (the Penang FTZ) and the Philippines (the Bataan EPZ). All of these EPZs started their operation in the early 1970s with initially garment manufacture as the dominant industry. Electronics assembly followed in South Korea and the Philippines. Warr obtained a positive net present value for the EPZs located in Indonesia, South Korea and Malaysia and a negative present value in the Philippines. Warr covered most of the static benefits, related to Spinanger's first hypothesis, while some of the dynamic benefits still remained difficult to identify. Economic internal rate of return for South Korea, Malaysia, Indonesia, Sri Lanka and China was around 15%, 28%, 26%, 23% and 10.7% respectively, which is well above the shadow discount rate of respective countries.

Table 4: Realisation of the Anticipated Benefits of EPZs

Anticipated benefits	South Korea	Philippines	Indonesia	Malaysia	Sri Lanka	China
Employment	Realised	realised	Realised	Realised	realised	realised
Foreign exchange earnings	Realised	realised	not realised	Realised	-	realised
Domestic raw-materials	Realised	not realised	Realised	Realised	realised	-
Domestic capital equipments	not realised	not realised	not realised	Realised	not realised	-
Taxes and other revenues	Realised	realised	Realised	Realised	realised	realised
Domestic Profit		-	-	-	realised	not realised
Electricity use	not realised	not realised	not realised	not realised	not realised	not realised
Domestic borrowing	not realised	not realised	not realised	not realised	not realised	-

Note: As revealed by Table 3, positive gains on respective anticipated benefits are reported as 'realised'.

Table 4 listed the anticipated benefits of EPZs and whether or not these appear to have been realised. Major anticipated benefits of EPZs were generating employment, foreign exchange earnings, domestic raw material purchases, and taxes. These were realised in most of the zones. Employment generation in South Korea, Malaysia and the Philippines accounted for more than half the gross benefits in each case. Domestic raw material purchases and taxes are relatively high in Indonesia. The heavy infrastructural costs and negative impact on the capital market resulted in the negative net benefit in the Philippines' Bataan EPZ. The Philippines government heavily subsidised substantial domestic borrowings by foreign firms.

In Sri Lanka, activities aside from textiles and clothing have generated modest returns. The two main benefits are profits to shareholders and income gains to labour, as wage rates on new projects in Sri Lanka exceed opportunity costs. The former is about 45 per cent of gross benefits in present value terms and the latter is about 36 per cent.[9] Local purchases, other than electricity, generated 14 per cent of gross benefits. Domestic profits have been an important source of benefit to the Sri Lankan economy. In terms of ownership, wholly owned domestic firms generated national returns of about 28 per cent compared to 22 per cent for joint ventures and

[9] In 1988, of the total firms 32 per cent were wholly foreign owned, 56 per cent were joint ventures and the rest were domestic firms. The sensitivity for the average labour conversion factor and managerial benefits was tested. The overall judgement on the relatively high economic returns to the zones is not affected by the alternative treatment of unskilled labour. The managerial benefits are assumed to be as 2 per cent of the turnover which reduces the internal rate of return on capital from 34 per cent to 23 per cent.

21 per cent for wholly owned foreign firms. This is from a national point of view and mainly due to the influence of domestic profit. The sensitivity for the foreign ownership reveals that wholly owned foreign firms reduce the internal rate of return on capital from 23 percent to 13 percent.

In China, high return to the zone is affected by the alternative treatment of workers. With a 56% and 36% wage differences between the firms in the zone and the firms outside the zones yields 7.5% and 2.5% internal rate of return respectively. The major sources of benefits were employment, foreign exchange earnings, tax revenue and technical training. Domestic profit was small in all but one year. Shenzhen zone was profitable both in national economic and the commercial point of view.

WORLD TRADE ORGANISATION AND EPZS

One can notice a growth of EPZs in the 1970s with the mass introduction of textiles, clothing and footwear products using cheap labour. Textiles, clothing and footwear (TCF) were the dominant industries in almost all EPZs in Asia as soon as they were established. Zones in Sri Lanka, Indonesia and the Philippines are highly dependent on TCF industries while TCF industries play quite a considerable role in the remaining EPZs. Due to the emergence of the Multi Fibre Arrangements (MFA 1973-94), a regulatory arrangement designed to govern international trade between the major industrialised and semi-industrialised countries, foreign firms moved into new countries in search of unexploited quotas. When the manufacturers from successful Asian countries had fulfilled the export quota of their own countries in the late 1970s, a growing number of firms migrated to new countries to obtain the available quota generated by MFA. This is widely known as 'quota hopping'.

Initially, new countries entering the market benefited by accessing a guaranteed market from a MFA quota allocation. In Sri Lanka, EPZs and the rest of the

economy are supposed to share the overall quota allocated. Sri Lanka fulfilled 80 per cent of the quota allocated in 1988. It is anticipated that if future performance exceeds the quota limit, the development of this sector will be jeopardised (Jayanthakumaran, 1995: 14). Willmore (1995: 530) indicates that without country specific quotas, a large part of the garment production of the Dominican Republic could relocate to China.

The 'Uruguay Round' negotiations agreed to phase reductions of MFA and to integrate all products in four phases ending in 2005. The first three phases included products such as tops and yarns, fabrics, made-up textile products and clothing. During phase 1, each party would integrate products from the specific list in the agreement, which accounted for not less than 18 per cent of 1990 imports from January 1995. During phase 2, each party would integrate products not less than 17 per cent of 1990 imports by January 1998. During phase 3, each party would integrate not less than 18 per cent of 1990 imports by January 2002. All remaining products would be integrated during phase 4 from 2005. Firms migrating for quota would come to an end by 2005. The growing fear is that, in the absence of guaranteed markets, firms may distance themselves from a number of new and recently established EPZs.

The Uruguay Round negotiations further established that preferential incentives provided to EPZs, such as tax breaks and utility subsidies that were not applied nationwide, can be construed as export subsidies and subject to countervailing duties. Duty free imports and exports were not included at this stage. The least developed countries and countries with less than US $ 1000 per capita GNP are exempt from this ruling on prohibited subsidies. This indicates that, in the near future some developing countries with EPZs may be subject to countervailing measures. Further, current trends towards restricting child workers and the exploitation of female workers in developing countries generate lower returns to the firms operating within EPZs.

SUMMARY

Benefit-cost analyses applied by authors are consistent enough to allow for valid comparison. The results show some support for the hypothesis that the EPZs had a positive economic impact for the citizens of a host country. The major drawback of these studies is that conversion factors were assumed to be constant throughout the period of study. Our literature survey unambiguously shows that zones in South Korea, Malaysia, Sri Lanka, China and Indonesia are economically efficient and generated returns well above the estimated opportunity costs of these respective countries. The above zones have been an important source of employment in all cases and have promoted local entrepreneurs in the cases of South Korea and Indonesia. The heavy infrastructure costs involved in setting up the zone in the Philippines resulted in a negative net present value.

Domestic profits were an important source of benefit in Sri Lanka mainly because of greater domestic and joint venture structure in ownership. Warr (1989: 77) neglected domestic profits in the cases of South Korea, Malaysia, Indonesia and the Philippines because domestic profits are difficult to quantify and unlikely to be very significant. Chen (1993: 267) integrated domestic profits in China and concluded that the impact was small in all but one year. The results do suggest that a heavy reliance on foreign investors is unlikely to maximise the welfare of citizens and that there should be a balance between domestic and foreign investment.

The effective utilisation of EPZs as instruments of industrialisation requires the availability of linkages with the rest of the economy. In the initial stage of development at least, employment and income gains to labour seem to be important benefits, as wage rates on the EPZs generally exceed opportunity costs. This survey unambiguously shows that the zones have provided an efficient means of absorbing surplus labour in the initial stages. However, as industrial development proceeds, the expectation is that the gap between market and opportunity cost will narrow and the national interest in the EPZs will tend to

disappear. National interest may hold only if the zones generate private profit to domestic shareholders.

There is a strong correlation between the growth of EPZs and Multi Fibre Arrangement (MFA) in general. A growing number of firms migrated to obtain quotas originated by MFA. The World Trade Organisation is currently involved with phase reduction of MFAs, removal of the exploitation of child and female workers in developing countries and the removal of a number of incentives of EPZs. The growing fear is that, in the absence of guaranteed markets and cost advantages firms may distance themselves from a number of new and recently established EPZs. These policy measures will eventually result in lower rates of return and will be a possible threat to the existing and new EPZs.

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