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This paper is a product of the Industry Development Division, Industry and Energy Department, and the Trade Policy Division, Country Economics Department.

ISSN 1013-3429

Library of Congress Cataloging-in-Publication Data

Export processing zones/Industry Development Division, Industry and Energy Department [and] Trade Policy Division, Country Economics Department.
p. cm. — (Policy and research series, ISSN 1013-3429: 20)
ISBN 0-8213-1988-4
1. Export processing zones — Developing countries. 2. Commercial policy. I. International Bank for Reconstruction and Development. Industry and Energy Dept. Industry Development Division.
II. International Bank for Reconstruction and Development. Country Economics Dept. Trade Policy Division. III. Series: Policy and research series: 20.
HF1417.E95 1991
338.4'767—dc20 91-45394
CIP

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Foreword

The World Bank has long supported developing countries in reforming their inward-oriented trade and regulatory policies to an outward-oriented direction and in improving the international competitiveness of their industries. One of the key elements critical for the effective implementation of such reforms and improvements is to design appropriate policy and administrative instruments that are suitable for the particular conditions of a developing economy. To assist in such design, the Industry Development Division has carried out research and operational support work in export policy instruments and institutions. An export processing zone (EPZ) is one of the various export policy instruments studied by the Division.

In recent years, there has been growing interest in EPZs, particularly among low-income developing countries, as a tool for helping them overcome their inability to generate an outward supply response and to provide immediate employment, as well as foreign exchange earnings, by inducing foreign direct investment. This also reflects changing perceptions in developing countries about the critical role of close collaboration between foreign and domestic enterprises, beyond capital transfer alone, for initiating a low-income country's entry into the world market by taking advantage of the increasing internationalization of manufacturing and trade. Also, some recent EPZ successes based on private zone development and operation have suggested the viability of innovative new approaches.

At the same time, many questions about the relationship between the EPZ policy regime and economywide policy reforms, as well as uncertainty about the benefits and costs of EPZ industrial estate construction and EPZ links with the rest of a developing economy, are being expressed. Some concerns may stem partly from the memory of EPZ failures in the 1970s — related primarily to inappropriate location and to mistakes in industrial estate construction — and partly from the increasing recognition of the importance of economywide policy reforms in developing countries in the 1980s and 1990s.

The purpose of this paper is to provide a perspective on the EPZ as a policy instrument as well as an industrial estate, by reviewing global and the World Bank Group's experience with EPZs and highlighting conditions that have contributed to their success and elements that have caused difficulties.

This paper was prepared under the direction of the Industry and Energy Department by a team consisting of members from the Industry Development Division of the Department and the Trade Policy Division of the Country Economics Department and has benefited from extensive consultation and comments from the Country Departments.

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Acknowledgments

This report is based on a paper entitled "Export Processing Zones," dated June 8, 1991, containing contributions by a core team composed of Carl Dahlman, Katharina Katterbach, Donald Keesing, and Yung Whee Rhee, and with inputs, comments, and assistance from many others.

Abbreviations

EC	–	European Community
EPZ	–	export processing zone
FDI	–	foreign direct investment
GATT	–	General Agreement on Tariffs and Trade
IBRD	–	International Bank for Reconstruction and Development
IFC	–	International Finance Corporation
IMF	–	International Monetary Fund
OECD	–	Organization for Economic Cooperation and Development
SAL	–	structural adjustment loan

Executive summary

Export processing zones (EPZs) are one of several administrative instruments for providing free trade status to manufactured exports. Along with a realistic exchange rate, sound macroeconomic policies, and liberalization and reform of import policies, making economywide duty-free systems work well for manufactured exports is a principal element of the trade policy reforms advocated by the World Bank Group since 1979. EPZs are found mainly in developing economies, while the three other commonly used systems — in-bond, duty-exemption, and duty-drawback — which serve different groups of exporters, are used widely in both developed and developing economies. Exports from EPZs in developing economies constituted 4 to 5 percent of these economies' total manufactured exports of $258 billion in 1988. About 80 percent of total EPZ exports came from three rather advanced middle-income developing economies.

The review of experience with EPZs yields several lessons: (1) economywide duty-free import systems should be emphasized over specific EPZs; (2) support to EPZs should be considered individually for each economy, in the context of broader trade policy reforms involving a shift toward outward-oriented development, mainly as a transitional instrument for helping economies enter world markets; and (3) private development and management of EPZs is to be encouraged, and when public development is required, special arrangements ought to be put in place to ensure full cost recovery (development costs, including land rents, and operating costs) and efficient management. The importance of the EPZ as a policy instrument tends to diminish as an economy becomes successful in its outward-oriented strategy, though its value as an industrial estate may remain.

Besides an appropriate policy regime, developing economies seeking to enter or expand manufactured exports require adequate physical trade infrastructure and a legal and regulatory environment favorable to private business and exporting. An EPZ, which is an industrial estate with rental factory buildings, helps meet both requirements. It specializes in manufacturing for export to more advanced market economies by offering exporters duty-free imports, a favorable business environment, few regulatory restrictions, and a minimum of red tape. The EPZ thus combines two critical features: it is both an industrial estate with links to trade infrastructure and a policy instrument providing suitable trade and regulatory regimes. The usual objectives of EPZs are to earn foreign exchange and to create employment through exports of manufactured goods. An EPZ can achieve this by attracting local and foreign investors who bring with them a package of management, technology, and marketing skills and international connections. Even under the most favorable circumstances, the impact of an EPZ is limited, however, by its small area, generally ranging from 10 to 300 hectares. (This is a deliberately narrow definition and corresponds roughly to what some would call "fenced-in" EPZs. It excludes many quite different arrangements that are sometimes considered EPZs.)

The benefits of EPZs and manufactured exports include direct ones, notably foreign exchange earnings, employment, income, and spillover benefits, including learning by locally owned firms; training, skills, and know-how acquired by local people employed there; learning by foreign investors and buyers about the economy as a source of manufactured exports; and the upgrading of the capabilities of local suppliers and officials in response to exacting foreign demands. In addition, an EPZ can have demonstration effects, by showing the benefits of a more open approach to trade and of an outward-oriented supply response for economies with an inward-oriented tradition. Indeed, EPZs should be evaluated in part according to their dynamic contribution to continuing policy reforms, but this is difficult to do because it is virtually impossible to determine what would have happened had no EPZs been created. While several other instruments have the potential to provide similar benefits, an EPZ is the easiest system to arrange well for rapid clearance of imports and exports, and its small area makes it easier to provide a favorable, lightly regulated environment suitable to foreign investors than can be provided in many varied locations at once.

For economies at an early stage of economic development with limited administrative capability, high distortions, and little local technological, marketing, or management capability, EPZs can be an appropriate way to attract foreign and domestic investment to export-oriented manufacturing in a limited geographic area. Besides providing a superior policy environment, EPZs offer reduced transaction costs by providing rental factory buildings and factory sites with convenient links to international trade, communications, other utilities, and services at low cost to investors. However, the EPZ cannot itself induce an inflow of foreign investment if foreigners are not interested in investing in the economy because of their unfavorable assessment of the local business environment, including political and social stability and physical trade infrastructure. Most developing economies that desperately need foreign investment in their export activities lack the favorable business environment that is critical for attracting it. Thus, an EPZ may not be appropriate in all cases and should usually be considered mainly as a way to attract foreign investors into export industries. And in most cases, an EPZ should be part of a larger set of instruments and policy measures for developing exports.

A major disadvantage of EPZs is their location-specific enclave nature. It is difficult to manage the estate development, promotion, and services well enough to attract investors and to offset EPZ development costs. EPZs have had a mixed and often disappointing record of performance in economies just breaking into manufacturing for export because of mistakes in location and policy regimes for EPZs, although there are a few notable cases of success such as the Dominican Republic, Malaysia, and Sri Lanka. EPZs also have been used at a somewhat later stage of development by a few economies with substantial sophistication in trade policies and public administration, as part of a larger package of export development measures designed to attract foreign investment in electronics and other technically challenging industries. Foreign investors often prefer the EPZ to other duty-free instruments, so the simultaneous use of several administrative instruments is fairly common, with each serving the requirements of different investors.

World Bank Group projects

The World Bank Group's (including the IFC) support for EPZ projects has amounted to about one-fifth of 1 percent of its total lending for industry since 1975, an amount consistent with the relatively minor role of EPZ exports in developing economies' total trade. Since 1977, the Bank Group has provided $87.5 million for six EPZ projects in five countries (Colombia, the Dominican Republic, Jamaica, Kenya, and Thailand). Over 40 percent of these funds ($36 million) have been channeled to private developers of EPZ sites in the Dominican Republic. Three projects have been completed, and three (two in the Dominican Republic and one in Kenya) were approved only recently, in 1989 and 1990. Of the completed projects, two have been reasonably successful (Jamaica and Thailand), while the third (Colombia), a 1978 project, had problems with site selection, estate development and management, and delays in the establishment of a legal framework for the EPZ policy regime. The World Bank seems to have learned from the Colombia project and applied those lessons in the four subsequent projects.

It should also be noted that World Bank support for these later projects was part of a broader policy dialogue and action program on trade liberalization. In the five countries where the World Bank Group has supported EPZs since 1981, it has

also supported general import liberalization through twelve other projects and reform of economywide duty-free systems through at least one lending operation in each country.

Experience with EPZs

There are at least eighty-six fenced EPZs now operating in twenty-seven developing economies. Their exports were around $11 billion to $13 billion in 1988, and somewhat higher in 1989. Since the detailed information necessary to make even an imperfect cost-benefit analysis is available for only a few zones, only a rough assessment of the success of EPZs can be made, based primarily on the number and type of investors that zones have attracted, the direct employment they have achieved, and information on their exports, occupancy, unusual costs, and problems.

Only about sixty of the zones have been in operation long enough to permit an evaluation of their success based even on such rough criteria. About 40 to 50 percent of these (twenty-five or more zones) appear to be successful, about 20 to 30 percent partly successful, and about 30 percent unsuccessful. Most of the unsuccessful zones were established in the 1970s, when economies were still experimenting. These zones have had the greatest difficulty attracting investors and have suffered from exceptionally high initial costs, low occupancy, meager employment, overbuilt facilities, and poor export performance. Many have had to be subsidized continuously. The successes include about half the EPZs in Asia, which account for 71 percent of EPZ employment, and several EPZs in the Dominican Republic, which has 21 percent of EPZ employment, but no more than two to four in the rest of Latin America and the Caribbean and none in Africa or the European and Middle Eastern Region.

The performance of public sector EPZs has been disappointing, except in Asia, where all EPZs are public, and a few in Latin America and the Caribbean. The successful public EPZs in Asia work in part because they have been managed flexibly, akin to a private business, with profit-making as an objective. Because of the more negative experience in Latin America, newer EPZs there have been owned and developed privately. Private zones generally operate without subsidies or exceptional assistance from the government.

In 1990, EPZs worldwide employed about 530,000 people, a tiny fraction of the labor force engaged in manufacturing in developing economies. Wages in the zones tend to be equal to or higher than wages for comparable jobs outside the zones. Working conditions also tend to be better. The same labor laws apply inside and outside the zones, but labor unions are rare in EPZs, and organizing activities are discouraged in some EPZs.

In their early years and even later, EPZs have had very few links with the rest of the economy, except for infrastructure and services—they work because they are enclaves. A few that have developed stronger links had a strategy of producing intermediate inputs at internationally competitive prices and quality. For this to happen, the producers of those intermediate goods, materials, and components need to have access to their own inputs at world prices and to be encouraged to build world-class plants at efficient scale.

There is general agreement that the transfer of product and process technologies through EPZs is small, except perhaps in simple industries such as garments. The most important technology transfer effects are in management and technical skills, and occur as local employees in the firms learn from foreign managers, technicians, and buyers, and from experience. Skill transfer to the rest of the economy occurs mainly through the movement of people who have received training in the zones and through work that firms outside the zones do for firms in the zones. If the business environment outside the zones is not attractive, however, these skill transfer effects tend to be unfruitful.

A major concern about EPZs is that they may delay needed economywide trade reforms. Much depends on the political circumstances and processes. Successful EPZs increase exports, and increased exports can give a country greater confidence and the resources to undertake trade policy reforms, or they can allow it to muddle along without reforms. The direct effects of EPZs on trade policy appear to have been positive on balance in Malaysia, Sri Lanka, and Taiwan (China), but uncertain in the Dominican Republic and elsewhere. As an economy develops an effective economywide free trade regime and minimally regulated market mechanisms, EPZs should diminish in importance as a policy instrument. What this means for World Bank policy is that EPZs should be supported as an initial or complementary part of a package for broader trade and regulatory reform.

Another concern about EPZs is that they discriminate against firms that are not in the zone. Initially, the EPZ is an enclave that gives its firms special advantages — duty-free imports for export production, less red tape and regulation, links to physical infrastructure, and, sometimes, added tax incentives. In return, firms in the zone are generally required to export all or nearly all of their output. EPZs seek to put their firms on an equal footing with international competitors, which typically enjoy free trade status in lightly regulated market economies with favorable business conditions. Local export firms outside the EPZ are discriminated against not by the existence of the EPZ but by the distortions and excessive regulations in the local economy. But local exporters outside the EPZs need free trade treatment and a liberal regulatory environment too, and the sooner the better.

A third concern is the environmental impact of EPZs, but this worry appears to be unfounded. There is no evidence that EPZs systematically exempt firms from environmental regulation or that firms that locate there are heavy polluters. Indeed, control of pollution and disposal of hazardous industrial wastes are generally easier and cheaper in a well-managed industrial estate than in dispersed firms. Thus, where environmental problems exist, they stem from economywide policies and resource use.

Lessons from experience

Experience suggests that certain policies are particularly important for EPZ success. A realistic exchange rate and a stable macroeconomic environment are crucial for all manufactured exports. Also important for firms in the EPZ are (1) clear policies toward foreign investment, including the possibility of 100 percent foreign ownership and guaranteed repatriation of profits and speedy responses to uncomplicated investment applications; (2) unrestricted access to duty-free imported inputs and capital goods and rapid, low-cost customs clearance for imports and exports; (3) no restrictions on foreign exchange for EPZ firms' export-related international transactions; (4) minimal regulatory interference in the actions and transactions in the EPZ, including freedom to hire and fire workers at low transaction costs; and (5) extension of free trade status to EPZ estate development and management. On the industrial estate side, key factors are appropriate location, generally in a major urban area, with suitable low-cost labor, transport (major port, good roads, and an international airport), utilities (electricity, water, sewage, and reliable telecommunications), and services (maintenance, security, banking). Also important are good zone administration and management (including phased construction of suitable factory spaces for rent as well as complementary facilities) and appropriate promotional efforts.

Failure or poor performance of EPZs on the policy side has been associated with inappropriate or ineffective formulation of policies or their implementation, such as an excessively interventionist and rigid regulatory environment and excessively time-consuming customs procedures. On the industrial estate side, problems have resulted from poor site selection (including trying to create EPZs in economies with an unfavorable business environment or poor trade infrastructure) and unsatisfactory zone management (including building too many structures ahead of demand). Inadequate promotion has also been important in contributing to low occupancy.

Role of the World Bank

The Bank's emphasis on economywide duty-free import systems as an alternative or complement to EPZs will continue. EPZs should be seen as just one instrument — and one with limited applicability — among many for export development, import reform, and regulatory liberalization. In a variety of circumstances an efficient in-bond or duty-exemption system may well be more appropriate than an EPZ, which is difficult to locate, develop, and manage. When the World Bank considers an EPZ project it should ensure that the preconditions and policy orientation are in place for a successful EPZ, that entrepreneurs and policymakers understand the task, and that each EPZ is part of a coherent package and sequence of measures to develop manufactured exports, supported by further measures for regulatory liberalization and macroeconomic stability. The Bank has very limited supervision capabilities and little detailed know-how for making an EPZ successful. Therefore, it should be selective and cautious in supporting EPZ projects.

EPZs may be most valuable as an interim measure for initiating economies into world markets for manufactured goods while more desirable economywide policies are being implemented.

The Bank should continue to support EPZs on a case-by-case basis. Support is most likely to be appropriate where the EPZ can be supported as part of an integrated strategy for trade and regulatory reforms and where there are no feasible alternatives for attracting local and foreign investment and other types of foreign collaboration on export activities. Also important is the availablity of suitable physical trade infrastructure and a policy environment that fosters — or at least does not hinder — private sector development. In economies that already have substantial and growing exports of labor-intensive manufactures to OECD countries, the Bank should support EPZ projects only in exceptional circumstances (part of an economywide institutional reform) and only as part of a larger package of well-aimed policy measures or through-lending to private EPZ developers, as in the 1989 loan to the Dominican Republic.

Where establishment of an EPZ looks promising, the Bank should lean strongly toward development and management of EPZs along profit-making lines, preferably through foreign or domestic private ownership and management. From a national perspective the risks and costs of relying on fenced EPZs largely disappear when private entrepreneurs assume responsibility for developing and managing EPZs. Private investors will not locate in unpromising areas, so the private development and management of EPZs is a realistic option only in economies that already offer favorable environments for labor-intensive manufactured exports. In an economy where basic trade infrastructure is deficient, the development of good physical trade infrastructure is a necessary complement to the EPZ.

When, in exceptional circumstances, the Bank finances construction of an EPZ industrial estate developed by the public sector, full cost recovery and efficient management are crucially important. Experts and practitioners with proven track records in all aspects of EPZ development should play significant roles in the project. Project components and conditions relating to funding, management, and promotion of the EPZ are essential, as are flexibly phased construction schedules, driven by occupancy rates, demand for space by investors, and progress in assessing and approving investment proposals.

1

Export processing zones and policy reform

This paper examines export processing zones (EPZs), one instrument among many for implementing policies for export development, import reform, and regulatory liberalization. EPZs may be most appropriate for an economy striving to develop manufactured exports but unable to rapidly overcome economywide deficiencies in its policy environment. Such an economy may be able to create the proper environment in the limited area of an EPZ needed to attract export-oriented investment. This analysis of EPZs, which are here rather narrowly defined to correspond roughly to what are often called fenced-in EPZs, separates the policy side of EPZ operations from the industrial estate aspect. (The appendix provides a historical perspective on the origins of EPZs and their proliferation and three tables on the eighty-six EPZs now in operation in twenty-seven economies.)

Experience indicates that economywide duty-free import systems should be emphasized over specific EPZs and that support to EPZs should be considered on an individual basis, taking into account the crucial relationship between the success of an EPZ and the overall policy and infrastructure framework. Private ownership and management of EPZs is also to be encouraged, and when public ownership cannot be avoided, special arrangements ought to be put in place to ensure full cost recovery (including land rents and operating costs) and efficient management. The EPZ's main role is as a transitional instrument, enabling a country to enter into world markets while undertaking policy reforms to shift it toward outward-oriented development. Reliance on the EPZ as a policy instrument should diminish over time, as an economy becomes successful in its outward-oriented strategy, though its value as an industrial estate may remain.

Three basic elements are critical for a developing economy's entry into the world market for manufactured exports:

- A suitable macroeconomic, exchange rate, and trade *policy regime*, together with a legal and regulatory environment favorable to business.
- Adequate *physical trade infrastructure* (such as sea, air, and road transport systems and communication facilities) and *public utilities* (such as electricity and water).
- Technical, marketing, and managerial *know-how* and adequate *links to the international market* network, along with financial and other resources for capital investments.

Rational trade policies

Economic policies in most developing economies handicap potential exporters, making it impossible for them to compete on world markets for industrial goods on anything close to an equal footing with their foreign competitors. Usually the incentive structures are biased against production for export. Where there are tariffs and other taxes or restrictions on imports of producer goods, export development policies must provide exporters *free trade status*, which their competitors enjoy (at least for imported inputs) around the world. And, while more general policy reforms

are pursued for the entire economy, exporters need a liberal regulatory regime (covering investment, company ownership, foreign exchange, hiring and firing, labor requirements, and the like) as a transition measure.

Since 1979 the Bank has advocated three primary measures of trade policy reform (Thomas, Matin, and Nash 1990):

- Maintaining a realistic exchange rate and sound macroeconomic policies.
- Establishing export policies to ensure free trade status for direct and indirect export activities.
- Reforming import policies to reduce protection for import-substitution industries and free imports from controls.

The first two measures help put exporters on an equal footing with foreign competitors without violating the rules of the General Agreement on Tariffs and Trade (GATT). The third — reforming import policies — reduces antiexport bias. The Bank has also discussed other desirable measures that offer exporters special treatment until suitable conditions can be created economywide.[1]

Several administrative instruments can provide free trade status for direct export activities and, with suitable supplements, for indirect ones as well in economies with tariffs or other trade barriers. These include an export processing zone, an in-bond system, a duty-exemption (or temporary import) system, and a duty-drawback system. Since each of these instruments serves firms in different circumstances, most economies offer a choice of two or more of them. Such systems need to be easy to understand, and their procedures must be automatic and transparent, to avoid the discretionary elements that lead to delay, uncertainty, and corruption. Mechanisms for preventing misuse of duty-free imports (sale of duty-free imports in the protected local market) are also important since misuse results in revenue losses and special favors.

An *export processing zone* is an industrial estate, usually a fenced-in area of 10 to 300 hectares, that specializes in manufacturing for export. It offers firms free trade conditions and a liberal regulatory environment. Its objectives are to attract foreign investors, collaborators, and buyers who can facilitate entry into the world market for some of the economy's industrial goods, thus generating employment and foreign exchange. An EPZ is intended to meet the requirements of the foreign investors for readily available factory space or sites, business services, utilities, and easy access to air and sea transport as well as unrestricted access to imported inputs, equipment, and spare parts.[2] Customs administration in EPZs should also be simple, mainly checking arriving and departing containers and preventing unauthorized trade between EPZs and the domestic economy. EPZs can generally be set up and running effectively faster than other duty-free instruments, which require much training, testing, experience, and adjustment before they are working well at a low enough cost to exporters. Key disadvantages of the EPZ are its location-specific enclave nature, which limits benefits to firms inside the zones, and the difficulty of managing estate development, services, and promotion well enough to attract investors and offset costs.

An *in-bond system* is the other special alternative for firms that manufacture for export. It tries to give firms free trade status and provide for rapid delivery of imported inputs and outputs without restricting firms to a specific location. While its objectives are practically identical to those of an EPZ, it typically offers a smaller package since it is impractical to provide infrastructure, services, and a liberalized regulatory and business environment in widely separated locations. Instead, the in-bond system relies on complementary private sector efforts to provide facilities and services and on honest and helpful service by public officials. In-bond systems, like EPZs, generally apply to firms that export their entire output, but both systems may provide for a certain percentage of sales to the local market. Unlike EPZs, which are confined largely to developing economies, in-bond systems are available in developed market economies as well.

Customs administration of an in-bond system can be based on either continuous physical checks or document review and spot checks. Under a system of continuous checks, customs officers supervise bonded manufacturing warehouses and monitor the use of duty-free goods in each plant. In document-based systems, customs officers make unscheduled visits, relying on spot checks of the plant's documentary records and goods.[3] Partly in reflection of these contrasts, in-bond systems vary widely in flexibility and effectiveness. They are used in thirteen or more of the twenty-seven developing economies that have EPZs, including eight of the nine in Asia.

Unlike the usual in-bond or duty-exemption system, Mexico's *maquiladoras* and Mauritius's so-

called Export Processing Zones (unfenced export processing zones) rely primarily on firms' declarations of imports and exports. Mexico's *maquila* system is a special case that exploits the combination of low-cost labor, a common border with the United States, and special U.S. customs provisions. Mauritius benefits from being a small island economy that receives preferential treatment from the European Community (EC). Its garment export industry was started by Hong Kong investors interested in avoiding export quotas in the industrial countries. Mexico's system is assisted by modern computerized documentation and procedures that allow most containers to clear customs rapidly. Mexico's maquiladoras and Mauritius's unfenced export processing zones together generate as much employment and more exports than all the EPZs in the rest of the developing economies.[4] Somewhat similar to these in-bond systems or to duty-exemption systems are the "special economic zones" in China, which provide exporting enterprises with special duty-free import regimes over a limited territory.[5]

Especially important for export development are economywide systems that apply to a much wider range of exporters. Under *duty-exemption systems* (including temporary admissions, deferred drawbacks, advanced licenses), which waive not only import duties and indirect taxes but also import restrictions, firms are obliged to export products corresponding to their duty-free imports within a specified time period, based on documentary checking mechanisms (including input-output coefficients).[6] *Duty-drawback systems* are usually based on documented evidence of duties and indirect taxes paid on inputs and on input-output relationships in export production.[7] The most efficient duty-exemption systems, when used in conjunction with industrial estates, result in arrangements that have some similarities to EPZs. They lack, however, the special, liberal regulatory environment of the EPZ, although some countries offer special exemptions from regulatory restrictions to all firms that export at least a specified percentage of their output.

Duty-exemption, drawback, and some in-bond systems rely heavily on input-output coefficients for customs documentary checking.[8] Many developing economies lack the technical capabilities to derive these coefficients systematically and the administrative capability to handle them properly. As an alternative, they tend to rely on firms' declarations. As a result, countries may face a tradeoff between speedy processing and preventing misuse of duty-free imports. Modern information technology facilitates processing only if pretabulated input coefficients are available. Physical checking mechanisms of EPZs or some in-bond systems (that do not require information on input-output coefficients) can be viewed as interim or complementary measures, to be used as a country develops the skills to apply document-checking mechanisms.

The Bank has recommended that economies offer both an exemption system and a drawback system to provide duty-free imports for exporters. Since delays and difficulties in using these systems are common, while most export producers need rapid access to inputs, the Bank has recommended that economies also offer an in-bond system or an EPZ — or both — for firms specializing in manufactured exports. The Bank has cautioned, however, that certain EPZs were poor investments because of unwise location, high investment costs, mediocre management, or uncooperative customs officials.

Infrastructure and industrial estates

Good physical trade infrastructure (ports, transport systems, and communication facilities) is essential for any export activity. Although an industrial estate or EPZ can be developed and managed by a private enterprise or a public authority, public investments are critical for building the overall trade infrastructure in developing economies. This is true even in virtual free ports such as Hong Kong and Singapore, where this infrastructure is world-class.

Many exporters under the various duty-free regimes (and also in virtual free ports) operate from factory buildings in industrial estates. The EPZ, however, is the only duty-free instrument that regularly includes factory buildings for rent and factory sites for lease along with the other facilities of an industrial estate. In addition to possible economies of scale and the shorter time required to make it work effectively, a physically delimited EPZ has the advantage of being able to provide, in a small area, the type of free trade and import restriction-free, lightly regulated policy environment that cannot yet be created for an economy's entire area. Actual economies of scale and scope come from concentrating export-oriented investors in a small area and supervising customs activities in a "showcase" situation, where

complaints are likely to be heard and failures to be visible.

Foreign direct investment

One feasible way for a developing economy, particularly a small one, to supplement its insufficient export manufacturing and marketing know-how and to develop links to the international market network is to collaborate with foreign investors. The foreign investors contribute not only capital but, more important, a package of marketing and technical know-how, access to established overseas market networks, and the managerial capacity to combine them with local resources.

An EPZ's free trade status and liberal regulatory environment, combined with an efficient industrial estate, generally make it more attractive to foreign investment than a location elsewhere in the economy. But while good management of both the policy and the industrial estate aspects of an EPZ are important for attracting foreign investment, an internationally competitive business environment is also essential. In practical terms this means a policy environment that does not get in the way of private sector development, low real wages relative to worker performance, easy access to external markets and to inputs for export processing, good physical trade infrastructure, and a reasonably favorable living environment. Readily available information on the EPZ and the host economy and on local firms that are potential suppliers or collaborators is also important.

2

World Bank experience with export processing zones

Since 1977 the World Bank Group has provided US$87.5 million for six projects supporting EPZ estate construction or EPZ facilities and infrastructure in five developing countries (see table 1). The six operations include four by the Bank, one by the International Development Association (in Kenya), and one by the International Finance Corporation.

Two completed projects and one new project have involved construction of public sector EPZs: the 1978 Cartagena EPZ project in Colombia, the 1983 Kingston Free Zone project in Jamaica (the zone, started in 1976, was already operating at the time of the loan), and the 1990 Kenya Export Development project (which earmarks US$22 million for the construction of an EPZ at Athi River). This Kenya project was part of a larger policy package to improve trade policy and foster export development.

The Bank was also directly involved in a 1977 industrial estate project in Thailand with a small EPZ component (under $1 million) that was expected to include 12 percent of the area of the industrial estate. Two recent EPZ operations in the Dominican Republic have supported private developers. One is a 1989 Bank project to channel funds to private EPZ developers for standard factory shells and other facilities through an existing financial intermediary. The second is a 1989 International Finance Corporation (IFC) investment in, and loan to, the private San Isidro EPZ.[9]

Operational aspects

The World Bank's experience with industrial estate construction for EPZs has been mixed in three projects (Colombia, Jamaica, and Thailand). Two projects became reasonably successful (Jamaica and Thailand), thanks to favorable environments for EPZs and for manufactured exports. One project was a failure (Colombia).

The Lat Krabang industrial estate project in Thailand, which was financed by a Bank loan approved in 1977, had anticipated that 12 percent of the estate would be designated as an EPZ. The estate was only partially filled at first, but demand for estate factory space increased within a few years, and the estate was expanded significantly (without Bank lending). Today 27 percent of this expanded area is an EPZ; 73 percent of the EPZ was added after the initial Bank project. In 1990 the estate had roughly 36,000 workers, over a quarter of them in the EPZ.

The Cartagena Free Trade Zone loan, approved in 1978, was the Bank's first attempt to specifically finance an EPZ. It has been a failure for a number of reasons, including poor site location, estate development, and public management, as well as policy failure (see below).[10] Cartagena is a small port city, far from the country's main urban centers. EPZs rarely succeed in that type of location. Finding land for the zone proved difficult because local authorities and the business community opposed most locations. A mangrove swamp was finally selected for the site, resulting in high devel-

Table 1 World Bank export processing zone (EPZ) projects, 1977-90

Country	Year	Project name	Type of loan	EPZ component amount (total project amount) (US$ millions)	Project objective of EPZ component: EPZ industrial estate development	Project objective of EPZ component: EPZ enterprise development
Thailand	1977	Lat Krabang Industrial Estate	IBRD	0.95 (4.75)	Small part of industrial estate site development (including estate infrastructure) to be designated for EPZ	
Colombia	1978	Cartagena EPZ	IBRD	15 (15)	EPZ site development and construction of buildings (including EPZ site infrastructure, training center, and technical assistance for promotional activities)	
Jamaica	1983	Kingston Free Zone Development	IBRD	13.5 (13.5)	EPZ site development, construction of buildings, training, and technical assistance)	
Dominican Republic	1989	Industrial Free Zone Development	IBRD	30 (30)	Loan to FIDE for onlending to private EPZ developers; technical assistance to support strategies for future EPZ development	Technical assistance to support strategies for future EPZ development and increase backward linkages
Dominican Republic	1989	Investment in Zona Franca San Isidro, S.A.	IFC	6 (6)	Loan to a major private EPZ developer to expand factory space for lease	
Kenya	1990	Export Development	IDA	22 (100)	EPZ site development (including estate infrastructure)	

opment costs. By 1989 employment had reached 716 people in nineteen small firms, far short of the 5,000 to 6,000 jobs foreseen in the project objectives. Exports reached $10 million in 1989, a fraction of the projected values of $50 million to $60 million a year (in 1978 prices; over $150 million in 1989 prices).

The Kingston Free Zone project started in 1976, seven years before the Bank became involved. Operation of the EPZ began with 140 employees in 1980. When the Bank came to its assistance in early 1983, the EPZ was not yet successful and employed only 875 people. Because of its poor design and small developed area, the zone became crowded; it also experienced tense labor relations.[11] Despite these problems, employment rose to 11,000 in 1987 before dropping back to 7,441 in 1989 — considerably more than the 4,000 jobs projected for 1990. The zone's success in generating employment has led to the development of a second public EPZ at Montego Bay and private EPZs in and around Kingston. EPZs in Jamaica now employ over 15,000 people and their exports constitute about 20 percent of Jamaica's exports.

The other three EPZ projects date from 1989 and 1990 and are too new to be adequately evaluated. It should be noted, however, that the Kenya project, though built with public funds, is to be privately managed. Since the mid-1980s, the Bank has enforced its environmental, health, and safety guidelines in all EPZ projects. (See box 1 for a discussion of cross-country experience with the operational aspects of EPZs.)

Policy aspects

A basic framework for an EPZ policy regime was in place in the Dominican Republic, Jamaica, and Thailand prior to the Bank projects. Five free zones existed in Colombia at the time of the

Box 1 Experience with operational aspects of export processing zones

Buildings — mainly standard factory buildings — constitute 75 to 80 percent of industrial estate construction costs of EPZs in Caribbean Basin countries with good physical trade infrastructure and general-purpose public utility facilities. There and elsewhere EPZ construction costs generally exclude construction of economywide trade infrastructure (seaport and airport facilities, roads, and communication facilities) and utilities outside the EPZ and its access roads. Indeed, these facilities are critical for expanding industrial exports both inside and outside EPZs.

Successful EPZs are usually within 20 to 25 miles or an hour's drive of both a major international airport and a major port, and they are conveniently accessible by good roads. Successful EPZs are located in major metropolitan areas that offer abundant low-cost labor, reasonably good infrastructure, and a wide range of services useful to EPZ firms. Also important are adequate medical and school facilities and reasonably pleasant living conditions and housing for managers and their families. Zones located in backward regions with the intention of accelerating their development have yielded poor returns, as have zones in small cities far from major centers of activity. When a poorly located EPZ has required construction of much new physical infrastructure, such as dams for electric power and even houses, new community development costs have been exorbitant.

Along with an appropriate site on slightly sloping or level terrain with good drainage above solid ground, EPZs must provide utilities (electricity, water and sewage, telephone and fax communications, with at least two or three lines per plant), access roads, standard factory buildings for rent, sites for investors who prefer to lease land and build their own plants, and auxiliary facilities ranging from administrative and service buildings to a bus stop, parking spaces, and a high fence around the developed part of the zone. Getting telephone lines is no small accomplishment in many developing economies, where applicants must typically wait several years for such a line.

Phased construction in response to demand for space has been a key to the success of EPZs. Many early EPZs overbuilt their facilities ahead of demand, encountered low occupancy rates, and never recovered the costs. There is also a size range that seems to yield best results, from no smaller than 15 hectares to around 200 hectares, although the Tanjung Priok zone in Jakarta has 11,000 garment workers on only 10 hectares. Services are yet another key to EPZ success. Well-managed zones provide the services that firms in the zone need most, including sanitation, waste disposal, and maintenance of various kinds. A zone is likely to include many other service facilities, such as fire fighting, banking and postal facilities, job referral, catering, day-care centers, training institutions, and standard business services. Usually the zone management stands ready to assist firms in their dealings with public authorities, public utilities, and businesses and service suppliers outside the zone.

The zone management and its services and business sense are crucial, but so are the energy, skill, and resources used to promote the zone to prospective investors. Unless suitable investors can be attracted, the rest goes for nothing.

The most frequent sources of EPZ failure stemming from the industrial estate side have been poor site selection (including trying to create zones far from major cities and in economies with a severely unfavorable business environment, serious political instability, or poor physical infrastructure); unsatisfactory management; and inadequate promotion campaigns.

Cartagena project in 1978, but there was no EPZ policy regime. Instituting such a policy regime was not one of the Bank's loan conditions at the time — Colombia's present EPZ law was enacted in 1985. This was one of several factors that delayed foreign direct investment in the zone — twelve of the foreign firms that were in the zone in 1989 came only after the EPZ law was enacted. For the Kenya EPZ project (1990), the Bank required an EPZ policy framework as a condition of the loan, and Kenya enacted EPZ legislation in 1990. In the last decade, a satisfactory legal framework has existed before the Bank has approved loans for EPZ projects.

A basic premise of the Bank's advice on export and import policy reforms is that export and general import liberalization should reinforce each other. Much of the impetus for further import liberalization comes from the confidence — and foreign exchange — acquired from exporting. In turn, import liberalization makes export industries more competitive with import-substitution industries at home and with other countries' exports in the world market. In practice, the Bank also emphasizes establishing and improving economywide duty-free import systems. Since 1981 there have been at least forty-three loans and credits in thirty-three countries for structural adjustment, trade policy, export development, and the industrial sector that have included components for reforming economywide duty-free import systems. In each of the five countries with Bank Group-supported EPZ projects, at least one lending operation has supported reform of at least one economywide duty-free system, and the Bank has also supported general import liberalization

in at least twelve projects in those five countries. The December 1990 EPZ project for Kenya, for example, required reforms in both the economywide duty-free import system and general import liberalization. Working closely with the IMF, the Bank has also sought to create realistic exchange rates and stable, sound macroeconomic policies. (See box 2 for a discussion of cross-country experience with the policy aspects of EPZs.)

Box 2 Experience with policy aspects of export processing zones

Speedy and reliable access to imported inputs at low cost appears to be the most critical element for increasing the ability of firms to get required inputs on time to meet delivery deadlines and to reduce waiting time and inventory costs, which can be a significant part of total production costs. Thus, rapid, low-cost customs clearance for imported inputs and exports is a must. Restriction-free and tax-free import of capital goods and spare parts is also crucial. Beyond that is the need for a clear foreign investment policy regime that permits 100 percent foreign ownership and guarantees the repatriation of profits and the prompt payment of liabilities in foreign exchange.

In the zone, property rights must be clearly defined and reliably guaranteed, and regulatory interventions and controls should be minimal, to avoid costly or unreasonable delays by regulatory authorities. The right to hire and fire workers at low transaction costs is particularly important. Transactions between firms in the zone should be left virtually unregulated. To attract industries such as electronics, where equipment is costly and technological change is swift, it is essential to allow new equipment to be exported as well as imported, at any time, free of taxes and restrictions. Other requirements include a liberalized foreign exchange regime for exporters; unrestricted travel for managers and technical personnel; application forms and procedures for investors that are not unduly complex and demanding; speedy responses to investment applications; and extension of free trade status to EPZ estate development and management, so that construction equipment and materials, transport equipment, and the like can be imported duty-free.

Key causes of failure or poor performance on the policy side have been the tardy formulation of required policies, an overregulated and rigid regulatory environment, and inappropriate laws and regulations affecting EPZs—rigid, time-consuming, and irksome customs procedures are a case in point.

3

Global experience with export processing zones

Benefits, costs, and performance indicators

An EPZ can bring both direct benefits in the form of foreign exchange earnings, employment, and income, and spillover benefits, in the form of learning and imitation by local firms, training, and on-the-job experience, which can lead to technology and skill acquisition by local employees and growing interest in the economy by foreign investors and buyers. Positive effects can also be created by backward links, as a result of exacting demands for infrastructure and services and sometimes for local inputs and processing by firms outside the zone. An EPZ may also have a positive spillover effect through learning by government officials about the needs of investors and the administration of simplified regulations. There is also usually a positive effect on poverty, since most of the jobs created go to people from poor households. Experience around the world suggests that a successful EPZ remains active and continues to yield direct benefits for more than twenty years, while the spillover benefits are concentrated mainly in the first decade.

The rate of return or net benefit, if any, depends on how the benefit compares with the cost, particularly the cost to the public sector, but also to the private firms involved. Evaluating costs and benefits from an economic perspective requires attaching suitable values to the benefits as well as the costs, taking into account the opportunity costs of the resources involved.[12] It is very difficult to get a good measure of the spillover benefits, however.

There have been few detailed cost-benefit studies of EPZs. The best known are summarized in a recent study in the *World Bank Research Observer* (Warr 1989).[13] Even though spillover benefits were not taken into account, the study found rates of return in Malaysia's Penang zones and in Indonesia's Tanjung Priok zone that are nearly as high as those in Korea's Masan zone. It found negative returns in the Philippines' Bataan zone.

No formal attempt at a cost-benefit assessment is made here because detailed information is not available for most zones. Enough information is often available, however, on direct employment, the number of firms or factories operating in the zone, or other details to provide a rough indication of success in some zones.[14] A crucial point about EPZ performance is that EPZs that fail to achieve a high occupancy rate do not generate enough direct or spillover benefits to justify their construction and development. EPZs with largely empty facilities after ten or fifteen years of operation must be counted as failures. Exceptionally high initial costs and a continuing need for subsidies are another sign of failure, even if employment is high.

Successes and failures around the world

About sixty of the eighty-six zones in twenty-seven economies have been operating long enough to permit tentative judgments about their success. Based on such rough criteria, twenty-five of these zones appear to be predominantly successful (including several that are clearly outstanding), an-

other ten come close, seven are partly successful, and eighteen are clearly unsuccessful. Most of the unsuccessful ones date from the 1970s, when economies were experimenting with this instrument — mistakes have been fewer and smaller with the more recent zones.[15]

Success. Almost all the successful EPZs are in the Asia region (eighteen of them) or in the Dominican Republic and Jamaica, where at least six appear predominantly successful, six are on the verge of success, and the others are new. Elsewhere, there is only one other clear-cut EPZ success (a small private zone at Cartago in Costa Rica), three zones that are partly successful, and as many as fourteen that are unsuccessful. The twenty-seven zones in these other parts of the world employed only 25,000 people in 1990, or less than 1,000 per EPZ; comparable figures for Asia are 10,500 and for the Dominican Republic and Jamaica, about 6,000 (see appendix).

Two zones rated poorly despite generally good employment performance: Kandla in India, which requires constant subsidies (because of high transport costs) and artificial pricing of output (exported mainly in barter trade with the USSR), and Bataan in the Philippines, which had enormous infrastructure and other construction costs because of its inappropriate location.[16] Most zones that are considered partly successful have achieved only a partial occupancy rate, and most of the unsuccessful zones have remained virtually unoccupied. Using EPZs to promote development in backward regions has generally led to very poor results.

An issue that has yet to be properly faced is when and how to phase out EPZs that have outlived their usefulness. EPZs have not been closed down or phased out anywhere so far, and this rigidity is a cause for concern since the land might well be more valuable in other uses.

Employment. Employment in EPZs in developing economies reached about 530,000 people in 1990 (see appendix for details by economy).[17] Of this labor force, roughly 71 percent is in Asia, 21 percent in the Dominican Republic, 7 percent elsewhere in Latin America and the Caribbean, and 1 percent in the rest of the developing world. Worldwide employment in EPZs has trended upward: in 1978 it was around 220,000, and by 1986 it had risen to about 374,000. EPZ employment growth during the last five years has been strongest in the Caribbean Basin region. In Costa Rica EPZ employment grew fivefold between 1986 and 1990; in the Dominican Republic, it tripled; and in Jamaica, it roughly doubled. Three of the five EPZs that employ 30,000 or more are in Asia (the largest has over 45,000), and the others are in the Dominican Republic.

Exports. Most of the developing economies' manufactured exports, which totaled $258 billion in 1988, came from firms that enjoy free trade status through duty-exemption or duty-drawback systems, with in-bond systems third and EPZs fourth.[18] The exports from fenced-in EPZs in 1988 were $11 billion to $13 billion, or 4 to 5 percent of the total.[19] In 1989 they were somewhat higher. About 80 percent of EPZ exports were from Malaysia, Korea, and Taiwan (China). (Table A.2 in the appendix shows the value of EPZ exports for some developing economies in recent years. No dependable data seem to be available on Malaysia's EPZ exports in recent years.)

In 1989 exports per worker in most EPZs ranged from about $5,500 to about $10,000; the Dominican Republic, for example, exported goods worth about $6,200 per worker. Zones in which foreign-owned electronics firms had a strong presence achieved much higher export value per worker: probably well over $30,000 in Malaysia, $50,500 in Taiwan (China), $67,800 in Korea, and over $40,000 (rising to $72,000 in 1990) in the Philippines' Baguio City zone.

Value added and net earnings from exports. Value added in EPZs is commonly around 25 percent or slightly less, particularly where zones import almost all their material inputs. Exceptions include Taiwan (China), at over 45 percent, and the Masan zone in Korea, at 51 percent (including about 23 percent from locally made material inputs — about one-third of the inputs used — and over 3 percent from processing by firms outside the zone).

Of the 25 percent or so of value added in a zone, typically at least half is labor costs; some of the rest is payments for rent, utilities, transport, services, and goods inside the country; and some goes to the owners and their creditors (including equipment suppliers) abroad. Thus net foreign exchange earnings for a country from the exports of a foreign-owned EPZ plant may be as low as 15 to 20 percent of the value of the exports. These shares are, however, probably at least as large as the earnings in world prices from a country's export

manufacturing outside EPZs; indeed, true margins almost certainly tend to be narrower outside EPZs wherever incentives and prices are seriously distorted.

Industries attracted and foreign investment. EPZs concentrate their exports and employment in a few labor-intensive industries, with two main patterns. In the first pattern, electronics predominates, as in Korea, Malaysia, Taiwan (China), and certain zones elsewhere. Other precision industries are usually present as well, while garments account for about 10 to 15 percent of employment. In the second pattern, garment manufacturing predominates, as in most of the zones in Bangladesh, the Dominican Republic, Indonesia, Jamaica, and Sri Lanka.

Foreign-owned firms and their joint ventures predominate in most EPZs. Domestically owned firms are also at work in almost all EPZs—in India and Indonesia they outnumber foreign and jointly owned firms. Nationals often play a substantial managerial role in foreign-owned firms. In garments, footwear, and other simple industries, foreign investment these days comes mainly from Hong Kong, Korea, and Taiwan (China), while in electronics it comes mainly from the United States and Japan.

Performance of public and private EPZs. All Asian EPZs are public,[20] and they are among the most successful EPZs. Public management seems to have worked well in Asia because the EPZs have been managed flexibly, akin to private businesses, with profit-making as an objective, and because most of the zone administrators have learned from each other, starting from the experience of the well-managed zones in Taiwan (China).[21] The low cost of labor in these economies at the time the zones were developed also helped. Outside Asia the performance of public EPZs has been disappointing, although public zones in the Dominican Republic and Jamaica are generally adequate for the needs of foreign and domestic garment firms.

EPZs in the Americas are increasingly being created through private ownership, development, and management.[22] Since government salaries tend to be low and government agencies inflexible and severely constrained in matters of fees, contracts, hiring, salaries, other personnel matters, and organization, the privately managed firms enjoy an advantage. A private EPZ development firm generally does not expect subsidies or exceptional assistance from the government. It takes all risks, bears the costs, and tackles the problems. These features are often viewed as attractive by governments struggling with shortages of funds and administrators.

Exchange rates and macroeconomic stability. Success in developing EPZs has been definitely correlated with realistic exchange rates and stable macroeconomic policies. Five of the nine Asian economies with EPZs — Indonesia, Korea, Malaysia, Taiwan (China), and Thailand—have maintained fully realistic exchange rates. Their average inflation rates for 1980-88 ranged from 1.3 percent (Malaysia) to 8.5 percent (Indonesia). In the other four economies inflation rates ranged from 7.4 percent in India to 15.6 percent in the Philippines. In the Americas the leading EPZ economies exhibit less macroeconomic stability. In the Dominican Republic, the main success story in the Americas, inflation averaged 16.8 percent for 1980-88. Jamaica, with 18.7 percent, and Costa Rica, with 26.9 percent, have also begun to realize some success, thanks mainly to duty-free access to the U.S. market under various incentive programs for the Caribbean economies, including the favorable allocation of garment quotas.

4

Concerns about export processing zones

Employment effects and labor legislation

Employment of 530,000 people in EPZs in developing economies is small in relation to their total labor force. But in particular settings the impact of EPZs on the surrounding labor market has been dramatic, reducing unemployment sharply, not only through direct creation of jobs but also through demand for services and construction. In those settings, the effects on income, growth, and economic activity have been equally dramatic, not least through their foreign exchange earnings.

Wages in the zones tend to be equal to or higher than wages for comparable jobs outside the zones and higher than the opportunity cost of most of those employed. Working conditions in EPZs tend to be distinctly better than those outside the zones. Safety and health conditions in EPZs are generally better than the conditions in plants outside EPZs in the same economies, partly because the EPZ plants are cleaner, better lighted, better ventilated, and more spacious. In simpler industries, such as garments, with inexpensive capital equipment, most EPZ plants work only one shift. However, some EPZ plants, particularly in electronics, work three shifts and others two, so that many EPZ workers are obliged to keep unconventional hours.

Most EPZ workers are covered by the same labor laws as non-EPZ workers. Unions exist in only a few EPZs, and in several economies EPZ workers are not completely free in their labor union activities.[23] Since EPZs are implicitly fiercely competitive, distortions of wages are rare and wage increases seldom accelerate beyond productivity increases unless exchange rates become overvalued.

Women make up at least three-fourths of the labor force in most EPZs and two-thirds in the Dominican Republic.[24] Women usually hold most of the semiskilled jobs, while men are in most of the skilled and management positions. The women in the EPZ labor force tend to be young, typically 16 to 25 years old, and most leave within a few years to marry and raise children.

Impacts on economywide trade reforms

The influence of EPZs on economywide trade reforms is especially difficult to establish since there is no way to arrive at convincing estimates of what would have happened without EPZs. Much of the controversy springs from competing views of political processes and thus cannot be resolved by factual evidence on actual events and export results. However, it is fairly clear that because of an EPZ's enclave character and special features, a favorable export performance is discounted more readily than are similar attainments outside an EPZ. If an EPZ fails conspicuously, the reasons are often widely recognized and it typically is only one of many failures. But its poor results can sometimes contribute to skepticism about the feasibility of outward-looking policies and manufactured exports. If an EPZ succeeds, the increase in exports will tend to facilitate trade policy improvements, but it can also facilitate muddling through a difficult situation without reforming trade policies.

Adherents of the view that EPZs have a negative impact on economywide trade policy reform typically cite the Dominican Republic as a case in point. But what would have happened there without EPZs is by no means clear (EPZ exports are now about 35 percent of total exports). Jamaica's EPZ success is too recent to have had much policy impact even though EPZs now account for about 20 percent of Jamaica's exports. Indeed, EPZ success in the Caribbean and Central American countries is a recent phenomenon, brought about largely by easy access to the U.S. market. Such access, coupled with U.S. private sector development assistance and World Bank operations and advice, promises to have a positive policy effect in most of the region. This positive influence probably will extend to the Dominican Republic as well — it has already agreed to some significant trade liberalization.

For Mexico's maquiladoras, there are conflicting views in and out of Mexico on their influence on trade policy. They may well have had a negative effect on policy during past eras of high protection, since Mexican officials could claim that they already had this special program to expand exports, making reduced protection unnecessary. But Mexico's trade policies turned around dramatically in recent years, and maquiladora experience seems to have influenced some of the new policies, particularly those toward exports. The policies, in turn, accelerated expansion of the maquiladoras.

That EPZ successes have had a significant positive impact on trade policy is plausible and fairly persuasive in the case of certain Asian economies, especially Malaysia, Sri Lanka, and Taiwan (China) (see boxes A.1-A.3 in the appendix). In other Asian economies, including Korea (see box A.4), EPZs' export share is 3 percent at most, so a strong impact on trade policy would hardly be expected. It is also noteworthy that several of the successful economies in Asia have chosen the EPZ as a policy instrument not so much to get exports started as to accelerate and diversify manufactured export growth.

As that observation suggests, EPZs tend to be established at two quite different stages in the development of manufactured exports. In some economies, EPZs are created early in the development process to initiate entry into the world market, based mainly on foreign direct investment. In Malaysia and Sri Lanka the country's leadership was already eager to be convinced that this part of an outward-oriented development strategy would succeed. In the Dominican Republic and Jamaica, among other places, the idea was to augment exports without necessarily reforming the economywide policy orientation.

In the other sequence, EPZs are established only after manufactured exports have made considerable headway. EPZs are seen as one more instrument to use in export-oriented industrial development. This was certainly the case in Korea and Taiwan (China), where EPZs were used above all to attract foreign investment in selected industries. Thailand has introduced EPZs late and on a small scale. The Philippines always saw EPZs as only one part of a broader export development effort.

Though they are different in scale and character from EPZs, the special economic zones in the People's Republic of China share several characteristics with EPZs that help illustrate the potential learning effect from enclave manufacturing. As firms and local officials strive for exports, they learn what is required and how to implement it. On a strict cost-benefit calculation, the high investments in these special zones may have had rather modest measurable yields — and leakage of inputs and illegal exports to the rest of China have made the zones a worrisome experiment. But the zones have had an important demonstration effect on the positive effects of policy reform, which may be extended to other parts of China. They have been a vehicle for cultural change and outside influence as well. On a greatly reduced scale, something like this can happen with EPZs in a small economy.

EPZs should be evaluated not only by their static contribution to foreign exchange earnings and employment but also by their dynamic contribution to continuing policy reforms. The administrative capability and industrial skills acquired, and the demonstration of the feasibility of an outward-oriented development strategy, can give an economy confidence to extend an equivalent policy regime to exporters outside the EPZ. Furthermore, increased foreign exchange earnings and employment through successful EPZ operation can provide an impetus for import liberalization and deregulation in the domestic market. Therefore, the EPZ may play an important role in the dynamic sequencing of policy reforms in some developing economies. The importance of the EPZ as a policy instrument can be expected to diminish over time, however, as an economy uses other

instruments more extensively and as it moves closer to economywide free trade regimes and minimally regulated market mechanisms, though its value as an industrial estate may remain.

Discrimination and distortions

Regulatory control is extensive in more than a few developing economies, to the point where some firms and economic activities are discriminated against and incentives are often distorted. Creating an EPZ moves export manufacturing out of this regulatory environment and into a business setting nearly free of such effects. Compared with firms outside, EPZ firms enjoy special advantages, such as less regulation and red tape, duty-free imports for use in export production, and sometimes better tax incentives. But firms in the zone generally have to export 100 percent or close to 100 percent of their output, and most local import-substitution firms have advantages over all exporters, even those in EPZs, in terms of positive effective protection rates for their products. The EPZ tries to put its firms on an equal footing with international competitors who enjoy free trade status in a good business environment with little regulation. Thus, local firms are discriminated against not by the existence of the EPZ but by the distortions and excessive regulation in the local economy. Local exporters outside the EPZs need free trade treatment and a liberal regulatory environment too, and the sooner the better.

Tax incentives and foreign direct investment

Besides duty-free and restriction-free imports of equipment and inputs, foreign firms in EPZs typically are allowed unrestricted repatriation of their capital and profits and the right to keep and manage foreign currency. In addition, developing economies generally compete for investors by trying to attract them with tax holidays.[25]

Differences among tax packages have only a small influence on foreign investment in EPZs, however. Practical concerns, such as the general business environment, have greater impact.[26] What foreign investors are mainly looking for are predictable low taxes and no unreasonable demands by the tax authorities. The practical impact of tax breaks depends on tax laws in the investor's home country. Tax authorities often grant credits for taxes that firms pay abroad, so reducing the tax rate below the rate in the firm's home country will not be an incentive and may well imply a net transfer from the host economy treasury to the home economy treasury. However, some capital-exporting economies have bilateral tax-sparing agreements specifying that any taxes spared or exempted in the host economy will be treated in the home economy as if they had been paid in the host economy; in this case, tax holiday benefits do accrue to the firm.

To the extent that host governments provide special tax incentives to investors in EPZs, they discriminate against firms outside the zones. Such discrimination may be justified for a limited period during an economy's early export development. The incentives may attract foreign investment and collaborative business ventures that would reject alternative locations. Any loss of revenue to the treasury would have to be weighed against the benefits from exports and from foreign investment in terms of outward supply response, employment, and foreign exchange. However, it is difficult to convince developing economies not to compete with each other in giving excessive tax relief to foreign investors.

Backward links

Except in rather advanced developing economies that have succeeded in their outward-oriented strategies, such as Korea and Taiwan (China), significant backward links from exports rarely develop in EPZs.[27]

An enclave is typically necessary to insulate EPZ firms from high costs, poor quality materials, and the defects of the poor economywide policy environment. The East Asian economies gradually developed backward links as they extended equal-footing policies to firms outside EPZs and developed the capacity to produce competitive indirect export items. They achieved this by attracting investment in world-class plants at internationally competitive scale to make intermediate goods. A number of developing economies provide the same incentives and rewards to suppliers of inputs to EPZs as they extend to direct exporters. These suppliers are indirect exporters, and developing these links is one of the reasons why parallel or follow-up policy measures to support free trade status for indirect exporters, both inside and outside EPZs, are so important.[28] By extending an EPZ-like policy regime to indirect exporters and facilitating their supplying of EPZs, Malaysia is attracting East Asian and Japanese firms

into component industries and creating significant backward links from its EPZ exports. By contrast, there have been almost no backward links from the Dominican Republic's EPZ exports, in part because of the government's failure to implement equal-footing export policies outside the EPZs or to develop a strategy to foster backward links.[29]

Transfer of technology and skills

In a relatively simple industry with no proprietary technology, such as garments and footwear, technology transfer takes place readily both inside and outside EPZs. The transfer is from foreign technicians and managers working together on factory floors, from foreign buyers to local firms, and through consultants, movement of employees, visits to plants abroad, and so forth. But in industries such as electronic components, with internationally challenging, fast-changing, and largely proprietary technology, transfer of technology to developing economies is resisted by established firms. In any case, firms in most developing economies are not capable of mounting a competitive challenge without a lot of help. In industries such as these, there is general agreement that the direct transfer of product and process technology from EPZs has been very small.

Firms in EPZs may transfer some technology and give technical assistance to local suppliers as they develop backward links. For example, Malaysian machine shops that worked regularly for semiconductor EPZ companies developed a wide range of new skills as a result (Lester 1982).[30] In Korea, 286 of the 525 firms outside the Masan zone that were outprocessing for firms in the zone were themselves in electronic and electrical industries and 76 were in metals industries. Often to guarantee quality, technological instruction is transferred to the outprocessing firms from the resident foreign firms (Cho 1990, pp. 30-31). However, as noted, these backward links are the exception.

The most important technology transfer effects of EPZs occur through the movement of people trained in foreign and joint venture firms in the zone and through learning by locally owned firms there. Careful micro studies have concluded that the only feasible way to acquire export skills at an early stage of a country's development is through on-the-job training and learning-by-doing — not at training centers, in formal courses, or from written materials. A study on the Dominican Republic EPZs confirms that the EPZs contribute significantly to workers' technical production and factory management skills even though the acquisition of broader management capability or marketing skills is very slow (Rhee, Katterbach, and White 1990). Technicians and managers who have acquired the ability to compete in the world market can carry this expertise to the rest of the economy.[31] To foster such mobility and make it more productive, the environment for businesses outside of EPZs must be rationalized as well, through deregulation and import liberalization (for healthy competition) and industrial restructuring (for efficient production). When the business environment outside the zones is not attractive, technology transfer effects tend not to be fruitful or to contribute much to the local economy.

Environmental effects

EPZs rarely house industries that are responsible for serious air or water pollution, and there is no evidence that firms in EPZs are exempted from national environmental regulations. However, electronics and certain other activities, such as furniture making, use chemicals that pose environmental hazards if not disposed of properly. Operating such activities in industrial estates makes environmental protection more cost-effective for three reasons. First, there are scale economies in treating hazardous waste. Firms in many EPZs realize these by jointly contracting for waste disposal services, as in developed economies. Second, manufacturers in industrial estates often have more cost-effective options for recycling or remarketing industrial byproducts than those available to isolated plants. Finally, the average cost of emissions monitoring is lower in concentrated sites, such as the industrial estates of EPZs. Growing interest in cost-effective environmental measures in developing economies is thus likely to lead to greater use of industrial estates. Thus, if an environmental problem exists in a particular economy, it relates to the economy's overall policies and resources and not to its policies on EPZs.[32]

5

Lessons from experience and the role of the World Bank

Contributions and limitations of export processing zones

The EPZ is the least widely used duty-free instrument in developing economies. Exports from EPZs in developing economies in 1988 totaled 4 to 5 percent of their manufactured exports, and the bulk of these EPZ exports came from relatively advanced developing economies that had built their EPZs by the early 1970s. Consistent with the small size of EPZ exports relative to total trade in developing economies, the Bank Group's aggregate EPZ project funding amounted to about one-fifth of one percent of its total lending for industry from 1975 through 1990. The Bank Group's minor role in EPZ support, compared with its support on overall trade reforms, will continue.

For EPZs begun when an economy was just starting to develop manufactured exports, the record is mixed; empirical evidence does not show many successes. Even so, when an economy lacks the administrative capability to implement duty-exemption and drawback systems effectively and lacks the capacity to enter the world market, an EPZ may be the most effective instrument for attracting foreign direct investment for export development. Indeed, an EPZ can be created considerably faster than a suitable economywide duty-free system. The EPZ's main advantage is that when it is done well, it provides a duty-free and restriction-free environment with rental factory buildings and adequate supporting infrastructure that can attract export-oriented investment, especially foreign investment. It can also have a demonstration effect as well as a facilitating role in skill acquisition and diffusion. When successful, EPZs are likely to have a positive influence on the economy's employment, balance of payments, and overall development.

But an EPZ will produce these good results only if

- The economy offers a policy environment that does not thwart private sector development — low labor costs, easy access to external markets, satisfactory business and living conditions (including political and social stability).
- Transport and communications links with the outside world are well developed, and other public utilities are adequate.
- The EPZ manages both the policy and operational aspects well, including EPZ promotion.
- The EPZ becomes part of an integrated strategy of trade and regulatory reform. That means that the government follows up with realistic exchange rates and macroeconomic stability, economywide equal-footing policies to broaden and deepen industrial development and exports, and improvements in import policies, including reduced protection and controls.

A comprehensive plan for trade infrastructure that is oriented toward growing trade with the outside world is highly desirable for ensuring that EPZ estates are well served and well located. For a developing economy without an adequate policy environment or sufficient trade infrastructure and links to world trade, an EPZ cannot provide the magic to induce foreign direct investment. And such an economy would be ill-advised to construct an EPZ. Instead, the firms in the economy should seek other forms of collaboration in export activities with foreign and

domestic firms, such as technical and marketing agreements, international subcontracting arrangements, and assistance from foreign consultants. These forms of collaboration may be easier to arrange because they do not require foreign firms to risk their equity.

Factors influencing success or failure

Experience suggests that certain policies at the macroeconomic level and policies specifically affecting EPZs are important for EPZ success. On the macroeconomic level, a realistic exchange rate and a stable macroeconomic environment are prerequisites for all manufactured exports. For policies affecting firms in the EPZ, key factors are

- A clear foreign investment policy regime (including the possibility of 100 percent foreign ownership and guaranteed profit repatriation).
- Restriction-free and duty-free access to imported inputs and capital goods.
- Rapid, low-cost customs clearance for imports and exports.
- A completely liberalized foreign exchange regime for EPZ firms' export-oriented international transactions.
- Speedy responses to uncomplicated investment applications.
- Minimal regulatory control of actions and transactions within the EPZ (including freedom to hire and fire workers at low transaction costs).
- Extension of free trade status to EPZ estate development and management.

On the industrial estate side, key factors are

- Appropriate site selection and location, generally in a major urban area, well provided with suitable low-cost labor.
- Transport (major port, good roads, international airport).
- Utilities (electricity, water, sewerage, and reliable telecommunications) and services (maintenance, security, banking).
- Good zone administration and management (including phased construction of suitable factory spaces for rent as well as complementary facilities).
- Appropriate promotional efforts (see boxes A.1 and A.2 in the appendix).

Operational failures of EPZs most frequently stem from poor site selection — economies with unfavorable business environments or poor trade infrastructure — poor management, and inadequate promotion. Another contributing influence has been excess capacity building in EPZ industrial estates, but this has become less frequent. Policy failures of EPZs include the tardy formulation of required policies, an overregulated and rigid business environment, ineffective implementation of EPZ laws and regulations, and lack of follow-up on further trade reforms.

Although fenced EPZs are easy to administer from a customs point of view, extreme care is needed to locate, develop, and manage them as industrial estates. For the most part, successful EPZs have been created either by private developers or by Asian public agencies. The need to turn a conventional EPZ into a well-managed, well-located, well-promoted industrial estate or lose the investment makes it a risky undertaking for public authorities.

The emergence of private EPZs in such countries as Costa Rica and the Dominican Republic has recently made EPZ development more attractive. The risks associated with EPZ estates largely disappear from a national point of view when private entrepreneurs take on the expense, risk, and work of locating, developing, and managing them. Private investors will not go to unpromising locations, so private development and management of EPZs is a realistic option only in developing economies that offer favorable environments for labor-intensive manufactured exports.

Countries that are serious about implementing EPZs ought to consider the advantages of private EPZ construction and management. Private EPZ developers and managers are likely to avoid the types of mistakes made elsewhere and to adopt prudent management practices for industrial estate construction and operation, stress effective implementation of EPZ policies, and carry out well-conceived EPZ promotion campaigns. Active involvement of both foreign and local investors in EPZ development and management should be encouraged. In addition, EPZ development and management activities should have access to duty-free imports of construction equipment, construction materials, transport vehicles, and the like — and to foreign exchange and finance. Public sector provision of good physical trade infrastructure is a necessary complement to this approach, but the physical trade infrastructure should be part of a larger development plan, not put in place only for the EPZ.

Any developing economy considering development of an EPZ should also weigh the benefits of an in-bond or duty-exemption system as an

alternative for firms specializing in exports. The decision to establish an EPZ should be made only as part of a well-articulated, integrated strategy of trade and regulatory policy reforms supported by exchange rate and macroeconomic policy. Key parts of the strategy should be parallel implementation of economywide duty-free import systems and programs of import reform and domestic deregulation.

Role of the World Bank

The Bank should continue to consider support for EPZs on a case-by-case basis in developing economies with abundant low-cost labor that are attempting to enter the world market for manufactured exports. The Bank should consider only economies

- Where alternatives are not feasible for attracting foreign direct investment and other types of collaboration to export activities.
- That offer or can create in and around an EPZ a rather favorable business environment.
- That offer a suitable trade infrastructure.
- That are expected to do a good job managing the policy and industrial estate aspects of the EPZ.
- Where the EPZ can be supported as part of an integrated strategy for trade and regulatory reform.

There are many developing economies with abundant low-cost labor that lack the administrative and technical capabilities to implement economywide duty-free arrangements that will attract foreign investment in export industries. But only a few of them can offer the favorable business environment and trade infrastructure that are critical for attracting foreign investors to an EPZ. In these few economies, EPZs can play an important pioneering role in initiating economies into world markets for manufactured exports and starting a process of policy reform. And that would be the leading justification for Bank support to EPZs. In economies that already have substantial and growing exports of labor-intensive manufactured products to OECD countries, the Bank should support EPZ projects in exceptional circumstances as part of a larger package of well-aimed policy measures in export development, import reform, regulatory liberalization, and macroeconomic adjustment. Lending to private EPZ developers, as in the 1989 loan to the Dominican Republic, can also be justified at this stage.

When the Bank does decide to support an EPZ, it should strongly recommend private participation in EPZ industrial estate development and management as a condition for its support. This would encourage the necessary institutional mechanisms for ensuring good location and good management of all aspects of an EPZ. It should also help to avoid creating excess capacities in EPZ estates.

For Bank financing of the construction of an EPZ industrial estate developed by the public sector, arrangements are required to ensure an appropriate policy regime, efficient management, and full recovery of development costs (including land rents) and operating costs. To help achieve this, the Bank should make sure that experts and practitioners with proven track records in the policy and operational aspects of EPZ development are given important roles in the project. Project components to fund and assist promotion and management of the EPZ may also be essential, along with conditions relating to promotion and management. Equally important, the Bank needs to incorporate flexibly phased construction scheduling into the project design and legal documents. The timing of each phase of construction should be determined by the occupancy rate and success of existing facilities, demand for space by investors, and progress in assessing and accepting applications. Finally, full cost recovery also should be among the main objectives of any public entity that develops an EPZ with Bank assistance.

The Bank's emphasis on economywide duty-free import systems, as an alternative or complement to EPZs, will continue: economywide duty-free systems are to be emphasized over specific EPZs. EPZs should be considered as just one instrument with limited applicability among a wider set of policies for export development, import reform, and regulatory liberalization. In a variety of circumstances an efficient in-bond or duty-exemption system may well be more appropriate. When the World Bank considers an EPZ project, it should ensure that the preconditions and policy orientation are in place for a successful EPZ and that the entrepreneurs understand the task. The Bank should also see that each EPZ is part of a coherent package and sequence of measures to develop manufactured exports, supported by further measures for regulatory liberalization and macroeconomic stability. The Bank, with limited supervision capabilities and little detailed know-how for making EPZs successful, should be very selective and cautious in supporting EPZ projects.

Appendix

How export processing zones in developing economies started and spread

Conventional export processing zones combine two older instruments — the industrial estate, also called the industrial park, and the free zone or free trade zone.

Industrial estates. The world's first full-fledged industrial estate was set up in 1896 as a private, commercial venture at Trafford Park in Manchester, England. What is generally regarded as the first one in the United States, the Clearing Industrial District in Chicago, Illinois, began operations in 1899. An industrial zone was established by the municipality of Naples in Italy in 1904. However, only a modest number were established prior to the late 1940s. The United States took the lead and by 1940 had thirty-three industrial parks. Another count showed fourteen planned industrial districts in 1945.

Growth became explosive in the 1950s and 1960s; by 1959 the United States had 452 planned industrial districts and, by one estimate, as many as 1,000 industrial parks. These numbers grew to 1,117 industrial districts in 1965 and 2,400 industrial parks by 1970. By comparison, the United Kingdom had 55 industrial estates in 1959, France had 230 industrial areas in 1963, and Canada had 21 industrial districts in 1965.

The first developing economy to make systematic use of publicly funded industrial parks or estates was Puerto Rico. Between 1947 and 1963, Puerto Rican authorities built 480 factories for rent, with suitable infrastructure, to help lure American manufacturing firms. Most were clustered in what amounted to over 30 industrial parks. The methods of promotion developed in Puerto Rico under the leadership of Teodoro Moscoso have had a great influence on EPZs in the Caribbean and East Asia, and on industrial estates from Mexico to Singapore.

The first public industrial estate in developing Asia was opened in Singapore in 1951. Malaysia's first estate dates from 1954; by mid-1990 Malaysia had 139 (see box A.1). India's first industrial estate started operations in 1955; by early 1966 India had completed 283 industrial estates and by 1979 the number had reached 705. Starting around 1960 the United Nations began to publish studies and hold conferences on industrial estates as an instrument of development.

Free trade zones. A free zone or free trade zone is a fenced or otherwise isolated physical area in or near a port or airport, where no customs duties are collected — the zone is considered to be outside the economy's tariff area. It can therefore be used to store goods in transit, to hold stocks of goods for distribution and delay paying import duties on them, or to avoid or reduce indirect taxation for a variety of other activities. Free zones in the sense of areas for storing goods without paying customs duty have existed in international trade for at least 2,500 years; they go back to ancient China and to the Mediterranean trade of Carthage, Greece, and Rome. A bigger version, free ports, played a central role as entrepôts in British nineteenth century

Box A.1 Malaysia's experience with export processing zones

At independence in 1963 the Federation of Malaysia was a successful primary commodity exporter with low to moderate tariffs, almost no quantitative restrictions, and leaders who believed in free trade and competition. The economy was built largely around the free ports of Singapore and Penang and had excellent infrastructure. Singapore became an industrial powerhouse and separated from Malaysia in 1965. Meanwhile, Penang's free port status effectively vanished as a result of the federation's initially mild protection of new industries. Seeing the manufacturing success of Singapore and Hong Kong and of the EPZs in Taiwan (China) and wanting to share in the bonanza in exports and employment, Penang's leaders pushed hard to set up EPZs in Malaysia. The federation promulgated a law on free trade zones in 1971 that called for zones to be developed and managed by the state governments. The most successful zones were developed by the states, Penang, Selangor (which includes Kuala Lumpur), and Melaka (Malacca). One or two of the thirteen zones created have proved unsuccessful, and three are too new to evaluate. The first zone (near Penang's Bayan Lepas airport) began exporting in 1972, followed quickly by several others. By 1975 eight zones were in operation, and others soon joined them. The EPZs in Malaysia were a success from the start because of good infrastructure and a favorable business and political environment, and the country rapidly emerged as a major exporter of semiconductors and other electronic components.

For the first fifteen years (from 1972 to 1987), however, Malaysia segregated the EPZs from the rest of the economy and ignored backward linkages. The government became more active in trying to develop new industries, raising protective tariffs and increasing their dispersion.

Duty exemptions were given only exceptionally until reforms in the late 1980s, and as in most countries, the drawback has never worked well. An in-bond system (licensed manufactured warehouses) was introduced in 1975 as an alternative to EPZs, but it had less success since the policy environment was difficult to improve outside the zones and the provisions were difficult to enforce on a decentralized basis. The system has continued to grow, however, and today 151 firms using the in-bond system employ 75,000 people — firms in free trade zones employ about 104,000.

In 1987 the country adopted a new industrial strategy in which the successful EPZs and their import requirements are to serve as poles of growth. The EPZs are to be increasingly integrated with the rest of the economy, which is to supply more of their inputs from new foreign-owned plants and joint ventures. Artificial barriers are being dismantled, and a Korean type of export-financing scheme with preshipment export finance for backward-integrated suppliers has been established as part of the strategy. Central aims are to promote foreign investment and develop internationally competitive local industries. Manufactured exports, including those from EPZs, have achieved astonishing growth within the new policy framework. EPZ exports have increased from 14 percent of the country's exports in 1982 to perhaps 24 percent in 1990.

trade, above all in Asia. Hong Kong and Singapore are still virtual free ports, while EPZs in Malaysia were set up partly to offset Penang's loss of free port status after Malaysia became independent.

The United States now has well over 140 general-purpose free trade zones and a large number of special subzones. There are also free zones in at least 20 European countries — Switzerland has the most, Spain has 22, and Yugoslavia has eight. Very few free zones in industrial countries are used as platforms for manufactured exports, though this idea is spreading. Free zones are also common in other parts of the world; for example, in 1988, among developing economies that do not have a single EPZ oriented toward manufacturing for export, Argentina had 18 free zones, Chile more than a dozen, Syria six, Paraguay five, Tanzania four, and scores of other economies had one or two.

Export processing zones. EPZs, combining aspects of both industrial estates and free trade zones, made their appearance by or before 1965 in widely separated locations. The Shannon Free Zone was set up in 1959 next to Shannon Airport in Ireland; by 1966 its employment reached nearly 4,000. In the 1950s, Spain's Barcelona free zone, dating from 1916, attracted assembly plants of two major automobile firms. At first their output was directed mainly toward the Spanish market, but the zone has become increasingly export oriented and now has 160 factories with 40,000 workers. In late 1958 an industrial and commercial free zone was authorized by law in Barranquilla, Colombia, though it was implemented slowly and did not achieve manufactured exports until 1970. In 1961 Puerto Rico created an industrial estate for petrochemicals based on the cracking of imported naptha in a free trade subzone in Guayanilla.

Three economies, poorer at the time than Ireland, Puerto Rico, or Spain, started building EPZs in 1965 — the Dominican Republic, India, and Taiwan (China). Construction of the first free zone was begun in the Dominican Republic, a private zone at La Romana that was then developed by Gulf and Western Corporation and was officially

established only in 1969. India soon inaugurated the Kandla Free Trade Zone at a small port in a backward desert area of Gujarat State. Taiwan (China) was the first to use the term "export processing zone," in its Export Processing Zone Law of January 30, 1965 (see box A.2). Goals from the start were to attract industrial investment, promote foreign trade, create jobs, and introduce modern industrial technology. The Kaohsiung EPZ was created on reclaimed land in the island's leading port and began exporting in 1966. It filled up quickly with investors, and by 1972 or 1973 employed as many as 57,000 workers. Two more EPZs were opened in 1970 and 1971. The excellent administration of the zones by the Export Processing Zone Administration seems to have influenced the administration of several other EPZs in Asia.

Also influential around the world have been Mexico's in-bond plants known as maquiladoras. The maquila program was started in 1965 through a simple exchange of letters between two members of Mexico's cabinet, allowing plants near the U.S. border to register to obtain duty-free imported inputs provided they exported their output. In 1969 Richard Campbell, entrepreneur of the Nogales industrial park in Mexico, invented the Shelter Plan, a system that reduced risk and headaches for foreign manufacturers. A simple contract covered management of everything in the firm's factory except the actual production process, all the firm's dealings in the country, and provision of all necessary services. The system has since spread widely in private EPZs in the Caribbean and Central America.

The first EPZs, especially those in Taiwan (China), were widely imitated in the early 1970s. In 1970 Mauritius passed an Export Processing Zone Law creating its own distinctive arrangements — firms specializing in exports would qualify for duty-free imported inputs, regardless of their location on the island. (The idea and the name came from Taiwan (China) and the generality of the scheme was inspired by Hong Kong and Singapore.) Another economy that stepped forward quickly was the Republic of Korea, which created the Masan Free Export Zone in 1970 and had it exporting by 1971, followed by the Iri zone in 1974-75 (see box A.3). Next came Malaysia, which launched its first zones in 1972 and followed quickly with several others, and the Philippines, which started its Bataan EPZ in 1972, then waited until 1979 to create the next two. Indonesia launched a zone in Jakarta in 1973, and India started operations in its Santa Cruz Electronic Export Processing Zone near Bombay in 1974, specializing in electronics, including computer software.

In the Americas the first conventional zones in Colombia and the Dominican Republic were followed by others there and were joined by zones in Guatemala (1971), Honduras (1972), and El Salvador (1973). Middle Eastern and African countries that tried to create EPZs before 1975 were Jordan (1973), Senegal (1974), and Liberia (1975).

Box A.2 Experience of Taiwan (China) with export processing zones

Taiwan (China) already had fast-growing manufactured exports based on sound export policies when it started its first EPZ in 1965. It had created an excellent drawback and exemption regime — known as a rebate and rebate-on-account system — in 1955 and had followed that up with exchange rate and macroeconomic policy reforms. As early as 1956, it had begun to study Puerto Rico's industrial estates. As a result of these sound export development policies, manufactured exports began to develop rapidly after 1959-60. In-bond exports were added in the mid-1960s as another option. The trade regime still had a vast array of hidden and open quantitative import controls, however, as well as generally high tariffs, and the regulatory regime was still too restrictive and complex to appeal to investors from developed economies. The EPZ project in the early 1960s was developed and sold as a way to attract desirable foreign investment and accelerate export growth. Four primary purposes of an EPZ were: (1) a show window to attract investment in export-oriented industries; (2) a guide for simplifying procedures outside the EPZ; (3) a foundation for a science industrial park such as the one Taiwan (China) created in 1980; and (4) a teaching institution, promoting international cooperation. The Kaohsiung EPZ was an instant success, and by late 1970, four years after it shipped out its first exports, it had 162 firms and about 40,000 workers. Also by then a second EPZ had been inaugurated, and a third was nearing completion. EPZ exports never constituted much more than 8 percent of total exports (6 percent today), and contributed some of the earliest foreign investment from developed economies to the development of technically demanding industries.

Taiwan (China) went on to achieve phenomenal export successes, including a remarkable diversification away from garments. In the 1970s it began to liberalize its policies, and in the 1980s it undertook a dramatic and sweeping liberalization of its imports. Confidence and know-how acquired from the EPZs seem to have contributed significantly to these achievements and to a convergence of the policy environment inside and outside the zones.

Box A.3 Korea's experience with export processing zones

Korea established two EPZs in the early 1970s, Masan (1970) and Iri (1974), to attract foreign investment to export activities. Under an outward-oriented development strategy beginning in the early 1960s, its exports increased from less than $100 million in 1963 to $1 billion in 1970. Still, the country was not sure in the early 1970s whether it could become a major export manufacturing economy without a major inflow of foreign direct investment in selected export activities. Nor was it sure whether economywide duty-free import systems would be effective in attracting foreign investment unless EPZs were established. Korea was committed to using all available policy instruments, including EPZs, and all disposable resources (including foreign loans and direct investment) for its outward-oriented development strategy.

The two EPZs attracted foreign investors. Within two to three years, about a hundred foreign and joint venture enterprises (mostly from Japan) were in operation in the EPZs, with exports of $175 million. Exports grew at an average annual rate of 41 percent between 1975 and the mid-1980s, close to the national export growth rate of 46 percent per year. Total manufacturing exports from EPZs amounted to $890 million in 1985, representing 2.9 percent of Korea's total manufacturing exports. The low share of EPZ exports in total Korean exports indicates that parallel instruments have been equally effective. Indeed, most of Korea's exports have come from industrial estates other than the EPZs. In 1986 employment in the EPZs, at close to 36,000 people, was less than 1 percent of Korea's total manufacturing employment. As of 1990 over 90 percent of Korea's exports were based on duty exemption or duty drawback and 8 percent on the in-bond system, including the 3 percent from EPZs. The other 1 percent were in special categories, such as exports for re-import.

EPZ estate construction and operation costs were more than fully recovered through the contribution of EPZs and foreign investment to Korea's export expansion in the 1970s. The EPZs also have been effective in facilitating local firms' interaction with foreign investors, in updating foreign know-how, and in expanding market access. (The majority of foreign investors in the 1970s were in the EPZs.) The contribution of local resources to export expansion has also been impressive, and far exceeded the expectations of policymakers, who had underestimated the production and managerial skills of Korean workers and managers. Such skills had been acquired during the Japanese colonial period and through U.S. military contacts from 1945 to 1960. Because of this local export production know-how and management capability (which most developing economies lack), Korea was able to rely mainly on foreign trading companies for external market links and foreign loans for financial resources. This helped it become a dominant competitor in the international market for light manufactured exports in the 1960s and 1970s.

Setbacks and disappointments in many of these programs in the 1970s did not prevent others from being launched in Jamaica (1976), Nicaragua (1976), Costa Rica (1977), Sri Lanka (1978; see box A.4), Bangladesh (1980), Thailand (1981), Cyprus (1982), and Pakistan (1983). EPZs were also started in high-income economies in the United Arab Emirates at Dubai (1979) and in the Bahamas (1980). More recently EPZs have been created in Brazil, Bulgaria, Kenya, St. Lucia, Togo, and Trinidad and Tobago.

Fenced zones worldwide

Table A.1 summarizes recent information on the number of EPZs and their employment for conventional fenced zones in developing economies in each of the World Bank's four geographical regions. The table does not count intended EPZs that did not attract manufacturing for export, including zones in such economies as Ecuador, Western Samoa, and Zaire, nor zones that have ceased to function such as Las Mercedes in Nicaragua; other areas excluded because of the narrow definition used here are listed in the note to the table. Table A.2 gives information on the value of EPZ exports in leading economies and zones. Table A.3 gives the names or locations of individual zones and their employment, the number of firms or plants, and the dates when the zones were established.

New zones under development. EPZs are now under development in several economies not shown in the tables, such as Bolivia, Cameroon, and Turkey, and are planned in others, for example, Madagascar. The new zone in Togo is the most promising in Sub-Saharan Africa.

Employment, number, and size of fenced zones. There are now about eighty-six fenced zones in twenty-seven economies. Employment totaled 530,000 in 1990, compared to about 374,000 in 1986 and 220,000 for the zones that existed in 1978. The economies with the largest employment in EPZs are the Dominican Republic, Malaysia, and Taiwan (China), followed by Sri Lanka. Seven of the eight leaders are in Asia.

The six largest individual EPZs in developing economies have over 30,000 workers each. Two are in the Dominican Republic and the rest are in Asia, one each in Indonesia, Malaysia, Sri Lanka,

and Taiwan (China).[33] The other eighty fenced zones average nearly 4,000 workers each. Those in Asia, minus the four biggest, average about 7,500; those in the Caribbean, minus the two biggest, about 3,000; and those in Central and South America, about 1,500. In the Bank's European and Middle Eastern region the average is less than 1,000, and zones in Sub-Saharan Africa average fewer than 500.

Box A.4 Sri Lanka's experience with export processing zones

Up to the 1950s open trade policies helped Sri Lanka become one of the highest-income economies in Asia. But then the country shifted to inward-looking import-substitution policies and constructed a semi-socialist economy with a state-dominated industrial sector, pervasive nontariff barriers, and high tariffs. Living standards fell as exports declined. In 1977 a new government, seeking to emulate successes in East and Southeast Asia, began a series of reforms designed to reduce the dominance of the public sector and shift the economy to a mixed market system with outward-looking policies and an emphasis on manufactured exports.

One key move in the initial sequence of reforms was the creation of the Katunayake zone in 1978. The new EPZ quickly proved a success in attracting firms in simple, light manufacturing, principally garments. A widely scattered garment industry had already begun exporting on a small scale, and the creation of the zone near the airport temporarily concentrated activity there, attracting firms with larger-scale operations from Hong Kong and elsewhere in East Asia that were escaping quotas in their home economies. These firms lured local skilled cutters and other garment workers away from Sri Lankan firms. However, as Sri Lanka developed other duty-free regimes — first a fixed drawback, then an in-bond system for garments — firms spread outside the EPZ; today, most of the country's garment exports originate outside the zone. The success of these manufactured exports was a major factor influencing the import reform in the 1980s that brought tariffs to modest levels and eliminated quantitative import restrictions. Active efforts were also made to further improve export incentives and policies. A second EPZ was established in 1984, and today the two EPZs employ over 56,000 people and supply about 20 percent of the country's exports.

Table A.1 Employment in export processing zones by region and economy, 1990

Region and economy	Number of EPZs in operation	Employment 1990	Employment 1990 Starnberg Institute
Asia			
Bangladesh	1	9,061 (early 1991)	7,000
India	6	20,750 (end of 1989)	30,000
Indonesia	3		50,000
Korea, Republic of	2	23,224	20,300
Malaysia	12	104,000 (1989)	98,900
Philippines	4	34,609	35,400
Sri Lanka	2	56,128	55,000
Taiwan (China)	3	68,196	70,700
Thailand	3		12,000
Subtotal	36	377,968[a]	379,300
Latin America and the Caribbean			
Brazil	1		
Colombia	6		7,000
Costa Rica	5		6,000
Dominican Republic	19	112,000 (end of 1989)	115,000
El Salvador	1		3,500
Guatemala	2		
Honduras	2		3,000
Jamaica	3		15,000
St. Lucia	1		1,500
Trinidad and Tobago	1		400
Subtotal	41	148,400[a]	151,400
Europe, the Middle East, and North Africa			
Bulgaria	1		
Cyprus	1		
Jordan	1		
Pakistan	1		2,000
Subtotal	4	2,000[a]	2,000
Sub-Saharan Africa			
Kenya	1		
Liberia	1		
Senegal	1		1,200
Togo	1		
Subtotal	4	1,200[a]	1,200
World total	86	529,568[a]	533,900

Note: Blank space represents unavailable data. Excluded from the table because of the narrow definition used here, but counted as EPZs by the Starnberg Institute or others, are (1) industrial estates with in-bond or special duty-exemption arrangements in Barbados, Egypt, Grenada, Haiti, Tonga, and St. Vincent; (2) factories with in-bond or duty-exemption arrangements in Belize, Fiji, Ghana, Guatemala, Mauritius, Mexico, Montserrat, St. Kitts, and Tunisia; (3) free zones primarily for services and warehousing in Morocco, Panama, and Uruguay; (4) zones processing imported inputs but selling primarily to the domestic market in Brazil (Manaus) and Chile — Egypt's industrial estates may also belong here; (5) China's special economic zones; (6) manufacturing

anywhere in the territory of Macau, which is a free port; (7) EPZs in high-income economies — Bahamas, Puerto Rico, and United Arab Emirates; and (8) in other high-income economies, industrial estates in the virtual free ports of Hong Kong and Singapore, all manufacturing in Bahrain and Puerto Rico, and zones primarily for services and warehousing in the Netherlands Antilles (Aruba and Curaçao).

a. These totals are based on Starnberg Institute data wherever an official total is not in hand.

Source: Official: *Bangladesh*, World Bank mission in April 1991. *Dominican Republic*, Investment Promotion Council, and Dauhajre, Riley, Mena, and Guerrero (1989). *India*, Ministry of Commerce. *Indonesia*, Ministry of Trade. *Korea*, Masan Free Export Zone Administration, and a booklet, *Masan Free Export Zone, Facts and Figures: MAFEZ*. *Malaysia*, Malaysian Industrial Development Authority and preliminary sample survey data from the Institute of Strategic and International Studies, Kuala Lumpur; these appear much too low from other indications, which suggest exports greater than Taiwan's (China). *Philippines*, Export Processing Zones Authority, and 1990 report in draft by COWI consultant to Philippine Department of Trade and Industry. *Sri Lanka*, Director, Investments. *Taiwan (China)*, Export Processing Zones Administration. The Starnberg Institute of Starnberg, Germany, updated estimates for this study.

Table A.2 Value of exports from export processing zones by economy and individual zone, 1986-90
(millions of current U.S. dollars)

Economy and zone	*1986*	*1987*	*1988*	*1989*	*1990*
Taiwan (China)	2,403	3,174	3,766	3,907	3,525
Kaohsiung	949	1,244	1,356	1,336	1,026
Nantze	1,010	1,400	1,773	1,919	1,921
Taichung	443	530	637	651	578
Malaysia	(1,578)	(1,712)	(1,792)	(1,834)	
Korea			1,917	1,806	1,533
Masan	1,033	1,399	1,769	1,667	1,405
Iri			147	140	127
Dominican Republic	246	325	517	692	
Philippines	278	397	431	444	580
Bataan	58	65	71	80	94
Baguio City	143	215	223	206	252
Mactan	77	116	134	143	185
Cavite		1	3	15	49
India[a]	283	253	356		
Kandla[a]	186	140	187		
Santa Cruz Electronic	81	83	128		
NOIDA	6	12	15		
Madras	8	14	17		
Falta	3	1	6		
Cochin	1	3	4		
Sri Lanka			257	282	291
Katunayake			240	249	230
Biyagama			17	33	61
Indonesia	41	91	147	222	
Cakung		9	63	117	
Tanjung Priok	41	83	85	106	

Note: Blank space represents unavailable data. In the Dominican Republic in 1987, 34.3 percent of the foreign exchange generated by EPZs came from the zone at San Pedro de Macoris, 31.0 percent from Santiago, 23.2 percent from La Romana, 7.0 percent from Itabo/San Cristóbal, and 4.5 percent from other zones (Dauhajre and others 1989, foldout table p. 179).

a. The value of India's EPZ exports, particularly those from Kandla, is greatly overstated because of artificial pricing of exports to the USSR and elsewhere in bilateral trade.

Source: Taiwan (China), Export Processing Zones Administration. *Malaysia*, Malaysian Industrial Development Authority and preliminary sample survey data from the Institute of Strategic and International Studies, Kuala Lumpur; these appear much too low from other indications, which suggest exports greater than Taiwan's (China). *Korea*, Masan Free Export Zone Administration, and a booklet, *Masan Free Export Zone, Facts and Figures: MAFEZ. Dominican Republic*, Investment Promotion Council, and Dauhajre, Riley, Mena, and Guerrero (1989). *Philippines*, Export Processing Zones Authority, and 1990 report in draft by COWI consultant to Philippine Department of Trade and Industry. *India*, Ministry of Commerce. *Sri Lanka*, Director, Investments. *Indonesia*, Ministry of Trade.

Table A.3 Employment and number of plants or firms in export processing zones, by region and economy

Region and economy (state)	*Zone (when established or constructed)*	*Date*	*Employment*	*Number of firms*
Asia				
Bangladesh	Chittagong (1980)	1986	4,500	
	(2nd nearing completion at Dhaka)	early 1991	9,061	37
India	Cochin (1982-87)	end 1989	400	15
	Falta (1982-86) (near Calcutta)	end 1989	250	9
	Kandla (1965-66)	1978	1,400	39
		1980-81	4,000	54
		1983	8,510	
		1984	7,800	98
		1985-86	8,510	
		end 1989	10,000	112
	Madras (1982-86)	end 1989	800	41
	NOIDA (1982-86) (near Delhi)	end 1989	800	41
	Santa Cruz Electronics (1971-74)	1978	1,700	15
	(SEEPZ) (near Bombay)	1981-82	2,500	
		1984-85	8,000	
		1986	7,800	
		end 1989	8,500	89
Indonesia	Batam (1975-82) (island 20 km from Singapore)	1989 (negligible in industry; mainly commerce and services)		
	Cakung (1985-86) (in Jakarta)	1897	6,418	61
		1988	12,015	80
		1989	25,165	103
	Tanjung Priok (1973) (in Jakarta port)	1982	7,736	18
		1986	11,394	14
		1988	11,286	14
		1989	13,019	15
Korea, Republic of	Iri (1974-75) (on west coast)	1977	2,300	
		1984	4,000	18
		1988	4,071	25
		1990	3,608	25
	Masan (1970-71)	1975	20,950	100
		1979	31,153	94
		1983	30,989	83
		1987	36,411	75
		1990	19,616	72
Malaysia				
Johore (Johor)	Senai (1977)	(no reliable information)		
	(30 km from Johor Bahru)	1990 (land largely allocated)		
Malacca	Bata Berendam (1972-73)	1978	5,600	6
(Melaka)	(5 km from Melaka Town)	1983		9
		1990	(fully occupied)	
	Tanjong Kling (1972-75)	1978	about 1,000	3
	(13 km from Melaka Town)	1983		4
		1990	(fully occupied)	(only 7 ha)
Pahang	Kuantan Port (1990) (on east coast)	1990	(three-fifths leased)	

Table A.3 continued

Region and economy (state)	*Zone (when established or constructed)*	*Date*	*Employment*	*Number of firms*
Penang	Bayan Lepas (1971-72)	1978	22,700	26
	(near Penang airport)	1983		36
		end 1988	38,075	49
	Prai (1973) (5 km from Butterworth)	1978	30,977	8
		1983		11
		end 1988	9,348	17
	Prai Wharf (1973)	1978	2,851	1
	(5 km from Butterworth)	end 1988	1,596	1
	Pulau Jerejak (1975) (island)	1978	150	1
		end 1988	72	1
Perak	Jelapang II (1986-89) (3 km from Ipoh)	1990		12
		(area almost all allocated)		
	Kinta (1990 or 1991) (10 km from Ipoh)	1990	(no occupancy yet)	
Selangor	Sungei Way (1971-75)	1978	9,244	12
	(near Kuala Lumpur airport)	1983		16
		1990	(fully occupied)	
	Telok Panglima Garang (1975)	1978	over 1,581	2
	(10 km from Klang port)	1983		3, all Japanese
		1990	(fully occupied)	
	Ulu Klang (1972-73) (13 km from Klang)	1978	8,548	5
		1983		6
		1990	(fully occupied)	
Philippines	Baguio City (1979)	1980	637	
		1983	1,466	
		1986	3,583	
		1989	5,114	11
		1990	3,489	12
	Bataan (1972)	1975	8,177	
		1978	17,307	44
		1980	20,788	
		1986	16,554	
		1988	16,228	34
		1990	13,631	29
	Cavite (1980-86) (40 km from Manila)	1988	322	9
		1989	3,294	14
		1990	5,811	35
		early 1991	8,689	55
	Mactan (1979) (14 km from Cebu)	1980	1,185	
		1986	3,528	
		1988	5,389	16
		1990	11,678	35
Sri Lanka	Biyagama (1981-84) (near Colombo)	1988	4,686	11
		1990	11,032	23
	Katunayake (1977-78)	Feb. 1979	5,250	
	(at Colombo airport)	1981	14,740	35
		1984		65
		1988	41,042	69

Table A.3 continued

Region and economy (state)	*Zone (when established or constructed)*	*Date*	*Employment*	*Number of firms*
		1990	45,096	65
Taiwan (China)	Kaohsiung (1965-66) (in port)	1969	27,881	161
		1973	53,306	151
		1978	41,885	127
		1984	39,304	113
		1987	37,078	
		March 1991	21,640	84
	Nantze (1969-70) (in Kaohsiung)	1973	14,116	96
		1978	20,425	95
		1984	28,769	112
		1988	38,525	
		March 1991	32,759	100
	Taichung (1969-71)	1973	8,135	43
		1978	15,079	45
		1984	15,302	46
		1988	14,576	
		March 1991	11,538	43
Thailand	Banpoo (late 1980s) (near Bangkok)			
	Lam Phon (late 1980s) (near Chieng Mai)			
	Lat Krabang (1978-81)	1984	500	8
		1988	5,000	
		1990	9,500	
Latin America and the Caribbean				
(excludes high-income economies: Bahamas and Puerto Rico)				
Brazil	Suape (1988) (at Recife)			
	(9 others being developed in Northeast)			
Colombia	Barranquilla (1964-71)	1975	2,231	28
		1978	2,230	26
		1981	3,900	57
		1985	2, 511	53
		1987	3,658	38
	Buenaventura (1973)	(negligible)		
	(island in Pacific port)			
	Cartagena (1978-82)	1984	75	4
		1989	716	19
	Cucutá (1972)	1983	204	2
	Palmaseca (1974) (at Cali airport)	1977	529	74
		1983	625	
		1984		13
	Santa Marta (1974)	1978	none	
		1984		5
Costa Rica	Alajuela[a] (c. 1988)			
	Cartago[a] (mid-1980s)	1989	3,000	
	Metropolitana[a] (c. 1989-90)			
	Moin (1977-81) (small port, east coast)	1982		3
	Santa Rosa/El Roble (early 1980s)			
	(near Puntarenas, west coast)			
	(2 others under construction)			

Table A.3 continued

Region and economy (state)	Zone (when established or constructed)	Date	Employment	Number of firms
Dominican Republic	Baní[b] (1986)	1986	440	3
		1988	1,256	5
		1990	4,000	10
	Barahona (1989)	1990	900	4
	Bonao (1988)	1988	769	3
		1990	2,000	9
	Chemtec[b] (1989)	1988	265	4
	(New San Pedro de Macorís)	1990	700	5
	Esperanza[a] (1988)	1988	150	1
		1990	800	5
	Hainamosa[a] (1989)	1988	50	1
		1990	1,260	4
	Itabo/San Cristóbal[a] (1986)	1986	287	2
		1988	2,000	10
		1990	4,000	13
	La Romana[a] (1965-69)	1978	6,400	18
		1983	3,500	
		1986	11,478	21
		1990	12,646	21
	La Romana II[a] (1987)	1990	3,000	12
	La Vega (1987)	1987	800	4
		1988	2,800	14
		1990	4,800	26
	Las Américas[a] (1988)	1990	500	5
	Moca (1988)	1990	800	9
	Puerto Plata[b] (1983)	1986	1,200	10
		1988	1,898	11
		1990	3,000	13
	San Francisco de Macorís (1989)	1986		1
		1988	443	7
		1990	2,800	11
	San Isidro (1986)			
	San Pedro de Macorís (1973)	1978	4,000	17
		1986	16,826	68
		1988	25,500	78
		1990	34,600	80
	Santiago[b] (1974)	1978	4,000	20
		1983	7,995	
		1986	18,000	53
		1988	30,000	58
		1990	35,000	64
	Villa Altagracia (1988)	1988	600	1
		1990	800	5
	Villa Mella[a] (1988)	1988	100	2
	(6 more under construction)	1990	400	2
		1990	106	2
El Salvador	San Bartolo (1973-74)	1975	6,143	

Table A.3 continued

Region and economy (state)	*Zone (when established or constructed)*	*Date*	*Employment*	*Number of firms*
		1978	2,940	8
		1983	2,900	9
		1986	2,100	
		1988	3,000	
		1990	3,500	
Guatemala	Zolic/Santo Tómas de Castilla (1972)	1978	none	
	(small port)	1984		3
		1987	400	
	Zeta-La Unión[a] (c. 1989)			
	(within 40 km of Guatemala City)			
	(3 other private zones being developed)			
Honduras	Puerto Cortés (1972-78)	1978	1,500	1
		1986	2,600	
		1987	3,000	
		1990	3,000	
	Villanueva near San Pedro Sula (1980s)			
	(7 private zones being created)			
Jamaica	Kingston (1976-80)	1978		3
		1982	875	14
		1985	5,085	17
		1987	10,500	20
		1989	7,441	
	Montego Bay (1984-85)	1987	1,500	
		1989	2,100	8
		(another source says 4,000)		
	Garmex[a] (mid-1980s) (in Kingston)	1989	5,500	
	(4 more private zones being developed)			
St. Lucia	Vieux Fort	1986	1,000	
		1987	1,800	
		1990	1,500	
Trinidad and Tobago	Point Lisas	1990	400	
	(3 more being developed)			
Europe, the Middle East, and North Africa	(excludes high-income economy: United Arab Emirates)			
Bulgaria	Rousse (c. 1989-90)			
Cyprus	Larnaca (1982-83)	1984		1
Jordan	Aqaba (1973)	1978	600.	
Pakistan	Karachi (1983-84)	1984	400	3
		1986	1,500	
		1988	1,000	
Sub-Saharan Africa				
Kenya	Sameer Industrial Park			
	(made EPZ in 1990; near Nairobi airport)			
Liberia	Monrovia (1975-76)	1983	none	
		1986	700	
		1989	15	
Senegal	Dakar (1974-76)	1975	150	

Table A.3 continued

Region and economy (state)	Zone (when established or constructed)	Date	Employment	Number of firms
		1978		4
		1984	337	6
		1986	1,200	
		1988	600	
Togo	Lomé (late 1980s)	1990		6

a. Private.

b. Public-private or private nonprofit.

Note: Blank space represents unavailable data.

Source: Those in tables A.1 and A.2 plus the following: Currie 1979 (for most data shown for 1977, 1978, or 1979), and Currie 1985 (for much of the data for 1982, 1983, and 1984); Rhee, Katterbach, and White 1990, annex II, table 1, p. 63 (for Dominican Republic, 1990); Business International Corporation 1989 (for Central America, recent); Kumar 1989 (for India, 1980-86); Ratnayake 1982 (for Sri Lanka, 1981); Lewis 1990 (for Jamaica, 1989); *Caribbean Business*, October 22, 1987 (for St. Lucia, 1987); Malaysian Industrial Development Authority, an unpublished recent document on industrial estates (for Malaysia, new zones and physical locations); Ministerio de Desarrollo Económico 1988; Kreye, Heinrichs, and Fröbel (Starnberg Institute) 1987 (1975); and KBN at Cakung (for Indonesia, 1989).

Endnotes

1. Examples are improving exporters' access to preshipment export finance for working capital and term loans for export-oriented investment; giving exporters automatic access to (controlled) foreign exchange not only for imported inputs but also for services and marketing expenses abroad; giving them access, even outside EPZs, to capital goods free of restrictions, tariffs, and indirect taxes; offering them cost-sharing grants for the use of foreign consultants and other service suppliers to improve their export performance; and exempting firms that export more than specified shares of their output from a wide variety of regulatory restrictions and laws so as to give them greater flexibility.

2. There are also arrangements that combine free trade zone elements and an industrial estate in somewhat different ways: zones specializing mainly in services; zones manufacturing primarily for the domestic market; China's special economic zones, which are in populated urban areas and are much larger than EPZs, with their own industrial zones and complex trade regimes; industrial estates in which exporting firms enjoy free trade treatment based on alternative administrative instruments; and so on. Such arrangements are sometimes also called EPZs. (See note to table A.1 in the appendix for a more complete list of these arrangements by economy.)

3. These documentary checks normally rely on physical input-output coefficients of the manufactured goods in those particular factories. Physical checks are used in Korea, Taiwan (China), and elsewhere in electronic component industries such as semiconductors, where physical input-output coefficients are especially difficult to specify and customs officers cannot easily determine what has been done to the product.

4. Mexico's maquiladoras employed 434,147 people in 1,886 plants in September 1990, and their exports totaled $12.495 billion in 1989. Mauritius's 560 unfenced export processing zone firms employed 90,211 people in mid-1990, and their exports totaled $0.6 billion in 1989. Fiji, following a similar approach, began to establish tax-free factories in 1988, which now employ 23,950 people. About two-thirds of Mexico's maquiladora exports come from industrial estates, most of them privately owned and managed, which have much in common with EPZs.

5. In 1979 China designated four populated areas on the southeastern coast as "special economic zones." These zones, which were allowed many exemptions from central and provincial economic policies, were viewed as an instrument to attract skills, technology, and foreign capital into China and to generate foreign exchange through exporting. Three of the initial zones — Shenzhen, Zhuhai, and Shantou — are in Guangdong province; the fourth — Xiamen — is in Fujian province. Shenzhen, right next to Hong Kong, now has nearly 2 million people; and Zhuhai,

next to Macau and Canton, is almost as developed. Hainan Island, off Guangdong in the south, was made a separate province and a fifth special economic zone in 1988. The zones have been allowed to operate under a so-called "open policy" that gives them greater autonomy in planning and managing foreign trade. In general, these zones have a much greater degree of independence than the rest of China in many policy areas, including fiscal responsibilities to the central government and the determination of wage and price policies. On the nonpolicy side, considerable resources have been invested in infrastructure and factory construction in the zones.

6. In many developing economies, a firm, unless it is extremely well known, creditworthy, and unlikely to vanish, may be required to supply a bank guarantee covering all or part of its duty, interest, and penalty for unauthorized use of the imported inputs should it fail to achieve the corresponding exports within the time allowed.

7. Particularly effective duty-exemption and drawback schemes have been implemented in Korea and Taiwan (China).

8. Use of realistic input-output coefficients is all the more important because GATT rules on export subsidies forbid excessive exemptions or rebates that provide better than free trade status. The annex to Article 9 of the Subsidy Code of the GATT, an "Illustrative List of Export Subsidies," includes "the remission or drawback of import charges in excess of those levied on imported goods that are *physically incorporated* (making normal allowance for waste) in the export product" as one element of export subsidies.

9. The World Bank also supported improvements in the EPZ policy regimes in six countries through industrial sector or structural adjustment loans in Bangladesh (1987), the Philippines (1989), Senegal (1990), Thailand (1983), Turkey (1981), and Uruguay (1989) without directly financing any EPZ estate development beyond the Lat Krabant Project in Thailand. Five of these were loan conditions, while the project in the Philippines contained a technical assistance component to rationalize that country's EPZ program. In Thailand, Turkey, and Uruguay, loan conditions provided for either the passage of an EPZ law and regulations for the establishment of EPZs or — in the case of Thailand — continuing implementation of an EPZ program. In Bangladesh and Senegal, where EPZs already existed but suffered from policy deficiencies, loan conditions in each case provided for policy amendments and streamlining of the EPZ administration. However, loan conditions such as these often reflect measures the government has decided to undertake in any event.

10. Of Colombia's six EPZs, three others have been worse failures. Total EPZ employment in the country was higher in 1975 than the few thousand employed today, and much of it was in natural-resource-based or domestic-market-oriented industries, which are rarely found in export-oriented zones.

11. The amount of rental floor space created has exceeded the projection by 59 percent; this is one reason for the crowding, although only 52 percent of the developed area is under roofs.

12. Costs include public expenditures in zone development and subsidies that affect the profitability of zone operations, such as expenditures against government budgets, artificially low charges on infrastructure services, and excessive tax holidays. The value in alternate uses of the land in an EPZ should also be considered.

13. Warr's earlier study on Malaysia's EPZs also found high returns from EPZs in two other states (Malacca and Selangor).

14. This typically includes lists of the firms or factories, their industries and nationalities, and the zone's location, physical area, and roofed space. Information is available less regularly on occupancy, space not yet leased, zone exports, initial development costs, and the zone's problems.

15. Not counted is one EPZ that started but lost all its investors (in Nicaragua) and some others that never attracted any investors (notably would-be EPZs in Ecuador, Western Samoa, and Zaire).

16. The other EPZs in the Philippines have been quite successful.

17. The Starnberg Institute in Germany counts so many other arrangements as EPZs, including several in what the Bank considers high-income

countries, that it calculates EPZ employment totals at 1,499,704 in 1986 and 2,551,200 in 1990. Note in table A.1 of the appendix gives a full list of arrangements sometimes counted as EPZs that are excluded here.

18. Well over $2 billion in manufactured exports came from the territory of Macau, a virtual free port. Manufactured exports domestically produced in Hong Kong and Singapore (totaling $44 billion in 1988) also came from virtual free ports, but because of their incomes the Bank now classifies them as high-income economies.

19. Over 85 percent of these exports came from zones that were built between 1965 and 1975.

20. The Philippines extends the status of "special export processing zones" to three or more private industrial complexes that process petroleum, copper, or other minerals, and to one joint Japanese-Philippine private shipbuilding venture at Subic Bay, but these appear too specialized to count here.

21. The first of three there began to export in 1966, and the third in 1971; see the appendix.

22. The results have been positive thus far in Costa Rica and the Dominican Republic, and private zones are spreading now to other economies, such as Guatemala, Honduras, and Jamaica. Kenya is the only economy in the Africa region that has a private EPZ.

23. Particularly serious obstacles to collective bargaining are found in the Dominican Republic and Sri Lanka, where labor organizers are prevented from entering EPZs. Pakistan bans strikes in the EPZ, and Bangladesh suspended union activities in its EPZ in 1985. Korea restricted the right to form unions and bargain collectively in its two EPZs until 1987 and reimposed restrictions in 1989 by declaring EPZ firms "public interest companies." India's EPZs have been declared public utilities, so strikes and work stoppages are allowed only after mandatory reconciliation procedures (U.S. Department of Labor 1990, pp. 6-7 and *passim).* Mauritius has active unions that have pushed wages higher in recent years, and in northeastern Mexico most maquiladoras are now unionized.

24. At the beginning of the 1980s the proportion of women in the EPZ work force ranged from 74 percent in the Philippines to 88 percent in Sri Lanka. Women made up 75 percent of the EPZ work force in Korea, 80 percent in Taiwan (China) and India, and 85 percent in Malaysia. However, a 1985 survey of EPZ employment in the Dominican Republic showed that women constituted only 68 percent of the work force. The women's share in the labor force has been declining sharply in Mauritius's unfenced export processing zone (to 66 percent in 1988) and in Mexico's maquiladoras (to about 56 percent in 1989). Evidently, in key regions of the last two economies the pool of suitable women workers is already employed to the point where firms are hiring young men instead.

25. In a few economies the tax exemptions appear unduly sweeping: Honduras offers "federal, state, local income, sales, and corporate tax exemption in perpetuity," and Jamaica offers "income, profit tax exemption in perpetuity, local, sales, and property tax exemption." *Business Latin America* (November 13, 1989), table on pp. 358-59.

26. However, seeking early coordination between source and host countries on tax-sparing agreements for foreign direct investment is desirable to ensure the full impact of tax incentives as an investment inducement.

27. A few EPZs use domestically produced raw materials extensively. In Indonesia about half the inputs for the EPZs are locally produced, mostly simple items such as textiles, wood, rattan, and latex rubber. More typical is a share near zero, apart from demands for services and infrastructure, which are often significant.

28. To illustrate, a local synthetic-fiber fabric weaving mill cannot compete with a foreign supplier of fabric to EPZ garment makers if it is not allowed to import the necessary yarn or fiber duty-free.

29. Offshore assembly tariff and rule-of-origin provisions in developed countries that encourage use of their inputs, as well as existing international sourcing arrangements by multinational firms, may also make the development of backward linkages difficult. The 1989 World Bank EPZ project for the Dominican Republic includes a technical

assistance component to support measures to foster backward linkages by instituting a suitable export policy regime for indirect exporters.

30. Lester's study was based on interviews with firms involved.

31. A 1982 survey in Malaysia queried 308 managers, supervisors, and technicians who had resigned from multinational semiconductor firms in EPZs. Over half the 109 respondents were working outside the industry, most in the private sector. Former managers and technicians typically were still using skills acquired in the EPZ jobs (Lester 1982).

32. Currently a lot of attention in the United States is focused on environmental issues in Mexico, particularly in its border areas and maquila industry. Because of its size and rapid growth, there is no doubt that this industry has led to increased pollution. There is no evidence, however, that the maquila industry is more polluting for its size than comparable industry in Mexico; the contrary is almost certainly true, since assembly and processing of imported inputs usually involve rather clean processes.

33. The EPZ with the highest employment level is Katunayake, Sri Lanka (45,096 in 1990), followed by Bayan Lepas, Malaysia (38,075 at the end of 1988), Santiago, Chile (35,000 in 1990), San Pedro de Macorís, Dominican Republic (34,600 in 1990), Nantze, Taiwan (China) (33,508 in 1990), and Cakung, Indonesia (may have been over 30,000 by 1990). Kaohsiung, Taiwan (China) was down to 23,091 on average in 1990, compared with 53,316 at the end of 1973, 40,552 in 1981, and 33,712 in 1988. Masan, Republic of Korea, was down to 19,616 in 1990, compared with 33,080 in 1988.

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