Manufactured Exports, Export Platforms, and Economic Growth[1]

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August 1999

[1] My thanks to Mumtaz Hussain for his usual excellent research assistance. This paper draws from a series of background studies (listed in the bibliography) conducted for this project by Staci Warden (Mexico and the Dominican Republic); Lisa Cook (Tunisia and Ghana); Graham Glenday and David Ndii (Kenya); Nipon Poapongsakorn, Panjamaporn Santanaprasit and Nipa Srianant (Thailand); Kong Weng Ho and Hian Teck Hoon (Singapore); and an earlier study on export processing zones in Central America by Mauricio Jenkins, Gerardo Esquivel, and Felipe Larraín B. I am grateful for the hard work of all of these contributors and for comments on an earlier draft of this paper from Orest Koropecky, Michael Shea, and participants at a USAID seminar on March 3, 1999. All opinions and errors are my own.

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1. Introduction

During the last thirty years, success in manufactured exports has been nearly synonymous with rapid economic development. With only a few exceptions, the countries that have achieved the most rapid gains in income per capita have also recorded the fastest growth in manufactured exports. The best known examples are the East Asian countries in which incomes grew by between four-fold (in Southeast Asia) and seven-fold (in the four tigers) on the back of labor-intensive manufactured exports. Outside of East Asia, Mauritius, Ireland, and Tunisia have all achieved both rapid manufactured export growth and rapid economic growth over sustained periods.

A great deal has been written about the advantages of export-led growth, and the possible connections between exports and growth. There is widespread consensus that manufactured exports accelerate economic growth and technological progress by fostering closer connections with international firms using leading-edge technologies, encouraging economic specialization, promoting high rates of investment into profitable economic activities, and providing foreign exchange to finance imports of capital goods which cannot be produced locally. There is also widespread agreement on at least some of the basic policies and preconditions needed to encourage growth in manufactured exports, including prudent macroeconomic policies (e.g., small budget deficits, appropriate exchange rates, and low inflation), access to duty-free imports of capital goods and raw materials, political stability, and a basic level of reliable infrastructure.

However, there has been far less analysis of the institutions that have been at the heart of export-led growth in developing countries. An important but little-recognized fact is that all of the successful developing country manufactured exporters during the last thirty years established and relied heavily on some form of export platform institution to facilitate growth in manufactured exports. These institutions included bonded warehouses, export processing zones,

special economic zones, and duty exemption or drawback systems. The vast majority of East Asia's manufactured exports were produced using one or a combination of these facilities. The same is true in Tunisia, Mauritius, and other successful manufactured exporters.

The basic idea behind an export platform is to create an enclave in which the problems of poor trade policies, weak infrastructure, and inconsistent rule of law that plague the rest of the economy are at least partially eliminated so that firms can become more competitive and more fully integrated into the global economy. These facilities typically attract producers of labor intensive manufactured products with a high import content. They give exporters access to duty-free imports of capital and intermediate goods, and usually provide special administrative procedures, especially to expedite customs clearance. In some countries, tax holidays are also offered to producers that use these facilities. Many countries, including Korea, Taiwan, Malaysia, Thailand, and Indonesia have introduced more than one facility so that exporters can choose the facility best suited to their needs. For some firms, low duties (through duty drawback systems) and predictable customs administration are sufficient; others prefer an EPZ with more reliable infrastructure.

The fact that export platforms have been used extensively by all the successful manufactured exporters does not mean that platforms have always been successful wherever they have been tried. In fact, their performance record is far from perfect. Export platform facilities in Egypt, Columbia, Kenya, Senegal, and several other countries have achieved relatively little success. The Dominican Republic has had export processing zones in place for years, but only recently has the country recorded rapid export and economic growth. Even in some countries where platforms have been relatively successful, there are few direct linkages between domestic suppliers and manufactured exporters. Some early theoretical work concluded that export processing zones could reduce, rather than increase, a country's welfare; more recent studies have reached the opposite conclusion. This range of experiences and theory suggests a need to better understand the rationale for export platforms, the extent of possible benefits, their inherent limitations, and the reasons why they have been effective in some settings.

This paper examines the experiences of export platforms in several developing countries that produce manufactured exports. It explores cases of both successful and unsuccessful export platforms in an attempt to decipher some of the characteristics that distinguish the most effective strategies to support manufactured exports. The next section of the paper explores some of the channels through which manufactured exports support sustained growth. Section three briefly reviews some of the basic policies that are understood to be preconditions for rapid export growth, including macroeconomic stability, initial trade liberalization, and the development of basic infrastructure. Section four describes various export platforms that have been used in developing countries, and the reasons why these institutions are a necessary complement to other reform policies, at least during a transition phase. The following section describes what seem to be the key characteristics that distinguish export platforms in the more successful exporting countries. Section six examines some of the most common criticisms made about export platforms, including the dearth of backward linkages in some countries and the idea that countries that follow this strategy will become stuck in low wage, low skill jobs. The final section offers some conclusions.

The paper is based primarily on a series of in-depth country case carried out in late 1998 and early 1999 in Mexico, the Dominican Republic, Tunisia, Kenya, Ghana, Thailand, and Singapore. These studies are complemented by previous studies on several Central American countries, Malaysia, Mauritius, the Philippines, and several other countries. In the previous literature, most early studies focussed exclusively on one type of export platform (usually export processing zones).[1] This study attempts to take a wider look at the different kinds of export platforms used in different countries.

Asia's extraordinary record of rapid economic growth and development, including its outward orientation and trade strategy, has been called into question by the Asian financial crisis. At a minimum, the crisis should make us pause and reflect on the process of globalization, and perhaps reassess both the potential gains and the possible hazards of integrating with global

[1] Hill (1994) and Falvey and Gemmel (1990) are exceptions in that they take a broader view of export facilities.

markets. To what extent was the crisis the result of Asia's development strategy, in particular the focus on openness to trade and the development of manufactured exports? It is hard to make a strong direct link between openness to *trade* and the crisis. Several Asian economies with a long history of success in manufactured exports were *not* victims of the crisis, including Singapore, Taiwan, Hong Kong, and China. Openness to trade was not the key characteristic separating the crisis and non-crisis countries (Radelet and Sachs, 1998a). Instead, the evidence suggests that the crisis countries (in Asia and elsewhere) were characterized by recently liberalized and weak financial systems, large amounts of short-term foreign debt, and a rapid expansion of bank credit to the private sector. At a broader level, much of the debate on the relationships between globalization and recent financial crises in emerging markets has been far too general, treating globalization as a singular process rather than a multi-faceted phenomena. There are many aspects to globalization, involving flows of trade, investment, finance, information, and technology. The recent financial crises in emerging markets are surely cautionary tales in the process of liberalization and globalization of *financial* markets, suggesting the need for a slower liberalization and opening process that allows the necessary supporting institutions to develop. Although trade and finance cannot be completely separated, these crises do *not* seem to undermine the basic case for manufactured exports. As Jagdish Bhagwati has pointed out, trade in widgets and trade in dollars are not the same (Bhagwati, 1998). With this caution in mind, we proceed to examine the relationships between manufactured exports, export platforms, and economic growth.

2. Manufactured Exports and Economic Growth

For at least a decade, there has been growing recognition of the links between success in manufactured exports and rapid economic growth. At the most basic level, this recognition comes from the fact that almost all developing countries that have recorded rapid growth in manufactured exports have also experienced rapid economic growth, and *vice-versa*. For example, Table 1 shows the 15 low and middle income countries (i.e., with per capita income

measured in purchasing power parity terms of $7,000 or less in 1970) with the strongest performance in manufactured exports from 1970 to 1996. The table shows the growth rate of non-primary based manufactured exports (i.e., excluding manufactured products like diamonds and plywood that are dependent mainly on natural resource endowments) in terms of its contribution to GDP.[2] The top twelve performers (with the exception of Hungary, which was exporting primarily to other East block countries prior to the dissolution of the Soviet Union) all recorded growth rates in per capita income of 3.3% or more over the 26-year period. All 15 countries recorded per capita growth averaging 2.1% per year or more.

At a more sophisticated level, a large and growing body of empirical research has consistently found strong positive linkages between more open trade policies, manufactured exports, and economic growth (Frankel and Roemer, 1999; Sachs and Warner, 1995; Radelet, Sachs, and Lee, 1997; World Bank, 1993, Dollar, 1992). The main points of debate are the magnitude of the relationships, the measurement of trade openness policies, the precise channels through which the relationship operates, and the direction of causality between exports and growth, rather than whether the basic relationship between exports and growth is positive or negative.[3] Most economists have concluded that openness to international trade and strong export growth have been significant contributors to rapid economic growth. It is probably true that the causality to some extent runs both ways in a virtuous circle: rapid export growth facilitates the acquisition of capital goods and technology transfer that drives economic growth, and rapid growth provides the means to finance investment in physical and human capital that supports more rapid export growth.

What are the channels through which manufactured export growth contributes to sustained economic growth?[4] One obvious answer is that exports provide the foreign exchange

[2] By taking the growth rate weighted by the share of non-primary exports in GDP in the previous year, we avoid the statistical problem that countries with small amounts of manufactured exports can record very high growth rates, and those with larger manufactured exports tend to record smaller growth rates.

[3] For a skeptical view on the trade/growth literature, see Rodriguez and Rodrik (1999) and Harrison and Hanson (1999).

[4] This section draws from Radelet, Sachs, and Lee (1997).

necessary to pay for imported raw materials and investment capital goods. One of the great ironies of import substitution is that even though the strategy is designed to save on imports, the vast majority of countries that followed this strategy eventually ran into balance of payments problems because they could not generate the foreign exchange earnings necessary to pay for the raw materials and capital goods they so desperately needed. By contrast, exporters are better able to pay for a range of imported goods, including capital goods.

Second, exporters of manufactured products can specialize their production to a far greater degree than is possible under import substitution. Developing country exporters can join in global production and distribution systems, even for very sophisticated products, based on their comparative advantage in labor-intensive operations. Malaysia provides a good example. Malaysia was able to build and develop its electronics sector starting in the early 1970s, even though it had no particular skill in electronic production at the outset. U.S. manufacturers moved the most labor-intensive parts of their production process there. Even though Malaysia could not design or produce computer chips, it was able to assemble and, later, test them, both labor-intensive operations. When Intel invested in Malaysia in 1972, the country was quickly brought into a world-class production system that drew on its comparative advantage.

Third, manufactured exports allow firms to sell to a much larger market than under import substitution, were market size is limited to the size of the domestic economy. A typical pattern under import substitution is that an initial period of rapid growth is followed by much slower expansion. One reason for this pattern is the simple limits of the domestic market. This is a particular concern for smaller emerging markets.

Fourth, a strategy of manufactured exports fosters technological progress. Rapid growth in manufacturing exports requires close links with multinational firms that provide intermediate inputs, technology, capital goods, and export markets. These linkages provide a powerful means through which firms can “learn by doing.” There is no realistic chance of this occurring if a country is cut off from world markets through severe restrictions on trade and capital flows. No country can generate all the sophisticated capital goods and technology needed for high-quality

investment projects by itself. Again, consider Malaysia. It now produces much more sophisticated electronics products than it did in the early 1970s, because Malaysian workers and managers have become more skilled at various aspects of the production chain and because Malaysian firms have access to the latest technology available on world markets. As a result, wages for workers in the manufacturing sector have grown rapidly over several decades.

From an early stage, East and Southeast Asian firms gained access to new technology by importing most of their machinery and equipment abroad. For example, in 1970, capital goods imports accounted for about 50 percent of total investment in East and South East Asia, compared to 17 percent in South Asia, and about 35 percent in Latin America and sub-Saharan Africa. These imports of capital goods were an important conduit for bringing new technologies into the region.

The key to facilitating imported capital goods and the accompanying technology was to ensure that they could be imported quickly and easily without the extra costs incurred by tariff and quota protection. *Although several East Asian countries went through a moderate phase of import substitution for consumer goods, they did not attempt to provide protection for domestic producers of capital goods.* Tariff and quota protection on imported capital goods was essentially zero in Korea, Taiwan, and Hong Kong in the early 1960s, and in Singapore by the late 1960s. The same is true for the non-Asian countries that have been successful manufactured exporters, such as Mauritius and Tunisia -- there are few restrictions on imported capital goods for exporters. These policies play at least two important roles: they reduce production costs, and they facilitate the acquisition of new technologies. Even today in Korea - which produces more capital-intensive exports than any other Asian country except Japan - these exports are chemicals, ships, and automobiles, not machinery. For example, between 1991 and 1994, imported capital goods accounted for 73 percent of all equipment investment in Korea (IMF, 1994). This indicates the country's continued heavy reliance on imported foreign technology in the production process. The key feature of "openness" for these and other successful exporters, then, has not been universally low tariffs or quotas on all imports, or even low variability of tariff

rates. Rather, the key has been low (usually zero) tariff and quota protection on *capital goods and raw materials used for exports* (Radelet, Sachs, and Lee, 1997). Some of these countries also lowered tariff barriers for consumer goods, and although this is important for consumer welfare, it is far less relevant to success in manufactured exports.

Manufacturing export growth confers a range of other benefits on an economy. In particular, success in exporting has important spillover and demonstration effects on other sectors of the economy. Exporters compete with other firms for resources, especially labor. Indeed, wages and labor practices in internationally competitive export firms often serve as a model for others to follow. Exporters are also more likely to demand high standards of service from their suppliers and to exert pressure for improved infrastructure provision, maintenance, and management. In addition, export markets allow labor and capital to move rapidly from low- to high-productivity sectors without encountering diminishing returns (Pack, 1989).

The critical element in manufactured exports is the linkages between domestic firms, their foreign affiliates, and global markets. In the successful manufacturing exporters, these linkages take different forms. Foreign direct investment (FDI) is the most obvious kind of link, and was the primary connection for Hong Kong, Singapore, and several other successful exporters. However, FDI initially played a limited role in Korea and Taiwan. In fact, both countries actively discouraged and even prohibited some types of foreign investments until the 1980s. Southeast Asian countries, especially Indonesia and Thailand, also limited foreign investment in manufacturing (although they were more welcoming in minerals) until the 1980s or even the 1990s.

For many firms, the link to foreign firms comes through licensing agreements or as part of original equipment manufacturing (OEM) arrangements. Many finished consumer goods exports are produced to precise specifications from overseas buyers' orders. In many cases, the buyers are either importer-wholesalers, or overseas manufacturers subcontracting to local firms. In order to establish relationships with reliable, stable suppliers, these overseas buyers often provide instruction and advice to exporting firms on virtually all aspects of business (Kessing,

1983). The successful firms learn quickly, and develop the flexibility and acumen to manufacture a variety of constantly changing designs. Some firms gain specialized knowledge of particular markets, others become skilled at quickly producing "knock-off" copies of samples, and still others specialize in producing higher-quality niche products. Successful exporting firms also often take the initiative to travel to major developed country markets and visit actual and potential buyers, thus enriching their knowledge of business practices in industrialized countries. In each of these ways, exporting firms enhance their skills, adapt new technologies, and expand their production.

3. Policies to Support Manufactured Exports

The basic set of macroeconomic and trade related policies that are needed to support manufactured exporters is well known.[5] What has generally been left out of these analyses is the institutional mechanisms that governments have used to support exporters, which we discuss in detail in the next section. Since many of the basic policies have been discussed in detail elsewhere, we only briefly summarize them here. They generally include the following:

- adjusting and managing the exchange rate to establish and then maintain the profitability of export industries;
- keeping domestic inflation (and therefore production costs) under control through prudent fiscal and monetary policies;
- reducing import tariffs and removing import quotas for exporters on capital and intermediate goods;
- building appropriate infrastructure to support exporters (and business more generally), especially ports, roads, power, and telecommunication facilities;
- strengthening bureaucratic systems, especially customs, in order to remove unnecessary regulations, reduce waiting times, and moderate corruption;

[5] See, for example, World Bank (1993), or Roemer and Radelet (1991) for discussions.

- developing appropriate education and training institutions to provide the workforce with basic skills.

These basic policies are widely understood as being critical to export success, and are the workhorses of many World Bank structural adjustment programs. They are designed to move economies more towards market prices and to make markets work more efficiently. However, few developing countries (including the most successful exporters) have been able to fully introduce all of these policies. Even where a developing country government might wish to introduce these changes, full implementation of some of them (e.g., improved infrastructure, bureaucratic systems, and education) would take many years. Most of the successful manufactured exporters are far from being completely free and open economies. Tariffs and quotas remain high in many of these countries, at least for consumer goods and for imports used by non-exporting firms. Wages and interest rates are often distorted and administratively controlled, and bank credit is often channeled to favored sectors and enterprises. Infrastructure remains weak in many countries, and government bureaucracies can be a nightmare.

The basic challenge for developing countries is to somehow overcome these obstacles and create an environment that will foster links between domestic and foreign firms in order to gain access to new technologies and dynamic production processes. In purely theoretical terms, the ideal solution is to deal with these problems head-on: remove tariffs and quotas, streamline bureaucracies, reduce red tape, and try to eliminate corruption (Hill, 1994). For most countries, however, this is a daunting set of tasks. For a variety of reasons, most countries -- even the successful ones -- either cannot or will not easily remove all of these distortions directly. In some countries, this reluctance stems from apprehensions about an export-led strategy; in others, it is driven by the desire to protect vested economic and political interests.

4. Export Platforms

The successful manufactured exporters in Asia and elsewhere managed to connect to global markets and grow rapidly *despite* significant institutional weaknesses. The successful

exporting countries recognized that they could not realistically solve all of these problems at once, and so they created several innovative programs and institutions to support exporters. Although the precise details varied, each of these institutional mechanisms can be thought of as an export platform: an enclave integrated into the world economy and hospitable to foreign investors, but without the problems of inadequate infrastructure, poor security, overwhelming bureaucracy and inconsistent trade policy that plague the rest of the economy. Export platforms have taken different forms, including export processing zones (EPZs), bonded warehouses, duty exemption programs, industrial zones, and science and technology parks. *All of the successful manufactured exporting countries established at least one, and usually more than one kind of platform, and these platforms together accounted for a very large share of non-primary manufactured exports*. At the core of each of these platforms is a mechanism that allows exporters to import capital and intermediate goods without paying import duties. As is well known, exporters must be able to import these goods at world prices in order to compete on world markets. Because exports are sold at world prices, any extra cost on imported capital and intermediate goods detracts directly from value added and a firm's competitiveness on world markets. Capital goods take on additional importance, as discussed previously, because they facilitate the acquisition of new technologies.

It is important to emphasize that the main objective of export platforms is to integrate firms with the global economy, *not* to separate exporting firms from other firms in the domestic economy as is often supposed. The enclave nature of platforms is intended to separate exporters from the distortions that undermine their international competitiveness, such as high tariffs and unwieldy bureaucracies, so that firms can produce for world markets. A consequence (not an objective) is that many countries that use export platforms have only a mixed record of successfully integrating exporting firms with domestic suppliers (albeit one that tends to improve over time). As we emphasize later in the paper, however, this is generally a reflection of the remaining distortions in domestic markets and inefficiencies in domestic suppliers, rather than of the export platform strategy itself.

Three facilities have been particularly important in supporting exporters: EPZs, bonded warehouses, and duty exemption programs.

- ***Export processing zones (EPZs)*** are enclaves located physically or administratively outside of a country's custom's barrier. Typically zones are fenced-in areas located near a port. Firms within EPZs generally have access to duty free capital and intermediate imports. Importantly, firms are provided access to streamlined customs clearance procedures (for both imports and exports) in the zone, thus avoiding time-consuming, bureaucratic, and unpredictable customs procedures at the port. EPZs usually provide firms with relatively high-quality physical infrastructure such as roads, electricity, and telecommunications. Some countries offer additional incentives, such as tax relief on value-added or income taxes. Occasionally, such as in the Dominican Republic, zone administration will offer additional services to firms, such as recruitment of workers or accounting services. Some zones are publicly owned and managed, others are privately owned working in close cooperation with the government.

  EPZs have advantages and disadvantages. Zones bring with them a large package of support facilities, allowing exporters to avoid problems with infrastructure, bureaucracy, and high tariffs. But they are generally available to only a subset of exporters -- those that are willing to locate in the zone itself. Established firms that are located close to an important supplier or source of raw materials cannot take advantage of a zone, nor (generally speaking) can firms that wish to continue to sell some of their production on domestic markets. Public sector zones can be costly to the government to build and maintain. However, this latter problem has been overcome to some degree in recent years with the growing use of privately owned EPZs. Some countries have unusual problems with EPZs. Kenya's EPZs, for example are considered to be outside the county's customs territory, and therefore are not considered to be of Kenyan origin under the rules of the Common market for Eastern and Southern Africa (COMESA). As a result, exports from the EPZs are ineligible for COMESA's normal duty preferences when shipped to other member states (Glenday and Ndii, 1999).

- ***Bonded warehouses*** are essentially single-factory EPZs. Approved warehouses, usually with a customs officer stationed at the site, can receive duty free imports of capital and intermediate goods and bypass other customs procedures. Firms usually post a bond as a guarantee against any duties that might be applicable to imports that are diverted to the domestic market. With a customs agent posted at the factory, firms generally are provided with expedited customs clearance procedures. A major attraction of registering as a bonded warehouse is that a firm can locate anywhere, and does not have to be inside the zone. This provides the firm with more flexibility, helps encourage backward linkages to the rest of the economy, and saves the government the cost of establishing a zone. Freedom of location is particularly attractive to firms that need to be located near an important upstream supplier, or for long-established factories that want to shift to exports but are reluctant to move to EPZs. However, by locating outside of the zones bonded warehouses lose the advantage of the higher quality infrastructure found in most zones. From the government's perspective, bonded warehouses avoid the start-up costs associated with zones, and are generally easier to manage. Bonded warehouses have become increasingly popular in recent years. They are the dominant platform in Tunisia and Mexico (the maquiladoras), and have been used extensively in Indonesia, Malaysia and several other countries.
- ***Duty exemption systems*** allow qualified firms, wherever they are located, to be exempt from import duties. Closely related are duty drawback systems, in which exporters initially pay duties on imported inputs, and then are reimbursed upon export of the final product. These systems provide firms with a great deal of flexibility, both in their location and in their decisions about selling to the domestic market or for export. Several countries in Central America (Costa Rica, Honduras, and Guatemala) have developed temporary admissions systems that are essentially duty exemption facilities. Korea and Taiwan both relied heavily on duty exemption and drawback systems. Exemptions are the dominant manufactured export facility in Guatemala and Kenya (Jenkins, et al, 1998, Glenday and Ndii, 1999). The duty exemption system has also played a major role in Indonesia, Korea, and Taiwan.

However, exemption and drawback systems generally provide firms with little assistance in customs clearance, improved infrastructure, or other advantages. The paperwork and bureaucratic delays involved for a firms to gain approval for an exemption can be burdensome, and is generally even worse for drawbacks. In several countries, exemption and drawback systems have been unsuccessful because of high administrative costs.

Although export platforms start as an enclave, when they work well they tend to spread though the rest of the economy. Platforms can have an important "demonstration effect," showing entrepreneurs and policymakers alike that exporting can be profitable and dynamic. The success of the initial firms encourages other firms to export, and over time to create a political interest group that support exports and lobbies governments to change policies that undermine export competitiveness. There may be an even more direct link to lower tariffs: it is likely that some duty-free imports intended for use in EPZs and drawback systems inevitably leak to the domestic market, undermining the high tariff walls protecting inward-oriented industries. It is tempting to speculate that as the "effective" levels of tariffs are eroded, it eventually becomes easier for the government to lower the actual tariff rates. Some analysts have suggested that export platforms slow the process of trade liberalization by allowing policymakers to believe that the platform will solve the problem. But just the opposite seems to be true: in most countries, extensive liberalization and deregulation tends to follow the introduction of export platforms. It is probably not an accident that the earliest users of export platforms -- Ireland, Taiwan, Korea, Singapore -- now have much more open trading policies than they did forty years ago. Warden (1999b) reports that in Mexico, the maquiladoras are "both a catalyst for and beneficiary of ... liberalization." In Malaysia, Sivalingam (1994) finds that EPZs have had a favorable impact on the regulatory framework and business environment.

In addition, firms in the platforms have the potential to create demand for locally produced intermediate products. Although in many cases the empirical record for creating backward linkages has been mixed (as discussed in more detail below), in the successful cases

local suppliers have demanded that government introduce reforms that allow them to compete more readily with offshore suppliers.

In the more successful countries, as institutions and infrastructure develop more widely over time, and as tariff and quota protection is reduced, export platforms become less necessary. In a sense, these facilities work themselves out of a job: when a country begins to be successful with manufactured exports, it tends to reduce tariffs and remove other impediments to trade, eliminating the need for export platform institutions. In Korea and Taiwan, for example, export platforms play a much less important role now than they did in the 1980s. These countries have developed better infrastructure and more reliable government institutions, and have substantially reduced tariff and quota protection, so exporting firms can compete on world markets without necessarily going though an export platform. Thus, export platforms are transitory, rather than permanent institutions that remain important until countries can successfully remove the most important obstacles to export development (World Bank, 1992; Rondinelli, 1987).

It is important to recognize that export platforms do not spring up as the result of free market forces. They are government interventions designed to overcome distortions and bring production closer to free market outcomes. In this way, the export platform strategy can be thought of as a form of industrial policy. This type of industrial policy is very different than the traditional notions of industrial policy sometimes associated with development in East Asia. As is well known, several of the East Asian countries carried out traditional industrial policies, including subsidized and directed credit, direct production subsidies, and import substitution to promote heavy industry. Korea, for example, supported a variety of industries with a complex system of export subsidies, cheap credit, and access to controlled imports. Taiwan used many similar systems. To the extent that these policies created net benefits -- and the debate continues as to whether or not they did -- their success was clearly limited to Japan, Korea, and Taiwan. Hong Kong did not rely on these policies, and Singapore, when it intervened, did so in fundamentally different ways. When the other Asian success stories tried these policies, they generally failed, as demonstrated by Malaysia's national car or Indonesia's jet aircraft. *Rather,*

the common industrial policy across all of the successful manufactured exports in Asia and elsewhere was the establishment of export platforms. Every single one of the successful manufactured exporters relied heavily on one or more export platform facility to support exporters.

The precise mechanism varied, and in many countries a combination of platforms has been used. Malaysia has relied heavily on EPZs, but also has an extensive network of bonded warehouses and a duty exemption system. Indonesia initially relied primarily on duty exemptions and drawbacks, and more recently has been successful with bonded warehouses. China has relied almost exclusively on its special economic zones, which in many respects closely resemble EPZs. Mexico's maquiladoras are essentially bonded warehouses, but many of them choose to locate in industrial parks that offer infrastructure and services similar to some EPZs. Thailand offers five different programs for exporters, which we explore in more depth later in the paper. Tunisia has relied almost exclusively on bonded warehouses, whereas Mauritius has relied on a variant of EPZs. Singapore and Hong Kong were essentially citywide EPZs.

Very early in its post-war development process, Korea established facilities for exporters that allowed duty free access of imported capital and intermediate goods. Hong Won-tack (1979) described the early genesis of these initiatives:

> "The tariff law has allowed duty free imports of basic plant facilities and equipment for important industries since 1949. On the basis of this law, imports of machinery for export production received a tariff exemption from 1964 until 1974 when the tariff exemption system was changed into a deferred payment system on an installment basis. Capital goods imported for foreign investment projects were also exempted from tariffs after 1960. After 1961, raw materials directly used for export production were imported duty free."

Thus, as early as 1961, Korea was taking strong steps to ensure duty free imports of capital goods and raw materials imports for exporters. The government opened two large EPZs in the

early 1970s, and by the early 1980s over 200 bonded warehouses were in operation (Rhee, 1994). The vast majority of Korea's manufactured exports either used duty exemption and drawback facilities or were produced in bonded warehouses or zones.

In Taiwan, the government established the Kaoshing EPZ in 1966 and two other EPZs in the early 1970s. In addition, by 1981 there were well over 300 bonded manufacturing warehouses operating in Taiwan. Together, exports from the EPZs and warehouses accounted for about one-fourth of the country's manufactured exports in 1981, and almost all other manufactured exports used a well-functioning duty drawback/exemption system (Rhee, 1994).

Most studies on export platforms have tended to focus exclusively on EPZs, missing out on the import contributions of other platform facilities. Many early studies took a mixed or negative view of EPZs. Several early theoretical studies came to the conclusion that zones could actually decrease, rather than increase welfare (Hamada, 1974; Hamilton and Svensson, 1982; Wong 1986). Early empirical studies, such as those done by Warr (1984, 1987a, 1987b, 1989), concluded that although most EPZs generated net benefits for an economy, the benefits tended to be small. However, these studies suffered from several critical weaknesses. Many were based on assumptions (such as full employment, capital intensive activities in zones, constant returns to scale technology) that do not accurately reflect zone activities. Moreover, the early theoretical and empirical studies examined static gains from zones, and did not attempt to capture the potentially important effects from technology transfer, learning-by-doing, and demonstration effects. More recent theoretical work based on different assumptions has demonstrated the potential benefits from EPZs (Miyagiwa, 1986; Young and Miyagiwa, 1987; Woo, 1998), and empirical studies have supported these findings (Johansson and Nilsson, 1997).

Perhaps the most compelling piece of evidence in support of platforms is that the vast majority of manufactured exports in the successful economies utilized at least one of these facilities. *Simply put, manufactured exports did not expand rapidly in any country except through one of these facilities.* In Taiwan, and Korea, for example, essentially *all* manufactured exports were either produced in a zone or a bonded warehouse, or used duty

exemption/drawback systems. The vast majority of China's manufactured exports come through the special economic zones. In Malaysia, as much as 75% (in 1979) of all manufactured exports were produced just in EPZs, (and the share still exceeds 55%); most other manufactured exports go through bonded warehouses or use duty exemptions (Sivalingam, 1994). Over 95% of Mauritius' manufactured exports are produced in EPZs. In Kenya, 75% of manufactured exports use at least one facility, with the vast majority depending on the duty exemption system. Exports from Mexico's maquiladoras account for over 50% of total manufactured exports, and a much larger share of manufactured export growth. In the Dominican Republic EPZ exports account for 80% of all exports, and almost all manufactured exports (Warden, 1999a and 1999b).

5. Characteristics of Successful Export Platforms

Macroeconomic Policies

Export platforms are no panacea, however, and they will not work always and everywhere. Most importantly, although export platforms can help exporters overcome many distortions in the domestic economy, they cannot compensate for substantial macroeconomic imbalances and distortions, especially an overvalued exchange rate. An overvalued exchange rate fundamentally undermines the competitiveness of exporters in such a way that tariff exemptions, tax breaks, and improved infrastructure cannot fully compensate. Similarly, high and variable inflation rates undercut exporters because of rising and uncertain production costs. *Even with good export platform facilities in place, no country has succeeded with manufactured exports in a highly distorted macroeconomic environment.*

There are many examples. The Dominican Republic has had fairly well-functioning EPZs for many years, but an overvalued exchange rate and high minimum wages combined to undermine export competitiveness. A series of devaluations and other reforms in the mid-1980s and early 1990s partially addressed these problems, and EPZ exports have boomed in the 1990s. Taiwan's export growth started only after the government unified the exchange rate and effectively devalued the currency in August 1959, shifting incentives markedly away from

import substitutes and towards exports. Mexico's maquiladoras have been in existence since the late 1960s, but manufactured exports took off only after the government devalued the currency, stabilized the economy, and introduced more widespread trade deregulation in the late 1980s. In the Philippines, manufactured exports stagnated under the highly distortionary policies of the Marcos regime, but have flourished since more effective macroeconomic policies and complementary reforms were introduced in the late 1980s and early 1990s.

On the other side of the coin, manufactured exports from Egypt have not responded to the introduction of new facilities, and are unlikely to do so as long as the Egyptian pound remains overvalued. Kenya's export growth stagnated in the 1980s, largely because of macroeconomic distortions. The introduction of reasonably well functioning duty exemption and bonded warehouse systems, vastly improved macroeconomic policies, and the discontinuation of trade licensing and foreign exchange allocation for imports led to a rapid expansion of manufactured exports between 1993-96. But when macroeconomic policies deteriorated and the exchange rate became overvalued, the export boom fizzled out. Kenya had over 70 bonded warehouses operating in 1993; by 1997 all but 10 had closed down (Glenday and Ndii, 1999).

Location

Geographical location is probably important in two ways: the location of the exporting country in relationship to its markets, and the location of the export platform within the country. On the first, Mexico, Costa Rica, the Dominican Republic, and nearby countries have an obvious advantage in exporting to the United States because of their location. Tunisia can export more easily to Europe than many competitors, an advantage that both Ireland and Poland have exploited. Their close proximity reduces shipping costs, and perhaps more importantly reduces shipping *time*. For example, a container shipped from Tunisia can reach Europe in 33 hours (Cook, 1999a). This gives firms in these countries and advantage in terms of making "just in time" deliveries.

Close proximity helps, but is not absolutely necessary. After all, Mauritius is far from major markets, and it has been very successful with textile and garment exports (however, it has

had trouble competing in electronics production, partly because of its distance to markets). The original Asian exporters were not particularly close to their major market (at the time) in the United States, and were still able to succeed. Higher shipping costs can be overcome in some circumstances, but they must be compensated by lower costs elsewhere, perhaps with lower wages. For example, in Mexico, more maquilas are opening in the interior as border infrastructure becomes overcrowded and wages escalate. About one-third of all of Mexico's maquilas are now located in the interior. These firms tend to focus on lower-skill, lower wage activities: more than half of Mexico's textile maquiladoras are located in the interior (Warden, 1999a). However, some remote, landlocked countries probably face prohibitive shipping costs. It is unlikely, for example, that firms in Rwanda or Mongolia will be able to compete readily on world markets for manufactured exports, although perhaps they can export regionally (Radelet and Sachs, 1998b). Development strategies that have worked in coastal economies are likely to be less effective in landlocked countries.

The location of export platforms within a country is also important. This is especially relevant for EPZs, since firms producing under bond or using duty exemptions can locate wherever they wish. For EPZs to function effectively, they need to be located near major roads, ports, and labor supplies. EPZs located in remote locations in order to spur regional development have almost universally failed (Kumar, 1987; ILO, 1988; World Bank, 1992; Hill, 1994). The Bataan EPZ in the Philippines suffered from high initial construction and operating costs because of its remote location, and as a result failed a simple costs-benefit analysis test (Warr, 1987a). Other EPZs with better locations in the Philippines have been extremely successful, especially those at Subic Bay, where the location and the facilities were superb. Malaysia's highly successful EPZs were built near state capitals, the federal capital, and major expressways (Sivalingam, 1994). Location near labor can be as important as being near a port. Firm directors in Mexico report that transportation and housing for labor near the Mexican border is a major problem, which is one reason that some firms are moving to the interior (Warden, 1999a).

Choice of Facilities

As we have pointed out, many of the most successful countries have offered exporters more than one facility. This allows exporters the flexibility, for example, in choosing between the infrastructure advantages of an EPZ and the freedom of location in a bonded warehouse. Additional facilities may also spark competition between the facilities to attract exporters, which may help reduce bureaucratic and administrative costs.[6] Korea, Taiwan, Thailand, Indonesia, and Malaysia all offer exporters multiple choices of export platform facilities. Thailand offers five different facilities, as described in Box 1. Mexico's maquiladoras can operate anywhere as bonded warehouses, but 80% choose to locate in industrial parks to take advantage of superior infrastructure and utilities. Moreover, a range of different industrial park sites are available offering many different amenities (day care facilities, sports facilities, private security, tenant associations, private health care, etc.) and price ranges. Thus, exporters can choose the facility

[6] My thanks to Louis T. Wells for this insight.

that best suits their needs. One reason why multiple facilities are an advantage are that none of the facilities are perfect -- each overcomes certain distortions in the economy, but each is ultimately only a weak substitute for a well-functioning market economy. For example, each of Thailand's five facilities offer certain advantages and disadvantages (see Box 1), but even with five facilities, small and medium sized enterprises are not well-served (Poapongsakorn, et al, 1999).

Box 1: Thailand's Five Export Platforms

Board of Investment (BOI) incentives are granted to BOI-approved firms, including foreign investors. The BOI provides duty exemption on imported raw materials and machinery, and corporate income tax holidays. These benefits are also subject to certain zoning based on the BOI's defined areas. The BOI is generally more efficient than other schemes and is less costly to use since it does not require guarantees. Still, for certain manufacturers, the BOI's approval processes (including approval of production formulae and raw materials) are complicated and inflexible. BOI investment incentives are the most widely used export facility in Thailand, accounting for about 50% of import duty exemptions in 1996.

Duty drawback and exemption provisions provide exporters with exemptions on import duties and business taxes for imported inputs or with drawbacks on duties and taxes paid on these items. It does not require that firms are exclusively exporters, thus allowing trading firms and other indirect importers to claims to duty drawback/exemptions and business tax rebates. Benefits are also available to existing businesses, which cannot take advantage of the BOI or EPZ platforms. Duty drawback facilities can be costly because they require bank guarantees. In addition, customs procedures are cumbersome and time-consuming, and refunds can take from 2 weeks to one year. Drawbacks and exemptions accounted for about 16% of export platform activity in 1996.

Bonded warehouses receive exemptions on raw materials and on indirect materials. The requirements for establishing a warehouse are much more stringent than that of the BOI or that of the Export Processing Zones. For instance, potential manufacturers must have at least 10 million baht in registered capital and possess warehouses at the time they make an application, and post a bond equal to 25% of import duties estimated from the values of the first-lot imported merchandise or raw materials. These requirements essentially exclude small and medium-scale enterprises, making bonded warehouses appropriate for large-scale enterprises. About 15% of manufactured export activity went through bonded warehouses in 1996.

EPZs provide tax exemptions on raw materials, duty-free machinery imports, corporate income tax holidays, and partial to full exemption of utility charges. Approval to operate in an EPZ is fairly easy to obtain. Exporters receive maximum benefits in EPZs, but the initial investment is high. EPZs accounted for about 12% of import exemptions for exporters in 1996.

Duty compensation facilities provide a partial fixed refund to exporters on the basis of pre-determined input-output coefficients applying either to domestic inputs alone or to domestic and imported inputs. Qualified agents can also reimburse duties on equipment, spare parts used in production process as well as on taxes for utility charges. Compensation is based on exports, but firms do not have to be exclusive exporters to be eligible. Although the process is simple to use, the compensation rates are perceived to be very low. As a result, duty compensation is the least-used export facility in Thailand, accounting for about 7% of export facility activity in 1996.

Source: adopted from Poapongsakorn, et al, 1999.

Customs Operations

One of the most common problems cited by exporting firms in almost all developing countries is customs clearance. Customs procedures can be time consuming, unpredictable, frustrating and expensive. Exporting firms often complain about long delays in customs, undermining their ability to quickly fill orders, or demands for bribes and other unofficial payments. One of the major attractions of EPZs in many countries is streamlined customs service in the zone (rather than at the port). For example, in the Dominican Republic, customs clearance outside the zone typically takes 3.5 days, whereas firms in the zone can get pre-clearance for goods before they arrive in the port (Warden, 1999b). In Ghana, imports generally take one to three weeks to clear, whereas exports take a maximum of four hours (Cook, 1999b).[7] Some countries offer streamlined customs procedures to firms operating as bonded warehouses. Tunisia, for example, allows inspection at the warehouse prior to shipping, alleviating the problems of queuing at the ports (Cook, 1999a). In many other countries, however, firms still face the expense and uncertainty stemming from poor customs administration.

Some countries have had at least partial success in directly cleaning up customs problems. Indonesia effectively privatized certain customs administration activities by hiring the Swiss surveying firm Société Générale de Surveillance (SGS) in April 1985. SGS took over the investigation and clearance of import consignments worth more than $5,000, and customs control over exports and inter-island domestic shipping was abolished altogether. Although the SGS contract was expensive, government revenue collections rose sharply, and traders benefited from more transparent, predictable, and rapid customs clearance. Indonesia began phasing out participation by SGS in 1991.

Platform Bureaucracy

One of the most important factors influencing the effectiveness of export platforms is the extent of bureaucratic and administrative difficulties in the platform. Simply establishing a

[7] Cook (1999b) notes that export customs clearance times fell quickly in Ghana once export taxes were removed, giving officials much less incentive to engage in prolonged inspections.

facility is not enough -- it has to be easy and low cost for exporters to use, or the entire purpose will be defeated. There is a long list of export platforms that have failed because of high administrative burdens, corruption, and other related problems. Duty drawback facilities commonly face the greatest administrative problems, requiring vast amounts of paperwork and approvals. Under drawback systems, rebates often come after only months of delay. Even then, it is commonplace for firms to receive a much smaller duty rebate than they expected, with government officials keeping the remainder. Drawbacks are particularly vulnerable to such problems because they require two financial transactions -- once to pay the duty, and once to get the rebate. Thailand's duty drawback system commonly faces such problems. Indonesia operated an effective drawback system for several years, but after a competent administrator was replaced, the system became much less effective. Ghana's drawbacks system was fraught with delays and administrative costs and actually added to exporters total costs (Cook, 1999b). Korea and Taiwan are two countries that have managed to operate an effective drawback system. Duty *exemption* systems, by contrast, are much easier to administer and tend to be subject to fewer delays and problems, although poorly-run exemption systems (such as in Ghana) also can be plagued by problems of discretion and high administrative costs.

Sometimes problems arise because too many government offices are involved in the process. Mexico's maquila system improved significantly after all facets of operation were put under the authority of the Ministry of Industrial Development. Nevertheless, enough difficulties remained for exporters that private "shelter operators" have sprung up that (for a fee) will take care of all administrative processes for a firm wishing to use platform services. More generally, in many countries it is commonplace for exporting firms to have one employee whose full time job is to deal with export facilitation administration. Of course, some administrative costs will be necessary, but when they are too high they simply undercut the international competitiveness of exporting firms.

Thailand's Board of Industries has regularly simplified its procedures, but problems still arise. To partially address these problems, the BOI has begun to effectively privatize some of its

functions. For example, it has given the Thailand Diamond Manufacturers Association responsibility for selecting companies to receive BOI promotional certificates, maintaining membership databases, and approval of production formula for diamond manufacturing companies (Poapongsakorn, et al, 1999).

Well-managed EPZs can provide exporters with a variety of services for a reasonable fee, while others charge high fees and provide few if any services. Publicly owned EPZs tend to be run less efficiently than privately owned EPZs, although several well run publicly owned EPZs have been successful in Asia. In most countries, such as the Dominican Republic, privately owned zones are much better managed, and offer better facilities and a wide variety of services (problem solving/trouble shooting, labor recruitment, accounting, private health care, etc). Private zones tend to cost more, but many firms are willing to pay for the improved service. Privately owned and managed EPZs generally relieve the government of the burden of initial investment costs and ongoing management, so there is a strong case in favor of privately owned EPZs. Perhaps the most critical variable, however, is the existence of competition between zones (and other platforms) to attract exporters, rather than public versus private ownership per se. Firms face the biggest difficulties in countries where there are few choices of EPZs or other platforms. There tend to be fewer problems where firms have a wider variety of choices and EPZs are actively trying to recruit new firms.

As a general matter, then, we would expect countries with higher quality institutions and bureaucracies to have better functioning export platforms and to record faster export growth. Radelet and Sachs (1998b), for example, in an econometric estimation of the determinates of manufactured export growth across countries, find that institutional quality is strongly associated with more rapid manufactured export growth, even after controlling for several other variables.

Reliable Utilities and Infrastructure

Exporters will be more successful in an environment of reliable infrastructure and utilities. Electricity failures stop production runs and can seriously harm food processing and other activities. In the Dominican Republic, for example, blackouts raise textile production costs

by 3-5% (Warden, 1999b). As a result, virtually all companies in the zones have their own independent power supplies, a costly and inefficient way to supply electricity. In Kenya, one of the most common complaints by exporters is the unreliability of power supplies. Similarly, reliable telecommunications are a must for firms trying to buy and sell in global markets. Poor quality roads and ports can add significantly to a firm's operating costs.

EPZs are designed to overcome these problems, at least to some extent (although the Dominican Republic shows that not all zones are successful in this regard). In Tunisia, exporters are given preferential rates for international phone calls, but they still cost two-to-three times the cost of a similar call from Europe (Cook, 1999a). Zones and preferential rates can only do so much to compensate for weak infrastructure, however, and the most appropriate solution is more generalized improvements in infrastructure. Mexico's export surge was aided by infrastructure development and the privatization of ports, communications, and railroads. All of the successful Asian countries invested heavily in improved roads, ports, power supplies, and telecommunications facilities. Just as some minimum amount of macroeconomic stability is needed to support exporters, it is probably true that a minimum level of basic infrastructure is necessary to initiate sustained manufactured export growth. Countries with small, congested, and poorly functioning ports; unreliable electricity supplies; and poor telecommunications facilities are unlikely to be successful exporters, regardless of the effectiveness of their export platforms.

6. Some Common Criticisms of Export Platforms

Failure to Develop Backward linkages

Export platforms have the potential (eventually) to create demand for locally produced intermediate inputs. The empirical record for creating backward linkages is mixed, however. The failure of many exporting firms to develop backward linkages is sometimes pointed to as a failure of the export platform approach. In some circumstances, this conclusion may be justified, especially if EPZs are located in remote areas, or if exporters are isolated from the rest of the

economy by stiff administrative or bureaucratic regulations. For example, in the Dominican Republic, before 1993 each sale from a domestic firm to EPZ firm required a license (Warden, 1999b). In many countries, exporters are not allowed to sell any of their output domestically, depriving potential domestic suppliers from purchasing low cost inputs from these export firms.

In some circumstances, the failure to develop backward linkages is a result of the structure of the exporting firm. Some firms are set up purely as assembly operations for a parent firm: they import the components, put them together, and export the assembled product. These kinds of firms purchase few domestic inputs. Other vertically integrated manufacturing firms buy large shares of their inputs from their parent company as a matter of pre-established company policy, and do not have the authority to buy locally. One study in Mexico found that exporting firms in which management had procurement authority purchased a significantly higher share of domestic inputs (Brannon, et al., 1994).

In most cases, however, the failure to develop backward linkages is a result of the *uncompetitiveness of domestic suppliers*, rather than a failure of the export platform strategy itself. Exporting firms selling on competitive world markets cannot be expected to purchase inputs from highly protected, high-cost domestic suppliers when cheaper, more reliable, and higher quality inputs are available on world markets. Thus, the primary strategy to encourage deeper backward linkages should be policy reforms aimed at making domestic suppliers more competitive. Put another way, the export enclave must be allowed to spread to develop effective linkages between firms, with lower tariffs and production costs in the rest of the economy.

For example, one major problem in creating linkages has been that domestic suppliers generally do not have access to duty free imports for their *own* inputs, placing them at a competitive disadvantage with suppliers on the world market. These "indirect exporters" are usually ineligible for EPZs or duty drawback systems. As long as domestic suppliers must pay duties on their imports, similar imported inputs are likely to be cheaper. Korea and Taiwan offered duty exemption and drawback facilities to indirect exporters early on. Kenya offers duty exemptions back two stages in the production process. Thus, in a situation where a domestic

company sells to a packaging firm that then sells to an exporter, all three are eligible for exemptions on their relevant imported inputs (Glenday and Ndii, 1999). Thailand, Indonesia, and Malaysia have also had some success in offering facilities to indirect exporters. In Malaysia, a World Bank report found that "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" (World Bank, 1992). In Malaysia, local purchases amounted to just 3% of raw materials and capital equipment in 1976, but by 1983 local purchases amounted to 24%. By contrast, in countries that do not offer duty-free facilities to domestic suppliers, backward linkages suffer. Ghana, for example, does not provide duty-free facilities for domestic firms selling to exporters located in EPZs. As a result domestic raw materials are more expensive than imported goods, and few backward linkages have developed (Cook, 1999b).

In addition to duties, domestic suppliers often have problems producing at the level of quality demanded by exporters. For example, some exporters claim they might lose their 9001 certification if their suppliers are not similarly certified. Suppliers may also be restricted by simple economies of scale if there are few exporters to purchase certain components. Korea and Taiwan made concerted efforts to develop local suppliers and component manufacturers. For example, in Korea's Masan zone, zone administrators provided technical assistance to local suppliers and subcontractors with the explicit objective of developing backward linkages. In Taiwan, personnel from firms in zones were placed at potential supplier's factories to provide advice, assistance, and quality control. These efforts, combined with duty facilities for indirect exporters, had a significant impact. Whereas in 1971 domestic suppliers provided firms in the Masan zone with just 3% of their inputs, that share eventually rose to 44% (World Bank, 1992).

Very few backward linkages have developed in Mexico. Originally, maquiladoras had to locate within 20 km of a border, so domestic suppliers were far away. Maquilas are now allowed to locate in internal locations, but linkages are hard to develop. There is no facility to provide duty relief to domestic suppliers on their imported inputs. Domestic suppliers could apply for

maquiladora status themselves to become eligible for these facilities, but then they would not be allowed to sell any output domestically. In any event, many domestic suppliers simply prefer to sell to the heavily protected domestic market where they can obtain higher prices.

The extent of backward linkages also varies by the type of export activity. Backward linkages are very high in Malaysia for rubber and food products, as they are for Indonesia's furniture manufacturers, but much lower for electronics, and even lower for textiles (Sivalingam, 1994). Several studies have found that textile production tends to have very few backward linkages (ILO, 1998). In Mauritius and the Dominican Republic, where textile production dominates export activity, very few inputs are purchased locally. Backward linkages tend to be higher for electronics production, partly as a function of the production process itself, and perhaps partly because countries engaging in electronics production have achieved a higher level of development more generally, and therefore can provide higher quality domestic inputs.

Stuck in Low-Skill, Low Wage Activities

Critics of a development strategy based on manufactured exports often charge that it is a dead end since it relies heavily on low-wage labor to attract foreign investment. Countries competing for low-wage foreign investment are engaged in a "race to the bottom," the critics suggest, with wages stuck at low levels (or even falling) in an ongoing attempt to entice new investors. However, there are several reasons to believe that wages should actually grow more quickly in countries focussing on manufactured exports rather than on domestic markets. First, because firms are competing on world markets, the potential for job creation is not limited to the amount needed to produce for the domestic market, and wages can increase over time as workers gain experience and increase productivity. Second, as exporting firms import new technologies, worker productivity can rise, with wages following suit. Third, worker and managerial experience should allow firms to gradually produce more sophisticated, higher quality products, also allowing wages to rise. In other words, a country assembling shoes is not likely to get stuck at that stage; experience, education, and further physical investments will lead from footwear to electronics assembly, and from electronics assembly to more sophisticated consumer goods, and

from there to automotive components, heavy machinery, and perhaps on to high-technology goods.

These issues can be examined by exploring two empirical questions. First, what has happened over time to the mix of manufacturing activities in export-oriented countries? Do exporting countries remain in simple, low technology activities, or do exports evolve over time to more sophisticated production products? Second, what has happened over time to wages in countries using export platforms?

Table 2 shows the change in the composition of export products between 1980 and 1996 for the twelve countries with the fastest growth in non-primary manufactured exports between 1970 and 1996 (drawn from Table 1). Perhaps the most striking change is the dramatic increase in the share of each country's manufactured exports in total exports. In Malaysia, for example, manufactured exports jumped from 18% to 73% of total exports in just 16 years. Thailand's jump from 25% to 74% is almost as dramatic, as is the change in Mauritius from 27% to 66% of total exports. Thus, we see evidence of the basic structural shift from primary and natural resource based exports into manufacturing and industry that is part of the stylized development process, except that it took place in these countries at a very accelerated rate. In each of these countries (some of which started with a high dependency on primary and natural resource exports), more than two-thirds of all exports were manufactured products by 1996.

In some countries, the bulk of the export growth took place in garments and textiles, or other labor-intensive products. Mauritius and Tunisia in particular registered large gains in exports of these products. Most of these countries, however, saw sharp increases in exports of machinery, electronics, scale intensive, or human capital intensive exports. Malaysia, for example, registered large gains in all four of these areas. Fully one-third of Malaysia's exports are now electronics products. Thailand also recorded large gains in electronics exports, and significant increases in the shares of machinery and human capital intensive exports. Singapore, Taiwan, and Korea also witnessed large gains in the shares of electronics and human capital intensive exports.

Figure 1 provides a similar analysis using averages across a large number of countries. The composition of exports is shown in 1980 and 1996 for three groups of countries corresponding to fast, medium, and slow growth of non-primary manufactured exports (weighted by the share of these exports in GDP). Once again, the countries with the fastest manufactured export growth show a substantial decline in the share of primary exports, offset by increases in exports of electronics, human capital intensive products, and machinery, with small increases in textiles and garments and other labor intensive exports. The countries with medium growth in manufactured exports also recorded a large decline in primary product exports (starting from a much larger primary base), with large increases in exports of textiles and garments. Shares of exports of electronics and human capital intensive products also increased significantly. The countries with the slowest growth in manufactured exports recorded relatively small changes in the composition of exports. The data clearly indicate that the economies that have relied most heavily on non-primary manufactured exports are very dynamic, changing very rapidly in a short period of time, and are hardly "stuck" in a low-level production trap.

Nonetheless, we should not underplay the challenges facing countries wishing to move up the production ladder. Several countries have had trouble shifting from garments and textiles to electronics, including Mauritius, Tunisia, Indonesia, and the Dominican Republic. Electronics and higher skill production processes demand better facilities, more reliable infrastructure and power supplies, and more highly trained workers and managers. Many countries are finding that making this jump is far from automatic. Export platforms can help facilitate this process, but they far from guarantee it. Critiques of EPZ-style production are probably correct that export production alone will not guarantee a foothold on the next rung of the development ladder. Government investments in education, training, and infrastructure; streamlined bureaucracies; and stronger and deeper financial systems are each important and complementary ingredients in moving up the production ladder. But all of the early East Asian export-zone graduates -- Hong Kong, Korea, Singapore, Taiwan -- were all able to develop higher levels of local technology and

sophistication, typically relying (as in the previous production stages) on joint ventures and strategic alliances with more sophisticated multinational firms.

The second important issue is wages. Have the changes in the composition of exports been reflected by higher wages, and presumably by higher worker skills? Unfortunately, comparable data on wages for workers inside and outside export platforms across countries is not available. Some information is available for selected countries. Most indicators suggest that wages have grown rapidly for workers in export platforms. For example, between 1990 and 1995, real wages in EPZs grew 68% in Honduras, or 10.8% per year, while real wages in the rest of the industrial sector grew just 0.2% per year (Jenkins, et al, 1998). Similarly, real wages for electronics workers in Malaysia grew 5.7% per year between 1981 and 1990. Wages in the electronics and textiles sectors were 30% higher than for non-EPZ workers (Sivalingam, 1994). In the Dominican Republic, the picture is a bit more mixed: wages paid in the zones are higher than those in the sugar industry and for small and medium enterprises outside of zones, but are lower than the wages paid by large enterprises (Warden, 1999b).

Table 3 shows real wages in the manufacturing sector for 21 developing countries between 1975 and 1996 for which data were available (note that the table extends to two pages). Wages are measured in real terms in local currency, deflated by each country's consumer price index. Note the data are not for exporters per se, but for the manufacturing sector as a whole (which may obscure the picture for countries with a large, protected domestic manufacturing sector). Once again, we divide the countries into three groups by the growth rate of non-primary-based manufactured exports, weighted by the share of these exports in GDP. The eight countries (with available wage data) that recorded sustained rapid growth in manufactured exports all recorded consistent increases in manufacturing wages during the period. Ireland and Portugal, which started with the highest average incomes in the group, recorded total increases of 19% and 41%, respectively, between 1980 and 1996. Wage growth in Mauritius was about the same as in Portugal. In China and Hong Kong, manufacturing wages increased 80% between 1980 and 1996, and in Thailand average wages doubled. Singapore and Korea saw the fastest

wage growth of any country, with real wages in manufacturing nearly tripling in Singapore, and more than tripling in Korea over just 16 years. In short, the evidence suggests that, far from being stuck in a low-wage trap, these countries recorded very strong increases in real wages.

The four countries with available data that recorded medium growth in non-primary manufactured exports showed a mixed picture. Indonesia and Israel recorded relatively robust real wage growth, whereas in Sri Lanka real wages fell slightly. Mexico recorded a sharp decline in real manufacturing wages during the period. Since a large share of Mexico's manufacturing sector sells on the domestic market, it is not clear to what extent these data reflect the wage situation for manufactured exporters. Managers in the maquiladoras located near the US border report that in recent years, wages have grown rapidly and labor markets have tightened significantly, which is one reason why many firms have relocated to the interior (Warden, 1999a).

The nine countries that recorded slow growth in non-primary manufactured exports show a different story. Only Chile (which recorded substantial growth in primary exports and primary-based manufactured exports) managed significant growth in manufacturing wages. The Philippines recorded sustained growth in manufacturing wages only after the political and economic reforms of 1986, driven in part by rapid growth in electronics exports. (By 1995, electronics exports accounted for more than half of the Philippines exports, and most of those were produced in EPZs). South Africa and Argentina showed very modest gains in real wages over the period. The other five countries all recorded substantial declines in real wages between 1980 and 1996.

This analysis of wages is far from systematic, and there are several exceptions to the general trends. However, by and large the countries with the most rapid growth in manufactured exports also recorded the sharpest gains in real manufacturing wages. This evidence suggests increases in both worker skills and worker welfare over the period for the most successful exporters. The results are consistent with pieces of evidence from earlier studies. For example, one comparison of 10 middle-income manufacturers found that Korea, Japan, and Taiwan

recorded the fastest growth rates in manufacturing output, employment, worker earnings, and productivity (Lindauer, et al., 1997). Real wages in Korea, for example, grew by 8.1% per year between 1966 and 1984, the fastest wage growth recorded anywhere in the world during the period.

A related important issue is worker conditions in firms producing manufactured exports. There is little question that worker conditions are relatively poor in almost all developing countries, whether in agriculture, manufacturing for the protected domestic market, manufacturing for exports, or services. Organized labor was repressed, and even crushed in several of the East Asian countries, especially Korea, but also in Taiwan and Singapore (Hong Kong, however, is an important exception). It is difficult to argue that the lack of union activity resulted in repressed wages, since wage growth in these countries was among the highest in the world. Nevertheless, an important question is to what extent worker conditions (and changes in those conditions) are better or worse in firms producing manufactured exports. To my knowledge, however, there is little systematic evidence on worker conditions (including hours worked, worker safety, job satisfaction, ability to organize, etc.) across countries, especially that distinguishes between workers in manufactured exports and employment in other sectors of the economy.

There are two basic views. According to one view, exporters impose harsh conditions in order to reduce labor costs and compete on world markets. The alternative viewpoint is that exporters must offer better conditions in order to draw workers away from jobs on the protected market. A consistent theory is that firms either owned by foreigners or that sell predominately to foreigners must offer better conditions because they are under closer scrutiny by government officials and by foreign consumers. Deborah Spar (1998), for example, reports that US multinationals that either own or purchase from foreign suppliers have responded positively to US consumer concerns and media campaigns about worker conditions in developing countries. She provides several examples, such as the following:

> "When reports surfaced that Reebok was purchasing soccer balls stitched by 12 year-old Pakistani workers, the firm sprang into action. It created a new central production facility in Pakistan and established a system of independent monitors. Eager to retain its image as a strong supporter of human rights around the world, Reebok affixed new "made without Child Labor" labels to its soccer balls" (Spar, 1998).

The issue, however, is far from settled. While the evidence on wage growth in exporting firms is fairly strong, we know much less about worker conditions in these firms that we should. This is clearly an area where further research and analysis is necessary.

Employment Generation

Some analysts criticize export platforms for not creating sufficient numbers of jobs. It is true that employment in export platforms accounts for a relatively small share of overall employment in most countries. This is partly because manufacturing itself is still relatively small in many countries, with agriculture still the major employer for the majority of the population. However, while export platforms alone cannot solve employment problems in developing countries, they can make an important contribution in countries with large numbers of low skilled workers. In Honduras, Guatemala, and El Salvador, for example, export platforms account for about 30% of all manufacturing employment (Jenkins, et al, 1998). EPZs account for 17% of *total* employment in the Dominican Republic, and therefore a much larger share of manufacturing employment (Warden, 1999b). The maquiladoras in Mexico now employee over 1 million people -- five times the level of 1984 -- and account for about one-fourth of all manufacturing employment (Warden, 1999a). In other countries, the direct impact on employment is smaller. In Malaysia, for example, employment in EPZs was about 10% of the manufacturing workforce (Sivalingam, 1994). However, on the margin, the employment effects of exports can be more significant -- EPZs accounted for 36% of all new jobs in manufacturing in Malaysia between 1972 and 1974.

Women dominate the workforce in many export-oriented firms. The majority of employees in most export platforms tend to be young women (aged 16-25) who typically work full-time in the factory for a few years before leaving the job to start a family. It is tempting to suggest that these types of employment opportunities for women may have demographic implications by postponing the age of initial childbirth and reducing fertility rates. However, to my knowledge this issue has never been systematically studied. The large share of female employees is probably mainly a function of the composition of manufacturing activity. Women tend to make up a large share of the labor force in textile and apparel factories, and a lower share in electronics and machinery activities. Thus, there is a tendency in many countries for the share of female employees in export platforms to fall over time as the mix of export activities moves away from textiles and apparel. The Dominican Republic is an exception to this basic trend, with women accounting for 64% of jobs in the electronics sector. Women account for just 35% of technician jobs in the Dominican Republic. Table 4 shows the gender composition of employees by sector in the Dominican Republic.

Conclusions

Export platforms have been an important part of the development strategy in all of the most successful developing country manufactured exporters during the past thirty years. Platforms have helped firms overcome some of the basic problems that plague developing countries that policymakers cannot quickly change. Of course, export platforms alone are no silver bullet. Rather, they have worked best when they are part of a more comprehensive long term change towards more open and better functioning markets, and integration with the global economy. The countries that have been most successful have started with some basic conditions in place, including macroeconomic stability, initial (but incomplete) liberalization of trade and foreign direct investment, and a minimum level of functioning infrastructure. Export platforms appear to have been most effective when countries offer several alternative mechanisms for exporting firms, the platforms are well managed with few administrative burdens for the firms,

streamlined customs procedures are available, and firms can easily receive duty exemptions. In the case of EPZs, the more successful facilities were built in appropriate locations; provide reliable infrastructure and utilities; and are well managed, perhaps by private owners actively competing to attract firms and provide services.

Export platforms are not perfect solutions. Many exporters do not develop backward linkages to domestic suppliers, and some firms face difficulties in taking advantage of platform facilities (especially small and medium scale firms wishing to continue to sell some of their output domestically). Nevertheless, experience in well-managed export platforms in Asia and elsewhere has shown their effectiveness in creating export-related jobs, and in promoting rising real wages of industrial workers as experience and productivity rise. The most successful countries have seen sustained increases in manufacturing wages, and a shift towards more highly skilled production processes. Export platforms alone do not generally solve a country's unemployment and development problems, but they can make an important contribution both directly and through their demonstration effects to other exporting firms.

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Table 2: Manufactured Exports Composition For High Exports Growth Countries

	Non-Resource Based Manufactured Exports (as % of Total Exports)													
	Total Manufactured		Textile & Garments		Other Labor Intensive		Machinery		Electronics		Scale Intensive		Human Capital Intensive	
Country	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996	1980	1996
China	51.4	81.8	21.3	24.9	6.3	17.9	1.5	7.4	0.7	9.3	6.2	8.4	6.0	13.8
Hong Kong	89.8	91.5	34.5	20.3	14.7	19.2	3.8	11.1	7.0	15.2	4.6	8.5	23.9	16.4
Hungary	64.9	68.2	6.9	10.7	5.0	7.7	14.9	8.4	5.8	10.3	15.4	12.7	15.8	14.6
Ireland	56.9	80.6	7.8	2.5	5.1	2.8	5.7	5.5	9.2	29.7	12.2	21.7	12.9	18.4
Korea Rep.	85.6	92.2	29.7	13.3	14.2	8.9	3.9	10.7	5.4	22.7	14.8	11.8	17.2	20.6
Malaysia	17.5	73.4	2.6	4.8	0.9	3.9	1.2	12.4	9.2	33.7	1.4	5.2	1.9	12.3
Mauritius	27.3	65.9	19.3	59.5	1.3	1.4	0.7	0.3	2.6	0.0	1.4	1.2	1.9	3.5
Portugal	61.2	80.1	27.0	22.7	6.7	13.6	2.7	5.3	4.1	8.6	8.6	5.5	10.8	24.2
Singapore	49.5	85.7	4.7	2.2	4.2	2.4	7.9	12.8	9.5	47.8	4.9	6.5	10.7	11.3
Taiwan	83.6	93.5	21.4	10.8	25.2	8.6	14.7	11.7	6.1	31.4	4.7	8.8	11.3	12.0
Thailand	25.3	74.1	9.4	7.3	2.0	6.8	0.4	7.9	5.1	24.5	1.5	3.7	2.9	9.1
Tunisia	36.2	78.5	18.4	47.7	1.1	3.6	0.4	2.1	1.3	7.1	13.8	13.7	1.2	4.1

Notes:

Total manufactured exports include commodities in SITC 5 through 9 except SITC 61, 63, 661-663, 667, 671, 68, and 94.

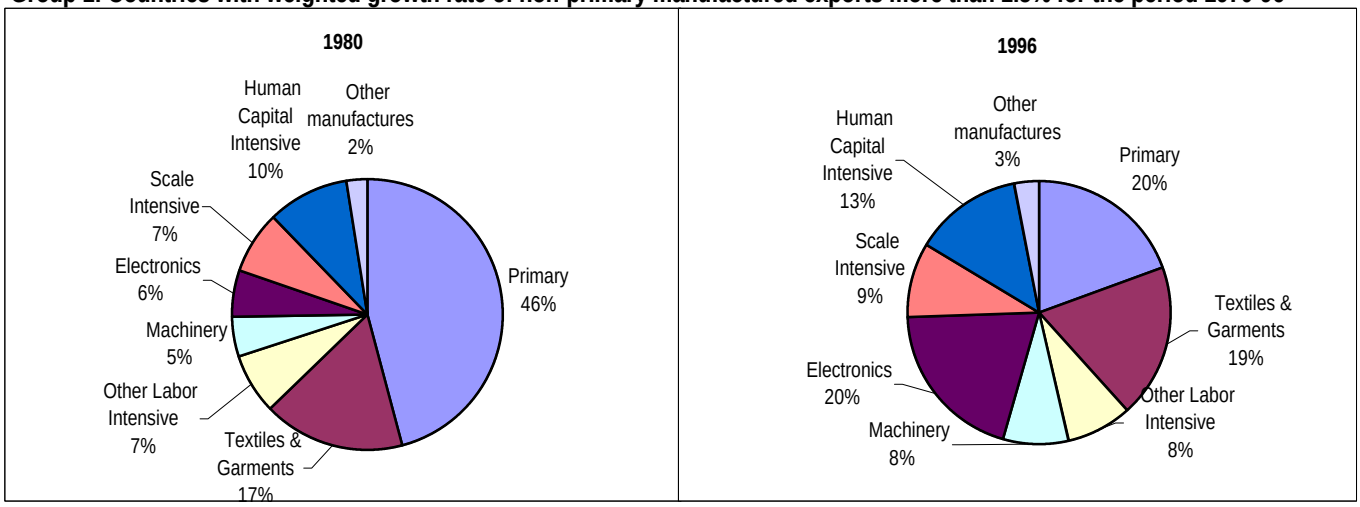
Textiles and Garments exports consist of SITC 65 and 84; Other labor intensive exports cover SITC 664-666, 669, 793, 81-83, 85, 893, 894, and 899.

Machinery exports cover SITC 71-74, 764, and 769; Electronics include SITC 75 and 77 except 775; Scale intensive exports include SITC 51, 52, 54, 56-59, 672-679, 79 except 793, and 88 except 885.

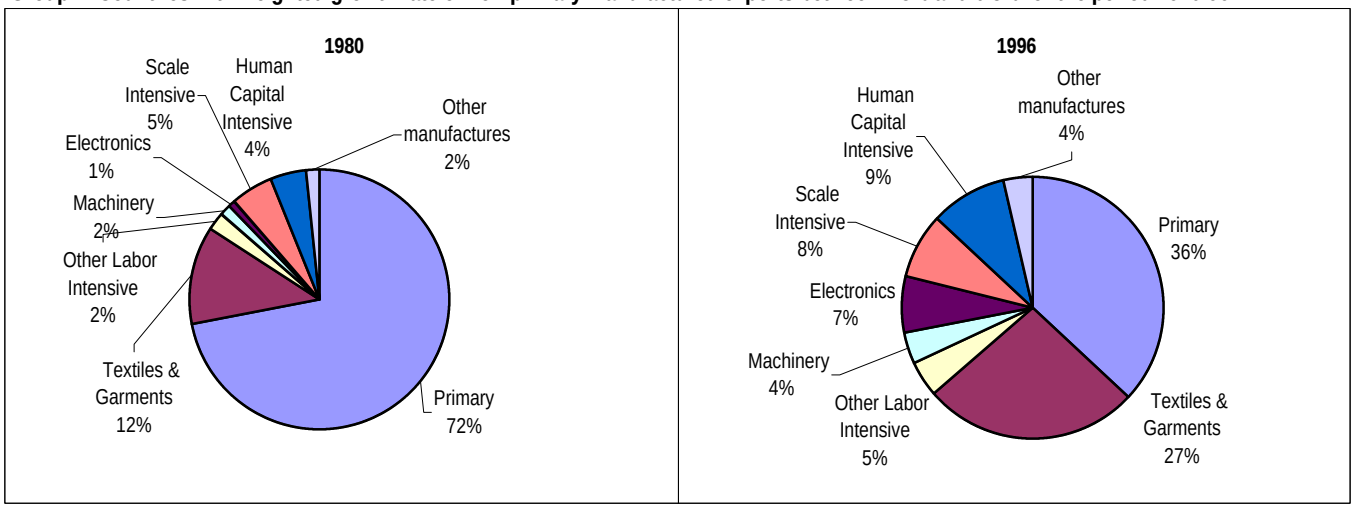
Human capital intensive exports include SITC 53, 55, 62, 64, 69, 87, 761-763, 775, 78, 885, 892, and 895-898; Others (not shown in table) include SITC 6X, and SITC 9 except 94.

Figure 1: Export Composition

Group 1: Countries with weighted growth rate of non-primary manufactured exports more than 1.5% for the period 1970-96



Group 2: Countries with weighted growth rate of non-primary manufactured exports between 1.5% and 0.5% for the period 1970-96



Group 3: Countries with weighted growth rate of non-primary manufactured exports less than 0.5% for the period 1970-96

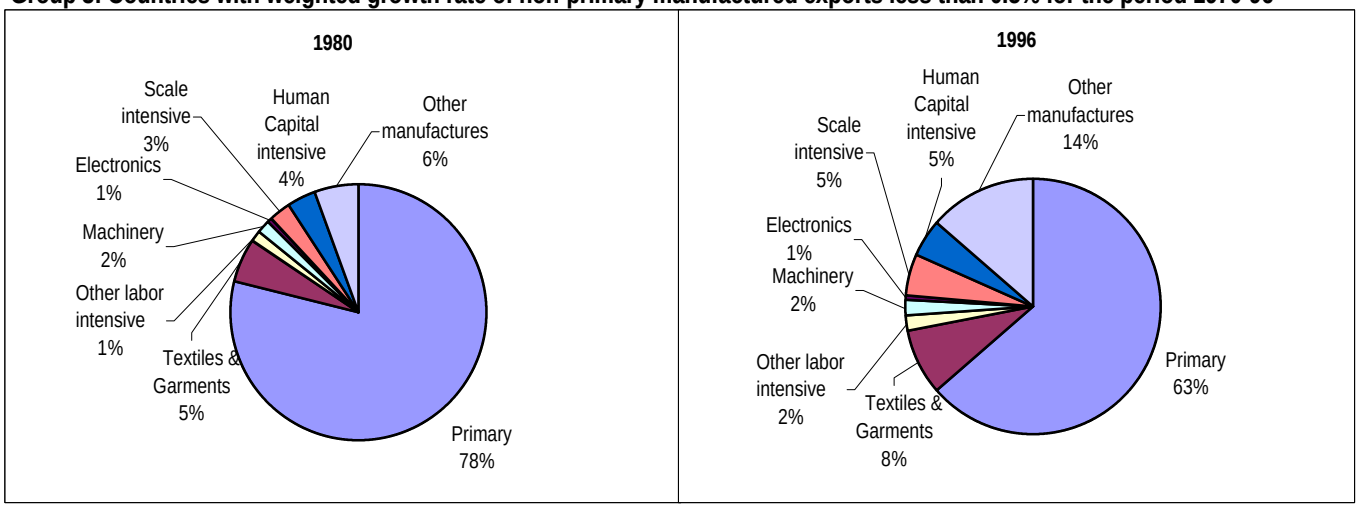


Table 3: Real Earnings Per Worker in Manufacturing
(domestic currency, Index 1980=100)

	High Growth of Manufactured Exports								Medium Growth of Manufactured Exports			
Year	China	Hong Kong	Ireland	Korea	Mauritius	Portugal	Singapore	Thailand	Indonesia	Israel	Mexico	Sri Lanka
1975		77.0	91.5	57.9	81.2					78.5	97.7	74.9
1976		85.9	89.1	67.6	96.5					83.3	106.2	74.8
1977		90.1	91.3	82.2	108.2					88.1	107.7	108.4
1978		96.0	98.1	96.4	116.8					91.4	105.5	145.9
1979		101.1	102.4	104.9	107.0					98.6	104.3	113.9
1980	100.0	100.0	100.0	100.0	100.0	100	100.0	100.0	100	100.0	100.0	100.0
1981	98.1	101.6	99.2	99.0	97.5	102	100.8	105.8	98	111.6	102.5	87.0
1982	98.0	127.3	96.9	105.9	93.4	102	105.8	113.1	111	113.7	101.1	77.2
1983	98.0	127.4	97.4	114.9	93.1	99	114.0	109.7	113	118.0	74.2	78.1
1984	115.2	133.1	99.4	121.5	92.1	90	121.1	173.2	118	122.5	71.3	77.8
1985	115.6	140.3	101.5	130.4	89.5	91	131.5	175.9	124	109.8	64.8	88.3
1986	124.2	147.2	104.8	138.6	96.2	98	145.4	160.8	130	121.1	58.2	86.7
1987	128.6	156.9	106.1	150.6	101.5	105	149.5	164.0	127	133.3	60.1	88.6
1988	136.2	167.5	108.3	167.5	110.0	111	162.9	163.7	138	137.9	56.8	88.6
1989	129.2	175.1	108.3	198.4	112.2	117	177.3	163.3	146	139.2	58.2	88.4
1990	131.0	182.4	110.0	219.5	109.7	125	192.3	173.2	179	135.1	58.9	94.1
1991	138.9	183.7	111.9	234.4	121.6	135	206.8	179.5	172	131.1	60.6	102.7
1992	149.9	182.5	114.0	255.5	126.7	142	219.8	163.0	166	133.6	64.4	96.2
1993	166.3	185.6	118.9	270.1	125.9	139	231.6	187.2	158	132.9	65.4	95.9
1994	171.2	188.5	117.1	293.9	137.3	136	246.6	182.1	154	133.8	61.8	101.9
1995	176.8	180.2	117.5	309.1	141.9	137	262.1	203.5	162	139.0	51.9	102.2
1996	178.1	180.8	118.8	330.6	140.6	141	278.0		152	143.4	47.2	91.7

Source: Nominal Earnings are from Yearbook of Labour Statistics and the CPI data are from IFS (except for China from Asian Development Bank)
Indonesian data represent minimum wage in industry. Portugal data show whole economy's wages
High growth means average annual weighted growth rate more than 1.5% for period 1970-96.
Medium growth means average annual weighted growth rate between 0.5% and 1.5% for period 1970-96.

Table 3 (continued): Real Earnings Per Worker in Manufacturing
(domestic currency, Index 1980=100)

	Low Growth of Manufactured Exports								
Year	Argentina	Bolivia	Chile	Jordan	Kenya	Malawi	Philippines	South Africa	Zimbabwe
1975	243.5	87.8	35.5	78.0	122.0			91.5	95.9
1976	136.2	84.0	44.5	112.4	116.5			87.9	91.6
1977	108.6	106.4	65.0	100.2	112.3			91.0	91.4
1978	77.3	78.2	79.8	118.2	100.9			98.5	94.9
1979	80.5	135.1	88.1	113.7	98.6			99.4	88.7
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	114.9	89.9	112.2	110.7	99.6	100.2	101.1	105.9	109.4
1982	115.4	65.2	112.6	114.7	91.7	133.0	101.8	112.0	114.1
1983	157.0	87.5	119.3	115.5	89.1	94.0	105.8	112.8	105.4
1984	175.4	50.3	115.7	112.5	88.6	71.3	92.6	116.4	98.3
1985	146.1	71.2	106.0	118.4	82.4	80.3	89.4	113.1	103.2
1986	159.0	48.6	106.0	123.7	84.7	79.1	99.3	107.8	97.7
1987	140.7	68.8	103.6	133.5	86.9	78.4	111.1	106.6	97.3
1988	144.6	78.9	109.8	116.8	84.1	63.2	120.6	109.8	101.3
1989	109.7	80.6	114.0	97.4	84.3	60.9	123.5	113.4	101.2
1990	131.2	77.7	115.6	87.6	79.9	65.5	134.1	114.4	103.1
1991	116.3	79.4	123.5	81.0	72.4	50.9	128.0	113.0	97.5
1992	105.5	79.4	130.8	80.6		45.0	131.0	115.2	83.0
1993	101.3	81.2	134.2	80.5		38.9	126.2	117.0	72.0
1994	104.4	88.2	146.6	81.7		30.7			73.9
1995	103.7	86.1	152.2	81.5		17.8			74.0
1996	108.6	87.3	157.5						70.8

Source: Nominal Earnings are from Yearbook of Labour Statistics and the CPI data are from IFS.
Low growth means average annual weighted growth rate less than 0.5% for period 1970-96.

Table 4. Gender of Zone Employees by industry in the Dominican Republic, 1998

Type	Males	Females	% Female	Total
Textiles	57,767	77,867	**57.4%**	135,634
Tobacco	7,520	10,216	**57.6%**	17,736
Footwear	6,974	6,317	**47.5%**	13,291
Electronics	3,320	5,801	**63.6%**	9,121
Services	1,955	2,142	**52.3%**	4,097
Medical Products	756	3,204	**80.9%**	3,960
Jewelry	1,750	905	**34.1%**	2,655
Electric Products	756	1,209	**61.5%**	1,965
Luggage	1,187	689	**36.7%**	1,876
Leather Goods	581	414	**41.6%**	995
Other	1,916	1,947	**50.4%**	3,863
TOTAL	**84,482**	**110,711**	**56.7%**	**195,193**

Source: Warden (1999b), drawn from Informe Estadistico del Sector de Zonas Francas, 1998