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**Evaluating the Malaysian Export Processing Zones**

With special focus on the electronic industry

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## **Abstract**

**Export Processing Zones** are geographical enclaves that have legally been excepted from the country's normal customs barriers and other constraining legislations. **Malaysia** has used them to foster its manufacturing industries, particularly the **electronic** sector. They are intended to attract foreign exchange, create employment and increase **exports**. In a longer perspective they are also supposed to have indirect effects through the creation of **backward linkages**, transfer of knowledge and positive **catalytic effects** on the host country.

The aim of this essay is to evaluate the EPZs' impact on Malaysia and see if their objectives have been reached and what other effects they might have had. This essay is specifically focused on recent developments and what effect the increasing **product fragmentation**, the **Asian crisis** and the new regional free trade area (AFTA) have had on Malaysia and on the electronic industry in particular. This study shows that the EPZ has been a success when it comes to direct effects, but that the indirect effects are still relatively limited and concentrated to certain areas (Penang). It also concludes that the Malaysian EPZ will probably diminish in importance if the mentioned trend continues.

**Keywords:** Export Processing Zones, Malaysia, backward linkage, product fragmentation, export, catalytic effects, Asian crisis, electronic

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## **List of abbreviations**

ASEAN	Association of Southeast Asian Nations
AFTA	ASEAN Free Trade Agreement,
APEC	Asia-Pacific Economic Cooperation
E & E	Electronic and Electrical
EPZ	Export Processing Zone
FTA	Free Trade Area
FDI	Foreign Direct Investments
ITA	Investment Tax Allowance
MIDA	Malaysian Industrial Development Authority
MNC	Multinational Companies
NAFTA	North American Free Trade Agreement
NEP	New Economic Policy
NIC	Newly Industrialised Countries
NGO	None Governmental Organisations
OPP	Outline Perspective Plans
RA	Reinvestment Allowance
R&D	Research and Development
RM	Malaysian Ringgit
UNCTAD	United Nation Conference on Trade and Development
WB	World Bank
WTO	World Trade Organisation

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# **1. Introduction**

This study looks deeper into the phenomenon of export processing zones (EPZs), which have become more important for development in the developing world. The interest in these has been growing because of some countries' successful path to industrialisation through them. The attractiveness for many countries lies in the fact that they do not have to change their overall trading policy. One of these successful countries that have implemented the EPZ as part of their general development policy is Malaysia, which has used this in their Export Promotion policies since the early 70s. They have used several incentives to attract multinational companies (MNC), with the EPZ as the most important one. However, there is not only the issue of attracting foreign direct investments (FDI) anymore, because the main focus of their policy since the 80s has been to obtain technological know-how and create linkage effects. The electrical industries in Malaysia are the dominant industry in the EPZ (and in the country since the EPZ accounts for a crucial part of Malaysia's overall growth) and the main target of FDI. And because of this, it is the natural industry to focus on when studying this development. The MNCs are supposed to bring something more than just the simple importation of capital (and solving the unemployment problems). They are supposed to develop the domestic industry and thereby increase competitiveness on the international market. It is, however, doubtful if Malaysia has experienced these effects.

This study aims to find out what effects the EPZs have had on the Malaysian economy: both the direct and the indirect effects. The main focus is on development since the Asian crisis in 1997, but in order to understand the present you also have to know something about the past.

## **1.1 Method and disposition**

This study is of a descriptive character and may have some limits due to the limited availability of data. It will mainly focus on the economic considerations. The rest of this report I have structured as follows: Section 2 describes the general context of EPZs, objectives and theories around them. In the third section the future of the EPZs is discussed regarding some worldwide trends. In the fourth section Malaysia's industrial policy is examined and labour developments are exposed. In the fifth section and sixth section the direct and indirect effects of the EPZs are analyzed.



## 2. The theory behind EPZ

### 2.1 Definition

According to the World Bank, an export processing zone (EPZ) is “an industrial estate, usually a fenced in area of 10 to 300 hectares that specialises in manufacturing for exports. It offers free trade conditions and a liberal regulatory environment”.<sup>1</sup> However, this definition is a bit narrow since there are several examples of EPZs in developing countries that are not geographically constrained to industrial estates, Mauritius and Tunisia are two examples. In other zones companies are also allowed to sell their output to the host country instead of re-exporting it, (Dominican Republic and Mexico are good examples where they are allowed to export between 20-40 percent to the domestic market). EPZs aim to attract foreign capital and exploit the comparative advantage that developing countries usually share, namely cheap labour.<sup>2</sup> In other words the industries that develops within these zones are labour-intensive ones like the electronic and textile branch. The detailed advantages offered in different EPZs vary greatly between countries, but here are the some of the main characteristics:<sup>3</sup>

- Unlimited, duty-free imports of raw materials, intermediate goods and equipment necessary for production.
- Liberal labour laws and restrictions on unionisation to keep wages down.
- Generous and long term tax holidays.
- Better infrastructure and service (compared to the host country). Some countries also subsidise utilities and rental rates.
- Industrial regulations are relaxed, such as restriction on repatriation on profits, foreign ownership of firms and employment of foreign staff.

Although EPZs are a recent phenomenon there has been an impressive growth of EPZs as they have multiplied by five and provided job for over 40 million (see table 2.1).

**Table 2.1: The Evolution of EPZs Over Time**

	1975	1986	1995	1997	2002
<b>No. of Countries with EPZ</b>	25	47	73	93	116
<b>No. of EPZ</b>	79	176	500	845	3'000
<b>Employment (millions)</b>	0.8	1.9	n.a.	22.5	43
<b>Which comes from China</b>	n.a	n.a	n.a	18	30

Source: ILO (2003) p 2

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<sup>1</sup> Madani, (1999) p 12

<sup>2</sup> Most EPZ is located in the third world, 48 percent in Latin America and 42 percent in Asia. Kusago & Tzannatos, (1998) p 5

<sup>3</sup> Madani, (1999) p 15

## 2.2 Objectives of a trade free zone

The general objective for the EPZ is to promote non-traditional manufacturing exports through MNC investments. More specifically, to attract foreign investments, to provide jobs to alleviate unemployment, export more non traditional manufacturing goods and obtain foreign exchange earnings. But there is also an important demonstration effect that hopefully will eventually be able to develop the domestic industry's international competitiveness. These indirect effects might be difficult to measure "but in the long run they might very well constitute the most important benefits of EPZs".<sup>4 5</sup> One of these indirect effects is the *knowledge spillover* effect that can take place in many different ways; local firms improving productivity by copying technology, former workers start-up on their own and so on. Another indirect effect is the *backward linkage*, when the companies within the EPZ begin to buy more input from the host country.

*Forward linkages* may also arise if exports are allowed to the local market (which they generally are not). This may induce attempts to use these products in some other new activity and thereby increase competition that will promote efficiency. These effects will occur not only if local firms provide training and assistance to their local suppliers but also for the simple reason that the local suppliers are forced to meet the higher quality standards and stricter delivery routines of the MNC (compared to the already existing local companies). Johansson also claims that there is a *catalytic effect* stimulating local firms to engage in export activities to the firms within the zone and in an external effect that spills over to the domestic economy and firms.<sup>6</sup> This effect may also influence the trade policy regime of the host country. Because of the nature of the industries (low cost, labour intensive, low-tech) located in the EPZ there has been some serious doubt about these effects since "firms tend to keep research activities and high end production processes at home".<sup>7</sup> Generally, you can say that the lower the gap between the technologies used in the zone and the domestic economy, the bigger the chances for positive externalities to occur.

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<sup>4</sup> Quote from Lundgren (2000) p 10

<sup>5</sup> For further information about indirect effects read Madani (1999) p 30-34

<sup>6</sup> Johansson (1994)

<sup>7</sup> Quote from Warr in UNCTAD (1993) p 22

### **2.3 The EPZ and the overall trade policy of the host country**

In order to understand why countries apply this “second best alternative” (assuming free trade is the best) we have to look for motives for why they are created in the first place.<sup>8</sup> Madani distinguished between four interlocking goals:

- To consider the EPZ as a first step for further wider reforms in the economy. The EPZ has in this circumstance a limited life span and phases out when the host country has implemented systematic trade, macroeconomic and exchange rate reforms. Both Taiwan and South Korea fit into this category.
- Tunisia is a prime example of the second view of Madani’s terminology. These countries consider the EPZ to be a way of obtaining much needed foreign exchange and partly alleviating some underemployment. However there are no plans to further liberalise the economy so therefore they have left the EPZ in enclave production and actually delayed wider trade policy reforms.
- A third view is to see the EPZ as a testing Zone for a market economy, mainly for the former socialistic countries (like China). In these areas new production, labour and financial relationships and dynamics were introduced and evaluated before they were introduced on a larger scale in the host economy.
- The last option comes from those countries that have a disappointing experience with trade and macro policy reforms. They create the zones mainly to be able to match their neighbouring countries’ incentives in order to attract FDI.

### **2.4 Prerequisite for successful EPZs in Asia**

A lot of things that can go wrong that may help to explain the poor performance of some of the zones. According to Johansson this includes “poor planning and design, abundance of red-tape procedures, insufficient and inefficient promotion, lack of government policy, interventions and finally pure mismanagement”.<sup>9</sup> It is therefore important to also look at some relatively satisfactory examples and see if there is any possible conclusion to be drawn. The best pair of examples probably comes from South Korea and Taiwan. Firstly, they had already formulated an export oriented national strategy, with realistic exchange rates, a partially liberalised trade regime and low inflation. Secondly, the state played its role as a developmentalist state through strong interventions. With a stick and carrot strategy it was

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<sup>8</sup> Madani, WB (1999) p 17-18

<sup>9</sup> Johansson (1994) p 2117

able to discipline the private sector by imposing performance standards, providing subsidies and prohibiting trade unions, but most important it allowed the private sector to grow. Thirdly, they were lucky with the timing of the first zones established, so they could reap the full advantage when the developed countries reallocated their firms in the early 70s and opened up their markets for manufactured products <sup>10</sup> (see section 3.1).

## **2.5 Theories around EPZs, and how to evaluate them**

There has been some development when it comes to how economists look at the EPZ. This is due to the strong growth in the number of zones (and with that an increased interest among economists) and because of the existing economic theories that provide inadequate tools to deal with them. Three different ways to evaluate the zones have been developed, the neo-classical, the cost-benefit analysis and the new growth theory. I am going to present them in the order they were developed. First, there were no specific tools to evaluate the zones so the economists applied neoclassical analysis to deal with them. The first studies <sup>11</sup> were fairly limited in scope and did not take into account some of the most important reasons for establishing EPZs, such as promoting employment and attracting foreign knowledge. They used Heckscher-Ohlin's two factor (labour and capital), two goods and two country model and focused on the final price of the good after the removal of tariffs. They further assumed that the country was relatively labour abundant and when (or if) international capital came in it would focus their resources towards more capital-intensive production according to the Rybczynski theorem; <sup>12</sup> hence it would work against the country's comparative advantage and reduce the country's welfare. Later complementary theories<sup>13</sup> changed this conclusion by emphasising the abolition of tariffs on intermediate products, reduction of taxes on repatriated profits and countries that experience employment problems. Although the model has moved toward more realistic assumptions regarding the EPZ it still lacks explanatory power. <sup>14</sup> Warr recognising these flaws developed the cost-benefit analysis. He is also relatively sceptical towards EPZs and although he recognises it can be a useful instrument in the early stages of development, he questions whether these limited positive effects could be obtained in a more cost effective way. Basically you are supposed to calculate all costs and benefits

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<sup>10</sup> Wu & Amirahmadi (1995) p 836

<sup>11</sup> This group includes Hamada (1974), Hamilton & Svensson (1982)

<sup>12</sup> Employment creation is one of the major targets for the EPZ, so the Rybczynski theorem might not be the best tool as it assumes full employment to start with

<sup>13</sup> Leading theorists here would be Miyagiwa (1986) and Young (1987)

<sup>14</sup> The theory explanation is based on Johansson (1994) p 394

associated with the zone in a static way. Warr also carried one of the first pioneer studies associated this school, and the results are summarised in table 2.2:

**Table 2.2 : Cost-Benefit Analysis of selected EPZ:s**

<b>Name of the zone</b>	<b>Bataan</b>	<b>Masan</b>	<b>Penang</b>
Millions of US \$ 1982	(Philippines)	(South Korea)	(Malaysia)
<i>Employment Creation</i>	59	39	111
<i>Foreign Exchange Earnings</i>	72	65	94
<i>Tax Revenue</i>	11	18	10
<i>Domestic Suppliers</i>	3	16	28
<i>Infrastructure costs</i>	-219	-85	-47
<i>Other costs</i>	-151	-13	-53
<i>Overall Net Benefit</i>	-225	40	143

Sources: Warr in Jayanthakumaran (2003) p 18

Madani concludes that the main drawback of this approach is the lack of adequate data. Assumptions regarding rates of returns, social discount rate and social benefits may easily be questioned and are hard to obtain.<sup>15</sup> Another drawback pointed out by Johansson is that this method emphasize direct effects such as export earnings and job creation but the more dynamic gains such as technology transfers and demonstration effects are assumed to be of minor importance.<sup>16</sup> The new growth theory, which has recently appeared, deals with some of these flaws and therefore is better suited to handle the dynamic gains of the EPZ. In this model the demonstration effect coming from foreign enterprises is the important thing as they can work as a “catalyst which initiates and transmits the export supply response in the host country”.<sup>17</sup> The MNCs are also important because they already have an established international network, so joint-ventures with them can give the local entrepreneur much better access to the world market. They are supposed to stimulate trade-oriented reforms in the whole country if the experience becomes successful through mutual interaction between the zone and the domestic economy. The obvious drawback is that these indirect effects are hard to measure, partly because they are not tangible in nature and it is even more difficult to determine any causality from them.

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<sup>15</sup> Madani (1999)  
<sup>16</sup> Johansson (1994) p 395  
<sup>17</sup> Johansson (1994) p 396

## 3. International product fragmentation and EPZ

### 3.1 The Asian point of view

The process of outsourcing relatively labour-intensive component production to developing countries has been going on since the late 60s and only seems to be increasing. This international product fragmentation allows the production process to be sliced up so that each stage can be reallocated to where the intensively used production factor is cheapest. The intensity of required factors of the given segment and the relative prices of those factors in comparison with their productivity will determine which country produces the components. This outsourcing process was started by American companies but was soon followed by European and Japanese companies in the 70s and by the Newly Industrialised Countries<sup>18</sup> (NIC) more recently. They were usually (at least in the case of the NICs) a response to domestic wage increases causing these countries to begin setting up subsidiaries abroad. The first industries established were in the garment and electronics fields, but the latter industry came to completely dominate the component-driven fragmentation trade.<sup>19</sup> Since the East and South Asian regions are world-leading in this sector it is not surprising to see that it is here that the fragmentation of production has gone furthest.<sup>20</sup>

Some observers thought that this leading role could be adversely affected by the integration of some new emerging countries (namely Mexico and East European countries) because of their proximity to the industrialised countries (closer to the markets and final assembly activities) and their low wages by regional standards.<sup>21</sup> However, the wages still remain low compared to these competitors (Mexico is represents them here, to be compared with the other countries within the same group) despite the rapid industrialisation that has almost doubled their wages (see table 3.1). Moreover, significant differences have created a regional hierarchy that provided the basis for the expansion of intra-regional product sharing system within the region.<sup>22</sup> Above all it is Japan which obtains cheap products from the region and takes care of the lions where of the more sophisticated steps such as Research and Development (R&D)

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<sup>18</sup> The NIC countries are South Korea, Taiwan, Singapore and HongKong.

<sup>19</sup> Four electronic sub-sectors namely office machinery (SITC 759), telecommunication equipment (SITC 764), electrical circuits (SITC 772 and household electrical equipment (SITC 776) have more than an 80 percent market share. The data in this fragmentation section comes from the Standard International Trade Classification which is based on UN trade data obtained from Athukorala (2003)

<sup>20</sup> In the ASEAN 55 percent of the manufacturing trade consists of parts and components compared to 30 and 21.4 percent in NAFTA and EU Athukorala (2003) p 30

<sup>21</sup> Athukorala (2003) p 13

<sup>22</sup> To clarify this hierarchy I have chosen to use table 3.1 with four different groups depending on economical progress and combined with the text the table will reveal which countries belong to each group.

and final assembly. It has a trade surplus with all the countries in the region and also uses them as a manufacturing base to be able to export to third country markets (to curb trade restrictions). The second group is the NIC countries that has moved up the technology ladder and shifted from assembly activities to final goods production. These newcomers have enjoyed substantial agglomeration effects. They are not so vulnerable to the fluctuations in the world markets since their foreign companies have been much more embedded in the host country and respond more sluggishly to relative cost changes.

The third group is the second generation of industrialised countries which is the group that is most dependent on the fragmentation-based production, 74, 54 and 47 percent for Indonesia, Malaysia and Thailand, respectively of the total manufacturing export comes from trade in components. They have been able to upgrade to some extent but they are still dependent on being able to develop their dynamic comparative advantage since there are a lot of countries which are able to compete with just low wages. The final groups consist of countries like China, Vietnam and India, but probably also most developing countries that participate in the world market to any extent. They compete with very low wages and industrialised countries continue to reallocate affiliates there, but even here the wages have increased substantially as can be seen in the table 3.1. One important misconception worth noting of here is that China does not seem to push out any other countries' opportunities by too big expansion in exports. On the contrary China's integration into the regional production network has gone well (export growth has been within the overall increase for newcomers).<sup>23</sup>

**Table 3.1: Annual Compensation per Worker in Manufacturing 1990-1998 (\$ per month)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
<b>Canada</b>	3156	3343	3350	3432	3589	3553	3570	3506	3413
<b>Europe</b>	3074	3283	3600	3388	3503	3724	3728	3616	3618
<b>Japan</b>	3808	4108	4373	4902	5724	5934	5849	5343	5054
<b>Korea</b>	1134	1449	1346	1635	1743	2059	2313	2351	2007
<b>Taiwan</b>	1162	1337	1639	1638	1695	1914	n.a	2032	1970
<b>Mexico</b>	579	666	765	843	854	749	746	831	n.a
<b>Malaysia</b>	387	420	488	570	573	569	665	657	652
<b>Thailand</b>	343	428	502	569	508	523	568	508	472
<b>Philippines</b>	314	370	467	499	565	580	647	623	598
<b>China</b>	178	217	213	317	293	395	428	513	533
<b>India</b>	348	315	323	335	318	427	463	461	474

**Source: Survey of U.S. FDI Abroad, Department of Commerce, US, Athukorala (2003) p 26**

<sup>23</sup> Athukorala (2003) p 12

### **3.2 Reasons for the fragmentation trend**

At an early stage low production costs just were not enough of a reason for MNCs to locate their production in a developing country because the trade barriers and transaction costs were too high. What started this trend was the gradual decrease in tariff and transport costs that made it more profitable to outsource specific product segments. However, this process has been reinforced by several interlocking factors that has enabled it to grow even faster. Firstly, the rapid advancement in production technology that has made it possible to slice up the value chain into finer components, this has in turn enabled individual countries to specialise in smaller segments which is easier than making the whole product from scratch. Secondly, technology innovation in communication and transport has improved speed, efficiency and economy in coordinating geographically dispersed parts of the production process. Thirdly, liberalisation reforms in both home and host countries have removed barriers to trade and investments. These factors have enhanced the price competitiveness and enabled scale economies, which in turn have resulted in market expansion.<sup>24</sup> This process has been most pronounced in labour intensive industries because in high technology industries the proximity to the main market is much more important. They are also more dependent on external scale economics so they can benefit from company clusters (such as Silicon Valley) that may lead to agglomeration and specialisation effects.<sup>25</sup>

### **3.3 Policy Implications**

The fragmentation process that favours outsourcing of labour-intense industries to developing countries in general and EPZs in particular may result in a conflict of interest of static and dynamic industries. In the short run it may make sense to attract industries that use simple technology and require little skill. But this kind of industry does not transfer any technology or create any learning effect. To obtain this the production has to be upgraded, become more sophisticated and less labour consuming. In this perspective Lundgren argues that conflicts between static and dynamic objectives may occur in the EPZ.<sup>26</sup> This problem will be more serious in the second generation of industrialising countries since they are much more dependent on FDI. However, there may not always be a contradiction between short and long term objectives since the country will only be able to climb the technology ladder by starting from the bottom and developing their comparative advantage.

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<sup>24</sup> Athukorala (2003) p 5

<sup>25</sup> Lundgren (2000) p 15

<sup>26</sup> Lundgren (2000) p 16-17



Since the electronic and electrical (E & E) industry is characterized by rapid innovation and continual change there is little risk that the industry will be automated (which some observers fear), and it will therefore continue to expand and provide countries with opportunities to find niches in export oriented production. Another important thing to remember for governments wanting to attract this trade is that since the products cross borders many times, even low tariffs will be magnified and that could be crucial in an industry with thin margins.<sup>27</sup>

### **3.4 AFTA and the fragmentation trend effects on EPZs**

The AFTA agreement was first signed at a ministers' meeting in Kuala Lumpur in January 1992 and it established a time schedule for phasing out tariff barriers (called Common Effective Preferential Tariff). Because of the Asian crisis this schedule has been postponed several times but is due to be carried out in 2008. The aim of this free trade agreement is to eliminate intra-regional tariffs, attract foreign direct investments and improve the efficiency and competitiveness of local manufacturing in the ASEAN countries.<sup>28</sup> The outcome of the establishment of this free trade area (FTA) is hard to predict but the general theory on FTA states that the establishment of FTA will be positive if the industry within it is competing with the same goods (like the electronic sector in SouthEast Asia). Another important factor deciding whether the FTA will be successful is the size of the trade between the involved countries (total size of the trade in the area, so the EU will have greater chances for success than smaller African unions for example. The more internal trade opposed to external trade will also have a beneficial impact). It might look like fragmentation based trade will dominate the area (competing structure) but if one looks at trade partners for the ASEAN countries one can observe that over 60 percent of the final exports goes to countries outside the ASEAN.<sup>29</sup> This implies that extra regional trade is much more important for continued strong growth, which in turn suggests that the trend of increasing product fragmentation will benefit more from global cooperation through organizations like WTO and APEC than regional ones.<sup>30</sup> The effect on EPZs is a bit contradictional as an FTA will remove some of the incentives to invest in the EPZ since the whole FTA will be a tax free area. Some companies will surely be reallocated to other low wage countries within the FTA, but this may be compensated for by other foreign companies that might try to establish themselves here to circumvent the external trade restrictions. Besides the EPZ will probably still have an advantage over non EPZ areas because of more practical matters such as access to adequate infrastructure and administration services.

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<sup>27</sup> Athukorala (2003) p 8

<sup>28</sup> ASEAN

<sup>29</sup> Athukorala (2003) p 33

<sup>30</sup> Athukorala (2003) p 20

## **4. Emergence and design of the Malaysian EPZs**

### **4.1 Industrial strategies and the emergence of EPZs**

After Malaysia gained independence in 1957 it continued to pursue the same laissez-faire policies as the British had done before them, which meant their policies were not characterised by very high protection or strong state interventions. Not until a World Bank trade mission visit in 1963 did Malaysia start to rely heavily on tariff and non-tariff protection to promote infant industries. This early industrialization enabled Malaysia to diversify its economy and reduce the excessive dependence on imported consumer goods. The limited success of import substitution, coupled with the small domestic market which had become saturated by the mid 60s, forced them to make a switch to a more export-oriented industrialisation. The continuously high unemployment and the ethnical conflict in 1969 provided justification for a more active role of the state. It launched the National Economic Policy (NEP), whose objectives were to eradicate poverty and address imbalances between ethnical groups. Recognising that Malaysia severely lacked the technology, manpower and capital to undergo industrialisation, the government created lucrative incentive schemes for foreign direct investment, particular through the launch of the EPZs (for detailed information about the incentives see below). These incentives attracted leading international firms that spurred growth in the 70s, but the Zones also widened the gap to the rest of the economy as little integration between the sectors occurred.

This dualistic structure with few linkages, combined with the great dependency on a narrow range of manufacturing products, led the government to embark on a more aggressive plan to develop a Korean styled heavy industrial programme. This industrialisation programme targeted (through increased protection) large scale, capital-intensive projects (including steel, machinery, petrochemicals and cars) which all had a significant comparative disadvantage in the short and medium run, high technical barriers to entry and long learning periods.<sup>31</sup> This was financed by heavy increases in public expenditures<sup>32</sup>, which combined with falling commodity prices, a slowdown in electronics exports and a rise in imports, (especially of heavy industry and infrastructural items), badly affected the investment and employment climate. With the recession in 1985 the government decided to move towards greater

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<sup>31</sup> However the emulation of Japan and Korea probably failed because the high protection in these industries was not matched by effective monitoring and appraisal as it had been in those cases.

<sup>32</sup> They increased from 300 million RM 1978-80 to 900 in 1982 to culminate with 1,500 in 1984, Alavi p 42

emphasis of export orientation by introducing the Industrial Master Plan (IMP). Many of the old methods (from the first round of export promotion) were used but they were made more generous. Among the more important ones were the relaxation of foreign equity conditions, extension of tax relief's and subsidised investments loans.<sup>33</sup> Most incentives were tied to technological deepening, exports and domestic sourcing of inputs. These changes in policy and external events that strongly depreciated RM against their major trading partners (which of course made Malaysia more competitive) helped attract massive amounts of FDI which spurred exports of manufacturing export. The development was so good that it could be argued that the incentives were too excessive when the economy saw signs of overheating (such as labour shortage and higher wages) in the early 90s. At that time the government became more focused on attracting higher value-added and technology intense operations, so the structural change was addressed through the launch of the Action Plan for Industrial Technology Development (APITD) and Second Industrial Plan (IMP2) (for further information see section 4.3). The technology advancement was encouraged through new arrangements like the Malaysian Industry-Government High Technology (MIGHT) in 1993 and the Multimedia Super Corridor (MSC) in 1997.

**Table 4.1: Industrial strategies and trade orientation in Malaysia, 1957-2004**

<b>Phases</b>	<b>Trade orientation</b>	<b>Period of dominance</b>	<b>Policy instruments</b>
<b>First round of import substitution</b>		1957-1970	Import substitution Domestic market orientation
<b>First round export promotion</b>		1970-1980	Free Trade Zones New Economic Policy Industrial Coordination Act
<b>Second round of import substitution</b>		1980-1985	Heavy industries program
<b>Second round of export promotion</b>		1985 - 2004	Industrial Master Plan Promotion of Investment Act Action Plan for industrial technology development

Source: Rasiah (2002a) p 2

<sup>33</sup> For an extensive review of the increased incentives that were extended through this period see Rasiah (2002a), from where all the statements and statistics in this section are obtained.

## 4.2 The history of the EPZs

The first export-oriented factories that were established when the first EPZ opened up in the early 70s were American electronic industries.<sup>34</sup> These are striking facts in two ways, because in EPZs it is usually the pioneering industry (the initial big investor) that later becomes the dominating one, as the EPZ usually has a tendency of breeding a monoculture.<sup>35</sup> So even though electronics is not the only industry in the EPZ it is the dominating one; in other words it is the industry to focus on when studying the Malaysian EPZ (and the whole economy for that matter since it has become the biggest manufacturing employer, see table 4.3). The other striking fact is the American presence. Unlike the NIC whose economies have been powered by local owned corporations, Malaysia has to rely on MNC and FDI. The aim with the zones was to attract foreign investment and promote manufacturing exports as a part of its New Economic Policy (NEP), and to provide urban industrial jobs for predominantly rural Malays (which is important to understand while evaluating them).

The incentives given to the foreign owned companies that invested in the zones were the traditional ones. The most important being pioneer status, tax holiday, investment and reinvestment tax allowance.<sup>36</sup> Additional restrictions were placed on unionisation in pioneer industries to ensure labour stability in the early years. Other good reasons for MNCs to invest in the EPZ were the political and economic stability, the good infrastructure and the English speaking labour force. These, along with an aggressive investment promotion mission already got the industry to prosper during the 70s with an annual growth rate that averaged 13.3 percent. The industry grew very fast during both the 70s and 80s when it came to export earnings, employment and attraction of FDI. The Electronic industry can now be argued to be the main engine of growth in the country's economy. Over 400 MNCs have been attracted to the zones and around 71.4 percent of the country's manufacturing exports comes from this industry (1995). The most remarkable success story inside the electronic industry is the growth of the semiconductor industry that in 1995 constituted nearly 9.7 percent of the world's total export, or about 38.0 percent of the total electronic export from Malaysia.<sup>37</sup>

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<sup>34</sup> Fairchild and Intel set up assembly factories in Pedang, Ismail (2001) p 8

<sup>35</sup> More info on why they breed an industrial monoculture see UNCTAD (1993) p 13

<sup>36</sup> For detailed description of incentives see the end of this chapter under principal incentives in section 4.6

<sup>37</sup> The statistics in this EPZ section comes from Ismail (2001)

### 4.3 Employment and skills

The electronic sector experienced a rapid employment development during the 90s which more than doubled employment in the sector to 400,000 from 1992 to 2000, but since then employment has contracted somewhat (see table 5.1). To this you have to add the indirect employment generated by their activities, such as supply of inputs and services which conservatively counted should be around 100,000. Cling & Letilly, however, estimate that the multiplication effect is between 0.25 and 2.<sup>38</sup> Due to the exhaustion of labour reserves the overall unemployment rate fell from 6.1 to 2.5 percent between 1990 and 1997. This development has also raised wages (more so than in competing countries, see table 3.1) which, combined with increased competition from low cost sites such as China and the Philippines, in turn emerged because of improvements in infrastructure and political stability. The scarce labour supply forced Malaysia to temporarily import low educated labour from Indonesia and Bangladesh, which at the time accounted for about 15-25 percent of the total labour force. But this policy has gradually been transformed, which was highlighted after the crisis when 350,000 illegal workers were deported. However, this policy change already started with the launch of the Action Plan for Industrial Technology Development in 1990 and the IMP 2 in 1995 when the policy became more focused on industrial deepening, clustering and a shifting to higher value activities.<sup>39</sup> After the crisis Malaysia also took steps to liberalise conditions for manufacturing FDI which had fled. This increased the import rate (see table 5.2). The industry has also become more capital-intensive and more knowledge based which may help to explain the strong productivity growth (see table 5.2).

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<sup>38</sup> Cling & Letilly (2001) p 17

<sup>39</sup> Rasiah (2002) p 17

However Malaysia has had serious trouble upgrading its technology capabilities to respond to these changes (despite all the efforts).<sup>40</sup> Primary and secondary education has always been above the global mean although it has fallen slightly lately.<sup>41</sup> But what has restricted Malaysia's capabilities to drive innovations and upgrade the economy is the very weak supply of R&D<sup>42</sup>, scientist and engineers<sup>43</sup> and the lack of progress in this area.

Rasiah recognise this fact:

“Overcoming the human capital shortfalls will require institution building which will, in turn, require a large commitment of government funding, local political leadership, and industry education institution partnerships to develop the skills required to make the transition”.

This problem could also be mitigated through better incentives for Malaysians educated abroad (which seems unlikely due to bad incentives) and/or a looser immigration policy (as mentioned before it has been tightened) which has helped other industrialised countries to overcome this supply gap. Although the high-tech human capital supply is not enough to satisfy the growing demand, the government's aggressive strategy focused on expanding technical capabilities is reflected in the increasing enrolment rates and the shifting towards more technical and science educated people (see table 4.2).

<b>Course</b>	<b>1995</b>	<b>%</b>	<b>2000</b>	<b>%</b>	<b>2005*</b>	<b>%</b>
<b>Arts</b>	44 886	59,3%	81 914	48,0%	103 846	42,5%
<b>Arts &amp; Humanities</b>	22 262		40 130		48 208	
<b>Economics &amp; Business</b>	20 072		37 875		50 522	
<b>Law</b>	2 552		3 909		5 116	
<b>Science</b>	18 171	24,0%	49 575	29,0%	71 897	29,4%
<b>Medicine &amp; Dentistry</b>	3 738		6 908		8 656	
<b>Agriculture &amp; Related Sciences</b>	2 472		4 940		5 961	
<b>Pure Sciences</b>	4 032		9 081		14 739	
<b>Technical</b>	12 652	16,7%	39 305	23,0%	68 784	28,1%
<b>Engineering</b>	9 756		31 494		57 684	
<b>Architecture</b>	1 397		4 682		7 920	
<b>Others</b>	1 499		3 129		3 180	
<b>Total enrolled</b>	<b>75 709</b>	<b>100 %</b>	<b>170 794</b>	<b>100 %</b>	<b>244 527</b>	<b>100 %</b>

Projections from Malaysian Plan 6, 7 and 8  
Source: Awang (2004) p 3

<sup>40</sup> For an extensive review of these policy developments see Felker (2003)

<sup>41</sup> Rasiah (2002) p 16

<sup>42</sup> In 1998 just 0.4 % of the GDP was spent on R&D compared to 2.7 in South Korea and 2.9 in Japan, Awang (2003) p 5

<sup>43</sup> Between 1985-1995 only 500 per million in the population were trained scientist and engineers compared to 2639 in South Korea and 6309 in Japan, Awang (2003) p 5

That there is a strong demand for educated manpower is also reflected in the upgrading of the labour force structure that has been enabled by the expansion of education (see table 4.3 which shows a falling demand for simple production workers and an increased demand for the first three groups, the most educated ones). The expansion in industrial employment has tapped the countryside and the agricultural employment has fallen substantially since the 80s.

	1989	1995	2000	2005*
<b>Professional, technical &amp; related workers</b>	7.5%	9.9%	11.0%	12.1%
<b>Administrative &amp; Managerial workers</b>	2.1%	3.2%	4.2%	5.0%
<b>Clerical &amp; Related Workers</b>	9.5%	10.9%	11.1%	11.2%
<b>Sales Workers</b>	11.4%	10.9%	11.0%	11.3%
<b>Service Workers</b>	11.4%	11.1%	11.8%	12.4%
<b>Production &amp; Related Workers</b>	29.3%	33.9%	32.8%	30.9%
<b>Agriculture Workers</b>	28.9%	20.1%	18.1%	17.1%
<b>Total (thousands)</b>	n.a	7 997.5	9 271.2	10 858.9

\*Projections from Malaysian Plan 6, 7 and 8  
 Source: Awang (2004) p 3

#### 4.4 Wages and labour conditions

Wage statistics for the zones are very fragmental so this survey is far from comprehensive. But the conditions in the Malaysian zones are generally better than the reputed conditions of EPZs in general. In the electronic industry EPZ wages tend to be higher than in the rest of the economy. In 1990 the average monthly wage in the zone was 920 compared to 709 RM outside.<sup>44</sup> Previously, when the industry was less knowledge-intensive, the situation was reversed, but the long term tendency is that the wage gap is increasing.<sup>45</sup> Generally, wages increased substantially in the early 90s but this all ended with the crisis when wages even contracted to eventually settle at a more moderate pace that would not risk their competitiveness (see tables 3.1 and 4.4). The wage ratio between unskilled and skilled production workers has remained virtually the same since the 70s, at around 60 percent which is remarkable considering that the wage premium should have gone up in the 90s following the upgrading of industry and increased demand for skilled labour.<sup>46</sup>

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003
<b>Growth</b>	20.9	4.4	5.9	-2.7	-1.7	12.9	3.5	4.9	4.4

Source: Malaysian Treasury (2004)

<sup>44</sup> For real value of the RM see appendix.  
<sup>45</sup> Sivalingam in Kusago, WB (1998) p 17  
<sup>46</sup> Rasiah (2002a) p 39

Two of the main lure of the Malaysian EPZs have been the low wages and the weak unions. No national union is allowed and the Ministry of Human Resources has decided that only in-house unions may be formed in the electronic sector. There are EPZ specific laws and regulations that restrict labour activities and protect companies against irresponsible unions. In addition, the Employment Act of 1955 also prohibits the use of strikes and lockouts in pioneer industries of vital interest. A low unionisation grade around 10 percent, (similar to the figures outside the zones) high turnover (15-20% per year) and little coordination between unions and Non Governmental Organisations (NGO) further limits the unions' influence.<sup>47</sup> The main labour issues now are the refusal of the government to set minimum wages, the abolishing of the legislation that previously prohibited night work for women (to enable enterprises to operate three shifts) and the extensive use of overtime workers.<sup>48</sup>

#### 4.5 Gender

The common pattern of the EPZs in the developing world with a high share of young and unskilled women is not as obvious in Malaysia anymore. The female participation rate has fell substantially from 75 to 53.5 percent between 1980 and 1990, which is more in line with the common development in manufacturing outside the zone which went in the opposite direction from 35.6 to 47.2. This decreased participation rate was quite unique compared to other zones that has maintained rates over 70 percent.<sup>49</sup> After the 80s the EPZ seem to follow the overall trend for the manufacturing sector with a knowledge increase in the 90s. However female participation overall and among the skilled seem to have fallen (the last from 59.4 to 51.4). Overall, there was no big difference between the men and women when it came to skilled, semiskilled and unskilled production workers (51, 48, 51 percent female participation rate, respectively 1997).<sup>50</sup> Among professional, non-professional managerial, technical and supervisory staff the female participation rate continually increased from around 5 percent at the start to over 20 percent 1997. To sum up, the industry has become more knowledge intensive as more skilled men have been employed. For the probable gender inequality when it comes to wages no data exists yet.<sup>51</sup>

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<sup>47</sup> Numbers comes from Ahmadu (1998)

<sup>48</sup> Statements comes from Ahmadu (1998)

<sup>49</sup> Sivalingam in Kusago, (1998) p 9

<sup>50</sup> One thing to remember though is that the overall participation rate among people from 15 to 64 is much higher among men, around 50 percent, than women who linger at 30 percent so there is still a bias against women in manufacturing. Rasiah (2002a) p 38

<sup>51</sup> Rasiah (2002a) p 38



## 4.6 Ethnic policy and its consequences

The NEP has, as mentioned, two pillars, namely poverty reduction and restructuring society to reduce inter-ethnic disparities.<sup>52</sup> It was supposed to unite the country by reducing inter-ethnic resentment due to social-economic disparities. The first pillar containing poverty reduction has been uncontroversial and successful, wherefore the NEP has increasingly become involved with the restructuring of society.<sup>53</sup> In practice, restructuring means increasing the Bumiputera (ethnic Malay) involvement in the economy by redistributing corporate ownership and expanding economic opportunities (increase employment and educational share of the Malays). This has been achieved by using public sector and state intervention extensively.

The most debated issue has been over the failure to reach the targeted 30 percent for Malay ownership of the corporate sector, which has hovered around 18 percent since the 80s (up from 1.5 in 1969).<sup>54</sup> By setting up a lot of public joint-venture enterprises (1,148 in 1987) the government tried to secure the Malay influence, but these policies have blurred the lines between politics and economics and it is now widely believed that wealth accumulation is crucially determined by political access and influence, rather than entrepreneur ability. The issue of wealth ownership only involves a small elite as reflected in the fact that 1.3 percent of the eligible Bumiputeras owned 75 percent of the shares.<sup>55</sup> Recent policies of discretionary privatizations (part of the second round of export promotion in the eighties) have only increased the resentment and criticism of rent-seeking and cronyism and so has the selective nature of the bail-out process following the economical crisis 1997-98.<sup>56</sup>

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<sup>52</sup> The NEP has been implemented through the three Outline Perspective Plans (OPP), the first for 1971-90, the second from 1991-2000 and the third from 2001-2010

<sup>53</sup> Although arbitrary and partly based on disclosed information, the proportion under the official poverty line went down from 49.3 to 16.5 and 7.5 in 1970 to 1990 and 1999 respectively thereby reaching the targets set in the OPP:s Jomo (2001) p 4-5

<sup>54</sup> The official figures here are questionable since they underestimate the real value, firstly it is only nominal share compared to actual stock share that was 34.5 percent in 1989; secondly, locally controlled companies are assumed to be non-Bumiputera and thirdly because foreign branches have been ignored. Jomo (2001) p 10-11

<sup>55</sup> The intention while starting the NEP was to let the "Bumiputera trust agencies" spread the influence over the corporate sector instead of concentrating it to individuals. Therefore the target in the OPP1 was 82.7 percent trust share versus only 17.3 individual, in reality 91 percent was controlled by individuals in 1999. Jomo (2001) p 12

<sup>56</sup> The privatizations were inspired by the monetarist "counter-revolution" and they included major state-owned companies as Malaysian Airlines, Petronas, and the national lottery whom were sold off at substantial discounts to well connected businessman with links to the ruling Barisan Nasional Jomo (2001) p 24-25

When it comes to creating opportunities the NEP has been successful in changing the ethnical proportions in both lucrative professional occupations and social enrolment ratios. The Bumiputera share in those professions has gone up from 4.9 to 32 percent between 70 and 1997 and was only severely underrepresented in “administrative and managerial” and in sales. As a matter of fact, the Malay was so over-represented in the public universities (up to 67 percent in 1985 from 40 percent in 1970) that there were controversies over their share of the public quota.<sup>57</sup> Although the NEP has reached its goals, it is probably more down to higher growth levels than to specific economic policies, which have declined in influence over the economy as the economy has opened up. It is fairly clear that the economy would have expanded even more without these contra productive measures. However, some policies for economic justice seem inevitable as the “alternative is continued inequality, and perhaps more ominously, heightened and irresolvable ethnic conflict”.<sup>58</sup> Sadly it seems like the NEP has played a part of the deteriorating inter-ethnical relations since the sixties.

## **4.7 Principal incentives**<sup>59</sup>

### *4.7.1 General Incentives*

#### Pioneer Status

A company granted Pioneer Status enjoys a 5-year partial exemption from the payment of income tax. It will only have to pay tax on 30% of its statutory income. However, there are a few exceptions for which the government may consider more favourable tax relief on a case by case basis:

- Companies located in the *States of Sabah and Sarawak* and the designated “*Eastern Corridor*” of Peninsular Malaysia, will only have to pay tax on 15% of their statutory income.
- *High technology* companies engaged in promoted activities/products in areas of new and emerging technologies may receive a tax exemption of 100% for five years.
- *Strategic projects* or activities of national importance. They generally involve heavy capital investments with long gestation periods, have high levels of technology and are integrated, generate extensive linkages, and have significant impact on the economy. They may receive tax exemption of 100% of statutory income for a period of 10 years.

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<sup>57</sup> Jomo (2001) p 12-13

<sup>58</sup> Jomo (2001) p 22

<sup>59</sup> From MIDA

#### Investment Tax Allowance (ITA)

A company granted ITA receives an allowance of 60% of qualifying capital expenditure incurred within five years from the date of approval of the project. Companies can offset this allowance against 70% of their statutory income in the year of assessment. Any unutilised allowance can be carried forward to subsequent years until fully utilised. The remaining 30% of statutory income is taxed at the prevailing company tax rate. As in the case of Pioneer Status companies, an additional incentive is enjoyed by promoted activities/products (the same exceptions as above). These companies can obtain an allowance of 80% of the qualifying capital expenditure incurred. The allowance can be utilised to offset 85% of their statutory income in the year of assessment.

#### Reinvestment Allowance (RA)

All manufacturing companies that have been in operation for at least 12 months and incur qualifying capital expenditure to *expand production* capacity, *modernise and upgrade* production facilities, *diversify* into related products, and *automate* its production facilities can obtain a Reinvestment Allowance (RA). The RA is 60% of qualifying capital expenditure incurred by the company and is given for a period of 15 years beginning from the year the first reinvestment is made. These can be prolonged under the rules of Accelerated Capital Allowance by an additional three years, of the initial allowance of 40% in the first year and annual allowances of 20%.

#### 4.7.2 Incentives for exports

##### Tariff Related Incentives: Exemption from Import Duty and sales tax

Full exemption from import duty can be considered on raw materials/components regardless of whether the finished products are meant for the export or domestic market. These exceptions can also be obtained on most machinery and equipment and on spares and consumables.

##### Double Deduction on Export Credit Insurance Premiums

To encourage exports to penetrate into non-traditional markets, double deduction is allowed for premium payments in respect of export credit insured with a company approved by the Ministry of Finance.

#### Double Deduction for the Promotion of Exports

Certain expenses incurred by resident companies in looking for opportunities to export Malaysian manufactured and agricultural products and services qualify for double deduction.

#### Industrial Building Allowance

An annual allowance of 10% of qualifying capital expenditure applies to buildings used as warehouses for storing goods for export and re-export.

#### *4.7.3 Incentives for Research and Development*

A company which undertakes in-house research and development to further its business can apply for 50% ITA on qualifying capital expenditure incurred within 10 years. A company can enjoy double deduction on revenue (non-capital) expenditure for R&D which is directly undertaken and approved by the Ministry of Finance.

#### *4.7.4 Training incentives*

In order to encourage the upgrading of skills and capability, the following incentives are available: double deduction for approved training, deduction for pre-employment training, non-employee training and cash contributions. Also companies which incur expenditure on buildings used for approved training can claim a special IBA.

### **4.8 Summary**

Generally, Malaysia's policies to promote EPZs have been pretty successful, especially if you compare them to other countries that have embarked on the road to industrialisation through EPZs. But it was not until the launch of the Industrial Master Plan in 1985 that their path became economically sustainable. Since the early 90s the policies have shifted from just achieving high growth to upgrading the economy to export more sophisticated and profitable goods. However, as I have shown, Malaysia has had some serious problems in these aspects. Inequalities between the genders seems to have gone down somewhat. The ethnical policies have been successful in reaching socio-economical targets but have failed to improve the inter-ethnical relations. In the next section I will evaluate the direct impact that the EPZs have had on the Malaysian economy.

## 5. Direct effects of the EPZs

Since there is limited information available about EPZs, because they are administrated locally by the states they are located in, (and the information does not seem to be compiled centrally) we have to look at other sources. Of the eleven Malaysian EPZs seven are devoted to electronics and account for 74.5 percent (1979) of the employment in the zones, and since at least 80 percent has to be exported, only very export oriented industries can be considered.

<sup>60</sup> Because the electrical industry most often correlates with the EPZs and because zones generally tend to breed a monoculture of industries, there is a good case for studying it when you want to know more about the Malaysian EPZs.

The electronic industry has been a remarkable success story and has gone from being a tiny industry in the 70s to dominate the manufacturing industry with around 35 percent of the employment and 69 percent of the export, which brought in 60 percent of total foreign earnings.<sup>61</sup> The industry has been able to grow much since it fits well into the international growth pattern of EPZs in developing countries. It is a big industry internationally which has made the clustering effects substantial. It is also relatively labour intensive as can be seen in table 5.1 and not highly capital intensive, which would be hard for a developing country to afford. With the accelerated globalisation (read increased fragmentation) in the 70s and 80s many industries were undergoing structural changes trying to cut costs (read labour costs) which also favoured this industry that increasingly became outsourced to developing countries like Malaysia.

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<sup>60</sup> UNCTAD (1997) p 13

<sup>61</sup> MIDA (2003) and Malaysian Treasury (2004)

**Table 5.1: Manufacturing Employment 1998, Employment per enterprise and Capital/Labour**

Sector	Employment	%	Empl/Enterpr.*	C/L*
Electrical and electronics	332 297	35.10%	144	269 606
Textiles products	90 310	9.50%	81	126 718
Wood products	81 847	8.70%	114	131 743
Food manufacturing	57 975	6.10%	70	204 136
Rubber products	53 911	5.70%	131	123 804
Transport Equipment	38 636	4.10%	88	424 121
Plastic products	35 261	3.70%	63	162 088
Non-metallic products	34 861	3.70%	56	643 964
Fabricated metal products	34 189	3.60%	68	135 071
Paper, printing and publishing	29 609	3.10%	7	596 952
Miscellaneous	157 076	16.60%	57	495 788
<b>Total/average</b>	<b>945 972</b>	<b>100.00%</b>	<b>91</b>	<b>404 787</b>

\*Refer to approved projects between 1998-2003

Source: MIDA (2003)

## 5.1 Growth development in Electronics

This industry<sup>62</sup> is dominated by big Multinational Companies and geared towards exports. The slowdown in growth between 1995-1997 (see table 5.2) was partly caused by one of their main trade partners (Japan), which sharply depreciated its currency at the time, making the Malaysian Ringgit (RM) overvalued. The Asian crisis hit Malaysia in June 1997 and the currency depreciated 55.4 percent against the dollar before it was pegged at 3.8 to the dollar in September 1998.<sup>63</sup> Although the aggregated growth for Malaysia contracted by 7.36 percent in 1998 the growth of the electronic industry picked up some speed again with 24.6 percent from a mere 12.6 the previous year (see table 5.2). The reason is of course the many MNCs that are part of an integrated international production system (one-third of the world trade consists of such intra-firm trade and even higher in the electronic industry) and therefore have been able to take advantage of the decreased cost and wages derived from the stronger foreign currencies.<sup>64</sup>

<sup>62</sup> The Malaysian EE industry essentially consists of two related industries. The electronics industry is defined as the production of “equipment whose functioning is based on the manipulation of electrical signals/impulses and/or components of such equipment”. The electrical industry produces equipment which “generates, stores and transmits electrical power or transforms electrical energy into other forms of energy”. MIDA (1990)

<sup>63</sup> UNCTAD (1998)

<sup>64</sup> UNCTAD (1998)

The crisis also increased the productivity levels (see table 5.2) and created new investment opportunities, which increased foreign investments, after the shock effect ceased, from a severe drop in 1997-98 (see table 5.2). This growth path continued until 2001 when then worldwide demand for electronics declined. Altogether this period (1997-03) was volatile and did not follow the steady growth path of the three previous decades. Despite a high annual average growth of 9.6 percent no expansion in employment opportunities has occurred. However this is still much better than the rest of the domestic economy and the industry will continue to be the leading one.

**Table 5.2: Malaysia's Electronic Industry, 1992-2003**

Year	Employment	Growth	Productivity*	Import/Export
1992	204 000	23.4%	157 843	73.7%
1993	231 000	30.7%	182 251	70.4%
1994	278 000	34.0%	202 878	73.9%
1995	313 000	25.9%	226 837	75.1%
1996	329 100	7.0%	230 933	74.2%
1997	343 300	12.6%	249 345	70.1%
1998	341 700	24.6%	312 262	63.1%
1999	382 000	21.6%	339 791	61.1%
2000	423 600	28.7%	394 476	67.4%
2001	355 800	-13.6%	405 846	66.9%
2002	345 500	-5.4%	395 369	73.6%
2003	360 048	7.7%	408 557	75.5%

\* Output Per Worker  
Source: MIDA (2003 )

## 5.2 Foreign Direct Investments

The electronic industry has been able to capture the lion's share of the FDI in Malaysia (see table 5.3). But you can also reflect on the dependency on the international corporations as slowdowns of the worldwide demand for electronic products have affected the investments much more than in other Malaysian industries (the oil industry was not as badly affected by the Asian crisis).

**Table 5.3: Sector share of the total Malaysian FDI (Million of RM)**

Sector/year	1996	1997	1998	1999	2000	2001	2002
Electronic	54%	25%	15%	48%	51%	50%	35%
Oil & gas	4%	37%	16%	26%	16%	1%	41%
Chemical	12%	6%	32%	2%	3%	4%	4%
Other %	30%	32%	37%	24%	29%	45%	20%
Total	17 057	11 473	13 064	12 274	19 849	18 907	11 578

Source: MIDA and Malaysian Treasury various years

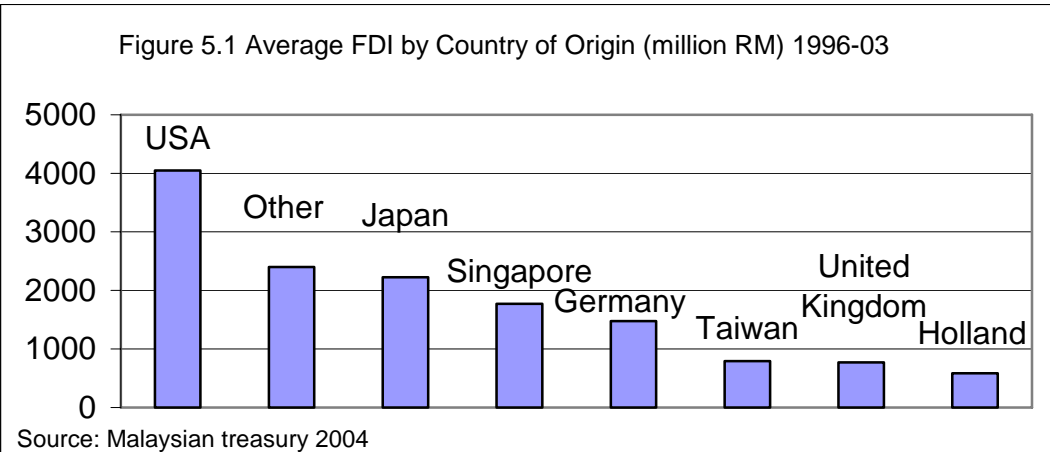
Just how international this industry really is, is very well captured in the investments statistics and as can be seen in table 5.4, the foreign share has in some years been as high as 92.1. But the aggregate investment seems to follow the FDI trend and is not as mobile so the downturns are not quite as bad (which cause the FDI to react faster to demand fluctuations)

**Table 5.4: Foreign Direct Investments in the Electronic industry (Million of RM)**

Electronics*	1996	1997	1998	1999	2000	2001	2002
Foreign investments	8995	2730	1422	5947	10210	9509	4005
Capital Investments	11816	5392	1653	7032	12182	10325	5651
Share of FDI	76.13%	50.63%	86.03%	84.56%	83.81%	92.10%	70.88%

\* From 1999 Electrical and electronic products are included  
 Source: MIDA and Malaysian treasury, various years

The main source of foreign investment in Malaysia is the USA with 27 percent. Other big investors are Japan, Singapore and Germany with 15, 12 and 10, respectively, of the FDI (for comparison see figure 5.1).<sup>65</sup> Suppose that these figures were representative for the electronic industry; then they would not be surprising considering the structure of the industry which is dominated by large MNCs. The deeper cooperation in the region with arrangements that are moving towards the FTA (among others are the ASEAN Free Trade Agreement, AFTA) with assurance of market access and reduction of trade barriers has facilitated an emerging trade pattern of fragmentation of production and more vertical specialisation. The fact that the FDI comes from almost the same countries that are the electronic industry’s main markets for export suggests that regional intra-firm trade might be high (compare figure 5.1 and table 5.5).

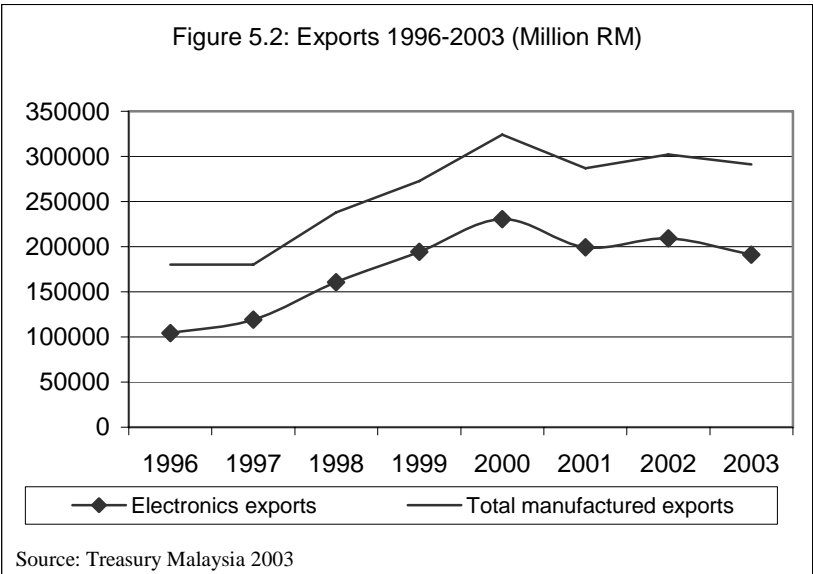


<sup>65</sup> Since country based FDI figures for the electronic industry have been hard to obtain I have chosen to analyse the aggregate figures for the whole economy, this is not to say that these figure necessarily correlate exactly.



### 5.3 Exports

The total manufacturing exports almost doubled from 1996 to 2000 but seem to have levelled out at fairly high levels around 300,000 million RM. The electronic industry export was responsible for almost all of that growth, but since the peak of 2000 has lost almost 5 percentage points and now only accounts for 65.6 percent of the total exports (see figure 5.2). Another trend is that imports, as a share of the exports for the industry, went up from 61.1 to 75.5 percent<sup>66</sup> between 1999-2003, which suggests that the local content has gone down and that MNCs are sourcing their input from their regional affiliates (another factor that points to an increasing regional fragmentation trend).



As mentioned before the share of exports is following the same trend as the FDI, but another thing to note is that more than a third of the market is spread out to other countries, which suggests that this is a competitive industry that has made it into markets all over the world.

**Table 5.5: Export Markets for E & E 1999-2003**

Country	%
United States	27.4%
Singapore	18.8%
Japan	9.8%
Hong Kong	6.2%
China	3.4%
Others	34.4%
<b>Total</b>	<b>100.0%</b>

Source: Bank Negara Annual Report (2003)

<sup>66</sup> MIDA (2003)

## **5.4 Export as a contributor of foreign exchange earnings**

Although the Malaysian EPZ record in promoting gross exports has been impressive, the benefits to the host economy might not have been so high. This is because production in the EPZs has a high import content. The benefits to the host economy from foreign exchange earnings arise when firms convert foreign currency into local to pay for local purchases and wages, but “Zones in Malaysia are highly focused on the electronics industry and local purchases constituted only a small percentage of the total”.<sup>67</sup> So instead of gross export you have to look at the net export. Figure for Malaysia on this is hard to obtain but Jayanthakumaran estimates it to be as low as 33 percent (1978) of gross export and claims it has remained virtually the same. However, Warr’s cost benefit-analysis for the Penang EPZ estimated the foreign exchange earnings to be 94 million US dollars 1982 or 38.6 percent of the total benefits (where employment is the other major benefit which contributed 45.6 percent, see table 2.2).

## **5.5 Summary of findings**

There is reason to suspect that the economy is reaching (or has already reached) a fifth developmental stage (see table 4.1) that differs somewhat from the previous era because the industry does not create jobs as it used to do, but has instead become more knowledge-intensive with higher productivity levels (see chapter four for the means to upgrade the economy to this stage). This trend is also reflected in investments and exports that have limped since the peak in 2000. This is probably linked with the regional fragmentation trend which will only become stronger as the implementation of AFTA progresses (as more countries and more products become affected). Politically, these tendencies may be hard to deal with as Malaysia may perhaps have to give up market shares to its competitors as trade barriers decrease. In the next section I intend to look at the indirect effects.

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<sup>67</sup> Jayanthakumaran (2003) p 13

## 6. Indirect effects

### 6.1 Backward Linkages and technology transfers<sup>68</sup>

In order to acquire information about these effects, we have to focus our search on the micro level since development has differed in the various regions of Malaysia. There are three major regions for the electronic industry that have developed since the early 70s: the Chinese dominated Penang, the capital region of Klang Valley and that of Singapore, which have positively affected the Johor state and they are all roughly of the same size.<sup>69</sup> The federal policy has generally been biased towards large and foreign industries so the local cluster development has only taken place when the local state has been proactive. The creation of backward linkage and spill over effects (see section 2.2) between the MNC and the domestic sector depends to a large degree on how big the technology gap is and to what extent the local state has been able to bridge it over. This is because:

“MNC is badly positioned to identify small scale and medium firms potential capabilities as it would require detailed scrutiny and monitoring. They themselves have received little encouragement to participate in such developments, which can be risky and uncertain...small firms on the other hand face financial problems including accessing subsidized loans and technical assistance and are hardly prominent enough to attract the attention of potential multinational clients”.<sup>70</sup>

#### 6.1.1 Penang

The only state that has been able to bridge this gap is the Penang state in the north. Penang has been doing so by pursuing a proactive systematic coordination policy that has accelerated the inter-firm links, and created a strong supplier network which has been able to increase the localisation of inputs. In 1998 the local sourcing of the total purchase was 40-50 percent in consumer industries and 20-40 percent in electronic components, and the Penang region had raised its share of total manufacturing output from 13 to 46 percent between 1971 and 2000.<sup>71</sup> Most Penang supplier firms have reached the third or fourth stage of technology absorption

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<sup>68</sup>To obtain statistics for this chapter has been hard so I have chosen to base it on various surveys made of Rajah Rasiah that may not always be complete.

<sup>69</sup> Penang is the largest with over 90,000 employed, followed by the Klang Valley with 85,000 and Johor with nearly 80,000 in 1995, Rasiah (1999) p 6

<sup>70</sup> Rasiah (1999) p 5

<sup>71</sup> Rasiah & Best (2003) p 42

and diffusion, which means that they have begun to adapt and reverse engineering imported machinery for their own use, and developed their own original equipment manufacturing capabilities to supply the MNC (third stage). This is in sharp contrast to firms elsewhere in Malaysia, which still perform low-end activities with imported machinery and design (first stage), or in rare cases have upgraded to use imported assembly semi automated machinery (second stage). The fourth and final stages in this categorisation are when they are able to introduce their own design while still oriented to supplying MNCs. The active state agency Penang Development Corporation (PDC), that has made the mentioned progress possible, has not only coordinated the cooperation but sustained the growth by seeking new industrial specialities from Silicon Valley, Japan and Taiwan. It was able to differentiate and diversify the production away from just massproduction operations of semiconductors and components in the early 70s to telecommunication components and equipment, audio video equipment in the late 70s and disk drives and computer assemblies in the 90s.<sup>72</sup> The MNCs have played a major role as a training ground for technical and skilled personal to gain critical tacit and experimental experience for new firm creation. Globetronics, Shinca, Unico are all example of local entrepreneurs that have gained their experience from working for MNC. The technology transfer has been very impressive so the local ancillary firms linked to the electronic industry has increased from 45 firms 1989 to 155 firms in 1993 and 455 in 2001.<sup>73</sup> Despite this impressive performance the lack of high-tech human capital has restricted Penang's capacity to attract high value-added activities such as R&D and new product development. Their invitation strategy has worked well since demand for science and engineering capital has not been high for assembly test and redesigning activities. However this will not be the case if they want to continue expanding (see section 4.3).

### *6.1.2 Klang Valley*

In the beginning the Klang Valley (consisting of the four states Selangor, Negeri Sembilan, Melaka and the federal capital Kuala Lumpur) was the main place for foreign firms to locate their subsidiary firms. The region has indeed created a large production capability in consumer electronics and related components, so the scope for clustering (and the beneficial effects from that) would appear to be substantial. However, the region is more like a loose agglomeration of firms and institutions than a prospering cluster like the Penang region.

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<sup>72</sup> Rasiah (2002) p 24

<sup>73</sup> Rasiah (2002) p 26

The reason for this is that the regional agencies have been comparatively passive in promoting regional dynamism or as a managing director of Motorola explained in 1995:

“We are for greater sourcing as that would raise our productive flexibility and lower costs. But private firms generally do not individually search and canvass for greater inter-firm collaboration and sourcing. It was possible in Penang because of the dynamic role of PDC, which created deliberation councils and took on a proactive role of promoting and matching firms”.<sup>74</sup>

So in that aspect it comes as no surprise that only 2-10 percent has been sourced locally. Knowledge transfer in inter-firm training relationships involving MNCs has also been limited and what does exist comes from business councils representing foreign countries (examples include JETRO for Japan and the American Business Council). Their efforts have seldom gone beyond national interest and therefore lack cross-national coordination and consequently generate little spillover effects to the local economy. The lack of systematic relations between firms and institutions has also limited the transfer of knowledge developed in MNC by entrepreneurial professionals and technical personnel, to start new firms in the region although there seems to be considerable market potential for their specialised capabilities<sup>75</sup>.

### *6.1.3 Johor*

The electronic industry in Johor has progressed relatively recently from the outsourcing of labour intensive production in Singapore and the formation of the Singapore-Johor-Riau (SIJORI) growth triangle in 1989. It has created a high production capability in computer peripheral and consumer electronics assembly, although they sit at the bottom of the value chain (due to rising wage costs, the industry has become more automated). As in Klang Valley the companies in this region have seldom gone beyond the first stage of technology transfer, and the sourcing pattern is similar to those in the central state because of the low capabilities of the local and indigenous suppliers. Other similarities with the Selangor region are the lack of state support which has prevented the establishment of information and co-ordination networks between firms and institutions. Instead the region has been relying on Singapore for such efforts, or as an official from Johor state development corporation put it:

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<sup>74</sup> Rasiah & Best (2003) p 43

<sup>75</sup> Rasiah has done a series of interviews that shows these kind of personnel has generally remained in their old firms in the Klang Valley (2002) p 37

“Singapore spends heavily on promotion, while we absorb some of the synergies because of our close location and the division of labour that has emerged in the industry... Our activities do not stretch to co-ordinating firms activities. We only do that when we have equity participation in the firms. As for others, we see it as getting too involved in activities outside our area. If firms establish strong linkages in Johor, that is good for us. But it should come from firms’ own initiatives”<sup>76</sup>.

Therefore, there has generally been low professional turnaround and the bigger successful local firms tend to operate without production links with MNC and few former MNC employees have started up new firms. The local sourcing is reported to be only 15 percent and almost no R&D activities have been conducted here due to their role in the regional production organisation.<sup>77</sup>

## **6.2 Catalytic effects**

As revealed in the objectives for a free trade zone section (2.2), the catalytic effect can be separated into two different but related areas, namely on micro and macro level. The micro level deals with the role of the MNC and its ability to spur the domestic firms to become more export oriented. This is closely connected to the linkage and learning effects that were discussed in this chapter. The macro level deals with the effect the EPZ has on overall trade policy in the country.

### *6.2.1 EPZ as a catalyst on the micro level*

As stated, the situation in Malaysia is not homogeneous as it differs in the different states. The learning effects have been strongest where the local state efficiently encouraged has cooperation between MNCs and local companies as in Penang. Elsewhere in Malaysia the development has not been as promising, but it is still clear that the domestic companies have been able to develop faster by greater interaction with MNCs, and by being exposed to increased competition, all effects that the EPZ:s have brought.

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<sup>76</sup> Rasiah (1999) p 16

<sup>77</sup> Rasiah (1999) p 15

### 6.2.2 EPZ as a catalyst on trade policies

When first introduced, the primary aims of the zones were to earn foreign exchange and create jobs by promoting manufacturing export. But the incredible success of the zones and the disappointing experiences with the second round of import substitution in the early eighties have likely affected Malaysia's trade policies towards more openness.<sup>78</sup> In an attempt to detect and measure possible catalytic effects, Johansson and Nilsson used a gravity model to evaluate the effects of EPZs on exports.<sup>79</sup> In their results they distinguish between two different groups of countries that have implemented EPZ successfully (in terms of attracting FDI and creating employment). The groups follow Madani's terminology in section 2.3 where one group has followed outward oriented trade policies<sup>80</sup> and the other has pursued more protective strategies.<sup>81</sup> Only in the first group has the EPZ had a significant positive impact on exports,<sup>82</sup> which seems to be a justification that an open trade regime and favourable micro characteristics facilitate a beneficial impact of EPZs on export. When they continue their studies they come to the conclusion that Malaysia has had a positive catalytic effect, although stable during the eighties (in theory this effect is expected to increase as the zones become more integrated into the economy). Although this may be a premature conclusion, it looks like the catalytic effect may have increased recently (see figure 5.2) as the non-electronics share has gone up for five consecutive years.

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<sup>78</sup> This trend was inspired by Thatcher/Reagan policies that dominated the world politics at the time

<sup>79</sup> Johansson & Nilsson (1997)

<sup>80</sup> Consisting of countries like Hongkong, Malaysia and Mauritius

<sup>81</sup> Consisting of Dominican Republic and Mexico

<sup>82</sup> Note that these results could be fragile and may be caused by other circumstances than the measured ones, Johansson and Nilsson (1997) p 2122

## **7. Summary and conclusions**

The purpose of this essay has been to study and evaluate the development of the Malaysian EPZs and their effects on the host economy. This goes beyond the original narrow objectives that the Zones once were created for, namely to create urban industrial jobs for mainly Bumiputera and earn some foreign exchange. Of course the question of whether the zones have been successful or not depends on what objectives one emphasizes and the relative importance one gives to them.

I started this paper by trying to explain what EPZs are and to put them in context. The EPZ is not a new phenomenon but its lure has increased as more countries have found a way to develop their industries through them. The main reason for their resurgence of the EPZ in Asia (where most of the successful EPZs are created) is the increasing production fragmentation trend which has sliced up the production chain and enabled increased specialisation in various countries. Lower trade barriers mitigated through various trade agreements such as WTO and AFTA, have probably also speeded up this process. In chapter four did I brought up the emergence of the Malaysian EPZs with its historical background. I also dealt with various issues of major concern when these zones progressed beyond their original objectives. In this section I tried to highlight that the Malaysian EPZs in most aspects have been role models and that creation from the global civil society has mostly been unfounded (with the possibly exception of the harsh labour conditions). It is also worth noting that the controversial ethnical policies have largely been unproductive.

In chapter five I examined the direct effects of the EPZs. They have been a huge success since they started and continued to be so during the period of study. The electronic industry hugely dominates the whole economy with over 60 percent of total foreign exchange and 35 percent of manufacturing employment (see section five). Although this might be a satisfactory achievement on its own, it is not clear whether the zones have helped to develop the host country, or if the effects are lasting in the new light of product fragmentation. In chapter six I looked at the important indirect effects that have been considerable compared to experiences elsewhere, but they are still disappointing overall. Learning effects and backward linkages are limited (and mostly concentrated to the “Silicon island” of Penang) and the country has, despite great efforts by the government, experienced serious problems in upgrading the industry. However, there are positive signs that they are slowly progressing. The most



important indirect effect is probably the catalytic effect the EPZs have had on the Malaysian trade policies that have gradually become more and more open. Remember from the theory section 2.3 that the EPZs are only a second best alternative compared to free trade.

The product fragmentation trend and the newly created free trade area, AFTA, have changed the prerequisites for EPZs in Southeast Asia and their role will be different in the future. Not so much attention will be given to EPZs as such as to their cluster fostering effect that will continue to attract companies. If these clusters could be developed, all the indirect effects would be fulfilled. Therefore, similar policies are required. Rasiah & Best point out a few key areas in the electronic industry for entrepreneurs and policy makers to address:

- *Create dynamic firms* – innovative firms that learn and teach other firms
- *Build production capabilities*
- *Build network capabilities*
- *Technology Management* – to coordinate different segments in the value chain as only the MNC has been able to do so far.
- *Technology transition* – to coordinate and mobilize investment decisions in key areas.
- *Skill formation* – it can not be emphasised enough how important education is.
- *Integration of government efforts* - like the Penang state has been good at.

Malaysia has identified and addressed some of these issues in the various Malaysian plans but great effort is still required if they are going to be solved, and if Malaysia is going to develop in to an advanced country as formulated in their ambitious “Vision 2020” plan (This plan was formulated in the OPP2 in 1991). For utilization of the economy’s full potential a review of discriminating ethnic laws has to take place as well.

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## Appendix

### *Currency:*

The RM varied from 2.8 to 2.5 for a dollar from 1990 to July 1997 (or 0.4 \$ for a RM) when it started to depreciate until it finally became fixed against the dollar at 3.8 in September 1998, Federal Reserve Bank (2003)

### *Location:*

Export Processing Zones<sup>83</sup> (14)

- In **Selangor**: Teluk Panglima Garang\*, Sungei Way\*, Ampang Hulu Kelang\*
- In **Sarawak**: Sama Jaya
- In **Perak**: Kinta Phases 1 & 11, Jelapang
- In **Penang**: Bayan Lepas\*, Prai\*, Prai Wharf\* Tanjung Gelang
- In **Malacca**: Batu Berendam\*, Tanjung Kling
- In **Johore**: Johor Port Authority EPZ

\* Electronic dominated

Source: Government of Malaysia (2001)

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<sup>83</sup> The number of EPZs has fluctuated and different sources name different numbers even during the same year

Map:

Peninsular (Western) Malaysia



Note that these are the Malaysian names but the English names are the same except for:

Pulau Penang = Penang

Wilayah Persekutan = Putra Jaya (Federal state)

Melaka = Malacca

Source: Travel.com