The United Nations University

WIDER

World Institute for Development Economics Research

Research for Action

Research for Action 43

Selective Policies for Export Promotion

Lessons from the Asian Tigers

Sanjaya Lall

UNU World Institute for
Development Economics Research
(UNU/WIDER)

Research for Action 43

Selective Policies for Export Promotion

Lessons from the Asian Tigers

Sanjaya Lall

This study has been prepared within the UNU/WIDER project on Growth, External Sector and Role of Non-Traditional Exports in Sub-Saharan Africa, which is directed by Professor Gerald K. Helleiner (External Project Director), University of Toronto, Canada.

UNU/WIDER gratefully acknowledges the financial contribution to the project by the Ministry for Foreign Affairs of Finland.

UNU World Institute for Development Economics Research (UNU/WIDER)
A research and training centre of the United Nations University

UNU World Institute for Development Economics Research (UNU/WIDER) was established by the United Nations University as its first research and training centre and started work in Helsinki, Finland in 1985. The purpose of the Institute is to undertake applied research and policy analysis on structural changes affecting the developing and transitional economies, to provide a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and to promote capacity strengthening and training in the field of economic and social policy making. Its work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

UNU World Institute for Development Economics Research (UNU/WIDER)
Katajanokanlaituri 6 B
00160 Helsinki, Finland

Camera-ready typescript prepared by Liisa Roponen at UNU/WIDER
Printed at Hakapaino Oy, Helsinki

ISSN 1239-6761
ISBN 952-9520-68-9

CONTENTS

LIST OF TABLES AND FIGURES

FOREWORD

Low-income developing countries, such as the majority in Sub-Saharan Africa, typically seek to develop beyond their primary product base and to diversify their exports. Such diversification is not so easy a task in poor economies. Finance, skills, infrastructure and markets may all be limited or entirely missing. Nor are the products to which diversification efforts should be directed entirely obvious. What can and should the governments of low-income countries do in pursuit of their diversification and development objectives?

Those attempting to develop appropriate policies for the expansion and diversification of exports from such economies may usefully draw upon the successful experience of other countries that began at a similar level of development. It is widely agreed that East Asian experience carries important policy lessons for today's low-income developing countries. On some issues, there is universal agreement as to what these lessons are: the need for sound macroeconomic management (including a stable and appropriate real exchange rate), the achievement of high domestic savings and investment rates, and general encouragements for exporters. There is considerably less professional agreement, however, on the role played by targeted or selective policies relating to particular kinds of export activities in the East Asian experience, or on the potential usefulness of such policies elsewhere.

In this paper Sanjaya Lall assesses the efficacy of selective policies for the promotion of manufactured exports in East Asian experience and attempts to draw lessons from that experience for other developing countries. He distinguishes between 'permissive' policies and 'positive' policies; a distinction is also made between positive 'functional' policies and positive 'selective' policies. 'Positive selective' policies excite the most controversy. Such selective policies have related to various forms of industry-specific promotion via subsidies, credit allocation, policies toward foreign direct investment, human resource development, technology support and export marketing. Lall also directs explicit attention to the institutional context for such policies. Selective policies, he argues, were effective and important in the East Asian experience. He notes that there may nonetheless be important limitations to their effective use in the context of today's low-income countries in Africa. His analysis constitutes a useful guide for policymakers as to the potential benefits and costs of selective manufactured export promotion.

This paper was prepared as background input to the UNU/WIDER project on Growth, External Sector and the Role of Non-Traditional Exports in Sub-Saharan Africa, directed by Professor G. K. Helleiner. Although it focuses primarily on issues relating to manufacturing activity, much of its analysis is likely to be useful to policymakers in African countries at an early stage of development at which diversification within the

primary sector is also important. The UNU/WIDER project for which this paper was written seeks to identify key constraints on better export performance in 'adjusting' African countries and the policy requirements for overcoming them.

Giovanni Andrea Cornia
Director, UNU/WIDER
December 1997

ABSTRACT

This paper considers the rationale for and limitations to selective export promotion policies in developing countries, with a focus on manufactured exports. It draws upon the experience of the most successful exporters in the developing world – the 'Asian Tigers' and 'new Tigers' – to illustrate the policy needs of upgrading and 'dynamizing' comparative advantage. It describes the different export structure and performance of these countries, and considers the role of domestic technological effort in developing their competitive advantages. It considers the role of 'permissive' and 'positive' policies in promoting exports: the former consist of a conducive macroeconomic and business environment, the latter of more direct interventions in product and factor markets (including those in export promotion, human capital development, technological activity, credit allocation, trade and foreign direct investment). The wide differences between the Asian countries in their policy interventions is highlighted as the explanation for their differing export performances. The paper goes on to consider the theoretical rationale for policy interventions, especially those of a selective nature. It closes with some of the practical difficulties in designing and implementing selective policies.

I INTRODUCTION: SETTING THE SCENE

This paper considers the rationale for and limitations to selective export promotion policies in developing countries. It draws upon the experience of the most successful exporters in the developing world – the Asian 'Tigers' and 'new Tigers' – to illustrate the policy needs of upgrading and 'dynamizing' comparative advantage. It considers the practical difficulties in designing and implementing selective policies, and concludes with suggestions for the analysis of export competitiveness in Africa. The focus here is on *manufactured* exports (a reflection of the background of the author, not a belief that these are preferable to other non-traditional exports).

In theory, export promotion policies, like all interventions, are justified by the presence of market failures.[1] Export promotion policies can, however, be divided into two groups according to the nature of the failure: first, to *remove distortions created by policies that deter exporting*, and, second, to overcome *structural market deficiencies in the creation of new advantages*. The distinction between them may not always be firm or clear, but it is useful for analysing the case for selective promotion policies to make it. Each set of policies can be further sub-divided according to different interpretations placed on the efficiency of markets and governments.

1. The first group essentially comprises policy reforms (we may call these *'permissive' policies*) to reduce macro policy mismanagement and uncertainty, make exporting profitable and minimize transactions costs to exporters. Typically, these involve removing or offsetting overvalued exchange rates or high rates of domestic protection (though not necessarily moving to free trade); policy volatility and uncertainty; inflation

---

[1] Though it is convenient to use the market failure terminology to discuss the role of government interventions, it may not be the most appropriate framework for analysing policy, especially where technological change is concerned. 'Market failure' in neoclassical theory is a deviation from a market clearing equilibrium under conditions of perfect competition, and the remedy is to return to (a theoretically achievable) static optimum. This may not be possible, or even desirable, in the markets that characterize modern industry. Some authors argue that perfect competition is undesirable *as a theoretical construct* under conditions of increasing returns and uncertain and unpredictable technological change (Richardson 1996). Information economics suggests that whenever information is imperfect, externalities 'diffuse' and markets incomplete (including all future markets for risk), invariably the case with technical change, free markets cannot in principle meet the strict requirements of optimality in resource allocation (Stiglitz 1996, 1997). It is misleading to think of market failure as something that can, or should, be 'remedied' in order that the economy can be brought back to a desired (static) optimum (Lipsey 1994). In developing countries, where technological learning is essential to industrial development, externalities are rife and markets highly imperfect – indeed, when new markets, agents or endowments are being created – it is difficult to describe policy as 'remedying market failure' in the neoclassical sense. Where economies of scale exist in intermediate products, leading to multiple equilibria (Rodrik 1996), government policy should aim to move from low to high productivity/ technology paths. Again, this is not really dealing with 'market failure' since equilibrium could in theory be reached in any of the multiple possibilities. However, this paper cannot deal with such fundamental issues. We continue to use the market failure terminology for purposes of exposition, but remind the reader that the term includes strategic interventions that have little to do with achieving static resource optimization.

and high interest rates; price ceilings or taxes on, and inefficient marketing of, exportable primary products; cumbersome or biased procedures on entry, exit, finance or trade; segmented or poorly functioning labour markets, and so on. There are two ways to interpret these policies. The first is simply to treat permissive policies as the reduction of biases against exports and improvement in macro management. This is uncontroversial, and has no further implications for other policies on industry, exports or factor markets – in this broad sense, such policies are accepted by everyone concerned with export promotion.

However, it is possible to take the argument further, and to suggest that permissive policies are *all* that is required by way of export promotion: governments should eschew all interventions in resource allocation, implement free trade and practise minimalism. This is the 'strong' neoclassical position, based on assumptions that markets are efficient and that 'getting prices right' is necessary *and sufficient* for an economy to reach optimality in world trade. In this strong position, since this 'optimum' represents the ideal level and structure of a country's exports at each point of time, no further export promotion policies are needed. Neither functional nor selective measures are therefore justified.

This extreme position has been held by some economists, but is unlikely to appeal today to most analysts of trade or to policy makers. Most would accept that failures do exist in many product and factor markets, and that governments often need to mount more positive measures to promote export expansion and diversification (in addition, obviously, to having the necessary permissive policies). This brings us to the second set of 'positive' promotion policies.

2. *'Positive' policies* intend to tackle the costs and deficiencies in stimulating new areas of competitive export activity: raising the quality, technology and cost competitiveness of existing or new activities; helping smaller enterprises to enter international markets; enhancing the domestic content of exports; lowering the information costs on new markets and of setting up marketing and distribution systems; creating a good 'image' of a country's products in world markets, and so on. These 'positive' policies can be sub-divided into *functional* and *selective* interventions. Functional (or 'market friendly') interventions remedy market failures without influencing resource allocation between specific activities. These include actions, for instance, to improve the physical infrastructure, capital markets or general human capital, or to provide information and technical support to potential exporters.[2] Selective policies do intend to influence resource allocation, by protection or export subsidies, credit direction, creation of specific skills or technologies, promoting large firms or particular types of small firms, attracting specific investors and the like.

---

2 Some proponents of 'market friendly' policies (e.g. the World Bank 1993a) also recommend an element of selectivity, in terms of favouring exports over domestic sales to capture the special externalities that exports generate. Even this element of selectivity concerns export activities in general, rather than selected export activities. For a review of the arguments for a pro-export bias, see Helleiner (1995a).

At first sight, functional policies are, like permissive ones, also fairly uncontroversial. All analysts would agree with the need to strengthen infrastructure and other factor markets in developing countries. It is selective policies that arouse controversy, part of the larger industrial policy debate between the 'market friendly' and structuralist or 'revisionist' schools.[3] It is important, in this context, to note that the *market friendly approach* (as an approach) is different from a case for functional policies as part of a larger strategy. The approach is a moderate version of the strong neoclassical philosophy described above. It accepts that *some* markets function imperfectly and thus are deficient, but takes a particular view of which of such market failures are important and can or should be addressed in policy. It tends to interlace its economic analysis with political judgement on what governments are or are not capable of doing (Shapiro and Taylor 1990). It concludes that only the failures that call for functional interventions should be addressed i.e. that failures that require selectivity are either unimportant or cannot be remedied, and/or that where selectivity is required governments are incapable of devising or implementing the remedies. In other words, either the cost of market failures 'of the selective kind' is low enough not to matter, or the cost of government failures invariably outweighs them. The structuralist approach, by contrast, is that market failures, of both functional and selective kinds, are important and pervasive, that remedies to both can be devised and implemented and that, therefore, governments have a more crucial role to play than accepted in the market friendly approach.

The market friendly approach represents the mainstream view of development. On trade policy, its stance is described as follows by Helleiner:

> Trade policy in this dominant view, which was effectively summarized in World Bank 1991 and 1987, is a fundamental determinant of economic performance, and it functions best when it attempts the least .... Domestic goods prices should closely approximate world prices, except in a narrowly limited range of cases, notably where countries possess market power (are not 'small') in the world markets for their principal exports. Government interventions should be few and, where they are made, should be unselective as between different forms of economic activity, leaving their impact as 'neutral' as possible. They should, in general, employ 'market friendly' policy instruments, like subsidies or taxes, rather than administrative instruments, like quantitative controls. These trade policies are assumed to be universally appropriate and should be introduced as rapidly as possible. Liberal policies regarding the inflow of services, technology and capital are also recommended as part of this universally applicable set of appropriate policies.
>
> (Helleiner 1995b: 2)

This paper has to consider some of the more general arguments for selectivity as part of the analysis of selective export promotion policies. The approach adopted is deductive. We look first at the *evidence* of effective export promotion, and at the literature on

---

3 Of the large, and burgeoning, literature on this see Amsden (1989), Lall (1996), Pack and Westphal (1986), Rodrik (1996), Stiglitz (1996), Wade (1990), World Bank (1993a).

enterprise development and 'learning' in developing countries, to infer the nature of market failures that affect export development. This is because received theory, with an over-simplified view of how competitive advantages are developed, offers little *a priori* guidance on the processes and market failures concerned. We then consider qualifications to the case for intervention: government failure, the limited transferability of experiences across countries, and the changing international rules of the trade and investment game that increasingly constrain the use of selective instruments.

II EXPORT PROMOTION POLICIES IN THE ASIAN TIGERS

The effectiveness of export promotion policies can be judged only by their effects. Thus, the most effective were presumably in the countries with the most rapid recent growth and diversification of exports: the 'Tiger' economies of Asia. This paper looks at seven of these – the Four 'Tigers' (Hong Kong, Singapore, Korea and Taiwan) and the three 'new Tigers' (Malaysia, Thailand and Indonesia). It is important to note that, while all these countries were 'export oriented' in a broad sense, they had very different approaches to export promotion. This reflected their governments' different objectives, which led them to identify different constraints (i.e. market failures) and to employ different strategies to overcome those constraints. The following two sub-sections sketch the main differences in their achievements and the strategies used.

2.1 Export growth and related efforts

2.1.1 Export growth and structure

This section presents export data to illustrate the technological and other effort underlying the growth and diversification of manufactured exports from East Asia. Several indicators of export dynamism are used to bring out the inter-country differences. This is followed by data on different measures of domestic effort related to competitiveness development.

Let us start with aggregate figures on merchandise and manufactured exports by seven Asian countries.

Table 1 shows that in 1994 the largest exporters, both of merchandise and manufactures, were Korea, Taiwan, Malaysia and Singapore.[4] The fastest rates of growth in 1990-94 were for Thailand, Indonesia, Malaysia and Singapore. Hong Kong was the only country in the group with declining exports (re-exports excluded), a dramatic deterioration on its earlier performance. Of the larger Tigers, Korea had a stronger performance than Taiwan. The general dynamism of exports suggests considerable and widespread underlying capability development. However, this is misleading.

These data reveal little about the *nature* and *determinants* of export dynamism. They do not, for instance, distinguish between different export structures, or differing levels of technology within given product groups. Nor do they distinguish between exports by foreign and domestic firms. All these are important in that they may be based upon different local technological efforts and competence, which in turn may involve

4 Note that the data for Singapore and Hong Kong exclude re-exports, which account for 40 per cent of total merchandise exports for the former and 81 per cent for the latter.

different market failures and policy needs. Let us try to remedy these as best we can, by looking at the structure, local technological content of exports and the role of FDI in trade.

TABLE 1
MERCHANDISE EXPORTS FROM SELECTED ASIAN COUNTRIES (1994)

	Merchandise exports			Manufactured exports
Country	Value ($m)	Growth rate (1980-90)	Growth rate (1990-94)	Value ($m)
Hong Kong (a)	28,739	11.5	-0.3	27,302
Singapore (a)	57,963	12.1	10.9	56,224
Korea	96,000	13.7	7.4	89,280
Taiwan	92,847	11.6	5.9	86,348
Indonesia	40,054	5.3	21.3	21,229
Malaysia	58,756	11.5	17.8	41,129
Thailand	45,262	14.3	21.6	33,041

Sources: World Bank, *World Development Report, 1996*; Asian Development Bank, *Key Indicators of Developing Asian and Pacific Countries,* 1994; *Hong Kong External Trade*, February, 1996; *Singapore Trade Statistics*, 1996.

Note: (a) Excluding re-exports.

Let us start with the *technological composition* of manufactured exports. There are numerous ways to categorize this. The most frequently used one, 'high' and 'low' technology, is too aggregated and can conceal interesting differences between developing countries that are largely exporting simple products. A breakdown by technological characteristics, as shown in Table 2, is more useful.

TABLE 2
TECHNOLOGICAL BASIS OF MANUFACTURED EXPORTS

Activity group	Major competitive factor	Examples	OECD exports 1985 (%)
Resource-intensive	Access to natural resources	Aluminium smelting, oil refining	13.5
Labour-intensive	Costs of unskilled or semi-skilled labour	Garments, footwear, toys	9.8
Scale-intensive	Length of production runs	Steel, chemicals, automobiles, paper	33.8
Differentiated	Products tailored to varied demands	Machinery, power equipment	27.3
Science-based	Rapid application of science to technology	Electronics, bio-technology, medicines	15.5

Source: OECD 1987.

The breakdown is far from perfect. Categories may overlap (resource-based activities can be very capital-intensive) or be very broad (many electronics exports are labour-intensive). However, the classification is plausible and helpful if carefully used. Labour-intensive products are generally at the low end of the technology and skill spectrum. Products in the scale-intensive group tend to use complex, capital-intensive

technologies, but are generally not at the cutting edge of technology. Here we should distinguish between process (e.g. chemicals) and engineering (e.g. automobiles) industries; the latter tend to have more difficult learning requirements, be very linkage-intensive, and involve a larger variety of skills. 'Differentiated' products are sophisticated capital goods involving advanced design, research and manufacturing skills, while 'science-based' products use leading edge technologies. We classify the last three categories as *technologically advanced*, and the last two as *high-tech*, products.

TABLE 3
DISTRIBUTION OF MANUFACTURED EXPORTS BY TECHNOLOGICAL CATEGORIES
(PER CENT)

	Hong Kong		Singapore		Korea		Taiwan		Malaysia		Thailand		Indonesia	
	1980	1994	1980	1994	1980	1994	1980	1994	1980	1993	1980	1993	1980	1993
Resource-based	2.0	3.7	6.5	3.3	7.3	3.8	9.4	6.8	11.0	5.4	53.9	20.1	14.7	29.5
Labour-intensive	65.8	54.3	16.9	8.5	49.5	27.8	53.9	32.7	18.4	17.4	28.4	38.3	28.9	48.7
Scale-intensive	1.2	4.2	20.9	10.5	25.8	27.2	9.4	13.9	4.9	5.3	4.3	5.6	20.2	7.6
Differentiated	16.7	21.4	50.3	46.3	14.7	35.6	23.7	30.9	60.1	29.6	13.4	15.7	19.0	7.6
Science-based	14.3	16.4	5.4	31.4	2.7	5.6	3.6	15.8	3.8	42.3	0.0	20.3	0.0	0.9
							Subtotals							
Tech. advanced	32.2	42.0	76.6	88.2	43.2	68.4	36.7	60.6	68.8	77.2	17.7	41.6	39.2	16.1
High-tech	31.0	37.8	55.7	77.7	17.4	41.2	27.3	46.7	63.9	71.9	13.4	36.0	19.0	8.5

Source: UN trade data. The classification is at the two-digit SITC level.
Note: Singapore and Hong Kong data are for total manufactured exports including re-exports; the UN data do not allow own exports to be distinguished from re-exports. The last year for Malaysia, Thailand and Indonesia is 1993.

Table 3 gives the technological breakdown of manufactured exports for these countries since 1980. The highest ratio of labour-intensive exports (primarily textiles and garments) is currently in Hong Kong (54 per cent), followed by Indonesia (49 per cent) and Thailand (38 per cent). With industrial development there is a general tendency for the share of labour-intensive products to decline, but in Indonesia this share has risen over time (because of a rapid relocation of garment and plywood processing activities from the NIEs in response to rising costs, with Indonesia offering by far the lowest wages in the group).

Figures 1 and 2 illustrate the evolving shares of 'technologically advanced' and 'high-tech' products. These figures show the following differences in the technological sophistication of exports:

- The most technologically advanced exporter is Singapore, followed by Malaysia, Taiwan and Korea. Among the Tigers, Hong Kong's exports have the lowest technological content (about the same as Thailand); Indonesia brings up the rear.
- In the narrower category of 'high-tech' products, the leader is Malaysia, followed by Singapore, Taiwan and Korea. Hong Kong and Thailand again lag, with Indonesia even further behind.
- The technology intensity of manufactured exports has been growing for all

countries except for Indonesia, where the growth of labour and resource-intensive exports has swamped other exports.

FIGURE 1
SHARES OF TECHNOLOGICALLY ADVANCED PRODUCTS IN MANUFACTURED EXPORTS
(PER CENT)

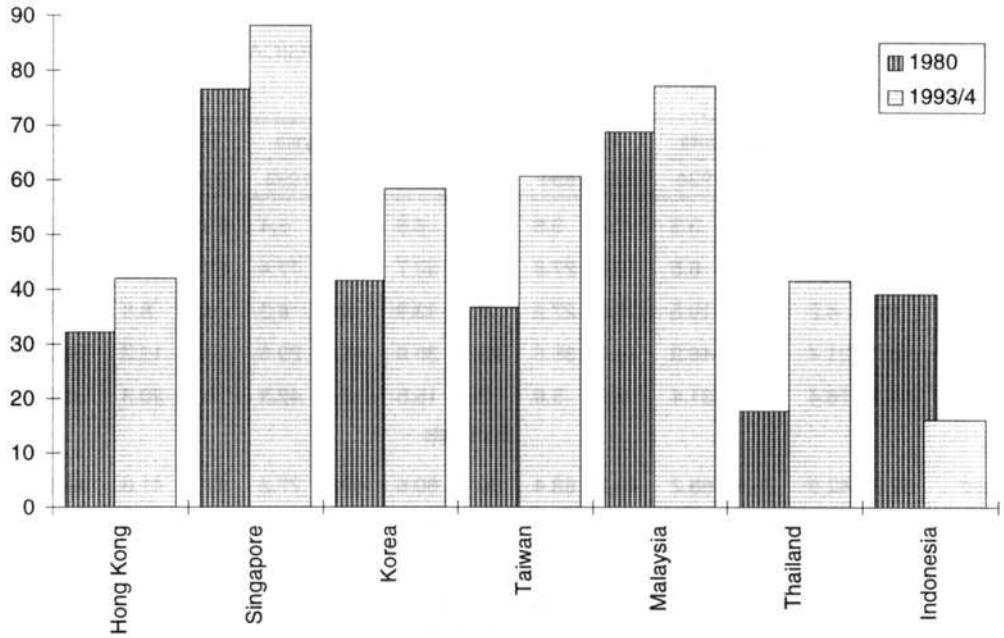
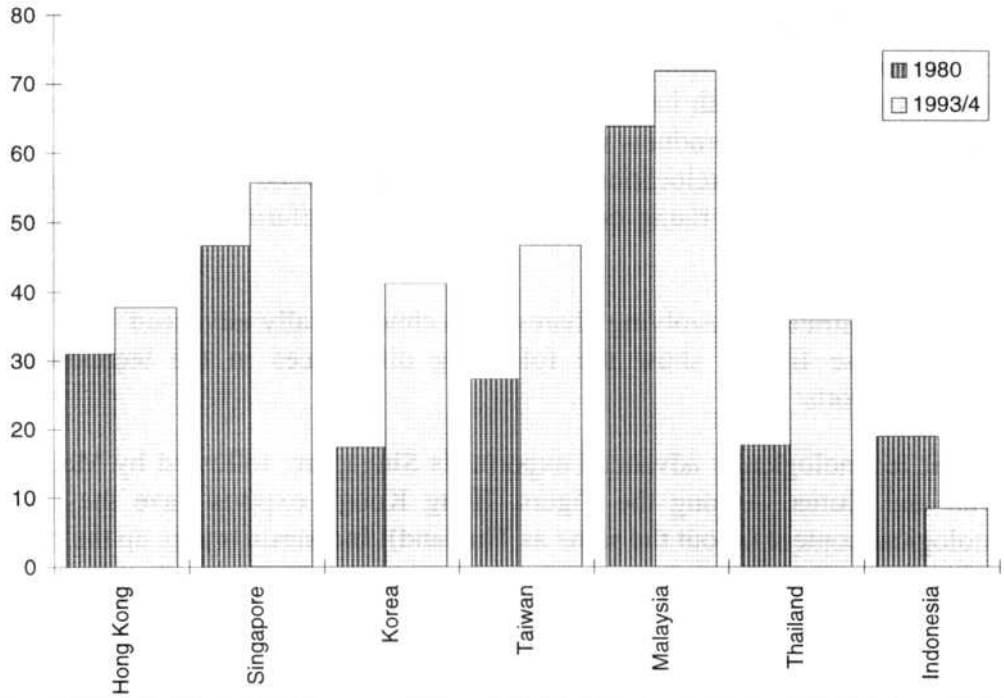


FIGURE 2
SHARES OF HIGH-TECH PRODUCTS IN MANUFACTURED EXPORTS
(PER CENT)



Acknowledging the inherent problems of aggregation and categorization, the results are still plausible and useful, supporting prior impressions about technological capabilities in these countries. However, some adjustments have to be made to these indicators to assess the *domestic technological and other effort* involved in upgrading exports – this is what is needed in order to understand the relevant policies and market failures. We have to look, in particular, at the level of technology involved and the role of MNCs in exports, as well as local technological activity and human resource development.

2.1.2 Level of technology

The local technological content of similar exports can vary between countries, according to the level and extent of local inputs of components, equipment and technical knowledge. A 'high-tech' export from one country may come from assembled imported components, with few local inputs, physical or technological; in another, it may have substantial local equipment, components, design, development and engineering. These show different capabilities, and may have very different policy implications. The Tigers differ greatly in this respect. Malaysia's high-tech exports are driven primarily by electronics and electrical assembly activity in export enclaves; while there has certainly been upgrading in process and product technology, there are still few domestic linkages and very low local technological inputs (World Bank 1996). Singapore's exports are also driven by MNCs, but processes and products are at a higher level of sophistication, using more advanced skills and involving greater local technological activity. However, Singapore's levels of design and development are still low, with the critical elements done overseas by the MNCs involved.

By contrast, high-tech exports from Korea and Taiwan have significant local supply linkages (both for equipment and components) and technological inputs to basic design stages. Korea is ahead of Taiwan, with a more diverse and 'heavier' industrial structure and greater R&D effort. Of the Tigers, Hong Kong has the lowest technological input, remaining specialized in light consumer goods (though within these there has been upgrading); in addition, even its 'high technology' exports are simpler than in the other Tigers (consisting largely of electronic items like games and watches). Thailand is also basically at the assembly stage in technologically advanced products, but its rate of growth in such activities is impressive, and in more traditional activities there is a lot of local 'depth'. Indonesia remains at the lowest end of assembly activity, though there are signs of recent export growth in sophisticated engineering activities like automobile engines.

2.1.3 Role of MNCs

MNCs have played very different roles in promoting exports and upgrading capabilities in the Tigers (Table 4). Singapore is the most FDI-intensive economy in the region, while at the other end, Korea has very low levels of foreign reliance with the others ranged in between. This reflects differences between the Tigers in perceptions of FDI and desired modes of technology transfer: Korea and Taiwan, particularly the former, emphasized 'externalized' technology transfer (via licensing and other arm's length transactions), while Singapore strongly targeted 'internalized' modes (via direct investment) and Hong Kong had a *laissez faire* attitude (Lall 1996). The first two had

selective policies on entry, restricting FDI where domestic capabilities were adequate. Once allowed in, investors were induced to share their knowledge and diffuse technologies.

TABLE 4
INWARD FDI

	Annual FDI inflows ($ million)							FDI as % of GDI (a)	
Country	1984-89	1990	1991	1992	1993	1994	1995	1984-89	1990-94
Hong Kong	1422	1728	538	1918	1667	2000	2100	12.2	6.7
Singapore	2239	5575	4879	2351	5016	5588	5302	28.3	28.4
Korea	592	788	1180	727	588	809	1500	1.4	0.7
Taiwan	691	1330	1271	879	917	1375	1470	3.3	3.0
Indonesia	406	1093	1482	1774	2004	2109	4500	1.6	3.5
Malaysia	798	2333	3998	5183	5006	4348	5800	8.8	22.4
Thailand	676	2444	2014	2116	1726	640	2300	4.4	4.3

Source: UNCTAD *World Investment Report 1996,* Geneva.

Note: (a) GDI stands for gross domestic investment. The figures are simple annual averages.

Singapore also used selectivity, to attract investors into targeted activities and to induce technological upgrading. Only Hong Kong left FDI and technology transfer entirely to market forces. Malaysia has adopted some elements of the Singapore strategy, with an increasing effort by its investment promotion agency to gear incentives to technology levels, local content and R&D effort (instead of, as earlier, just export orientation). Thailand was more liberal on export-oriented FDI, but, like Malaysia, exercised selectivity on domestic market oriented investments. Indonesia followed a similar path, but from an initial hostility to MNCs and with larger discretionary elements (its public sector controls large areas of technologically advanced industry).

The export contribution of FDI corresponds to its role in domestic capital formation. According to available estimates, MNCs account for around 25 per cent of manufactured exports from Hong Kong, 70 per cent from Malaysia, 90 per cent from Singapore, 17 per cent from Taiwan (Ramstetter 1994). Thailand and Indonesia probably lie between Hong Kong and Malaysia, and Korea has a much lower figure than Taiwan.

What do these differences imply? Korea's low dependence and selective restrictions on FDI, along with its strong performance in technologically demanding exports (and its own outward FDI), reflects strong indigenous capabilities, driven by its giant conglomerates, the *chaebol.* Taiwan is similar, but lagging where large-scale, capital-intensive production and marketing are involved. Hong Kong's strong indigenous base in exporting (and large outward FDI) along with its *laissez faire* policies on FDI also reflects well-developed local capabilities, but its specialization in low technology activities means that these capabilities are not as deep or complex as those in Korea and Taiwan (and foreign investors have remained in relatively simple manufacturing activities). Singapore remains highly dependent on foreign sources of technology and

marketing, but its success in moving into the most advanced technologies means that it has been able to use MNCs by a series of highly targeted policies.

TABLE 5
R&D EXPENDITURES

Country	Year	As % of GDP		R&D per capita ($)
		Total	By enterprises	
Hong Kong	1995	0.1	N/A	19.8
Singapore	1992	1.0	0.6	153.6
Korea	1993	2.3	1.98	176.2
Taiwan	1993	1.7	0.8	179.6
Malaysia	1992	0.4	0.17	11.2
Thailand	1991	0.2	0.04	3.1
Indonesia	1993	0.2	0.04	1.5
	Memo item: some OECD countries			
Japan	1992	3.0	1.9	762.9
France	1991	2.4	1.0	512.7
Germany (a)	1989	2.8	1.8	427.3
UK	1991	2.1	1.1	365.7
USA	1988	2.9	1.5	540.9

Sources: UNESCO, *Statistical Yearbooks* and national sources.

Note: (a) Figures for the former Federal Republic.

The new Tigers have relatively lower levels of indigenous capabilities, and FDI dominates export activity in both low and high technology activities. While they have been selective in FDI entry into domestic oriented activities, they have been fairly liberal on export-oriented FDI; in the latter, they have yet to develop the kind of selective targeting that Singapore has mounted so effectively.

2.1.4 Indigenous technological activity

Though these countries are, like developing countries generally, highly dependent on imported technologies, they undertake increasing amounts of technological activity, to absorb complex technologies, adapt and improve upon imported knowledge, and even to create new technologies. Formal R&D does not capture the full extent of technological activity, but it is something on which comparable data are available. Moreover, with growing industrial maturity, as more routine technological capabilities become standard, formal research activity may become a more accurate measure of inter-country technological differences.

Table 5 shows R&D as a proportion of GDP in these countries. The clear leader is Korea, which spent 2.3 per cent on this activity in 1993 (and 2.6 per cent in 1996 according to Kim 1997). This is just behind the technological leaders in the OECD, though in *per capita* terms it is still one-third of the US and one-quarter of Japan. Some

85 per cent of Korean R&D is financed by enterprises rather than the government, making its private R&D/GDP ratio of 1.7 per cent (now 2.2 per cent) one of the world's highest: this may be regarded as a better indicator than total R&D of technological effort directly relevant to industrial competitiveness. Taiwan comes next, with *per capita* spending slightly higher than Korea. However, more than half of Taiwanese R&D comes from the government: its dominant SME sector is unable to undertake expensive research. The government compensates with an extensive infrastructure of public institutions that offer extension, contract R&D and productivity improvement services (Lall 1996).

Private industrial R&D is relatively weak in the other countries. Singapore has increased enterprise R&D in recent years as a result of strong government incentives and targeting, but much of it is located in foreign affiliates and does not reach the depth that has been achieved in Korea and Taiwan. Hong Kong, in line with its specialization in low-technology activities, lacks a significant R&D base. Of the new Tigers, only Malaysia has some R&D capability, but this is largely confined to the product engineering units of a few large MNCs; the bulk is in 25 electronics firms (World Bank 1996).

2.1.5 Human resource development

Human resource development is most readily measured by educational enrolments, but it is not an ideal measure. Formal education is only one way to create skills: on-the-job learning and training are often more important. Nevertheless, formal education is a basic condition for industrial skill acquisition, and enrolment data serve as a reasonable proxy (though there are differences in definition, quality and dropout rates between countries, which we cannot correct for).

TABLE 6
EDUCATIONAL ENROLMENTS AND LITERACY RATES (1990-92)
(PER CENT OF AGE GROUP)

Country	Primary	Secondary	Tertiary	% Tertiary abroad (a)	% Adult literacy
Hong Kong	117	75	20	32	91
Singapore	107	71	9	25	90
Korea	105	90	46	2	97
Taiwan	100	88	38	..	..
Malaysia	93	58	7	38	82
Thailand	97	33	19	1	94
Indonesia	115	38	10	2	83

Sources: World Bank, *World Development Report*, 1994, 1995; UNESCO, *Statistical Yearbook*, various; UNDP, *Human Development Report* 1995; Government of Taiwan, *Taiwan Statistical Data Book*, 1994; Ministry of Education, Singapore.

Note: (a) 1987-88

Table 6 shows *general enrolments* at the three levels, as well as tertiary students abroad and the adult literacy rate. Secondary enrolment rates are very high in the Tigers, with

Korea and Taiwan now reaching developed country levels. Hong Kong and Singapore are slightly behind, followed by Malaysia, Indonesia and Thailand.

At the tertiary level, Korea and Taiwan are again at developed country levels. Then come Hong Kong and Thailand, with around 20 per cent. Indonesia, Malaysia and Singapore have tertiary enrolments of 5-10 per cent. There are high proportions of students studying overseas from Hong Kong, Singapore and Malaysia. Korea, Taiwan and Singapore have in place attractive incentives for nationals studying or working overseas to return, and these have provided an important input into their capability development. Singapore places more emphasis than other countries on non-university technical education.[5]

The breakdown of tertiary enrolment *in technical subjects* is more relevant for our purposes (Table 7). This table includes some advanced industrial countries for comparison, and shows interesting differences, not just between the Asian Tigers, but also between them and the developed countries. It shows, in particular, that some Tigers, in particular Korea and Taiwan, are now significantly ahead of the technological leaders in the OECD in investing in high level technical skills. Note that the figures are expressed as percentages of the total population rather than of the relevant age group (as in the previous table).

Take enrolments in *all technical subjects* (which includes medicine, architecture and so on). The norm in the European technological leaders is around 1 per cent, while the USA is at 1.47 per cent. Korea and Taiwan have 1.66 per cent and 1.45 per cent respectively, higher that Europe or Japan; the former is ahead of the US and the latter is about the same. There is a large range among the other Asian countries: the lowest figures are for Indonesia and Malaysia (under 0.2 per cent); in between lie Thailand, Singapore and Hong Kong (the latter two also have large numbers of students overseas).

Enrolments in *core technology subjects* (science, mathematics, computing and engineering) are probably the most relevant indicator of manufacturing-related technical skills. Korea has an impressive lead over the whole group, with 1.34 per cent of the population as compared to 0.73 per cent for the USA, 0.87 per cent for Germany and 0.46 per cent for Japan; while I have not calculated this figure for all countries, this is likely to be the *highest* among all industrialized or industrializing countries. Taiwan comes next with 1.09 per cent. Singapore has around half of this (0.56 per cent), Hong Kong less (0.47 per cent), followed by Thailand (0.32 per cent), Malaysia (0.15 per cent) and Indonesia (0.13 per cent).

In *natural science*, the Asian countries lag behind the OECD countries, where France and Germany lead. Korea has by far the highest proportion of science enrolments in Asia; Taiwan has a relatively low figure, trailing Thailand and Hong Kong. In *mathematics and computer science*, Korea leads both Asian and OECD countries; in

---

5 The tertiary enrolment figures for Singapore would be higher if polytechnics were included – polytechnic enrolment in Singapore is nearly double that of universities. However, the way in which the data are presented makes them difficult to compare with the other countries.

TABLE 7
TERTIARY-LEVEL STUDENTS IN TECHNICAL FIELDS (NUMBERS AND PER CENT)

Country	Year	Natural science		Maths & computers		Engineering		All technical subjects (a)		Science + maths & computers + engineering		Ratio of engineers to scientists
		Nos.	% population	Nos.	% population	Nos.	% population	Nos.	% population	% total tertiary	% population	
Hong Kong	1992	5503	0.095	6661	0.115	14788	0.256	35068	0.607	30.3	0.47	2.69
Singapore	1994	1281	0.046	1420	0.051	13029	0.465	16767	0.599	20.4	0.56	10.17
Korea	1993	75778	0.172	145948	0.331	367846	0.834	730346	1.655	31.2	1.34	4.85
Taiwan	1993	16823	0.080	32757	0.157	179094	0.857	303964	1.454	42.3	1.09	10.65
Malaysia	1990	8775	0.049	4557	0.025	12693	0.071	32222	0.180	21.4	0.15	1.45
Thailand	1992	77098	0.135	1292	0.002	105149	0.185	249952	0.439	15.9	0.32	1.36
Indonesia	1992	22394	0.012	13117	0.007	205086	0.109	315325	0.167	13.4	0.13	9.16
Memo item: some OECD countries												
Japan	1991	59030	0.048	20891	0.017	488699	0.394	730637	0.590	19.6	0.46	8.28
France	1991	266299	0.467	N/A	N/A	123514	0.217	614159	1.078	21.2	0.68	0.46
Germany	1993	310435	0.384	N/A	N/A	389182	0.481	805801	0.997	37.3	0.87	1.25
Netherlands	1992	16707	0.110	8742	0.058	N/A	N/A	137510	0.905	N/A	0.17	N/A
UK	1992	105983	0.183	76430	0.132	219078	0.378	596404	1.029	26.3	0.69	2.07
USA	1990	496415	0.199	525067	0.210	801126	0.320	3676985	1.471	13.3	0.73	1.63

Source: UNESCO, *Statistical Yearbook 1995*; Government of Taiwan, *Taiwan Statistical Yearbook, 1994*; data from Ministry of Education, Singapore.

Note: (a) All technical subjects include the three categories earlier plus medical, architecture, trade & crafts, and transport & communications.

relation to the size of the population, its enrolments in this field are over twice that of UK and Japan (German and French data are not available separately) and 58 per cent higher than in the USA. The nearest Asian follower, Taiwan, has less than half the proportion of its population in these disciplines, though it leads most European countries (but not the USA). Hong Kong performs better here than Singapore; this may seem surprising in view of their production structures, but the competitive edge of Singapore lies in production of electronic hardware rather than computing – and here it is engineering and production-related training that is important (but the Singapore government has a well-funded programme for increasing information technology skills).

Engineering is strongly emphasized in most, but not all, Asian countries. Korea has 0.83 per cent of its population enrolled in engineering and Taiwan 0.86 per cent (it is interesting to note that the number of Korean engineering enrolments is actually 70 per cent larger than India's). Singapore follows far behind with 0.47 per cent. Indonesia is notable for the rapid expansion of enrolments in engineering. The two large Tigers are well ahead of the OECD countries, where Germany leads with 0.48 per cent; they enrol over twice the proportion of their populations in engineering than the USA (0.32 per cent).

2.1.6 Conclusion on performance and capabilities

What may we conclude from the evidence presented above? Of the Tiger economies, Korea stands out as the clear technological leader on almost every criterion. Its industrial sector has considerable depth and integration, with competitive export capabilities over a very wide range of activities (including practically all heavy producer goods industries) which have been developed largely as a result of *indigenous* learning, skills and R&D effort. Its leading *chaebol* are now multinationals in their own right, challenging established MNCs on their home ground in complex industries (such as automobiles) where it was believed that developing country firms could not play an independent role. Korea is followed by Taiwan, which has a narrower industrial base and a preponderance of SMEs. This gives it more flexibility, but perhaps less depth in technology generation. As its industrial sector approaches technological frontiers this may prove a disadvantage (and may account for the fact that Taiwanese manufacturing output and exports have been growing more slowly than Korea's over the past decade). Nevertheless, some of its largest firms are world leaders in their technologies; a superlative network of technology institutions gives Taiwanese SMEs (below) some of the support they need to keep up with technological change.

The smaller Tigers have narrower spheres of competence. Singapore is distinctly ahead of Hong Kong in technological terms. Despite its smaller size and higher wages, which may be expected to lead to faster 'deindustrialization', Singapore continues to register high rates of industrial and export growth, while Hong Kong is suffering a rapid contraction of its manufacturing sector and falling (own) exports. Their industrial structures have also diverged over the past four decades, Singapore transforming itself into a centre for high-tech electronics and chemicals production, Hong Kong remaining in activities with low technological content. The Hong Kong economy continues to

grow by moving into services largely directed at the mainland, but its rate of growth is lower than that of Singapore, which has also increased its service sector without running down industry. However, Singapore's edge lies in providing an efficient, high skill and well-located base for MNC activity rather than in its own technological capabilities. These capabilities are growing, partly as MNCs are induced to set up research facilities there, but they are not comparable to the larger Tigers.

The new Tigers have relatively shallow industrial structures, with Thailand the most advanced in terms of indigenous capabilities and Indonesia the least. Malaysia provides an interesting combination of a very high-tech MNC sector with a weak indigenous industrial base; however, the domestic sector has built up a range of competitive capabilities in resource processing, services and infrastructure which it is exploiting in its own FDI overseas, and some advanced suppliers to MNCs have also emerged.

These contrasts provide the base from which we can assess the role of government policies in promoting export growth and diversification. *Do government policies in any form help to explain these differences? If so, was it purely 'market friendly' functional policies that were responsible? Or were selectivity and targeting also important?*

2.2 Export promotion strategies

2.2.1 Introduction

The Tigers adopted a mixture of permissive and positive (both functional and selective) policies to promote the growth, diversification and upgrading of their manufactured exports. It is not easy to draw clear distinctions between these in practice, since the same set of policy instruments can be used in different ways. As noted, different Asian governments did indeed use very different combinations of policies and employed similar tools in different ways.

A useful point of departure is the summary of main export policies in the HPAEs, the 'high performing Asian economies' (the seven above plus Japan) provided by the World Bank, based on its *East Asian Miracle* study:

> Trade policies in all the Asian economies (except Hong Kong) passed through an import-substitution phase with high and variable protection of domestic import substitutes. In all cases, however, policies that strongly favoured the production of import substitutes to the detriment of exports were abandoned. And governments of high-performing Asian economies (HPAEs) – Hong Kong, Indonesia, Japan, Malaysia, the Republic of Korea, Singapore, Taiwan (China), and Thailand – adopted strategic pro-export policies that established a free trade regime and offered a range of other incentives for exports. This approach provided a mechanism by which industry moved rapidly toward international best practice, despite highly imperfect world markets for technology.

In the HPAEs that intervened selectively to promote exports, a contest based on performance in global markets played the allocative role that is normally ascribed to neutral exposure of both import-substituting and exporting industries to international competition.

Export targets provided a consistent yardstick to measure the success of market interventions. When protected sectors interfered with the exports of other sectors, the latter could seek redress and were successful. Even where domestic content rules were imposed – for example, on foreign direct investors in Taiwan (China) – they were suspended if they interfered with exports. The emphasis on export competitiveness gave businesses and bureaucrats a transparent and objective system to gauge the desirability of specific actions. Interventions could not be made arbitrarily – if they interfered with exports, they could be appealed at a higher level of government.

The more recent export-push efforts of the Southeast Asian newly industrializing economies – Indonesia, Malaysia, and Thailand – have relied less on highly specific incentives and more on gradual reductions in import protection, coupled with institutional support of exporters and a duty-free regime for inputs for exports.

The close link between successful macroeconomic policies and trade liberalization can be seen in the experiences of Indonesia, Korea, and Taiwan (China) .... The three economies used deliberately undervalued exchange rates to assist exporters. Exchange rate policy and the fiscal and monetary tools to carry it out became part of an overall export-push strategy.

One can see a fairly clear relationship between devaluations in these economies and export growth in the 1980s ....

Each of the eight HPAEs contributed to one or more of the four elements of a successful export push: access to imports at world prices; both long- and short-term financing; market penetration; and flexibility.

Access to imports at world prices. HPAE governments have found numerous ways to grant exporters access to imports at world prices: free trade zones, export processing zones, bonded warehouses, duty drawbacks, or tariff exemptions.

Export financing. Expansion into new export activities often requires financing, both long- and short-term. Nearly every HPAE has had some program to ensure access to credit, often at subsidized prices.

Market penetration. Nearly all governments recognized the difficulty exporters face in cracking into foreign markets, and again chose various means to encourage exporters to overcome the hurdles. Some directly subsidized export activity (direct income tax incentives), some subsidized market penetration (through exporter associations), some subsidized small and medium-size exporters to offset their difficulties in

market penetration, and some promoted the creation of international trading companies.

Flexibility. Pragmatism and policy flexibility proved important because hitting the right strategy is not easy, for three reasons. The right strategy depends on the circumstances. It changes as the economy changes. And it is not always obvious.

(World Bank 1993b)

While we may quibble with the interpretation by the Bank of some policies (e.g. selective interventions to promote exports using 'contests' played a neutral allocative role), this gives a reasonable picture of the kinds of policies used to directly promote exports. However, this does leave out some policies that were critical in indirectly raising competitive capabilities.

2.2.2 'Permissive' policies

The Asian Tigers all had macroeconomic policies and trade regimes that favoured exports, in some cases strongly so, making them more profitable than domestic sales (and, in some cases, as in Korea, essential for survival). Exporters had confidence that favourable policies would be maintained. Most governments emphasized export promotion as a national objective and gave various awards or marks of recognition to successful exporters. The exchange rate and trade regimes were generally stable and predictable; devaluations were used to further improve export profitability.

Export incentives, by means of tax privileges and subsidies, were often given.[6] Where the economy had trade barriers, inputs were made available at world market prices to exporters (in export processing or free trade zones or bonded warehouses, or by duty drawback schemes). Transactions costs in trade were reduced by efficient, streamlined administration of imports, exports, customs clearance, shipping facilities and the like (the original Tigers did so early, while the new Tigers improved these over time).[7] Labour markets generally functioned efficiently, and wage rises were generally kept moderate, or in line with productivity increases.

2.2.3 'Positive' functional policies

Functional support was given to exporters to meet several types of factor market failure, without targeting particular activities or firms:

Physical infrastructure: The public goods characteristics of infrastructure, in conjunction with deficient capital markets and private sector capabilities, meant that the

---

6 Helleiner describes the direct and indirect subsidies to exports as follows: 'import and excise duty exemptions and drawbacks for inputs (often extended to local suppliers of inputs to exporters); subsidized credit; corporate tax concessions (reductions or refunds); preferential exchange rates; preferential foreign exchange retention rights or allowances; and direct cash subsidies' (Helleiner 1995b: 19). Some of these fall under our category of 'positive' rather than 'permissive' promotion policies and are noted below.

7 See Keesing (1988).

state often had to invest in improving the infrastructure for export activity. Many governments concentrated this on export processing zones, though in the original Tigers (and Malaysia) there was a tendency to improve the industrial infrastructure more generally.

General skills: Market failures in the provision of education, arising from information gaps and asymmetries, risk, poor institutional capabilities and bad income distribution, are widely accepted by analysts, especially at the basic levels. The original Tigers started with a fairly high base of literacy and general skills, found that this was insufficient to sustain their industrialization drive and invested massively in it over time (but a significant part of higher skill creation was of a *selective* nature, taken up later).

The new Tigers started from a lower human capital base (in particular Indonesia), and invested heavily in upgrading education and worker training. In general, however, the newcomers still have considerable skill gaps *vis-à-vis* the established Tigers: their enrolment rates are far lower, as are the quality and relevance of their education systems. Firms train their employees to compensate (this is especially marked in the case of the electronics industry in Malaysia), aided by incentives and training levies. However, this is mainly aimed at creating basic operational rather than more advanced skills (partly because of the cost and partly because turnover rates of employees are very high), and is not enough sustain an upgrading of the export structure into more demanding technologies. Their exports have grown well so far because they are concentrated in simple technologies, but it is widely acknowledged in all these countries that a massive improvement in the skill base is needed if growth is to be sustained in the face of rising wages and growing competition from cheaper countries.

Capital markets: The market failures that afflict capital markets in developing countries, arising from asymmetric information and moral hazard, and from more general market deficiencies that drive a wedge between social and private returns, are well known (Stiglitz 1989). The Tigers ensured credit access to all exporters, often on subsidized terms (while this was 'functional' in that it did not favour particular export activities, it was selective to the extent that it helped export over domestic market oriented activities). Credit direction and subsidization, often highly selective, were strongest in Korea, followed by Taiwan (for a recent review of capital market interventions in East Asia see Stiglitz and Uy 1996). Singapore used credit allocation to build up infrastructure and give signals to foreign investors. The new Tigers provided general support for credit to exporters, but with relatively little targeting (World Bank 1993a). Hong Kong did not use this tool, though it gave land and housing cheaply to manufacturing industry in general.

SME support: Small and medium sized enterprises face a variety of market failures, arising from segmentation in the various markets in which they compete with larger firms. These are recognized by governments at all levels of development and addressed by a variety of functional as well as selective measures – to 'level the playing field', favour SMEs over larger enterprises (if they provide social, locational, employment or other benefits) or to favour SMEs in some activities over others. All the Tiger governments mounted special measures to help SMEs, in particular Taiwan and Hong

Kong, where these enterprises account for the bulk of manufacturing activity and exports.[8] Singapore and Korea also have strong SME support systems, though their industrial and export drive has been led by large companies, foreign in the first case and domestic in the second (Singapore by encouraging subcontracting by MNCs under its Local Industry Upgrading Programme, LIUP, and by providing subsidized technical and other assistance to help SMEs upgrade, Korea by reserving over 1200 products for

---

8 Taiwan has around 700,000 SMEs, accounting for 70 per cent of employment, 55 per cent of GNP and 62 per cent of manufactured exports, and an impressive set of programmes to support them. In 1981, the government set up the Medium and Small Business Administration to support SME development and coordinate the several agencies that provided them assistance. Financial assistance was provided by the Taiwan Medium Business Bank, the Bank of Taiwan, the Small and Medium Business Credit Guarantee Fund, and the Small Business Integrated Assistance Centre. Management and technology assistance was provided by the China Productivity Centre, the Industrial Technology Research Institute (ITRI) and a number of industrial technology centres (for metal industry, textiles, biotechnology, food, and information). The Joint Services Centre of the Ministry of Economic Affairs acts as a source of information on SME assistance. The government covers 50-70 per cent of consultation fees for consultancy services for SMEs. The Medium and Small Business Administration has a fund for SME promotion of NT$10 billion. The 'Centre-Satellite Factory Promotion Program' of the Ministry of Economic Affairs integrates smaller factories around a principal one. This programme involves vendor assistance and productivity raising efforts, and a rational sharing of tasks between participating enterprises. By 1989 there were 60 networks with 1,186 satellite factories in operation, mainly in electronics. For providing R&D support, ITRI handles contract research work considered too risky for the private sector; the contracts have financial support from the government. The Institute for the Information Industry (III), complements ITRI's work on hardware by developing and introducing software technology. The Taiwan Handicraft Promotion Centre supports handicraft producers, particularly small ones with export potential. The Program for the Promotion of Technology Transfer maintains close contact with foreign corporations that have developed leading-edge technologies in order to facilitate the transfer of those technologies to Taiwan. The China Productivity Centre (CPC) is the known for its efforts to promote automation to improve precision and quality; it sends out teams of engineers to visit plants throughout the country and demonstrate the best means of automation and solve relevant technical problems. Over two years the CPC visited over 1,000 plants and made over 4,000 suggestions for improvement. It also carried out more than 500 research projects on improving production efficiency and linked enterprises to research centres to solve more complex technical problems.

Despite its laissez faire approach, Hong Kong provides technical support to SMEs through the Hong Kong Productivity Council (HKPC). HKPC was started in 1967 to help SMEs upgrade from declining labour-intensive activities to more advanced, high value-added activities. It provided information on international standards and quality and gave training, consultancy and demonstration services on productivity and quality to small firms at subsidized rates, serving over 4,000 firms each year. Its on-line information retrieval system now has access to over 600 international data bases on a comprehensive range of disciplines. Its technical reference library takes over 700 journals and has over 16 thousand reference books. The HKPC also acts as a major technology transfer and technology development agent, and has developed specialized technical services for all the relevant industrial sectors. It first identifies relevant new technologies in the international market, builds up its own mastery, and then introduces them to industry. It provides a range of management and technology related courses, reaching some 15 thousand participants per annum. For firms that are unable to release staff, it organizes in-house training programmes tailored to individual needs. To help the dissemination of information technology, it has formed strategic alliances with major computer vendors, and provides specially designed software for local industry, consultancy and project management in computerization. It provides consultancy services in ISO 9000 systems, and has helped several firms obtain certification. In 1993-94, it undertook 1,354 consultancy and technology assistance projects, trained over 15 thousand people and undertook 2,400 cases of manufacturing support services. Despite the growth in the share of revenue earning work and its withdrawal from activities in which private consultants have appeared, the government still has to contribute about half of its budget. In addition, the government supported local design capabilities by starting a school of design and the Hong Kong Design Innovation Company.

SMEs, giving tax incentives to large firms to subcontract, and by providing subsidized credit and a range of assistance to help SMEs to upgrade and export).

The new Tigers also have a number of institutions for SME support, but these appear to be less dedicated, skilled and effective than in the above countries; the procedures tend to be more cumbersome, and the management is far more passive in reaching out to SMEs. In addition, SMEs themselves tend to be less well organized in representing their interests and seeking assistance. The most advanced is perhaps Malaysia, with its various schemes to subsidize and assist Malay-owned (*bumiputra*) SMEs.

Export market information: New exporters, especially smaller ones, invariably face high costs in obtaining necessary information on export markets. The Tigers have invested considerable effort in helping them to overcome this deficiency (Keesing 1988). The Hong Kong Trade Development Council, set up in 1966, is highly regarded for its 'matchmaking' between foreign buyers and exporters. Taiwan's China External Trade Development Council (CETDC), set up in 1970, is perhaps the most effective; however, a substantial proportion of Taiwan's exports are handled by Japanese trading companies and US buyers. The Singapore Trade Development Board (SRDB) started later, in 1983, and was doing extremely well within five years; again, its scope is fairly limited because over 80 per cent of manufactured exports are from MNC affiliates that do not need such assistance. The Korean Trade Promotion Council (KOTRA) started in 1962, modelled upon the Japan External Trade Research Organization; it seems to be regarded as less effective than its Hong Kong and Taiwanese counterparts. Most Korean exports are handled by its giant trading companies that buy from smaller enterprises, or else emanate directly from the *chaebol*.

The main contribution of these organizations has been to help SMEs establish contacts with foreign buyers and break directly into new markets. They are highly skilled and professional. For instance, in the first three organizations 'most of the officials .... come from overseas-Chinese communities that are business-oriented in the extreme and highly sophisticated in international trade. Many of their higher officials have MBAs, postgraduate degrees in practical fields such as engineering or design, or substantial previous business experience. Most have degrees from first-rate universities. Each gives its staff excellent training'.[9] All four have large computerized information bases, and actively help enterprises in establishing contact, participating in trade fairs and missions, conducting research and often providing industrial and packaging assistance.

---

9 Keesing (1988: 9-10). Most of these institutions have substantial government financial support. STDB is fully funded by the Singapore government; KOTRA gets 70 per cent of its funds from the government, the remainder from a levy on imports; HKTDC is financed by an ad valorem levy on domestic exports and imports; CETDC is funded by a fixed donation by exporters based on the value of exports. KOTRA had a staff of 933 in 1988, STDB of 350, HKTDC of 650 and CETDC of over 600. The Hong Kong agency has a more limited range of functions than the other three because of the government's laissez faire philosophy.

TABLE 8
SELECTIVE INDUSTRIAL POLICIES IN THE ASIAN TIGERS

	Deepening industrial structure	Raising local content	FDI strategy	Raising technological effort	Promotion of large local enterprises
Hong Kong	None	None	Passive open door	None except technology support for SMEs	None
Singapore	Very strong push into specialized high skill/tech industry for export markets, but without protection	None, but subcontracting promotion for SMEs	Aggressive targeting and screening of MNCs, direction into high value-added activities	None for local firms, but MNCs targeted to increase R&D	None, but some public sector enterprises enter targeted areas
Taiwan	Protection and subsidization of capital, skill and technology intensive industry. Incentives for exports of more advanced products	Pressures for raising local content, technology diffusion by MNCs and local subcontracting	Screening FDI, entry discouraged where local firms strong. Local technology diffusion pushed	Intense support for local R&D and upgrading of SMEs. Govt. targeted and orchestrated high tech development	Sporadic: to enter heavy industry by public sector enterprises
Korea	Strong trade and credit interventions to push into capital, skill and technology intensive industry, especially heavy intermediates and capital goods. Selective export targeting and promotion	Stringent local content rules, creating support industries, protection of local suppliers, sub-contracting promotion	FDI kept out unless necessary for technology access or exports, joint ventures and licensing encouraged	Ambitious plans for R&D in advanced industry, heavy investment in technology infrastructure. Targeting of strategic technologies	Sustained drive to create giant private conglomerates to internalize markets, lead heavy industry, create export brands

Again, the new Tigers have similar agencies but they appear to be less effective. Most of the marketing information and assistance comes from overseas investors or buyers and from large (generally foreign) trading companies.

To sum up: Functional export promotion policies have been generally pervasive, and well managed, in the old Tigers, but of more limited range and effectiveness in the new Tigers. The latter did have trade regimes that were conducive to exporting, and their location and relative costs enabled them to expand manufactured exports rapidly in less demanding products over the 1980s. They relied more on large firms (domestic but particularly foreign) and foreign buyers and trading houses, rather than on policies and institutions, to overcome information and other market failures. However, their functional support weaknesses have to be remedied if export growth is to deepen like those of the larger Tigers.

2.2.4 'Positive' selective policies

While conducive trade regimes and functional support were necessary for the Tigers' export growth, they are only part of the explanation for the differences in their export patterns and capabilities. For the original Tigers, these were the result *more* of their (different) selective rather than (fairly similar) functional policies. The selective policies that affected export performance were not confined to those dealing directly with exports but included the whole gamut of industrial policies that led to the evolution of the industrial structure and capabilities. Table 8 lays out the outline of the selective policies adopted by the Tigers.

It is apparent that Hong Kong was the exception to the general picture of selective interventions: in a sense, it was the special case rather than the rule, contrary to the neoclassical belief that Asian growth was driven by free market forces (Lall 1996). Its exports grew rapidly, not because of free trade in a developing country with scarce capital and cheap unskilled workers, but because of low cost literate labour combined with certain unique advantages – its location and *entrepôt* experience, the presence of the British trading, finance and other *Hongs*, and the influx of experienced entrepreneurs and engineers from Shanghai (where they had already undergone a 'learning' process). However, these advantages did not prevent its deindustrialization and relative stagnation in technological terms. Let us, therefore, look at the selective policies that explain the differing patterns sustaining export growth and deepening in the other Tigers.

2.2.4.1 Selective industrial promotion

With the exception of Hong Kong, all the Tigers and new Tigers protected their infant industries. Singapore switched to free trade after a brief period of import substitution. The two larger Tigers practised extensive selective trade interventions from the start of their industrialization process; the intensity of the interventions diminished over time as the economic system grew more complex and efficient but has never vanished altogether. They sought to promote new areas of activity considered to be in the long-term national interest – the selection was directed at products that would have the maximum technological and export potential and build up domestic linkages and

capabilities. Korea had relatively high, prolonged and variable levels of effective protection (ranging from nil to several hundred per cent), by quantitative and tariff-based measures. Taiwan used similar measures, with somewhat less intensity. These policies were, however, implemented flexibly, and, unlike typical import substituting regimes, changed as circumstances demanded.

The period of trade interventions in the larger Tigers was strongest over the late 1960s and 1970s; this was followed by liberalization, but this was slow and controlled (there are complaints even now about hidden restraints on, and government exhortations against, consumer goods imports by Korea). A comparison of price 'distortions' compiled by David Dollar shows that Japan, Korea and Taiwan had larger distortions, in terms of deviations of domestic from international prices, than 'classic' import substituting economies like India, Brazil, Mexico, Pakistan or Venezuela (World Bank 1993a: 301). The East Asian economies with the largest 'distortions' were precisely the ones with the strongest strategies to develop indigenous technological bases in advanced industrial activities: the market failures concerned are reviewed later.

The most intensive form of trade intervention in East Asia was in *Korea*, in its Heavy and Chemical Industry (HCI) drive in the 1970s. During the HCI, a range of electrical, electronic, steel, chemicals, heavy engineering and automobile industries was built up behind high and variable import protection at a speed and with an intensity unmatched in recent economic history. While this created macroeconomic problems which led to stabilization measures in the early 1980s, the HCI industries 'took off' in export markets in the mid-1980s, and, after some restructuring of the activities (Kim 1994), now provide Korea's most dynamic exports. With the benefit of hindsight, and despite the criticism at the time that the HCI drive had failed, this concentrated set of selective interventions proved to be the foundation of industrial deepening and upgrading in Korea. Of course, the learning period involved was long, and probably under-estimated by the government (Kim 1997); but given the inherent problems involved in mastering such advanced technologies and the experience of other developing countries in building up equivalent levels of capability, it was surprisingly short rather than long.

Korean industrial targeting and promotion was pragmatic and flexible, and developed in concert with private industry. Moreover, only a relatively small number of activities were supported at a given time, and the effects of protection were offset by strong export orientation (below). These features strongly differentiate its interventions from those in typical import substituting countries, where infant industry protection was sweeping and open-ended, non-selective, inflexible and designed without consultation with industry. To quote Westphal (1997) on Korean strategy:

> Since the economy's take-off in the early 1960s, the hallmark of the government's approach to developing the business sector has been its pragmatic flexibility in responding in an appropriate manner to changing circumstances. Several instances demonstrate this well: the means used at the outset to abolish the pervasive rent-seeking mentality that had been engendered by a decade of dependence on US foreign assistance; and the way that rampant pessimism about its growth prospects was overcome

through sensible planning between government and business, the success of which soon created conditions that stimulated radical changes in the mode of economic planning. Another central feature has been the government's ability to adapt policy approaches borrowed from other countries. Here notable examples include the placement of the budget authority in the planning ministry and the entire apparatus of export promotion. But the most important characteristic of the government's approach has undoubtedly been its generally non-restrictive stance. More important, where many other governments have constrained business activities not in line with their development priorities, the government has practised 'benign neglect' rather than repression. As a result, entrepreneurial initiatives have identified significant business areas that were later incorporated into the government's priorities.

In *Taiwan*, according to the World Bank (1993a:131-3), early trade policies had 'extensive quantitative restrictions and high tariff rates [that] shielded domestic consumer goods from foreign competition. To take advantage of abundant labour, the government subsidized some light industries, particularly textiles.' As import substitution started to run out of steam by 1960, 'a multiple exchange rate system was replaced with a unitary rate, and appreciation was avoided. Tariffs and import controls were gradually reduced, especially for inputs to export. In addition, the Bank of Taiwan offered low-interest loans to exporters. The government also hired the Stanford Research Institute to identify promising industries for export promotion and development. On the basis of Taiwan's comparative advantage in low-cost labour and existing technical capabilities, the institute chose plastics, synthetic fibres and electronic components. Other industries subsequently promoted included apparel, consumer electronics, home appliances, watches and clocks.'

In the 1970s, the Taiwanese government again drew upon foreign advice, now from consultants Arthur D. Little, to upgrade the industrial structure and enter into secondary import substitution.[10] These interventions included the setting up of 'capital-intensive, heavy and petrochemical industries to increase production of raw materials and intermediates for the use of export industries'. In the 1980s, as its light exports lost competitiveness, Taiwan's government 'again moved to restructure the economy. After extensive consultation with domestic and foreign advisors, the government decided to focus on high-technology industries: information, bio-technology, electro-optics, machinery and precision instruments, and environmental technology industries. The shift to a high-technology economy has necessitated the close coordination of industrial, financial, science and technology, and human resource policies.' Individual tariff rates still varied widely, with widespread quantitative restrictions in use: the use of these protective instruments was made conditional on prices moving towards international levels in 2-5 years. The average legal tariff rate in 1984 was as high as 31 per cent,

10 According to Wade (1990), the use of quantitative restrictions on imports was more widespread than of tariffs, and senior policy makers believed that it was more flexible and effective. Local content rules were used to foster backward linkages in several sectors, though their use lessened in the 1980s; the information industry was, unlike Korea, not subjected to local content rules (idem: 137-8).

higher if additional charges are added; this is higher than the 34 per cent prevalent in the developing world (Wade 1990:127).

Apart from promoting new infant industries, both the Taiwanese and Korean governments used selective interventions to strengthen existing, mature industries that were facing growing competition from new entrants. In part, and in particular in the 1990s, this comprised measures to help labour-intensive industries to locate in cheaper areas (all the Tigers except for Singapore are now net FDI exporters). More generally, however, it comprised selective measures to assist firms to restructure, improve their technological levels, raise quality and design, and invest in new equipment and skills.[11]

In Singapore, the promotion of new activities was conducted *via* FDI targeting and incentives and factor market interventions rather than by trade policy. This does not mean that the government was not selective – the identification and targeting of areas of dynamic comparative advantage was firmly in the hands of the Economic Development Board (EDB) rather than market forces. The EDB formed industrial strategy (a series of strategic plans have been devised and implemented over time) and used all the incentives available to catalyse investment. The government announced in 1997 that the EDB was to set up an Economic Resources Division to undertake 'proactive planning, development and organization of key economic resources for present and future needs, i.e. specialized infrastructure and specialist manpower.' This is being supported by a grant of S$4.3 billion (US$3.1 billion).[12]

The *new Tigers* had extensive infant industry protection, though large parts of the export-oriented sectors were kept insulated in export processing zones or similar facilities. According to estimates collected by the World Bank (1993a: 138), ERPs in the import substituting phase came to around 45 per cent for Malaysia, 75 per cent for Indonesia and 90 per cent for Thailand; these rates fell to 18 per cent, 57 per cent and 65 per cent respectively in their export push phase. Over time, several of the protected activities 'matured' and moved into export markets, often (like Korea) keeping domestic

---

11 One example of the Taiwanese government's support for industrial restructuring is for the textile industry. Textile exports, Taiwan's second largest foreign exchange earner ($12 billion in 1993), consist mainly of synthetic fibres, since labour-intensive garments have been largely relocated to lower wage countries. Faced with rising labour costs and intensifying competition from cheaper countries, the government embarked in the late-1980s on a major programme of restructuring and upgrading the industry. The Industrial Development Bureau of the Ministry of Economic Affairs developed a $95.4 million programme, of which 95 per cent was to be grants to private firms to speed up technological renovation, encourage R&D, improve design capabilities and train technical and managerial personnel. Over 250 textile plants were to receive financial and technical assistance under this programme. A number of other public and private agencies are involved in this exercise. The Taiwan Textile Federation and the CETRA Industrial Design Centre are to provide information through their data banks, provide design training and sponsor design shows. The China Productivity Centre is sending out technical teams to visit plants and advise on automation. Banks are providing low interest loans to SMEs to move their facilities overseas and have a special credit line for them (up to $60 thousand each) to import new equipment. These efforts are starting to bear fruit as textile firms more into the latest open-end rotor spinning and water-jet and air-jet weaving technologies and improve their entire range of technical skills. Indigenous designers are beginning to establish a reputation in export markets and there is relocation of simpler facilities to China and South East Asia.

12 'Towards a Developed Economy: EDB Sets Bold Targets for the Year 2000', EDB Website.

markets fairly protected – this is the case, say, with the Malaysian automobile industry, Thai food processing and Indonesian textiles and garments.

2.2.4.2 Credit allocation and subsidization

Stiglitz and Uy (1996) categorize financial market interventions in Asian Tigers into three types: '... creating markets and financial institutions; regulating them; and providing rewards (subsidies or access to credit or foreign exchange, often on preferential terms) to firms, groups, or industries that undertake priority activities or perform in an exemplary manner' (idem: 250). After considering the first two types and analysing why several of these apparently 'market unfriendly' measures (such as financial 'repression' and restricting bank competition) succeeded, they go on to consider the case for directed credit. To quote,

> All East Asian countries have directed credit in varying degrees to support industrial policies or social objectives ... Like other economies, high-performing East Asian economies use two broad types of intervention. First, the government directs credit to priority firms, groups, industries and activities (such as exports or high-technology projects). Second, the government directs credit for social reasons, often to small farmers, small and medium-scale enterprises, or a specific ethnic group. In both cases the government directs credit by investing in public enterprises, using its development banks to lend to priority areas (and to signal to other financial institutions what these areas are), and compelling commercial banks to lend to designated activities.
>
> (Stiglitz and Uy 1996: 270)

Of the Tigers, *Korea* 'most pervasively directed credit to promote specific firms and industries' (idem: 271), with mixed results during the HCI drive. According to the World Bank, as much as 60 per cent of loans by its commercial banks were directed during 1973-81 (1993a: 280). As with Japan, most of the targeted activities were 'associated with large optimum scales and increasing returns to scale'. In the context of enhancing competitiveness, we may note that the government provided and directed large amounts of *technology finance* in Korea.[13] In addition to this, there were a number

13 The main technology finance schemes in Korea are as follows: (1) The Designated R&D Programme has, since 1982, supported private firms undertaking research in core strategic technology development projects in the industrial area approved by the Ministry of Science and Technology. It funded up to 50 per cent of R&D costs of large firms and up to 80 per cent for SMEs. Between 1982 and 1993, this Programme funded 2,412 projects, which employed around 25,000 researchers at a total cost of around $2 billion, of which the government contributed 58 per cent. It resulted in 1,384 patent applications, 675 commercialized products and $33 million of direct exports of know-how. Its indirect contribution in terms of training researchers and enhancing enterprise research capabilities was much larger. The value of grants under the Programme in 1994 was $186 million, of which 42 per cent was directed at high technology products like new speciality chemicals. (2) The Industrial Technology Development Programme, started in 1987 to subsidize up to two-thirds of the R&D costs of joint projects of national interest (National Research Projects) between private firms and research institutes. Between 1987 and 1993 this Programme sponsored 1,426 projects at the cost of $1.1 billion, of which the subsidy element from the government

of schemes at commercial banks to provide technology loans and credit guarantees. Korea has the largest venture capital industry in the developing world to support local innovation.

Taiwan also used directed credit extensively. The curb market for loans was very large, but significantly more expensive than the commercial banking system, which was largely government controlled. According to Wade (1990),

> In addition to concessional credit for export production ... the government has also indicated priority industries for bank lending .... During the 1950s and the early 1960s the banks received credit allocation targets for rather broadly defined sectors, supplemented by more detailed case-by-case instructions from the planners. By the mid-1960s the banks were receiving lists of six to twelve industries to which priority attention should be given. These lists were drawn up by the planning agency, with the Ministries of Finance and Economic Affairs and the central bank having opportunities to suggest modifications. During the 1970s the banks themselves began to participate more in drafting the lists. Each bank was required to select five or six areas it wished to focus upon for the coming year. With the increased participation of the banks came more open acknowledgement of the fact of credit targeting .... In addition to the bank loan lists, the government has created special-purpose funds. For example, in 1972 the government created a special facility for machinery imports, which over the following ten years lent US$600 million on concessional terms for new machinery in any sector (but with only a small margin of preference, of the order of one or two percentage points below the normal rate ...). In 1979 the sense of national emergency created by US derecognition prompted the government to establish a special fund of US$600 million to assist machinery imports in selected industries – mainly textiles, electronics and machinery. The terms were unusually generous, with an interest rate several points below the prevailing bank rate and two-year grace and five-year repayment period, the collateral being only the machinery itself .... From time to time the government has announced measures to help local machinery producers ... A major new development in preferential investment financing is the so-called Strategic Industry Fund (or the Preferential Loan Scheme for Strategic and Important Industries) .... Established

---

was 41 per cent. In 1994, the Programme gave grants of $180 million (with 31 per cent going to high technology products), a significant increase from $69 million in 1990. (3) The Highly Advanced National Project (HAN) was launched in 1992 to support two activities: the development of specific high-technology products in which Korea could become competitive with advanced industrial countries in a decade or two (Product Technology Development Project), and the development of 'core' technologies considered essential for the economy in which Korea wanted to achieve an independent innovative base (Fundamental Technology Development Project). So far 11 HAN projects have been selected, and during 1992-94 the government provided $350 million of subsidies for them. In this brief period, the programme resulted in 1,634 patent applications and 298 registrations.

following the second oil crisis, the fund is to help diversify industry into less energy-intensive sectors.

(Wade 1990: 166-8)

Singapore also directed and subsidized credit to its public enterprises that were set up to catalyse activity in areas that were too risky for private investors. This direction continues today, for instance in setting up industrial estates and export processing zones overseas (e.g. in the 'Growth Triangle' with Indonesia and Malaysia, and in India and China).

The new Tigers, with the apparent exception of Thailand, also used a variety of forms of directing and subsidizing credit, though often with less success than the old Tigers (World Bank 1993a: 280). Over time, Indonesia and Malaysia reduced their capital market interventions, though Indonesia continues to offer substantial financial support to its 'strategic' industries which are to spearhead its drive into high technology.

2.2.4.3 Industrial structure and FDI

All the Tigers started their export drives with small indigenous enterprises operating in relative simple technologies. Thereafter their strategies differed. Taiwan and Hong Kong had exceptionally strong SMEs and a relatively arm's length stance on the direction of firms – they did not act directly to change the structure of the private industrial sector. However, Taiwan used public enterprises to enter heavy industry where the private sector was reluctant to step in, and to coordinate technological activity.[14] Its industrial structure remains dominated by SMEs, and these are, as with Hong Kong firms, relocating massively in lower cost areas as costs rise.

By contrast, Korea created large industrial firms in the belief that large size was necessary to fulfil its ambition of entering difficult technologies at world levels of competitiveness, building up its own know-why capabilities and building its own MNCs and brand names in world markets. It encouraged firms selected on the basis of their export performance to grow large, using the whole battery of selective measures. The implicit objective was to allow them to internalize defective markets for capital, skills, technology and entrepreneurship and to act as interlocutors for government policies towards the industrial sector as a whole. This was also part of its strongly nationalistic strategy of industrialization – large firms were necessary to replace foreign investment in heavy and high-tech industry, and to undertake the R&D required to absorb and create advanced technologies. The Korean government wielded considerable power to discipline the conglomerates, and in the early days several *chaebol* were closed down

14 For instance, when the Taiwanese government found that it lagged behind Korea in semiconductor production, and local private firms were too small to set up the capital-intensive facilities entailed, it took the initiative directly. The Electronic Research and Service Organization (ERSO) started to import and develop process technologies for very large integrated circuits (VLSI) in the late 1970s. A decade later the government set up a joint venture for wafer fabrication, the Taiwan Semiconductor Manufacturing Company, with Philips of the Netherlands and local private participants. TSMC also orchestrated the design and manufacturing activities of numerous small electronics firms. Once TSMC was established, private companies started producing semiconductors, microprocessors and related products.

when they failed to meet the export targets set by the government (Kim 1997). However, over time this strategy led to a highly concentrated industrial structure, with economic power located in the hands of a small number of firms; this worked well in creating industrial capabilities and going into very demanding activities, but it had its social costs. Nevertheless, the Korean *chaebol* are today the technological leaders in the developing world, its most powerful exporters and multinationals.

Singapore chose the opposite route, deliberately targeting and attracting foreign investors, with large state-of-the-art facilities and technologies, to lead its drive into more advanced export activities. Its industrial structure is thus also fairly concentrated, but with control dispersed over a large number of affiliates with overseas head offices.[15] This structure was necessitated by an export strategy that was driven by integration into the globalized production structure of multinational firms, with continued reliance on the transfer of research and development conducted overseas and on the marketing networks of the parent companies. Interestingly, Singapore drew extensively upon the managers of foreign affiliates in designing its industrial policy, one of the few countries that involves foreigners in its highest levels of policy making.

Singapore is also promoting outward investment as part of a 'Regionalization 2000' initiative to strengthen its regional networks and competitiveness. As part of this, it has set up a Regionalization Finance Scheme to provide low-interest loans to firms setting up investments in the region, with EDB bearing 70 per cent of the risk. In addition, the EDB will co-invest with MNCs and public sector enterprises in risk-sharing ventures in Singapore and the region (the fund is already nearly US$1 billion).[16]

The new Tigers have also intervened in the industrial structure: Malaysia has targeted large MNCs and set up a large public sector holding company for heavy industries (now being privatized to Malay entrepreneurs close to the Prime Minister); Indonesia has favoured large local conglomerates, again with close connections to the President, and has created giant public sector 'strategic' industries; Thailand has supported large local conglomerates. These interventions have not directly affected their export performance very noticeably in the past, but with the upgrading of comparative advantage they should become more significant in the future. Each is becoming more selective in its FDI policies, using incentives to promote upgrading and local linkages.

2.2.4.4 Human resource development

General human resource development strategies in the Tigers have already been dealt with earlier. The main point to note here is that a large part of the investments in education and training was not 'market friendly' – above a certain level, these policies were also highly selective. In the three Tigers with industrial policy, in particular, the creation of high level technical manpower was geared closely to the activities being

15 There are 4,000 foreign firms located in Singapore, about half of them being regional headquarters. Some 80 of these regional headquarters have an average expenditure in Singapore of around US$18 million per year; the government is targeting the attraction of such headquarters as a major plank of its FDI policy.

16 'Towards a Developed Economy: EDB Sets Bold Targets for the Year 2000', EDB Website.

targeted by the government. Selvaratnam (1994) describes in detail how the Singapore government changed the orientation and structure of its higher education system from a liberal arts based one to a very technological one, using its powers over finance and appointments. In Korea and Taiwan, the Japanese legacy of technical orientation in education was reinforced by subsequent policy. Korean education planning was explicitly based on comparisons with Japan, Germany and the USA, on the assumption that its long-term skill needs would be very similar as its industrial policies led to the development of heavy and high technology activities.

The Tigers have also created strong industrial training systems. Singapore has one of the world's strongest structures for pre-employment and employee training.[17] Korea has enforced a training levy on large firms of 5 per cent of payroll, very much higher than the norm of 1 per cent. The education of high-level technical manpower has been promoted by the setting up of institutions like the Korea Advanced Institute of Science and Technology at the post graduate level, and the Korea Institute of Technology at the undergraduate level. These were aimed at exceptionally gifted students, while the normal university system catered for the normal run of science and engineering training. Taiwan has numerous institutions to support training for its myriad SMEs.

The new Tigers have invested much less, and less selectively, in their human resource development. As noted, this has not held back their export growth, mainly because of the low demands of the technologies they are operating and their reliance on foreign investors to transfer technology. However, they are acutely conscious of their need to

---

17 The Vocational and Industrial Training Board (VITB) has established an integrated training infrastructure which has trained and certified over 112,000 individuals, about 9 per cent of the existing workforce, since 1979. Its Full-Time Institutional Training Programme provides pre-employment skills training for school leavers. Its Continuing Skills Training Programme comprises part-time skills courses and customized courses, offered to workers based on requests from companies and specifically tailored to their needs. Its Continuing Education Programme provides part-time classes for working adults. Its Training and Industry Programme offers apprenticeships to school leavers and ex-national servicemen. The government has collaborated with MNCs to jointly set up specialized training centres, funding a large part of employee salaries while they are being trained. The government has also worked with the governments of Japan, Germany and France to provide technical training. Under the Industry-Based Training Programme, employers, with VITB input, conduct training courses for their specific needs. VITB also provides testing and certification of its trainees and apprentices as well as trade tests for public candidates. Using various grant schemes, the National Productivity Board's Skills Development Fund (SDF) created 405,621 training places in 1990. The SDF is responsible for various financial assistance schemes to help SMEs finance their training needs and to upgrade their operations. The Training Voucher Scheme supports employers in augmenting training resources. It enabled the SDF to reach more than 3,000 new companies in 1990, many of which had 50 or fewer employees. The Training Leave Scheme encourages companies to send their employees for training during office hours. It provides 100 per cent funding of the training costs for approved programmes, up to a maximum of $20 per participant hour; in 1990, over 5,000 workers benefited from this Scheme. In effect, Singapore penalizes firms that do not invest in employee training on a continuous basis. Some of the new HRD programmes announced in 1996 include: Precision Engineering Specialist Manpower Programme; Press Tool Design Programme; 3D Solid Technology Development Programme; MSc in Mechatronics; Certificate in Logistics Operations. The EDB's International Manpower Programme was initiated in 1991 to attract foreign skills; in 1996 offers were made for 800 jobs to foreign experts and a total of 2,800 professional and technical personnel had been brought to Singapore. (Information from the EDB Website).

upgrade their skill levels if they are to sustain their export growth in the future, and have made this a high policy priority.

2.2.4.5 Technology support

The Tigers have launched several selective policies to upgrade their quality, design, productivity and R&D activity. Hong Kong has an excellent support system for SMEs in the form of the Hong Kong Productivity Centre, which imports, adapts and diffuses advanced manufacturing technologies. One of its few selective support schemes is to provide the textile and garments industry with designers; it has set up a world class design training centre to upgrade this industry.

Singapore goes much further. Two aspects of Singapore's technology infrastructure programmes are worth noting, each with selective aspects tied in with its general policies of technology upgrading. The first is its policies on *SMEs*. In 1962 the EDB launched a programme to fund SMEs to modernize equipment. In the mid-1970s, it launched several other schemes for financial assistance; of these the most significant was the Small Industries Finance Scheme to encourage technological upgrading in SMEs. The 1985 recession induced stronger measures, and Venture Capital Fund was set up to help SMEs acquire capital through low interest loans and equity. A Small Enterprises Bureau was established in 1986 to act as a one-stop consultancy agency; this helped SMEs with management and training, finance and grants, and coordinating assistance from other agencies. In 1987, US$519 m. was provided for eight SMEs programmes, including product development assistance, technical assistance to import consultants, venture capital to help technology start-ups, robot leasing, training, and technology tie-ups with foreign companies.[18]

The Singapore Institute of Standards and Industrial Research (SISIR) undertakes technology dissemination activities among SMEs, and provides information on foreign technical requirements and how to meet them. The National Productivity Board provides management advice and consultancy, while the Technology Development Centre helps them to identify their technology requirements and purchase technologies. and designs technology upgrading strategies. TDC also administers the Small Industry Technical Assistance Scheme (SITAS) and Product Development Assistance Scheme to help firms develop their design and development capabilities. It has given grants of over $1 million for 29 SITAS in the past 5 years, mainly to local enterprises; its earnings have risen to a level where its cost-recoverable activities are self financing. The EDB encourages subcontracting to local firms through its Local Industries Upgrading Programme (LIUP), under which MNCs are encouraged to source components locally by 'adopting' particular SMEs as subcontractors. In return for a commitment by the MNCs to provide on the job training and other assistance to subcontractors, the government provides a package of assistance to the latter, including cost sharing grants

18 During 1976-88, the total value of government financial assistance to SMEs amounted to S$1.5 billion, of which 88 per cent was in the Small Industries Financing Scheme. Grants of various kinds amounted to S$23.4 m. and the Skills Development Fund for S$48.6 m. (Soon 1994).

and loans for the purchase of equipment or consultancy and the provision of training. By end-1990, 27 MNCs and 116 SMEs had joined this programme.

The second element of Singapore's support system consists of direct government support of R&D and new technologies. For instance, the government decided to promote *biotechnology* as an area of future comparative advantage. It set up an Institute of Molecular and Cell Biology (IMCB) within the National Biotechnology Program, which was started in 1988 to strengthen the national R&D base and fund biotechnology development. An important incentive under this programme is pioneer industry status, which gives tax exemption for 5-10 years, with the largest benefits directed at technology-intensive and export-oriented projects. In addition, funding is provided by the government if there is active research collaboration with the public sector, with no specified limit to the available funding for R&D. Supporting this effort is a strong push in basic research at the National University of Singapore (NUS), which houses the IMCB. The University conducts one-third of Singapore's R&D, and NUS scientists have made their mark in several areas including materials technology, microelectronics and information technology. Singapore's decision to spend S$13.8 million to build IMCB and to provide annual funding of S$17.5 million is part of a broader approach to develop biotechnology.

To nurture this industry, the EDB established Singapore Bio-Innovation (SBI) Pte Ltd. which by 1991 had invested S$41 million in 12 local biotech start-up firms with 1,428 employees making health care, food, and agricultural products. SBI also invests in overseas companies that might be strategic allies. The investment in IMCB appears to be paying off scientifically. An IMCB group is at the forefront of research on tyrosine phosphates, a hot topic in cancer research. Another group is sequencing the genomes of several fish species, which could serve as a reference vertebrate genome for the human genome project. IMCB laboratories' innovative assay systems convinced Glaxo, the pharmaceutical MNC, to establish a S$31 million trust fund for a drug screening centre within IMCB. Glaxo also invested S$30 million for a neurobiology lab focusing on genes that are expressed only in the brain.

In December 1996, the Singapore government set up a $500 million Innovation Development Scheme to be administered by the EDB. This scheme will 'typically defray 50 per cent of the costs involved when undertaking or developing capabilities for innovation projects in products, processes, applications and services' in both manufacturing and service activities.[19]

Korea promoted local R&D and other forms of technology development by a series of measures (Lall 1996). We have already noted the strongly nationalistic stance of the government in importing technology by 'externalized' means, not involving foreign ownership and control. Thus, the main forms of technology inflows were by capital goods, licensing, subcontracting and imitation (Rhee *et al.* 1984). The government intervened in these transactions to ensure that local technological capabilities were well

19 'Towards a Developed Economy: EDB Sets Bold Targets for the Year 2000', EDB Website.

served.[20] In the early years, the emphasis was on building basic mastery of imported technologies, but R&D was promoted from the early years, first in public technology institutions and later in private firms. The startling rise in industrial R&D notes earlier led to a reversal of the relative funding of these expenditures in Korea, from three-quarters public in the early 1970s (which is typical of most developing countries today), to over 80 per cent private by the mid-1990s. The main thrust of private R&D was, of course, the *chaebol*, which were forced to raise their technological effort to be internationally competitive in the high-tech areas the government had chalked out for them; however, these pressures were reinforced by a range of R&D incentives offered by the government.[21]

In 1966 the government set up KIST (Korea Institute of Science and Technology) to conduct applied research of various kinds for industry. In its early years, KIST focused on solving simple problems of technology transfer and absorption. In the 1970s the government set up other specialized research institutes (on machinery, metals, electronics, nuclear energy, resources, chemicals, telecommunications, standards, shipbuilding, marine sciences, and so on), largely spun off from KIST. By the end of the decade there were 16 R&D institutions; in 1981 the government decided to reduce their number and rationalize their operations. The existing institutes were merged into 9 under the supervision of the Ministry of Science and Technology.

The government launched a series of *National R&D Projects* in 1982, large-scale projects regarded too risky for industry to tackle alone but considered in the country's strategic industrial interest. These were conducted jointly by industry, public research institutes and the government, and covered activities like semiconductors, computers, fine chemicals, machinery, material science and plant system engineering. National Projects were a continuation of the strategy of identifying and developing the country's dynamic comparative advantage, orchestrating the different actors involved, underwriting a part of the risks, providing large financial grants, and directly filling in gaps that the market could not remedy. Total expenditure on these Projects came to

---

20 In the field of plant and process engineering, for instance, the government stipulated that foreign contractors transfer their design knowledge to local firms, which quickly absorbed design technologies in some process industries. The government intervened in technology licensing to lower prices and strengthen the position of local buyers, but in a way that did not constrain access to know-how. Licensing policy was also liberalized over the 1980s as the need for advanced technologies increased. The chaebol soon developed sufficient international presence to manage their technology imports, but the SME sector had to be assisted in buying technologies overseas. Korea compiled a data base on sources and prices of technology supply, linked to similar data bases overseas and provided on-line in major industrial centres.

21 Incentive for private R&D in Korea included tax exempt Technology Development Reserve funds, tax credits for R&D as well as for upgrading human capital related to research, and setting up industry research institutes, accelerated depreciation for investments in R&D facilities, a tax exemption for 10 per cent of cost of relevant equipment, reduced import duties for imported research equipment, and a reduced excise tax for technology-intensive products. The Korea Technology Advancement Corporation helped firms commercialize research results; a 6 per cent tax credit or special accelerated depreciation provided further incentives. The import of technology was promoted by tax-deductible costs of patent purchase and other technology import fees. Income from technology consulting was tax-exempt. Foreign engineers were exempt from income tax. Grants, long term low interest loans and tax privileges were granted to participants in National Projects. Technology finance was provided by the Korea Technology Development Corporation.

$680 million over 1982-89. The sums involved increased steadily from $25 million in 1982 to $151 million in 1989. Strategic technological activities are still targeted and promoted today.

Other technology policy measures included the setting up of *Science Research Centres* and *Engineering Research Centres* at universities to support R&D activities, the *common utilization* of advanced R&D facilities, and the construction of *science towns.* Daeduk Science Town has been under construction since 1974, and a large number of research and educational institutions are already well established there. Others are under construction. Technology diffusion is advanced through efforts of the Korea Institute for Economics and Technology, which collects, processes and disseminates technical information to industry.

Since the early 1980s a number of measures have *promoted SMEs*, leading to a perceptible rise in their share of economic activity (over 1975-86, the share of SMEs in employment, sales and value added rose by 25 per cent). Policy support has covered SME start-up, productivity improvement, technology development and export promotion. A host of tax incentives has been provided to firms participating in these programmes, as well as finance at subsidized rates for using support services, credit guarantees, government procurement and a specialized bank to finance SMEs. A number of other institutions have been set up to help SMEs, such as the Small and Medium Industry Promotion Corporation to provide financial, technical and training assistance and the Industrial Development Bank to provide finance. The government has greatly increased its own contribution to the programme, though SMEs also had to pay a part of the costs of most of the services provided.

To promote subcontracting by the *chaebol*, the Korean government enacted a law designating parts and components that had to be procured through SMEs and not made in-house. By 1987 about 1200 items were so designated, involving 337 principal firms and 2200 subcontractors, mainly in machinery, electrical, electronic and ship-building. By this time, subcontracting accounted for about 43 per cent of manufacturing output and 65-77 per cent of the output values of the electrical, transport equipment and other machinery industries. Generous financial and fiscal support was provided to subcontracting SMEs, to support their operations and process and product development. In addition, subcontracting SMEs were exempted from stamp tax and were granted tax deductions for a certain percentage of their investments in laboratory and inspection equipment and for the whole of their expenses for technical consultancy. Subcontracting promotion councils were set up by industrial subsector and also within the Korea Federation of Small Business to help SMEs in the contractual relationship, arbitrate disputes and monitor contract implementation. The government put pressures on the *chaebol* to establish vendor networks; such pressures were very effective and led to a rapid expansion of localization of components among subcontractors.

As for *Taiwan*, we have already noted the measures for supporting SMEs. We now note some more selective policies for promoting technological effort. A series of Science Plans have been launched since 1959, each targeting technologies important for future industrial development. For instance, the 1979 Programme targeted 4 areas for

technology development: energy, production automation, information science and materials science, to which biotechnology, electro-optics, hepatitis control and food technology were added in 1982. The current S&T Development Plan (1986-95) continued the targeting of strategic areas of technology. Private sector R&D has been relatively weak in Taiwan because of the preponderance of SMEs, though some firms have now grown sufficiently large to perform substantial R&D, and are induced to do so in order to maintain competitiveness in international markets. In the late 1980s, some 43 per cent of total R&D expenditures went into eight national strategic programmes for R&D, of which the bulk (62 per cent) was carried out by private enterprises; engineering accounted for 73 per cent of this.

Incentives for R&D offered by the Taiwanese government include: facilitation of funds for venture capital companies, including venture capital finance from the Bank of Communications in high risk, high technology projects up to 25 per cent of the equity; financing for enterprises developed 'strategic' industrial products (151 were selected in 1982, raised to 214 in 1987; the government provided NT$20 billion in loans at preferential interest rates for buying equipment, of up to 65 per cent of the investment); encouragement of product development, with matching grants for approved projects; tax incentives for R&D, with all R&D deductible and accelerated depreciation for equipment. Special incentives for enterprises based in the Hsinchu Science Park, with government financial institutions able to invest up to 49 per cent of the capital, and the investor able to count patents and know-how as part of equity.

2.2.4.6 Export marketing

As noted in the section on functional interventions, all the Tigers supported their exporters in overcoming the costs and risks of entering unfamiliar, risky and demanding international markets. However, the countries that had selective industrial policies also had (and had to have) selective policies to promote exports. This was partly in order to offset the differential entry costs facing exporters from different activities, and partly to achieve different levels of international marketing capabilities and a national marketing presence. Korea had the strongest ambitions to build up its own marketing capabilities, trading houses, international brand names and its own multinationals; these ambitions grew over time as the constraints imposed by exporting through foreign buyers and by 'original equipment manufacture' (OEM) arrangements began to chafe. Taiwan remained more dependent on buying and OEM arrangements, and on foreign general trading houses, though its small number of giant firms also decided to build up their own brand names and distribution networks. Singapore essentially relied on foreign investors to market its exports, though government organizations took the lead in certain kinds of overseas activities such as the setting up of EPZs. Hong Kong had no selective measures for export promotion apart from the information and matchmaking service noted above.

It is important to reiterate that the strong measures of export promotion undertaken by the interventionist Tigers were essential to ensure that protected 'infants' were forced to

mature and move into the export arena.[22] In effect, *this was the discipline that ensured that selective trade and other interventions were effective* – without such export promotion, these interventions would have gone the way of other developing countries that adopted protection. It is also important to note that several measures were selective and *went well beyond reproducing a 'neutral' trade regime.*

In *Korea*, in particular, export promotion became a compelling system to force firms into export activity. Korea's export targeting system is well known. Targeting was practised at the industry, product and firm levels (Rhee *et al.* 1984), with the targets set by the firms and industry associations in concert with the government. There were monthly meetings between top government officials (chaired by the President himself) and leading exporters.[23] These targets were also enforced by several punitive measures: access to subsidized credit and import licences; income tax audits; and a number of other measures of suasion, publicity and prizes. On a long-term basis, moreover, bureaucrats were held responsible for meeting export targets in their respective industries, and had to keep in close touch with enterprises and markets. These measures were supported by regular studies of each major export industry, with information on competitors, technological trends, market conditions and so on. The selectivity of these measures mirrored the selectivity of interventions to promote infant industries.

Korea set up its own large trading houses (owned in turn by the *chaebol*) on the Japanese model, with strong government support in the form of preferential loans for stocking products and higher ceilings on foreign exchange holdings overseas. By 1976 there were 11 general trading houses that met specified criteria of export volumes, paid-up capital and number of overseas branches. By 1982 these houses accounted for about half of Korean exports and had an average of 23 offices overseas (Rhee *et al.* 1984: 53). The initial heavy reliance on foreign buyers was reduced as local marketing capabilities

---

22 However, domestic markets in Korea were kept protected long after an industry had become export competitive, as in garments earlier and automobiles more recently. This seems to have been intended to afford an extra cushion to firms for cross-subsidising their export expansion or upgrading. Taiwan liberalized faster when activities matured, though analysts note considerable redundancy in tariff rates.

23 According to Rhee et al. (1984), 'The export targets and monthly meetings provide some of the most important information needed to administer the Korean export drive. Perhaps the most important is the up-to-date information on export performance by firm, product, and market and on reasons for discrepancy between target and performance. The government also gets much solid information on what is going on in the world. (The firms, meanwhile, get much solid information about the priorities and undertakings by government). But the government has not only acquired this information. The ministries, in concert with the firms, have sought first to identify the problems and opportunities and to determine appropriate actions. These actions have been characterized by pragmatism B speed B flexibility .... This willingness to implement new policies without careful, deliberate planning was generally a virtue for export policy-making – primarily because the test of those policies was success in the international market place. Firms thus saw the flexibility and frequent adjustments in the incentive system not as characteristics that would create uncertainty about the automaticity and stability of that system. They saw them as part of the government's long-term commitment to keep exports profitable – a commitment made possible by the continuity of the government. Without such commitment, firms would have faced much more uncertainty in their export production, and exports would have suffered as a result' (idem: 35-6).

were built up. Today, the *chaebol* have a massive international presence in practically all foreign markets and are investing enormous sums in building up an 'image'.[24]

Taiwanese exporters were given preferential tax treatment and access to credit on favourable terms (above). According to Wade (1990), they were encouraged to form cartels and provided with quality assistance, marketing information and prizes. Local enterprises, predominantly SMEs, led the export drive, first by using the 'Chinese connection' in Asia and then, as their horizons widened, by tapping Japanese trading companies and American mass-market buyers. In the 1960s, about 60 per cent of textile exports were sold through Japanese *sogo shosha*, and even today these companies handle a third to half of Taiwanese exports. US buyers grew more important over time, with the government facilitating contacts with small suppliers, with aggressive assistance from industry associations and other private organizations. In addition, there also emerged large numbers of relatively small local trading houses, which proved valuable sources of technical, design and marketing information to Taiwanese exporters.

In general, however, there was considerably less selectivity in promoting exports in Taiwan than in Korea; in particular, there was no targeting of specific products, industries or firms. While the Taiwanese government gave strong general incentive for its firms to go multinational and relocate uncompetitive facilities overseas or tap new markets, these were more functional than selective in nature.

The new Tigers also have some selective export marketing strategies: Malaysia is promoting the Proton car in overseas markets, while Indonesia has ambitious plans to sell its passenger planes. Malaysia also wants to promote a 'Made in Malaysia campaign, but differentiated manufactured products made by indigenous enterprises are a very small part of its total exports and it is not clear that this will have much effect. On the whole, however, selectivity has not played much of a role in export marketing in these countries.

2.2.5 The institutional setting

It is important to bear in mind the political economy which made this array of interventions feasible. The most interventionist economies had well-managed macro economies, strong and stable governments clearly committed to export development, efficient and relatively honest bureaucracies insulated from daily political pressures, a fair degree of economic equity and national consensus on economic goals.[25] The interventions themselves were pragmatic and flexible, and evolved in consultation with

---

24 The success of this can be judged from the fact that LG Group's proposed investment in a semiconductor plant in the UK was greeted by the British press as an injection of 'Eastern high technology', and has been promised a subsidy by the UK government of over £300 million.

25 In Korea, for instance: 'Underlying the effectiveness of Korea's system of export promotion has been the single-minded commitment of the country's political leadership to an outward-looking development strategy based on international competitiveness. That commitment did more than foster an efficient bureaucracy. It unified all economic agents in Korea in a common identifiable undertaking. If the Korean experience is a guide B the institutional set-up for exporting is not going to be as effective as it might be unless there are repeated signals from the very top about the importance of international competitiveness' (Rhee et al. 1984: 73).

business. The governments always had the power to punish enterprises that failed to meet their performance criteria. They were not saddled with ideological predilections on free markets versus planning – they did whatever was considered necessary to improve national competitiveness and export performance. Ideologies were important in setting the national objectives of industrial deepening, local ownership and technological development: relatively practical matters on which each Tiger evolved its own approach and instruments, with very different degrees of selectivity and different results in terms of industrial structure and depth.

Selective interventions could work so well only because of these conditions, and, most importantly, because of the *discipline exercised by export orientation.* However, the design of the selective policies was also much better than in most other countries. Only a relatively few activities were promoted at a time, with mistakes corrected fairly quickly. Interventions in product markets were integrated with those in factor markets, allowing firms access to the inputs they needed in order to become efficient in the activities they were being encouraged to undertake. Information was shared between the policy makers and economic actors, and a great deal of effort went into having up-to-date market and technological intelligence. The financial and educational systems were geared to meeting the long-term industrial objectives of the government. While the Tigers learned from each other, they maintained their different objectives and approaches. However, over time, there has been policy convergence as the extent of selective interventions has been reduced and external 'rules of the game' have changed.

The importance of these international 'rules of the game' has increased greatly in recent years. In the 1960s and 1970s, pervasive government intervention was the accepted norm and there were practically no external pressures against the kinds of selective policies undertaken by the Tigers. Today, many of these policies are ruled out of court: selective import protection, local content requirements, export subsidies, directed credit and differential interest rates, performance and entry rules for foreign investors and copying of foreign products are either unacceptable to the WTO and major OECD trading partners or are fast becoming so. In fact, practically all these tools were used at critical stages of development by the presently industrialized economies, but the perception of what constitutes a 'level playing field' has changed so much, and the simple acceptance of the theoretical benefits of free markets so ingrained, that this is relegated to the attic of obsolete ideas. We shall return to these issues later; let us first look briefly at the theoretical case for selectivity.

III MARKET FAILURES AND SELECTIVE INTERVENTIONS

3.1 Introduction

The export success of the Tigers suggests that they 'did something right' in mounting the selective interventions described above. But what is the theoretical rationale for such interventions? What does theory have to say on the market failures that call for selectivity? And what does recent research on enterprise development suggest on the nature of these market failures?

3.2 The neoclassical approach

We can contrast two (simplified) approaches to these issues: neoclassical and evolutionary (also termed 'capability'). In neoclassical theory, apart from the classic cases of monopolies, public goods and externalities, there may be four types of market failures in resource allocation that justify selective government interventions (World Bank 1993a: 90-2). Note again that the market failure approach assumes that there exists an optimal equilibrium position that the economy can return to with appropriately designed remedies. The four market failures are:

- capital market deficiencies (caused by information gaps, asymmetries and moral hazard),
- lumpiness of investment (scale economies),
- the imperfect appropriability of firm-level investments in technological innovation and skills,
- the inability of individual actors to invest rationally when there are interdependent investments (i.e. in intermediate inputs) that enjoy scale economies and cannot be replaced by trade.[26]

While this list of market failures is valid, it is still based on an oversimplified framework of technology and information. At the level of theory, the very nature of information and innovation are such that it is difficult to conceive of a static market-clearing optimum which is given by free markets.[27] At the more empirical level of

---

26 This leads to the possibility of multiple equilibria in which government policy can shift an economy from a low-growth to a high-growth path (Rodrik 1996).

27 As Stiglitz notes in criticism of the neoclassical assumption of 'efficient' markets: 'B whenever information was imperfect or markets were incomplete, government could devise interventions that filled in for these interventions and that could make everyone better off. Because information was never perfect and markets never complete, these results completely undermined the standard theoretical basis for relying on the market mechanism. Similarly the standard models ignored changes in technology; for a variety of

development policy, it essentially ignores the slow, costly, risky and unpredictable process by which firms in developing countries become efficient and learn to compete in world markets. This process poses important *additional market failures,* and provides some of the most critical arguments for selective intervention.

The neoclassical depiction of enterprise development assumes that technology is freely available from a known 'shelf' on which there is full information. Firms choose from this shelf according to their factor and product prices, and any intervention in these prices necessarily leads to harmful 'distortion' in resource allocation. The technology selected is then absorbed costlessly and risklessly by the enterprise and used at efficient ('best practice') levels. There is no need for intervention to support the process: the assumptions ensure that any observed industrial inefficiency *must* be due to interventions in efficient markets. The removal of such interventions then becomes the necessary and sufficient condition for restoring efficiency. Only 'good' and 'bad' firms exist, since there are none that are in the process of becoming efficient – the good can only be sorted out from the bad by free markets.

If there is any lag in efficiency it can, at most, only be for a brief period in which scale economies are fully realised or costs fall in an automatic 'learning by doing' process. However, these lags are predictable (scale economies are given by technical design parameters, while the learning curve is known) and a simple function of the quantity of output. Again, there is no need for intervention because firms can anticipate the process and raise money in efficient capital markets to finance the learning process. If capital markets do fail, the correct theoretical solution is to improve their functioning rather than to intervene selectively to support particular activities. Thus, capital market failures and scale economies do not provide grounds for selective intervention in resource allocation. The only second best case for selectivity exists when these failures cannot be remedied readily, and protection or subsidies are used as intermediate solutions.

3.3 The evolutionary/capability approach

There is a large and growing literature on technological learning by developing countries which suggests that this analysis is oversimplified and misleading.[28] Technology has many 'tacit' elements and cannot be transferred like a physical product. *Its mastery and use require the recipient to invest in new skills, technical information, organizational methods and external linkages.* The process varies greatly by technology. It may be relatively short, cheap and predictable in 'easy' technologies where the equipment involved is simple, the range of skills limited, and the operation relatively self-contained. In technologies that have complex processes and sophisticated equipment,

---

reasons markets may underinvest in research and development .... Because developing economies have underdeveloped (missing) markets and imperfect information and because the development process is associated with acquiring new technology (new information), these reservations about the adequacy of market mechanisms may be particularly relevant to developing countries' (Stiglitz 1996: 156, emphasis added). G. B. Richardson argued essentially the same thing about the undesirability of a neoclassical optimum in the 1960s, but with little impact on mainstream thinking (see his reflections in Richardson 1996).

28 For a review see Lall (1996).

the range of skills is large, there are many differing stages of production, and large numbers of enterprises have to interact in the production chain, mastery may be prolonged, costly, unpredictable and uncertain. When firms are undergoing such learning, it is difficult to sort out 'good' and 'bad' firms, since there is a large intermediate category.

More important, the process of learning may be distorted and curtailed if firms do not *know* how to go about learning, how long it will take, how much it will cost, or where to look for information and skills. There may be a 'learning to learn' process which firms may be unwilling to undertake if they face free competition from those that have already undergone the process. Dropping the assumptions on perfect information in technology markets and full transferability of technology gives rise to market failures in resource allocation. Given the cost, risk and information gaps within the firm in learning, firms in free markets will tend to underinvest in technologies that have costly, prolonged and risky learning periods. This will also affect the process of technological deepening: entering complex technologies, increasing local content, or doing more demanding technological tasks (moving from simple final assembly technology to design and development).

The capability approach clearly does not suggest that *no* industry will take root in free markets. Where there is a modicum of skills, good infrastructure and low labour costs, simple labour-intensive activities will start (though in modern industry even the simplest of industries require advanced technical and management skills). However, upgrading into more complex and demanding technologies may be limited in the absence of interventions to overcome learning costs. Such interventions cannot be functional – since technologies differ in their learning needs, they *have* to be selective.

The protection of infant industries is one, and historically the most popular and effective, means of selective intervention. However, protection is a dangerous tool. Apart from the cost to the consumer, it dilutes the incentive to invest in capability development, the very process it is meant to foster. Firms are very sensitive to competitive pressures in deciding to invest in capabilities, and the protection offered in typical import-substituting regimes tended to detract from costly and lengthy investments in competitive skills and knowledge. There may be many solutions: offer limited protection (the Mill proposal); impose performance requirements; or enforce early entry into export markets while maintaining domestic protection. The last has the added advantage that it taps information externalities of export activity, and was the one used widely by the larger NIEs.

Firms do not learn on their own. They draw upon other firms and factor markets for a variety of skills, information, finance and inputs. All these markets may suffer from failures, and protection of final products can only *partly* remedy market failure impediments to firms becoming efficient. Offering protection without remedying factor markets can be wasteful, while simply improving factor markets without offsetting market failures to learning within firms can lead to narrow and shallow technological development. An ideal policy requires an integrated set of interventions addressing all the interlinked market failures affecting industrial growth. As noted, interventions in

factor markets are not necessarily functional; they can be as selective as offering protection to 'winners'.

A further issue in selectivity relates to promoting *dynamic groups* of activities. The coordination problem caused by technological linkages between firms, when each link in the production chain is undergoing its own learning process and so is unable to anticipate correctly what the others will do, is noted in the *Miracle* study. The policy issue, however, goes beyond simply coordinating individual investment decisions. Where some activity 'clusters' generate stronger benefits for the economy (in terms of technological learning, spillovers and dynamism) than others, there is a case for promoting them selectively. The case for such 'strategic' sectors is noted by some endogenous growth theorists, who distinguish between patterns of specialization that lead to technological stagnation or dynamism (Rodrik 1996).

Industrial strategy has to distinguish the *ownership* of enterprises. Market failures are particularly binding for *local* enterprises, particularly small and medium sized ones. Foreign investors, especially affiliates of large multinational firms, face fewer failures in developing countries. Their *raison d'être* lies in the internalization of many intermediate markets, especially for capital, skills and technology. This is why multinationals can be a powerful means of launching industrialization in developing countries (as long as some complementary factors exist). Their significance is greatest where technologies are changing rapidly, production is tightly linked across nations, and export market access is difficult for new entrants. However, the advantages offered by foreign direct investment do not mean (as neoclassical theory suggests) that the best way to develop is to adopt passive 'open door' policies that leave matters entirely to free markets.

There can be two important types of market failures in the foreign investment process. First, a passive liberal policy may only attract MNCs into areas of static comparative advantage. Selective and functional interventions then need to be used to guide investment into more dynamic and complex activities (as in Singapore). Second, multinationals tend to transfer operating know-how rather than complex technological functions like design and research to developing host economies. The R&D process remains largely in advanced countries, near sophisticated markets, established suppliers, advanced science systems and universities. However, as countries industrialize it becomes important for them to develop local R&D capabilities, to keep abreast of and absorb technologies, deepen industrial activity and reduce the cost of importing technology. Interventions may be needed either to induce MNCs to deepen local technological activity (as in Singapore), or to restrict foreign entry and encourage local firms to establish their own innovative base, to develop *indigenous* R&D capabilities and so capture the externalities and dynamic benefits that this may offer (as in Korea and Japan).

This is all concerned with basic production capabilities – entry into *export* markets, given such capabilities, involves a *further learning process*. Information on foreign markets, tastes, specifications, marketing systems and regulations is generally costly and difficult to acquire for a newcomer. The costs rise inversely with the size of the exporter, and tend to be highest when demand patterns are changing constantly and

rapidly, as with labour-intensive consumer goods, or where highly differentiated and customized products, such as sophisticated engineering goods, are involved. It is for this reason that most new entry into manufactured exports, in the former category, is handled by foreign buyers who take care of the marketing and transmit all the necessary information to the producer. Bypassing buyers is therefore a difficult and expensive process, and few exporters in developing countries have been able to reach this stage.

In engineering products, the equivalent is OEM production, where the local firm manufactures to specifications provided by an established firm in the importing country and sells under the latter's brand name and through its own retail and service outlets. Again, bypassing OEM arrangements to set up an independent brand, with after-sales service and customer relations, is a very expensive undertaking, and few firms have accomplished this.[29] It is therefore not surprising that export marketing has attracted the range of functional and selective interventions noted above.

3.4 The case for selective interventions

Theory thus provides valid grounds for interventions, once more realistic assumptions are introduced on the process by which competitive advantages are developed. Market failures can take three forms: within firms, in inter-firm relations and *in factor markets*. These failures are inter-related, and their remedy calls for a range of integrated interventions. Those within firms have to be dealt with by providing a 'cushion' for learning (as by protection), and by the provision of information and other support; those between firms by the coordination of investments (partly by protection), geographical clustering and promotion of linkages; and those in factor markets by direct interventions to remedy the failure. Note that protection meets only a small part of the need (within firms and in inter-firm relations); used by itself, it can be harmful for technological development because it leaves other failures untouched. Protection can only be used effectively if its deleterious incentive effects are fully offset by such means as strong export orientation and if other factor market failures are addressed.

The capability approach suggests that import-substitution strategies failed and export-orientation worked, not because of 'getting prices right' and realising static comparative advantage, but by providing a setting in which selective interventions could promote a healthy and dynamic learning process. It offers the following generalizations:

- Interventions in factor and product markets have to be closely coordinated and integrated; one without the other may be ineffective, even counter-productive. Factor market policies as recommended by new growth theories cannot provide a complete explanation of rapid industrial development by indigenous enterprises, since they ignore the costs of learning and the variety of market failures faced.

---

29 On the electronics industry and the role of OEM and own-brand exports from the Tigers, see Hobday (1995). The greatest success in moving to independent branding, design and sales has been in Korea.

- Distortions introduced by interventions must be offset. In particular, protection must be accompanied by competitive pressures to enter world markets. This is what traditional import substitution strategies failed to provide.

- Since intervention resources are limited, only a few activities should be supported at any time. Intervening in a large number of unrelated activities risks waste and failure.

- Since learning is a cumulative and incremental process, interventions must aim to support activities that have a base in existing skills and knowledge in a country. New technological 'leaps' must be modest, based on realistic assessment of what is feasible within reasonable periods of time.

- The line between market friendly and selective interventions is almost impossible to draw. Each market may be subjected to a combination of functional and selective policies.

IV LIMITATIONS TO SELECTIVE INTERVENTIONS

4.1 Introduction

While it is possible to establish a theoretical case for government interventions to promote dynamic comparative advantage, and to show that some countries have been able to use selective policies successfully, it is vital to bear in mind the risks of government failure. After all, the history of development policy is replete with cases of failed policies, and the current trend to liberalization is partly a reflection of such failure. The failure of some interventions does not, of course, mean that *all* interventions are undesirable: as long as market failures exist, a wholesale reliance on free markets will be inefficient compared to a situation where policy can improve or create markets. However, as long as governments are prone to failure, it is vital to ascertain the conditions under which selective interventions of different types can be undertaken. The issue is, then, not a black-and-white one of free markets versus wholesale intervention, but of deciding which type and level of intervention it is desirable to undertake in different product and factor markets.

4.2 Main constraints

Lack of clarity of objectives: Governments often have unclear or conflicting objectives in their economic and trade policies. This makes it difficult, or impossible, to design and implement a strategy of selective interventions, which calls for a strong, unambiguous pursuit of efficiency and competitiveness and a sharing of these objectives with the main actors involved. 'Leaving it to the market' at least has the advantage that it imposes a clear set of priorities on policy makers and is easily understood by the actors, but in the presence of market failures it may not be the best strategy for development (and even here governments have to make compromises with equity and other social needs, select between market friendly interventions and cope with pressure groups). Clarity of objectives is, of course, a matter of political leadership and commitment rather than of economic analysis. There may nevertheless be different degrees of clarity and commitment. Korea, for instance, was very different in its political economy from Taiwan, where relations between government and business were much more arm's length – in the former, the government could therefore exercise a much greater degree of selectivity. But both shared the commitment to achieving export competitiveness, as do the very different regimes in the new Tigers. Given the other demands of selectivity (below), it would seem to be a basic condition that any government that undertakes industrial policy have a clear and well-publicized set of objectives where efficiency and export growth have top priority.

Lack of information: A government wishing to use industrial policy needs information on technological and market parameters, and on local capabilities and institutions – this is often posed as one of the main constraints to selectivity. The government may not

have access to better information than industrial firms, even if such information exists somewhere (for existing technologies, say, in more industrialized countries); where the choice involves new technologies the necessary information is unlikely to exist anywhere. While it is clearly better placed than individual agents to tackle coordination problems and externalities, these may involve even more difficult issues of information. These are very real dangers, calling for caution in devising selective export promotion strategies. However, it is possible to over-stress the information problems of 'picking winners'.

Neoclassical economists, in particular, with their concern for finding a 'unique' equilibrium solution, find it difficult to conceive how governments can ever obtain and process adequately the requisite information of the endless array of choices and combinations; at the same time, they tend to overlook how their simplifying assumptions minimize the problems that private agents face in this respect – when information is imperfect, the future uncertain and risks cannot be insured (Stiglitz 1996). In any case, the issue facing governments in the real world is not to solve a gigantic optimization problem which yields a unique solution. Given the various market failures and possibilities of multiple equilibria, they have to decide upon which path they set the economy upon without being able to evaluate in detail the costs and benefits of different outcomes. As Stiglitz notes, 'Good decision-making by the government necessarily involves making mistakes: a policy that supported only sure winners would have taken no risks. The relatively few mistakes speak well of the government's ability to pick winners' (1996: 162). In the real world, the government does not replace a perfect market – it acts more as a venture capitalist who takes risks.

Most developing countries choose between technologies that are established elsewhere and, with some effort, they can obtain full information on the technological and skill parameters involved. This is much easier than 'picking winners' at the frontiers of innovation, the problem of industrial policy in advanced industrial countries. In effect, *between a reasonable range of technological choices*, it does not matter very much exactly which particular activities developing countries choose to promote. By mounting a coherent and integrated series of interventions it is *possible to create winners*. This is precisely what the governments of the interventionist Tigers did. Each defined its own set of favoured activities (within the different strategic objectives it had chosen). Having done this, it mobilized factor and product markets with appropriate trade, industrial and other policies to guide enterprises and industries, imposing export discipline to ensure that the privileges granted were not wasted or abused. Mistakes were made, as with all private investments, but flexible and rapid response ensured that the costs were not very high. None of this was done, as far as we can tell, on the basis of sophisticated quantitative models or calculations, but by using simple guides – 'follow Japan' or the immediate competitors, increase backward integration, tap high income elasticities of demand for exports, maximize technological 'spread' effects, or establish a foothold in important new technologies. Their choices also at times reflected strategic rather than economic priorities.

This does not mean that *any* choice of activities would have worked equally well. The choices have, as noted, to be 'reasonable' – what does this mean? Given the incremental

and cumulative nature of technological learning, the activities promoted had to be based on the existing base of skills and capabilities and the rate at which these could realistically be increased. The technologies developed had to have commercial applications, and the private sector that was to use them had to have the financial wherewithal to mount the necessary investments. The main demands were organizational rather than informational.

As far as information goes, the real challenge to developing countries lies in finding out the basic parameters of new technologies (efficient scales, sources of know-how and equipment, skill needs, international market size and access) and in predicting the availability of the local capabilities and suppliers. The mistake import substituting governments made was to ignore efficiency requirements and international markets, and to assume away local capability problems. In effect, they believed that the necessary capabilities existed within the country, or would be created automatically and without extra cost. The Tigers, on the other hand, tended to look carefully at scales, skills, supplier structures, technological effort, quality, market needs and so on, and to intervene to help firms develop the necessary capabilities. The procedure was not easy, but it was systematic and rational, unlike that pursued by import substituting regimes. The need to export forced technological jumps not to be too large or non-commercial (though some, particularly in Korea, appear highly risky).

How can governments collect information? Purely technological data can be obtained from a variety of sources: larger local firms, MNCs, capital goods suppliers, consultants and the published literature. Market data can be obtained, where necessary, from MNCs, sales outlets, buyers, consultants, embassies, publications and so on. The best guide to the design of economic strategies is the strategies and results in countries that are further along the road of industrial development, and that have pursued what each country regards as feasible and desirable policies. The latter qualification is important, since not every country has the ability nor the desire to mount Korean-style interventions (this apart from its legality under present rules, considered below). Many governments firmly believe in market oriented policies and wish to undertake minimal selectivity. Many others that do wish to have selective policies lack the political economy to direct industry in the Japanese or Korean tradition: Taiwan may be a much more useful model for them. Singapore provides pointers to how foreign affiliates can be persuaded to conform to selective policies (and its EDB is now actively selling consultancy services to help other countries set up similar institutions).

Skills: The strategy just described is clearly very demanding of technical and administrative skills, often in short supply in developing countries. The skills are needed to understand and devise strategies with strong technical content, and, more importantly, to implement and improve them over time, to communicate with the industrial sector, and to ensure that agency problems (below) are overcome. Of course, the need for skills is not uniform, and depends on the level of industrial development and the degree of selectivity aimed for. The more advanced the industrial base and the more detailed and adventurous the strategy, the higher the levels of skills involved. In countries with small and simple industrial activities, the strategies can be devised far more easily and their implementation may need a smaller range of technical skills. The degree of selectivity

itself can be geared to the capabilities of the bureaucracy and the pace at which its information and training can be improved. In this context, it is important to note that administrative capabilities are not required only for selective strategies; it is just as important for the success of 'market friendly' policies, that they provide for education, competition policy, infrastructure and so on.

Government skills are not a given; they can be improved by training, better selection, competitive salaries, appropriate promotion schemes and performance incentives (see the World Bank 1993a, on the lessons of East Asia in this regard). The social status of the civil service is an important determinant of its confidence and ability to liaise with the private sector. All these considerations are fairly obvious and mundane, but they are important nevertheless – it is surprising how many governments tend to overlook them when demanding their bureaucrats to mount difficult and demanding tasks.

Agency problems: Principal-agent theory suggests that policy makers have to devise suitable incentives and monitoring mechanisms to ensure that the (implicit) 'contract' between them and agents (mainly in the private sector) is enforced. While theoretical solutions often appear very complex and difficult, it is possible to devise simpler practical ones. The Tigers did this in different ways: the most important and common one was, as noted, the use of export performance as the monitoring and allocation device (what the World Bank 1993a, calls 'creating contests'), but there were others. Banks acted as agents of monitoring and implementing export policy. Regular meetings between industry and government permitted the inter-flow of information, backed by detailed industry and strategy studies. Close contact between the bureaucracy and industry was promoted, with personnel moving between the two. In Korea promotion of a relatively few *chaebol* allowed the government to limit the number of agents it had to deal directly with, and to use them as interlocutors with the rest of the industrial sector. Industry associations also played vital roles as interlocutors in all three interventionist countries.

Within the bureaucracy itself, there are means of ensuring better compliance. As noted, skills and information can be enhanced; internal incentive structures can also be improved to ensure that general objectives are met efficiently. Again, making bureaucrats responsible for meeting export targets can be an effective way of improving their commitment and incentives. Adequate reward and promotion systems are another.

Resource constraints: Most intervention requires financial resources as well as human ones. Tariffs are an exception. The creation of skills, technology institutions and marketing support systems can be expensive propositions – the market friendly approach does not escape these – as are industry specific programmes for restructuring, technology upgrading, training or design. Unless the government has ensured that its budget can provide the necessary resources to carry through the interventions it has selected, the results can be very negative: again, an obvious point but often forgotten in practice.

Coordination with private sector: The importance of close coordination between government and the private sector has been noted at several points above. The World

Bank study (1993a) also comments on the need for mechanisms to ensure regular interaction, and describes how the new Tigers are setting up new institutions for this purpose. The exact form differs, of course, from country to country, but the general principles are similar across countries.

Inflexibility: Many interventions turn out to be costly not so much because they are poorly designed (private business makes huge mistakes all the time) but because often changing course is difficult for governments and there is little accountability for the outcome. Clearly, all interventions have to be designed flexibly and monitored constantly so that mistakes can be rectified as they appear. There are precedents in the private corporate sector on how this can be done, but the use of export performance as the check is perhaps the best way to monitor export policies.

Sectional interests: While the 'hijacking' of policies by sectional interests is a danger in most countries, regardless of the nature of policies, the danger is greater where the government has selective as opposed to functional interventions. It can be offset only by strong leadership, the setting up of appropriate institutions and internal checks on the allocation of favours: again we step outside the realm of economic analysis. That sectional interests can be dominated by national ones is illustrated by the Asian experience. Whether or not this is feasible in a particular set of circumstances, however, cannot be said *a priori*. What we can say is that the danger of hijacking of national policies in sectional interests is a good argument against selectivity where there are strong vested interests facing a weak government.

Corruption: There may be several levels of official corruption: the higher the level the more difficult it is to solve. At lower levels, changes in monitoring, employment conditions, salaries and incentives may help reduce rampant corruption. At the top levels, however, if there is no one able to impose sanctions on wrong-doers and there is no genuine commitment to economic development, there is really no way of mounting selective, or indeed any useful development, policies. Venality at the top will also tend to breed and condone that lower down the scale, and it follows that the greater the risk of corruption the less selectivity should be exercised.

4.3 The degree of selectivity

It is difficult for an economist to take this sort of discussion much further. There are clearly very real dangers of selectivity when government capabilities are weak in a broad sense. Neoliberals may argue that *all* governments are inherently weak and corruptible, and that selectivity can never succeed: this is a matter of ideology and has no base in either theory or fact. What we suggest is that there are certainly risks that have to be acknowledged and faced. We also argue that government capabilities can be improved, that the *level of selectivity* can be geared to capabilities if the leadership is clearly committed to competitive development and that governments can be helped to intervene efficiently.

It is important, therefore, to distinguish between *different intensities or degrees* of selective intervention. There is a common tendency to treat all selectivity as equal in intensity, a selective industrial strategy being something like Korea's, and to dismiss the feasibility of a selective strategy if government capabilities do not match up to those in Korea. This is mistaken. Selectivity can be exercised at very different degrees, from relatively mild to very intense. A low degree of selectivity would be involved, say, in favouring technical education over liberal arts, giving uniform protection to all manufacturing over agricultural activities, or providing privileged access to credit for all exporters. At the other end, a high degree of selectivity would resemble early Korean-style direction of investment at the firm and product level, control of technology imports at the detailed level or the creation of hand-picked giant firms. In between, we can think of a multitude of interventions of different degrees of selectivity, defined by the intent and the impact. But they are all selective in their own way.

The lower the capabilities of the government, the lower the degree of selectivity that it can safely be entrusted with. The lower the level of selectivity, the lower also the risks involved as well as the possible 'payoff' in terms of transforming the competitive structure. If there were the possibility of a rational choice of strategy differentiated by country, then the optimal one would take into account present and future government capabilities. This is in theory – in reality governments do not choose strategies on a realistic assessment of their own capabilities and limitations. External advisors or analysts may be able to provide such an assessment, but there is little guarantee that a government will base its strategy on such advice. If strategies of more general applicability were to be recommended, what would they be?

If governments were really intent on copying what they regarded as each other's 'best practice' without regard to their own failures and weaknesses, the best general strategy may be the one aimed at the lowest common denominator of capabilities, i.e. one with a fairly low level of selectivity. The implicit assumption here would be that the cost of government failure at all higher levels of selectivity would outweigh the costs of market failures left untreated, and that this balance could not be altered by improving government capabilities. In this case, the rational strategy would be to persuade governments that non-selectivity was economically the ideal strategy they should aim at under all circumstances. Arguments in favour of selectivity would then be dismissed on economic rather than political or administrative ones, as part of a general persuasion campaign, and no attempt would be needed to improve capabilities to undertake selective intervention.

4.4 Conclusions

This sounds rather like the present situation: the awesome weight and authority of the Washington consensus and the WTO, backed by the major aid donors, combining some sensible policy advice on macroeconomic management with strong neoliberal advice on the inherent desirability of free markets. However, whether this is due to a strong belief in free markets, the interplay of pressures from powerful governments or a considered judgement based on the above reasoning is not clear.

What is evident is that the scope for selective interventions has been considerably narrowed by the new rules of the game of international trade and finance. This constitutes today the single most important constraint to the use of the tools that were deployed so successfully by the two larger Tigers: import protection and export subsidies, credit subsidies and direction, local content rules, discriminatory treatment of FDI, interventions in technology transfer and lax intellectual property protection.

While there is no doubt that this wholesale move to liberalization has many desirable effects, reducing the scope for inefficient interventions and corruption that past policies have exhibited, our argument suggests that by ignoring the legitimate and important role of selectivity it goes too far. The genuine constraints that exist on the use of selective instruments need to be addressed directly, since it is possible to remedy them. They are presently going by default, crushed by the Washington juggernaut and the impenetrable *mantras* of formal neoclassical economics.

V CONCLUSIONS

In the absence of selective policies, export growth and diversification are likely to be slow and shallow. A domestic enterprise based strategy of technological deepening calls for the most pervasive interventions, but even a foreign investment driven strategy needs targeting if it is to go beyond the basic labour based activities. This paper has drawn upon the East Asian experience to illustrate the range of possible policies and strategies, providing the rationale for selectivity and the role of 'vision' or national objectives in defining the relevant market failures. It has noted the limitations to selective policies, posed partly by the risk of government failures and weak capabilities and partly by external constraints and governments' own ideological perceptions. When all is said and done, there does remain some scope for the use of selective policies to promote exports, but its exact scope still has to be delineated.

In the meantime, governments continue to worry about their international competitiveness in an era of liberalization, and competitiveness studies are a major industry in the most mature industrial to the least developed countries. Most studies are unfortunately poorly done, using current fads like 'cluster' analysis, with little analysis of the economic issues or of market failures. It is important that they be well done, based on sound economics and on the experience of successful exporters. This paper has simply highlighted some of the important issues in this context.

REFERENCES

Amsden, A. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, New York: Oxford University Press.

Helleiner, G. K. (ed.) (1995a), *Manufacturing for Export in the Developing World: Problems and Prospects*, London: Routledge.

Helleiner, G. K. (1995b), *Trade, Trade Policy and Industrialization Reconsidered*, UNU WIDER, World Development Studies 6.

Hobday, M. G. (1995), *Innovation in East Asia: The Challenge to Japan*, Cheltenham: Edward Elgar.

Keesing, D. B. (1988), 'The Four Successful Exceptions: Official Export Promotion and Support for Export Marketing in Hong Kong, Singapore, Taiwan and the Republic of Korea', World Bank: Trade Policy Division, draft.

Kim, K. S. (1994), 'Trade and Industrialization Policies in Korea: An Overview', in G. K. Helleiner (ed.), *Trade Policy and Industrialization in Turbulent Times*, London: Routledge, pp. 317-363.

Kim, L. (1997), *Imitation to Innovation: The Dynamics of Korea's Technological Learning*, Boston: Harvard Business School Press.

Lall, S. (1996), *Learning from the Asian Tigers: Studies in Technology and Industrial Policy*, London: Macmillan.

Lipsey, R. G. (1994), 'Markets, Technological Change and Economic Growth', Quaid-I-Azam Invited Lecture, *Pakistan Development Review*, 33(4), pp. 327-352.

Pack, H. and Westphal, L. E. (1986), 'Industrial Strategy and Technological Change: Theory versus Reality', *Journal of Development Economics*, 22(1), pp. 87-128.

Ramstetter, E. (1994), 'Employment-Related Characteristics of Foreign Multinationals in Selected Asian Economies', Background paper for UNCTAD, *World Investment Report 1994*, Geneva.

Rhee, Y. W., Ross-Larson, B. and Pursell, G. (1984), *Korea's Competitive Edge: Managing the Entry Into World Markets*, Baltimore: The Johns Hopkins Press, for the World Bank.

Richardson, G. B. (1996), 'Competition, Innovation and Increasing Returns', Aalborg: Danish Research Unit for Industrial Dynamics, DRUID Working Papers, No. 96-10.

Rodrik, D. (1996), 'Coordination Failures and Government Policy: A Model with Applications to East Asia and Eastern Europe', *Journal of International Economics*, 40, pp. 1-22.

Selvaratnam, V. (1994), *Innovations in Higher Education: Singapore at the Competitive Edge,* Washington, DC: World Bank, Technical Paper No. 222.

Shapiro, H. and Taylor, L. (1990), 'The State and Industrial Strategy', *World Development,* 18(6), pp. 861-878.

Soon, Teck-Wong (1994), 'Singapore' in S. D. Meyanathan, *Industrial Structures and the Development of Small and Medium Enterprise Linkages: Examples from East Asia,* World Bank, Economic Development Institute.

Stiglitz, J. E. (1989), 'Markets, Market Failures and Development', *American Economic Review Papers and Proceedings*, 79(2), pp. 197-202.

Stiglitz, J. E. (1996), 'Some Lessons from the East Asian Miracle', *World Bank Research Observer*, 11(2), August, 151-177.

Stiglitz, J. E. (1997), 'Market Failures, Public Goods, and Externalities', in E. Malinvaud (ed.), *Development Strategy and the Market Economy,* Oxford: OUP (forthcoming).

Stiglitz, J. E. and Uy, M. (1996), 'Financial Markets, Public Policy and the East Asian Miracle', *The World Bank Research Observer*, 11(2), pp. 249-276.

Wade, R. (1990), *Governing the Market*, Princeton: Princeton University Press.

Westphal, L. E. (1997), 'Government-Business Relations: Experience of the Republic of Korea', Background note prepared for UNCTAD Expert Group Meeting.

World Bank (1993a), *The East Asian Miracle*, Oxford: Oxford University Press.

World Bank (1993b), 'East Asia's Export Push', *Development Brief Number 23*, October.

World Bank (1996), *Made in Malaysia: Technology Development for Vision 2020*, Study prepared for the Ministry of Science, Technology and the Environment, Government of Malaysia.

UNU/WIDER Research for Action series

RFA1 Hunger and Entitlements by Amartya Sen, January 1988 *out of print*

RFA2 Lessons of the Golden Age of Capitalism by Stephen A. Marglin, April 1988

RFA3 Conditionality: Facts, Theory and Policy by Dragoslav Avramovic, July 1989

RFA4 The World Economic and Financial Crisis by Celso Furtado, Lal Jayawardena and Masaru Yoshitomi, November 1989 *out of print*

RFA5 The Affinity between Ownership and Coordination Mechanisms. The Common Experience of Reform in Socialist Countries by János Kornai, January 1990

RFA6 Towards a Peaceful Sri Lanka. Six Introductory Seminars for University Students by Carlo Fonseka, October 1990

RFA7 Gender, Development, and Policy: Toward Equity and Empowerment by Valentine M. Moghadam, November 1990

RFA8 Foreign Resource Flows and Developing Country Growth by Lance Taylor, March 1991

RFA9 A Global Environmental Compact for Sustainable Development: Resource Requirements and Mechanisms by Lal Jayawardena, August 1991

RFA10 Privatization and Democratization in Central and Eastern Europe and the Soviet Union: The Gender Dimension edited by Valentine M. Moghadam, January 1992

RFA11 Aid and Development Policy in the 1990s by Arjun Sengupta, February 1993

RFA12 The Potential of Development Contracts and Conditionality: Towards Sustainable Development Compacts by Lal Jayawardena, February 1993 *out of print*

RFA13 Gender and the Development Process in a Changing Global Environment. Results of the UNU/WIDER Research Programme on Women and Development by Valentine M. Moghadam, July 1993

RFA14 The New Regionalism: Implications for Global Development and International Security by Björn Hettne and András Inotai, February 1994

RFA15 Economic Reform and Its Interpretations in Russia by Ruben N. Yevstigneyev and Arkady M. Voinov, May 1994

RFA16 Structural Adjustment in Africa. A Performance Review of World Bank Policies under Uncertainty in Commodity Price Trends: The Case of Ghana by Tetteh A. Kofi, June 1994 *out of print*

RFA17 Russian Transition - Chinese Reforms: A Comparative View by András Blahó, June 1994 *out of print*

RFA18 Internationalization of Finnish Firms and their Response to Global Challenges by Reijo Luostarinen, December 1994

RFA19 Impacts of Africa's Growing Debt on its Growth by Siddig A. Salih. December 1994

RFA20 Trends in International Cooperation and Net Resource Transfers to Developing Countries by Krishnalekha Sood, January 1995

RFA21 Habitat II and the Urban Economy: A Review of Recent Developments and Literature by Pii Elina Berghäll, April 1995

RFA22 Restructuring of Peripheral Villages in Northwestern Russia by Eira Varis, February 1996

RFA23 The Urban Challenge by Reino Hjerppe and Pii Elina Berghäll, March 1996

RFA24 Development, Aid and Conflict: Reflections from the Case of Rwanda by Peter Uvin, September 1996

RFA24 Développement, aide, et conflit: Réflections à partir du cas du Rwanda par Peter Uvin, mai 1997

RFA25 The Age of Humanitarian Emergencies by Raimo Väyrynen, September 1996

RFA26 Welfare Changes in China during the Economic Reforms by Lu Aiguo, September 1996

RFA27 The Banking System and Monetary Aggregates Following Financial Sector Reforms: Lessons from Indonesia by Anwar Nasution, September 1996

RFA28 Dealing with Capital Inflows: Are There Any Lessons? by Carmen M. Reinhart and Steven Dunaway, September 1996

RFA29 A Russian Puzzle: What Makes the Russian Economic Transformation a Special Case by Vladimir Popov, September 1996

RFA30 Tree Plantations in the Philippines and Thailand: Economic, Social and Environmental Evaluation by Anssi Niskanen and Olli Saastamoinen, October 1996

RFA31 Why Humanitarian Emergencies Occur: Insights from the Interface of State, Democracy and Civil Society by Claude Ake, January 1997

RFA32 Zaire after Mobutu: A Case of a Humanitarian Emergency by Kisangani N. F. Emizet, February 1997

RFA33 The Polish Alternative: Old Myths, Hard Facts and New Strategies in the Successful Transformation of the Polish Economy by Grzegorz W. Kolodko and D. Mario Nuti, March 1997

RFA34 Food Marketing Reconsidered: An Assessment of the Liberalization of Food Marketing in Sub-Saharan Africa by Pekka Seppälä, April 1997

RFA35 The Liberalization of Foreign Exchange Markets and Economic Growth in Sub-Saharan Africa by Nguyuru H. I. Lipumba, May 1997

RFA36 Political Sources of Humanitarian Emergencies by K. J. Holsti, May 1997

RFA37 The Role of Civic Organizations in the Provision of Social Services: Towards Synergy by Mark Robinson and Gordon White, July 1997

RFA38 Emergence of Unorthodox Ownership and Governance Structures in East Asia: An Alternative Transition Path by Laixiang Sun, July 1997

RFA39 The Determinants of Economic Performance in Transitional Economies: The Roles of Ownership, Incentives and Restructuring by Derek C. Jones, August 1997

RFA40 Towards the Abyss? The Political Economy of Emergency in Haiti by Mats Lundahl, August 1997

RFA41 Community and Village-Based Provision of Key Social Services: A Case Study of Tanzania by Marja Liisa Swantz, September 1997

RFA42 The Transition's Mortality Crisis in East Germany by Regina T. Riphahn and Klaus Zimmermann, November 1997

RFA43 Selective Policies for Export Promotion: Lessons from the Asian Tigers by Sanjaya Lall, December 1997

For price and order information, please contact the address given below.

UNU/WIDER Publications
Katajanokanlaituri 6 B
00160 Helsinki, Finland

Telephone (+358-9) 6159911
Facsimile (+358-9) 61599333
Telex 123455 unuei fi
E-mail wider@wider.unu.edu