III Singapore's Development Strategy

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In large part, Singapore's rapid growth can be attributed to policies that promoted macroeconomic stability (low inflation, positive real interest rates, sound fiscal management) and limited relative price distortions in the economy (liberal foreign trade policies and an exchange rate policy that avoided prolonged periods of real exchange rate misalignment). The liberal climate regarding foreign investment also played a role, since it set the stage for rapid investment- and export-led growth. Other important factors included a healthy level of infrastructure investment and a commitment to upgrading human capital through investments in education and vocational training.

In addition, Singapore has relied on "market-leading" policies for active promotion of investments in those sectors thought to possess the greatest growth potential. Tax holidays awarded under "pioneer" status, as well as other incentives, have been used to affect the pattern of investment. From independence until the mid-1970s—corresponding to the period of surplus labor—such incentives were widely granted to promote industrialization. Since then, however, the incentives have been used increasingly to facilitate the introduction of new state-of-the-art technologies to Singapore in the context of labor scarcity. While the investment incentives were available to both local and foreign firms, the latter were well placed to benefit from the tax relief offered under the pioneer program since, in general, they had better access to relatively advanced technologies.

Given Singapore's successful development record, the presumption must be that its policies enhanced the country's growth potential. However, any assessment of the growth strategy must distinguish between "open door" policies vis-à-vis foreign trade and investment on the one hand, and the use of incentives to promote particular sectors and activities on the other. While the importance of liberal trade and investment policies, flexible factor markets, and macroeconomic stability for growth is generally acknowledged, the relationship between selective interventions and economic growth is perhaps more ambiguous. The relative-price distortions induced by selective incentives (like the distortions induced by restrictive trade policies and unstable macroeconomic policies) will in general impose economic costs that can potentially outweigh the benefits of such incentives.

The Strategy: A Historical Perspective

During the roughly three-decade period since achieving self-rule in 1959, Singapore's economy has evolved from a semiclosed, low-wage producer of mainly labor-intensive goods, to a very open, high-wage producer of high-technology, capital-intensive products. It is possible to identify four phases along this transition, reflecting important changes that took place in the underlying economic policies. Import-substitution policies, pursued during the first phase (1959–65), were designed to promote industrialization through protection of the common market established with Malaya. After leaving the Malaysian Federation, Singapore entered a phase of export promotion (1966–73) during which foreign investments were sought in mainly labor-intensive activities. By the early 1970s, the unemployment problem that had plagued Singapore since independence was largely solved, and policies attempted to restructure the industrial base toward more capital- and skill-intensive activities. This phase, "Industrial Restructuring," lasted from 1973 to 1984. By 1985, with much of the opportunity for technology catch-up in manufacturing having been exhausted, policies were directed toward diversification of the industrial base, particularly the promotion of business and financial services.

Phase I: Import-Substitution Policies, 1959–65

Upon achieving self-rule in 1959, Singapore was saddled with severe poverty and chronic unemployment of its poorly educated population. Singapore's traditional economic activities—entrepôt trade and related supporting services and processing industries—were already in decline owing to the development of direct trade routes between Southeast Asian

and western countries, and were not expected to generate sufficient job opportunities to absorb the 10 percent or more of the labor force estimated to be unemployed.

To alleviate the unemployment problem, the Government committed itself to a policy of rapid industrialization. A number of hurdles needed to be overcome, however, especially owing to the small size of the domestic market and the previous reliance on entrepôt trade. One prong of the approach involved expanding the size of the domestic market through political and economic union with Malaya. Membership in the Malaysian Federation, beginning in 1963, nearly doubled the size of Singapore's market in terms of GDP and, together with protection afforded by tariffs and quotas, promoted industrialization through a strategy of import substitution.

In addition to import substitution, the Government introduced a number of fiscal incentives to encourage the development of Singapore's manufacturing sector.[1] Thus, the Pioneer Industries Ordinance and the Industrial Expansion Ordinance, enacted in 1959, allowed the Government to grant tax holidays to firms investing in Singapore, particularly in labor-intensive activities.[2] Petrochemicals was among the first sectors to benefit under these schemes, with Shell being granted pioneer status in 1961.

The Government took a number of additional measures to promote industrialization. For example, the Economic Development Board (EDB) was established in 1961 as the primary body responsible for implementing the Government's industrial policies. As such, the EDB was given the authority to grant incentives (the most important being pioneer status), to set up industrial estates, and to invest directly in new and expanding enterprises. Import-substitution efforts were strengthened in the early 1960s to shield new firms from foreign competition. Thus, tariffs were raised in both 1962 and 1963, and import quotas were imposed on a variety of products in 1963. By May 1965, some 230 commodities were subject to import licensing and quantitative restrictions. In addition, the Control of Manufacture Ordinance, enacted in 1959, continued to shield firms operating in Singapore from competition by allowing the Minister for Finance to set limits on the total number of firms engaged in producing a specific good.[3]

Alongside the import-substitution strategy, the Government recognized that continued industrialization would require improvements in the skill- and education-level of the work force. To this end, a five-year education plan was introduced in 1960 designed to produce a work force well equipped with a knowledge of basic mathematics, science, and other technical subjects required in a modernizing economy. By 1965, these policies saw an increase in primary- and secondary-school enrollment of 33 percent and 94 percent, respectively; a 70 percent increase in university enrollment; and the establishment of technical and vocational institutions with a total enrollment of nearly 1,200 students.[4]

These policies met with some success. Real GDP grew at an annual rate of 5¾ percent between 1960 and 1965, and the share of manufacturing in real GDP rose to 19 percent from 17 percent. In addition, more than 21,000 new jobs were created in manufacturing. Nevertheless, the unemployment rate remained above 10 percent.

Phase 2: Export Orientation, 1966–73

Although somewhat successful at promoting Singapore's industrialization, the import-substitution strategy began to unravel by the mid-1960s. A chief concern was that firms producing primarily for the domestic market, even when this market included Malaysia as it did until August 1965, were unable fully to exploit economies of scale in manufacturing. As a result, unemployment remained a severe problem in Singapore several years after independence. In addition, the import-substitution strategy, because of its negative impact on exports, contributed to increasingly severe balance of payments problems. The announcement by the United Kingdom in 1967 of a timetable for withdrawal of its military forces came as a further economic setback and gave additional impetus toward a change in development strategy.

Breaking with what was then the preferred development strategy in both policy and academic circles, Singapore from 1967 on took an export-oriented approach to industrialization. Hong Kong was perhaps the only other economy to have had a similar strategy at that time. The move away from import substitution allowed a number of firms that had been established in Singapore in the early 1960s to reach

[1] The incentives, first introduced in 1959, were in part a response to similar incentives being introduced in Malaya.

[2] The Pioneer Industries Ordinance provided tax relief for periods of two to five years, depending on the fixed assets of the company. Pioneer incentives were granted for specific products and applied to income flows specifically attributable to that product. The Industrial Expansion Ordinance gave tax relief to expanding enterprises for periods that varied with the amount of new capital expenditure.

[3] Currently, the Control of Manufacture Ordinance covers a limited range of goods, consistent with Singapore's social and national security objectives.

[4] For further details, see Soon Teck Wong, "Education and Human Resource Development," in Low and others (1993).

their minimum efficient scale. As import quotas were removed and tariffs came down (albeit from relatively low levels), exports grew, the balance of payments improved, and the unemployment of both labor and capital that had plagued Singapore almost since independence were gradually reduced. At the same time, many of the inward-oriented manufacturing firms that had geared production mainly to supply the federated market ceased to exist.

The switch in development strategy toward export promotion was reflected in changes in the policies of the Economic Development Board. Under the new regime, the EDB sought firms that would set up manufacturing facilities in Singapore primarily for export. As a low-wage country with a strategic location in Asia, a good transportation infrastructure, and a newly introduced outward-oriented trade and investment regime, Singapore was particularly attractive to multinationals contemplating an expanded presence in the region.

To further the objective of employment creation through export promotion, a number of specific incentives were introduced in 1967 under the Economic Expansion Incentives Act (administered by the EDB) including, for example, sharply reduced corporate tax rates on manufacturers engaged in export.[5] These policies, together with a number of exogenous factors—including the rapid expansion in world trade during this period and the relocation of textile and garment plants from other Asian countries that had exhausted their clothing quotas in industrial country markets—can be credited with the surge in inward foreign direct investment to Singapore over this period (total manufacturing investment commitments during 1968–73 exceeded S$2.3 billion).

Both the manufacturing and the financial services sectors benefited from the increase in foreign investment, the major source of which switched from the United Kingdom to the United States. Within manufacturing, the expansion of the electronics, petroleum refining, ship repair, and textiles sectors was particularly rapid, helping to absorb much of the unemployed labor force. As to financial services, the establishment in Singapore in 1968 of the Bank of America's Asian currency unit, an international banking facility constrained to operating in the Asian dollar market (similar to its Eurocurrency unit based in London), signaled the first stage in the rapid development of the Asian dollar market and the emergence of Singapore as a major international financial center.

The success of this second phase of Singapore's development strategy was attested to not only by the rapid increase in foreign investment and exports, but also by the impressive growth in employment that transformed Singapore from a low-wage surplus labor economy to a relatively high-wage full employment economy. Between 1967 and 1973, 147,500 manufacturing jobs were created in Singapore; indeed, by the early 1970s, the country was experiencing labor scarcity, requiring the attraction of a substantial number of temporary foreign workers to satisfy the demand for labor coming from the burgeoning manufacturing sector.[6]

Phase 3: Industrial Restructuring, 1973–84

With the achievement of full employment in the early 1970s, Singapore embarked on a new phase in its development strategy. Whereas the goal in the second half of the previous decade had been to promote investments that were labor- and export-intensive, now the objective switched toward technological catch-up.[7] No longer would policies be directed at securing an expansion of sectors—such as textiles, garments, electronic components assembly, and ship repair—that absorbed surplus labor but did little to upgrade the technology level used in domestic industry. Instead, policies would strive to encourage investments in skill- and technology-intensive sectors, such as computers, electronics, machinery, and pharmaceuticals, in order to generate more value added from the same amount of labor.

Indeed, by the early to mid-1970s, the emergence of excess demand pressures in Singapore's labor market began to put upward pressure on real wages, entailing some loss of competitiveness vis-à-vis neighboring countries that were competing with Singapore in third-country markets. To spur growth, foreign investments in high-technology industries were encouraged by the EDB by granting firms five-year tax holidays. Enterprises that were already operating in Singapore were also offered incentives to upgrade the skill levels of their employees, to improve the technology level of new investments, and to increase automation.

[5] Under the Act, the corporate tax rate was reduced from 40 percent to 4 percent on approved manufacturers' export profits for a period up to 15 years. More generally, a guiding principle in the incentives seems to have been the encouragement of investment and employment in export-intensive sectors and, subsequently, in sectors that introduced new manufacturing technologies to Singapore.

[6] Singapore was the first Asian country to attract a significant number of temporary foreign workers. According to the 1970 census, more than 72,500 workers—about 11 percent of the labor force—were nonresident workers.

[7] Although the change in development strategy was announced in 1973, the world recession associated with the first oil shock forced Singapore to postpone economic restructuring (for fear of reigniting the unemployment problem) until somewhat later in the decade.

To keep up with the demand for new skills, the EDB set up joint industrial training centers with foreign multinationals operating in Singapore. Although enrollment in these centers remained low compared with that in vocational institutes, the centers benefited all parties involved: trainees received a hands-on technical education provided by the manufacturing leaders in their field, the EDB was able to achieve continual upgrading of the labor force, and the multinational corporations (MNCs) were assured of a steady supply of well-trained workers. The multinational firms also received additional fiscal and other benefits from the EDB to compensate them for their participation in the training centers.

Notwithstanding the restructuring toward less labor-intensive activities that took place over this period, the persistence of high growth rates in Singapore continued to put pressure on the domestic labor market. To allow adjustment in equilibrium real wages to take place, growth in labor incomes was permitted to outstrip that of productivity by a considerable margin.[8] In addition, to relieve pressure in the labor market and to promote the restructuring away from low-technology, labor-intensive activities, a levy on foreign (mainly unskilled) workers was introduced in the early 1980s.

The EDB's investment promotion activities, together with the Government's human-capital development and labor-market policies, were successful in restructuring Singapore's industrial sector toward technologically sophisticated "upstream" activities. Within manufacturing, investments in component and precision engineering industries, computers, and other high-tech activities came to supplant the investments in textiles and more labor-intensive activities that had been prevalent in the early to mid-1960s. In addition, the rapidly improving skill level of Singapore's labor force, together with a strong commitment by the Government to invest in transportation and other types of infrastructure, contributed to rapid growth in business and financial services as well as nonmanufacturing industries such as construction over this period. By the mid-1980s, the use in a number of sectors of state-of-the-art capital was rapidly exhausting room for further technological upgrading within manufacturing, and with this development the policies needed to maintain high growth also evolved.

Phase 4: Economic Diversification, 1985–Present

While in the first two phases of Singapore's development, manufacturing growth outstripped GDP growth, this situation was reversed between 1979 and 1984. During that period, value-added growth in manufacturing slowed to just over 5 percent a year, while the economy as a whole was growing at about $8\frac{1}{2}$ percent annually, reflecting mainly the impressive performance of the business and financial services sectors. To maintain high growth and improve performance in manufacturing, attempts were made to find new sectors where technology gaps could profitably be exploited. Biotechnology, computer peripherals, and aerospace were identified as potential high-growth sectors and were actively promoted by the EDB with pioneer and expansion incentives.

Indeed, a concerted effort at diversifying the production (and export) base, especially (but not exclusively) outside manufacturing and into business and financial services, was implemented beginning in the mid-1980s. Responsibility for the promotion of banking and financial services rested with the MAS, while the EDB was responsible for the promotion of other services and offered incentives similar to those in manufacturing, including pioneer status.

The policy of diversification had ramifications also for regional trade and investment policies. With Singapore having become the leader in the production of high-technology, high-wage goods in Southeast Asia, foreign investment in labor-intensive technologies was moving to low-wage countries in the region. In order to encourage an allocation of new foreign capital that would correspond to each country's comparative advantage, Singapore, together with Indonesia and Malaysia, established the Johor-Batam-Singapore growth triangle in 1989. Singapore would benefit under this arrangement, since multinational firms would retain their skill-intensive headquarters in Singapore while shifting their labor-intensive manufacturing facilities to relatively low-wage regions.[9]

As part of Singapore's diversification strategy, the Economic Development Board and the Trade Development Board began to offer a wide range of incentives to encourage locally owned and partially locally owned firms to establish operations abroad. In part reflecting these policies, Singapore's outward direct investment grew from a relatively small S$2.2 billion in 1976 to S$14.2 billion in 1989. Nearly 70 percent of investments abroad were directed to Asia, with Malaysia alone attracting more than a third of the total. Apart from the ASEAN countries, China and Viet Nam have recently emerged as major new investment destinations.

[8]From 1978 to 1984, real wages grew 48 percent, while output per worker grew only 31 percent. See Section V for a discussion of the wage correction policy.

[9]The EDB administers a tax-relief incentive scheme to attract headquarters' operations to Singapore.

Selective Tax Incentives

For much of its history, Singapore adopted an activist industrial policy, promoting sectors and firms that were thought to have high growth potential and that satisfied a variety of auxiliary criteria that evolved over time. Although a number of instruments were used, tax incentives were the most prevalent. As described in the previous section, the Pioneer Industries Ordinance was one of the most important programs under which tax relief was offered to enterprises by the EDB. Some indication of the importance of this incentive program for Singapore's economy can be gleaned from the data on pioneer manufacturing firms. To illustrate, in 1991 pioneer firms generated 63 percent of manufacturing value added, 48 percent of manufacturing employment, and nearly 74 percent of manufacturing exports (Table A1). Furthermore, on each of these measures, the importance of pioneer manufacturing firms has grown over time. In addition, pioneer manufacturing firms have a greater propensity to export than does the average manufacturing firm. Finally, as a share of value added by sector, pioneer firms are concentrated in the chemicals, petroleum, electronic products, and instrumentation sectors, accounting for more than 80 percent of value added in each of these sectors.[10]

Although tax data disaggregated by pioneer and nonpioneer firms are unavailable, it is possible to obtain some indication of the variation in tax treatment across industrial sectors from the data on posttax rates of return for 1981–90.[11] These data are available disaggregated by type of ownership as well.[12] Posttax rates of return (averaged over this period) for manufacturing and financial and business service sectors are provided in Table 3-2. The data reveal considerable nonuniformities in the tax system, both by ownership type and by sector.[13] For example, for the economy as a whole, the posttax rate of return to foreign equity was more than double the comparable rate of return to local equity. The difference is even greater if one looks at manufacturing separately, where the rate of return to foreign equity exceeds 20 percent, more than three times the average rate of return to local equity investment over this period. There is also significant intersectoral variation. Within manufacturing, for example, rates of return range from 4 to 26 percent for foreign-owned firms, and from −2 to 11 percent for locally owned firms. Table 3-2 also confirms that, as far as foreign-owned firms are concerned, sectors with a significant pioneer-firm presence—such as chemicals, petroleum, and electronic products—indeed had relatively high posttax rates of return, consistent with the incentives offered under that program.

Economic Policies and Growth: An Assessment

Singapore, like a number of its neighbors in Southeast Asia, has achieved growth over the past three decades that compares favorably with that of most other developing and industrial countries. This section looks at the relationship between the policy framework in Singapore and the high growth rates it has experienced.

An important constant in economic policy over the period since the mid-1960s has been a commitment to a stable macroeconomic environment and to liberal trade and foreign investment policies.[14] Macroeconomic stability (low inflation, positive real interest rates, sound fiscal policy), together with minimal distortions in trade and foreign exchange markets, has provided an environment conducive to investment and growth.[15] Indeed, the policy frame-

[10]The data in Table A1 also reveal that, on average, pioneer firms have a higher capital-labor ratio than manufacturing firms in general. In part, the greater capital intensity among pioneer firms may be attributed to the investment incentives received, since tax relief serves to reduce the (net-of-tax) relative cost of physical capital.

[11]Returns are defined as profits plus extraordinary items, divided by the average of the current and previous year's equity investment. Data reported below are averages over a ten-year period, so the effect of any extraordinary items should be reduced.

[12]Largely reflecting Singapore's open door policies vis-à-vis foreign investment, foreign ownership in the economy has grown substantially over the past three decades. For example, by the mid-1970s, majority foreign-owned establishments already accounted for nearly two thirds of value added in the manufacturing sector, and by the late 1980s, the share had risen to nearly three quarters (see Table 3-1). In addition, foreign-owned companies are well represented among the group of pioneer firms. While data on the share of foreign-owned businesses that receive pioneer status are unavailable, Tables A1 and 3-1 indicate that wholly foreign-owned companies generate at least 40 percent of pioneer value added in manufacturing, while majority foreign-owned firms produce a minimum of 55 percent of pioneer-based manufacturing value added.

[13]Strictly speaking, differences in posttax rates of return reflect both nonuniformities in the tax system, as well as differences in pretax returns. In turn, the level of pretax returns could be boosted by the use of nontax incentives, which are directed primarily to local firms and the financial services sector. In addition, multinational firms may be able to shift their profits, through transfer pricing, to countries where they receive more favorable tax treatment, thereby raising their pretax returns.

[14]As mentioned above, import-substitution policies were pursued during the first years following independence. It is interesting to note that growth accelerated in Singapore after the country abandoned import-substitution policies in the early 1960s, which is at least consistent with the view that more liberal foreign trade and investment policies tend to be associated with improved growth performance.

[15]For a recent survey of the empirical evidence, see World Bank (1993) and Ostry (1993).

Table 3-1. Contribution of Foreign Establishments to Manufacturing
(Percent of category total)

	Ownership Structure		
Category and Year	Wholly foreign owned	Majority foreign owned	Wholly locally owned
Valued added			
1962	24.6	...	47.5
1970	37.0	49.4	35.6
1975	47.4	62.7	24.3
1980	54.1	67.4	19.1
1988	61.9	71.7	14.9
Gross output			
1962	31.4	...	45.6
1970	43.4	55.8	31.0
1975	56.2	71.3	18.1
1980	58.7	73.0	15.6
1988	61.1	75.0	14.1
1991	62.1	75.3	16.0
Employment			
1962	14.1	...	66.4
1970	17.7	34.7	45.3
1975	31.5	52.0	32.8
1980	39.9	58.4	28.1
1988	49.0	59.5	27.6
Direct exports			
1962	26.3	...	44.7
1970	56.7	...	16.5
1975	66.1	84.1	8.9
1980	71.5	84.7	7.1
1988	72.6	86.1	6.5

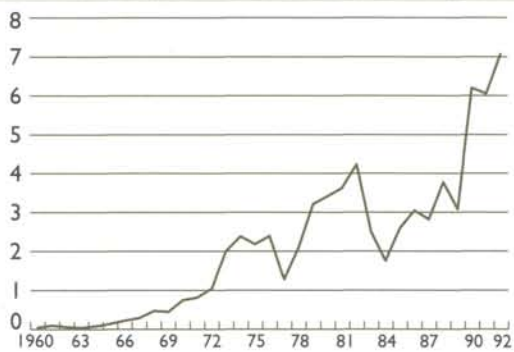
Sources: For 1975–91: Singapore, Department of Statistics, *Report on the Census of Industrial Production*, various issues. For 1962–70: Chia Siow-yue, "Industrialization Strategy and Industrial Performance in Singapore, 1960–73" (doctoral dissertation, McGill University, 1976).

work adopted by Singapore and other countries in the region is often credited as one of the most important factors accounting for these countries' superior growth performance.

In Singapore's case, a stable macroeconomic environment and liberal trade and foreign investment policies have been important factors contributing to the large inflows of private capital (see Chart 3-1).[16] The resulting capital deepening and improvements in the quality of the capital stock increased labor productivity and income at a faster rate than would have been possible under more restrictive policies.

In addition, the introduction of new technologies

Chart 3-1. Real Private Sector Capital Inflows
(In billions of 1985 Singapore dollars)



Sources: Singapore authorities; and IMF staff estimates.

[16]Since the mid-1960s, there have been virtually no quantitative restrictions on imports, and tariffs have been kept to very low levels. As to foreign investment, Singapore has permitted free repatriation of profits, and foreign participation is allowed in most sectors of the economy, including 100 percent foreign ownership. In addition, there are no minimum requirements for local sourcing and domestic value-added content.

Table 3-2. Posttax Return to Equity Investment by Sector and Type of Owner, 1981–90[1]
(Annual average; in percent)[2]

	Foreign Direct	Local
Total economy	14.97	6.61
Manufacturing	20.48	6.63
Of which:		
Food, beverage, and tobacco	11.39	10.56
Textiles, wearing apparel, and leather	3.62	0.40
Chemical and chemical products	19.27	9.86
Petroleum and petroleum products	17.71	2.73
Rubber and plastic products	7.00	3.15
Basic metals	16.32	9.81
Fabricated metal products	12.81	2.90
Machinery	17.14	0.84
Electronic products and components	26.12	−2.01
Transport equipment	23.92	5.41
Instrumentation, photographic, and optical goods	18.71	10.11
Financial and business services	12.18	6.59
Financial services	16.43	7.75
Insurance services	12.64	9.03

Sources: Singapore, Department of Statistics; and IMF staff calculations.
[1]Return on equity is defined as net profit after tax and extraordinary items divided by the average of the current and previous year's equity investment.
[2]Period average is calculated as the simple arithmetic average of the corresponding annual rate of return data.

through the establishment of multinational firms in Singapore, rather than through licensing foreign technologies to local firms, produced three additional benefits. First, it implied that the multinationals would assume much of the start-up risk involved in implementing a new technology. Second, it allowed more rapid technological catch-up and upgrading of the capital stock than if local firms had had to go up the learning curve from the bottom. Third, to the extent that productivity gains that stem from learning-by-doing may accrue to local firms as well as to the multinational firm that is actually engaged in production, the presence of foreign multinationals in Singapore may have facilitated the adoption of new technologies by domestic companies as well.[17]

While macroeconomic and foreign trade and investment policies tended to limit relative price distortions in the economy, the tax system in Singapore was used to promote certain sectors whose growth prospects were thought to be particularly favorable. While the range of evidence on the negative growth effects of, for example, selective trade policies would suggest that tax incentives would be unlikely to make a positive contribution to growth, the parallel is not perfect, and the empirical evidence is so far lacking. Moreover, in markets that are not perfectly competitive—particularly in cases in which there are large fixed costs associated with setting up production, substantial economies of scale, imperfections in capital and product markets stemming from information asymmetries, steep learning curves, and substantial knowledge spillovers across firms—there is some evidence to suggest that incentives to specific enterprises or sectors can be justified on economic efficiency grounds.[18]

Perhaps the most important market imperfection in this context relates to the public-good characteristics of knowledge, which imply that the benefits associated with the introduction of new technologies accrue not only to the multinational firm operating in Singapore, but also, because of spillovers across local firms, to the host country more generally. If this were the case, tax incentives might be justified to ensure that social benefits (which exceed private benefits) match social (resource) costs.

[17]Some evidence to support the view that there are such favorable "learning-by-doing" externalities is surveyed by Grossman (1989).

[18]Formally, in such cases, the increase in the surplus generated by firms that receive favorable tax treatment can outweigh any reduction in the surplus accruing to the government and consumers. Measuring the change in surplus associated with specific policy interventions has been attempted in a few specific cases; see Grossman (1989) for a survey of the evidence.

There are reasons to believe that this argument has some practical relevance in Singapore's case, as clusters of specialized local firms have in fact developed around multinationals to provide them with a variety of components and support services. This close interaction between local suppliers and multinationals has created opportunities for knowledge spillovers of benefit to domestic firms. In addition, to maximize the potential benefits from such spillovers, the EDB has established a number of programs in cooperation with local firms. For example, in 1986, the Local Industry Upgrading Program (LIUP) was initiated, encouraging multinationals to "adopt" some of their local subcontractors and assist them in introducing new production processes. Multinationals are also encouraged to undertake joint ventures with local firms to develop new production techniques. In addition, the EDB's joint industrial training scheme enables local workers to receive a technical education based on programs designed by the EDB in conjunction with the multinationals.

In evaluating whether selective interventions may have been justified in Singapore's case, another consideration that is frequently put forward is that, given the objective conditions that Singapore encountered over the past three decades, policies have in the end produced a development path that seems rational on economic grounds. For example, in the early stages, with surplus labor, incentives that favored labor-intensive investments were used, while in subsequent stages, capital deepening and technological upgrading were favored. In fact, the argument has been made that the nature of selective interventions in Singapore simply "led the market." Since market outcomes would ultimately have been similar, any potential costs associated with its industrial policy are likely to have been relatively small. In addition, there are relatively few cases in which promoting specific firms has clearly produced disastrous results, especially when compared with other developing countries.

On the other side, however, the market-leading strategy may also impose economic costs, especially if advanced technologies are promoted prematurely. To the extent that some "learning" must take place before new technologies reach their full productive potential, a premature introduction of advanced capital goods may reduce growth relative to a situation in which local workers have already acquired the necessary experience (see Young (1993)). In addition, given the inherent complementarities between capital and labor, it may be argued that relatively advanced physical capital should be combined with human capital of similar quality. If Singapore had promoted industries prematurely—that is, before the labor force had acquired the necessary skills to use it to its full potential—productivity growth would probably have been adversely affected.

It is difficult to judge the quantitative importance of the above arguments. If data on the application of incentives were available, one approach would be to see if there was any systematic relationship between incentives and growth, especially growth of efficiency or TFP.[19] If selective interventions had been successful, then one might expect those sectors that were favored through the incentive system to have more rapid TFP growth than those that were not. Alternatively, if the distortionary effects associated with selective interventions were significant, then incentives (including relatively lower tax rates) would be associated with lower TFP growth.[20]

Conclusion

Over the three decades since independence, Singapore has evolved from a low-wage, labor-surplus economy to a high-wage producer of high-technology, capital-intensive products. The rapid industrialization of the economy contributed to eliminating the unemployment problem that plagued Singapore at independence, and to the sevenfold increase in real incomes enjoyed by Singaporeans over this period. Both the manufacturing sector and, more recently, the business and financial services sectors have seen their roles in the economy increase as part of the industrialization process.

Initially, Singapore's approach to development was to encourage industries that could supply the federated market with Malaya, protecting them from foreign competition by a range of import-substitution policies. When these policies did little to reduce unemployment, they were abandoned, and Singapore then embraced an industrialization program based on investment- and export-led growth. Opening up the economy caused a surge in foreign investment that, combined with sound macroeconomic management and liberal foreign trade policies, created the conditions for sustained, long-term growth.

The development strategy also involved providing significant industrial incentives. Tax incentives were accorded to those sectors and firms that were seen to

[19]There is little doubt that growth in output and investment would increase in those sectors that received incentives. The issue is whether efficiency growth or TFP growth (rather than output growth) is helped or hindered by targeted interventions.

[20]Using a panel of disaggregated data for 38 Korean industries, Jong-Wha Lee (1993) finds that firms that had been favored by Korea's industrial policies (including tax incentives) actually experienced relatively slower growth in efficiency (TFP). Consequently, his results suggest that Korea's growth rate would have been higher had policies ensured a more level playing field.

have the greatest growth potential. A number of criteria were used in evaluating these firms, but the resulting development path—which emphasized labor-intensive production initially, capital deepening and technological upgrading subsequently, and diversification most recently—appears rational on economic grounds, suggesting that the development policies may simply have "led the market." Moreover, the number of promoted projects that have gone awry appears to have been relatively small, especially when compared with other countries that have favored an activist industrial policy. This high success rate may reflect in part the nature of the political system, which has ensured that rent-seeking activities have not determined which firms or sectors receive favorable treatment.

In addition, however, the returns to capital deepening and technological upgrading have diminished in recent years. One implication is that continued high growth is likely to come increasingly from gains in efficiency or TFP. There is some international evidence that productivity improvements are enhanced when relative price distortions in the economy are kept to a minimum. This is because, with a "level playing field," capital tends to be allocated on the basis of its underlying productivity, rather than in response to special incentives. To the degree that this argument has validity, TFP growth in Singapore would likely be enhanced in coming years by phasing out the tax incentives currently on offer.[21] In addition to improving the allocation of resources in the economy, such a policy could permit the Government to lower corporate tax rates across the board, thereby further enhancing the performance of the supply side of the economy.

[21]However, the willingness of Singapore to phase out these incentives would in practice depend on the readiness of competitor countries to likewise reduce their incentive programs.