



Integration with the global economy

Openness—the free flow of goods, capital, people, and knowledge—transmits technology and generates economic growth across nations. Two hundred years ago, imports of machinery and the emigration of skilled workers helped carry the industrial revolution from Britain to Europe. Japan and the United States were both highly successful at borrowing established technology and exploiting linkages with more advanced industrial countries to become major players in world markets. In the past forty years, East Asia has grown rapidly through the expansion of trade.

The linkages between openness and technological change are twofold. First, increasing global competition raises the demand for new technology. Second, the supply of new technology for industrializing countries is determined largely by the degree to which they are integrated with the global economy. New products and processes are transmitted through imported inputs and capital goods, sold directly through licensing agreements, and transmitted through direct foreign investment or export contacts with foreign buyers. Yet a market-friendly approach also requires government action to help producers master new technology. Governments must ensure the educational base, which is essential for developing technological capability; promote competition; coordinate efforts for quality control; and protect intellectual property rights.

Flows of capital and skilled workers across nations continue to provide an important avenue for technology transfer. The East Asian countries have successfully assimilated technology by sending students abroad, exploiting linkages with overseas nationals, and encouraging exchanges with re-

search centers. Direct foreign investment (DFI) has contributed to technology transfer and fostered export growth in economies such as Brazil and Mexico. Yet the gains from foreign investment depend critically on the policy climate. DFI in a protected sector, for example, is likely to generate net losses instead of welfare gains.

By increasing competition and expanding access to technology, trade generates benefits which may even exceed the gains from improved resource allocation. Yet almost all industrial and developing countries have restricted trade to promote industry and raise revenue. In retrospect, these objectives would have been better attained in other ways. Where protection accompanied rapid development, as in East Asia, competition was maintained in external and domestic markets. These countries preserved incentives for technological change by using export success as a yardstick for performance. Trade intervention was also moderate and restricted in time, minimizing costly distortions from protection.

Channels of technology transfer

Technology is the knowledge that leads to improved machinery, products, and processes. Additions to this knowledge reduce the real cost of production and lead to the introduction of new products. Technology also includes the knowledge embodied in management know-how. Chapter 2 showed that growth in productivity, the best proxy for technological change, has accounted for as much as 30 percent of GDP growth in the East Asian countries.

Integration with the global trading system af-

fects technological change in two ways. First, it improves the *supply* of new technology. Second, it raises the *demand* for new technology.

Supply-side channels

Technology is embodied in imported inputs and capital goods, sold directly through licensing agreements, and transmitted through direct foreign investment, labor movements, or contacts with foreign buyers. In all these ways, openness increases the supply of new products and processes.

TRADE. Technology is embodied in many kinds of imported inputs—ranging from capital equipment and turnkey plants to sophisticated components for electronic assembly. One explanation for the observed relation between high trade shares and GDP growth is that increasing trade allows countries to import capital goods. A comparison of

foreign technology imports by Argentina, Brazil, India, the Republic of Korea, and Mexico in the 1960s and 1970s shows that Korea relied extensively on imports of embodied technology. In 1985, India increased access to imported capital goods and components for the electronics sector, and it liberalized restrictions on the entry and exit of firms. Since then, out-of-factory prices have fallen as much as 60 percent for some products, and exports of electronics have increased.

The second source of technology transfer from trade occurs through exporting (Box 5.1). Exposure to international markets keeps exporters informed of new products, and foreign buyers are an important source of information that can be used to upgrade technology. In a survey of 113 Korean export enterprises in the 1970s, 20 percent of the firms cited contacts with foreign buyers and suppliers as important; only 8 percent considered licenses and technical agreements important. From contacts with foreign buyers, firms received blue-

Box 5.1 Export takeoffs: two success stories

The two stories below suggest that successful entry into export markets requires a combination of access to information, the appropriate incentive structure, and domestic entrepreneurship.

Garment exports in Bali, Indonesia

Foreign exchange earnings in the Bali garment industry increased from less than \$3 million in 1975 to more than \$65 million in 1987. The industry began in the early 1970s as a tourist-oriented sales effort by local businesses and expatriates who financed their travels by returning home with suitcases full of clothing. These expatriates, who generally had little business experience, provided limited but inexpensive capital, foreign contacts, and international mobility. Several of these early joint ventures were quickly replicated once their profitability was demonstrated.

A recession in 1981 led many local producers to reevaluate their informal relationships with local expatriates and turn to more highly skilled foreign partners, who were drawn to Bali by its new reputation as a profitable production site. By 1986 Bali had a sufficiently strong reputation as a boutique supplier that many foreign buyers were willing to purchase garments under more arms-length arrangements. Yet stricter enforcement of established immigration laws, which regulate the employment of expatriates, seems to have contributed to a temporary slowdown in the improvement of the quality of garment exports.

Rice exports in Viet Nam

In the mid-1980s, Viet Nam was a net importer of rice and requested international food aid several times during the decade to avert famine. By 1989, it had become the third largest exporter of rice, following the United States and Thailand. Rice trade shifted from net imports of 280,000 tons in 1988 to net exports of nearly 1.5 million tons in 1989, representing one-third of total hard currency exports.

No major change in weather accounted for this reversal in performance. Rather, a series of interrelated policy reforms transformed Viet Nam from a net importer to a net exporter of rice. During 1988 and 1989, agriculture was decollectivized and rice returned to family-farm production. Price controls were eliminated, and a large real devaluation of the currency in 1989 strengthened financial incentives to export. Finally, trade institutions were reorganized to eliminate state monopolies in imports and exports, which introduced competition among the mostly state-owned trading companies.

The lessons from these two case studies are quite different. Traditional reforms (price decontrol, privatization, and devaluation) transformed Viet Nam from a net importer to a net exporter of rice. In Bali, access to information on international markets, technical management, and capital provided the vital push.

prints and specifications, information on the production techniques and technical specifications of competing products, and feedback on the design, quality, and technical performance of exported products. China's heavy reliance on foreign trade corporations to mediate trade arrangements between Chinese enterprises and world markets has lessened the degree to which exporters have gained access to free technical assistance. Recent reforms, however, have greatly increased the involvement of manufacturing enterprises in trade and should facilitate technology transfer.

BUYING TECHNOLOGY THROUGH LICENSING. Concern about the monopoly power of technology suppliers, combined with balance of payments problems, led many developing countries to control the flow of disembodied technology and restrict royalty payments in the 1960s and 1970s. In India, restrictions on the size and time allowed for making royalty payments encouraged suppliers to favor lump-sum transfers. Yet by discouraging long-term relationships between suppliers and buyers, this form of payment made suppliers less responsible for ensuring successful technology transfer. Other countries sought to limit payments for technology imports by restricting access to several firms, which in turn discouraged competition. In contrast, Japan's Ministry of International Trade and Industry (MITI) reinforced interfirm rivalry by making sure that foreign technologies were available to a number of domestic firms.

Trade flows and the licensing of foreign technologies allow countries to avoid the cost of duplicating established technologies. Restrictive policies on technology imports in Brazil, China, and India have frequently led to intensive scientific activity that could have been accelerated through greater use of established technologies developed abroad.

The demand for technology

In a more competitive environment, firms respond to international competition by trying more and more to minimize costs. This may simply lead to better use of established technology, or to efforts to acquire and adapt new technology. In Turkey, which liberalized trade and reformed its financial sector during the 1980s, the private sector has accelerated technology imports—embodied in machinery that is available through licenses or technical agreements—as well as the purchase of designs and know-how.

By distorting relative prices, protection has often led to the costly adoption of capital-intensive

techniques in economies with abundant labor. In Côte d'Ivoire, the textile sector was developed in the 1960s primarily through direct foreign investment, which was induced by income tax and import duty exemptions, interest subsidies, high tariffs, and restrictive import licensing. Subsidized credit, by lowering the cost of capital, led to more capital-intensive plants. Firms' choice of sophisticated technology, which required a high level of expatriate employment, also inflated their wage bill. These high production costs were passed on to consumers in a protected market. In contrast, the textile industry in Japan developed as a highly labor-intensive sector, using imported secondhand machinery modified to substitute labor for capital. In Japan and the Republic of Korea, the technology for textile production became capital-intensive only when relative prices changed and labor became the scarce factor.

An escalated tariff structure can also affect the choice of technology. In the Philippines, as in many other countries, the more processed the product, the higher its import duties. This has encouraged assembly and packing operations that are heavily dependent on imported materials and equipment. Typically, governments respond with local-content regulations requiring finished products to contain a certain share of domestically produced components. Local content rules are often applied across the board, without regard for comparative advantage, further reducing the competitiveness of the assembled products.

Export competition, like import competition, also forces firms to the forefront of technological developments. One of Brazil's vehicle-components firms, Metal Leve, entered the international market in 1965 to use up excess capacity and exploit fiscal and credit incentives. The entrepreneurial ability of the firm's leadership and the firm's entry into international markets created a dynamic process of technological change and expanding export shares, driven by foreign demand for high quality. Exporting also strengthens the incentive to adopt new technology by increasing the returns from innovation through expanded market opportunities. In the computer industry, for instance, firms must target global markets from the beginning in order to make their investments profitable.

Government technology policy

One of the clearest lessons of Japanese and East Asian experience is the value of a strategy of importing, and building on, established technology

from abroad. Countries which rely on imported technology have generally made very strong internal efforts to diffuse and develop technology. This ability to select, diffuse, and build on imported technology—sometimes referred to as technological capability—is also determined by policy action in several areas, in addition to openness. One of these is education (discussed in detail in Chapter 3). The others are domestic competition (also discussed in Chapter 4), the macroeconomic framework (discussed in detail in Chapter 6), information services, norms and standards, intellectual property, and research and development.

DOMESTIC COMPETITION. Innovation and the diffusion of technology are promoted by domestic competition, especially if the domestic market is large. One study of the United States in the early nineteenth century showed that as navigable inland waterways expanded, patent activity increased. Access to larger markets and more regional competition sped up the pace of innovation. A recent study of successful industries in six European countries, Japan, Korea, Singapore, and the United States found that domestic competition was a key to global success (Porter 1990). In Japan, almost every sector that became a major exporter on world markets had numerous domestic competitors—the machine tool industry alone has more than 100 manufacturers. Domestic competition is important even in industries with substantial economies of scale (for example, the chemical industry in Germany, the car and truck industries in Sweden, and pharmaceuticals in Switzerland).

Barriers to internal competition—licensing restrictions limiting entry, pricing policies, and bankruptcy or labor laws regulating exit, in addition to tariffs and nontariff barriers—often discourage technological change (see Chapter 4). In India's fertilizer sector, where competition has been virtually eliminated by government controls on entry and by pricing policies which pass on higher costs, older plants using obsolete processes survive despite operating at less than 30 percent capacity. In Europe's computer industry, sheltered national markets were handed over to "national champion" firms that never left their protected markets.

Yet market-friendly government policies may mean more than removing barriers to internal competition. Governments may need to use antitrust provisions to ensure that producers and distributors do not collude or exploit monopoly power. Import competition generally provides a powerful check on collusive practices, but it may

not be sufficient if import distributors have monopoly power or goods are nontraded. In the United States, all recent antitrust cases involved nontradable goods such as trucking and dentistry services. Yet poorly designed antitrust policies can be "captured" by the very interests that they are supposed to regulate—as in India. A simple antitrust code which only prohibits price-fixing and other clearly restrictive practices is a good approach. Policies which go further—such as restricting mergers or joint-ventures—may increase competition but could hurt efficiency if scale economies are important.

THE MACROECONOMIC FRAMEWORK. The macroeconomic framework affects the pace and choice of technology transfer through its effect on interest rates, exchange rates, and the availability of foreign exchange. High national saving rates and capital formation in the Republic of Korea and Japan were associated with a fast diffusion of technology in that the cost of capital declined and the turnover of the capital stock accelerated. Studies have shown a strong association between equipment investment and economic growth for the industrial countries; Chapter 2 showed that a rapidly increasing capital stock has contributed a significant share to GDP growth in developing countries since 1960.

An unstable macroeconomic framework generally results in foreign exchange rationing, which, for instance, leads to restrictions on royalty payments for technology licenses. Particularly in the less industrialized countries, where a large share of technology is transferred either in the form of capital-goods imports or licenses, foreign exchange restrictions are likely to be a significant deterrent to technology development.

An overvalued exchange rate can also distort the process of choosing technology by lowering the cost of imported machinery and biasing the pattern of development toward capital-intensive growth. If the cost of capital is either too high (as in India, which imposes high tariffs on capital-goods imports) or too low (as in Ghana, the Philippines, and Tanzania during the 1950s) the speed of technology transfer and the benefits from imported technology under local conditions will decline.

INFORMATION SERVICES. Government agencies and industry associations can make a valuable contribution by coordinating the exchange of information among technology importers, which in turn encourages the standardization of compo-

nents and devices. Government agencies have, however, had mixed success in getting information to exporters of manufactures. Exporters need detailed information on production specifications and marketing options—which the public sector usually lacks the expertise to provide. To increase the efficiency of public information services, they could be sold. This would oblige the supplier to find information worth paying for. Such services also need to be judged against performance standards. For example, services designed to promote manufactured exports could be evaluated through changes in export shares. In the East Asian economies, trade promotion agencies only became successful after a long build-up of experience by private suppliers, private associations, and small units of government officials who promoted trade. Governments should encourage competition between public and private sector providers of information by eliminating restrictions on entry of private and foreign suppliers of consultancy services.

NORMS AND STANDARDS. A strong central system of metrology, norms, standards, testing, and quality control helps an economy to upgrade and diffuse technology. In economies as diverse as the Republic of Korea and Turkey, testing and quality control services have contributed to export success and created incentives to invest in upgrading. Experience, however, suggests three important considerations. First, unless there is vigorous competition so that inferior products cannot easily be sold, quality control services will not be supplied. Second, entry into this sector should not be restricted to public organizations. These services are successfully provided by domestic and foreign firms in a number of industrializing countries. Third, an economy's standards should conform to international specifications. Otherwise, country-specific standards can become a form of protection. Moreover, cooperative standards also help prevent monopolies. Industrial countries can play an important role in disseminating technology by encouraging open standards, which allow firms to link products as well as communication between machines without special equipment or permission. Korea made use of open standards for personal computers to launch their exports.

INTELLECTUAL PROPERTY. Most industrializing countries—especially the least industrialized—are engaged in adapting and diffusing products and processes developed in the industrial countries. Consequently, until now, increased patent protec-

tion has been perceived in industrializing countries as benefiting foreign companies more than domestic industry. Patent protection can promote the development of innovative technology by domestic firms and the transfer of existing technology from industrial countries. But it can also raise the cost of using newly patented technology. Yet for the newly industrializing economies—which are now reaching the technology frontier in several areas—the gains from greater protection of intellectual property may soon become important. Historically, industrial nations strengthened their intellectual property protection as they developed. Even industrializing economies are capable of quickly reversing their attitudes. A resolution by the Food and Agriculture Organization (FAO) mandating that germplasm be available at no cost to all countries was supported by developing countries in 1983. By 1985, however, many of these countries wanted to protect the new crop varieties they had developed. They joined the United States in its reservations against the FAO proposal, which was defeated.

Better protection of intellectual property is rapidly becoming a central issue for other reasons. The changing nature of technology is making it more difficult to assimilate new developments by copying imported products—leading more firms to seek licensing arrangements. Industrial countries which view unauthorized copying in the context of trade losses are pressing for greater patent and trademark protection in industrializing countries. By leveraging the issue in the context of bilateral trade negotiations, including potential trade retaliation, the United States and the European Community (EC) have been instrumental in strengthening the patent laws in Korea and Mexico.

Yet multilateral agreements negotiated through the GATT and the World Intellectual Property Organization would be preferable to case by case bilateral efforts. This would provide a more comprehensive global approach and would minimize the threat of trade retaliation. Intellectual property protection is most critical for areas in which industrializing countries would benefit from industrial country research, such as the prevention of tropical diseases. Research in industrializing countries is often based on extensions of established designs and processes, which could also be protected. Access to licenses for foreign innovations could also be actively promoted. Industries in developing countries could seek to limit restrictive clauses in their international licensing agreements, such as those which ban exports.

RESEARCH AND DEVELOPMENT. In agriculture, the rate of return on publicly sponsored crop research has typically ranged between 30 and 60 percent (see Chapter 4). Yet the returns from publicly sponsored research in industry have probably not been so high. Studies suggest that Japanese success in developing new technologies results more from improving incentives to private industry than from expanding government-subsidized programs.

Governments in developing countries often spend a large share of the resources available for technology transfer on national research and development institutions. In many cases, as in India and Thailand, they have had little effect. Particularly in low-income countries, a large share of research and development could better be used to assimilate and monitor technology development abroad. Yet government-sponsored R&D centers are more likely to follow the interests of their staff in basic research. The Republic of Korea has made such centers more accountable to their users by forcing them to increase share of revenues from private contracts.

TECHNOLOGY TRANSFER: AN ASSESSMENT. Is openness equally important at all levels of development? In Africa, strong protection of industry and reliance on public enterprises discouraged competition, leading to low rates of productivity growth. Countries of all income levels could create the demand for new technology by fostering competition and building the educational base needed to absorb changes in the marketplace. There is a critical need for broadly based primary and secondary education, combined with on-the-job training programs. In 1986, only 20 percent of the school-age population (13 percent for women) were enrolled in secondary schools in Sub-Saharan Africa. Despite heavily subsidized university education, Africa has skill shortages in science, engineering, auditing, and higher-level accounting and management. Low-income countries also need to encourage partnerships with firms which have gained experience in adapting technology and marketing. The recent export success of Mauritius in garments may be traced to a combination of favorable policies, a well-educated labor force, and a large influx of direct investment from Hong Kong.

The recent acceleration of technical change in old and new fields such as microelectronics, telecommunications, and biotechnology is creating a more and more complex, competitive world in

which adopting and adapting new technology is even more important. Successful policies will encourage both the most efficient use of established technology and its rapid diffusion through internal and external competition. Governments can improve technological capability best by providing education, fostering domestic and external competition, and encouraging the development of information services and quality control.

Labor flows and direct foreign investment

International flows of capital and labor affect growth and welfare in two ways. First, foreign inflows can finance domestic investment and help economies adjust to temporary shocks. (Official and commercial inflows are discussed in Chapters 4 and 6; this chapter looks primarily at the potential for foreign investment as a new source of additional capital, in light of the dwindling supply of commercial flows.) Second, foreign investment and labor migration are potentially important avenues for transferring technology. But the gains from foreign investment depend on the policy climate. Greater foreign investment in a protected domestic market could hinder development rather than promote it.

Labor movements

Migration, transfers of skilled personnel, and returning workers from abroad all contribute to the diffusion of technology. After legal barriers were removed from the emigration of skilled workers in the United Kingdom (1825) and exports of machinery (1842), British entrepreneurs and workers helped to develop railways and coal mining in Europe and elsewhere. In the period after World War II, large numbers of foreign students received science and engineering training in the United States and then returned abroad to use—and diffuse—their knowledge. In Pakistan, a cottage industry in soccer ball exports was initiated by a Kashmiri immigrant from India, who had studied the sports equipment business in Germany.

Labor mobility provides other benefits apart from technology embodied in migrating workers. It is another avenue for reducing the disparity in incomes worldwide. In several industrial countries, such as Norway and Sweden, high unemployment accompanied the transition from agriculture to manufacturing. Emigration helped to relieve population pressure in those countries: 25 percent of the Swedish population emigrated to

the United States between 1865 and 1920. Higher labor mobility could improve welfare for labor-scarce regions as well. The trade-increasing potential of regional integration plans put forth by such bodies as the Caribbean Community (CARICOM) and the Central African Customs and Economic Union (UDEAC) is likely to be limited. Yet these plans could alleviate unemployment or shortages of skilled labor in member countries if they permit greater labor mobility.

Looser immigration and emigration policies in both industrial and developing economies are likely to lead to global gains in human welfare. One cost, however, is the loss of skilled and highly trained people emigrating to industrial countries—the brain drain. In Bangladesh, the share of professionals emigrating abroad was so large that it is believed to have contributed to shortages in some professional categories. After completing their education, 63 percent of students from the Republic of Korea, 49 percent from Jordan, and 33 percent from Greece remained in the United States between 1962 and 1976.

The net losses from brain drain may be mitigated by other factors. Net remittances from migrants in France, Germany, Kuwait, Saudi Arabia, and some other countries are often high. Migrants send back from 10 to 50 percent of every dollar earned. In addition, emigrating workers may contribute to the diffusion of new ideas and technologies, either when they return home or simply by facilitating the exchange of information. In sum, the net losses from emigration of skilled workers are not clear. Governments can mitigate these

costs by eliminating subsidies to those who can afford higher education, or to those who are likely to move abroad. Governments may also wish to tax the incomes of skilled emigrants, especially if they remain citizens of their home countries.

Technological change and direct foreign investment

After 1945, direct foreign investment was a major conduit for know-how between the United States and Europe. Case studies of Hong Kong and Mexico show that the presence of foreign firms has increased the diffusion of technology and improved the efficiency of local firms. In Brazil, a large share of manufactured exports originates from firms with foreign investment. Evidence from Côte d'Ivoire and Venezuela suggests that foreign-owned manufacturing firms are more productive and that joint ventures export a higher share of total output than domestically owned firms (Table 5.1). This is true even after capital intensity and firm size are taken into account. It seems plausible that a foreign presence could raise the productivity of firms that remain wholly domestically owned. For the three countries shown in Table 5.1, however, the evidence on this is inconclusive.

The diffusion of management and marketing skills is likely to be as important as the transfer of product and process technologies. In Bali, Indonesia, and Taiwan, China, foreign investment has generated positive spillovers by overcoming the informational costs of entering world markets. Because foreign firms already have marketing link-

Table 5.1 The relative performance of foreign firms in manufacturing, selected countries and years

Country	Relative output per worker of foreign relative to domestic firms ^a		Net foreign exchange earnings as share of sales (percent) ^b		
	Firms with majority foreign ownership	Firms with minority foreign ownership	Firms with majority foreign ownership	Firms with minority foreign ownership	Domestic firms
<i>Côte d'Ivoire</i>					
1976	4.2	3.8	3	37	-8
1987	2.2	2.1	8	28	18
<i>Venezuela</i>					
1976	0.9	1.4	..	..	..
1988	1.3	1.2	-13	36	-11
<i>Morocco</i>					
1985	0.7	0.6	14	13	21
1986	0.7	0.6	17	16	21
1987	0.9	0.8	18	17	24
1988	0.8	0.7	22	16	28

Note: All averages weighted using firm sales. Foreign firms are defined as all firms of which at least 5 percent of assets are foreign owned.

a. Ratio of foreign firm to domestic firm productivity (output per worker).

b. Equal to exports minus imported inputs divided by sales. For Morocco, equal to exports divided by sales because no data were collected on imported inputs.

Source: World Bank data.

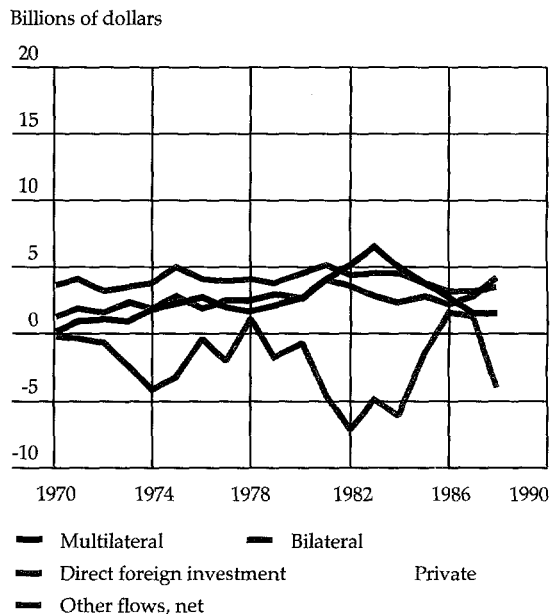
ages, know-how, and production experience, some host economies have actively encouraged global exporters to establish production units in their country. Economies which have exploited the linkages of foreign firms with global markets include Ireland, Malta, Mauritius, and Singapore.

Despite its significant role for diffusing technology, direct foreign investment in an economy with highly distorted policies is likely to generate net losses for the host country instead of welfare gains. In Côte d'Ivoire (as mentioned above in this chapter), selective protection and subsidies to multinational textile firms led to inefficient production. Another study found that more than a third of foreign investment projects earned negative returns for the host country because of import protection. As shown in Table 5.1, majority-owned foreign firms generated less foreign exchange than joint ventures or domestic firms. In all three countries, much of the manufacturing sector has been protected, so both foreign and domestic firms have concentrated on the domestic market. In addition, both Morocco (for phosphates) and Venezuela (for petroleum and aluminum) imposed restrictions on foreign ownership in sectors with high export earnings. Following the trade reform which began in Morocco in 1984, however, productivity and export sales increased faster in the foreign firms than in their domestic counterparts (Table 5.1).

Host countries can maximize potential gains from DFI with evenly enforced investment codes, a low level of protection, and a minimal reliance on income tax breaks or credit subsidies to foreign firms. Taxes which restrict repatriation of profits also discourage direct investment. To reduce the possibility that multinationals could exploit their advantages in information and charge higher prices, host countries can encourage competition between foreign firms and avoid granting exclusive privileges to any one foreign investor. In Turkey, for example, liberalization of foreign investment has created competition among local joint ventures and licensees to upgrade the national automobile sector. It is best for local and foreign firms to face equal tax policies: a lower uniform tax rate is preferable to a schedule that discriminates for or against multinationals.

Foreign investors are also likely to prefer a clear regulatory system. A World Bank study of forty-four international mining companies found that most of the companies surveyed preferred working within the bounds of a clearly defined investment and corporate tax code to negotiating individual agreements on tax breaks or subsidies. The

Figure 5.1 Annual net flows of capital to developing economies, 1970-88



Note: Based on a sample of fifty-five developing economies. Singapore; Taiwan, China; and economies unable to borrow on market terms are excluded. Flows are in constant 1970 prices. Source: World Bank data.

three countries considered most attractive for mineral investment—Botswana, Chile, and Papua New Guinea—have quite high tax rates by developing-country standards.

Aggregate flows of direct foreign investment and growth

The fall in access to commercial bank lending for developing countries has increased the attractiveness of direct foreign investment. In 1988, DFI surpassed all other forms of lending as a source of foreign capital to developing countries (Figure 5.1; see also Table 1.3).

Although DFI grew at a slower rate than commercial flows, averaging 6 percent annually in real terms from 1970 to 1989, it fluctuated much less than private flows. After a steady upward trend in the 1970s, DFI dropped off between 1981 and 1986, recovering to its 1981 level in 1988. But the aggregate picture hides significant differences in the growth of these flows to various regions. In real terms DFI increased 12 percent a year between

Table 5.2 Investment, growth, and net flows of capital, 1970–89
(percentage of GDP)

<i>Period and correlation</i>	<i>Official flows / GDP^a</i>	<i>Direct foreign investment / GDP</i>	<i>Private flows / GDP</i>
<i>Between domestic investment / GDP and flows</i>			
1970–75	0.14	0.50*	0.45*
1975–82	0.13	0.26*	0.26*
1982–89	0.10	0.24	0.24
1970–89	0.16	0.39*	0.31*
<i>Between GDP growth and flows</i>			
1970–75	0.34*	0.52*	0.21
1975–82	0.17	0.24	0.23
1982–89	–0.07	0.15	–0.05
1970–89	0.16	0.33*	–0.02

* Statistically significant at the 5 percent level.

Note: All values shown are period averages for sixty countries.

a. Official flows include bilateral and multilateral flows.

Source: World Bank debt reporting service.

1970 and 1989 in Asia, compared with 3 percent in Latin America and a decrease in Africa.

Apart from potential gains through technology transfer, DFI generates employment, accounting for as much as 60 percent of manufacturing employment in some economies, such as Singapore. As DFI in industrializing countries continues to shift into services, its favorable effect on employment is likely to rise. DFI also shifts the burden of risk for an investment from domestic to foreign investors. Repayments are linked to the profitability of the underlying investment, whereas under debt financing the borrowed funds must be serviced regardless of the project's success. Table 5.2 shows that DFI is the only capital inflow that was strongly associated with higher GDP growth during the period 1970–89, although the direction of causation is not clear. If DFI is likely to promote growth, the converse is also true.

Prospects for enhanced flows of DFI to developing countries in the 1990s remain uncertain. One study estimates that the share of developing countries in global foreign investment flows declined in the 1980s from 26 to 21 percent. In addition, DFI in developing countries is highly concentrated: in the 1980s, fifteen countries attracted 75 percent of all investment. DFI cannot be viewed as a substitute for commercial lending or official flows; it is at best a complement. The flow and effectiveness of DFI will be improved by adequate domestic and official financing by organizations such as the World Bank to support the expansion of infrastructure, health care, and education.

To sum up, direct foreign investment is a potentially important source of capital to supplement

domestic investment, technology transfer, and employment generation. Yet the evidence on technology transfer through DFI is mixed. The extent to which foreign inflows contribute to growth depends largely on the effectiveness of host-country policies. The scope for increased inflows of DFI to developing countries will also be determined by industrial-country policies. Regional integration has made Europe even more attractive to foreign investment, which will discourage flows to the developing countries. In general, increasing protection in industrial countries diverts DFI from other destinations and makes developing countries less attractive as sites for export-oriented foreign investment.

Trade policy and economic growth

When developing countries establish open trading regimes, they attract DFI for the right reason: foreign investors see opportunities to create internationally competitive businesses. But the gains from liberal trade go far beyond this. Trade restrictions distort the allocation of investment and encourage lobbying by private interests and governments. Consumers pay the costs of restrictive trade policies, while protected sectors gain. In the United States, one study estimated that the cost to consumers of restraints on imports of Japanese automobiles was between \$93,000 and \$250,000 for each job saved.

Dispersion in the level of protection can lead to significant distortions, even if the average level of protection is low. Buyers of inputs from protected sectors—such as automobile producers who must

purchase locally made steel in Brazil, India, or Pakistan—are at a disadvantage in world markets. In the United States, manufacturers of personal computers complain that duties on components reduce their international competitiveness. But if policymakers protect final products instead and allow inputs to be imported duty-free, then the so-

called effective protection for these products is often much higher than indicated by official tariff levels.

High tariffs often invite discretionary enforcement: in many countries, official levels of protection are high but actual tariff collections are low. Brazil's import-weighted statutory tariff level for

Box 5.2 Protection in industrial countries: a historical perspective

Centuries before the industrial revolution, countries had learned to protect domestic markets. Beginning in the thirteenth century, England enacted a series of laws that restricted the type and origin of fabrics which could be worn. Although some laws had a social objective—to identify social classes through their costumes—the basis for others was clearly economic. In addition to laws against imports of French products, the British also protected producers against countries such as India. British producers in the seventeenth century succeeded in getting a law passed which prohibited importing or wearing silk and calicoes from China, India, and Persia. Restrictions on imported calicoes provided an impetus to England's calico-printing, silk, and cotton-linen industries.

Yet a comparison of protection levels in industrial countries during the past two hundred years with

those prevailing in developing countries today (Box table 5.2) shows that average levels of protection in industrial countries never reached the level of protection presently found in developing countries. In 1820, the average level of tariffs on manufactures for seven countries was 22 percent. Although industrial countries did benefit from higher natural protection before transport costs declined, the average tariff for twelve industrial countries ranged from 11 to 32 percent from 1820 to 1980. For example, in Japan low tariffs were mandated through foreign treaties until 1899. Once these restraints were removed, rates seldom rose above 10–15 percent until 1911. Even after 1911, the overall level of tariffs never exceeded 20 percent. In contrast, the average tariff on manufactures in developing countries is 34 percent (Table 5.3).

Box table 5.2 Tariff rates in industrial countries, 1820–1987
(unweighted average percentages)

Kind of goods and country or region	1820	1875	1913	1925	1930 ^a	1950	1987
<i>Manufactures</i>							
Austria	..	15–20	18	16	24	18	9
Belgium	7	9–10	9	15	14	11	7
Denmark	30	15–20	14	10	..	3	..
France	..	12–15	20	21	30	18	7
Germany	10	4–6	13	20	21	26	7
Italy	..	8–10	18	22	46	25	7
Netherlands	7	3–5	4	6	..	11	7
Spain	..	15–20	41	41	63	..	..
Sweden	..	3–5	20	16	21	9	5
Switzerland	10	4–6	9	14	19	..	3
United Kingdom	50	0	..	5	..	23	7
United States	40	40–50	25	37	48	14	7
Average	22	11–14	17	19	32	16	7
<i>All goods</i>							
Australia	..	..	16	18	14	17	..
Canada	..	14	17	14	13	9	6
Japan	..	4	20	13	19	4	8
United States	45 ^b	41	40	38	45	13	6
Average	..	6	23	21	23	11	7

a. For manufactures, the average is for 1931 instead of 1930.

b. Data are for 1821 instead of 1820.

Sources: For 1820 and 1875 (average tariff on duties), Bairoch 1976. For 1987, GATT data reported in Kelly and others 1988. For other years: for the United States (ratio of customs revenues to dutiable imports), U.S. Department of Commerce 1975; for Japan (ratio of customs revenues to dutiable imports), Ohkawa, Shinohara, and Umemura 1979; for Canada and Australia (ratio of customs revenues to dutiable imports), Mitchell 1983; for 1913 and 1925 (average statutory tariffs), League of Nations 1927.

the private sector was 40 percent in 1985, yet total customs revenues as a share of import volumes were only 6 percent. Exemptions (including those for public sector firms) explain a significant part of the discrepancy. In many countries such exemptions are often granted ad hoc, giving politicians a powerful tool for illicit gain.

Freer trade is even more desirable when domestic markets are dominated by only a few firms. In Pakistan, where the domestic market is too small to sustain many bicycle manufacturers, imports could spur competition to improve product quality and lower prices. Evidence on profit margins from countries as diverse as Chile, Colombia, Côte d'Ivoire, Morocco, and Venezuela suggests that imports are an important source of competition. In markets that require large production volumes for efficiency, trade leads to consolidation of output and allows specialization in production. Under free trade, Venezuela would not be able to support fifteen auto assembly firms.

By affecting the nature of inputs as well as production processes, trade could generate gains which greatly exceed the short-term benefits from improved resource reallocation (Grossman and Helpman, forthcoming). Access to better-quality inputs is likely to improve productivity and accelerate output growth. Exporters and importers learn about new products and processes arising from international advances in technology. Larger markets, which provide greater returns from research efforts and increase competition, motivate producers to develop or adapt new technology. Yet it is sometimes argued that monopoly profits are necessary to reward producers for investing in research and adapting imported technology to local conditions. If domestic investors cannot fully appropriate the gains from innovation or adaptation, they will underinvest in technology. In industry, however, many efforts to apply and diffuse knowledge require in-house technical expertise and may therefore be fully captured by the firm. What does the historical evidence suggest about the relation between protectionist systems and technological change? The answer seems to be that openness has generally promoted faster growth.

The evidence on trade

As industrial countries developed, they relied less on protection than do most countries developing today. Since the beginning of the nineteenth century, tariffs in industrial countries have averaged less than 25 percent (Box 5.2). In 1987, the average tariff in developing countries was more than 30

Table 5.3 Tariffs and nontariff barriers in developing countries, 1987

Region	Manufactures		All goods	
	Tariffs	NTBs	Tariffs	NTBs
East Asia	22	20	21	22
South Asia	81	47	77	48
Europe, Middle East and North Africa	26	31	24	32
Africa	30	30	33	30
Latin America and the Caribbean	34	20	33	21
Average	34	27	32	28

Note: NTBs, nontariff barriers. Data are unweighted tariff averages. Source: UNCTAD 1987, based on eighty-two individual country sources. For Republic of Korea, World Bank estimates.

percent, and that was after a decade of extensive reforms (UNCTAD 1987). Tariff protection in South Asia is more than twice as great as the historical average for industrial countries.

Industrial countries rarely used nontariff measures during industrialization, although lately this has been changing—witness the increase in voluntary export agreements for autos and steel and the Multifibre Arrangement (MFA) for textiles. Yet for a sample of eighty-two developing countries, nontariff barriers were applied to 28 percent of all imports in 1987 (Table 5.3). Overall, the evidence suggests that the industrial countries grew with somewhat lower tariffs and substantially fewer nontariff barriers than those employed today by developing countries.

Studies which measure the short-term (static) gains from moving to freer trade find that the gains vary from less than 1 percent to as high as 6 percent of GDP. The gains are larger still if domestic markets are dominated by only a few producers, or if there are economies of scale in production. These studies, however, only measure changes at one point in time; they are not designed to analyze the potential linkages between trade policies and long-term growth.

Most of the studies which have analyzed GDP growth and openness to trade have found a positive relation (Box 5.3). Figure 5.2 also shows that there is a positive association between productivity growth and trade and exchange rate policy, using seven different measures of openness. The accumulated evidence suggests that the long-run gains from increased competition and the spillover of technology are likely to be much greater than the short-term gains.

Yet a degree of skepticism is warranted for two reasons. First, most studies examine the relation between economic growth and trade volumes, not

Box 5.3 Trade policy and growth: the evidence

In this chapter, openness means access not only to goods, but also to services, technology, foreign investment, and capital flows. Neutrality in trade policy means that incentives are neutral between saving a unit of foreign exchange through import substitution and earning a unit of foreign exchange through exports. Price comparisons between goods sold in domestic and international markets provide one measure of neutrality. If domestic markets are competitive, price comparisons incorporate the effect of the trade and exchange rate policies that affect domestic prices: tariffs, quotas, different exchange rates for imports and exports, and subsidies. But information on relative prices is often unavailable, so many other proxies are used instead (for examples, see Barro, forthcoming).

The simplest measures of trade orientation are based on actual trade flows, such as imports plus exports as a share of GDP. (For an overview of the literature on openness and growth, see the background papers by Dollar, Harrison, and Jen.) Most of these measures show a positive association with GDP growth, even after controlling for other factors. Unfortunately, they are at best an imperfect proxy for *trade policy*. Other factors, such as country size or foreign capital inflows, also affect trade: for example, large countries tend to have smaller trade shares. One improvement over this approach is to use the deviation of actual from predicted trade flows, based on variables such as country size (Balassa 1985; Syrquin and Chenery 1989).

The use of administrative data, which include tariffs and nontariff barriers, are difficult to aggregate into an overall index. Coverage ratios for nontariff barriers cause the greatest difficulty. Because the coverage ratio

indicates the percentage of imports covered by trade barriers, an extremely effective barrier that excludes almost all imports in one category would receive little weight. Most studies based on these direct measures of policy find a positive relation between trade and growth (for example, Heitger 1986).

Microeconomic studies also have generally shown a positive association between increased exports and productivity growth. However, the relation between imports and productivity growth is sometimes positive and sometimes negative. (For the work summarized in the last two sentences, see both Nishimizu and Page 1990 and Tybout 1991.) Empirical work has been unable to distinguish between the expected positive effect of imports on productivity growth in the long run and the fact that imports are initially drawn to sectors with low productivity in which a country does not have an international advantage.

Another difficulty in measuring the effect of trade policies on growth is that trade policy itself may be a function of other variables, including growth. Studies that have tried to identify the causal relation between GDP growth and growth in exports or imports have had mixed results (for example, Hsiao 1987; Jung and Marshall 1985).

The majority of the evidence now available shows a positive relation between openness—however measured—and growth. Yet the difficulties in isolating the impact of trade policies per se and establishing causality suggest that the debate is not fully resolved. More effort needs to be devoted to gathering detailed data on quotas and tariffs for developing countries.

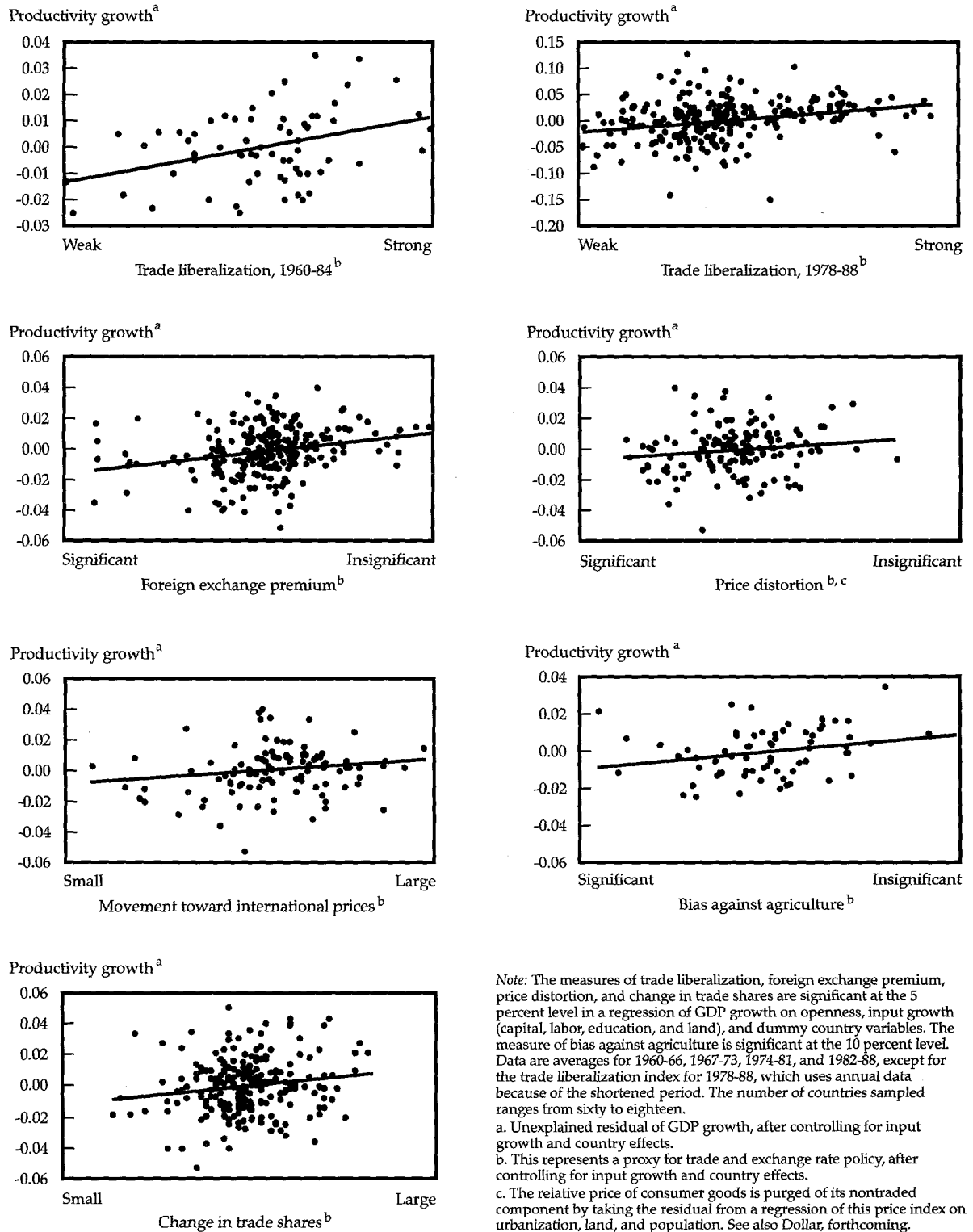
policies; this is partly because measuring “policy” poses difficult questions. Some East Asian economies have achieved high shares of trade in GNP with trade policy intervention. Nevertheless, more recent studies have tried to identify the effect of trade policies in their own right, using information on tariffs, quotas, and relative prices. These still show a positive relation between openness and growth.

Second, interpreting the observed correlation between trade policies and growth is difficult. Policies that are not directly concerned with trade (macroeconomic policy, measures to promote domestic competition, and so on) may be responsible both for superior export performance and for high GDP growth. Moreover, it is difficult to establish the direction of causality between trade policies and growth.

Intervention and growth

The evidence supports two broad conclusions. First, there is a general statistical association between less intervention and lower price distortions on the one hand and higher productivity growth on the other. Second, there is considerable variation in country experience—hence the dispersion of points around the general trends in Figure 5.2. In part, this is because openness is only one factor which explains productivity growth; this Report also documents the importance of establishing macroeconomic stability, providing social services, and fostering a productive climate for enterprises. Yet it is also true that such countries as Korea achieved high rates of export growth in conjunction with selective protection. Why is intervention more risky on average? Why are there exceptions?

Figure 5.2 Openness and growth in productivity: partial correlations for developing countries, 1960-88
(percent)



From a purely practical point of view, government intervention in trade is risky for several reasons. Countries often underestimate how difficult it can be to offset trade-induced distortions. A duty drawback scheme to reimburse exporters for tariffs paid on inputs is a second-best measure to attack distortions caused by protection. To ensure that incentives to produce for domestic and export markets are truly equal, exporters must also be compensated for any tariffs on their products (which shift incentives toward producing for the domestic market) and the exchange rate overvaluation that arises with protection. One study of Latin American countries found that export subsidies offset only a small fraction of the anti-export bias arising from tariffs and distorted exchange rates. In addition, countries which provide export subsidies become vulnerable to countervailing duties (imposed mainly by the United States) if they have signed the GATT subsidies agreement.

In many countries, the costs of failures in implementation have exceeded gains there might have been from correcting market failures. In Argentina and Côte d'Ivoire, efforts to distribute export credits to offset trade and exchange rate distortions were short-lived. Subsidies create financing problems and are often allocated to favored groups or sectors. In Costa Rica, subsidies for nontraditional exports were 5 percent of total central government expenditures in 1990; 80 percent of these subsidies were received by fewer than 20 firms. Korea, which tied credits and subsidies to successful export performance, also made mistakes: the drive to establish heavy industry through widespread subsidies in the 1970s was at best only a partial success. Often, policies designed as short-term measures to give domestic industries a chance to grow or restructure are never dismantled. The main arguments for and against intervention are reviewed in Box 5.4.

What distinguishes the countries which intervened in trade and yet were also able to grow rapidly? First, the successful interventionists preserved incentives for technological change by maintaining international and domestic competition and imposing performance requirements in return for any credit subsidies, import protection, or restrictions on domestic entry. In Japan and Korea, subsidies and protection were strictly tied to achieving export success within a defined period. Companies which did not perform well were allowed to fold. In the Japanese synthetic fiber industry, MITI helped firms obtain licenses from several different national sources to ensure new

entry—which resulted in excess capacity and ruthless competition.

Successful intervention has also been tempered by a flexible, highly pragmatic approach. The ability to terminate special treatment when intervention fails is critical. In 1980, Korea quickly reversed its 1970s policies of broad support—through protection and subsidies—for the development of heavy industry. In contrast, many industrializing countries have continued to subsidize ailing public sector firms and have restricted exit by poor performers.

Second, their intervention was moderate in the sense that it did not lead to large price distortions. Botswana, Canada, and Malaysia used relatively low tariffs and avoided nonprice measures such as quotas to diversify production. Measures of effective protection for Korea suggest that relative prices never became significantly distorted in favor of production for the domestic market (Westphal 1990). In part, price distortions were minimized in some of the East Asian economies because of their orientation toward global markets. Their commitment to world markets provided an external check on interventionist policies—guiding policy on exchange rates, protection, and subsidies.

In practice, few economies have successfully used infant industry protection to create viable, internationally competitive industries. The cost of government failures has been shouldered most often by the agricultural sector and by the consumers who pay higher prices for low-quality products. If governments do intervene, the guiding principles should be (a) to impose competition by fostering outward orientation and domestic competition, (b) to intervene at the source of the distortion (for example, to subsidize education rather than use protection when the problem is lack of human capital), and (c) to intervene only through nondiscretionary, time-bound policies that do not encourage rent-seeking. Economies which do choose to use trade protection should use low tariffs instead of nontariff barriers such as quotas or price controls.

Conditions for success in trade reform

In recent years a growing number of developing countries have embarked on programs of trade policy reform. Where these programs have been maintained, they have generally succeeded—that is, both trade and overall output appear to have expanded as a result. But in many cases programs

Box 5.4 Should states intervene in trade or shouldn't they?

Arguments for intervention

- Selective state intervention has figured prominently in two of the impressive success stories of development: Japan and the Republic of Korea. Both countries employed taxes and subsidies, directed credit, restrictions on firm entry and exit, and trade protection to encourage domestic industry. In other countries, including resource-rich Canada, Malaysia, and Botswana, moderate intervention supported diversification of the export base and helped new industries get established (Lewis 1988). In Canada, moderate tariffs (10–30 percent) protected industry into the early twentieth century. The government did not use quotas or exchange controls, however, nor attempt to prevent the decline of uneconomic industries. In 1988, manufactures exceeded 50 percent of total exports. Malaysia has also employed modest tariff protection, but it has used exchange controls and import sparingly. Manufactures rose from 6 percent of exports in 1965 to 46 percent in 1988. In Botswana, which has one of the highest GDP growth rates in the world for the postwar period, the value of manufactured exports surpassed that of beef exports in the mid-1980s. At independence beef products had provided almost all of Botswana's export earnings. Although skillful management of the mining sector has been critical to success, modest use of import restrictions promoted both manufactured and horticultural production, with protection conditional on production at import-equivalent prices.

- A long-term decline in the terms of trade for non-fuel commodities, combined with more inelastic demand for some of these products, suggests that countries could well boost export earnings by diversifying into manufactures. In the past, government intervention was sometimes necessary because producers lacked the information or expertise needed to enter industrial production (for example, Brazil, Korea, and Turkey).

- A wide range of market failures, from lack of information to incomplete capital markets, could justify an industrial policy. High rates of return on innovation in agriculture and industry suggest that private agents

may be underinvesting in research and development. For industry, less evidence is available, but several studies on industrial development of computers and computerized axial tomography scanners in the United States suggest that consumer benefits from innovations have greatly exceeded research costs. An often-mentioned failure concerns industrywide learning by doing. In principle, governments could use subsidies instead of protection to encourage domestic producers to learn by doing or enter markets with high setup costs. In practice, protection has been a more popular tool because it is more practical administratively and financially.

- A recent argument for trade intervention calls for using trade policy as a strategic tool to give domestic firms an edge in global markets (Helpman and Krugman 1989; Brander and Spencer 1985). When large oligopolies compete in world markets, governments might want to subsidize national firms to shift oligopoly profits to them. Similarly, a government could try to subsidize the entry of national firms into global markets with scale economies that preclude more than a few players.

Arguments against intervention

- The high costs of intervention in trade policy have been documented by a number of studies (Balassa and Associates 1971; Bhagwati 1978). Even in the Republic of Korea, some prominent import-substituting projects were costly failures. The "Big Push" to develop heavy industry in 1973–79 contributed to real appreciation of the exchange rate, loss of competitiveness, and distortions in financial markets (Collins 1990). GNP growth in Korea fell to –4.8 percent in 1980. It turned around again to 6 percent in 1981–82 following devaluation, liberalization of price and import controls, and tax reform. Where interventions have been successful, the evidence suggests that countries do better if the interventions result in neutral incentives. Success also depends on a time limit for the interventions. But most countries do not have the administrative capacity to collect all the information needed to ensure that inter-

have been only partly maintained, and often they have collapsed altogether. How far can countries and the international community (which also has a stake in these reforms) improve the chances that trade liberalization will succeed?

One study of thirty-six trade reforms in nineteen developing countries between 1945 and 1984 found that only fifteen of the reforms were fully sustained, nine were partially sustained, and twelve collapsed (Papageorgiou, Michaely, and

Choksi 1990). A study of trade reforms which accompanied World Bank loans in the 1980s found that many countries realigned their exchange rates and offset biases against exporters, and converted quotas to tariffs. Only a few of the countries examined, however, reduced their tariffs substantially. Evidence suggests the merits of phasing out quantitative restrictions rapidly, and reducing tariffs to reasonably low and uniform levels, such as a range of 15–25 percent. Experience supports a substan-

ventions result in neutral incentives. And protected sectors may continue to lobby for protection of infant industries long after they mature. Europe and Japan provide examples from the industrial countries of the difficulty of trying to dismantle protection of agriculture.

- Efforts to encourage diversification out of commodities and into industry have often resulted in high levels of protection for manufacturing sectors. In the process, many countries undermined their agricultural base and created industrial sectors that depended on indefinite protection for survival (for example, Argentina, Egypt, and India).

- In practice, trade policy is generally not a desirable instrument for encouraging domestic industry. Although protection may encourage learning by doing—by promoting production—and draw more workers to the protected sector, relative prices become distorted in favor of production for domestic markets. To offset the anti-export bias, additional measures are necessary, often resulting in a labyrinth of interventions.

- The case for strategic subsidies to help national firms in developing countries compete on world markets is weak (Bhagwati 1989). Apart from a few isolated cases—such as the Brazilian aircraft industry—producers are more likely to have oligopoly power in home than in global markets. That makes protection even more costly than in the perfectly competitive case. If other countries retaliate by subsidizing their national firms, everyone may be worse off. Studies of the gains from promoting entry by domestic firms into world markets have shown the gains to be small or nonexistent (Grossman 1989). A study of the Brazilian aircraft industry found no welfare gains from subsidizing exports, in part because other countries also subsidized entry (Baldwin and Flam 1989). A study of the global rivalry between a large U.S. airplane manufacturer and a large European one estimated that government subsidies imposed a considerable welfare cost on the United States and brought little (if any) welfare gain to Europe (Baldwin and Krugman 1987).

tial and comprehensive reform within, say, five years, with major and decisive actions in the first year.

Despite these difficulties in implementing reform and sustaining it once introduced, liberalizing countries outperformed the others. A study of developing countries in the 1980s found that, holding other factors, countries that implemented trade reforms experienced a higher annual increase in GDP growth (Thomas and Nash, forth-

coming). Growth rates for reforming countries were higher even when other effects were taken into account, including external financing, changes in the terms of trade, movements in the real exchange rate, and faster growth in the OECD countries.

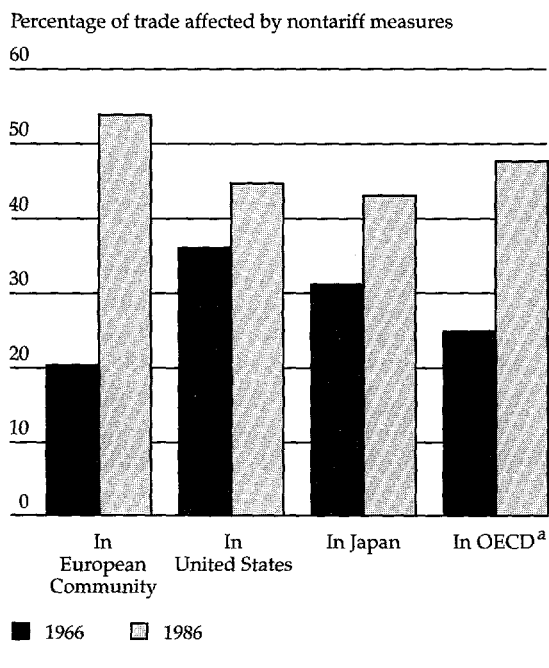
Microeconomic aspects

Successful reforms have usually reduced the coverage of quantitative restrictions and the level and dispersion of tariffs. Quantitative restrictions may be phased out in various ways. Where product quotas are used, the quota ceiling can be gradually raised until the quota becomes redundant, a method used by Australia, the EC, and New Zealand. Where import licenses are used, licensing can be phased out by reducing the number of products to which licenses apply, making the licenses transferable, and shifting to “negative lists,” which permit unrestricted imports of all products not listed.

Tariffs may be reduced either by making equally proportional cuts in all tariffs or by reducing the top rate to a target level, which is gradually lowered. A nonuniform tariff structure may in principle generate more revenue, with higher tariffs on goods with the most inflexible demand. Designing such a system, however, requires massive amounts of information and could also adversely affect income distribution. Equally important, nonuniform tariffs are subject to lobbying pressures, raise administrative difficulties, and introduce the perception of inequity. Next to a no-tariff system, the best practical policy is to establish a relatively low uniform tariff structure and a duty-drawback program for exporters.

Reforms to promote a more competitive domestic economy (discussed in Chapter 4) are crucial. Restrictions on market entry or exit, price and production controls, or regulations that reduce competition in the nontradables sector may dampen the expected supply response to trade reforms. In Mexico, entry barriers made it difficult for firms to respond to the new incentives. Until recently, regulations in the transport sector steeply increased the cost of shipping products to ports or the U.S. border. Regulations inhibiting exit by insolvent companies (such as bankruptcy laws and institutional or political constraints) also prevent improvements in the structure of production under trade reforms. Restrictions on exit partly explain the failure of earlier trade liberalization attempts in Poland and Yugoslavia. Such cases confirm one of

Figure 5.3 The share of imports affected by all nontariff measures, 1966 and 1986



a. Excludes data for Australia, Austria, Canada, Iceland, New Zealand, and Sweden.
Sources: Laird and Yeats 1990b; Walter 1972.

the main themes of this Report: success in one aspect of reform requires complementary efforts in others.

The macroeconomic context

This point applies to macroeconomic policy with equal, if not greater, force. Large fiscal deficits and money financing of those deficits worsen the external balance and generate inflation, frequently leading to losses in reserves. If the nominal exchange rate is not allowed to adjust, foreign exchange shortages often oblige the government to return to licensing, higher protection, and trade restrictions.

Although tariffs are a much more distortionary means of raising revenue than sales taxes or value added taxes, administrative weaknesses in many countries lead them to rely heavily on trade taxes as a revenue source.

The effect of liberalization on revenues depends

on the mix of policies. Governments need to assess the potential revenue effect of reforms. A switching from quantitative restrictions to tariffs can be undertaken under almost any fiscal situation. Tariff reductions, however, need to be accompanied by measures to convert remaining quotas to tariffs, together with a reduction in tariff exemptions. Declines in tariff revenue—if expenditures cannot be reduced—may need to be compensated for with other measures. Reformers have improved tax administration and collection (in Ghana, Pakistan, and Thailand); increased rates and coverage of sales and excise taxes (in Malawi, Mauritius, Mexico, and the Philippines); introduced a value added tax (in Jamaica, Morocco, and Turkey); or increased the price of public sector output and services.

The timing of compensatory revenue measures is of critical importance. Although trade reform in both Mexico and Morocco led to a decline in trade tax revenues, Mexico cushioned the loss through higher revenues from a value added tax instituted before the reform. Morocco, however, rolled back some of its tariff reforms initiated in 1984 when implementation difficulties with its new value added tax and the collapse of world phosphate prices added to its revenue problems.

A World Bank study of nineteen trade-reforming countries found that appreciation of the real exchange rate was often associated with the collapse of a reform episode. Trying to implement trade reforms when the exchange rate is grossly overvalued will make balance of payments problems worse and is likely to sabotage the reform effort. As controls on imports are relaxed, a real depreciation will increase the prices of tradables, making export production more attractive and temporarily dampening the impact of competition for producers of import-competing goods. (The role of macroeconomic policy in development is discussed in detail in Chapter 6.)

Political-economy considerations

Even the best-conceived trade reform may fail because of problems which are not purely economic. Those who stand to lose from a trade reform are generally more organized and politically powerful than those who stand to gain, such as consumers at large or rural agricultural interests. Reform also threatens vested interests within government, from protected state enterprises to trade regulators who derive rents from the status quo to politicians who seek to cultivate support. Getting the pace

and sequencing of reform right can help to overcome such difficulties. (Chapter 7 returns to these issues in the art of reform.)

The global climate for trade

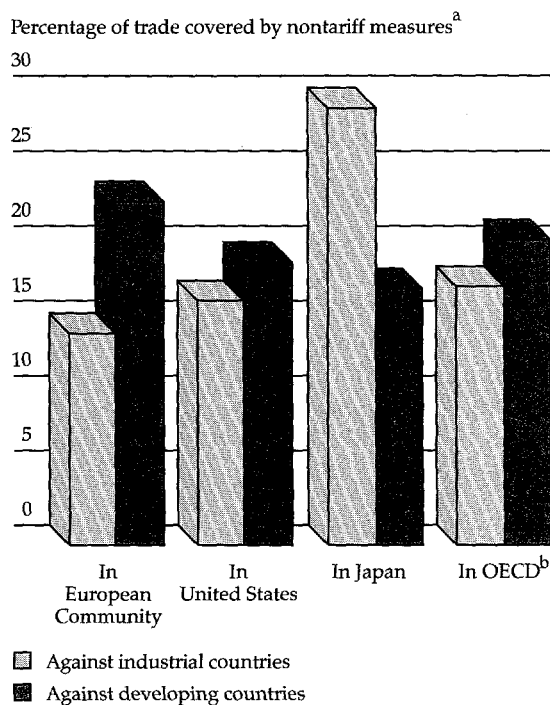
Industrial-country protection

Trade reform in developing countries is much more likely to go ahead if success in trade is not punished. During the past several decades, average tariffs in industrial countries have been reduced to less than 6 percent. But the use of other protective measures such as quotas, subsidies, voluntary export restraints, and countervailing and anti-dumping measures, has risen alarmingly since the 1960s. Increased protection is largely the result of greater competition on world markets, exacerbated by the inability of the GATT to control nontariff barriers. Between 1966 and 1986, the share of imports affected by all nontariff measures increased by more than 20 percent for the United States, almost 40 percent for Japan, and 160 percent for the EC (Figure 5.3). By 1986, 21 percent of imports from developing countries to the OECD were covered by so-called hard-core nontariff barriers: quotas, voluntary export restraints, the MFA, and other highly restrictive measures (Figure 5.4). This number does not even include other restrictions such as price restraints or health and safety regulations. If these measures were included, the share of trade covered by nontariff barriers in industrial countries could be equal to the 28 percent of trade covered by all nontariff measures in developing countries in 1987.

Subsidies to agriculture increased by 80 percent in the United States, by 60 percent in Canada, and by 21 percent in Japan between 1980 and 1985, while the number of countervailing and anti-dumping cases filed by Australia, Canada, the EC, and the United States more than doubled. New evidence suggests that anti-dumping and subsidy investigations are being used as a threat against foreign imports, even when the countervailing and anti-dumping duties are not applied. Since the mid-1980s, industrial countries have done almost nothing to roll back the accumulated protection. The increasing use of such measures by industrial countries during the past 30 years provides a disturbing precedent for retaliatory action and for the enactment of similar measures by developing countries.

Laird and Yeats (1987) estimated that the cost (in 1990 dollars) to developing economies in terms of forgone exports was \$55 billion in 1980—almost

Figure 5.4 Hard-core nontariff measures applied against industrial and developing countries, 1986



a. Calculated using 1981 trade weights. Hard-core nontariff measures include quotas, voluntary export restraints, the Multifibre Arrangement, and other highly restrictive measures.

b. Excludes data for Australia, Austria, Canada, Iceland, New Zealand, and Sweden.

Source: Laird and Yeats 1990a.

equal to the value of total official development assistance in that year. Action by developing economies to reform their trade policies must be met by equal efforts to reduce protection in the industrial world. But developing economies should not slow their own reform efforts simply because of rising protection in industrial ones. The four East Asian NIEs were able to increase their share in total world trade and manufactured exports more than eightfold between 1965 and 1989, despite rising protection in industrial countries. The scope for increased trade in manufactures for the rest of the industrializing economies remains significant: they accounted for only 5 percent of manufactured exports in 1988. Can they too continue to benefit from trading opportunities despite declining terms of trade for commodities?

Commodity price movements

The evidence in Box 5.5 shows a relatively small decline in primary commodity prices in relation to manufacturers during the course of this century.

Nevertheless, falling primary commodity prices since the 1970s and volatility in these markets pose serious problems for low-income primary producers. The solution is not an easy one. If countries produce a large share of world exports (such

Box 5.5 Commodity price movements

Can a country still benefit from trade if a large share of its exports is primary products? In the 1950s, Raoul Prebisch and Hans Singer suggested that the gains from trade for developing countries would decline as the price of commodity exports relative to manufactures imports fell. The Prebisch-Singer hypothesis provided a rationale for import-substituting industrialization. The evidence is not persuasive.

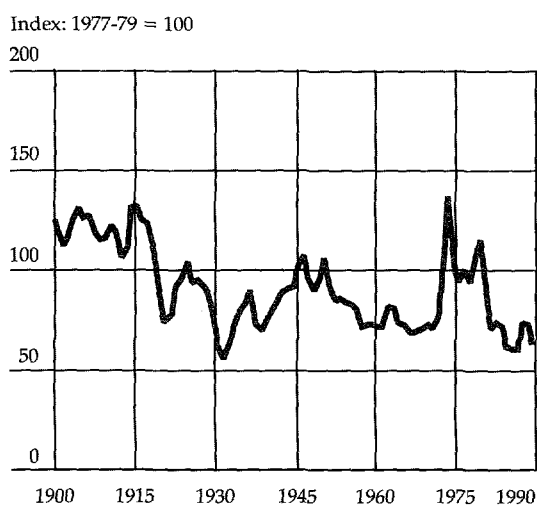
Between 1900 and 1986, nonfuel commodity terms of trade declined by an average of 0.6 percent a year (Box figure 5.5a). If we choose a different period, however, the decline is much smaller. Between 1920 and 1986, the terms of trade fell less than 0.3 percent a year. In addition, these figures are likely to overstate the decline because they ignore improvements in the quality of manufactured goods.

Many developing countries have diversified their exports: the share of manufacturing in the nonfuel exports of developing countries increased from 15 percent in 1963 to 62 percent in 1987 (Balassa, background

paper). In addition, small exporters of commodities such as coffee or cocoa have probably benefited from improved terms of trade as grain import prices have declined. Consequently, the terms of trade for developing countries have probably fallen by much less than the nonfuel commodity decline.

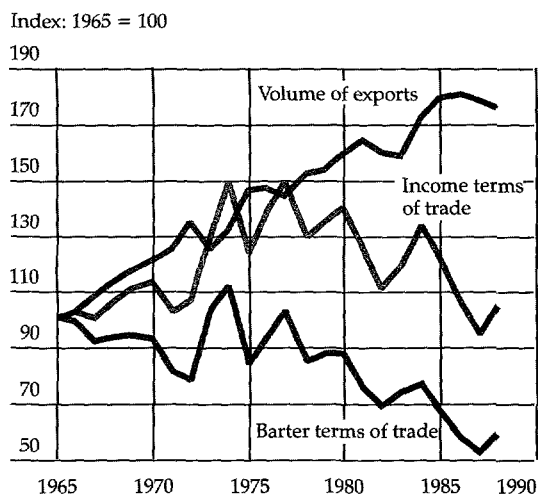
Nor do changing prices take into account offsetting increases in trade volumes. Despite significant declines in the relative price of nonfuel commodities since 1973, revenues from commodities have stayed relatively constant in relation to those from manufactures. Export volumes from developing countries over this period nearly doubled, offsetting the declining terms of trade (Box figure 5.5b). Because of differences in domestic policy, some countries did much less well than others: nonfuel commodity export revenues fell 50 percent in South Asia and increased by about the same amount in East Asia.

Box figure 5.5a Nonfuel primary commodities versus manufactures: relative price index, 1900-90



Note: The manufactures price index used is the U.S. wholesale price index.
Sources: World Bank data; Grilli and Yang 1988.

Box figure 5.5b Trends in exports and the terms of trade of developing countries, 1965-88



Note: Barter terms of trade are the weighted export unit values of primary commodities deflated by the weighted import unit values of each region. The barter terms of trade multiplied by the actual volume of exports yields the income terms of trade. Data are based on a sample of ninety developing countries.
Source: World Bank data.

as coffee or cocoa) or if increasing export volumes from some groups of exporters depress prices, a case could be made for controlling production through export taxes. In practice, however, attempts to stabilize international or domestic producer prices have not met with much success. In many cases, the implicit tax on agriculture is too high because of a combination of export taxes and the protection of manufacturing. Although new financial instruments designed to hedge commodity price risk hold promise, their use has been limited because many poor countries pose an unacceptable credit risk for commercial financing.

Yet both developing and industrial countries have recourse to policies which can make a significant difference (see also Box 5.4). In some low- and middle-income countries during the 1970s, inappropriate policies led to losses in market share and greater dependence on a few primary commodity exports. Industrial countries, which impose greater protection for goods at a higher stage of processing, discourage the development of local processing capacity for industrializing countries.

Regional trading blocs

The unification of Europe in 1992, the United States-Canada free trade agreement in 1989, and the proposed inclusion of Mexico in the United States-Canada agreement could herald a new era of regional trading blocs. Although such blocs may constitute a step toward global free trade, it remains to be seen whether they will support or hinder the goal of a more open global trading system.

In principle, the formation of a trading bloc leads to net gains for its members when goods which were domestically produced are now imported from lower-cost partners. Other potential sources of gain include economies of scale and in-

creased competition from larger markets, particularly in countries with emerging infant industries and low domestic demand. Yet a trading bloc may also lead to losses if members replace lower-priced goods from outside the bloc with more expensive goods produced by other members. Even if a regional trading bloc can be designed to generate net gains for its members, these gains are exceeded by the benefits from unilateral trade reform.

What about primary product exporters? The evidence presented in Box 5.5 shows that primary product exporters also stand to gain from rising exports.

The historical evidence (Table 5.4) suggests that regional blocs in all but the EC have not generated a large share of total trade in the post-World War II period. Why? In a number of cases (CARICOM and the Central American Common Market in Central America; UDEAC in Africa) intraregional conflicts have made it difficult to liberate internal trade. In many blocs, such as the Andean Pact, participants sought to rationalize production by allocating specific markets to designated producers instead of allowing the competitive process to determine the allocation of production. These designated producers were not necessarily the most efficient; nor were tariffs low enough in relation to the rest of the world to provide external competition. Consequently, the expected benefits from rationalization of production or increased competition have been limited. Developing-country trading blocs have often imposed high tariffs or quotas against nonmembers, increasing the likelihood that net losses from the bloc will exceed gains. In addition, except in the EC, trading opportunities and pro-competitive effects have been limited by the small size of regional markets in comparison with the rest of the world. Finally, regional trading blocs have frequently produced

Table 5.4 Intraunion trade as a percentage of total exports, 1960–87

<i>Economic union</i>	1960	1970	1976	1980	1983	1987
European Community ^a	34.6	48.9	..	52.8	52.4	58.8
Association of South-East Pacific States	21.7	14.7	13.9	17.8	23.1	17.7
Central African Customs and Economic Union	1.6	3.4	3.9	4.1	2.0	0.9
Central American Common Market	7.5	26.8	21.6	22.0	21.8	11.9
Caribbean Community	4.5	7.3	6.7	6.4	9.3	6.3
LAIA-Latin American Free Trade Area	7.7	10.2	12.8	13.5	10.2	11.3
Andean Group	0.7	2.3	4.2	3.5	4.3	3.2
West African Economic Community	2.0	9.1	6.7	6.9	11.6	7.7
Economic Community of West African States	1.2	2.1	3.1	3.9	4.1	5.5
Economic Community of the Great Lake Countries	0.0	0.2	0.2	0.2	0.2	..
Mano River Union	0.0	0.1	0.2	0.1	0.1	..
Regional Cooperation for Development	..	1.0	0.8	5.3	8.5	5.2

a. Includes the original six members up to 1970 and nine after 1980.
Source: Lächler 1989.

similar products, limiting the opportunity to exploit differences in skills or endowments.

Do trading agreements between industrial and developing countries show more promise? Larger markets and greater differences in the structure of production could in principle generate greater gains for the participants. But such a strategy could also undermine the GATT and the multilateral trade system, and thus reduce the incentives of partners within such blocs to move toward global free trade. Other countries, reacting to the formation of such blocs, may set up their own network of trading blocs. Such a system is likely to reinforce current protectionist trends, and it could be a blow to developing countries' efforts to reform trade.

Unilateral trade liberalization and multilateral efforts to free up global trade are preferable to the formation of trading blocs; however, steps can be taken to maximize the gains from such unions. First, members should commit themselves to multilateral reform and the GATT. The EC, for example, continued to participate in multilateral trade negotiations in the post-World War II period at a pace similar to other industrial countries (except in agriculture). Second, the external tariffs set by regional blocs should be reduced or limited to those of the most open member; meanwhile, internal efforts should concentrate on freeing up trade and ending efforts to allocate production. Third, participants should continue to move toward freer

trade through unilateral reforms. Postponing reforms to win agreement with other members of the trading bloc will greatly increase the costs of such arrangements.

Trade routes to growth

Openness to trade has improved resource allocation, increased competition and product specialization, and provided a broad avenue for technology transfer. Ironically, greater competition and a more integrated world have also resulted in a global trading system which is now poised at a critical juncture. The world faces two important trade challenges in the 1990s. First, regional trading arrangements must be carefully managed to ensure that multilateral commitments are strengthened, not forgotten. Second, and even more urgent, the Uruguay Round of trade talks must be revived. However difficult, all participants must reach agreement to open up agriculture, expand the GATT to eliminate quantity restrictions (on autos, steel, and textiles), and restrict the use of so-called fair trade legislation (anti-dumping and subsidy measures). In this, the developing countries can play a key role; in their own interests, they should press for free trade and continue to reform their own trading systems. The industrial countries of today grew prosperous through trade. No effort should be spared to ensure that the developing countries can follow that same path to progress.