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Chapter V

NATIONAL POLICIES IN SUPPORT OF PRODUCTIVE DYNAMISM

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A. Introduction

The widening gap in relative income levels between rich and poor countries has been a major trend in the world economy over the past 250 years. On one estimate, the difference in per capita income between the richest and the poorest country in the world was about 5:1 before the Industrial Revolution; today this difference has increased to 400:1 (Landes, 1998). While the exactitude of these numbers is debatable, there can be little doubt that the world economy has been on a long-term path of substantial and growing divergence in relative productivity levels and living standards, both between developed and developing countries and among developing countries themselves.

The slow per capita income growth in developing countries has left millions of people in poverty. Nevertheless, recently the growth performance of many developing countries has improved, especially since the beginning of the current commodity price boom in 2002. Rapid growth in a few highly populated developing countries, especially China and India, has helped lift a substantial number of people out of poverty, in these countries themselves as well as in other developing countries that have benefited from spillovers

of fast growth in Asia. But improved growth performance in the developing world will need to be more broad-based and sustained over a long period of time if there is to be more substantial progress towards achieving the Millennium Development Goals (MDGs) and eradicating poverty.

Around the long-term trend towards divergence in relative productivity and per capita income levels, a number of initially backward countries have succeeded, at different times, in catching up to the productivity and income levels prevailing in the frontier countries. It is well known that the current global technology leader – the United States – was itself once on a catch-up path with respect to the then economically and technologically leading country, the United Kingdom. Australia, Canada, New Zealand, some Latin American and many Western European and Scandinavian countries began catching up about 50 years prior to the First World War. Japan is a prominent example of catch-up during the decades before and after the Second World War, as are the East Asian newly industrializing economies (NIEs) since the 1960s (*TDR 1997*, Part Two, chap. II), and China and India more recently (*TDR 2005*). Fast growth

in these Asian developing countries, particularly in China, has even succeeded in pulling along some of the lagging economies in Latin America and Africa.

Explaining this diversity in the pattern of development and determining what government policy can do to help achieve economic catch-up is among the oldest and most controversial issues in economics. There is no clear-cut policy prescription for success, but investment, technology adoption and structural change have traditionally been considered among the main critical factors for sustained economic catch-up. Giving support to earlier findings (Levine and Renelt, 1992), recent empirical analyses underline the importance of investment in physical capital as a “very strongly” robust growth determinant (Sala-i-Martin, Doppelhofer and Miller, 2004; Tsangarides, 2005). But for sustainability of economic growth, it is important that output expansion be based not merely on capital accumulation, but also on a continuous rise in labour productivity and the maintenance of productive dynamism over time, as is obtained through the acquisition of technological mastery over a broad range of activities, especially in manufacturing. The development of a strong manufacturing sector has been at the core of all successful catch-up experiences over the past 250 years, which suggests that achieving a lasting productivity-based increase in manufacturing is indispensable for a sustained rise in income levels and, ultimately, the eradication of poverty.¹

Industrialization strategies have varied widely across developing countries over the past 50 years. Especially during the 1960s and 1970s, much of Latin America, Africa and parts of South Asia employed import-substituting industrialization strategies oriented towards the domestic market and based on a plethora of protective measures and other government interventions. Many of these countries subsequently abandoned those strategies for a variety of reasons, including their failure to promote development and because of the policy conditionality of multilateral lending institutions. Consequently, they began to view

unfettered market forces and deep integration into the world economy as the most promising means to economic development during the 1980s and 1990s. There is some dispute as to the merits of the import-substituting industrialization strategy as a paradigm (Bruton, 1998), while the outcome of the liberalization strategy is generally judged disappointing (*TDR 2003*; World Bank, 2005). In any case, the annual rate of real economic growth averaged about 2.0–2.5 per cent in Africa and Latin America during the 1980s and 1990s, which is only about half that of these countries’ growth performance during the 1960s and 1970s.

By contrast, the East Asian NIEs recorded an average annual rate of real economic growth of almost 9 per cent during the 1960s and 1970s and more than 7 per cent during the 1980s and 1990s. Their successful economic catch-up and industrialization, in particular until the mid-1990s, have been associated with outward-oriented industrialization strategies and strategic integration into the world economy. Proactive trade and industrial policies² played a key role in the pace and direction of structural change and economic growth particularly in the Republic of Korea and Taiwan Province of China (*TDR 1996*).

Similarly, the recent star performers among developing countries in terms of economic growth, particularly China, India and Viet Nam, have not followed orthodox policy prescriptions of relying on unfettered market forces, broad-based liberalization and deep integration into the world economy.

Given that economic policies relying on unfettered market forces have failed to deliver the expected development results over the past two decades, many developing countries that had closely followed the prescriptions of the Washington Consensus have begun to reconsider the use of proactive trade and industrial policies in their development strategies. Arguing that “it is fair to say that nobody really believes in the Washington Consensus anymore” (Rodrik, 2006: 2) appears to be an exaggeration. Nonetheless, the reasoning put forward by Rodrik (2004), along with the establishment of a task force on Industrial Policies and Development within the Initia-

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tive for Policy Dialogue directed by Nobel laureate Joseph Stiglitz at Columbia University, and the publication of a recent study by the World Bank (2005: xiii) whose “central message ... is that there is no unique universal set of rules ... [and that we] need to get away from formulae and the search for elusive ‘best practices’”, have given new vigour to the industrial policy debate.

In spite of the revitalization of the debate, much controversy remains in development policy discourse concerning the rationale for proactive trade and industrial policies and the feasibility for developing-country governments to adopt them. Some have questioned the efficacy of such policies, tending to associate them with failed inward-looking, import-substituting strategies, a comprehensive range of open-ended interventions and a strong bias towards protectionism (Krueger, 1990). Others have argued that sectoral policies conferred only modest benefits in the economic catch-up experiences in East Asia after the Second World War and that, due to the associated high risk of protracted rent-seeking and other potentially adverse effects, developing countries “should be exceptionally cautious before embarking on such policies” (Pack, 2000: 64). By contrast, most of the recent development literature argues that industrial policies were indeed an important supportive factor for East Asia’s economic catch-up. For example, according to the World Bank (2005: 83) “the role of activist industrial policies is still controversial but is likely to have been important.”

The rationale for proactive trade and industrial policies has been questioned also because of their possible adverse effects on efficient resource allocation (Bora, Lloyd and Pangestu, 2000; Pack and Saggi, 2006). But a major theme in historical analyses of economic catch-up in mature and late industrializers (Amsden, 2001; Chang, 2002; Rodrik, 2006) is that exclusive concentration on allocative efficiency implies that too little atten-

tion is paid to stimulating the dynamic forces of markets that underlie structural change and economic growth. As widely argued in the recent literature (Akyüz, 2005; Chang, 2005; Gomory and Baumol, 2000; Hausmann and Rodrik, 2003; Rodrik, 2004; Singh, 2005; Stiglitz, 2005; World Bank, 2005), industrialization and economic catch-up are not generally the result of a natural process simply based on an efficient allocation of resources. As recently stated by Rodrik (2006: 5), “market or government failures that affect accumulation or productivity changes are much more costly, and hence are more deserving

of policy attention, than distortions that simply affect static resource allocation.” A recent study by the World Bank (2005: 10) also argues that “growth entails more than the efficient use of resources”. This is particularly true for developing countries where economic growth entails dynamic changes in the structure and technology-content of production.

From this perspective, successful industrialization and economic catch-up need to be interpreted as a process of cumulative causation. Supportive national economic policies advocated by this interpretation focus on strengthening the dynamic forces of markets related to information externalities in the context of innovative investment, coordination externalities associated with complementarities in investment, production and consumption, and dynamic economies of scale resulting from cumulative production experience. Strategic integration into the world economy helps to maximize the benefits of these externalities at the level of the national economy. But all of these externalities are inti-

mately linked to departures from the competitive equilibrium ideal of conventional economic theory; if unsupported by proactive national economic policies, such externalities cause a suboptimal provision in the volume and industry composition of investment.

Many believe that the new international trading rules reduce the degree of freedom available to developing country policymakers ...

... causing them to relinquish policies that favour industrial development.

Another aspect of the argument that questions the wisdom of adopting proactive trade and industrial policies as an integral element of development strategies relates to the feasibility for developing-country governments to implement such policies. There is indeed a widespread belief that the new international trading rules and regulations, which have emerged following both the conclusion of the Uruguay Round of multilateral trade negotiations and the rising number of regional and bilateral trade arrangements, reduce the degree of freedom available to developing-country policymakers to the point that they are required to relinquish policies that favour domestic industrial development and associated trade-related strategies (see, for example, Das, 2003; Gallagher, 2005; Chang, 2006).³

This raises the following questions: What are the principles on which developing-country policymakers should base their formulation of in-

dustrialization and technological upgrading strategies? Which principles would they need to heed in formulating the set of policy instruments appropriate to the specific conditions of their economies? And what degree of freedom remains for policy implementation, given the increased importance of international rules and commitments stemming from international trade agreements? Sections B and C address these questions. Section D discusses the main features of industrial development and technological upgrading in developing countries over the past decade with a view to examining whether and to what extent commitments from international trade agreements have required developing countries to abandon the use of policy instruments on which they had previously relied, what kinds of policies they have adopted instead, and with what effect on industrial development. The final section draws conclusions on options for policy innovation at the national and international level.

B. Stimulating the dynamic forces of markets

1. *Maintaining productive dynamism*

Countries at the earliest stages of economic development can increase per capita income and living standards simply by capital accumulation that allows a fuller use of underutilized labour and natural resources. This is the case in particular for countries seeking to diversify away from the production of primary commodities. But sustained economic success to enable countries to go beyond these early stages depends on continuous improvements in productivity. The basic policy questions facing these developing countries are how to maintain productive dynamism and technological upgrading as the key to successful eco-

nomical development and structural change, and how best to promote trade and investment to that end. From this perspective, when formulating economic policies related to industrialization and structural change, developing-country policymakers need to take into account the interrelationship between income growth, productivity gains and changes in production structure in an open economy.

Four arguments⁴ in favour of a proactive national economic policy designed to support productive dynamism and technological upgrading have received the most attention:⁵ (i) the presence of dynamic scale economies that gives rise to increasing returns of scale at the firm level; (ii) complementarities in investment, production and con-

sumption that, if unchecked, result in coordination failures; (iii) information externalities associated with investment in goods or modes of production that are new for the respective economy; and (iv) strategic trade integration, which describes the open-economy pattern of public support policies that is motivated by the above three arguments. This form of integration represents a mix of import substitution through temporary protection and export promotion using temporary subsidies, and embeds industrial policy in a wider, outward-oriented industrialization strategy.

(a) Strengthening the creative functions of markets

Dynamic scale economies are important in that substantial productivity growth can result from an increase in investment. This is because investment in physical capital includes the components of technological change that are embedded in machinery and equipment and investment in human capital allows for the efficient use of increasingly sophisticated technologies. Moreover, learning by doing, resulting from cumulative experience with a production process, facilitates incremental improvements in product design and organizational practices that support productivity growth. These productivity gains in turn, combined with productivity growth resulting from other factors – for example, increased specialization of production within firms and the introduction of more specialized capital equipment – drive the profitability of a firm’s activities and its further investment.

Demand is an important incentive for investment by entrepreneurs. Only when they expect to have a large enough market for their new activities to be profitable will they engage in new investment. Developing countries with a large population and some minimum level of domestic purchasing power may be able to generate domestically a substantial part of the demand needed to support industrialization.⁶ But most developing countries will need to generate exports as a vent for output, because a small economy is hardly able to main-

tain the circular causal links between productivity growth and large-scale output and investment simply by trying to meet domestic demand. It is thus the interaction of supply and demand factors in the investment process that translates productivity growth into further investment and maintains productive dynamism and technological upgrading.

Changes in the production structure influence the intensity of the interrelationship between income and productivity growth. Traditionally, the belief has been that industrialization, particularly the development of manufacturing activities, offers the greatest scope for productivity growth. This is because manufacturing provides a large potential for the division of labour as well as virtually unlimited scope for technological change. Moreover, the income and price elasticity of demand of most manufactures exceeds that for other products.

Turning to the second argument in favour of industrial policies, the presence of complementarities in investment, production and consumption is also generally considered to be greater in manufacturing than in other sectors because manufacturing activities give rise to more and stronger forward and backward linkages. For example, investment and profits of one manufacturing firm depend not only on its own output and factor inputs, but also on the output and factor inputs of other manufacturing firms that provide intermediate production inputs or use the firm’s output as production inputs in their own production.

This type of interdependence among different individual firms, which increases the profits of both of them, has been referred to as “pecuniary external economies” in the economic literature. When investment creates pecuniary external economies, its economy-wide impact exceeds its private profitability. Hence, profitable investment can fail to develop unless investment in upstream and downstream activities occurs at the same time.⁷ In this sense, a key problem of entrepreneurs, acting as independent agents and only in their self-interest, is how to coordinate investment

Substantial productivity growth can result from an increase in investment.

so as to exploit external economies. As noted by Scitovsky (1954: 150), market prices are not capable of providing a signalling device to transmit information about present investment plans and future production conditions when there are reciprocal pecuniary external economies.

The above two arguments in favour of industrial policy have generally been interpreted as providing a rationale for temporary protection. By contrast, the third argument supporting the adoption of industrial policy stresses that protection of the manufacturing sector per se does not provide an incentive for an entrepreneur to undertake innovative investment and create new production capacity at an internationally competitive level of productivity.⁸ Following Meade (1955) and Baldwin (1969), Rodrik (2004) argues that large uncertainties related to the profitability of investment associated with the manufacture of products or the adoption of modes of production which are new for the respective economy, as well as to the speed of entry of imitative entrepreneurs, give rise to information failures.

This information problem results from the fact that each potential investor that creates production facilities for new products or introduces new modes of production faces fixed start-up costs. But the investor usually does not know the cost function of these new activities, and therefore whether they will be profitable and whether the sunk costs can be recovered, because the production costs of modern, non-traditional activities can be determined only after the initial investment has been made.⁹ In addition, an entrepreneur who discovers the best way to produce a particular product incurs the risk of potential imitators entering the market too quickly to allow the realization of sufficient profits to cover the initial sunk cost.¹⁰ Hence, imitative entry reduces the private return that the innovative investor can realize, but at the same time it increases its social return because of the spillovers

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from imitation that allow the newly discovered cost structure of the economy to be exploited by a wide range of entrepreneurs. Moreover, if the investment fails, the innovative entrepreneur will bear the full cost of the mistake. Thus, the potential innovative entrepreneur's initial lack of knowledge of the cost structure of new products or the use of new production processes causes an information failure. If unchecked, this information failure results in a suboptimal provision in the volume and industry composition of investment.

According to this argument, the main task of public support policies is to address the information externalities entailed in discovering the cost structure of an economy (Meade, 1955: 256–257; Baldwin, 1969; Rodrik, 2004). Acquiring knowledge of the underlying cost structure of an economy that determines the evolution of production patterns over time is a discovery process (Zeira, 1997; Hausmann and Rodrik, 2003). In this sense, industrial policy needs to be defined not in terms of an expected outcome (i.e. an altered sectoral structure of production), but in terms of a process – “one where firms and the government learn about underlying costs and opportunities and engage in strategic coordination ... with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them” (Rodrik, 2004: 3).

This reasoning on the role of policy implies a shift in emphasis concerning policy instruments. In terms of supporting innovative investment, protection is a rather blunt instrument. But, as noted by Meade (1955) and Rodrik (2004), and succinctly stated by Baldwin (1969: 298), “[w]hat is needed, of course, is a subsidy to the initial entrants into the industry for discovering better production techniques”.

From this perspective, economic development, technological upgrading and structural change amount to a cumulative process of emerging new

and more dynamic economic sectors, with traditional activities being phased out or performed in more productive ways. This process goes through several stages, distinguished by the changing relative importance of economic sectors and activities. Empirical evidence shows that in the course of economic development the sectoral allocation of employment changes. In a study covering a wide cross-section of countries, Imbs and Wacziarg (2003) note that during the earlier stages of economic development countries diversify (i.e. they spread economic activity more equally across sectors), but relatively late in the development process, at around a per capita income of \$9,000, they start specializing again. They suggest that an increase in a country's productivity level, relative to the rest of the world, drives the tendency towards diversification, while a decline in trading costs – stemming from a decline in transport costs or tariffs, or from an increase in agglomeration economies resulting from forward and backward linkages – leads to a shrinking range of goods produced domestically, thus fostering specialization (Imbs and Wacziarg, 2003: 82–83). They also emphasize that “increased sectoral specialization, although a significant development, applies only to high-income economies. Countries diversify over most of their development path” (Imbs and Wacziarg, 2003: 64). Thus economic development appears to be closely related to the acquisition of technological mastery over an increasing range of products.

Rodrik (2004) provides a powerful restatement of the need to address information problems related to the key importance of innovative investment for diversification and technological upgrading in developing countries. This restatement complements the other two arguments, mentioned earlier, that provide a rationale for industrial policy: the need to support dynamic economies of scale and overcome coordination failures.

A frequent argument made against industrial policy is that if there are industries with a potential comparative advantage, but domestic private investors fail to develop the necessary activities

because of insufficient financing possibilities, government policy should be directed at the full development of domestic financial markets, rather than providing industrial policy support. In other words, policy should address the financial market imperfections with a view to moving the economy towards fully developed factor markets and competitive equilibrium. However, this reasoning is valid only when investment is actually financed from sources external to the firm. It has been shown that much of the investment that drove successful industrialization in East Asia relied on profits as a source for investment (*TDR 1996*).

Moreover, the full development of domestic financial markets takes time. As a result, the above argument has led to the suggestion that the task of determining whether the prospects for the domestic infant industry are profitable be left to foreign investors whose decisions are based on production experience elsewhere. Some authors (e.g., Pack and Saggi, 2006) argue that the promotion of foreign direct investment (FDI) should play a key role in industrial development and national economic policies should be limited to the creation of

In the cumulative process of technological upgrading and structural change the relative importance of economic sectors and activities changes.

locational advantages – such as the provision of appropriate physical infrastructure and assuring appropriate education and health services for the labour force – with a focus on the provision of incentives to attract FDI. This view considers FDI not only as eliminating information constraints regarding the profitability of innovative investment, but also as delivering a bundle of assets that includes additional capital investment, productivity-enhancing technology and best corporate norms and practices. Moreover, it is assumed that the knowledge initially transferred to an enterprise through FDI will spill over to other firms in the same industries.

Such optimism about the economic growth, technology transfer and productivity consequences of FDI has led many countries to adopt investment regimes that offer special financial incentives to foreign enterprises. However, empirical evidence points to considerable variation in the benefits that host countries actually reap from FDI

inflows, and much depends on the establishment of an appropriate regulatory and fiscal framework.

Kumar (2005: 179–186) cites a number of recent empirical studies showing that knowledge spillovers may not take place, especially in developing countries, and domestic enterprises may actually be affected adversely. In some cases FDI may be immiserizing by crowding out domestic investment. Moreover, the interests of a transnational corporation (TNC) may diverge from the host country's developmental objectives, due to the TNC's strategy of pursuing global profit maximization. Thus its decisions to source production inputs locally or from international suppliers may not be taken on the basis of efficiency considerations alone. Also, TNC affiliates in developing countries tend to buy the bulk of their inputs from their parent companies or other associated suppliers, and hence generate few domestic linkages.

One explanation for this variation in FDI-related developmental benefits is that the effects of FDI on domestic investment and growth partly depend on the mode of entry (UNCTAD, 2000). For example, FDI in new plant equipment (i.e. "greenfield investment") adds to the existing capital stock and may indicate a longer-term commitment of the foreign investor to producing in the host country. However, in the poorer countries that are most in need of external financing of investment, much of the greenfield investment has occurred in fuel and mineral industries, thus making little contribution to the diversification and development of competitive manufacturing activities. In other cases, FDI has often taken the form of mergers and acquisitions, thus making no addition to the host country's productive assets.¹¹

Apart from the nature of FDI inflows themselves, national policies also determine the extent to which FDI contributes to technology transfer and linkage creation. Restrictions on entry in the form of contractual obligations on technology transfer, ownership ceilings, the provision of incentives only for entry in specific targeted eco-

nomics sectors, and performance requirements related to purchases of intermediate inputs from local suppliers can play an important role in increasing the developmental impact of FDI. These measures try to establish positive, complementary interactions between foreign and domestic investment so that they can have a favourable impact on the host country's productivity performance. To what extent such attempts are successful often depends on the leverage of host countries over foreign firms. It is clear that the larger a host country's domestic market and the more developed its industrial production structure, the better it will be able to offer auxiliary activities that foster the profitability of TNC activities. It will therefore be in a good position to demand concessions in terms of technology transfer and input sourcing

from domestic suppliers in exchange for access to a large domestic market and a large domestic network of input suppliers.

National policies that aim to create locational advantages based on cost differentials, for example through favourable tax treatment or relatively low unit labour costs, rapidly risk becoming ineffective as a result of small cost changes or the emergence of alternative host countries. By contrast, support policies designed to create a dense network of intermediate input suppliers can be an important means to attract or retain TNC activities, develop domestic supply capacity and foster technological upgrading. Local availability of high-quality intermediate inputs at world market prices provides pecuniary externalities for TNC activities. The profit incentive for the TNC to produce in the host country will be higher, the more intensively it uses intermediate inputs, and the higher will be the savings stemming from lower imports and the associated lower trade costs of such production inputs. As explained in the literature related to new economic geography models (e.g. Puga and Venables, 1996, 1999), a similar mechanism applies when the host country provides a large market for the output of the TNC: TNC profits will increase because of the scale effects of additional demand.¹² Thus, support policies designed to provide a network of competitive input

Developing-country policymakers need a pragmatic and strategic perspective on how FDI can fit into their wider development agenda.

suppliers or output users can be a key factor in a host country's locational advantage.

Thus there is a need for investment policies to mobilize domestic resources as well as FDI. Such policies should be combined with an appropriate regulatory and fiscal framework to ensure that the expected development gains will be obtained. An excessive focus of national industrialization policies on attracting FDI would bias the national economic policies towards "external integration" at the expense of "internal integration", in the sense of a denser set of links between consumer, intermediate and capital goods industries (Wade, 2003a). This is the case, in particular, when a high import content of exports, including those associated with the activities of TNCs, misleadingly suggests successful industrialization and technological upgrading of domestic production, when, in reality, the domestic value added of these activities is small. Consequently, developing-country policymakers need a pragmatic and strategic perspective on how FDI can fit into their wider development agenda in ways that bring about structural and technological change.

(b) Embedding investment promotion in a wider industrialization strategy

The above arguments indicate that developing countries may be well advised to adopt – in the context of a private-sector-led, market-based economy – a broader industrial strategy, which combines temporary protection with public support that nurtures the innovative capabilities of domestic private enterprises and increases their rate of investment and technological upgrading. Indeed, the fourth argument in favour of proactive national economic policies relates to the pattern of support; it stresses the importance of combining industrial policy with a strategy that takes into account the relationship between trade and growth.

As mentioned earlier, one linkage between exports and growth is through market size. Ex-

porting enlarges the market for domestic production, and thus offers scale economies at the firm level made possible by mass production techniques. It also provides a range of externalities at the industry level, including economies of specialization and agglomeration. Moreover, the nexus between the availability of foreign exchange earnings from expanded exports and the need for foreign exchange to finance imports of capital goods and intermediate inputs – required to build up industrial capacity and competitive strength – reduces technological constraints that would otherwise impede the development process.

But these linkages between trade and growth do not necessarily imply the rapid

opening up of markets. While the experience of successfully industrializing economies points to the importance of strong export performance (*TDR 2003*), cross-country regressions attempting to establish a causal link between import liberalization and growth have failed to deliver robust findings (Rodriguez and Rodrik, 2000). This is partly due to processes of cumulative causation (i.e. the fact that the levels of past and present activities in a sector are a determinant of current patterns of comparative advantage). As argued by Burgess and Venables (2004: 118), in these instances, broad-based "liberalization actually impedes growth by inhibiting infant industries and local accumulation of knowledge."

The difficulty in establishing a robust empirical causal relationship between openness to trade and higher growth is also due to the fact that successfully integrating developing countries have adopted a wide variety of trade policy approaches. These range from partial liberalization through the establishment of export processing zones (as in China and Mauritius) and opening up different sectors at different speeds (as in India), or ambitious broad-based unilateral trade liberalization (as in Chile), to a combination of unilateral trade reforms and an aggressive pursuit of regional and bilateral trade deals (as in Mexico). Moreover, these different trade policies have been combined with various complementary policies. As a result, econometric studies encounter severe methodological problems

It is important to combine industrial policy with a strategy that takes into account the relationship between trade and growth.

related to measurement, reverse causation and omitted variable bias.

While recognizing that there may be several different means of trade integration that can successfully support economic growth, in most historical patterns of successful industrialization, industrial policy has been part of a wider strategy in which the structure of imports and exports progresses through a number of stages. During the earliest stages of economic development, production and exports consist largely of primary commodities, while imports comprise mainly manufactures. Subsequent stages of industrialization generally involve, first, increased production (and reduced imports) of manufactured producer goods, accompanied by increased imports of machinery and equipment. This is followed by a stage of net exports of consumer goods and a reduction in imports of capital goods. Finally, a stage of mature industrialization is reached in which most capital goods are produced at home and basic consumer goods are imported (Kaldor, 1966; Akyüz, 2005). From this perspective, acquiring the ability to competitively produce goods that were previously imported is inherent in rapid economic change, and implementing some temporary protection does not imply adopting an “anti-trade” strategy, because import replacement needs to go hand in hand with policy-supported export development.

While this process follows a clear trajectory of progress towards the efficient production of more technology- and knowledge-intensive products, it does not converge to a predefined point. Rather, choice is involved across a whole range of industries and products in each stage of development, influenced by geography, size, relative factor endowments, the decision of entrepreneurs and policy. The trade policies used to animate this complex process can be characterized as “strategic trade integration” – a more measured approach to liberalization combined with proactive industrial policies and outward orientation (*TDR 1996*).

The precise policy mix will depend on the stage of industrial development and the particular

requirements of different manufacturing industries. Thus the specific product category candidates for public support policies in a country will depend on many factors, and are likely to change during the course of economic development as their skill and technology content gradually increase. During the initial phase of industrial expansion that emphasizes resource-based and labour-intensive manufactures, price signals resulting from traditional comparative advantage and reflecting an economy’s relative abundance of natural resource and low-skilled labour endowments can provide strong investment incentives for entrepreneurs. Since these sectors tend not to be very demanding in terms of technological mastery, the start-up costs of investment designed to discover their cost structure in the domestic economy are likely to be small. As a result, support measures can be of relatively small size, and can be phased out after a short period of learning and expansion in world markets.

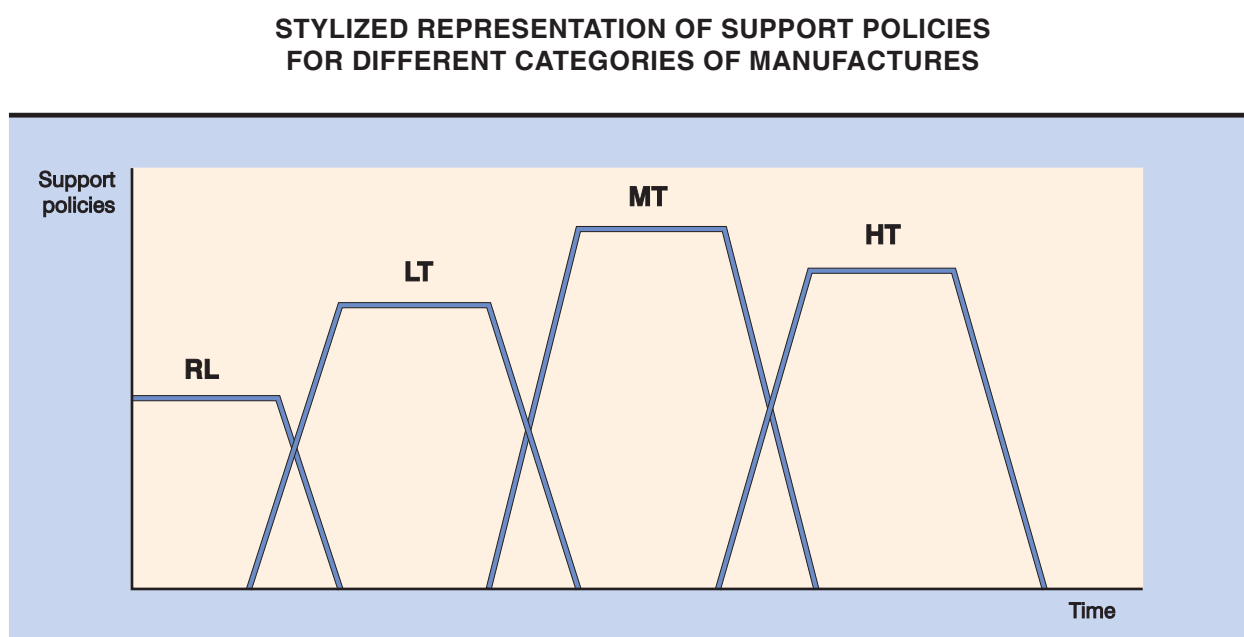
Public support policies have to shift to other product categories in the course of economic development as their skill and technology content gradually increase.

As these basic industrial sectors mature and become internationally competitive, they are likely, over time, to encounter difficulties in competing on international markets as domestic wages rise, low-cost competitors emerge, and sector-specific limits of

learning and productivity growth approach. Hence, more dynamic and skill- and technology-intensive industries need to be promoted, and any existing protection and support to the traditional industries need to be phased out. Industries in the medium-technology-intensive range typically include electrical machinery, basic chemicals, automobiles, consumer electronics and semiconductors – sectors that, historically, have played a key role in successful late-industrializing countries. Further industrial upgrading will allow some industrializing economies to develop production and export activities in high-technology-intensive manufactures, such as aerospace industries and biotechnology.

In all successful industrialization experiences of the twentieth century the gradual process of technological upgrading has followed this general pattern. But it is clear that the sequential devel-

Figure 5.1



Source: Adapted from Akyüz, 2005: 22.

Note: This is a stylized representation and should not be viewed as a precise mapping of relative levels of support measures required for specific product categories in individual countries. For the allocation of individual products to the four categories, see *TDR 2002*, annex to chapter III.

RL: Resource-based and labour-intensive manufactures.

LT: Low-technology-intensive manufactures.

MT: Medium-technology-intensive manufactures.

HT: High-technology-intensive manufactures.

opment of individual industrial sectors will differ across countries, depending on initial conditions, such as geography, economic size and relative factor abundance, as well as on policy choices.

These considerations suggest a structure of support policies as described in a stylized manner in figure 5.1. In this schema, policy support for a specific product category is introduced once the technological barriers to entry are no longer out of reach for domestic manufacturers. It is withdrawn once domestic manufacturers have attained technological mastery, once the increase in domestic wages makes production no longer profitable at an internationally competitive level, and when benefits from economies of scale and learning by doing approach exhaustion. Thus the key feature of the stylized representation in figure 5.1 is that support policies follow a non-linear path; that is, any specific product category is a candidate for public support policies only for a limited period of time.

It is difficult to establish meaningful benchmarks for the size of support policies; these will depend on product-specific and, in particular, country-specific characteristics. Thus the exact positions and slopes of the lines in figure 5.1 should be seen merely as a schematic illustration of a general pattern. In this stylized representation, the relative strength of support policies for each product category depends on the incremental increase in skill and technology content as production moves from one product category to the next, and on a country's cumulative manufacturing experience. Previous manufacturing experience will have allowed a country to benefit from dynamic external economies (e.g. through the creation of technological capacities) and to establish a network of auxiliary manufacturing activities. As a result, it is likely that the level of support required to move from medium- to high-technology-intensive products will be lower than that required to move from traditional industries to medium-technology-intensive products. Moreover, during

the earlier stages of industrialization, which concentrate on resource- and labour-intensive products, there would be no protection against imports of other manufactures¹³ since they will be an important source for satisfying domestic demand, given that there is not yet any significant domestic production of these goods. By the time technology upgrading towards medium-technology-intensive products sets in, support for resource- and labour-intensive products is assumed to have been fully phased out.

The recent economic literature also suggests that support policies may be required for skill- and technology-intensive manufactures to enter global markets. For example, as stated by Gomory and Baumol (2000: xiii), comparative advantages “based on natural resources still exist ... but more dominant today are advantages that can be *acquired*. These can be advantages conferred by being established in an industry and gaining thereby either specialized knowledge or economies of scale or scope” (emphasis in original). Acquired, as opposed to natural, comparative advantage plays a key role in medium- and high-technology-intensive manufactures for which economies of scale or scope and high start-up costs are a key characteristic. To quote again Gomory and Baumol (2000: 6), “much of modern technology requires activities to be carried out on a very large scale in order to be economical and competitive. Consequently entry into one of these industries, against an entrenched competitor, is slow, expensive, and very much an uphill battle if left to free-market forces.”

Thus, while the process of industrial upgrading and strategic trade integration implies outward orientation, it is not a process that is driven by unfettered market forces. Rather, beyond the earliest stages of industrialization, the provision of temporary support to promote increasingly higher skill- and technology-intensive industries helps the economy to progress through a series of overlapping industries, as well as to continuously increase productivity and acquire technological mastery over a wider range of products. Thus, policy choices are crucial to countries’ trading patterns,

because international trade does not lead to one, uniquely determined, best economic outcome based on natural national advantages. On the contrary, “there are *many possible outcomes* that depend on what countries actually choose to do, what capabilities, natural or human-made, they actually develop” (Gomory and Baumol, 2000: 5, emphasis in original).

Two additional observations regarding the stylized representation in figure 5.1 are worth mentioning. First, the scheme can be interpreted as referring not only to industrial sectors but also to specific activities within the same sector. Technological progress and reduced trade costs have given rise to international production-sharing, whereby activities with different factor intensity are carried out at different locations. Thus it may

be possible for a country to start producing in an industrial sector by carrying out labour-intensive functions and undertaking gradual technological upgrading, leading eventually to its being able to carry out the most technologically intensive activities in that particular sector. Second, one reason to combine temporary protection and temporary subsidies is that the maintenance of dynamic scale economies requires both successive innovative investments and learning processes. Temporary subsidies facilitate innovative investments, while temporary protection allows learning processes to unfold. But the potential for learning in each specific activity diminishes with growing experience in that activity, so that learning and innovative investment depend on each other: new innovative investment opens new possibilities for further learning, which in turn provides the basis for the productive use of a new round of innovative investments, and so on (Mayer, 1996).

The question often arises as to whether developing-country governments have the administrative and institutional capability to design and implement well-conceived support policies. For example, Pack and Saggi (2006: 28) point to the alleged severe information constraints of industrial policy: “The range and depth of knowledge that policy makers would have to master to im-

Industrial upgrading implies outward orientation, but it is not a process driven by unfettered market forces.

plement a successful policy is extraordinary. They would have to understand the relevance of, and be accurately informed about, a huge range of complex questions and have the ability to accurately evaluate very subtle differences.” However, the same governments are expected to carry out other complex tasks, such as implementing trade and financial liberalization and privatization. Indeed, many of them are supported in these efforts through capacity-building assistance, for example, for the implementation of WTO agreements.

The maintenance of dynamic scale economies requires both successive innovative investments and learning processes. ...

These implementation-related arguments are based on the view that industrial policy tends to rely on excessively complex methods and targets for a wide range of industrial sectors at the same time. Indeed, import substitution strategies in some countries in Latin America and South Asia relied on a wide-ranging and often overlapping use of import quotas, exchange controls and domestic content rules in addition to industrial tariffs. This often made it difficult to determine how much support an administrative regulation actually provided, which government institution was ultimately responsible for that support, and who benefited, how much and from which measure.

However, as shown by Amsden (1989, 2001) and Wade (1990), compared to the broad-based support in much of Latin America during the 1960s and 1970s, the scope of sectoral support policies and programmes in the post-Second World War cases of successful economic catch-up was rather modest, yet, in aggregate, much more effective. Implementing these kinds of support policies does not require sophisticated calculations, and the associated information requirements do not go beyond those needed

... Temporary subsidies facilitate innovative investments, while temporary protection allows learning processes to unfold.

for routine decision-making by managers in TNCs, such as estimating demand elasticities and the technology requirements for internationally competitive domestic production of particular goods. Most importantly, a key objective of the institutional mechanisms that are intimately linked with

these kinds of support policies is to promote information exchange between the private sector and the government with the aim of identifying the most serious obstacles to diversification and structural change, and determining the kinds of policies most likely to remove these obstacles.

Another argument against proactive trade and industrial policies, which also addresses implementation issues, is that it risks giving rise to rent-seeking; that is, State intervention creates additional “wastes” that may more than offset the ben-

efits it produces, because private agents divert resources to unproductive activities in order to capture rents generated by government intervention. But as in the case of information constraints, institutional mechanisms exist that can substantially reduce the risk of rent-seeking.

Thus, while it is correct to say that successful sectoral support policies require a certain implementation capability on the part of governments, there are various institutional arrangements to address implementation issues, and, more generally, to generate, distribute and revoke economic rents and coordinate investment in a way that meets wider development goals. These institutional arrangements are discussed in chapter VI below. What is important at this point is to recognize that the acceleration of industrial develop-

ment and technological catch-up is not just a question of policy reform; it also requires the strengthening of administrative capacity and institutions.

In sum, the adoption of proactive trade and industrial policies can be anchored firmly in economic theory if the recent revival of arguments

supporting the creative functions of markets, which played a key role in the theoretical debate among early development economists (Meade, 1955; and the authors discussed in Toner, 1999, and Ros, 2000), and the more recent theoretical contributions regarding the creation of new areas

of comparative advantages (Gomory and Baumol, 2000; Puga and Venables, 1996, 1999) are taken into account. From this perspective, proactive trade and industrial policies can enhance the information and coordination mechanisms of markets and help economies achieve technological mastery and international competitiveness in a range of increasingly technologically sophisticated products. The following section addresses key issues relating to how the rationale for proactive trade and industrial policies can be made operational and translated into concrete national economic policies.

2. Principles and types of policies for stimulating the dynamic forces of markets

The formulation of any prescription for development policy must recognize the large differences between developing countries and the need to respect their unique characteristics. Nevertheless, there are some common features that permit consideration of general policy principles for developing countries as a whole, while bearing in mind that such principles need to be translated into specific types of policies adjusted to the particular circumstances of individual countries.

For the implementation of proactive trade and industrial policies there is a range of choices regarding general principles and specific types of policies. General principles refer to the characteristics of economic policy, for example, the balance between private initiative and public policy support, or the extent to which policies apply horizontally across multiple sectors, or selectively at the sectoral or even subsectoral level.¹⁴ Specific types of policies refer to specific measures that operationalize such general principles.

(a) General policy principles

One general principle concerns the balance between private initiatives and public policy support. Latin America's import-substitution strategy of the 1960s and 1970s has sometimes been char-

acterized as "State-led industrialization" as opposed to the so-called "market-led industrialization" strategy pursued in East Asia since the 1960s (World Bank, 1993). However, it has become generally accepted that this characterization is a misinterpretation of the historical facts (see, for example, World Bank, 2005). The main difference between the strategies pursued in these developing regions is that industrial policy has not been as concerted and coherent in Latin America as in East Asia. For example, Bruton (1998: 912) notes that industrial policies under import-substitution regimes often levied tariffs on an ad hoc basis, with the consequence that "a great hodgepodge of rates appeared, with virtually no evidence of any consideration of costs or efficiency." Moreover, the impact of specific trade and industrial policy measures cannot be expected to be proportional to their intensity. The intensity of intervention in Latin America was higher than in East Asia. However, whereas support policies in East Asia were strategically designed and implemented, in Latin America, governments often adopted unsystematic and overlapping measures, making it difficult to establish a clear link between policy measures and targets.

Modern support policies give the lead role to private enterprises, supporting their innovative investments as well as their efforts to get imported technologies to work well under local conditions. This support is complemented by trade policy support designed to achieve international competitiveness in increasingly more technologically sophisticated products.

A second general principle of proactive trade and industrial policies that aim at strengthening the creative forces of markets is that in order to foster diversification and technological upgrading subsidies should be given only to investment that is undertaken to discover the cost function of new goods or new modes of production in the respective economy.¹⁵ This implies that such policies should not be employed as defence mechanisms to support industries where production and employment are threatened the most by foreign competitors that have successfully upgraded their production. For example, this general principle does not support selective trade protection or other selective support measures that many developed countries are still applying in agriculture or in labour-

intensive manufacturing sectors such as the clothing industry.

Neither does this general principle support a large number of contemporary industrial policy measures which focus on attracting FDI and related export-oriented activities.¹⁶ Rodrik (2004: 28) emphasizes the current importance of such measures, stating that “industrial policies [privileging exports and foreign investment] have run rampant during the last two decades.” This widespread support is based on the expectation that FDI inflows will facilitate industrialization and

development in host countries by enabling them to benefit from foreign investors’ production technology, organizational and managerial skills, and marketing know-how, as well as by entering their marketing networks. Moreover, host countries expect to benefit from knowledge spillovers and other favourable externalities of FDI. However, as already mentioned, empirical studies have found very little systematic evidence of technological and other externalities obtained in this manner. Perhaps most importantly, FDI inflows and export promotion may reinforce host countries’ existing comparative advantage based on the relative abundance of natural resources or cheap labour, ignoring the importance of productivity gains and structural transformation that is at the heart of the rationale for proactive trade and industrial policies.

A third general principle is that policy support should not be open-ended. Instead, it should be given only on the basis of clearly established operational and achievable goals, observable criteria for monitoring it and specific time horizons. Regarding the latter, a key question is how one can ensure that the policy support lasts long enough to motivate entrepreneurs to invest, but short enough to force investors to keep improving productivity. Historical experience shows that where supporting policies were of a blanket and virtually permanent character, they failed to

The lead role of private enterprises needs to be complemented by policy support to achieve competitiveness in technologically increasingly sophisticated products.

curb inertia and rent-seeking. In East Asia, by contrast, attaining the policy objectives has been achieved by the establishment of strict performance criteria related to productivity, as verified through performance in international markets.¹⁷

The rapid growth of exports provides the key demand stimulus to ignite a cumulative process of high investment, high profits, high savings and high growth. Moreover, export performance provides a clear, neutral standard to evaluate the performance of firms receiving public policy support. Export data have the additional advantage that they cannot be faked, and that they provide a

relatively clean measure of the relative competitiveness of domestic producers. The establishment of clearly defined and quantifiable performance criteria also makes it easier to identify failures and withdraw any associated support. Finally, by imposing performance standards on investors, the government subjects itself to evaluation by objective criteria. Indeed, the aim of performance requirements is not for the government to pick winners, but to know when there is a loser.

A fourth general principle is to base the determination of policy measures on an intense dialogue between ministries, industry associations and research institutions; that is, on a deliberation process, rather than on autonomous decisions of government entities. The aim of this process is to exchange information on the government’s vision regarding structural change and development strategies, on the views of industry associations regarding business opportunities and investment

constraints, and on research institutions’ assessments of national and international technology developments. The leadership and decision-making power of the individuals who participate in the deliberation process play a fundamental

role in its success. Participants from business associations need to be representative, with sufficient economic and political weight. As for government officials, Wade (2006) points out that the authority for carrying out support policies must

Policy support should not be open-ended.

vest in agencies with demonstrated competence, while the implementing agencies must be monitored closely by and be accountable to a principal with a clear stake in the outcomes and with political authority at the highest level, and they must maintain the capacity to reinvent and refashion themselves as economic conditions change. Institutional issues are addressed in more detail in chapter VI below.

In sum, modern public policies combine private initiatives with public support. This should be embedded in

processes that rely on reciprocal control mechanisms and on information and coordination commitments from both sides. An important objective of such processes is knowledge generation. While these processes are inevitably characterized by trial and error, it is important to minimize the economic costs of mistakes. Yet, attempting to prevent any mistakes risks leading to no innovative investment at all.

(b) Specific types of policies

As already mentioned, how these general principles are translated into specific types of policies depends on a country's particular initial conditions and stage of economic development. Also, they should be the outcome of a deliberation process to determine which public support policies are likely to have the greatest impact. Nonetheless, a brief discussion of a number of possible types of policies may be useful for illustrative purposes.¹⁸

Fiscal incentives, direct public credit and subsidies are measures that lower the cost of innovative investment. They can thus reduce uncertainty among potential investors as to the profitability of innovative investment that can be easily emulated. Fiscal incentives may take the form of tax deductions and tax credits for particular types of innovative activities or the acquisition of national or imported, embodied or disembodied, technology related to innovation. Direct public credit may take the form of loans by development banks for innovative investment and the acquisi-

tion of technology, and be granted with preferential interest rates and favourable repayment schedules. Subsidies may be allocated to entrepreneurs by competition according to their projects' potential to bring about diversification and technological upgrading as well as knowledge spillovers or the creation of forward and backward linkages.

The aim is not to pick winners, but to know when there is a loser.

Venture capital organizations can play an important role in providing risk capital, since obtaining loan finance is particularly difficult for innovative investment, given that

the profitability of the innovation and its potential market are not yet known. But in addition to uncertainties and asymmetric information regarding the profitability of a project and the potential opportunistic behaviour of entrepreneurs, venture capital organizations themselves often face financing constraints. The resulting desire for zero default may lead to underfunding. In these circumstances, development banks and other public actors that are motivated by social returns and externalities, rather than private profit, can play a crucial role. In particular, when domestic sources of investment finance are constrained, credits from development banks can also be an alternative to FDI for financing investment.

Undertaking research and development (R&D) activities in public research institutes constitutes a third specific type of public policy. A major problem, however, is that the resources devoted by the government to R&D may be substantial in fiscal terms, because of the proportion of the budget they absorb, yet insufficient to cover a broad science and technology infrastructure and to provide a meaningful level of subsidies for R&D. These budgetary constraints are exacerbated where the provision of funds is more horizontal and less targeted. One solution could be to deploy a scheme allowing for the partial recovery of public R&D outlays through royalty payments by the private users of public research output commensurate with their profits. Another possibility could be to introduce a system of allocating subsidies for R&D through competitions designed in conformity with the general innovation promotion strategy. Given the current income boom from natural-resource exports in many developing countries, a further

possibility could be to earmark income from State companies, and royalties or tax income for R&D in research institutions designed to generate innovations either for product diversification, research into new technologies, or capacity building among suppliers.

Technology development can also be supported by the creation of science and technology parks that provide incentives (for example, in the form of tax breaks, subsidized credits, or permission to exceed normal debt-equity ratios) for the establishment of firms that identify, transfer, diffuse and absorb foreign industrial technologies and subsequently undertake innovation. Such incentives may be complemented by offering attractive salaries in order, for example, to encourage the return migration of skilled nationals. Developing-country governments could also consider paying or subsidizing royalty payments, and support the application of technology by negotiating on behalf of domestic firms that are able to apply the technology.

In addition to the use of these traditional instruments, the potential of strategic standard setting for technology development has recently gained attention. In the economics of technological change, formal standardization closely interacts with international property rights protection (UNIDO, 2005). The timing and scope of technical standard setting plays an important role in the diffusion of patents and the related new products and technologies. Thus it contributes to channeling collective efforts towards technological progress. On the other hand, standard setting can be a mode of selection for the use of product and process innovations that are protected by intellectual property rights and thus favour one set of innovative firms over another. Consequently, strategic setting of compatibility standards can be a means of stimulating domestic technology research efforts and the creation of non-proprietary technology. Successful pursuance of these goals can increase the ability to exercise leverage in negotiations with overseas patent holders and, as a long-term objective, help to develop domestic proprietary technology. These issues apply mostly to high-technology-related product markets, such as, recently, in the information and communications technology industries, which have seen a rapid succession of patented new technologies in an environment of multiple standards.¹⁹

The vast majority of developing-country markets are likely to be too small, with too little purchasing power to impose technology standards that favour the production of domestic firms. This is because foreign firms producing in conformity with existing internationally applied technology standards serve much larger user bases and can realize economies of scale and learning effects. Inappropriate standard setting by developing countries may therefore stifle technology transfer to their economies. However, standards are often shaped by market needs and users' preferences, rather than simply by technology requirements. If a developing country, or a group of developing countries, can provide a large enough user base with promising market potential, it may rival an existing technology that enjoys property rights protection. Given its large domestic market, its large pool of educated researchers and experienced returnees from overseas, and its substantial expenditure in high-tech research, China (either on its own or in concert with other Asian economies) appears to have acquired such a position (Ernst, 2004; Linden, 2004), but this is an unusual case among developing countries.

Governments need to have a clear vision for their economy's future technology development if they are to benefit from the support to technology upgrading and the development of proprietary knowledge that strategic standard setting can provide. Only when promising new technologies are identified at their very early stages can standardization influence basic research activities and subsequent pilot production. Moreover, standard setting should specify the performance of components, rather than their design, in order to avoid conflicts with patents protecting those components. Governments should also offer attractive licensing schemes to provide incentives for innovative, R&D-intensive companies to participate in standardization processes (UNIDO, 2005).

Specific policy measures related to strategic integration include selective liberalization through differentiated intervention, granting duty drawbacks and establishing temporary admission regimes for selected imports (e.g. capital equipment and intermediate inputs), and the creation of export processing zones that offer preferential tax and customs treatment. Such measures have been successfully employed for industrial development in

a wide range of developing countries, and have often been complemented by selective treatment of FDI inflows through, for example, restrictions on FDI entry, ownership ceilings, barriers to hostile takeovers, or the imposition of performance requirements.

As already mentioned, the above discussion of specific policy measures is intended to illus-

trate some of the options available to developing-country policymakers; it is not intended to provide an exhaustive list. In addition, it is doubtful whether any of these policy instruments can be used successfully in isolation. Rather, policymakers will need to have a vision for the economic development of their country in order to tailor these instruments to local conditions and link them with other policies in support of development.

C. Restrictions imposed by international agreements on policy autonomy: an inventory

Unlike monetary and financial multilateral arrangements, discussed in chapter IV, the multilateral trading regime is organized around a set of negotiated, binding and enforceable rules and commitments. Negotiated under the aegis of the GATT/WTO, these rules provide the basis for regulating international trade. The core principles of this regime are reciprocity and non-discrimination, as reflected in the most-favoured nation (MFN) rule and the commitment to national treatment (i.e. equal treatment of domestic and foreign goods and enterprises in domestic markets). Leaving aside a number of general exceptions,²⁰ as well as exemptions that specifically apply to developing countries (see below), the multilateral trading regime is thus intended to provide what is often called a “level playing field”, by extending the same legal rights and obligations to all member States of the WTO.

Since the mid-1980s, rapid and broad-based trade liberalization has been a central condition attached to loans from multilateral lending organizations, as well as to aid flows and debt relief from major developed-country donors. But the current

wide scope of multilateral governance in the area of trade is associated with the Uruguay Round Agreements (URAs) and the establishment of the WTO in 1995. The Uruguay Round (UR) brought about industrial tariff reductions, negotiated on a request-and-offer basis, rather than through the use of a formula approach based on a percentage reduction in average tariffs, as well as through “zero-for-zero” reductions for some product groups, including under the Information Technology Agreement.²¹ Moreover, the UR resulted in a new set of agreements on trade in goods – an extension of the General Agreement on Tariffs and Trade (GATT) which the WTO absorbed – as well as additional agreements on so-called “trade-related” activities. These include the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS), the General Agreement on Trade in Services (GATS) and the Agreement on Trade-related Investment Measures (TRIMs), as well as the Agreement on Subsidies and Countervailing Measures (SCM). It also established a unified and binding dispute settlement mechanism. The Agreements were adopted as a so-called “single undertaking” – countries had to accept the package of

Agreements in its entirety. The resulting expansion of the scope of the multilateral trading regime means that key aspects of countries' regulatory regimes that affect how national economies operate have become subject to multilateral disciplines.

The multilateral trade regime has accorded exemptions to developing countries. In negotiations, they are allowed to grant less-than-full reciprocity under Article XXVIII bis of the GATT, adopted in 1958. Moreover, the so-called "enabling clause", adopted in 1979 and generally known as special and differential treatment (SDT), accords developing countries exemptions to the MFN rule, by allowing them to benefit from more favourable market access conditions. However, the UR brought a change in perspective on SDT. Prior to the Round, exemptions from the MFN rule and the principle of reciprocity were seen as a recognition by the international community that in order to provide some kind of parity between developed and developing countries, developed countries needed to give developing countries access to their markets without requiring them to open up their own markets on a reciprocal basis. These exemptions also gave developing countries some possibilities to pursue legally their own nationally determined development policies. Following the UR, SDT has basically come to mean that developing countries, and especially the least developed among them, are accorded longer transition periods for full implementation of all rules and commitments in the WTO.

Especially since the early 1990s, many developing countries have increasingly complemented multilateral trade negotiations in the WTO with regional or bilateral agreements, including with developed countries and regions, in particular the United States and the EU. Regional or bilateral agreements with large developed countries offer substantial benefits to developing-country members as they usu-

ally provide greater market access than multilateral agreements, and often include a wider range of products than traditional trade preference schemes such as the Generalized System of Preferences (GSP). Moreover, their adoption is generally expected to lead to additional FDI. On the other hand, greater integration often involves additional steps towards regulatory disciplines, and thus further constrains the *de jure* ability of developing countries to adopt appropriate national regulatory and development policies, particularly with regard to FDI and intellectual property rights.

The constellation of these rules and commitments, as well as the associated exceptions and exemptions, constitute a complex legal structure that offers scope for different interpretations and practices. Against this background, this section concentrates on the often voiced concern that, since the rules and commitments of the international trading regime restrict the *de jure* ability of developing nations to adopt national development policy, they limit the possibilities for governments to deploy policies in support of further productive and technological development. More specifically, there is concern that these rules and commitments could deny the use of the very policy measures that were instrumental in the development of today's mature and late industrializers. To the extent that this is the case they thus reduce

the flexibility of national governments to pursue their development objectives. Another concern is that these rules and commitments, which in *legal* terms are equally binding for all countries, in *economic* terms might impose more binding constraints on developing, compared to developed, countries because of the differences in their respective structural features and levels of industrial development. The discussion in this section concentrates on rules and commitments associated with the TRIMs, SCM and TRIPS Agreements and tariff regulations.

The rules and commitments of the international trading regime restrict the *de jure* ability of developing nations to adopt national development policy.

Rules and commitments, which in *legal* terms are equally binding for all countries, in *economic* terms might impose more binding constraints on developing countries.

1. *The Agreement on Trade-related Investment Measures (TRIMs)*

One important area that the URAs have brought under multilateral jurisdiction involves a range of investment measures that have been used by many developing and some developed countries as part of broad strategies aimed at nurturing domestic industry and achieving technology transfer. The TRIMs Agreement is designed to clarify the relationship between a country's investment policy and the core rules of the multilateral trading regime by identifying measures considered incompatible with national treatment and forbidding the application of quantitative restrictions that link imports to export performance (e.g. trade or foreign exchange restrictions) or export restrictions based on domestic sales.²²

The Agreement does not define "trade-related investment measures", nor does it provide objective criteria for identifying them. The appendix to the Agreement gives guidance to governments to decide which of their measures violate the Agreement by providing an "illustrative list" of prohibited regulations. Countries are required to notify the WTO of such measures and eliminate them following the termination of transition periods.²³

The imposition of performance requirements on foreign investors is a key regulatory measure that has been affected by the TRIMs Agreement. Many governments, in developing and developed countries alike, have used performance requirements, which generally aim to increase the linkages between foreign investors and local manufacturers. One commonly employed performance requirement concerns local content regulations, which are intended to increase domestic value added, thereby generating additional national income and employment, as well as encouraging the transfer of technology. Other frequently used performance requirements relate to export performance or trade balancing, which require firms to match their use of imported inputs in their export products with an equal share of domestically

produced inputs in order to integrate the affiliates in the host countries into their global/regional production networks. Foreign exchange balancing rules, which require foreign investors to meet foreign exchange needs for imports through exports, rather than by converting local earnings into foreign exchange, have also often been used.

Chang (2002), for example, shows that today's developed countries extensively employed performance requirements to maximize domestic value added. A number of developed countries continued the use of performance requirements in the early post-Second World War period (WTO and UNCTAD, 2002). Local content requirements were also a widely used instrument that strengthened backward integration and increased domestic value added, in particular in the automobile industry.

Developed countries have increasingly replaced explicit performance requirements with trade policy measures that achieve essentially the same objectives as performance requirements but are consistent with WTO rules (Kumar, 2005: 185). One example is screwdriver regulations (i.e. regulations governing imports by trading partners of parts and components), which have been used by the EU (Safarian, 2003).

While developed countries extensively employed performance requirements in one form or another at earlier stages of their industrial development, developing countries have only recently started to use these policy tools to foster their industrialization and technological upgrading. This is closely related to the increasing importance of international production networks, where developing-country exports often include a high import content of technology-intensive parts and components, while domestic value added mostly consists of wages paid for simple assembly activities. In this context, domestic content requirements have been used to increase technology transfer to developing-country producers and to foster the use of domestically produced parts and components. Empirical evidence on the effectiveness of such measures suggests that well-conceived performance requirements "that have clear objectives and

TRIMs have affected the imposition of performance requirements on foreign investors.

are effectively enforced are not only able to meet their objectives, but may also bring significant favourable externalities to the host countries” (Kumar, 2005: 193). However, developed countries have brought a number of cases against developing countries before the WTO dispute settlement mechanism, especially in the automotive sector, invoking the rules and commitments of the TRIMs Agreement.²⁴

The TRIMs Agreement does not restrict the provision of incentives to attract FDI, even though the economic effect of such incentives may be similar to the provision of subsidies, and even though such incentives may affect international investment and trade flows as much as domestic content requirements. This is the case, in particular, for activities in international production networks where TNCs are known to practice trade-restricting policies with respect to their foreign affiliates (Kumar, 2005: 194).

Regional and bilateral investment agreements can be considerably more restrictive than TRIMs because they address all measures regulating FDI, and not only those that are considered “trade related”. Moreover, many such agreements allow firms, rather than just governments, to bring cases to arbitration. Thus they go much further towards regulatory harmonization. By contrast, developing countries’ bilateral and regional trade agreements with developed countries play a peculiar role in the area of TRIMs, as they weaken rather than reinforce multilateral commitments. This is because, through the rules of origin, local content requirements have also, by definition, been included in preferential trade agreements between developing countries and large importing countries/regions, such as the United States and the EU. Given that developed-country parties to such trade agreements can tailor local content requirements to their needs, these measures have not been brought before the dispute settlement mechanism of the WTO. Di Caprio and Amsden (2004: 23) therefore argue that preferential trade agreements present developing-country WTO “members with an escape hatch from limitations on that particular aspect of TRIMs.”

It also needs to be recognized that FDI-regulating measures that do not violate national treatment or impose quantitative restrictions con-

tinue to be consistent with WTO rules. For example, governments can impose technology transfer requirements which specify that a foreign company conduct a certain proportion or type of its research and development activities locally and transfer or license a specified technology to domestic firms. Or a licence could be granted for the establishment of an assembly plant only if the foreign investor simultaneously establishes a plant that produces required intermediate inputs. Governments can also require that domestic investors retain a proportion of a firm’s equity or that a specific percentage of their technology personnel be recruited domestically (Shadlen, 2005a: 759).²⁵ In reality, however, only countries with substantial leverage over foreign investors are able to use such measures.

2. The Agreement on Subsidies and Countervailing Measures (SCM)

The SCM represents another outcome of the UR that impinges directly on national rule-making authority. It addresses multilateral disciplines for regulating the provision of subsidies, as well as the use of countervailing measures to offset injury to an industry in the importing country caused by imports that are subsidized in the country of origin. The SCM covers mainly the industrial sector; special rules apply to agriculture, and the General Agreement on Trade in Services (GATS) has no rules on subsidies (although the current WTO-negotiations are addressing this issue).

The SCM defines a subsidy as a financial contribution made by a government or any public body within the territory of a WTO member that confers a benefit. Such benefits can result from direct payments, foregone revenues and rights, government guarantees and equity participation, the provision of goods and services below market value, or from differential application of certain rules to different sectors and activities, such as bank credits directed to specific sectors and activities with preferential conditions.

The Agreement represents a significant tightening of disciplines compared with the pre-UR

regime, which did not include comprehensive rules and regulations on the use of subsidies, and allowed developing countries greater leeway to use subsidies for export promotion and import substitution. It broadens the scope of regulations relating to subsidies as it binds WTO members²⁶ (except for the poorest among them, as discussed below) and extends to measures of subnational governments, State-owned enterprises and private entities that carry out functions that would normally be vested in the government.

As the Agreement only applies to specific subsidies, that is, those targeted at an enterprise, industry, or group of enterprises or industries, it affects the selective function of policy. Non-specific subsidies are not affected because they are presumed not to distort the allocation of domestic resources; these include subsidies for the provision of physical and social infrastructure, or subsidies resulting from low energy taxes that benefit all enterprises, as well as subsidies earmarked for specific enterprises according to their size or similar criteria. The Agreement prohibits subsidies that are conditional on export performance or on the use of domestically produced goods (but countries with a per capita income below \$1,000 are exempted from this prohibition) and makes specific subsidies “actionable”, which means that they are subject to challenge through multilateral dispute settlement or countervailing action. While this distinction between specific and non-specific subsidies is straightforward in legal terms, in practice it is not always easy to differentiate (Anderson, 2002). This may leave some room for developing countries to design subsidies that help import-competing or exporting firms without contravening WTO disciplines.

Article 8 of the original SCM provision defined certain specific subsidies as non-actionable. Subsidies extended to research fell in this category, as did subsidies in the pursuit of regional or environmental objectives.²⁷ The permitted sub-

The SCM Agreement affects the selective function of policy.

Subsidies impose a cost on public budgets, which developed countries can afford more easily than developing countries.

sidies for R&D included the financing of venture capital funds and the provision to the private sector of technologies and innovations developed in government research laboratories. Also included in this category was public procurement policy in support of the proliferation of domestically defined standards for particular technologies. Moreover, in order to support a shift in economic activity to new products or the use of new technologies, activities could be subsidized as long as they were in the pre-competitive phase (i.e. before they resulted in the production of goods that were exported or subject to significant import competition).

It is, however, important to note that the provision that classified these subsidies as non-actionable came up for review in 2000, when no agreement over its extension could be reached. Thus these subsidies have now become actionable.

The Doha Declaration revisited this issue along with the proposal of some countries to allow certain subsidies for development. More specifically, it stated that the Ministerial Conference “takes note of the proposal to treat measures implemented by developing countries with a view to achieving legitimate development goals, such as regional growth, technology research and development funding, production diversification and development and implementation of environmentally sound methods of production as non-actionable subsidies, and agrees that this issue be addressed ... [as an outstanding implementation issue]. During the course of the negotiations, Members are urged to exercise due restraint with respect to challenging such measures” (WTO, 2001: 6). Meanwhile, however, the issue of Article 8 subsidies seems to have been eclipsed by negotiations on other issues.

According to Aguayo Ayala and Gallagher (2005), this call for restraint has been respected, and developed and developing countries alike continue to use such subsidies under a tacit agreement not

to challenge them under the dispute settlement mechanism. To the extent that this is the case, the SCM agreement is a good illustration of how WTO rules and commitments that are equally binding, legally, impose more binding constraints on developing countries economically. Firstly, subsidies impose a cost on public budgets, which developed countries can afford more easily than developing countries. For example, Aguayo Ayala and Gallagher (2005: 19) estimate that in 2003 the EU-15 spent a total of about 50 billion euros on Article-8-type subsidies, mainly consisting of State aid and Structural Fund payments. This corresponds to about 25 per cent of developing countries' total annual gross domestic expenditure on R&D (UNESCO, 2005).

Secondly, Article-8-type subsidies are of concern primarily to developed countries in their quest to develop high-tech capabilities and technological innovations. They differ from subsidies conditional on export performance or on the use of domestically produced goods, which were frequently used by the late industrializers to foster industrialization and technological catch-up. Indeed, Article-8-type subsidies can be a key device for developed countries in their shift away from the provision of basic funding for scientific R&D towards a strategic approach that establishes and targets research priorities in frontier sectors such as information and communications technology, biotechnology and nanotechnology, alongside new challenges arising in more traditional sectors, such as health care, national defence and the environment. These are areas that many developed-country policymakers have come to consider as crucial for economic growth and national prosperity (see section D below).

Probably the most serious drawback of the SCM Agreement for development is that it prohibits making subsidies conditional on export performance. This has been an important instrument in East Asia's reciprocal control mechanisms, which have often been identified as key to the greater success of industrial policy in that region compared to Latin America (Evans, 1995). Thus the SCM Agreement withdraws a major monitoring standard that outward-oriented sectoral strategies in East Asia used successfully to ensure that support was given only to those enterprises that were able to compete in international markets. It

is possible to establish other performance standards under a reciprocal control mechanism (such as the percentage of technology personnel employed, the percentage of sales contributed by new products and the allocation of retained earnings). But none of these alternatives enable a performance-based incentive policy that ensures international competitiveness and minimizes the risk of abuse and rent-seeking.

These effective asymmetries cast some doubt on arguments, such as made by Amsden (1999), that the bark of WTO law is worse than its bite. According to this argument the SCM Agreement formally leaves open the possibility of supporting industrial upgrading, as developing countries maintain the ability to provide "boundless" subsidies for science and technology and the development of human capital. The main problem, the argument goes, is that developing countries have failed to take advantage of the major types of non-actionable subsidies. It is probably true that subsidies is an area where, in principle, the main challenge for many developing countries is to use the existing flexibilities of the multilateral regulations through innovative policy measures. However, in practice, budgetary constraints may prevent some developing countries from using subsidies as part of their industrial policies.

3. *The Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS)*

The TRIPS agreement establishes global mandatory minimum standards for the granting and protection of intellectual property rights in several areas, particularly copyrights and patents.²⁸ It also provides a dispute resolution and enforcement mechanism. Countries are free to decide how to implement these provisions in accordance with their own legal and institutional systems. Application of TRIPS in developing countries (except the LDCs²⁹) has been mandatory since 2000. According to Article 7, protection and enforcement of these rights must contribute to the promotion of technological innovation and the transfer and diffusion of technological knowledge in order to improve social and economic welfare. They must

also ensure a balance between the rights and obligations of the parties.

Many believe TRIPS to be the most controversial of URAs because of its potential to restrict access of developing countries to technology, knowledge and medicines. The importance of the Agreement for industrial development lies in the fact that the procurement of proprietary knowledge has been among the key determinants of both early and late industrialization. The history of intellectual property rights protection shows that countries with low levels of technological capacity have generally used weak standards until they reached a level of development at which their industries could benefit from intellectual property rights protection. Chang (2002) points out that many of the now developed countries did not adopt intellectual property rights legislation or strict intellectual property rights standards when they were in the process of economic catch-up.

Prior to their implementation of the TRIPS agreement, developing countries' patent regimes typically included instruments to restrict the private rights of (largely foreign) patent holders (Amsden, 2001). Such instruments aimed to create more opportunities for local firms to access foreign innovations, thereby encouraging learning and technological progress via imitation. This enabled these countries to move beyond a critical threshold level for domestic technological skills and promote national firms that were eventually able to engage in export activities. Knowledge procurement occurred in different ways, but reverse engineering from imported goods played an important role. This was facilitated by relatively weak enforcement of intellectual property protection, particularly of patents.

The TRIPS Agreement severely restricts reverse engineering and other forms of imitative innovation since it upholds the private rights of pat-

ent holders. As a result, it tends to limit access of developing countries to proprietary knowledge. More precisely, TRIPS has introduced a number of limitations on developing countries in designing their patent regimes. It broadens the scope of patents by requiring countries to extend patent protection to all fields of technology, while previously, countries could deny patents to certain types of goods or inventions in order to encourage reverse engineering; it extends the duration of patent protection uniformly to 20 years, while previously, countries could offer patents of short duration; it reduces the scope of exceptions, which are limited to very specific cases; and it limits governments' ability to regulate patent holders, while previously, countries could make the granting of patents that provided monopoly benefits conditional upon local production or licensing and on the transfer of technology to local users (Shadlen, 2005a).³⁰

The kinds of limitations introduced by TRIPS implies an asymmetry that favours the producers and holders of protected intellectual property – mainly in developed countries – at the expense of those trying to gain access to protected intellectual content, mainly in developing countries. Moreover, the Agreement requires developing countries to expand and enhance their intellectual property regimes, while providing very little to effectively facilitate and promote their access to technology. Indeed, the provisions in the Agreement are specific, binding and actionable with regard to the protection of intellectual property, and non-compliance with these provisions can be challenged under the WTO's dispute settlement mechanism. By contrast, provisions regarding technology transfer and technical cooperation, which are of importance mainly for developing countries are of a "best endeavour" nature and vaguely worded, making them difficult to enforce. As a result, non-compliance with these provisions is difficult to prove and, on a practical level, subject to no penalty.

TRIPS implies an asymmetry that favours the producers and holders of protected intellectual property, mainly in developed countries ...

... at the expense of those trying to gain access to protected intellectual content, mainly in developing countries.

Another expression of this asymmetry of favouring incentives for the creation of patentable knowledge at the expense of the dissemination and use of such knowledge is the implied additional cost – in the form of royalties – to developing countries of acquiring useful technology. The potential economic costs of the TRIPS Agreement for developing countries to acquire patentable knowledge may be illustrated by the fact that in 2001 only five developed countries (France, Germany, Japan, the United Kingdom and the United States) accounted for 83.6 per cent of the total patent applications filed in the EU, Japan and the United States. And 82 per cent of scientific articles worldwide were published in the OECD area, nearly two thirds of which were from G-7 countries (OECD, 2005: 9 and 40). The surplus in the OECD-countries' technology balance increased from \$9.6 billion in 1993 to \$30.4 billion in 2003 (OECD, 2005: 203). Moreover, technology transfer is increasingly taking place within multinational firms, which reduces the importance of contractual and non-equity modes of technology transfer and makes it increasingly difficult for developing countries to obtain useful technology on a commercial basis as envisaged by TRIPS.

Regional and bilateral trade agreements with developed countries often foreclose part of the autonomy left open to developing countries by TRIPS.

While acknowledging that TRIPS would cause a significant revenue transfer from developing to developed countries, it has sometimes been argued that its application would bring about higher returns to knowledge generation, which in turn will spur knowledge diffusion to developing countries, including through increased flows of FDI. However, there is no persuasive evidence for this (Correa, 2000). A further economic handicap is that patentable research is increasingly carried out in private entities, with the result that most research activities are driven by their expected economic pay-off. Given the limited financial resources of most developing-country firms, there is a bias in the research agenda against those areas that are primarily of importance to developing countries.

Even though TRIPS has placed significant constraints on countries' autonomy in intellectual

property matters, it has left room for variation across countries. For example, developing countries can impose stringent rules on patent disclosure (i.e. disclosure of the intervention that is sufficiently clear and comprehensive for a skilled person in the related activity to reproduce the inventive step), and subsequently grant narrow patents, i.e. patents that protect a very limited range of variations and thus offer no – or little – protection for variations that are not explicitly claimed. Or they can liberally grant improvement patents to local actors and protect their “minor” innovations, which often refer to incremental innovations that build on more fundamental discoveries and are thus crucial for tailoring imported technologies to local conditions. Such flexibilities allow local actors to “invent around” patents without governments risking litigation for infringement. Kumar (2003) argues that the patent regime in

place in Japan after the Second World War until the 1980s provided for the granting of narrow patents, and that this regime served as a model for the late industrializers in Asia. Another example is flexible use of compulsory licences that allow a government to authorize itself or third parties to use a patent without the permission of the patent holder. Compulsory licences historically

have been an important component of countries' patent regimes, and they are granted in a wide range of situations (UNCTAD and ICTSD, 2005). The TRIPS Agreement continues to leave countries with a significant degree of autonomy in this regard, as it grants countries “considerable leeway to impose non-voluntary licensing of patented interventions for any legitimate purpose and without undue constraints” (Reichman and Hasenzahl, 2003: 2).

However, many developing countries have engaged in regional and bilateral trade agreements with developed countries that often foreclose part of the autonomy left open to developing countries by TRIPS. For example, the United States – and to some extent the EU (Shadlen, 2005b) – uses regional arrangements to introduce legislation and practices that go beyond the levels of intellectual property protection under TRIPS (USTR, 2004).³¹

One of the greater obligations imposed by many regional and bilateral trade agreements concerns the reduced ability of governments to use compulsory licensing as a policy instrument (see, for example, Maskus, 1997). In general, regional and bilateral trade agreements do not allow developing governments to issue compulsory licences except during declared states of national emergency, and even then they require increased levels of prior negotiations with the patent holder; moreover, where such licences are granted, the agreements substantially restrict the rights of the licensee (Shadlen, 2005a).³²

International harmonization of substantive and enforcement rules on intellectual property rights has been further pursued at the World Intellectual Property Organization (WIPO), especially in the ongoing negotiations on a Substantive Patent Law Treaty (SPLT). Discussions on the work programme of the SPLT so far have not led to an agreement as to whether aspects such as prior art, grace period, novelty and inventive step should be included, as suggested by developed countries. Developing countries fear that adoption of the developed countries' proposal would eventually result in the further harmonization of national patent laws in areas of patent law that have so far been left to the discretion of national legislation. This would risk further reducing developing countries' flexibilities to decide on the stringency of requirements for disclosure and the standards for granting patents, because it would eliminate countries' ability to determine what an invention is and how the patentability standards are set (see, for example, Correa, 2005).

4. Industrial tariffs

The use of industrial tariffs is in many respects not the best tool to promote diversification and technological upgrading. For a number of developing countries, domestic markets are too small to sustain the scale needed for production to be internationally competitive. Hence, tariffs may end up protecting infant industries that are unable to come anywhere near world market price and quality combinations. Industrial production needs to have an export component to reach an

efficient scale, and protection alone may well discourage efforts to export. Also, as noted earlier, protection can easily be abused, in the sense of being unrelated to efforts to improve productivity: once granted, firms will lobby vigorously to maintain the protection. Therefore, industrial tariffs need to be used with great caution.

In spite of the numerous drawbacks of tariff use, developing-country policymakers may be hesitant to abandon industrial tariffs, mainly for three reasons. First, tariffs remain an important source of fiscal revenue for many developing countries. According to Kowalski (2005), should tariffs be completely abolished, many low-income countries would need to replace, on average, around 18 per cent (and in some cases over 50 per cent) of their tax revenues with sources other than import duty (see also Laird, Vanzetti and Fernandez de Cordoba, 2006: 7). While the importance of trade taxes in total revenue collection generally declines with economic development, in upper-middle-income countries import duties accounted, on average, for about 12 per cent of total revenue in the late 1990s. Improved tax collection and broadening of the tax base can reduce the revenue shortfall resulting from declining taxes. However, many developing countries have already substantially lowered the share of import duties in their total revenues over the past two decades,³³ while low-income countries in particular have been unable to recover the revenues lost from trade liberalization (Baunsgaard and Keen, 2005). As a result, they are likely to experience difficulty in finding supplementary sources of revenue that further tariff reductions would necessitate. Moreover, the decline in government revenue resulting from a reduction in import duties may lead to an increase in public deficits or a decline in public investment. But public investment has a crucial impact on economic development because it seeks to improve education, health and other social indicators. And public investment is often complementary to private investment, so that a decline in public investment below a critical level can seriously compromise an economy's development prospects (*TDR 2003*). On the other hand, tariff cuts could lead to a substantial increase in imports, with lower tariff rates levied on a higher volume of imports; in principle, this could maintain the value of import levies, but this is unlikely to occur because of balance-of-payments constraints.

Second, the provision of subsidies, rather than broad-based protection, could provide the incentives required for innovative investment, as discussed above. However, as already mentioned, the SCM Agreement has highly circumscribed the use of subsidies in areas where, formerly, both the mature and late industrializers of today actively used them during their economic catch-up. Moreover, as mentioned earlier, tight budgetary constraints limit developing countries' ability to use subsidies.

Third, and perhaps most importantly, the economic impact of changes in industrial tariffs is often assessed in terms of welfare gains or losses resulting from the reallocation of existing resources. From this perspective, a trade policy aimed at low and uniform tariffs across industrial sectors with full binding coverage will maximize a country's welfare benefits.³⁴ But such an assessment pays little attention to the implications of tariff cuts and harmonization for capital accumulation, technological change and productivity growth that underlie industrialization and economic development.

It may be useful to recall that industrial tariffs were the main element of protection that today's developed countries used during their industrial development. As illustrated in table 5.1 and analysed in some detail by Bairoch (1993), the United States maintained average industrial tariffs at around 40 per cent, and never below 25 per cent except for short periods, throughout most of the period between 1820 and 1945. Regarding the United Kingdom, Bairoch (1993: 46) notes that prior to its substantial move towards free trade with the repeal of the Corn Laws in 1846, Britain had achieved its technological lead "behind high and long-lasting tariff barriers". He also notes that the country had actively used infant industry protection, export subsidies, import tariff rebates on inputs used in manufacturing for export, and export quality control. Table 5.1 also shows that at the beginning of economic catch-up in West European countries

following the Second World War, the level of tariffs on manufactured products was also fairly high (see also, Chang, 2002).

Comparing tariff levels at similar levels of per capita income (measured at purchasing power parity) shows that average tariffs in today's developed countries were much higher when they had similar per capita income levels as today's developing countries (see also Akyüz, 2005). In this sense, tariff policy in today's developing countries appears to be relatively liberal. Towards the end of the nineteenth century, when the United States had a

per capita income similar to today's weighted average level in developing countries (i.e. about \$3,700 in 1990 dollars measured in purchasing power parity), the level of its weighted average applied tariffs on manufactured goods was close to 50 per cent, compared to 6.5 per cent in developing countries today (tables 5.1 and 5.2). In 1950, when the United States had evolved as the world's technological leader with a per capita income more than double the average level in today's developing countries, the level of its weighted applied tariffs on manufactured products still exceeded the current level in today's developing countries. When the United States had the same level of per capita income as the Republic of Korea today, its weighted applied tariffs were higher (7.0 per cent compared to 4.5 per cent), and when it had the same per capita income level as Brazil, China or

India today, its tariffs were several times higher. This is also true, to varying degrees, for the European countries in table 5.1 (i.e. Germany, France and the United Kingdom).

These comparisons of the relative levels of tariff protection between the developed

countries during their catch-up phases and today's developing countries do not tell the whole story. Developed countries also benefited from the additional protection of natural trade barriers in the form of transportation and information costs, which were higher in the past than they are today. More importantly, the productivity gap between

A flexible tariff policy consists of maintaining bound tariffs at a higher level and ...

... modulating applied tariffs on particular industrial sectors around a lower average level.

Table 5.1

TARIFFS ON MANUFACTURED PRODUCTS AND PER CAPITA INCOME IN SELECTED DEVELOPED COUNTRIES, 1820–1980

Country	1820 ^a	1875 ^b	1913	1950	1980
Tariffs, weighted averages (Per cent)					
United States	35–45	40–50	44.0	14.0	7.0
United Kingdom	45–55	0	0.0	23.0	8.3
Germany	8–12 ^c	4–6	13.0	26.0	8.3
France	.. ^d	12–15	20.0	18.0	8.3
Per capita income (1990 international dollars)					
United States	1 257	2 445	5 301	9 561	18 577
United Kingdom	1 707	3 191	4 921	6 907	12 928
Germany	1 058	1 821	3 648	3 881	14 113
France	1 230	1 876	3 485	5 270	15 103

Source: Tariff data from Bairoch, 1993: 40; income data from Maddison, 2001: 264, 276–279.

a Very approximate rates. Range of averages, not extremes.

b Per capita income data for 1870.

c Prussia.

d Numerous and large restrictions on imports of manufactured products render calculations of average tariff rates insignificant.

developed and catching up countries, which is the main justification for tariff protection in catch-up periods, is much greater now than it was in the past. Thus in order to obtain the same degree of actual protection, today's developing countries would need to impose relatively higher tariffs than those that were used by the now developed countries during their catch-up periods (Chang, 2002: 67).

Chang (2002) shows that the great importance of tariffs in promoting economic development until the 1920s was associated with the underdevelopment of other instruments of public policy. Governments' limited abilities to raise tax revenues circumscribed their use of subsidies. Moreover, non-tariff measures such as quotas, voluntary export restraints and anti-dumping were developed only after the Second World War, before evolving into standard instruments in support of industrial development. Therefore, in a sense, the limited

range of trade policy instruments available to developed countries until the 1920s resembles the situation faced by developing countries today, given that WTO rules and commitments curtail the use for economic catch-up of instruments such as export-related subsidies, performance requirements for foreign investors, and reverse engineering and imitating of foreign technology.

As proposed by Akyüz (2005), in such circumstances, it would be important for developing countries to be able to modulate applied industrial tariffs in order to pursue a pattern of public support policies such as that illustrated in figure 5.1 above. That is, the variation of applied tariffs levied on particular product categories, in accordance with their path of technological upgrading, could be a key instrument of sectoral policy. To be sure, this kind of tariff policy does not imply either the imposition of high applied tariffs for all

sectors at any one time or the imposition of high average applied tariffs. On the contrary, it is likely to result in lower average applied tariffs than would be the case if tariff policy were looked at from a tariff line by tariff line perspective.

This kind of flexible tariff policy would be best accommodated by a strategy of maintaining bound tariffs at a relatively higher level (or maintaining a large part of industrial tariffs unbound) and modulating applied tariffs on particular industrial sectors around a relatively lower average level. This would be possible if industrial tariff reduction obligations from international agreements extended only to average tariffs, and not to individual tariff lines,³⁵ which has indeed been the case in all multilateral trade agreements concluded so far.

Apart from supporting diversification and technological upgrading, this tariff policy pattern provides several additional advantages (see also Akyüz, 2005: 26). First, it would balance multilateral disciplines with national policy flexibility, because it would encourage countries to choose applied levels of their industrial tariff lines within the overall limit of an average bound tariff, rather than seeking revenue maximization or accommodation of wide-ranging demands from lobby groups. Second, it would encourage policymakers to view tariff protection for specific industries at the lower rung of the technology ladder as a temporary measure, to be phased out and replaced by tariff protection for industries at higher rungs of the ladder until they are able to compete in world markets. Third, as a consequence, it would encourage policymakers to take a longer-term view of their economy's technological development and multilateral commitments.

A number of developing countries have maintained a tariff regime that allows them to modulate applied tariffs on manufactured goods. Table 5.2 shows that for developing countries as a group and

for all individual developing countries in the table, except China, bound tariffs on manufactures significantly exceed applied tariffs,³⁶ thus leaving

room to adjust tariffs in support of domestic producers. Moreover, many developing countries have less than full binding coverage or deploy significantly different levels of both bound and effectively applied tariffs across manufactured goods, as shown by relatively high values of the coefficient of variation that reflects intersectoral dispersion. Among the countries

in the table, India maintained the greatest degrees of freedom, as its tariff regime combined relatively high levels of bound and applied tariffs, as well as sizeable intersectoral dispersion and a relatively low binding coverage.³⁷ This tariff profile left India significant space for tariff modulation. By contrast, Chile has a relatively low level of tariffs, very little intersectoral dispersion and full binding coverage. China and Mexico have also conserved relatively little flexibility in their tariff profile. The other countries in the table occupy intermediate positions as they either conserve relatively high tariff levels but little intersectoral dispersion and (close to) full binding coverage (Argentina, Brazil and Egypt), or relatively low tariff levels but with some intersectoral dispersion and less than full binding coverage (the Republic of Korea).

The current multilateral negotiations on non-agricultural market access (NAMA) are set to reduce this flexibility in tariff setting and binding that developing countries have maintained. The framework adopted for modalities of industrial tariff reductions, as contained in Annex B of the so-called July Package (WTO, 2004) stipulates a reduction in tariffs according to a non-linear Swiss formula, and an increase in binding coverage. While at the

time of writing (June 2006) the definition of full modalities remained to be negotiated, the overall objective of the adopted approach is to bind and reduce all industrial tariffs with a view to harmo-

The current multilateral negotiations on NAMA are set to reduce the flexibility in setting and binding tariffs.

Since the Uruguay Round reduced the freedom to use other policy instruments, the relative importance of industrial tariffs has increased.

Table 5.2

TARIFFS ON MANUFACTURED PRODUCTS AND PER CAPITA INCOME IN SELECTED DEVELOPING COUNTRIES AND COUNTRY GROUPS, 1985–2005

Country	Year	Applied tariffs			Bound tariffs			Binding coverage (Per cent)	Memo item: Per capita income ^a
		Simple average (Per cent)	Coefficient of variation	Weighted average (Per cent)	Simple average (Per cent)	Coefficient of variation	Weighted average (Per cent)		
Argentina	1985	28.3	..	26.2	..	..	..	..	10 008
	1990 ^b	14.8	0.5	13.6	31.7	0.2	32.5	100.0	10 755
	1995	13.1	0.6	9.0	31.6	0.2	32.0	100.0	11 254
	2000	15.3	0.5	11.2	31.6	0.2	32.2	100.0	12 174
	2005	10.9	0.7	9.4	31.6	0.2	32.7	100.0	12 222 ^c
Brazil	1985	60.7	..	53.5	..	..	..	..	6 640
	1990	34.4	0.5	28.1	30.7	0.2	28.7	100.0	6 497
	1995	13.7	0.6	12.7	30.7	0.2	30.0	100.0	6 940
	2000	17.0	0.4	14.8	30.6	0.3	29.6	100.0	7 301
	2005	12.6	0.6	9.1	30.6	0.3	28.6	100.0	7 531 ^c
Chile	1985	19.8	..	18.5	..	..	..	..	4 969
	1990 ^b	11.0	0.1	10.9	25.0	0.0	25.0	100.0	6 764
	1995	10.7	0.2	10.6	25.0	0.0	24.9	100.0	7 999
	2000	9.0	0.0	9.0	25.0	0.0	25.0	100.0	9 115
	2005	5.0	0.5	4.4	25.0	0.0	25.0	100.0	9 993 ^c
Mexico	1985	12.1	..	11.1	..	..	..	..	7 870
	1990 ^d	14.4	0.3	13.0	35.0	0.1	34.9	100.0	7 758
	1995	12.5	0.5	7.7	35.0	0.1	34.8	100.0	7 619
	2000	18.0	0.4	14.6	35.0	0.1	65.4	100.0	9 046
	2005	8.5	1.0	2.8	35.0	0.1	35.5	100.0	9 010 ^c
China ^e	1985	41.9	..	33.2	..	..	..	..	1 181
	1990 ^b	40.0	0.8	35.6	9.5	0.7	8.9	100.0	1 944
	1995 ^f	21.3	0.7	18.2	9.5	0.7	7.9	100.0	2 971
	2000	15.8	0.6	13.5	9.5	0.7	6.0	100.0	3 928
	2005 ^c	9.5	0.7	5.8	9.5	0.7	5.3	100.0	5 419
India	1985	101.9	..	99.4	..	..	..	..	1 385
	1990	79.9	0.5	70.8	35.5	0.5	29.3	71.5	1 701
	1995 ^g	28.9	0.3	21.1	35.4	0.5	31.2	71.3	2 154
	2000 ^h	30.7	0.3	28.3	35.4	0.5	30.0	71.3	2 480
	2005	17.7	0.4	12.6	35.5	0.5	28.0	71.5	2 885 ^c
Rep. of Korea	1985	23.4	..	22.5	..	..	..	..	6 649
	1990	12.8	0.2	11.4	11.0	2.1	7.3	95.4	9 792
	1995	7.8	0.2	7.3	11.2	2.2	7.2	95.4	13 597
	2000 ⁱ	8.0	0.3	6.2	11.3	1.8	6.1	94.8	15 143
	2005 ^c	7.2	2.1	4.5	11.3	1.7	6.4	94.8	18 840
Egypt	1985	37.5	..	30.8	..	..	..	..	2 845
	1990	..	..	..	..	..	..	..	2 896
	1995	24.0	0.9	22.2	28.5	0.7	26.4	99.3	3 025
	2000 ^j	19.2	0.7	17.5	28.5	0.7	25.1	99.3	3 326
	2005 ^k	19.0	0.9	16.9	28.4	0.7	24.9	99.2	3 729

/...

Table 5.2 (concluded)

TARIFFS ON MANUFACTURED PRODUCTS AND PER CAPITA INCOME IN SELECTED DEVELOPING COUNTRIES AND COUNTRY GROUPS, 1985–2005

Country	Year	Applied tariffs			Bound tariffs			Binding coverage (Per cent)	Memo item: Per capita income ^a
		Simple average (Per cent)	Coefficient of variation	Weighted average (Per cent)	Simple average (Per cent)	Coefficient of variation	Weighted average (Per cent)		
Memo item:									
Developing countries									
	1985	..	..	..	..	..	..	..	2 946
	1990	26.1	0.9	20.5	26.7	0.7	17.7	68.6	2 875
	1995	14.8	0.9	9.5	32.6	0.5	19.8	73.2	3 225
	2000	14.0	0.8	11.3	36.5	0.5	19.1	70.7	3 612
	2005 ^c	10.5	1.1	6.5	30.2	0.5	15.6	67.9	3 915

Source: Tariff data for 1985 from UNCTAD, 1994. All other tariff data from UNCTAD, *TRAINS* Database at WITS. Income data from World Bank, *World Development Indicators (WDI)* Database.

Note: The data in the table refer to manufactures, and thus exclude tariffs applied in a number of sectors (such as extractive industries) that are included in industrial tariff data (i.e. the subject of NAMA negotiations). Data for developing countries are only indicative, because averages are based on less than full country coverage for some years.

a PPP (constant 2000 international dollars), data for developing countries as a group refer to the median.

b 1992. **c** 2004. **d** 1991.

e Data for applied tariffs are based on a more recent list, that includes a larger number of tariff lines than the list used for data on bound tariffs. Thus, prior to China's accession to the WTO in 2001, the numbers in the table for applied tariffs can exceed those for bound tariffs, even with full binding coverage.

f 1996. **g** 1997. **h** 2001.

i 1999. **j** 1998. **k** 2002.

nizing them, both across countries and across individual tariff lines.

In sum, a developing country's tariff policy needs to be part of a long-term industrialization strategy. Selective trade liberalization should be in line with a country's ability to achieve technological upgrading. In addition, temporary protection should be combined with export promotion associated with quantitative targets that are easy to

monitor and allow governments to withdraw support from firms that do not achieve upgrading targets. Given the numerous drawbacks and risks associated with their use, tariffs need to be implemented with considerable caution. But since the URAs reduced the degrees of freedom for developing countries to use other policy instruments designed to support diversification and technological upgrading, the relative importance of industrial tariffs has increased.

D. Industrial dynamism and national policies: recent experiences

The objective of this section is, first, to provide empirical evidence of industrialization and technological upgrading in developed and developing countries over the past 25 years and, second, to present a few selected case studies on the associated trade and industrial policies. It attempts to set the general context in which countries have undertaken trade and industrial policies and examines whether, how and to what extent multilateral trade rules and commitments have affected countries' autonomy in policy-making and implementation.

1. *Industrial dynamism: recent empirical evidence*

The degree of expansion of their manufactured exports and improvement of their share in world trade, particularly in high-tech products, is often taken as a measure of the pace of industrialization and technological upgrading in developing countries. However, the higher import content of domestic production brought about by trade liberalization, together with the greater participation of developing countries in import-dependent, labour-intensive, low-value-added processes in international production networks, implies that increases in their manufactured exports may often have taken place without commensurate increases in income and value added, as discussed in *TDR 2002*.

Table 5.3 presents data on the shares of developed and developing economies in world manu-

facturing trade and production over the past 25 years. Comprehensive data on manufacturing value added (MVA) are available only up to 2003, so that they do not reflect the more recent impact of trade and industrial policies. The data show that success in exporting manufactures is not an appropriate indicator of a country's industrial development. They reveal a pattern comprising the following features:

- The shares of developing economies both in world manufactured exports and world MVA showed a sharp increase during the period 1980–2003, but growth in exports was much stronger than in value added. This contrasts with the experience of developed countries, whose share in world manufacturing exports fell between 1980 and 2003, while their share in world MVA rose significantly.
- There has been wide variation in industrial performance across developing regions, leading to a rise in the concentration of industrial activities. South and East Asia are the most industrialized in the developing world; their combined share in total world MVA has increased the most, more than doubling since 1990 to exceed 17 per cent in 2003. The Latin America and Caribbean region has experienced the strongest decline in its share of world MVA, the sharpest fall being in the 1980s and early 2000s.
- China succeeded in more than tripling its share in both world MVA and world manufactured exports between 1990 and 2003. Its experience closely resembles that of the Re-

Table 5.3

**SHARE OF SELECTED DEVELOPING ECONOMIES AND REGIONAL GROUPS IN WORLD
MANUFACTURING VALUE ADDED AND MANUFACTURED EXPORTS, 1980–2003**

(Percentage share)

Region/economy	Share in world manufacturing value added				Share in world exports of manufactures ^a			
	1980	1990	2000	2003	1980	1990	2000	2003
Developed countries ^b	64.5	74.1	74.9	73.3	74.1	77.9	67.3	65.4
Developing countries	16.6	17.0	22.8	23.7	18.9	18.3	28.9	29.7
Latin America and the Caribbean	7.1	5.6	5.4	4.4	4.3	2.4	4.7	4.1
Argentina	0.9	0.8	0.8	0.5	0.2	0.3	0.3	0.3
Brazil	2.9	2.2	1.1	0.9	0.8	0.8	0.8	0.8
Chile	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Mexico	1.9	1.1	2.0	1.7	0.8	0.5	2.7	2.2
South and East Asia	7.4	8.7	15.2	17.2	7.6	13.6	21.7	22.7
China, Taiwan Province of	0.6	1.1	1.3	1.1	1.3	2.3	2.7	2.3
Republic of Korea	0.7	1.4	2.2	2.3	1.1	2.2	3.1	3.0
ASEAN-4	1.2	1.5	2.4	2.8	1.0	2.0	4.2	3.7
Indonesia	0.4	0.5	0.9	1.1	0.2	0.4	0.8	0.6
Malaysia	0.2	0.2	0.5	0.5	0.4	0.7	1.6	1.5
Philippines	0.3	0.2	0.3	0.3	0.2	0.2	0.7	0.5
Thailand	0.3	0.5	0.7	0.8	0.2	0.6	1.1	1.1
China	3.3	2.6	6.6	8.5	1.0	1.7	4.3	6.5
India	1.1	1.1	1.2	1.4	0.3	0.5	0.7	0.9
Africa	0.9	0.9	0.8	0.8	5.4	2.6	1.8	2.0

Source: UNCTAD secretariat calculations, based on UNIDO, *Handbook of Industrial Statistics 1996*; UNIDO, *International Yearbook of Industrial Statistics, 2006*; World Bank, *World Development Indicators* online; Taiwan Province of China, *Monthly Bulletin of Statistics* online; UN COMTRADE and UNCTAD estimates.

Note: Calculations in current dollars.

a To ensure data comparability, the definition of this product category follows industrial statistics. It therefore includes processed primary products in addition to manufactures, as defined in trade statistics. For further discussion of this statistical issue, see Wood and Mayer, 1998. Using the definition of manufactures in trade statistics (i.e. SITC 5 through 8 less 68) has a negligible effect on the shares of the individual countries listed in the table. By contrast, it results in a number of sizeable changes for country groups. Most of these changes are confined to 1980 when, based on the definition of manufactures in trade statistics, the share in world exports of manufactures was 15.5 per cent for developing countries and 78.1 per cent for developed countries (using the UNIDO country classification). The remaining discrepancy with respect to *TDR 2002*, table 3.5 for 1980 trade data is due to data (re-)estimation, in particular for China.

b To ensure data comparability, the definition of this group is that used by UNIDO prior to 2006. Hence, contrary to the current standard definition of the United Nations, it does not include the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia.

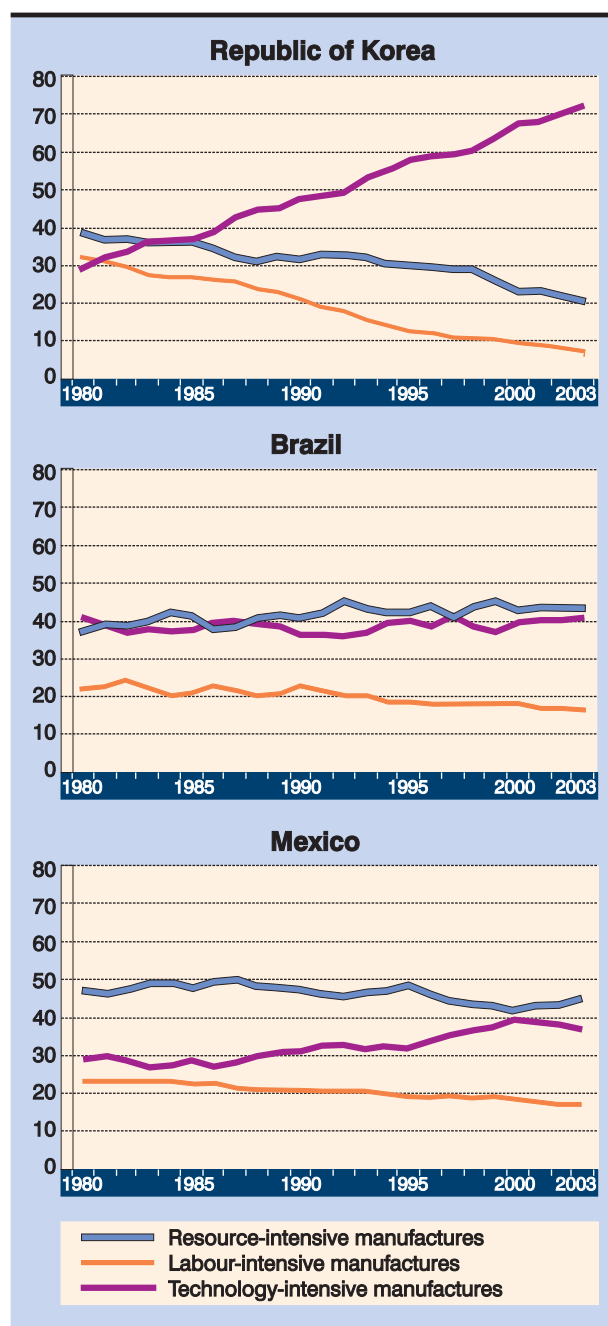
public of Korea between 1980 and 2000, which (together with the Taiwan Province of China) is often portrayed as exemplifying successful economic catch-up among the late industrializers.³⁸ This outcome strongly con-

trasts with that of Mexico, whose share in world manufactured exports increased more than fivefold during the 1990s, while its share in world MVA only about doubled during the same period. Moreover, both these shares de-

Figure 5.2

SHARE IN TOTAL MANUFACTURING VALUE ADDED OF MAJOR PRODUCT CATEGORIES IN THE REPUBLIC OF KOREA, BRAZIL AND MEXICO, 1980–2003

(Per cent)



Source: UNCTAD secretariat calculations, based on data for Mexico and the Republic of Korea from OECD, *Structural Analysis (STAN)* Database; and on data for Brazil from ECLAC, *Program for the Analysis of Industrial Dynamics (PAD)* Database.

Note: The shares are based on values in 1985 dollars. For a detailed explanation of the product categorization, see the notes to this chapter.

clined during the early 2000s. Brazil also shows an interesting development, with its share in world manufactured exports remaining largely unchanged over the past 25 years and its share in world MVA falling significantly, during the 1980s, and even more so during the 1990s.

These different experiences in industrial development across individual developing countries are closely related to changes in the composition of the respective countries' industrial activities, as shown in figure 5.2. The figure concentrates on Brazil, Mexico and the Republic of Korea, because comprehensive data for China are not available. The Republic of Korea shows the classic picture of successful industrial structural change and technological upgrading. While the shares of resource-intensive and labour-intensive products in that country's total industrial activities fell during the period 1980–2003, the share of technology-intensive products grew continuously, to reach 72 per cent in 2003.

Brazil and Mexico show an entirely different picture. Mexico experienced a slight increase in the share of technology-intensive products in its total industrial activities between 1995 and 2000, which is likely to have been associated with the growing activities in the automobile sector following the entry into force of the North American Free Trade Agreement (NAFTA) in 1994. Nevertheless, resource-intensive manufactures have maintained the highest share in the country's industrial activities. Brazil experienced little change in the relative importance of the three categories of industrial production over the period 1980–2003.

2. National policies for industrial development: some recent experience

(a) Latin America

Most countries in Latin America adopted comprehensive economic reform programmes during the 1980s and early 1990s, which emphasized more stringent monetary and fiscal policies, liberalization, privatization and deregulation (as noted in chapter II). These were accompanied by

the discontinuation of inward-oriented industrialization strategies and, in most cases, the dismantling of institutional structures, such as development banks, that had been of major importance to those strategies. However, in the mid-1990s, there was a growing belief that, even though the reforms had been successful in bringing about macroeconomic financial stability, they were not achieving the promised results in terms of economic growth and sustainable improvement in the countries' balance of payments. Moreover, the industrial restructuring process that accompanied economic reform had led to the undesired outcome of premature deindustrialization (i.e. a decline in the share of industry in aggregate output and employment accompanied by the growing importance of the primary sector, rather than by that of the services sector as has generally been the case in the benign process of deindustrialization in developed countries). As discussed, for example, in *TDR 2003* and Cimoli et al. (2006), the pattern of industrial production and trade, which had resulted from policies that relied on unfettered market forces, was shifting the composition of output and exports towards natural-resource-based products at the expense of those sectors that have the greatest potential for productivity growth and technological upgrading (i.e. manufactures, and particularly the high-technology-intensive ones).

In the mid-1990s, a significant number of countries in Latin America – in particular Brazil, Colombia and Mexico – adopted medium- or long-term plans for the (re-) development of their industrial sector, and a number of other countries began to implement policies with the same objective, though through a less formalized strategy. The general approach of these plans and strategies has been to: (i) maintain their macroeconomic orientation, emphasizing financial stability and broad-based trade liberalization, often accompanied by financial liberalization, with a view to achieving an efficient allocation of re-

In the mid-1990s, a significant number of countries in Latin America adopted plans for the (re-) development of their industrial sector ...

... attempting to enable domestic enterprises to gain a competitive edge over their foreign competitors.

sources in response to signals from world market prices; and (ii) complement this macroeconomic policy with microeconomic policies designed to make their domestic enterprises internationally competitive and facilitate their international integration. These microeconomic policies have often been embedded in national competitiveness strategies,³⁹ sometimes specifically targeted at small- and medium-sized enterprises (SMEs), with the general aim of fostering labour productivity and technological innovation in existing industries. Such business promotion policies have been combined with measures designed to attract FDI through improvements in the host countries' locational advantages.⁴⁰ FDI has also been sought with the objective of developing production, particularly for export activities in new industrial sectors for the respective host country (Melo, 2001; Peres, 2006).⁴¹

The specific policy measures employed to achieve the central objective of enabling domestic enterprises to gain a competitive edge over their foreign competitors have differed across the countries of the region. In general, they have been aimed at promoting exports, output growth and investment, and higher productivity and competitiveness. Tax and credit incentives have been the most important types of policy instruments for the promotion of exports, particularly of non-traditional exports. Such fiscal incentives have been characterized by a reduced use of subsidies and an emphasis on tax refunds on domestic inputs or duties paid on imported inputs, and the creation of export processing zones.

The main objective of credit policies to promote exports has been to provide access to working capital or initial investment financing for new export activities. These loans are generally offered at domestic market rates, which are usually higher than those of international financial markets. Brazil's programme for the financing of exports (PROEX) is a major excep-

tion, as it allows Brazilian exporters of certain goods and services, or their foreign importers, to obtain trade finance on international market conditions (i.e. granting mainly interest equalization payments).⁴² Embraer, the Brazilian manufacturer of regional aeroplanes, has been one of the firms to use this programme. However, in 1996–1999, Canada, home to Embraer’s main competitor, Bombardier, challenged the compatibility of PROEX with WTO rules and commitments. The WTO dispute settlement panel ruled that the subsidies granted under PROEX were inconsistent with the SCM Agreement’s provision prohibiting the use of subsidies contingent upon export performance. While Brazil appealed against this ruling,⁴³ it also changed the provisions of PROEX. Subsequently, ruling on a further challenge from Canada, the WTO panel report of July 2001 established that the revised PROEX falls under the exceptions provided in Annex I of the SCM Agreement, and thus is not against WTO rules and commitments.⁴⁴ While this illustrates that WTO rules and commitments can reduce the degrees of freedom of national policy-making, it also highlights the fact that (i) the WTO provides a transparent legal structure to deal with disputes, and thus minimizes the risk of “trade wars”, (ii) while much leeway in policy-making may have been lost under multilateral rules, countries can nevertheless retain a degree of flexibility through creative policy-making, and (iii) significant administrative and negotiating capacities are required to fully benefit from the WTO regime.

Policies to promote output growth and investment have also emphasized credit and tax incentives. Generally, these incentives have been provided to all economic sectors, but some have a sector-specific dimension. Contrary to much of the policies adopted in connection with the inward-oriented industrialization strategies of the past, which focused on support to manufacturing activities, recent fiscal incentives and loans by development banks have emphasized extraction industries (such

Incentives have been provided to all economic sectors, but some have a sector-specific dimension ...

... emphasizing extraction industries, tourism, or services.

as the oil, mineral or forestry sectors), tourism, or a variety of services sectors (ranging from infrastructure to the film industry). In some countries (e.g. Brazil and Mexico), a variety of sectors benefit from credit and tax incentives, but most countries have focused support on a narrow range of sectors (Melo, 2001: table 3).⁴⁵ However, Mexico’s recent plan (contained in the National Plan for Development, 2001–2006) to adopt sector-specific policies to stimulate investment with a view to generating greater domestic value added and strengthening the linkages among local production chains has been hampered by insufficient budgetary funds and by long delays in implementation (Moreno-Brid, Rivas Valdivia and Santamaria, 2005: 14).

The promotion of scientific and technological upgrading has been an important element in policies designed to improve enterprise productivity and international competitiveness. As with export promotion and support to output growth and investment, the provision of credit and fiscal incentives have been the main types of policy instruments used to promote technological upgrading. Other instruments include government funding of R&D projects and strengthening cooperation between public research institutions and private enterprises. However only limited budgetary resources seem to have been made available for technology development and innovation. For example, in Brazil, public funding covered only 10 per cent of private sector R&D activities during the period 1998–2000; much of the rest was sourced from company profits, given that the high domestic interest rate provided little incentives for financing such activities through loans (De Negri, 2006). Another type of policy used to promote scientific and technological development has been support to SMEs, which are often considered highly important in innovation. Particularly in countries of the Andean Community (Bolivia, Colombia, Ecuador, Peru, and Venezuela) or in Central America (Peres, 2006), this has taken the form of support to SME

clusters (i.e. an agglomeration of SMEs in the same or related lines of business located in a given geographical area).⁴⁶

While the bulk of policy support mentioned so far has been applied to all economic sectors, many countries in Latin America have also used sector-specific measures. For example, credit and fiscal incentives have been directed mainly to attract FDI in high-technology-intensive sectors, such as the information and communications technology sector, and in the automotive industry. However, the shift away from relatively centralized tax policies supportive of economic development and their increasing devolution to regional and local governments has often led to “fiscal wars”, whereby different regions and municipalities offer increasingly generous incentive packages to attract new TNCs or trigger their relocation away from existing TNC production sites within the same country. In Brazil, for example, in order to make the automotive sector more attractive to FDI, individual incentive packages amounted to as much as \$300,000 per job, leading some observers to conclude that subsidies of this size are likely to exceed the gains from reallocating plants within Brazil (Christiansen, Oman and Charlton, 2003).

Such incentives were offered to TNCs in the hope that they would provide technological and knowledge spillovers to domestic producers, as well as facilitate the integration of such producers into international markets, such as through their participation in TNC-managed international production networks (Lugones, 2006). Mexico, among the countries in Latin America, has gone furthest in this regard. In December 1993 (i.e. just before NAFTA took effect), Mexico enacted a new law on FDI that simplified administrative procedures and eliminated virtually all restrictions on FDI in manufacturing. The law also provided for the progressive removal of all performance requirements on FDI in the automotive sector. Moreover, imported inputs for re-exportation were allowed to enter the country tax-free. As a result

A major shortcoming of industrialization strategies in Latin America has been the lack of coherence between the measures taken at the micro level and the macroeconomic environment.

of such tax benefits “manufacturing firms that rely on foreign inputs entering as temporary imports pay approximately 30% lower input costs than similar firms which use locally produced inputs” (Moreno-Brid, Rivas Valdivia and Santamaria, 2005: 22). This is probably why, during the period 1990–2000, producers of auto parts that enjoyed such tax benefits through the *maquiladora* regime increased output and employment much more than those that did not benefit from such a regime, even though the latter experienced more rapid productivity growth (Mortimore and Barron, 2005: 20). Indeed, it is doubtful whether the provision of such benefits has supported the entry of domestic enterprises into international production networks and contributed to domestic industrial development. Rather, it may ultimately have benefited mainly the automobile manufacturers in the United States by increasing their competitiveness vis-à-vis their Asian competitors in the United States market (Mortimore and Barron, 2005).

Partly in reaction to this, in the early 2000s, the Mexican Government attempted to transform the export platforms, which had mainly carried out assembly activities of imported production inputs for re-export to the United States. It sought to convert them into manufacturing centres that would produce auto parts in addition to assembling them into vehicles, and aimed at other large markets for automobiles in addition to the United States, such as the EU and Japan. Free trade agreements were used as a major instrument to that effect, because it was expected that the rules of origin associated with these agreements would bring about increased levels of local content. However, according to Mortimore and Barron (2005: 25–26), this strategy has largely failed, mainly because very few enterprises located in Mexico were able to provide parts and components that would meet international price and quality standards. This demonstrates the difficulties of the Mexican automotive industry in re-establishing local production linkages and furthering technological upgrading, which may have been due to the adverse effects of previously overgenerous treatment of FDI.

If comprehensive tax incentive packages to attract FDI had not been offered, there may have been sufficient additional budgetary revenues to significantly increase the Government's ability to provide greater funding support to R&D and innovative activities.

In sum, the microeconomic policies that governments in many Latin American countries have adopted since the mid-1990s may have been successful in supporting the international integration of domestic enterprises and in attracting more FDI to the region. On the other hand, these policies do not appear to have significantly moved production and export patterns towards products of higher technology intensity. According to Peres (2006), it is not easy to assess the success of the microeconomic policies in these terms because in many cases they have been adopted in the absence of quantitative criteria that would have enabled an objective assessment of their effects.

Nevertheless, a significant shortcoming of the current industrialization strategies in many Latin American countries relates to the lack of coherence between the adopted microeconomic measures and the prevailing macroeconomic environment. The orthodox macroeconomic policy stance of most countries in the region helped to bring inflation under control and establish a reasonable degree of monetary and fiscal discipline. However, partly due to a loss of macroeconomic policy autonomy resulting from rapid liberalization and closer integration into the global economy, financial stabilization has often been accompanied by significant instability in key prices, such as real wages, exchange rates, interest rates and assets, that exert a strong influence on resource allocation and investment decisions. High interest and exchange rates have exacerbated this situation and impeded investment and technological change (see, *TDR 2003*, chap. VI). Thus the macroeconomic framework has not been conducive to the creation and expansion of productive capacity and the improvement of productivity and international competitiveness, which were the main objectives that the microeconomic measures sought to achieve.

In addition, the emphasis on export promotion through measures that apply to all economic sectors has tended to boost international com-

petitiveness of domestic enterprises within a production and export pattern based on existing comparative advantage related to the abundant endowment in most countries of the region of natural resources and/or low-skilled labour. However, these sectors are generally not capable of generating sizeable growth in productivity and value added. This policy stance has been reinforced by the fact that tight budgetary constraints of many Latin American countries have prevented them from allocating sufficient financial resources to support R&D and innovation activities and the further development of technological capabilities. Innovation policies have been too broad-based, which, although substantial in overall fiscal terms,⁴⁷ has meant that they have been insufficient for making a meaningful contribution to R&D and innovation activities in individual sectors. Moreover, budgetary constraints were exacerbated by the generous tax incentives to FDI. More recently, the current commodity price boom and the associated higher budgetary revenues have given many Latin American governments greater flexibility in this respect. It is also worth noting that technological and knowledge spillovers from FDI have fallen short of expectations, and have been insufficient to improve domestic technology and productivity to create a competitive domestic export sector in high-value-added manufactures. The disappointing impact of FDI on industrial development may have been partly due to the overly generous incentive packages offered in competing for that FDI. In some instances, this shortcoming may also have been related to the fact that rules and commitments in international trade agreements prohibit the use of performance criteria for FDI of the kind applied in the East Asian NIEs during their economic catch-up.

(b) China

The structural transformation of China's economy is of particular interest for several reasons. First, it has been accompanied by very rapid economic growth, which led China to become the fourth largest economy in the world by 2005. Second, China's economic development over the past 30 years has been based on various development strategies, including central planning, inward-oriented import-substituting industrialization along

with a strong export orientation, and an open-door policy regarding FDI. These strategies were used at different times, but in some cases also simultaneously in different parts of the economy. Third, the various types of proactive economic policies and wide range of instruments that have shaped China's economic development have continuously been adapted to changes in the underlying development strategy, as well as to changing circumstances in the domestic and international environment. This has been the case, in particular, in the run-up to, and in the aftermath of, China's accession to the WTO. Thus the process of China's economic transformation over the past 30 years may be characterized as "experimental gradualism", with the use of heterodox policies in a creative and often innovative manner.

Distinct from economic transformation in most other developing countries, China's process of industrialization and structural change has been part of a general economic transition from a centrally planned economy towards a market economy. Thus, much policy support has consisted of a gradual and selective adoption of regulations that have governed the pace and pattern of the transition towards a market economy. Key elements in this transition have been the reduction of the role of State-owned enterprises (SOEs), and the gradual and selective introduction of market incentives through the regulatory reform of price systems and of the regimes governing domestic labour mobility, external trade and FDI. On the other hand, government policy has played an important role in directing both domestic and foreign investment towards specific sectors.

Investment promotion has mainly taken the form of sizeable public investment in physical infrastructure, direct government financing, the provision of credit at preferential interest rates, and tax rebates. In the absence of an efficient domestic securities market, bank loans were the major source of corporate finance. Fixed investment expanded faster between the late 1980s and the late 1990s, directed at targeted industries and sectors that benefited from preferential credit,

mainly from State-owned banks. Moreover, manufacturing industries and industries based on non-agricultural raw materials enjoyed tax rates up to 80 per cent lower than those imposed on other industries (Lu, 2001: 342 and 348).

FDI has played a pivotal role in China's changing industrial structure. It was attracted through the creation in 1980 of four Special Economic Zones, where imported inputs and exports were exempted from duties and new enterprises were offered extended periods of tax exemption. Since 1992, inward FDI has increased, as firms in Taiwan Province of China and Hong Kong (China), under increasing pressure from rising wages in their labour-intensive industries, were driven to find new low-wage production locations elsewhere to maintain their international competitiveness. This contributed to accelerating industrial restructuring in China from heavy to light industry. Later, in the 1990s, a growing number of international production networks, in which TNCs organize several suppliers in different loca-

tions, supported industrial restructuring from light industry to capital- and technology-intensive industries. Chinese locations have come to play a central part in such networks, in particular in electronics. Since 1999, on average, about 15 per cent of total FDI flows to China have been invested in the electronics industry (MOFCOM, 2006a).

In addition to the provision of fiscal incentives, the government has influenced the sectoral distribution of FDI by screening potential FDI inflows. Guidelines and regulations were issued explicitly identifying "prohibited", "permitted", or "encouraged" types of FDI. The latter offered incentives to FDI in high-tech industries through extensive preferential treatment such as tax rebates and/or exemptions, duty free imports of capital equipment and better access to public infrastructure and utilities such as gas and electricity (MOFCOM, 2006a). In order to attract FDI incorporating more sophisticated technologies for export-oriented industrial production, the Government streamlined administrative procedures and offered incentive packages in "free trade and high-

In China, much policy support has consisted of a gradual and selective adoption of regulations regarding the pace and pattern of the transition towards a market economy.

technology development zones”, including the provision of heavily subsidized land and energy.

China’s foreign trade policy has been an integral part of its strategy for industrial development. It was very industry-selective, with extensive import restrictions before China’s accession to WTO. Until then, foreign trade had supported industrial restructuring in two ways. First, gradual and phased trade liberalization enabled imports of technology which China would not otherwise have access to, and which were essential for structural changes in Chinese industry (see *TDR 2002*). Second, foreign trade allowed the export of surplus production, without which these structural changes, based on a combination of a large surplus of labour and rapidly increasing investment – both domestic and foreign – would not have been sustainable given the narrowness of China’s domestic market, in particular before 1990.

Exporting firms benefited from various pricing, tax and loan privileges, as well as support for technological upgrading, to maintain and increase their exports. With the deepening of China’s economic reforms and, in particular, the decentralization of foreign trade, which led to a massive entrance of private enterprises, many of the incentives have been phased out, non-tariff barriers gradually dismantled and tariff barriers lowered significantly. Indirect instruments such as tax rebates have become increasingly important to boost trade in the Government’s “encouraged” industrial sectors.

Over time, technological upgrading has become one of the greatest challenges in Chinese economic development. China’s exports continue to have a relatively high import content, particularly of technology-intensive parts and components, as indicated by the fact that in 2005, 55 per cent of the exports fell into the category of processing trade, and in the same year 88 per cent of Chinese high-tech exports came from foreign-funded enterprises (FFE) and 66 per cent from wholly foreign-owned enterprises (MOFCOM, 2006b). As recognized in China’s five-year plan for 2006–2010, making scientific and technological ad-

vancement and domestic innovation a driving force for structural change and social development is of particular policy relevance at China’s current stage of industrialization. So far, only a small number of firms have been reinvesting a significant share of their profits in R&D. The reliance on FDI for technological upgrading appears to have weakened domestic innovation and application of knowledge: since the 1990s, FFEs in China filed by far the largest proportion of patent applications, with local firms filing less than 20 per cent (Cao, 2004: 8). This may further inhibit technological progress in Chinese industry. Another problem lies in the application of patents: only 10 per cent of the domestically owned patents were applied in production annually between 1985 and 2003, in stark contrast to an annual average

of 60 to 80 per cent in developed countries.⁴⁸ The lack of initiative on the part of domestic enterprises to innovate and upgrade technology may also be due to the wide technology gap between Chinese firms and competitors in advanced countries, which makes catching up very costly and highly risky for individual enter-

prises. Moreover, within international production chains Chinese firms have tended to be locked into labour-intensive activities, a tendency that has been reinforced by China’s tax rebate system. The system was successful inasmuch as it contributed significantly to China’s trade expansion, but it has done so by encouraging processing and assembling activities.

As a result, advanced technology in China’s export industry is still highly concentrated in affiliates of TNCs. This is evidenced by the high and growing share of FFEs in China’s high-tech exports compared to their share in the country’s total exports. In 2005, the share of FFEs in high-tech exports was 88 per cent, compared to 45 per cent in 1995, while the share of FFEs in China’s total exports rose from 31 per cent to 58 per cent in the same period (MOFCOM, 2006b). At the beginning of China’s opening up, policies towards FDI included measures aimed at coercing technology transfer and enhancing backward linkages. The FDI approval process frequently included explicit provisions for technology transfer in the

Technological upgrading has become one of the greatest challenges in Chinese economic development.

form of local content requirements and production export quotas. In addition, joint venture projects served to obtain technology through collaboration in production, research or training. With China's accession to the WTO, in particular its commitment to abide by the TRIMs Agreement, these practices had to be abandoned. Besides, as China's FDI regime has been liberalized and administrative power increasingly decentralized, there has been growing competition among local governments to attract FDI. As a result, incentives to foreign investors have tended to become more generous, so that they frequently benefit from better than national treatment with little pressure for technology transfer, and there is risk of a race to the bottom in bidding for FDI. Although TNCs in China appear to have considerably increased their investment in R&D, this has been driven mainly by the abundant human resources available there, and their aim to create R&D centres close to the potentially rapidly growing Chinese market in order to adapt advanced technology to specific demands of local consumers (UNCTAD, 2005: 110–111). Overall, however, the level of diffusion of competitive technology of TNCs in China is still low.

With the end of the WTO transition period, most of the elements of China's earlier industrial policy have been phased out, in particular infant industry trade protection measures, preferential interest and tax rates, as well as some forms of direct financial assistance to industries. This has brought new challenges for the design and implementation of industrial policy. For instance, when the clauses covering technology requirement and export content in the Law of Wholly Foreign Owned Enterprises were repealed upon China's accession to the WTO, many FFEs separated from their local joint-venture partners to become wholly-owned foreign enterprises, making technological and other spillovers from FDI more difficult to obtain. Moreover, the possibilities for the Government to support domestic industries have diminished considerably. Recently, Canada, the EU and the United States requested consultations with China concerning its regulating of imports of automotive parts and components in order to support the development of the Chinese automobile industry, which they considered to be inconsistent with some WTO/GATT agreements.

Although direct intervention favouring domestic industries has declined with the growing importance of the private sector and China's accession to the WTO, the Government is still retaining a guiding role via indirect instruments such as taxation, the provision of guidelines for science and technology development⁴⁹ and certain forms of public financial support for related expenditures. At present, a reform of the system of value-added tax rebates is under discussion.⁵⁰ In the past, these rebates, which favoured raw materials and parts and components used as inputs for manufactured exports, had a significant impact on the structure of China's trade and industrial development in favour of processing trade. Now, increasingly it is believed that relying too much on the comparative advantage of labour-intensive products may discourage the upgrading of China's position to higher value-added production in the international supply chain. Another ongoing debate is about the possible elimination of the dual corporate tax system applied to foreign investors and domestic companies.⁵¹ So far, foreign investors benefit from lower tax rates of between 15 and 24 per cent compared to domestic companies that have to pay 33 per cent. In addition, foreign investors are entitled to tax holidays if they invest in "encouraged sectors" or poor regions in China. Changes in these government policies are bound to have an impact on China's future industrial structure.

(c) *Recent industrial policy in France*

France has often been characterized as the European representative of State-led developmentalism. Particularly prior to economic liberalization in the 1980s, France pursued a developmentalist industrial policy supported by subsidies, credit controls, indicative planning, and direct intervention in State-owned enterprises. While liberalization eliminated government control over the allocation of credit by banks and other financial institutions, which previously had been the principal tool of industrial policy, subsidies survived, although they were used to a lesser extent. The importance of indicative planning was also drastically reduced, and, in any case, had already become less development orientated, given that in the aftermath of the economic slowdown of the

1970s industrial policy was directed more at avoiding bankruptcies and unemployment rather than at espousing an enlightened vision of economic development.

French industrial policy has traditionally focused on the development of sectors designated as being of national interest, such as steel and computer technology in the 1960s, nuclear power and telecommunications in the 1970s, electronics in the 1980s, and high-technology sectors more recently. The institutional structure in which industrial policy is embedded and the instruments used have been evolving over time in response to changes in the world economy, in particular the change in the international monetary system after 1973.⁵² There was also concern that the strategy of nurturing national champions might cause industrial policy to be “captured” by the economic sectors it was designed to serve and develop, with the result that the instruments used would serve to create sectoral rents rather than accelerating national economic modernization.

France’s recent industrial policy reforms mark a further evolution in the choice of institutional framework and policy instruments. Reflecting the general trend towards decentralization in that country, the new approach gives substantially more weight to local and regional government entities, even though the central Government retains a strong role. The new initiative also marks a shift away from a State-led approach based on the nurturing of a few large national enterprises to a private-sector-led approach. It relies on partnerships between firms (both large enterprises and SMEs, most of which collaborate with foreign, particularly German, enterprises), educational centres and research institutions in which the State mainly plays a merely facilitating role.

France’s new industrial policy started, in 2002, a process aimed at defining a strategy for the promotion of clusters of competitiveness (“*pôles de compétitivité*”).⁵³ This resulted in the identification of 74 such clusters in 2005⁵⁴ and the launch of six clusters in March 2006. This new industrial policy is based on the observation that

France’s new industrial
policy promotes clusters of
competitiveness ...

having successfully narrowed the technology gap with the world leader, the United States, during the 1950s, 1960s and 1970s, in the past few years France’s industrial development has not kept pace with technological progress and economic growth in some other developed countries, particularly the United States. This is reflected in (i) a decline in the contribution of manufacturing to total value added relative to that in other developed countries (in addition to the common trend in developed countries towards a growing services sector); (ii) a specialization pattern biased in favour of traditional, relatively low-technology-intensive sectors (such as agro-industry and transport equipment) at the expense of dynamic high-tech sectors; and (iii) growing international competition from developing countries and Central European economies in France’s traditional industrial sectors, which has been accompanied by the relocation of some activities in these sectors from France to relatively low-wage countries, as well as by an erosion of the international competitiveness of France’s existing high-tech sectors (Beffa, 2005).

Some observers have identified insufficient research and innovation activities as the root cause of the concentration of France’s industrial specialization in relatively low-technology-intensive sectors and of its difficulties in developing high-tech sectors (Beffa, 2005; Jacquet and Darmon, 2005). Thus the main objective of France’s new industrial policy is to promote research and innovation and improve industrial efficiency. It is expected that this will help increase the country’s growth potential and social cohesion, change its pattern of industrial specialization by according greater importance to high-tech sectors, and enable the achievement of the highest level of technological competencies (Jacquet and Darmon, 2005: 72).

The clusters of competitiveness bring together enterprises, educational centres and private and public research institutions to work in partnership on common projects with a view to attaining a critical mass of economic activity within a geographical area. They aim to achieve technological innovation that will improve the competitiveness of French enterprises on interna-

tional markets of substantial size or growth potential. There are two types of clusters: (i) a relatively small number of clusters, the research activities of which are organized around a specific area of technology with innovative activities aimed at applications at the technological frontiers (e.g. in biotechnology, nanotechnology and space industries); and (ii) a larger number of clusters that conduct more applied research closely targeting existing industrial sectors and markets with a significant growth potential at the global level (CIADT, 2004; Jacquet and Darmon, 2005: 63–74). Both types of clusters emphasize active partnerships for innovation.

The clusters were selected on the basis of a competitive process with the objective of identifying projects capable of making a significant contribution to the development of enterprises for which innovation is central to their competitiveness. Under the general oversight of the Inter-ministerial Committee for Regional Planning and Development (CIADT), which was chaired by the Prime Minister and which also had the final decision-making authority, the selection process was conducted by independent experts from the business, research and educational sectors, as well as by government experts at both local and ministerial levels. The assessment criteria included the cluster's potential for creating value added through innovation, for playing a leading role on international markets, for its reliance on a partnership with different actors, and the coherence of its economic development strategy with that of the geographical region in which it is located (CIADT, 2004).

The State's financial contribution to the clusters amounts to 1.7 billion euros for the period 2005–2007. The direct financial benefits take the form of subsidies, tax exemptions and reduced social contributions, as well as specific financial support and guarantees. These are supplemented by priority treatment in terms of the provision of IT-equipment and speedy administrative procedures, staffing of public research institutions, appraisal and exchange of technological knowledge, and a range of other measures (Jacquet and Darmon, 2005: 70–71 and 83; OECD, 2006: 77).

... with the main objective to step up research and innovation and improve industrial efficiency.

The funds are granted on the condition that the supported activities are not relocated (Jacquet and Darmon, 2005: 70).

While increasing the local ownership of projects, the decentralization, combined with the high fragmentation of local and regional State entities into multiple levels, has increased the administrative complexities of decision-making and poses an additional challenge to maintaining coherence in government actions. In addition, the selection process includes a sizeable element of subjectivity, as no strictly defined quantitative criteria are used. Moreover, it is not clear how the clusters' performance will be evaluated. Perhaps, most importantly, the call for project submission vastly exceeded expectations, resulting in the creation of more than four times the initially expected number of recognized clusters, while the funds allocated for their support were only doubled. This raises the question as to whether the allocated funds are sufficient to obtain the objective of reaching a critical mass (OECD, 2006: 16).

The new industrial policy in France has been designed under the general umbrella of the so-called "Lisbon Strategy". This Strategy, adopted at the European Council Summit in 2000⁵⁵ and updated in 2005, aims at increasing R&D intensity in the EU. The action plan of 2005, which reformulated the Strategy's priorities, provides an integrated approach to improving the conditions for business investment in R&D and innovation in order to meet the goal of increasing overall investment in research in the EU from 1.9 per cent of GDP to 3 per cent by 2010 (Commission of the European Communities, 2005).⁵⁶

Within this EU-wide framework, the French approach is distinguished by its greater emphasis on a required increase in the contribution of public funds to industrial research. Beffa (2005), for example, notes that in the United States this share is between 12 per cent and 21 per cent, depending on the industrial sector, while in France, it is only 12 per cent on average for all industrial sectors. Moreover, France allocates much fewer of these funds than the United States to non-defence-

related research in industrial frontier technologies. The funding provided to the competitiveness clusters attempts to narrow both these gaps.

This policy of broad-based sponsorship of partnerships between government, business, and educational and research institutions to advance industrial R&D and innovation has been a general tendency in developed countries over the past few years. It reflects a move away from public support to the development of productive capacity towards fostering innovation for the development of knowledge-based industries. Within this new strategy, support measures appear to be mainly of a general nature, but in practice they imply according priority to particular industrial sectors that have been identified, in one way or another, as offering considerable potential for innovation. As noted by Weiss (2005: 732), developed-country governments have implemented an extensive range of programmes to promote high-tech firms. These include support for pre-competitive R&D, facilitating access to venture capital, and the expansion and upgrading of a sophisticated infrastructure for the promotion and protection of intellectual property, information and telecommunications, and the appraisal and exchange of technological knowledge via public-private collaborative projects.

Developed countries have the budgetary capacity to provide massive public support.

One reason for this shift towards the promotion of R&D and innovation activities has been the perception that outsourcing activities or the relocation of entire production units to cheaper locations no longer involves only labour-intensive assembly stages; it is also increasingly affecting more skilled activities. This has caused concern because it is generally believed that, contrary to the outsourcing of labour-intensive activities to lower-wage regions, a process that actually may improve an outsourcing firm's international competitiveness, outsourcing of high-tech activities deprives an economy of part of its dynamic development potential. Anxiety over the outsourcing of IT-based services to India has perhaps been the most vivid expression of this concern.

Multilateral trading rules provide sufficient latitude for developed countries to implement this strategy. As discussed in the previous section, the provision in Article 8 of the SCM Agreement allows subsidies for R&D and regional and environmental development activities, although they are now actionable. The fact that the developed countries have the budgetary capacity to provide massive public support to such activities highlights the asymmetry involved in the use of Article-8-type subsidies.

E. Conclusions: options for policy innovation

Experience with reforms over the past 15 years, as well as recent developments in economic theory concerning the creation of new areas of comparative advantage, provide a strong rationale for the adoption of proactive trade and industrial policies.

However, specific policy measures that successful countries have adopted cannot easily be emulated by other countries. Nevertheless, there are some common general principles underlying their success, and governments, through creative policy-making, could choose specific types of public support policies adapted to their country's particular local conditions, including its stage of economic and institutional development.

An assessment of the extent to which various international trade arrangements have restricted the degrees of freedom of developing countries to pursue proactive trade and industrial policies gives a mixed picture. On the one hand, WTO rules and commitments have made it far more difficult for developing countries to combine outward orientation with the unorthodox policy instruments that the mature and late industrializers employed to promote economic diversification and technological upgrading. The rules and commitments limit policy space in three areas. First, they severely restrict the use of subsidies to develop local production of new products or new modes of production; probably the greatest obstacle to sensible industrial policies in this context is the pro-

hibition under the SCM Agreement to provide subsidies contingent on export performance.⁵⁷ Second, they prohibit the imposition on foreign investors of performance requirements that favour technology transfer and the use of domestically produced components. And third, they make it difficult or costly for domestic producers to undertake reverse engineering and imitation through access to technology that is covered by patent or copyright protection. Given these constraints, the URAs, by implication, lead to an increase in the relative importance of temporary protection in the

form of industrial tariffs. Developing countries thus may find that tariffs are one of the few policy options left, and in this respect it may be of interest to modulate applied tariffs on particular industrial sectors around a stable average level of industrial tariffs, in line with a country's pace and pattern of technological upgrading. How-

ever, even this option is likely to be limited by the current WTO negotiations, as well as by RTAs.

On the other hand, under the current set-up of multilateral trade rules, countries still have the possibility to pursue policies that will be able to help generate new productive capacity and new areas of comparative advantage. Such types of policies largely concern the provision of public funds in support of R&D and innovation activities. Countries in a position to use the WTO rules and commitments to this effect can continue to support their own industries, target national cham-

International trade arrangements have limited policy space in several areas.

pions, and generally promote national efforts towards technological advancement.

The case studies in section D of this chapter, which attempt to shed some light on the kinds of policies that have been used to support industrial development and technological upgrading over the past few years, indicate that:

- Coherence between macro- and microeconomic policies is crucial. A macroeconomic policy stance that leads to high domestic interest rates and an overvalued exchange rate is not conducive to investment that can bring about productivity growth and improve the international competitiveness of domestic enterprises, even when microeconomic and structural policies provide incentives for such investment.
- A coherent policy strategy that supports industrial development and technological upgrading also requires a pragmatic and strategic approach aimed at making FDI fit into the development agenda in a way that would help bring about not only faster and more sustained growth, but also structural and technological change. However, in the current international economic environment, where many countries compete with each other for FDI, only countries with a skilled labour force and a large enough domestic market and purchasing power potential are likely to have sufficient leverage over TNCs to secure technology transfer and productivity spillovers. On the other hand, even those countries will find it difficult to exert such leverage if there is intensive domestic competition for increased FDI through generous incentive packages at the provincial or municipal levels – a lesson learned from the experiences of some Latin American countries and China, as noted above.
- The shift in emphasis from trade and industrial policies based on protectionist measures for a limited number of industrial activities towards the provision of public funds to support all economic sectors has a significant fiscal impact. Subsidies imply a cost to public budgets, in the form of a loss of fiscal revenues (e.g. through tax exemptions) or an

increase in fiscal expenditure (e.g. through the provision of subsidies), while protectionist measures in the form of tariffs provide fiscal revenues. Thus, as emphasized by Wade (2006), by pursuing public support policies solely on the basis of the provision of public funds, developing countries risk encountering serious budgetary and financial constraints, which will allow substantially lower levels of support compared to those provided in the past and those that developed countries continue to be able to provide.

- It also needs to be borne in mind that WTO rules and commitments carry the *threat* of sanctions, but the eventual imposition by trading partners of retaliatory tariffs or other measures depends on the actual damage.⁵⁸ Consequently, as long as the damage caused by a trading partner's infringement of rules is small, a WTO member State is unlikely to invoke the dispute settlement mechanism and initiate the imposition of sanctions. It would appear that this confers additional degrees of freedom on countries whose importance in world trade is relatively small.⁵⁹

Thus, developing-country governments may wish to take advantage of the degrees of freedom in national policy-making that have remained untouched by the URAs. Indeed, the observation that multilateral rules still allow countries a certain degree of freedom to adopt open-economy industrial policies and that infringements are liable to challenge only when the dispute settlement mechanism is invoked, has led to the hypothesis that “[w]hat constrains sensible industrial policy today is largely the willingness to adopt it, not the ability to do so” (Rodrik, 2004: 32).

However, the asymmetries in the URAs should not be underestimated. They result from the fact that while the negotiated agreements extend to all WTO members in the same way in terms of *legal* obligations, they are much more burdensome for developing countries in *economic* terms. This implies that it is crucially important to look at the “level playing field” metaphor not in terms of *legal* constraints, but in terms of *economic* constraints, considering countries' different structural features and levels of industrial development.

Moreover, what is left of the degree of freedom for developing-country policymakers after the URAs has been reduced through regional and bilateral free trade agreements with developed countries. These agreements typically extend the range of disciplines beyond those found in the URAs regarding investment regulation and intellectual property rights protection.

Current trade negotiations threaten to further curtail the degree of freedom for developing country-policymakers. At the multilateral level, the threats are probably greatest in the intellectual property rights negotiations being conducted under the aegis of WIPO – where developed countries are pushing for further harmonization of national patent regulations – and in the current multilateral trade negotiations on industrial tariffs.⁶⁰ Concerning the negotiations on industrial tariffs, employing a harmonizing formula (across products and/or countries), cutting tariffs line-by-line rather than just on average, would reduce the degree of freedom for developing countries to protect some industrial sectors while liberalizing others. Most importantly, it will reduce the flexibility to increase tariffs that had previously been cut, as shown by Laird, Vanzetti and Fernández de Córdoba (2006).⁶¹ Maintaining existing degrees of freedom for national policy-making would imply extending the notion of flexibility to the right to exempt some sectors from tariff-binding and tariff-cutting commitments, and to the right to maintain the *average* level of tariffs at negotiated levels while being able to flexibly raise and lower tariffs in specific sectors, as deemed necessary for industrial upgrading and development.

It needs to be recognized that developing-country policymakers willingly signed on to many of the commitments in international trade agreements, which implied a reduction in their *de jure* policy autonomy. This was motivated by the expectation that the resulting benefits would far outweigh the costs of such commitments. Another possible reason for doing

so may have been the fear of adverse reactions by multilateral lending agencies, international financial markets and foreign investors. As Finger and Nogues (2002) note, at the end of the UR, developing countries were faced with the choice of accepting what was proposed or risk being marginalized in the international trade regime.⁶² Regarding bilateral trade agreements, it appears that the emphasis on export promotion as a development strategy led many developing countries to believe that securing and increasing access to developed-country markets by signing free trade agreements is almost an end in itself.

More recently, however, developing countries have been making concerted efforts to prevent a further reduction of their policy autonomy and to recover some of their lost autonomy (Gallagher, 2005: 12). This implies that, in light of their experience with adherence to the existing multilateral rules and disciplines, many governments today believe that too much policy autonomy was conceded during the UR, without gaining much in return. According to this view, some of the concessions developing countries made in the URAs, such as in TRIPS and TRIMs, were on the understanding that these were in exchange for developed countries' providing improved market access. However, as discussed in chapter III above, developed countries have largely failed to follow through on their side of the deal.

The Doha Work Programme has yet to deliver on the development promise of the Doha Declaration. The eventual outcome may well further reduce flexibility in policy-making by developing countries, particularly in the area of industrial tariffs. On the other hand, a failure of the ongoing multilateral negotia-

tions could result in greater importance being given to regional or bilateral free trade arrangements as the legal mechanisms that define rules and disciplines in international trade. While these arrangements may improve developing countries'

Developing countries may find that tariffs are one of the few policy options left.

Some degrees of freedom in national policy-making remained untouched by the URAs, but the asymmetries in the URAs should not be underestimated.

access to developed-country markets, they may entail a reduction in the degree of freedom in national policy-making that could be greater than that emerging from a Doha Round Agreement.

This could make it even more difficult to develop the supply capacity needed to take advantage of improved export opportunities. ■

Notes

- 1 As discussed in *TDR 2005*, India's reliance on the services sector is the major exception to this pattern but to what extent India can sustain rapid economic growth without rapidly expanding its manufacturing sector is an open question.
- 2 There is no generally accepted definition of industrial policy. Chang (1996: 60) defines it "as a policy aimed at *particular industries* (and firms as their components) to achieve the outcomes that are *perceived by the state* to be *efficient for the economy as a whole*" (emphasis in original). In a similar vein, Pack and Saggi (2006: 2) argue that "industrial policy is basically any type of selective intervention or government policy that attempts to alter the sectoral structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention, i.e., in the market equilibrium". In this sense, the desired outcome of industrial policy can be considered to be the creation of new production capacity and new comparative advantage, enabling an economy to progress upwards in the international division of labour. By contrast, Rodrik (2004: 3) stresses that "the analysis of industrial policy needs to focus not on the policy *outcomes* – which are inherently unknown *ex ante* – but on getting the policy *process* right" (emphasis in original).
- 3 It has also been questioned whether developing-country governments have the administrative and institutional capability to design and implement active trade and industrial policies. This issue is addressed in chapter VI.
- 4 A further argument, associated with the literature on "strategic trade theory" initiated by Brander and Spencer (1985), relates to international rent shifting on the basis of strategic interdependence among a small number of firms. However, the policy outcome of this argument is very sensitive to even small changes in the underlying model assumptions. Moreover, the model is often based on the interdependence of a duopolist structure (i.e. a market structure that is most relevant for high-tech enterprises in developed countries). Thus, apart from isolated cases, such as that relating to the aircraft firms Embraer and Bombardier, there appears to be little in strategic trade theory of relevance for developing countries.
- 5 These arguments stem largely from the concept of circular and cumulative causation that posits a circular relationship between growth in productivity and growth in total output. The main proponents of this concept – including Young, Rosenstein-Rodan, Hirschman, Myrdal, Kaldor and, more recently, Cornwall, McCombie and Thirlwall – employ similar or related analytical tools as those of recent empirical studies of late industrialization (e.g. Amsden, 1989, 2001; Wade, 1990, 2003a; *TDR 1996, 2003*). They argue that there are pervasive and significant increasing returns and externalities; complementarities in investment, production and consumption; endogenous technical change and factor creation; imperfect information, and a dependence of the capital-labour ratio on the size of the market, which, taken together, contradict the conditions for general equilibrium (see Toner, 1999, and Ros, 2000, for detailed accounts).
- 6 This also largely depends on the extent to which productivity growth translates into an increase in aggregate demand (i.e. issues related to income distribution).
- 7 With international trade in intermediate goods, domestic producers may import their production inputs. However, such imports are likely to pose problems of technology adaptation similar to those related to the purchase of foreign machinery and equipment.

- 8 To be sure, innovation in developing countries does not generally mean pushing out the technology frontier. Rather, it means developing products or processes at home that are new for the specific economy but that may already be well established in world markets.
- 9 Technical evaluations may provide some indication of the cost structure, but undertaking such an evaluation itself represents an initial investment.
- 10 Noland and Pack (2005: 4) argue that the existing technological barriers will cause the entry of imitators to be slow, so that the innovative enterprise will have a considerable time period during which it will not face much competition from local firms. However, if the speed of imitative entry depends on the degree of technological innovation, it is likely that the size of the start-up investment will also depend on the size of existing technological barriers, thereby extending the time period required to recover the start-up investment.
- 11 In the discussion on the volatility of different types of capital inflows (*TDR 2003*), it has been noted that in the evolving international environment, where finance has assumed a more prominent role in shaping international economic relations, liberalization of financial flows and related innovations in financial market instruments allow for hedging of FDI flows. This tends to blur the distinction between FDI and other types of capital flows by making FDI much more footloose and less stable than the kind often proposed in the argumentation in support of FDI as the key driver of industrialization in developing countries.
- 12 In new economic geography models, the structure of production in individual countries is determined, as in traditional trade theory, by the interaction between country characteristics and industry characteristics. But while traditional trade theory focuses on relative factor endowments of countries and factor intensities of goods, the mechanisms of new economic geography models also take into account market size and countries' geographical distance from the markets of the main developed countries, as well as the transport intensity of the industrial sectors, including the level of transport costs and the dependence on intermediate inputs. Mayer (2004) examines the relevance of these models for developing countries.
- 13 In the past, many countries maintained restrictions on imports of luxury consumer goods, but this was motivated not so much by industrial policy as by foreign-exchange management considerations.
- 14 Moreover, as a fundamental rule, it is clear that, to be successful, any kind of trade and industrial policy requires a stable macroeconomic environment conducive to investment.
- 15 Policy support for product or process innovation will be more successful if it can be directed at those activities with the highest potential to crowd in complementary investment and create technological spillovers. But the creation of linkages and inter-firm spillovers very much depends on, among other things, the prevailing industry structure (i.e. whether all activities in an industrial sector are combined in large firms, such as in the *chaebols* of the Republic of Korea, or whether there is a dense network of smaller firms with forward and backward linkages). It is probably easier for large enterprises to exploit scale economies before potential imitative competitors enter the market, as well as to benefit from spillovers. On the other hand, this reduces the case for supportive policies designed to reduce the cost of innovative investment. An alternative may be to combine more horizontal support, targeted at new activities and processes more generally, with more selective measures aimed at fostering diversification and structural change.
- 16 Lall (2004), for example, builds a classification of different types of industrial policy around the attitude towards FDI based on a "competitiveness strategy", which seeks to identify the kind of public support required to attract FDI while laying the ground for knowledge spillovers.
- 17 Experience suggests that performance criteria should be related to productivity growth and structural change, rather than to a multiplicity of objectives such as rent transfer to particular groups on an ethnic, family, gender or interest group basis.
- 18 In addition to using formal policy tools, governments can also seek to exercise influence through informal administrative guidance, coercing recalcitrant firms if necessary. Wade (2003a: xxi–xxii), for example, describes how "nudging" foreign firms to switch supplies from imports to domestic producers, or nudging established industries quickly to provide markets for firms in innovative industries, was used in Taiwan Province of China. This kind of persuasion involved a mix of methods, such as promises of goodwill for future ventures, or delaying the granting of permission to import (that had earlier been approved quickly and automatically).
- 19 Examples include the incompatibility of standards between IBM personal computers and Apple Macintosh, computer chips made by Intel and other firms, or competing standards for third-generation telephone handsets, optical disk storage or high-definition televisions. By contrast, open source software is an example of global compatibility because it makes the source code of an application available via the Internet.
- 20 Departing from the MFN rule, there are provisions that allow free trade agreements and customs unions among WTO members under certain conditions. Moreover, the so-called "escape clause" allows a WTO member to suspend its obligations as a tem-

- porary emergency measure, accompanied by the adoption of adjustment policies.
- 21 The agreements also included liberalization commitments relating to non-tariff barriers, as well as commitments in the areas of agriculture and services, but these are not considered here.
- 22 Investment-related disciplines of the multilateral trading regime are also contained in the General Agreement on Trade in Services (GATS) as part of mode 3 (i.e. supply through commercial presence). For a detailed discussion of this area, see Wade, 2003b; and Cho and Dubash, 2005.
- 23 These transition periods were five years for developing countries (i.e. until the end of 2000), and seven years for the least developed countries (LDCs), with some further extensions granted to countries experiencing implementation difficulties for development, finance or trade reasons.
- 24 This concerns disputes Nos. 51, 52, 65 and 81 against Brazil; Nos. 146 and 175 against India; Nos. 54, 55, 59 and 64 against Indonesia; No. 195 against the Philippines, and Nos. 339, 340 and 342 against China. For details, see www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm.
- 25 Since TRIMs applies only to trade in goods, governments can impose local procurement requirements with respect to services such as banking, insurance and transport, as long as such measures remain possible under GATS disciplines.
- 26 This is in contrast to the Subsidies Code of the Tokyo Round, which was voluntary and extended only to national governments.
- 27 Subsidies for research had to be for activities conducted by firms or by higher education or research establishments on a contract basis with firms, on the condition that the assistance covered not more than 75 per cent of the cost of industrial research or 50 per cent of the cost of pre-competitive development activity. Eligible regions were defined as those whose per capita income did not exceed 85 per cent of the country's average or those whose unemployment quota had been at least 110 per cent of the country's average over a three-year period. Regarding environmental objectives, subsidies were permitted for the "promotion of adapting existing facilities to new environmental regulations".
- 28 The Agreement refers to seven areas of intellectual property: copyrights, trademarks, geographical indications, utility models, patents, integrated circuits and undisclosed information.
- 29 The LDCs have been granted a general transition period until 1 July 2013, and an additional extension until 1 January 2016 with regard to patents and undisclosed information relating to pharmaceutical products.
- 30 While the focus of this discussion is on the impact of the TRIPS Agreement on industrial development, it should be noted that access to medicines in developing countries has gained considerable attention. This has mainly a humanitarian dimension, but it can also be of considerable importance for pharmaceutical industries in developing countries. The Doha Declaration clarified the need to interpret TRIPS from a public health perspective, and thus improved the Agreement's developmental aspects in terms of access to medicines. It explicitly recognizes the flexibility within TRIPS to grant compulsory licences and the right of countries to determine the grounds on which these are granted. The WTO decision of 30 August 2003 waives the limitation on exports of generic products if they go to countries having insufficient manufacturing capacity.
- 31 For specific examples, see Morin, 2003; and Shadlen, 2005b.
- 32 The advent of the avian influenza made compulsory licensing a global issue because of the widespread perception that patent protection of the apparently only efficient drug in this area is a barrier to preparations for combating a potential pandemic. For a detailed discussion of the impact of developing countries' bilateral free trade agreements with the EU and the United States on intellectual property rights that affect access to medicines, see Correa, 2006.
- 33 Kowalski (2005: 11) points out that in upper-middle-income countries, the share of import duties in total government revenue fell from about 20 per cent in the late 1980s to about 7 per cent in the early 2000s; the respective shares for lower-middle-income countries were 25 per cent and 16 per cent, and for low-income countries 27 per cent and 19 per cent respectively.
- 34 Full binding coverage and uniform tariffs also contribute to greater predictability of trade policy and market access, and thus foster the stability of the international trading system (Francois and Martin, 2002). But this is true only if the resulting loss of flexibility in tariff policy is not replaced by a greater application of non-tariff measures, which are generally less transparent than tariffs. Moreover, it is exchange-rate instability that often constitutes the most serious threat to the predictability and stability of international trade flows and the international trading system (*TDR 2004*).
- 35 Moreover, developing countries would need to be able to raise tariffs in particular industrial sectors without much cost. GATT Article XVIII: A and XVIII: C allows countries to remove tariff concessions or use quotas for infant industry protection, but in order to do so they have to "negotiate" and "compensate". While these obligations maintain transparency and help to avoid abuse, this procedure can be cumbersome and involve costly compensation. The so-called "escape clause" under Article XIX allows a WTO member State to suspend

- its obligations under certain conditions in order to safeguard its industry. However, these safeguards can be invoked only as temporary emergency measures and must be accompanied by adjustment; thus they do not provide an instrument for promoting competitive industrial production.
- 36 This discrepancy between bound and applied tariffs is partly due to unilateral trade liberalization that many developing countries have undertaken either voluntarily or as a result of conditionalities imposed by multilateral lending institutions.
- 37 This statement relates to a comparison of India with the other countries in the table, but, as noted above, not with respect to the now developed countries when they were at India's current level of per capita income.
- 38 However, industrial upgrading in the Republic of Korea has largely relied on national enterprises, while it appears that much of the high-value-added industrial activity in China occurs in wholly foreign-owned enterprises, as discussed below.
- 39 This emphasis on international competitiveness is well illustrated by the fact that one of the main policy actions included in Brazil's Multi-Annual Plan for the period 1996–1999 was a reduction of the so-called "Brazil-cost", that is, "the extra labor and fiscal costs producers (both foreign and domestic) have to bear when producing in Brazil as opposed to producing in foreign countries" (Melo, 2001: 10).
- 40 Peres (2006) also notes that in bilateral or multilateral free trade negotiations, representatives from Latin American countries sometimes attempt to improve export opportunities for new industrial activities in order to promote industrial development.
- 41 This has been the case, in particular, for countries closely linked to the United States markets, either through geographical proximity or formal trade arrangements, such as Mexico and the smaller Central American and Caribbean countries.
- 42 For details on PROEX, see www.bb.com.br/appbb/portal/gov/ep/srv/fed/AdmRecPROEX.jsp. In a sense, it could be argued that, in terms of export finance, PROEX simply seeks to bring Brazilian exporters on an equal footing with their competitors in countries that have sustained macroeconomic stability and strong financial markets.
- 43 Moreover, in 2001–2003, Brazil challenged the compatibility with WTO rules and commitments of the low-interest financing provided by the Canadian Government to a foreign importer of Bombardier aircraft. In February 2002, the WTO dispute settlement panel ruled that this aid constituted an illegal subsidy.
- 44 As pointed out by Goldstein (2002: 112), to prevent abuse of the programme, financing must be at market rates plus a risk premium; loans must be for no longer than 10 years, and they must cover no more than 85 per cent of the purchase in question. For a legal assessment of the WTO dispute settlement panel ruling, see Doh, 2003: 14–15.
- 45 For details on the criteria used for the selection of specific sectors, see Peres, 2006.
- 46 Employment creation and regional development have been additional objectives of support to SME clusters.
- 47 Gross domestic expenditure on R&D accounts, on average, for only 0.6 per cent of GDP in Latin America and the Caribbean, compared to 1.2 per cent in China, 1.8 per cent in the EU and 2.8 per cent in the United States (UNESCO, 2005).
- 48 See *China Daily*, Speed application of high-tech advance, 14 February 2006.
- 49 National Guideline on Medium and Long-term Programme for Science and Technology Development (2006–2020).
- 50 See *China Daily*, China to adjust export tax rebates, 6 June 2006 (http://en.ce.cn/Business/Macroeconomic/200606/15/t20060615_7365602.shtml).
- 51 See *Shanghai Securities Daily*, Merger of the dual tax system has reached the Ministry of Finance, 6 June 2006 (www.china.org.cn/chinese/zhuant/2006ssgclt/1231761.htm).
- 52 Loriaux (2003: 108–109) argues that the move from fixed to flexible exchange rates in 1973 rendered a policy of State-controlled bank credit very costly because it led to an "overdraft economy" in which interest rate hikes had little or no impact on the demand for credit by businesses.
- 53 Jacquet and Darmon (2005: 86) point out that the creation of clusters of competitiveness is the "offensive" part of France's industrial policy, which has been complemented by a "defensive" part consisting of tax credits and other fiscal benefits for industrial sectors and geographical regions facing economic difficulties. For detailed information on clusters of competitiveness, see www.competitivite.gouv.fr/.
- 54 Some of the 67 initially chosen projects were merged, while the projects for an additional nine clusters were approved in December 2005 (Ministère de l'Économie, des Finances et de l'Industrie, 2006).
- 55 The European Council meeting in Lisbon in March 2000 set the objective of making Europe the most competitive and dynamic knowledge-based economy in the world by the year 2010 by, *inter alia*, creating a knowledge-based economy and enhancing competitiveness and innovation.
- 56 Apart from promoting the use of public procurement to stimulate research and innovation, the new initiatives in the action plan include: a revised State aid policy, which aims to reduce State aid gradually while refocusing it on activities that are likely to have the most sustainable impact on competitiveness, jobs and growth, and that promote cross-

- border cooperation in research; tax incentives for firms to invest more in innovative areas; efforts towards the creation of an attractive single market within the EU for researchers, structural cohesion and regional funding focused more on research and innovation; and financial instruments to support research within SMEs (Commission of the European Communities, 2005).
- 57 Contrary to the broad-based and virtually unconditional protectionist measures that often accompanied inward-looking, import-substituting industrialization strategies, export targets were the main performance standard imposed by East Asian governments on business as a reciprocal control mechanism for public policy support. They were designed to help the supported production activities achieve international competitiveness and to minimize the risk of rent-seeking and other abuse of public policy support.
- 58 However, in some instances, the mere threat of sanctions from other countries may have an impact on a country's policy-making.
- 59 The generally long time lapse between the adoption of a certain policy measure that potentially infringes rules and the ruling of a dispute settlement panel may allow countries with strong administrative capabilities to achieve the intended goal and discontinue the policy measure before such a ruling and the potentially associated sanctions are adopted.
- 60 Another area is the negotiations on a multilateral investment agreement, now dormant, that aimed at removing virtually all restrictions on FDI.
- 61 It may also induce an even greater use of anti-dumping measures and countervailing duties, which are inherently discriminatory and costly to implement.
- 62 According to Finger and Nogues (2002: 334), influential developed countries had announced that they would withdraw from the GATT as soon as the WTO came into existence. This implied that a country that did not accept the "grand bargain" of the URAs would not have enjoyed protection from discriminatory treatment, either from the new WTO or the old GATT rules and regulations.

Notes for figure 5.2:

The product categories are based on the International Standard Industrial Classification (ISIC) Rev. 3 for Mexico and the Republic of Korea; and on ISIC Rev. 2 for Brazil. Resource-intensive manufactures include: 15, 16, 20, 21, 23, 26, 27 and 28 in Rev. 3, and 311, 313, 314, 331, 341, 353, 354, 362, 369, 371, 372 and 381 in Rev. 2. Labour-intensive manufactures include: 17, 18, 19, 22, 25, 36 and 37 in Rev. 3, and 321, 322, 323, 324, 332, 342, 355, 356, 361 and 390 in Rev. 2. Technology-intensive manufactures include: 24, 29, 30, 31, 32, 33, 34 and 35 in Rev. 3, and 351, 352, 382, 383, 384 and 385 in Rev. 2. This classification is based on the categories used in *TDR 2002*, chap. III.

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