

## II TRADE AND DEVELOPMENT

From its beginnings the international trading system has been shaped by a blend of principle and pragmatism. Trade relations cannot be determined solely on the basis of simple, inviolate principles that are defined and agreed upon at the outset. Practical considerations, politics and particular expressions of the national interest inevitably intervene to determine positions taken by governments. Some commentators reflect this reality when they refer to a government measure or policy approach as “bad economics but good politics”. Yet much of the strength and historical success of the multilateral trading system has rested on the willingness of governments to pre-commit to a set of principles and rules, underpinned by binding arrangements for settling trade disputes.

A continual challenge facing the trading system is to secure balanced outcomes faithful to these core tenets which at the same time accommodate the divergent needs, interests and priorities of the membership, including those of smaller and weaker countries. This is a moving target, and the mix that has emerged from the interplay of principle and pragmatism at different stages of the GATT/WTO’s development has never seemed ideal to all participants in the system. But as long as governments believe that no serious alternative exists to co-operation, they will negotiate and the system will continue to modify and redefine itself. It is this essential process of modification and redefinition that underlies negotiations like those upon which Members embarked at Doha in November 2001.

The outcome of these negotiations will be assessed in no small measure on the basis of their contribution to development. This part of the Report focuses on the question of how developing countries can derive greater benefits from participation in the trading system. The answer to this question depends on two fundamental considerations. The first is the policies that developing countries themselves choose to pursue. The second is whether the trading system is appropriately designed and effectively functions to support and promote development.

Section II.A discusses what we understand of the development process and the part that trade plays in that process. Despite the remarkable technological achievements of the last two hundred years, we still live in a world of pervasive human poverty and underdevelopment. Deep and complex factors underlie this sad reality, and not all of them are fully understood. A very brief discussion of some of these issues follows, with pointers to elements of what we do understand about successful development strategies and the nature of outstanding challenges. Particular attention is paid to the role of trade in the development process. The analysis will focus on the potential developmental contribution of openness to trade and investment, the economic and socio-political preconditions that enable nations to take advantage of openness, and the ways in which openness relates to the continuing challenges of poverty alleviation and environmental sustainability.

Section II.B links this analysis to the Doha negotiating agenda and work programme. Those aspects of the Doha Agenda that seem most directly related to the development needs and interests of developing countries form the central focus of analysis. Options and priorities are examined in terms of how outcomes might affect the development prospects of developing countries. This analysis builds on the basic argument that even if governments were perfectly aware of the best possible policy options available to promote development, and the growth that must inevitably accompany development, additional gains accrue from active participation in a well designed system of international co-operation. The analysis also considers the impact of developed country policies and positions on the prospects of developing countries.

## A THE ROLE OF TRADE AND TRADE POLICY IN THE DEVELOPMENT PROCESS

### 1. THE COMPLEXITIES OF DEVELOPMENT

Different aspects of the development process have been emphasized by the many scholars and observers who have ventured into this field. The seminal work of Sen (1999) identifies freedom as both the primary end and principal means of development.<sup>1</sup> The Brundtland Commission stressed that development must involve the care and nurturing of the environment for future generations. Others have focused particularly on poverty reduction and the empowerment of poor people. All these approaches consider economic growth a vital component of the development process, while emphasizing that development is about more than growth.

Growth in real income is an important means of expanding freedom but it is not the ultimate objective.<sup>2</sup> The means and ends of the development process should not be confused. Moreover, the correlation between levels of income and the quality (or even the length) of human lives is not perfect.<sup>3</sup> It may thus be possible to improve the human condition without requiring significant growth in real incomes. Ultimately the development process is about expanding the opportunities of people to choose a life they have reason to value.

Closely linked to this broader definition of development is the importance of poverty reduction in the development process. It is estimated that of the world's 6 billion people, 2.8 billion live on less than \$2 a day, and 1.2 billion live on less than \$1 a day (World Bank, 2000). Poverty not only encompasses material deprivation. It is also associated with low levels of education and health, greater vulnerability, possible ill treatment by institutions of the state and society, and powerlessness to influence key decisions.

A major objective of poverty alleviation is to enable poor people to take greater control of their own destiny. This "empowerment" amounts to the "expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives" (World Bank, 2000). Empowerment requires that people have access to information, participate in decisions that affect them, hold public and private institutions accountable, and develop organisational abilities.

In the 1960s and early 1970s, concern about the impact of economic growth on the environment came to the fore. The environmental impact of economic growth and industrialization – air and water pollution, acid rain, deforestation – was emerging as an important policy issue in developed countries. Given growing population and the enormous challenge of lifting the quality of life of billions of poor people, the development process is bound to exert pressure on the earth's limited resources (air, water, land and biodiversity). As a consequence, the concept of sustainable development gained ground. Sustainable development means that the needs of the present should be met without compromising the ability of future generations to meet their own needs.

The concept of sustainable development carries the seeds of potential tension. On the one hand, it is essential to meet the current needs of the world's poor. A world in which poverty and inequality are endemic will always be prone to ecological and other crises, so the objective of uplifting the poor and of achieving economic growth are integral to the concept of sustainability. But on the other hand, limitations imposed by available

<sup>1</sup> Sen argues that development should be a process that expands the freedom people enjoy or removes obstacles to freedom that leave people with little choice and few opportunities. He defines freedom as escape from the indignities of poverty, illiteracy, ill-health and early mortality. It is liberty from political tyranny, the possession of political rights and civil liberties, the absence of racial, ethnic, sexual or religious discrimination, and the availability of social and economic opportunities and the capability to take advantage of them.

<sup>2</sup> The philosophical thrust of development beyond economic growth underlies much of the work done by institutions such as UNDP and is reflected in its human development index. As originally proposed in 1990, the index measured three aspects of human life – longevity, knowledge and decent living standards. The index has since been expanded to include the environment, gender, human and labour rights.

<sup>3</sup> Sen points out, for example, that the survival rates for African Americans is lower than for people in China or India, despite the former having higher average levels of income.

environmental resources can cut across the development process. There is a need to manage the process of economic growth so that pollution and depletion of non-renewable resources do not cause irreversible damage to the stock of environmental resources and threaten the well-being of future generations.

The eight Millennium Development Goals (MDGs), adopted by the UN Millennium Summit held in September 2000, exemplify the holistic approach to development. The MDGs are a set of time-bound and measurable goals for combating poverty, hunger, disease, illiteracy, discrimination against women and environmental degradation (see Box IIA.1). The fact that economic growth is not listed as a goal reflects the accepted view that has been described above, namely that growth is a means to achieve development targets, not an end in itself.

### Box IIA.1 : Millennium Development Goals

In September 2000, world leaders met at the United Nations Millennium Summit, to address the role of the United Nations in the 21<sup>st</sup> century. At the Summit, world leaders adopted the Millennium Declaration, which identified as the key challenge faced by the international community the need to “ensure that globalization becomes a positive force for all the world’s people”. The Declaration recognized that developing countries and countries in transition faced special difficulties in responding to this central challenge and that broad and sustained efforts were needed to create a shared future. The Declaration agreed on a set of ambitious development goals and targets, all of which are to be achieved by 2015. The Millennium Development Goals (MDGs), as they are now called, involve 8 goals and 18 targets. They represent a holistic approach to development with key targets in the economic, social, health, education, gender and environmental areas.

#	Millennium Goals	Targets
1	Eradicate extreme poverty and hunger	(i) Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day (ii) Halve, between 1990 and 2015, the proportion of people who suffer from hunger
2	Achieve universal primary education	(iii) Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
3	Promote gender equality and empowering women	(iv) Eliminate gender inequality in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015
4	Reduce child mortality	(v) Reduce by two thirds, between 1990 and 2015, the under-five mortality rate
5	Improve maternal health	(vi) Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
6	Combat HIV/AIDS, malaria and other diseases	(vii) Have halted by 2015 and begun to reverse the spread of HIV/AIDS (viii) Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
7	Ensure environmental sustainability	(ix) Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources (x) Halve by 2015 the proportion of people without sustainable access to safe drinking water (xi) By 2020 have achieved a significant improvement in the lives of at least 100 million slum dwellers
8	Develop a global partnership for development	(xii) Develop further an open, rule-based, predictable, non-discriminatory trading and financial system - Includes a commitment to good governance, development, and poverty reduction – both nationally and internationally (xiii) Address the special needs of the least-developed countries - Includes: tariff and quota free access for LDC exports; enhanced programme of debt relief for HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction (xiv) Address the special needs of landlocked countries and small island developing states - (through Barbados Programme and 22nd General Assembly provisions) (xv) Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term (xvi) In co-operation with developing countries, develop and implement strategies for decent and productive work for youth (xvii) In co-operation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries (xviii) In co-operation with the private sector, make available the benefits of new technologies, especially information and communication technologies, to all

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Trade's contribution looms large in many of the key goals and targets of the Millennium Declaration, particularly in the first (eradication of poverty and hunger), sixth (Combat HIV/AIDS, malaria and other diseases), seventh (environmental sustainability) and eighth (global partnership for development) Millennium Development Goals. Many of the work programmes of Doha feed directly into these areas of the MDGs and the specific targets under each of the goals.

*Eradication of Poverty and Hunger.* Trade, as the Monterrey Conference on Financing for Development recognized, is in many cases the single most important external source of development financing for developing countries as well as countries with economies in transition. The Doha work programme in the areas of agriculture, tariff peaks and tariff escalation on products of export interest to developing countries, are key to enhancing growth prospects in the developing world. These negotiations are being complemented by the unprecedented attention paid to technical assistance and capacity building in various provisions of the Doha Declaration. The objective is to build negotiating capacity and institutional capacity for understanding WTO rules and implementing WTO obligations and commitments.

*Combating HIV/AIDS, malaria and other diseases.* The Declaration on TRIPS and Public Health emphasizes that the TRIPS Agreement should not prevent WTO Members from taking measures to protect public health and reaffirms their right to use the provisions of the TRIPS Agreement for this purpose. The Declaration extends until 2016 the transition period for least-developed countries in regard to the protection and enforcement of patents and undisclosed information with respect to pharmaceutical products and seeks ways for countries with limited manufacturing capacities to be able to make effective use of compulsory licensing.

*Environmental Sustainability.* The Doha work programme offers an important opportunity to enhance the mutual supportiveness of trade and environment, as negotiations will examine the relationship between existing WTO rules and specific trade obligations set out in multilateral environmental agreements (MEAs), whose numbers have been growing in recent decades. One of the key targets of the MDGs is to halve by 2015 the proportion of people without sustainable access to safe drinking water. The Doha work programme promotes the realization of this target through the mandated negotiations which aims to reduce or eliminate tariff and non-tariff barriers on environmental goods and services. The provision of water supply is one of the key areas or activities in the environmental goods and services sector. Another example in which Doha will contribute to environmental sustainability is through the negotiations to clarify and improve WTO disciplines on fisheries subsidies, which many believe have played a major part in the depletion of fishery stocks.

*Global Partnership for Development.* The Doha work programme directly addresses other key targets (xiii, xiv, and xviii) of the Millennium Development Goal to develop a global partnership for development. It recognized that the integration of least-developed countries into the multilateral trading system required meaningful market access and an important commitment made in this connection was duty-free, quota-free market access for products originating from LDCs. A work programme has also been established under the aegis of the WTO General Council to examine issues relating to small economies, with a view to framing responses to the trade-related issues identified for the fuller integration of small and vulnerable economies into the multilateral trading system. The Working Group on Trade and Transfer of Technology was established to examine steps that might be taken within the mandate of the WTO to increase flows of technology to developing countries.

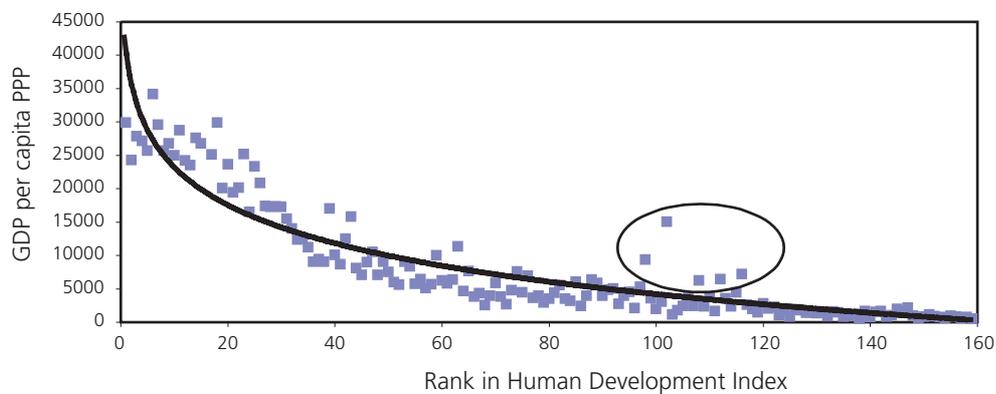
## (a) Growth is important for development

A good education system, a healthy diet, safe water and good health services all require considerable economic resources. Economic growth can generate the resources necessary to meet these development challenges. The link between human development and the availability of economic resources is reflected in Chart IIA.1. The chart plots countries' ranking on the Human Development Index (HDI) constructed by UNDP against GDP per capita. The HDI ranks countries according to their performance in relation to health, education and income. Since income per capita has a weight of one third in the index, one should expect correlation between the HDI and GDP per capita, but the chart clearly indicates that health and education are also closely correlated with income.

Chart IIA.1

### Human development index closely linked to income levels.

(Dollars and rank)



Source: UNDP, Human Development Report, 2002; World Bank, World Development Indicators, 2002.

The chart suggests that human and economic development often move in concert. Yet this is not always the case. Human and economic development can be out of step, as the encircled countries above the trend-line indicate. These include three middle-income sub-Saharan African countries with high HIV/AIDS infection rates (South Africa, Namibia and Botswana), where life expectancy has fallen dramatically, while the income level has so far been maintained. The other two are oil-exporting African countries (Equatorial Guinea and Gabon) which have experienced a rapid increase in their level of income due to production from new oil fields without corresponding gains in human development.<sup>4</sup>

The interdependence of human and economic development also suggests that human development is unlikely to be sustained in the face of enduring economic stagnation. In Zambia, for example, the level of GDP per capita peaked in 1965 and has fluctuated around a downward trend ever since.<sup>5</sup> Life expectancy at birth increased from 42 years in 1960 to a peak of 51 years in 1982 and after that slipped back to 49 years in 1990 and 38 years in 2000. The sharp decline during the 1990s is probably due to the HIV/AIDS pandemic, but it appears that the slippage started even before the pandemic. Primary school enrolment in the country increased from 89 per cent in 1970 to 100 per cent in 1985 and then gradually slipped back to 86 per cent in 1998. In the absence of growth, it has been difficult to sustain early gains in social development, notwithstanding aid flows to the social sectors.

Given the significance of growth as a means to achieve development, it is important to understand how growth is generated. Our understanding of the growth process has much improved in recent decades but is still far from complete. The discussion that follows considers factors that our current state of knowledge points to as the main driving forces behind growth.

<sup>4</sup> This should be seen as a shift in the level of income rather than economic growth, since it is largely due to the expansion of extractive industries exploiting non-renewable resources.

<sup>5</sup> GDP per capita reached 473,528 kwacha in 1965, but in 2000 stood at only 247,012 kwacha. Both figures are at constant 1995 local prices (World Development Indicators, 2002).

## (b) Effectively using resources

Economic growth is driven by two major forces: finding new and better ways of utilizing existing resources, and generating new productive resources through investment. Better utilization of existing resources appears to be the more important of the two factors. If, for example, the only difference between the United States and Niger was their endowments of capital and their level of education, the United States would be only 4.6 times richer than Niger. There are, however, huge differences in the way the two countries utilize their resources and the United States is in fact 35 times richer than Niger in terms of per capita income (Hall and Jones, 1999).<sup>6</sup> Countries utilize resources differently because they have different histories, institutions, and geographical circumstances.

Early research on economic growth focused on the accumulation of capital, such as investment in machinery, equipment and infrastructure. That is why during the 1950s and 1960s the development strategy in newly independent countries and other poor countries emphasized investment and rapid industrialization. Furthermore, it was widely believed that markets in these countries were too underdeveloped for growth and that they lacked competitiveness with manufacturers from developed countries. Therefore, the policy framework for early investment-led industrialization and growth was one of government planning and protected domestic markets. In addition, domestic savings were considered to be inadequate for the necessary investments, and foreign borrowing and aid came to play an important role in the development strategy.<sup>7</sup> It soon turned out that planned, investment-led development created rigidities that became an obstacle to growth in the face of changing circumstances such as the oil price shocks in the 1970s and 1980s and technological change. These problems are further discussed in Section IIA.2(e) in this Report.

During the 1950s and 1960s the world economy experienced rapid growth, including in some poor countries. The fastest-growing countries during the period 1960 to the first oil crisis in 1973 were natural resource-based developing countries such as Oman (13 per cent), Botswana and Saudi Arabia (about 11 per cent) and Côte d'Ivoire (about 8 per cent).<sup>8</sup> During the same period there were also some newly industrialized countries and some at an early stage in the industrialization process that experienced very rapid growth. Japan, Hong Kong, China; and Singapore experienced growth rates above 9 per cent during the period, while Brazil, Thailand, Greece, Israel, the Republic of Korea and Costa Rica had average growth rates exceeding 7 per cent. Nevertheless, there were some countries that experienced little or no growth during the same period. Chad, Niger and Uruguay had less than 1 per cent growth annually during the period 1960-73, while Haiti, Senegal and Sudan had less than 1.5 per cent growth. Population growth was between 0.9 and 2.7 per cent on average in the slow-growing countries, implying falling per capita incomes.

In all the fast-growing countries mentioned above, the investment share of GDP has been relatively high while it has been relatively low in the slow-growing countries.<sup>9</sup> In general, there is a strong positive correlation between the investment share of GDP and growth. This observation raises the question as to why some countries have more high-yielding investment opportunities than others. And is it investment that generates growth or is it growth that stimulates investment? In order to answer these questions, one has to look at the factors that complement and support capital investment.

<sup>6</sup> Data are from 1988.

<sup>7</sup> See Krueger (1997) for a discussion of the evolution of our understanding of the development process and development policies, focusing on the role of trade.

<sup>8</sup> All figures are annual average growth rates.

<sup>9</sup> See Table IIA.1.

Human capital is one of these factors. Human capital acquired through education and work experience is clearly required in order to operate advanced machinery in an efficient manner. The introduction of modern machinery and production processes creates demand for skilled workers, while increased supply of skilled workers improves productivity of new machinery and equipment. Investments in machinery and skills thus feed on each other.<sup>10</sup> A better educated labour force makes investment in physical capital more profitable and therefore attracts more of it. But not all countries with a well educated labour force and a high investment rate grow. The Eastern European countries during the 1980s are a case in point and again illustrate that it is not the accumulation of capital (human and physical) that is most important, but the way it is utilized.<sup>11</sup>

To conclude this section, high-yielding investment opportunities become exhausted if not complemented by other factors such as education and research and development (R&D), to which we now turn.

### (c) How is knowledge converted into productive technology?

Knowledge has two properties which make it an important component of the development process. The first is its durability implying that it can be used repeatedly. The second is its non-exclusive nature. More than one person can take advantage of knowledge without diminishing its value to others. Yet there are huge technology gaps between rich and poor countries. In order to understand how universal knowledge can co-exist with such technology gaps there is a need to distinguish between knowledge in the form of abstract ideas and the way the abstract ideas are transformed to changes in behaviour and to productive technology. While abstract ideas are an indication of potential development and growth, changes in behaviour and improvements in productive technology determine actual growth.

Ideas are created through research and development (R&D) and they spread through the education system and through dissemination of research findings in publications, patents and interchange of ideas within the research community. The ideas are largely in the public domain and often referred to as a common pool of knowledge which everybody can draw from. When everybody can draw on every new idea, there are clearly economies of scale in R&D. First, the larger the population, the more people there are who can take advantage of existing ideas. Second, the more scientists and engineers, the more ideas are discovered or created. It follows that a large community should be expected to have a larger stock of knowledge than a small community. The key questions for understanding the linkage between knowledge and growth are then how far ideas spread, how ideas affect behaviour and technology, and to what extent a large stock of knowledge makes it easier to discover or create new ideas.

When individuals, firms and governments are able to act upon new ideas in terms of changing behaviour, improving technologies or changing policy respectively, ideas affect economic growth. For example, common knowledge of nutrition and what constitutes a healthy diet improves public health and labour productivity, given that knowledge changes behaviour and that healthy food is available and affordable. By the same token, knowledge of family planning techniques reduces fertility and increases growth, given that knowledge changes behaviour. From the R&D side, common knowledge of technologies – for example how a computer works – can be used by all producers of computers once the innovation has been made. Obviously reproducing what has already been invented is less costly than inventing the product. New innovations create new investment opportunities while the prospect of capitalizing on new inventions motivates further R&D. Capital investment and R&D thus feed on each other in much the same way as investment in human and physical capital feed on each other. Furthermore, R&D prevents investment from running into diminishing returns, as new technologies are more productive than the ones they replace, and new products often fetch higher prices than comparable existing products.

<sup>10</sup> Industrialization during the nineteenth and early twentieth century was, however, “deskilling” as machinery simplified tasks and replaced craftsmen with unskilled manual workers.

<sup>11</sup> By the same token, empirical research has found that the impact of female education on economic growth is insignificant or even negative (e.g. Barro 2001), indicating that if women have less opportunity to participate in the labour force in jobs where their skills are utilized, the social return to their education may be low.

When assessing how far ideas spread, the distinction between abstract ideas and productive technology becomes crucial. At the level of abstract ideas it appears that knowledge is universal. The school curriculum is fairly similar across countries and scientists and engineers have access to more or less the same information everywhere. Diffusion of productive technology, however, appears to be more limited in scope. There is evidence to suggest that technological diffusion falls off sharply with distance and that technology is local rather than global (Keller, 2002).

Finally, there is the question whether new ideas are more easily created the larger the stock of existing knowledge. If so, one would expect that the rate of innovation would increase over time and there would be more innovations in large economies than in small economies. It is indeed true that R&D expenditure has increased over time and that it is higher in the larger and richer economies. The share of scientists and engineers in total employment has risen three-fold in the United States since 1950, and similar figures are found in other OECD countries. The average number of years of schooling has increased substantially during the same period. Yet the trend rate of productivity growth has been stable (Jones 1995; 2002). These findings indicate that, at least during this period, the discovery of past ideas has not made current research more productive. That does not necessarily mean that the same will apply in the future. It has been argued that knowledge and technology move forward in leaps. Sometimes a new discovery leads to a significant technological breakthrough followed by a large number of complementary innovations. So-called general purpose technologies are examples of this. General purpose technologies are characterized by their usefulness in a wide range of sectors in ways that drastically change modes of operation. Examples are electricity, the internal combustion engine, and recent developments in information and communication technology.<sup>12</sup> Periods of rapid technical progress can, however, be followed by periods where fewer productive ideas emerge from R&D efforts.

#### (d) Specialization and the extent of the market – are markets local, regional or global?

Economic activities are not evenly spread over the earth's surface, but tend to cluster in certain areas. In these clusters each activity benefits from access to inputs produced by others located in the same area and to a pool of skills, infrastructure and business services. A sufficiently large market allows for extensive specialization while each company is still able to exploit economies of scale. Furthermore, when manufacturers have access to a broad variety of specialized inputs their productivity improves, their costs are reduced and they can expand sales. As the market expands, room for more specialized producers is created with a further lowering of costs. It is entirely possible for this process to create a self-sustained virtuous cycle.<sup>13</sup>

The virtuous cycle only becomes self-sustaining once a critical mass of producers and a critical level of demand are reached. Countries with markets below this critical size may find themselves in a poverty trap with the majority of the population engaged in household and subsistence production, where very little specialization takes place. Early development theory was concerned with how to trigger the virtuous cycle, moving production from the household to the market and extending the market beyond the village and then beyond national borders in order to adopt industrial production methods that require a minimum scale to be efficient. Early industrialization take-offs in the United Kingdom and Continental Europe were preceded by extensive improvements in roads, canals and harbours that integrated the domestic market, while construction of intercontinental railway lines served the same purpose in the United States.<sup>14</sup>

<sup>12</sup> Gordon (2000), among others strongly disagrees that "the new economy" measures up to earlier industrial breakthroughs such as electricity. See Helpman (1998) for an extensive analysis of general purpose technology.

<sup>13</sup> The clustering of firms in a well-served area may well be equally important for the performance of export processing zones.

<sup>14</sup> See McDermott (2002) for a discussion.

Openness to trade is clearly one way of extending the market to reach the critical mass of demand that makes specialization feasible. Economic integration preceded industrialization and sustained growth in Continental Europe and was a crucial trigger for launching the virtuous cycle described above. Likewise, the take-off to sustained growth in newly industrialized countries was preceded by strong export growth in all cases except China, where export growth came later.<sup>15</sup> China, however, has a huge internal market that could set in motion the early industrialization process, which subsequently has been sustained through opening up to international trade. Market size is in other words important for industrial development, and small developing and least-developed countries can only attain the critical market size through integration with the rest of the world. The scarcity of success stories from inward-looking countries underscores this point and is further discussed in Section IIA.2(e).

Specialization has taken a new turn in developed and newly industrialized countries in recent years, following a sharp decline in the costs of transport and information. Now specialization occurs not only between industries or between different models and trademarks within industries – it changes the very boundaries of the firm. Production is increasingly split into a sequence of activities that are performed by different firms that form a more or less closely knit production network. Such networks are often international in scope, and allow for a more extensive division of labour between countries based on comparative advantage. Labour-abundant developing countries that lack comparative advantage in the production of cars or computers, for example, can still produce labour-intensive components for the car or the computer industry, and over time move into higher value added activities.<sup>16</sup>

Table IIA.1 shows average annual growth rates in GDP per capita, primary and secondary school enrolment ratios, the investment rate and the degree of openness for fast-growing and slow-growing countries. The fast-growing countries are defined as those that have an annual average growth rate above the median and the slow-growing countries grow less than the median. Three periods are estimated: the rapid growth period from 1960 until the first oil crisis in 1973; the turbulent period of stagflation following the oil crises in the 1970s and early 1980s; and finally the period since 1985. The fast-growing countries have consistently higher investment rates, higher school enrolment rates and they trade more than the slow-growers.<sup>17</sup>

**Table IIA.1**  
**Sources of economic growth, 1960-2000**  
(Percentage)

	1960-73		1973-85		1985-2000	
	Fast-growers	Slow-growers	Fast-growers	Slow-growers	Fast-growers	Slow-growers
Per capita income growth	4.6	1.2	2.9	-0.9	3.0	0.0
Share of investment in GDP	23.8	10.8	20.9	14.0	18.8	12.2
Ratio of trade to GDP (X plus M)	62.6	43.5	72.3	58.2	79.3	64.0
Primary school enrolment rate	...	...	87.4	74.1	97.5	86.6
Secondary school enrolment rate	...	...	37.8	28.7	59.5	36.0

Sources: Penn World Tables, version 6.1 and World Bank, World Development Indicators, 2002 (for school enrolment rates). Estimates include all countries for which data was available for each period; 1960-73: 112 countries, 1973-85: 117 countries and 1985-2000: 110 countries.

<sup>15</sup> McDermott (2002).

<sup>16</sup> See Box IIA.5 on Malaysia for the electronics industry.

<sup>17</sup> School enrolment data refer to the beginning of period or the year closest to the beginning of period for which data are available. 1970 is used for the period 1973-85, while 1980 is used for the period 1985-2000.

It is clear from what has been said above that investment in physical and human capital, specialization and knowledge are all important ingredients in the growth and development process. But there are other, perhaps deeper, determinants to be considered. The forces driving growth and development operate within a social, cultural, geographical and institutional context. We now turn to a brief discussion of how these factors might influence outcomes.

### (e) Growth, institutions, history and geography

The notion of an institution embodies several elements – formal and informal rules of behaviour, ways and means of enforcing these rules, procedures for mediation of conflicts, and sanctions in the case of breach of the rules.<sup>18</sup> Institutions are more or less developed, depending on how well these different features operate. Institutions can create or destroy incentives for individuals to invest in human and physical capital, and the incentives to engage in R&D and work effort. An investment decision involves considerable risk and in the words of Bernstein (1996): “Only the foolhardy takes risks when the rules are unclear”.

One feature of institutions that is of particular relevance for economic development and growth is the treatment of property rights. In addition the rule of law, the enforcement of contracts and payments of debts are important. Property rights, combined with access to credit and education, grow in importance with the degree of complexity of the industrial and technological environment. In an agrarian society, an elite can invest in the land and induce the rest of the population to work on it. An industrial society, in contrast, requires entrepreneurship and creativity. The distribution of such talents in the population is independent of the distribution of income. Limiting economic opportunities to an elite therefore represents a huge waste of resources. Conversely, when entrepreneurs have access to funding and can expect to receive a return on their investments, society will be better able to benefit from new technologies and continue to upgrade their industrial base as new technologies arrive.

The more complex the technology and the more extensive the degree of specialization, the more interdependent are economic agents. Transparent and efficient institutions that facilitate the establishment and enforcement of contracts therefore become more important as development proceeds. This does not mean that institutions are not important in developing countries. To the contrary, the rule of law and the enforcement of contracts are equally important in developing countries. It is, however, important that the complexity of regulations matches the institutional capacity to enforce the regulation.

A current issue in the development debate is the relative role of institutions and geography in explaining the fact that poor countries tend to be located near the equator. The question is whether a tropical climate *per se* is detrimental to growth, or whether countries in the tropical climate zone tend to have less development-friendly institutions. The direct impact of the tropical climate on development goes through agriculture and health. While tropical conditions were favourable to agriculture in the very early history of mankind, the invention of heavy ploughs, systems of crop rotation and the introduction of new crops favoured temperate zones. Tropical diseases are found to have both a direct and an indirect impact on development. They represent higher health risks, and consequently a lower stock of human capital. Furthermore, the demographic transformation towards lower mortality and fertility rates has been slower in tropical areas due to higher health risks. This transformation is part of the development process towards sustained growth.<sup>19</sup> The suggested linkage from climate to institutions is that the prevalence of tropical diseases prevented Europeans from settling, but not from exploiting, the natural resources in tropical areas. They therefore imposed institutions with the exclusive purpose of extracting resources. These institutions concentrated wealth and power within a small elite and the associated structures have tended to prevail after independence. A number of empirical analyses suggest that institutions are indeed important determinants of the growth and development process.<sup>20</sup>

<sup>18</sup> See North (1994).

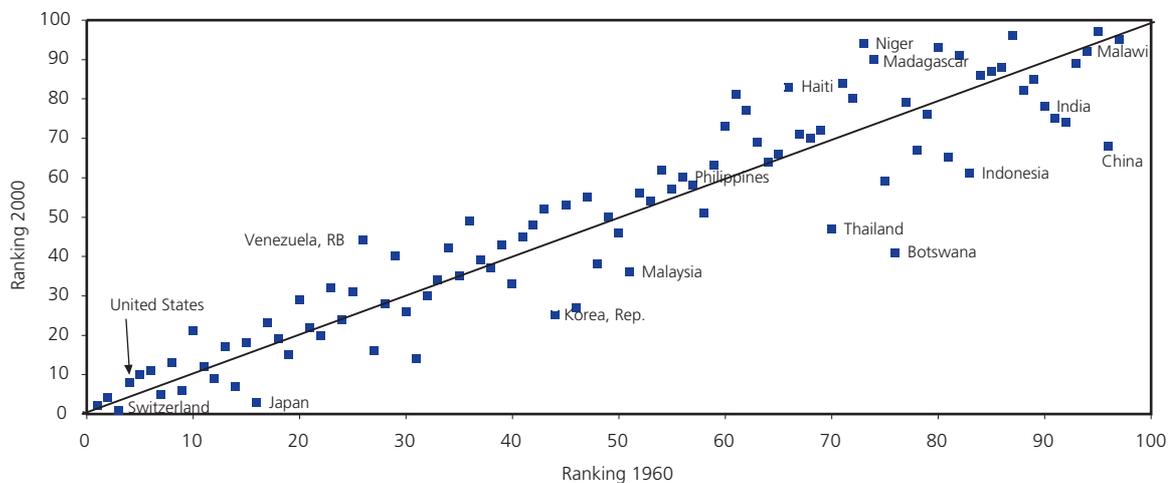
<sup>19</sup> See Sachs (2001; 2003) for a discussion.

<sup>20</sup> See Acemoglu et al. (2001; 2002), Rodrik et al. (2002) and Hall and Jones (1999).

Geography is largely given by nature and persists over time, although geographical disadvantages can be overcome through human effort. Malaysia and Singapore, for example, have had high growth rates and reached a middle-income and high-income status respectively in spite of being located in the tropical zone. Institutions may well change with changing policy, but sometimes not quickly enough to support positive change. If development is by and large driven by geography and institutions, two predictions follow. First, one might expect the ranking of countries according to social and economic indicators to remain relatively unchanged over time. Second, if countries with better locations and better institutions grow faster, income gaps are likely to widen over time.

The first prediction seems to fit the facts fairly well, at least during the period 1960 – 2000 for which data are readily available.

**Chart IIA.2**  
**Ranking of selected countries according to income levels, 1960 and 2000**



Note: Data comprise 97 developed and developing countries.

Source: World Bank, World Development Indicators, 2002.

Chart IIA.2 plots the ranking of countries according to GDP per capita in 1960 against the ranking in 2000. Countries cluster around the 45-degree line, indicating little change in rankings. There are, however, some exceptions. Botswana climbed 35 places, China 28, Thailand 23, Indonesia 22 and the Republic of Korea nineteen. Other countries went down the rankings, with Niger falling by 21 places, Zambia by 20, Venezuela by 18, Haiti by 17, and Madagascar sixteen.

As to the second prediction, there is evidence that cross-country income distribution has become less equal over time, although the picture is more mixed when weighted by population and when taking into account within-country income distribution (Sala-i-Martin, 2002a, b). In particular, a steep increase in income levels in China and India modifies the picture of growing inequality.

Given the apparent roles played by institutions and geography in determining growth and development, moving from a stagnant pre-industrial economy to sustained progress seems to be a tall order often underestimated by policy makers and advisers. The concept of institutions is at present rather abstract and the discussion of their role in growth and development has much in common with the discussion in the 1980s of the role of technology, following the first publications on endogenous growth. An understanding of how economic agents and the institutional framework interact in the growth process, and how geography benefits or impedes the process, is emerging.

But there are still gaps in our knowledge about what aspects of the institutional framework are the most relevant for growth, to what extent and how the optimal institutional framework depends on geography, culture, religion and the level of development in each case, and how far and how quickly “getting institutions right” would generate growth and development. We do know, however, that corruption, severe impediments to trade and unclear and non-transparent regulations are detrimental to growth and development. Yet the brief discussion above has illustrated the sheer complexity of the growth and development process. No quick fixes have been identified. Nevertheless, in the section that follows, we discuss fairly well-established propositions about the circumstances in which engagement in the world economy can contribute to improved economic performance.

## 2. OPENNESS IMPROVES EFFICIENCY AND STIMULATES GROWTH

Openness to trade helps countries utilize their resources better in several ways. First, trade allows a country to specialize in the productive activities that it does relatively better than other countries, and thus exploit comparative advantage. Second, trade extends the market facing local producers, allowing them to better exploit economies of scale, which increases income levels and the efficiency of resource allocation. These effects are characterized as static gains from trade. Trade will have a positive long-run growth effect only if it increases the rate of investment or improves incentives for the development and diffusion of technology. This section explores in some more detail these linkages between trade and growth.

### (a) Open economies invest more

Investment is one of the few economic variables that is positively and robustly related to economic growth as indicated in Table IIA.1. International trade, in turn, shows a strong positive correlation with investment (Levine and Renelt, 1992; Florax et al., 2002). As explained in the previous section, trade allows for increased specialization and stimulates investment through the exploitation of economies of scale, and through technology transfer. It was also emphasized that R&D and capital investment reinforce each other since new innovations are sometimes embodied in capital goods and sometimes generate new consumer goods and services that require new investments in order to enter the market. Upfront investments can be substantial and a sufficiently large market is necessary for an innovating company to break even. Trade often provides the market opportunities needed for investing in R&D and introducing the resulting innovations in the marketplace. Open economies are therefore more rewarding to R&D, and this is another reason why open economies have a higher investment rate.

An additional channel through which trade affects the investment rate is trade in financial services. The financial sector plays an important role in the mobilization and allocation of resources for investment. In fact, the degree of financial development has been found to be a good predictor of future growth (Levine, 1997). Trade in financial services improves the ability of the financial sector to mobilize and allocate resources for investment. Even when the market share of foreign banks is small and limited to narrow segments of the local market, these banks contribute to the development of the domestic financial sector through competitive pressure and the introduction of new products and technology (Levine, 2001).<sup>21</sup>

It is not only the large, multinational financial corporations that benefit from trade liberalization. Recently, some micro-credit institutions have also become international in scope. In Bangladesh, micro-credit institutions have provided credit to 12 million people engaged in micro- and small enterprises and are widely seen as an important factor behind Bangladesh’s growth performance. One Bangladeshi micro-credit institution (Bangladesh Rural Advancement Committee, BRAC) has expanded into Afghanistan to assist in rehabilitation and development, and BRAC is also planning to expand its activities into India.<sup>22</sup>

To summarize, openness creates new investment opportunities and strengthens and deepens the financial sector, which in turn plays a crucial role for the mobilization and efficient allocation of resources for investment.

<sup>21</sup> See also Section IIB.5 for a discussion of the financial sector and development.

<sup>22</sup> “Bangladeshi micro-credit group to expand operations into India”, *Financial Times*, 24.02.03.

## (b) Open economies exchange more ideas

As shown above, accumulation of physical and human capital can only partially explain different income levels across countries. Differences in the way resources are utilized play a key role in determining income inequality among countries. One of the factors that explain such differences across countries is technological knowledge.

Technological knowledge can be defined as the design, or blueprint, of a new product, process or service. It can be embodied in a product and, therefore, it can be utilized and transported with it. For example, employing a foreign intermediate good in production involves an implicit usage of the design knowledge that was created with the R&D investment of the foreign inventor. One of the principle characteristics of technological knowledge is that it can be transferred across countries. The stock of technological knowledge in a country is determined by domestic innovation and the international diffusion of technology. In developing countries, where domestic innovation is low, the international diffusion of technology acquires greater importance from the perspective of economic development.

### Box IIA.2: Technology transfer through trade and FDI: the case of Mexico

Since Mexico began liberalizing its economy in the mid-1980s, technology transfers have been closely linked to trade growth, which has been the result of increased foreign investment and, in turn, has spurred new investment itself. Mexico's trade and investment flows have been amongst the largest in the developing world, particularly following the entry into force of the North American Free Trade Agreement (NAFTA) in 1994: between that year and 2001, Mexican trade increased from about \$140 billion to \$327 billion, while cumulative foreign direct investment (FDI) totalled almost \$98 billion. The third Trade Policy Review report for Mexico (WTO, 2002b) concluded that considerable cross border technology transfers had gone hand-in-hand with Mexico's closer integration into the global economy and its efforts to improve intellectual property rights (IPR) protection.<sup>1</sup>

In Mexico, increased trade and investment flows have been associated with both disembodied and embodied flows of foreign technology. An indicator of the first type of transfer is the purchase or licensing of IPRs, a process that appears to have accelerated in recent years. Direct commercial transactions related to international technology transfers to Mexico were valued by the OECD at some \$454 million in 1999, up from \$347 million in 1996 (OECD 2001b). These patterns are likely to be related to the strong presence of foreign affiliates in Mexico, which actively acquire technology from their countries of origin.

Trade and investment flows have also brought to Mexico foreign innovations embodied in new plant and equipment, which are generally imported duty-free, including under-tariff preferences or concessions. These goods have reached Mexico in significant volumes, as imports of machinery and transport equipment account for about half of Mexican imports. This is also closely related to the large share, just over 50 per cent, of FDI flowing into manufacturing, which heavily relies on the use of foreign inputs and capital goods, particularly for export production (formerly based on the export incentives granted under the *maquila* regime).

IT products and pharmaceuticals have been among Mexico's fastest-growing traded items, which are both IPR-intensive and characterized by active intra-industry and intra-firm trade. The tendency for trade in those products to grow faster than overall merchandise flows is indicative of Mexico's expanding technological capacity. More importantly perhaps, it has also been closely related to an increase in international sourcing and involvement of foreign affiliates in Mexico to supply both the domestic and export markets. Indeed, given that Mexico still has the lowest gross domestic expenditure

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on R&D as a percentage of GDP in the OECD, its manufactures-dominated export patterns can in large part be explained by the considerable size of technology transfers and will depend on such flows to continue.

Another possible indicator of the importance of technology flows to Mexico is the number of patents applied for and granted. Reflecting trade and investment patterns, between 1996 and 2002 most patents granted related to manufacturing activities, namely chemistry and metallurgy (30 per cent of all patents) and various industrial techniques (21 per cent). Over the same period, most patents were granted to nationals of countries with whom Mexico has particularly strong trade and investment links: the United States (56 per cent of all patents), five European countries (France, Germany, Italy, United Kingdom and Switzerland, together accounting for 21 per cent) and Japan (almost 4 per cent). This is likely to reflect the medium-high technological content of trade and investments undertaken in Mexico.

Source: IMPI (2002); OECD (2002c, 2001b); WTO (2002b).

<sup>1</sup> Cross border technology transfer is defined as the actual passage of a technology from a country to another one. It is worth noting that not all foreign technology that flows to a country represents technology transfer, as this may include the phase of adaptation and learning of the know-how by the technology importing country.

A number of channels exist through which technological knowledge can be transferred across countries, including trade (both in goods and services), FDI and partnership agreements. Trade can enhance technology transfer by giving firms access to technologically advanced capital goods and intermediate products from abroad. Trade in services including business, financial, telecommunication and transport services may provide the input needed to enter new sectors and lower the costs for exchanging information (see Section IIB.2). Imports can also provide access to knowledge that can be acquired through reverse engineering. Trade opens up the possibility of person-to-person communication that may foster technology transfer. Foreign direct investment can also contribute to technology transfer through on-the-job training and various forms of interaction among local and foreign firms. Backward and forward linkages favour technological diffusion, as technologically advanced foreign affiliates help their local suppliers and host country firms involved in later stages of the production process to raise quality and service standards. New managerial, marketing and production processes may be adopted as a result of interaction between local and foreign producers. This interaction may also exert a positive effect on technology transfer through competitive pressure.<sup>23</sup>

The effectiveness of trade as a vehicle for the transfer and diffusion of technology depends in part upon the volume and the composition of imports.<sup>24</sup> Empirical research has found a positive relationship between the size of trade flows and a country's level of total factor productivity. In particular, this relationship has proved stronger in respect of capital goods, such as imports of machinery and equipment, than final goods (Coe, Helpman and Hoffmaister, 1997). Inputs into the production process may themselves embody new technologies, such that technology is transferred merely by making use of the inputs or of machinery in production. For final goods, technological benefits may accrue through less direct means of transfer, such as reverse engineering and other forms of adaptation or learning. The country of origin of imports also matters for technology diffusion. Imports originating in industrial countries generally embody a higher technology content than imports from developing countries (Blyde, 2001; Coe and Helpman, 1995).

<sup>23</sup> For a review of the channels through which technology transfer occur and the conditions under which those channels could be most effective see the WTO document WT/WGT/TT/W/1.

<sup>24</sup> As far as FDI is concerned, the degree of effective technology transfer depends mainly on the technological content of output, the technology intensity of that part of the production activity that occurs in the host country, and the degree of integration of the foreign firm with the local economy.

**Table IIA.2**  
**Imports of intermediate machinery<sup>a</sup> by regions, 1995-2000**  
 (Billion dollars)

	1995	2000
North America	223	355
Latin America	58	105
Western Europe	399	527
EU (15)	363	483
Transition economies	...	51
Africa <sup>b</sup>	21	22
Middle East	17	19
Asia	329	418
<i>Memorandum item:</i>		
Developed countries	647	925
Developing countries	400	521
LDCs <sup>b</sup>	2	4
Developing Asia	267	332
NICs	191	239

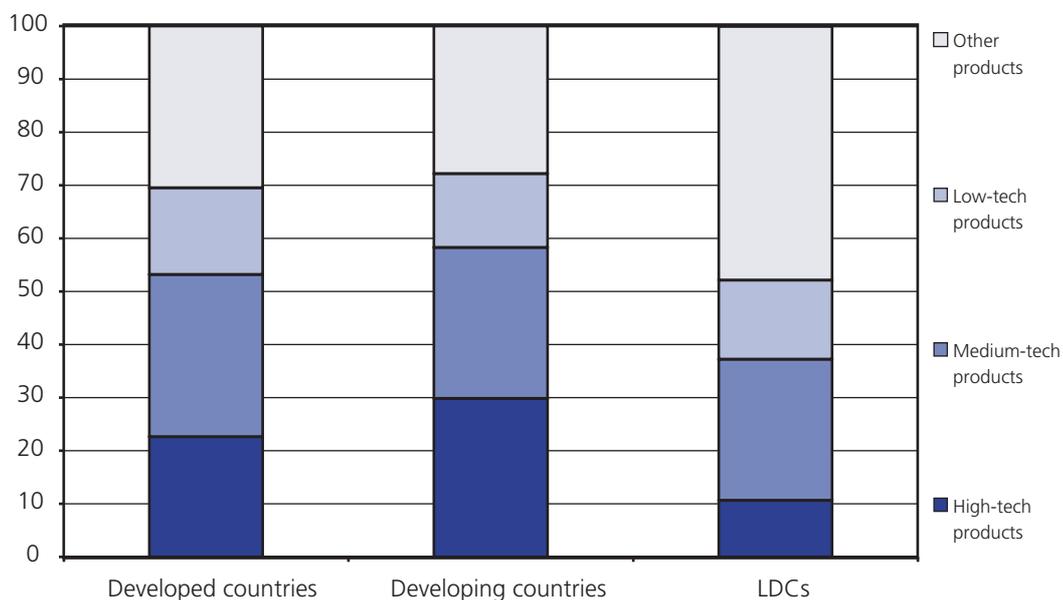
<sup>a</sup> For definition of machinery see Mayer (2000).

<sup>b</sup> Data for Africa (LDCs) refer to a sample of 27 (19) countries.

Sources: UNSD, Comtrade database.

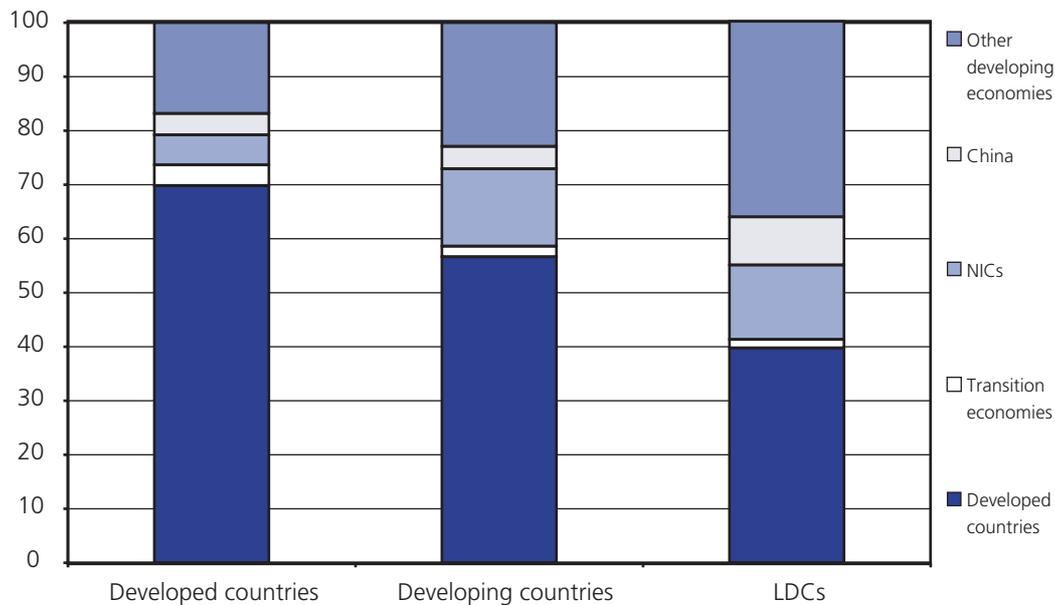
The data on imports of machinery in Table IIA.2 provides an indication of the amount of knowledge that potentially flows across countries through trade. Charts IIA.3 and IIA.4 show import composition by technology intensity and by level of development of trading partners for developed, developing and least-developed countries. The data indicate that the volume of imports of machineries has increased between 1995 and 2000 in developed countries, developing Asia and NICs, but has stagnated in Africa and among LDCs. Imports of medium and high-technology manufactures make up nearly 60 per cent of developing countries total imports. However, this percentage falls to below 40 per cent for LDCs. Machinery imports represent about 30 per cent of the total imports of developing countries. However, for Africa and LDCs the percentage share of machinery imports is much lower, at below 20 per cent and 10 per cent respectively. Finally, three-quarters of developing country imports originated in developed countries or new industrialized countries, while the percentage of LDCs imports from developed countries was only 39 per cent.

**Chart IIA.3**  
**Import structure by product technology content, 2000**  
(Percentage shares)



Note: For product definition see Lall (2000).  
Source: UNSD, Comtrade database.

**Chart IIA.4**  
**Import structure by area of technological development, 2000**  
(Percentage shares)



Note: For product definition see Lall (2000).  
Source: UNSD, Comtrade database.

Overall, the composition (high-technology content) and source (large developed-country share) of developing country imports suggest that a relatively large amount of knowledge flows to developing countries through trade. However, since much of what has been observed is driven by trade patterns in Asian countries, there is a significant potential for higher flows of technology through trade to Africa and LDCs.

Successful technology transfer through trade also depends on conditions and policies in the importing country. Effective transfer requires a learning process in relation to the use of technology (know-how), understanding of the underlying principles of a given technology (know-why), adaptation of a technology to local conditions, and diffusion of new technology within the country. These are key determinants of the absorptive capacity of a country in relation to technology.

A country's absorptive capacity depends on several other considerations as well, not necessarily related to the treatment of a specific technology. These include the following four factors: first, the nature of the relationship between basic research and applied R&D. Good linkages between academic research and R&D activity conducted in the private sector would favour technology transfer, as they would be complementary in the learning process of the know-why and know-how of a foreign technology. Second, a country's absorptive capacity is determined by the level and quality of the education system. An education system directed toward abstract thinking is shown to produce better researchers in basic research than in applied research. An education system directed to develop a "culture of entrepreneurship" is more likely to lead to success in developing and marketing a new product. Both types of education are needed for successful technology transfer. The quality dimension of human capital is at least as important as its general level in determining the success of technology transfer (Hanushek and Kimko, 2000).

Third, the ability of a country to absorb foreign technology depends on the gap between existing technology and imported technology. There is some empirical evidence that technology transfer is greater in those industries in which the technological gap is smaller. One explanation for this is that when the technology gap is small, the domestic producers can build on already acquired knowledge to imitate foreign affiliates. Kokko, Tansini and Zejan (1996) use plant level data for Uruguay over the period 1988-1990 to test the existence of spillovers within industries. They find spillovers only for plants in industries with small technology gaps vis-à-vis foreign firms. They interpret this as meaning that the ability of the domestic economy to generate knowledge spillovers from FDI requires the knowledge in foreign affiliates to be close to the technology frontier of the domestic economy. Finally, the entrepreneurial environment, and other conditions in the host country, including the intellectual property regime determine how easily a country learns and adapts a foreign technology to the local market. Technology transfer will take place if local managers have an incentive to invest in learning a foreign technology. This, in turn, will depend on the possibility of commercializing the product in the local market, that is on the existence of an appropriate entrepreneurial environment.

To the extent that openness fosters technology transfers, barriers to trade constitute an obstacle. This is particularly the case where barriers affect imports of technology-intensive final goods and intermediate inputs, including machinery and equipment. Table IIA.3 shows tariff levels according to technology category.<sup>25</sup> It also shows average *ad valorem* tariffs for machinery and equipment used as inputs into the production process.<sup>26</sup> The data indicate that tariffs on technology products tend to be higher in countries at a lower stage of development for all technology categories.<sup>27</sup> In most countries tariffs on high-technology products and machinery are lower than they are on low-technology goods. However, while for low-technology goods import duties in low income countries are on average 3.4 times higher than they are in high-income countries, for high-technology goods they are 8.5 times higher. That is, unlike technology transfer needs would require, the degree of protection in low-income countries is relatively higher for high-technology products.

<sup>25</sup> Tariffs are simple averages across *ad valorem* duty lines.

<sup>26</sup> This definition of machinery excludes radios, television receivers, household type equipment, sound recorders and transistors better classified as consumption goods rather than capital equipment. It follows Mayer's (2000) definition.

<sup>27</sup> There is a negative correlation between countries' per capita income and tariff rates for all technology categories. Moreover, correlation coefficients are higher for high to medium-technology intensive products.

**Table IIA.3**  
**Tariff profile by income level and technology content**  
(Arithmetic average applied rates)

GDP PPP per capita	Primary products	Resource-based manufactures	Low-tech products	Medium-tech products	High-tech products	Machinery
GDP below \$5,000	12.6	12.4	16.1	12.3	8.5	8.1
GDP between \$5,000 and \$10,000	14.3	12.4	14.2	11.1	7.0	7.6
GDP between \$10,000 and \$20,000	10.0	9.3	9.9	8.3	5.5	6.1
GDP above \$ 20,000	3.6	2.8	4.7	2.5	1.0	1.4

Note: For product definition see Lall (2000) and Mayer (2000).

Source: WTO, IDB.

Where imports transfer technology and conditions exist in importing countries that promote effective absorption and diffusion of such technology, open trade arrangements can make a positive contribution to development through fostering technology transfer.

### (c) Openness and the quality of institutions

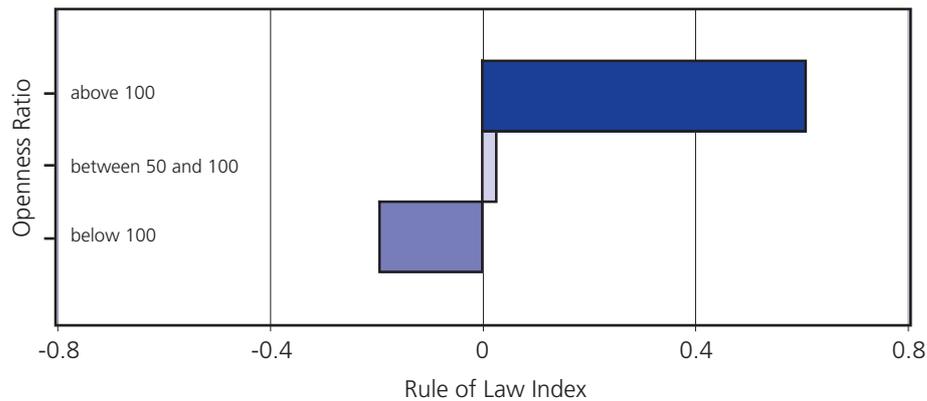
The quality of institutions has long been recognized as an important component of a well functioning market. Section IIA.1 already highlighted the importance of institutions for economic development. Two key questions concern the kind of institutions that are relevant, and whether trade or trade policy can have a positive effect on these institutions. A country's institutional setting is determined by a wide range of formal and informal rules of behaviour. While formal constraints might be quickly changed, the informal ones usually change only gradually.<sup>28</sup> Any trade impact on institutions should in general, therefore, not be expected to be immediate.

As noted earlier, the establishment of secure and stable property rights is considered key to economic development.<sup>29</sup> The rule of law is also important, including the ability to enforce contracts and secure payment of debts. A positive relationship seems to exist between the effective rule of law and openness to trade. This can be illustrated by correlating openness and an indicator measuring the extent to which people have confidence in and abide by the rules of society. This indicator is a composite measure including perceptions of the incidence of both violent and non-violent crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts.

<sup>28</sup> North (1994).

<sup>29</sup> See Section II A.1(e) and Rodrik et al. (2002), Rodrik (2002a, b), Acemoglu et al. (2001).

Chart IIA.5  
Openness and the rule of law



Note: The Rule of Law Index can take values between -2.5 and 2.5 and has been averaged across countries grouped according to their level of openness. Openness has been computed as exports plus imports divided by GDP. The sample comprises 187 countries: 54 countries fall into the range of most open economies, 48 in the range of least open economies and 84 countries in the intermediate range.

Sources: Kaufmann, Kraay and Zoido-Lobaton (2002) and World Development Indicators (2002).

Chart IIA.5 shows a positive link between openness and the rule of law as characterized by the composite measure.<sup>30</sup> But a correlation says nothing about causality. In this case, causality could run both ways. Even if a country lowers its trade barriers, outsiders may be reluctant to trade with the country if they do not believe contracts can be enforced or are not sure whether payments will be made. Countries with a better track record in such matters are likely to trade more. On the other hand, openness may also have a positive effect on the quality of institutions. Lower trade barriers may, for example, increase the incentives for individuals and governments to improve the formal and informal rules governing commercial interactions in order to induce more trade. Trade in itself can increase the knowledge and understanding of foreign institutions and potentially lead to institutional reform.<sup>31</sup> Empirical research confirms two-way causality, with institutional quality having a positive effect on openness and openness having a positive impact on institutional quality (Rodrik et al, 2002). These findings thus suggest that trade can have an indirect effect on incomes by improving institutional quality.

The level of corruption is another indicator of institutional quality. Empirical support exists for a link between higher perceived corruption and lower investment and growth<sup>32</sup>, and openness seems to be negatively correlated with corruption.<sup>33</sup> Chart IIA.6 shows that more open economies exercise stricter control over corruption than less open ones.<sup>34</sup> Again, it is not clear *a priori* whether trade leads to less corruption or less corruption induces more trade. It has been argued, however, that in markets with low levels of competition, economic rents are higher and illicit payments may therefore also be higher. To the extent that greater openness engenders competition, then, corruption levels may be expected to fall.<sup>35</sup>

<sup>30</sup> A simple regression between the two variables finds a positive and significant relationship between both variables.

<sup>31</sup> See Rodrik (2002a).

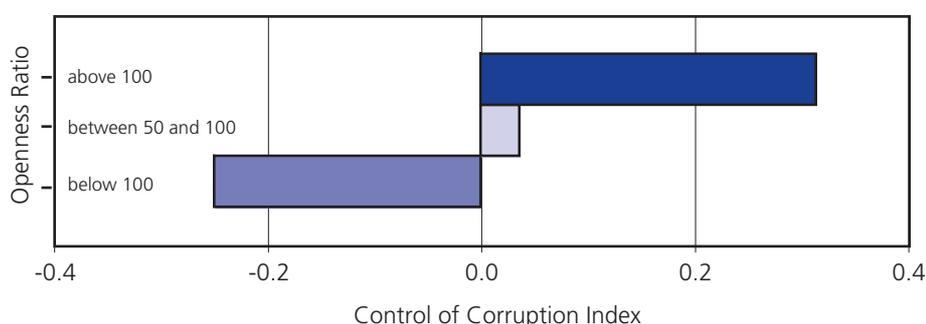
<sup>32</sup> Mauro (1995).

<sup>33</sup> Bacchetta and Drabek (2002).

<sup>34</sup> A simple regression between openness and corruption control finds a positive and significant relationship between the two variables.

<sup>35</sup> Ades and Di Tella (1999) perform an empirical test of this hypothesis and find that the ratio of imports to GDP has a significantly negative effect on corruption. See also Drabek and Payne (2002) for evidence on the inverse relationship.

**Chart IIA.6**  
**Openness and corruption control**



Note: The Control of Corruption Index can take values between -2.5 and 2.5 and has been averaged across countries grouped according to their level of openness. Openness has been computed as exports plus imports divided by GDP. The sample comprises 187 countries: 54 countries fall into the range of most open economies, 48 in the range of least open economies and 84 countries in the intermediate range.

Sources: Kaufmann, Kraay and Zoido-Lobaton (2002) and World Development Indicators (2002).

Causality can also run in the opposite direction. Taking into account that international traders and investors are more footloose than domestic ones, poor governance and corruption in a country may reduce international trade and investment more than domestic trade and investment. A country that is naturally more open – as determined by its size, geography and other factors – would find it optimal to devote more resources to building good institutions. Empirical results confirm this argument, as it has been shown that “naturally” more open economies do exhibit less corruption.<sup>36</sup>

The level of civil liberties and political rights within a country constitute another aspect of institutional quality. Economists have frequently asked the question whether democracy fosters economic growth, but the debate on this issue has been inconclusive so far.<sup>37</sup> There does, however, seem to be agreement that democracy may prevent the worst outcomes, even if it does not guarantee the best ones.<sup>38</sup> In particular, it has been shown that democracies have been successful in avoiding famines, a very acute form of poverty. A second important claim for democracy is that there have been no wars between democracies.<sup>39</sup> It has often been argued that greater openness leads to more democracy. Higher levels of openness imply more frequent contacts with individuals in other countries, and thus more intensive information flows with the outside world. Such interaction arguably makes it more difficult for oppressive regimes to maintain power. Empirical evidence confirms the existence of a positive link between openness and democracy. Hamilton (2002) uses the Freedom House Democracy Index to measure the “level of democracy” of countries and uses two alternative measures for economic openness: the simple mean tariff average and the change in shares of trade in GNP. He finds a positive and significant correlation between both measures of openness and democracy. Milner and Kubota (2001) argue that democracy leads to more openness. They find empirical evidence that democracy and democratisation have contributed to the lowering of trade barriers in a number of developing countries since the 1970s: i.e. causality goes from more democracy to increased openness.<sup>40</sup> These empirical findings to a certain extent contradict anecdotal evidence emphasizing the role of authoritarian regimes in trade reform.<sup>41</sup>

<sup>36</sup> Wei (2000) also finds that openness is positively related to public sector wages. As higher wages may lower the incentives for officials to accept bribes, this result suggests that open trade may have a negative impact on corruption to the extent that it contributes to higher incomes. See also Bacchetta and Drabek (2002).

<sup>37</sup> Hamilton (2002).

<sup>38</sup> UNDP (2002).

<sup>39</sup> Hamilton (2002).

<sup>40</sup> Robinson (2000), on the other hand, points out that globalization has in the past also been used by military regimes to help consolidate their political power and demobilize their opponents.

<sup>41</sup> See Fernandez and Rodrik (1991) for examples.

The rule of law, including the enforcement of property rights, the level of corruption and the political process are only a few of many aspects that determine a country's institutional setting. Industrialized countries are typically equipped with a wide range of institutions that seek to guarantee the proper functioning of markets. These include regulatory institutions, institutions for macroeconomic stabilization, institutions for social insurance and institutions for conflict management.<sup>42</sup> The question has been raised whether it is not advisable to have (some of) these institutions in place before opening up markets. In effect, increased openness may call for accompanying domestic institutional reforms, in the absence of which a liberalizing country may encounter difficulties in reaping the benefits of increased trade. Greater openness, for example, may imply increased exposure to external risk, and consequently greater demand for social insurance.<sup>43</sup> Trade liberalization itself can also imply the need for institutional reform, for instance in the form of a change in custom procedures. To the extent that reforms are costly and developing country governments tend to face serious financial restrictions, the question arises as to which institutional reforms deserve priority.<sup>44</sup>

### Box IIA.3: The importance of institution building: customs modernization in Guatemala

Since the signing of Peace Accords in 1996, which ended 36 years of internal armed conflict, Guatemala has embarked on a programme of institution building and economic liberalization seeking to increase economic efficiency, including in the supply of public services, and to integrate in the global market place. Given the need to raise the low level of tax revenues and reduce wide-spread tax evasion, the Government established the Superintendency of Tax Administration (SAT) in 1998, replacing the former General Direction of Internal Revenue and the General Direction of Customs. The SAT was given sole responsibility for the administration and collection of all internal taxes and trade-related duties as well as for customs inspection.

The efforts made since SAT's establishment to reform customs administration and streamline related procedures have facilitated trade while helping to minimize the fiscal impact of tariff reductions. Between 1998 and 2001, the average tariff decreased almost 17 per cent while tariff revenue (in current US dollars) marginally increased. This reflects both lower tax evasion and increased imports, with the latter being partly due to reduced tariffs.

Guatemala has also broadened its tax base and, thus, significantly reduced its reliance on trade-related duties, thereby lessening the dependency of trade policy on budgetary considerations. Fiscal revenue from direct taxes, which had stagnated in real terms between 1996 and 1998, increased in 1999 to more than 3,150 million real quetzales and, in 2002, amounted to 4,486 million real quetzales. Both the decrease in tariffs and increase in internal revenue led to a reduced reliance on import duties: while in 1995 the share of tariff income in fiscal revenue was nearly 24 per cent, this proportion had fallen to 12 per cent in 2000.

Multilateral rules have also been a catalyst for institutional modernization. Considerable modifications were required to bring domestic practices in line with WTO rules, in particular, in the area of customs valuation. This included eliminating the regular use of minimum prices, which, although relatively simple to apply, can cause significant trade distortions. The required institutional changes involved the adoption of new legislation, training of customs personnel, and modernization of customs infrastructure and procedures. In order to have sufficient time to bring about those wide-ranging changes, Guatemala requested and obtained an extension until November 2001 to apply WTO rules on customs valuation.

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<sup>42</sup> Rodrik (2002a, b), Acemoglu et al. (2001).

<sup>43</sup> See Rodrik (1998).

<sup>44</sup> See the discussion in Rodrik (2002a).

As part of Guatemala's modernization process, the SAT introduced an electronic system to facilitate customs clearance, providing the possibility to fill the customs declaration in electronic form. Customs procedures and clearance of imports were reduced to approximately four to six hours; in the case of physical inspection, clearance now takes less than 24 hours, provided that the goods to be imported comply with all requirements.

Likewise, export procedures were simplified and streamlined, reducing costs for Guatemalan exporters. In 2001, the Government abolished the requirement for foreign exchange and export licences and introduced a single export form, which can be downloaded from SAT's website and submitted electronically. Export procedures were further simplified through the establishment of a one-step export office bringing together in one single place all the institutions associated with export activities. Exports are usually cleared on the day of their arrival at the customs office. To further reduce the cost and time involved in customs procedures and foster regional integration, bi-national customs offices with neighbouring El Salvador started to be set up in 2000.

*Source:* WTO (2002c), Stotsky and WoldeMariam (2002), WTO document G/C/W/248 of 14 February 2000 and SAT online information available at: <http://www.sat.gob.gt>.

The costs of WTO membership have received particular attention in recent literature. For many developing countries the implementation of WTO agreements entails institutional reform, for instance related to customs valuation, sanitary and phytosanitary measures (SPS), and intellectual property rights (TRIPS). According to one estimate those reforms would cost the typical developing country \$150 million, a sum equal to a year's development budget for many of the least-developed among them.<sup>45</sup> While doubts arise as to what is actually being estimated by such measures – mere compliance with WTO rules or a deeper reform agenda – the question of how to prioritize the use of scarce resources is no less real.

Certain aspects of WTO membership are likely to have positive effects on domestic institutions without involving significant costs. Tariff bindings under the WTO, for example, may generate a more predictable incentive structure and solidify property rights – two important attributes of a high-quality institutional framework.<sup>46</sup> Membership of the WTO may strengthen the institutional environment by enhancing the credibility of domestic institutions and encouraging collaboration among different domestic institutions. In general, openness and WTO membership can be considered to offer governments a range of new opportunities.

#### (d) Openness and pressures to adjust

When countries lower their barriers to trade companies and consumers gain access to a whole range of new opportunities. Imports will allow domestic consumers to take advantage of a large variety of goods at lower prices. Domestic companies can also take advantage of cheaper imported inputs and some companies will seize the opportunity to expand exports to foreign markets. But changes in relative prices brought about by trade liberalization will lead to a reshuffling of resources from less competitive import competing sectors to competitive and expanding export sectors. It is these shifts of resources into more productive activities that raise the economy's efficiency and create benefits from trade.

The adjustment of an economy to this new set of opportunities is not necessarily immediate and often involves costs. In an economy with an inflexible labour market, for instance, job losses in import competing sectors may not be immediately compensated by job creation in expanding exporting sectors. The resulting temporary increase in unemployment represents an economic cost. If financial markets are not efficient, companies with lucrative opportunities in foreign markets may not be able to find the funding necessary to expand their activities. Again, capital and workers may be idle for some time, which is costly for the economy. The quality

<sup>45</sup> Finger and Schuler (1999).

<sup>46</sup> See, for instance, Rodrik (2002a). See also Bacchetta and Drabek (2002).

and availability of infrastructure and utilities also have an important effect on the adjustment process following trade liberalization. These amenities, for instance, influence the quality of information flows within a country and information is crucial for firms and workers to react to trade reform. They also affect the size of investments companies need to make in order to expand their activities. The higher those investments, the more likely it is that adjustment takes time, in particular in countries characterized by inefficient credit markets.

Given the potential obstacles to the adjustment process, it may in certain circumstances make sense to give the private sector some time for adaptation after the announcement of trade reforms.<sup>47</sup> Announcing trade reform today for a well-specified moment in the future can give the private sector time to make the necessary adjustments. It is crucial, however, that the announced reform is credible.

WTO agreements often foresee implementation periods for negotiated reductions in trade barriers or changes in trade rules. Implementation periods are typically longer for developing countries, reflecting the notion that these countries may encounter more difficulties in the adjustment process. Financial markets tend to be less sophisticated in developing countries, infrastructure of lower quality and utilities less available. As a consequence, adjustment costs may indeed be higher for companies in developing countries than in developed countries. Many least-developed countries are also characterized by a low level of diversification on the export side. This makes it harder for least-developed countries to expand their exports, as it is generally more costly to start new export activities than to expand existing ones. WTO agreements therefore also accord more flexibility in the use of export promotion policies to low-income Members than others. WTO agreements also foresee safeguard mechanisms aimed at alleviating the burden of adjustment in an open trading environment.

Adjustment is not only a challenge to be met in the period immediately following trade liberalization. Economies operate in a constantly changing environment. Policy changes at home and abroad, climate changes, technological changes, the discovery of raw materials – among many other factors – have an impact on the comparative advantage of countries. Companies that are competitive today may not be competitive tomorrow. Those lacking competitiveness will be replaced by others taking advantage of new business opportunities. Trade exposes open economies to constant adjustment pressure. But real growth opportunities are hidden behind these adjustment imperatives.

## (e) Other aspects of the relationship between openness and growth

### (i) *Import substitution policies taken too far have proved to be bad for growth*

In the aftermath of the second world war and decolonization, it became increasingly obvious that differences in income between North and South had to be addressed and something fundamental had to be done to raise incomes in the South. At the time, the South's major export was commodities. A great deal of concern was generated by the finding that the terms of trade between commodities and manufactured exports of developed countries in the seventy years prior to the outbreak of the second world war had suffered a secular deterioration (Prebisch, 1950). A number of explanations were provided for this including long-term productivity growth in agriculture that, because of unlimited supplies of labour, were captured by consumers (Lewis, 1954) as well as differences in the income elasticity of demand for agricultural products and raw materials (Singer, 1950). Whatever the explanation, the prediction was of a continuing decline in primary product prices, with the implication that international trade would result in poor countries becoming trapped in commodity production. In the long run, it was believed that this would be incompatible with development and that in order to grow, poor countries needed to industrialize.

<sup>47</sup> See Bacchetta and Jansen (2003).

The process of growth and technological development was not well understood at the time.<sup>48</sup> The policy assumption was that there was a fixed relation between capital and output and that once the capital equipment was installed and the workers employed, the expected volume of production would follow.<sup>49</sup> It was necessary to keep the price of capital goods low and thus stimulate investment. This approach implied a prominent role for the government in development planning, industrialization behind protective tariff barriers and special and differential treatment of developing countries in international trade agreements.

The implementation of the import substitution strategy involved tariff protection, exchange rate controls, quotas and import licensing. The restrictions were focused on imported consumer goods, while capital goods were charged lower rates. Interest rate subsidies were prevalent and were defended as an encouragement to investment. In many countries, the trade regime created negative effective rates of protection on agriculture, thus implicitly taxing agriculture, which was often the only viable source of exports. The overall result was a very distorted set of prices (i.e. imported capital was made cheap, labour was made expensive, commodity exports were taxed) that were not compatible with prevailing economic conditions and scarcities.

Initially, the regime of import controls typically had some positive effect on GDP growth, investment rates and industrialization. The rates of growth were markedly higher during the 1950s and 60s, especially if compared with the stagnation of the 1930s.<sup>50</sup> Manufacturing increased as a proportion of GDP and manufactured exports from all developing countries increased. This was the easy stage of import substitution although it is important to note that we cannot attribute all the economic changes that took place to the pursuit of this policy. However, by the 1970s it became apparent that the initial success could not be sustained as economic distortions took their toll and economic growth stagnated. The first problem was a persistent current account deficit due to the overvalued exchange rate. A second and closely related symptom that something was seriously wrong was the underutilization of existing capital and lack of employment growth, even in countries where capital was scarce. Due to balance of payments problems and the rationing measures needed to tackle them, industries could not import the necessary intermediate inputs and production could not run at full capacity. A further problem was that productivity growth was meagre and even negative in many import substituting industries. Infant industries often had difficulty growing up as the protection they enjoyed reduced incentives to learn and upgrade technology, in ways that would increase productivity and render firms competitive. Finally, some economies in Asia, such as the Republic of Korea and Chinese Taipei emerged as major exporters of non-traditional manufactured products and proved wrong the assumption that poor countries could not compete with the North.

Import substitution policy was abandoned or drastically modified in an increasing number of countries during the 1970s and 1980s, both because it had failed to deliver the expected results and because an alternative model of export-led growth seemed to be emerging. The early success of some Asian countries was not always well understood. In particular, industrial policy also played an important role in some of these countries, but the policy-makers there were better able to pursue policies that worked and change policies that did not (Bruton, 1998). As discussed below, key ingredients of successful export-led industrialization policies included the absence of a policy bias against exports, an ability to remove as well as to accord protection to firms, and very importantly, the maintenance of sound macroeconomic policies and attention to adequate social and infrastructural investments.

### *(ii) There is little evidence that protection is good for growth*

A modern version of the infant industry argument focuses on differences among industries in terms of technological content and productivity growth. In the same way as commodity exporters were believed to lag behind, it is argued that countries specializing in less dynamic manufacturing sectors will be locked into an industrial structure that yields slower growth than those specializing in the dynamic sectors. Again, the fear is

<sup>48</sup> The neoclassical growth model was developed in the 1960s. See Bruton (1998) for a discussion of the import substitution policy.

<sup>49</sup> The incremental capital-output ratio (ICOR) formed the basis for planning and expected output.

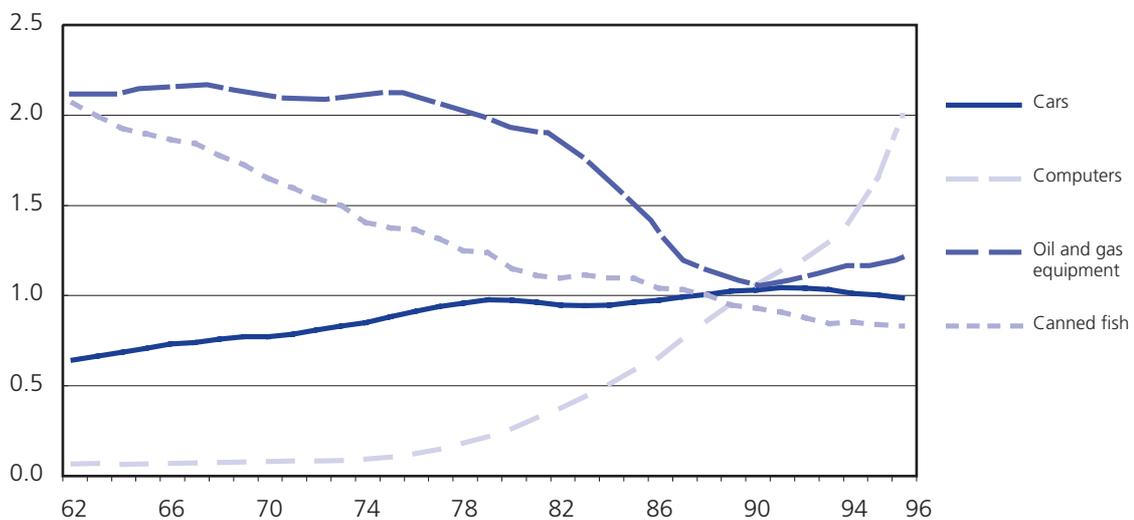
<sup>50</sup> See for example the World Bank (1978).

that an ever-widening income gap will be the result, and as with import substitution, temporary protection is seen as a means of avoiding becoming locked onto a slow growth path. This argument rests on the belief that the industrial structure is static over time, that there are no technology spillovers across countries and industries, and that the ranking of industries according to productivity growth persists over long periods of time.

Even if this were the case, faster productivity growth may be reflected in declining relative prices of the output from the dynamic sectors, so that consumers, including those in importing countries, would gain as much as the workers and capital-owners in the industry in question. In the computer industry in United States, for example, (total factor) productivity has grown at an annual average rate of 9.6 per cent during the period 1959–96, while quality-adjusted prices have fallen on average 17.5 per cent per year during the same period.<sup>51</sup> Since computers are widely used in the production of almost all goods and services, their declining price spurs productivity in all computer-using sectors.<sup>52</sup>

It also appears that industries experience periods of high productivity growth and periods of slower productivity growth, and that the ranking of industries according to productivity differs both over time within a country and across countries at a specific time. Productivity performance over time within a country is illustrated in Chart IIA.7. The chart shows five-year moving average productivity indices in four selected industries setting 1987 equal to unity in all sectors. The sectors depicted represent four typical development paths – one with a monotonically declining trend in the productivity-level (canned fish), one with accelerating growth (computers), one with a hump-shaped trend (cars), and one that appears to become U-shaped (oil and gas field machinery and equipment).

**Chart IIA.7**  
**Total factor productivity in selected US industries, 1962-1996**  
(TFP Index, 5-year moving average 1987=1)



Source: Bartelsman, Becker and Gray (2000).

<sup>51</sup> The price estimate is taken from Jorgenson (2001), while productivity growth was estimated by Bartelsman, Becker and Gray (2000).

<sup>52</sup> The quote that computers are seen everywhere except in the productivity figures of the economy is famous. However, recent research has found a sharp increase in productivity growth due to use of computers at the firm level. But such productivity growth is conditioned on complementary investments in skills and organizational changes (Bresnahan et. al. 2002).

Labour productivity has increased during the entire period for all the sectors in the chart due to capital deepening. Capital deepening implies that each worker acquires more equipment or more sophisticated equipment to work with over time, enabling him or her to produce more. Total factor productivity increases if output per worker increases faster than the capital stock.<sup>53</sup> When new equipment is only marginally better than the equipment it replaces, and the technology is already quite capital intensive, additional investment may not improve total factor productivity. It would then in many cases be more profitable to relocate production to a developing country where labour is more abundant. A less capital-intensive technology can then be applied and total factor productivity growth may resume in the new location.<sup>54</sup> Furthermore, while low-technology sectors can experience high productivity growth in poor countries, high-technology sectors do not necessarily exhibit high productivity growth in countries with scarce human capital. Table IIA.4 identifies the ten sectors with the highest productivity growth in South Africa and the United States during the period 1970-96, showing the annual average growth rate of total factor productivity during this period.<sup>55</sup> It clearly illustrates the point that there is no one-to-one relationship between technology level and productivity growth that is independent of time and resource endowments.

**Table IIA.4**  
**The most dynamic industries<sup>a</sup> in the United States and South Africa**  
(Percentage)

United States		South Africa	
Industry	Percentage change	Industry	Percentage change
1 Electronic computers	14.10	1 Basic non-ferrous metals	5.3
2 Semiconductors	13.20	2 Other chemicals and man-made fibres	4.6
3 Computer peripheral equipment	12.90	3 Other manufacturing	3.7
4 Computer storage devices	11.80	4 Electrical machinery and apparatus	3.0
5 Magnetic and optical recording media	6.50	5 Television, radio and comm. equipment	2.9
6 Calculating and accounting machines	4.10	6 Plastic products	2.9
7 Laboratory and analytical instruments	3.80	7 Professional and scientific equipment	2.7
8 Optical instruments	3.60	8 Paper and paper products	1.7
9 Household audio and video equipment	3.10	9 Basic iron and steel	1.4
10 Women's hosiery	3.00	10 Coke and refined petroleum products	1.1

<sup>a</sup> Ranking of industries according to total factor productivity growth during the 1970-1996 period.

Source: Bartelsman, Becker and Gray (2000) and TIPS (2002).

<sup>53</sup> Strictly speaking, there is an increase in TFP when output per worker grows faster than the growth rate of the capital stock times the capital share in input.

<sup>54</sup> The product cycle theory predicts that innovations resulting in new products take place in rich countries. Early in the life of a new product, incremental technical progress improves productivity at a rapid but declining rate. Eventually the product matures, it becomes standardized and costs become the most important factor for competitiveness. Imitators in developing countries will then take over production (Grossman and Helpman, 1991).

<sup>55</sup> The productivity growth rates are calculated from data given in TIPS (2002) and Bartelsman, Becker and Gray (2000). They are not entirely comparable as the US data are at a 4-digit level while the South African data are at a 3-digit level and the South African data include only capital and labour in the production function, while the US data include intermediate goods and energy as well. The table nevertheless gives an impression of the differences in ranking of sectors according to productivity growth.

Table IIA.4 suggests that each country has the fastest productivity growth in the industries for which it has a comparative advantage (natural resource-based industries in South Africa and science-based industries in the United States). And even in the United States, one sub-sector in the apparel industry makes it to the top ten, while high-technology sectors do not top the list in South Africa, despite the fact that South Africa has a computer industry. The level of productivity and the rate at which it grows in a country are, therefore, probably more related to a country's ability to innovate, to learn from others and combine its resources in the most productive way rather than to the industrial structure at one particular point in time. Thus, the modern version of the infant industry argument for deviating from free trade may suffer from similar limitations as the traditional case for import substitution.

*(iii) Striking success stories of export-led growth exist*

A series of important investigations in the 1970s demonstrated the high cost of protectionism in developing countries (Little, Scitovsky, and Scott, 1970; Balassa, 1971). They set in motion a major rethinking of the role of trade in development. The idea that trade can become an engine of growth was accentuated by the success of a growing number of developing countries, primarily in East Asia, in using exports to promote sustained growth and industrial transformation.

Looking at the Asian economies that have recorded the most impressive economic performance during the past decades, it is impossible not to notice the connection between strong export orientation and periods of rapid growth and development. In most cases, high and sustained economic growth was preceded by shifts from traditional import substitution to more export-oriented and outward-looking policies, resulting in export growth rates reaching 20 per cent per year (or more) over extended periods of time.

Export success has, for instance, been intimately connected with Japan's overall growth performance, and export growth averaged 17 per cent per year for a sustained period up until 1973. Exports provided foreign currency to pay for imports of raw materials, intermediates, and capital goods needed for industrial development. They also allowed firms to grow large enough to benefit from economies of scale that could never have been achieved on the domestic market alone.<sup>56</sup>

Chinese Taipei turned from traditional import substitution to a strong export oriented development strategy in the 1960s. This policy shift led to increases in the average share of exports to GNP from 8.8 per cent in the 1950s to 18.5 per cent in the 1960s, 42.4 per cent in the 1970s and 50.3 per cent in the 1980s. Average GNP growth rates were 10.2 per cent in the 1960s, 8.9 per cent in the 1970s and 7.6 per cent in the 1980s. Table IIA.5 shows how economic growth was accompanied by a change in the economy's export structure, away from agricultural products and textiles in the 1960s, to clothes and "other consumer goods" (including toys and watches) in the 1970s and 1980s, and finally office and telecom equipment in the 1990s. This indicates that exports can play an important role in shifting an economy's resources into the most dynamic economic activities. Yet these shifts are not necessarily automatic, as the experience of New Zealand indicates (Box IIA.4).

<sup>56</sup> Kokko (2002)

**Table IIA.5**  
**Changes in the product structure of Chinese Taipei's merchandise exports, 1963-2001**  
 (Percentage shares)

	1963	1973	1983	1993	2001
Agricultural products	59.3	15.4	8.0	5.1	2.6
Mining products	2.7	0.9	2.4	1.7	2.6
Manufactures	38.0	83.6	89.1	93.0	94.6
Iron and steel	3.0	1.3	2.5	1.6	3.0
Chemicals	5.1	1.5	2.4	5.1	7.0
Other semi-manufactures	11.7	12.1	11.6	9.6	7.4
Machinery and transport equipment	1.5	23.5	26.2	44.4	57.3
Office and telecom equipment	0.3	16.3	13.9	23.8	37.9
Electrical machinery and apparatus	0.3	2.7	3.6	6.5	7.7
Textiles	11.7	12.8	7.2	9.6	7.8
Clothing	3.0	16.1	11.9	4.4	2.0
Other consumer goods	1.8	16.3	27.4	18.4	10.1

Source: WTO.

#### Box IIA.4: New Zealand's experience

In the mid-1980s, New Zealand embarked on a comprehensive programme of macro-economic and structural reforms, thereby transforming itself from a rather closed economy into one of the most open in the world. The outcome was a substantial improvement in the country's productivity and growth performance. New Zealand's success in withstanding recent external shocks, namely the Asian crisis and the global slowdown in 2001, as well as adverse climatic conditions, is also undoubtedly due in large part to macroeconomic and structural reforms. Prior to these reforms, the Government had responded to major external shocks in the 1970s, notably the oil price increases and the loss of free access to the UK market for dairy products, owing to the latter joining the European Community, by adopting essentially inward-oriented policies that sought to maintain a high level of economic activity and employment; these policies continued to insulate New Zealand from the global economy. By the start of the 1980s, the economy experienced low growth and high inflation together with large fiscal and current account deficits. Furthermore, increasingly restrictive regulatory policies in the early 1980s hindered private sector adjustment.

Macroeconomic reforms in the mid-1980s and early 1990s included granting the Reserve Bank independence to set monetary policy in pursuit of an explicit inflation target agreed periodically with the Government. Measures were also taken to tighten fiscal discipline by making policy more transparent and ensuring that the government took more account of the future implications of current policies. Structural reforms included: unilateral dismantling of trade barriers; extensive liberalization of product, service and financial markets; widespread privatization of state-owned enterprises; new forms of governance in the public sector; and labour market reforms.

While economic growth slowed initially from an average of 2 per cent annually during 1970-83, to 1.7 per cent annually between 1983 and 1991, it then accelerated to around 2.7 per cent during 1991-2002. Real GDP is expected to grow by 4 per cent in 2002/03. Much of this growth was due to a rapid expansion of labour inputs owing to labour market reforms, although labour productivity improvements have been moderate. On the other hand, total factor productivity (TFP) growth rose considerably to 1.5 per cent annually

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between 1993 and 1998 versus only 0.9 per cent during the previous 15 years. Despite this substantial acceleration in TFP and growth, New Zealand's real GDP per capita has continued to slip below the OECD average. The Government's hope of making up the ground lost during the past few decades has yet to be realized, prompting a re-examination of some policies, which has resulted in the suspension of several previous liberalization programmes, including unilateral tariff reform (up to 2005 pending a review) and all further privatization, as well as measures to encourage higher value-added activities and exports.

One of the major reasons given for New Zealand's growth not being more rapid is the structure of the economy and its major exports. Despite considerable diversification since the 1960s, around 60 per cent of merchandise exports are concentrated in agricultural products, for which demand has grown relatively slowly; world agricultural markets are also highly protected and thus distorted, thereby possibly curtailing New Zealand's exports. It has also been suggested that while the agricultural sector has made considerable productivity gains, these might have been greater if domestic market distortions, such as export monopoly policy, had been eliminated earlier; unlike in other sectors of the economy, New Zealand only began eliminating the export monopoly of state trading enterprises (STEs) in certain agricultural products in the late 1990s. Furthermore, it has been argued that New Zealand's comparative advantage in resource-based activities have impeded its ability to diversify into more innovative manufacturing and service activities. Other important reasons may include New Zealand's small size and geographic isolation from major markets, limiting the ability of its firms to exploit economies of scale and to export; insufficient private involvement in innovative activity, including investment in R&D; the high cost of capital possibly due to inadequate national saving; and a monetary policy that some think has been too rigid.

Source: WTO(2003a).

Observers tend to agree that the success of the East Asian "tigers" involved a move away from an import substitution strategy. Yet there is some disagreement as to whether their trade policies actually represented a move towards free trade, or whether they should be considered interventionist but different from the standard import substitution package. Those arguing that the East Asian "tigers" were arbitrarily close to a free trade regime emphasise that they installed fairly uniform incentives for earning or saving foreign exchange.<sup>57</sup> Others argue that these economies pursued an "export push" strategy consisting in "picking winners" that would be able to conquer foreign markets.<sup>58</sup>

#### Box IIA.5: Electronics and the automotive industry in Malaysia

Robust economic growth was observed in Malaysia's manufacturing sector during the period 1997-2001; however, performance varied across different manufacturing industries, possibly reflecting their relative openness, and thus their exposure to competition. This is particularly true when one compares the relatively open electronics industry with the relatively closed automotive industry.

The export-oriented electronics industry provides a striking example of the benefits of an open trading and investment regime in fostering economic development. The industry has received relatively little tariff or non-tariff protection and, as a consequence of a liberal investment regime, attracted significant inflows of foreign direct investment. It has been among the main engines of Malaysia's growth, and has grown to such an extent that it now accounts for approximately 2.5 per cent of global electronics production. Moreover, the industry's strong external competitiveness was an important element in Malaysia's recovery from the Asian financial crisis, with electronics accounting for almost half of Malaysia's total exports.

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<sup>57</sup> See for instance Krueger (1997).

<sup>58</sup> Rodrik (2002a) points out that trade policies like those of the Republic of Korea in the 1960s should not be considered orthodox free trade strategies. The different views are summarized in Panagariya (2000).

Duty-free imports comprised over 97 per cent of total Malaysian imports of electronic products during the period 1997-2000. No major non-tariff protection for the industry was observed. The industry was the largest contributor to Malaysia's manufacturing output, employment, and exports; output growth of 22 per cent was recorded in 1999 and almost 32 per cent in 2000. In 1999, the sector employed around 16 per cent of the total labour force in manufacturing. Exports of electronics products accounted for 45 per cent of total exports in 2000, up from 37 per cent in 1997. Imports of electronic products, which were mainly used for further processing, have increased alongside exports. Electronics accounted for over one-third of total fixed assets held by foreign investors as of 31 December 1998; 100 per cent foreign equity participation has been allowed for export activities. In 1999 and 2000, foreign investment constituted 85 per cent and 84 per cent, respectively, of approved capital investment in the electrical and electronic product industries.

By contrast, the domestic automotive industry has been relatively sheltered from foreign competition owing to high tariffs and support from various tax and non-tax measures. While such protection was successful in winning the industry a large share of the domestic market, contrary to stated objectives, automotive exports have been modest, which is perhaps indicative of a certain lack of external competitiveness.

Malaysia's automotive market was protected by both tariff and non-tariff measures. Tariffs on automobiles in 1999 ranged from 42 per cent to 300 per cent. Most automobile parts and components were subject to 25-30 per cent tariffs. Motor vehicles, various chassis, bodies, parts, and some tractors were subject to discretionary import licencing. Cars produced domestically under the National Car Projects received a 50 per cent reduction in the excise tax. All assemblers and manufacturers were required to source certain amounts of parts and components locally. Malaysia's promotion schemes for its motor vehicle industry notably included tax allowances, incentives for high-technology industries, R&D, and training. Following a slowdown during the financial crisis, sales of passenger cars, commercial vehicles, motorcycles, and scooters increased in 1999 and 2000. Imports of automotive products decreased from \$3,057 million in 1997 to \$1,351 million in 1999 or around 2.1 per cent of total imports. The two national car companies secured large shares of the domestic market, but few cars were exported from Malaysia; indeed, exports of automotive products accounted for 0.4 per cent of total exports in 1999.

*Source:* WTO (2001a).

In most of the Asian economies that have recorded strong and long-lasting export growth, governments have pursued policies to support export activities. They have played a strong role in developing new markets by establishing institutions specializing in marketing and research, and by disseminating information about foreign markets. The export sector has also been able to take advantage of policy orientations and priorities that were not explicitly about exports, such as heavy investments in infrastructure and human capital accumulation.

Several Asian economies established Export Processing Zones (EPZs) at some moment in time. The trend has spread to many other countries and regions. These zones are typically thought of as open-market oases within an economy that is dominated by distortion-ridden trade policies, exchange rate regulations, and other regulatory controls. The potential role of EPZs as an engine for growth in developing countries has been a much discussed topic, not only in the context of Asian countries. Export processing zones may indeed make a positive contribution to growth if they manage to attract foreign direct investment that is accompanied by technological transfer, knowledge spillovers and demonstration effects acting as catalysts for domestic entrepreneurs to engage in the production of non-traditional goods or services. Individual country experiences with export processing zones have been mixed and the specific set-up and management of the zones seems to be paramount to their success.<sup>59</sup> The fact that in many cases firms locating in EPZs enjoy tax breaks and host

<sup>59</sup> See Madani (1999) for an overview.

countries subsidize infrastructure in EPZs has been prone to criticism. It is indeed not clear at all whether such incentives can always be justified on a cost-benefit basis. However well EPZs may fare, overall liberalization of the economy is likely to be a better policy in the longer term.

### Box IIA.6: Export Processing Zones in Mauritius (EPZs)

Incentives provided under various schemes, and in the context of Export Processing Zones (EPZs) in particular, have given impetus to manufacturing in Mauritius; EPZ companies account for the bulk of manufacturing.

In Mauritius, EPZ companies are not located in specified areas; they are “free points” (export enterprises), which may sell up to 80 per cent of their production duty free on the domestic market, subject to authorization by the Ministry of Industry.

The EPZ scheme, together with preferential market access provided by certain developed countries, has contributed to the specialization of the manufacturing sector in the production of export-oriented, labour-intensive goods requiring low skills and low technology, in particular textiles and clothing. This strategy has helped Mauritius to move away from one-crop production at the time of its independence in 1968 and to become a relatively diversified, export-oriented economy.

High protection of the domestic market has resulted in an annual average wage increase of 7.5 per cent between 1988 and 1997, which eroded the competitiveness of Mauritian products as productivity rose by only 3.5 per cent a year. With real wages growing faster than productivity, Mauritius has become a high-cost country in the production of its major export products (sugar, textiles and clothing).

High protection of companies supplying the domestic market in combination with incentives granted to exporters under the EPZ scheme have created elements of duality in the economy and led to tensions in resource allocation between the export and domestic sectors.

The complete dismantling of the MFA, of which Mauritius has not been a member, and post-Lomé ACP-EU Agreements will further increase competition in the country's traditional markets, mainly the EU, where Mauritius is the largest exporter of textiles and clothing among ACP countries. This changing international environment, combined with a decline in competitiveness, has highlighted the task of transforming the economy from export- to outward-orientation.

The manufacturing strategy of Mauritius is now focusing on market and product diversification (e.g. delocalization of low-cost activities to neighbouring countries, vertical sectoral integration at the regional level, and promotion of higher value-added and more capital-intensive production) and on improved competitiveness through, *inter alia*, elimination and reduction of customs tariffs on inputs and equipment, and enhancement of incentive schemes.

*(iv) Trade liberalization is not enough to fully realize the gains from trade in poor countries*

Despite strong theoretical and empirical support for the benefits of openness, trade liberalization and globalization have not been embraced with enthusiasm in all quarters. A primary concern has been that the poorest countries may not be able to benefit from a more open trade regime and will lag even further behind successful economies. This concern is justified, but it does not imply that poor countries should not liberalize trade. Rather it implies that poor countries may not realize the full potential benefits of trade liberalization unless trade liberalization is complemented by other policy measures such as investment in infrastructure and deregulation of key infrastructural services sectors, including finance.

High transport costs, inefficient logistics services and weak supportive services in general constitute a substantial barrier to trade in many poorer countries. Over-land transport costs in African land-locked countries, for example, adds at least 200 per cent to the transport cost from the nearest port. In addition, port handling costs are much higher than in more developed regions.<sup>60</sup> Poor infrastructure and high transport costs can cut off producers in African countries from developed country export markets altogether. For example, if an item fetches a price of \$100 in New York and it costs, say, \$80 to bring it there, there will be hardly anything left to cover the cost of producing the item. Moreover, if a producer has to import intermediates from overseas at similar transport costs and with uncertain delivery times, the prospect of entering the US market would be even bleaker. Finally, land transport, port handling and border crossing are time consuming in Africa, and the time factor has become increasingly important as modern manufacturing practices, including just-in-time delivery, have proliferated. As discussed in Section IIB.2, liberalization in key services sectors can help opening infrastructural bottlenecks and stimulate merchandise exports in poor countries.

### 3. TRADE LIBERALIZATION AND POVERTY ALLEVIATION

One indicator of how far trade has a positive impact on development is its effects on poverty. Linkages between trade and poverty issues are not as direct or immediate as the linkages between poverty alleviation and national policies on education and health, land reforms, micro-credit, infrastructure development, and governance. Trade can affect the income opportunities of the poor in a number of ways. The final outcome depends on the relationship between trade liberalization and growth, and the relationship between trade liberalization and income distribution.

As indicated earlier, economic theory suggests that trade can help the poor within a country through its positive impact on per capita income. Trade liberalization creates conditions for faster income growth through better access to ideas, technology, goods, services and capital. Moreover, trade may boost growth by promoting a more efficient use of resources through specialization and by allowing the realization of economies of scale. Finally, trade can be a major instrument in bringing about convergence in incomes between rich and poor countries.

Growth is a necessary but not sufficient condition for poverty alleviation. Even if trade liberalization leads to more rapid growth, this does not imply that it will improve the conditions of the poor. If income inequality increases at the same time, then the poor may actually become worse off. A large theoretical and empirical literature has focused on the relationship between trade and inequality. Economists consider it to be most likely that wage inequality decreases in developing countries as a consequence of trade liberalization. This would be the case because developing countries are typically well endowed with low-skilled labour relative to developed countries. When opening up to trade developing countries will therefore be more competitive in low-skill intensive sectors and these sectors will expand. The increased demand for low-skilled workers, who typically belong to the poorer segments of the population, will lead to an increase of their wages relative to the wages of skilled workers.

<sup>60</sup> Recent empirical work on transport costs can be found in Limao and Venables (2001), Clark et al. (2001) and Radelet and Sachs (1998).

Empirical evidence on the link between trade and wage inequality, however, is mixed. Most of the empirical evidence from East Asia confirms the argument presented in the last paragraph, as the gap in wages between skilled and unskilled workers narrowed in the decade following trade liberalization (the 1960s in the Republic of Korea and Chinese Taipei, and the 1970s in Singapore).<sup>61</sup> Wage differentials also decreased in Malaysia (between 1973 and 1989), but evidence on the Philippines is more ambiguous.<sup>62</sup> In China, recent increases in openness have been accompanied by increases in income inequality. Two different studies estimate that the Gini coefficient in China increased from 38.2 in 1988 (28.8 in 1981) to 45.2 (38.8) in 1995.<sup>63</sup> Yet a recent empirical paper finds that across China, those cities that have had a greater increase in the trade-to-GDP ratio have also tended to witness a reduction, rather than an increase, in income inequality.<sup>64</sup>

In Latin America, Argentina undertook trade liberalization between 1976 to 1982 and again from 1989 to 1993.<sup>65</sup> The Gini coefficient rose from 36 in 1975 to 42 in 1981 and 48 in 1989 implying an increase in income inequality. The skill differentials in wages increased in the first period but narrowed in the second period. Chile liberalized between 1975 to 1979 and the Gini coefficient rose from 46 in 1971 to 53 in 1980. The wage gap between different skill levels also increased. Costa Rica liberalized from 1987 to 1993, the Gini coefficient increased from 42 in 1986 to 46 in 1989, and the wage gap also increased. Finally, during Mexico's liberalization episode from 1985 to 1988 the Gini coefficient also rose – from 51 in 1984 to 55 in 1989.

The links between trade liberalization and income distribution are not fully understood. Several explanations have been put forward for the differences in outcome between East Asia and Latin America. One line of argument focuses on the fact that Latin America opened its markets later than the East Asian economies (Wood, 1997). As a result, the entry of China and other large low-income Asian countries into the world market for labour-intensive manufactures in the 1980s shifted the comparative advantage of middle-income Latin American countries into goods of medium-skill intensity.<sup>66</sup> As a result, increased openness in middle-income countries reduced the relative demand for unskilled workers by causing sectors of low-skill intensity to contract. This would explain why relative wages of unskilled workers decreased.

Another explanation for rising inequality in some developing countries is that liberalization introduces new skill-intensive activities into developing countries. For example, there is evidence for Mexico that liberalization induced larger FDI inflows from the United States (Feenstra and Hanson, 1997). These FDI flows reflected the shift of low-skill intensive activities from the United States to Mexico. Yet, Mexico's relative demand for skilled workers within industries in manufacturing rose along with FDI inflows into those industries, which led to increases in Mexican wage inequality.<sup>67</sup> The explanation of this phenomenon is that jobs which were low-skill-intensive in the United States were relatively skill-intensive in a country like Mexico.

The tariff schedule in place before trade liberalization will also affect the impact of trade on wage inequality. If protection was higher in the low-skill intensive sectors, then trade liberalization may actually lead to shrinkage of these sectors. As a consequence, wage inequality would increase. Mexico and Morocco are examples of countries where low-skill intensive sectors received relatively more protection than high-skill intensive sectors before trade reform.<sup>68</sup>

<sup>61, 62</sup> Wood (1997).

<sup>63</sup> Cited in Wei and Wu (2001). The Gini coefficient is a measure of income inequality in an economy. The higher the value of the coefficient, the more unequal is the distribution of income.

<sup>64</sup> Wei and Wu (2001). Chen and Ravallion (2003) find a small positive impact of trade reform in China on mean household income. Yet the impact varies across households with rural households tending to lose and urban households tending to gain.

<sup>65</sup> Data on income inequality in this paragraph are taken from Slaughter (2000). Information on skill differentials is taken from Wood (1997). The findings of Robbins (1996) go in the same direction.

<sup>66</sup> It has also been argued that most Latin American economies are abundant in natural resources rather than low-skilled labour. This would also explain why wage inequality did not decrease in Latin America.

<sup>67</sup> Currie and Harrison (1997) focus on another explanation for rising inequality in developing countries when liberalization occurs. They argue that the wage impact of liberalization depends crucially on the nature of product market competition. If increased product market competition reduces the relative price of low-skill-intensive products, trade could have perverse wage-inequality effects. Currie and Harrison argue that this pro-competitive effect of liberalization mattered in Morocco.

<sup>68</sup> Hanson and Harrison (1999) and Currie and Harrison (1997) as quoted in Slaughter (2000).

Trade can also affect wages indirectly through its impact on institutions. It has been argued, for instance, that trade liberalization weakens the bargaining power of unions, so exerting downward pressure on wages. Rodrik (1997) discusses how openness can weaken the bargaining power of unions, and Driffill and van der Ploeg (1995) have shown that trade liberalization with unionised labour markets may lead to lower wages. While several analyses in this area point to weaker union power as a consequence of increased international competition, not all the evidence on this is unambiguous.<sup>69</sup>

So far this discussion focused on situations in which trade affects wage inequality without affecting the distribution of assets. Yet increased openness may lead to changes in asset distribution that can be to the advantage or to the detriment of the poor. Robinson (2000) illustrates this with the following example:

*“In the nineteenth century as transportation costs fell and the European economies developed and created a large market for tropical crops, Central American countries were ideally endowed to take advantage of the expanding world demand for coffee. In Costa Rica this led the government to pass laws in 1828, 1832 and 1840 allowing peasants to farm and gain title to frontier lands. This led to the creation of the famous class of Costa Rican yeoman farmers. In Guatemala the profitability of coffee instead induced a mass land grab by political elites in the 1870s that led to the creation of large coffee estates and the re-introduction of colonial forced labour laws which lasted until the democratic interlude after 1945. As a result, land inequality is higher in Guatemala than in Costa Rica today, as is income inequality.”*

Much of the empirical literature discussed so far focuses on wages and thus fails to take into account other components of household income. Income from self-employment is for instance not reflected in wage statistics. The poor in developing countries are often located in rural areas and working in agriculture. Many of them are self-employed. It has been argued that the relatively slow pace of trade liberalization in agriculture has been negative for poor farmers in developing countries. Data on income distribution rather than wage inequality need to be used in order to capture such an effect. Only a few empirical papers, showing mixed results, analyse the link between personal income distribution and trade.<sup>70</sup>

Measures of income inequality focus on the difference in income between the rich and the poor within a society. Changes in income inequality do not necessarily tell us whether poverty increases or decreases. It may be that trade raises the income of the poor. Yet if the income of wealthier people increases more, a reduction in poverty will go hand in hand with an increase in inequality. To better understand what happens to poverty the focus of analysis should be the absolute income levels of the poor.<sup>71</sup> It is also preferable to look at the evolution of real income rather than nominal income or wages. Given that trade affects the prices of goods, it is important to include in the analysis the effect of trade on goods the poor consume. Trade liberalization will, for instance, lead to an increase in the price of agricultural crops in developing countries that export agricultural goods. This is likely to be beneficial for the rural poor if they are producers of agricultural goods. But it may be to the disadvantage of the urban poor in the same country who are consumers of agricultural goods.<sup>72</sup>

<sup>69</sup> See Dunthine and Hunt (1994) for a different result.

<sup>70</sup> Edwards (1997) does not find any significant effect of trade on income distribution. Spilimbergo et al. (1999) find that trade openness reduces inequality in capital-abundant countries and increases inequality in skill-abundant countries.

<sup>71</sup> This is more easily said than done. See Ravallion (2003) for a detailed discussion on the measurement of poverty and on how results concerning the evolution of poverty in recent decades depend on the poverty measure used.

<sup>72</sup> A recent study by Dollar and Kraay (2001) analyses how growth affects average real income of the poorest quintile of a society. They find that their income increases proportionally with the country's average income, which implies that economic growth benefits the poor. The authors find no evidence of a significant negative relationship between openness and average incomes of the poor. To the extent that openness is growth enhancing, Dollar and Kraay, therefore, conclude that trade benefits the poor.

The International Labour Organization recently carried out a number of country studies to analyse the social dimensions of globalization. The case studies of Bangladesh and Chile illustrate how increases in income inequality can go hand in hand with poverty reduction. In Bangladesh trade liberalization gathered momentum from the end of the 1980s and has been associated with a considerable intensification of trade flows.<sup>73</sup> The Gini coefficient of income inequality increased between 1988/89 and 1995/96. Yet in the same period the percentage of the population living below the poverty line (based on an intake of 1,805 kcal per person per day) gradually declined from 28.4 per cent in 1988/89 to 25.1 per cent in 1995/96. These figures reflect an important decrease in poverty among the rural population, while poverty among the urban population showed a slight increase.

Chile went through a second phase of trade liberalization in the second half of the 1980s, which was accompanied by a marked increase in trade and investment flows.<sup>74</sup> The ratio between the income of the 20 per cent richest households and the income of the 20 per cent poorest households first decreased from 13.3 in 1987 to 12.2 in 1992 and then increased to 13.8 in 1996. Inequality thus increased in the second period. Absolute poverty, however, declined from 17.4 per cent of the population in 1980 to 12.9 per cent in 1990 and 5.8 per cent in 1996.

The discussion so far has focused on the long-term effects of trade liberalization on the poor. But trade liberalization can also lead to temporary strains that may be particularly painful to the poor. Trade liberalization is beneficial because it allows countries to specialize in activities in which they are more competitive. This is why trade liberalization is typically followed by a restructuring of economic activities. While less productive, typically import competing companies shrink or close down completely, competitive exporting activities flourish and expand. In practice, this implies that some people lose their job in the aftermath of trade liberalization. Though they may end up finding a better-paid job in the expanding exporting sector, they may nevertheless have to go through a period of unemployment before finding another job. Being unemployed may be less difficult to manage in industrialized countries, where benefit schemes guarantee that the unemployed also receive an income. But in developing countries, social safety nets often do not exist or are inadequate.<sup>75</sup> Their coverage may be limited if not non-existent, or if available such social safety nets may be far below demand during a crisis or adjustment period. Adjustment processes can have harsh consequences in those countries, particularly for the poorest. As Winters (2000) puts it, "even switching from one unskilled informal sector job to another could cause severe hardship" for the poor.

Increased openness can increase a country's exposure to external risk. At the same time, integration in the global economy may reduce risks associated with fluctuations in domestic production. If a flood destroys the harvest of the main food crop, for instance, consequences are more disastrous in a closed economy than in a country where people can import crops. The question, then, is how the combination of increased exposure to external risks and reduced dependency on internal risks affects aggregate risk levels in an economy. Rodrik (1998) argues that external risk is positively associated with aggregate income volatility. If the population is to be protected from increased volatility, the role of the government as a provider of social insurance becomes more important in more open economies. Rodrik argues that this explains why governments have expanded fastest in the most open economies.

Critics have pointed out that it will be difficult for developing country governments to respond to an increased need for social insurance if the removal of tariff barriers leads to a reduction of government revenue. Yet it is not necessarily the case that trade liberalization lowers government revenue. Although tariff rates are lower, trade volumes are higher and these two effects work in opposite directions. Likewise, lower tariffs may reduce the incentive to evade tariffs. Over time, government tariff revenue can be substituted by revenue from other forms of taxation. The poor do not need to lose from this. It is a political decision whether new taxation or cuts in public expenditure will disadvantage the poor.

<sup>73</sup> Paratian and Torres (2001).

<sup>74</sup> Reinecke and Torres (2001).

<sup>75</sup> See for instance Ferreira et al. (1999).

To sum up, it has been long recognized that not everyone benefits from trade liberalization. Certain segments of the population will, at a minimum, face a period of adjustment; others may experience longer-term reductions in income. In developing countries, the effects of adjustment to trade liberalization on the poor have been a source of particular concern. While the distributional consequences of increased openness may influence the sequencing and pace of liberalization, as well as the range of policies that governments may choose to mitigate the adverse effects of change for some, no convincing case has been made for eschewing openness altogether as a policy option. This is because the benefits of trade and economic openness for an economy and society as a whole are well understood.

### Box IIA.7: Trade liberalization and tariff revenue

Tariff reductions are an element of trade liberalization which is of particular concern to many developing countries due to their negative impact on tax revenue. For many of them, tariff revenues are still an important source of tax revenue. In the mid-1990s, tariff revenue exceeded 30 per cent of the government's total tax revenue in more than 25 developing countries. This contrasts sharply with the situation in high-income countries for which tariff revenues typically represent less than 2 per cent of total tax revenue.

Developing countries have also expressed concern about the revenue implications of the introduction of the WTO's Agreement on Customs Valuation. The view has been expressed that the shift from "reference prices" to "transaction values" for the determination of tariff payments could lead importers to declare transaction values that are considerably lower than the "real" value of the imported good or the traditional reference price, and that customs administrations, unable to detect or prove false declarations of the transaction value, would be unable to stem the consequent loss in revenue. Empirical evidence to substantiate these claims is not available. In cases where the implementation of the Customs Valuation Agreement implied a shift to transaction values, general reform and modernization of custom administrations were often undertaken in parallel. The impact of the shift to "transaction values" is therefore blurred by the repercussions of other changes.

In evaluating the net revenue implications of trade liberalization, at least two crucial features have to be borne in mind: first, trade liberalization which substitutes tariffs for non-tariff barriers (quotas, restrictive licensing requirements, etc.) may have a positive revenue impact. Second, once trade protection is based on tariffs, the revenue implications of reductions in applied rates depend on the price elasticity of imports.<sup>1</sup> According to a recent study, price elasticities in open economies have to be much higher than empirically observed elasticities in order for trade liberalization to be self-financing. These findings imply that significant tariff reductions should be accompanied by reform of the general tax system to avoid the emergence of fiscal deficits or curtailment of government expenditure.<sup>2</sup>

Empirical evidence on the impact of major trade liberalization programmes (which were not exclusively focused on tariff reductions) show that revenue implications are not necessarily significant. For Bangladesh, Chile and Mexico, trade liberalization since the mid-1980s involved cuts in applied tariffs by more than 10 percentage points, reducing the ratio of duties to total tax revenue significantly in Bangladesh, but only slightly in Chile and Mexico. In each case, import growth accelerated sharply. Interestingly, in the initial years of trade liberalization in Chile and Mexico, the ratio of import duties to total tax revenue rose, but declined steadily thereafter.

<sup>1</sup> An IMF study (Ebrill et al, 1999) provides interesting insights: the flattening of tariff rates toward uniform levels, followed by the elimination of exemptions can actually increase external tax returns.

<sup>2</sup> Devarajan et al. (1999).

## 4. OPENNESS AND ENVIRONMENTAL SUSTAINABILITY

The relationship between trade and environmental sustainability is often posed in terms of a conflict between the goals of environmental protection and freer trade. But there is no inherent conflict between openness and environmental sustainability and there are many instances where measures that promote one objective also promote the other.

The level of economic activity and the degree to which it is environmentally sustainable can affect environmental quality. But trade is only one aspect of economic activity and can play both a negative and a positive role in protecting the environment. There is no *a priori* assumption that trade is less environmentally friendly than activities in the rest of the economy. In 2000, the share of merchandise trade to global gross domestic product was about 20 per cent. This shows that while trade is an important component of global economic activity, it is dwarfed by the size of the rest of the world economy. In any given country, domestic monetary and fiscal policy are bound to have a bigger impact on the aggregate level of economic activity, and hence on environmental quality, than trade.

The standard way to examine the impact of trade on the environment is to decompose the scale, technique and composition effects (Grossman and Krueger, 1993). The scale effect refers to the environmental consequences of increased output or economic activity which results from more trade. The general presumption is that an increase in output will result in more pollution or degradation of environmental resources. However, it turns out that the relationship between economic growth and environmental quality is neither linear nor the effects of growth on the environment so detrimental.

One striking finding is that while various measures of environmental quality initially deteriorate as per capita income rises, once a threshold level of income is crossed, further increases in per capita income may raise environmental quality (Grossman and Krueger, 1993; 1995). The shape and strength of the environmental Kuznets curve (EKC), as this relationship is called, seems to vary according to the environmental medium being examined, with the effect being strongest for air quality. The environmental Kuznets curve has been well documented by other studies, with some recent investigations (Dasgupta et al., 2002) suggesting that the income threshold at which the turning point occurs may actually be decreasing over time.<sup>76</sup>

It is important to emphasize that increases in per capita income will not automatically translate to improved environmental quality. With higher incomes, citizens demand better environmental quality from governments and are able to afford more easily the resulting abatement costs. Increased demand for environmental standards or regulations has to be supplied by national governments. And in this regard, societies with better income distribution and more civil and political liberties may do better in traversing the upward sloping part of the EKC (Torrás and Boyce, 1998).

This increased demand for better environmental outcomes could also provide incentives for firms to improve production technologies so that a given level of output can be produced with less pollution. Freer trade may also prompt the transfer of environmentally-friendly goods, services and technology to countries. These forces work to reduce the intensity of pollution per unit of output, which is the technique effect.

The composition effect refers to the way that more trade changes the distribution of a country's production towards those products where it has comparative advantage. This re-allocation of resources is how trade improves efficiency in production. The effect on the environment of a given country will depend on how polluting are the expanding and contracting sectors. The composition effect will be positive on the environment if the expanding sector is less pollution intensive than the contracting sectors and vice-versa. For the world as a whole, pollution will be re-allocated from countries that have a comparative advantage in industries that are less polluting to countries that have a comparative advantage in industries that are more polluting. Hence, trade will result in an improvement in environmental quality in some countries but a deterioration in others.

<sup>76</sup> These include Antle and Heidebrink (1995), Cole, Rayner and Bates (1997), Cropper and Griffiths (1994), Hettige, Lucas and Wheeler (1992), Panayotou (1995; 1997), and Shafrik (1994).

In addition, the analysis of trade and environment is often extended to focus on the competitive pressures faced by firms or governments as a result of trade liberalization. These may lead governments to adopt less stringent environmental regulations (regulatory chill or race to the bottom hypothesis) or lead firms to locate their plants in countries with lax environmental regulations (pollution haven hypothesis). However, the empirical evidence suggests that the cost of complying with environmental regulations is usually not very high. Hence, the increased competition brought about by more liberalization need not lead to greater reluctance to adopt more stringent standards. Also, neither studies on international trade flows nor on FDI flows suggest that environmental regulations are an important factor in international location decisions, and that other factors (political risk, exchange rate uncertainty, labour costs, corporate taxes) are more important.<sup>77</sup>

But irrespective of the mechanisms through which trade affects the environment, what is important is for the right environmental policies to be put in place in the domestic economy so that the use of environmental resources (land, air, water, etc.) is appropriately priced. The right environmental policies may involve taxes, regulations, establishment of standards or the removal of subsidies. Provided that governments address negative environmental effects that otherwise are not properly accounted for (negative externalities), international trade can promote better environmental quality by increasing efficiency in resource use. Freer trade results in the reallocation of resources towards sectors of comparative advantage, thereby reducing or eliminating waste.

Where negative externalities are not corrected, trade may exacerbate environmental damage or accelerate the use of non-renewable resources. But even in these situations, measures that restrict trade are not necessarily the optimal instruments to use. The basic principle is that corrective measures are best addressed at the source. If the objective, for instance, is to reduce deforestation of tropical rain forest, it may be far more effective if local people are given incentives to protect their forests or timber companies pay the full cost of forest concessions. Restricting trade through a higher tariff or an import ban in the consuming country will not resolve the externality problem at its root and will cause other deadweight losses.

Where negative externalities are trans-boundary in nature, e.g. global warming, national governments may not face the proper incentive structure to curb their pollution problems. This is because part of the costs is borne by foreigners. In this case, there is clearly scope for international co-operation. But even here the first best solution would be for a multilateral agreement to face producers in all countries with the true social price of their polluting activities.

But what if environmental preferences, and therefore regulations, differ across nations? This has prompted fears that more open trade, by enhancing competition among countries, will lead them to reduce environmental standards or prevent the adoption of more stringent regulations. In a world of sovereign nations, it would not be possible to impose a universal set of environmental standards if individual countries were not willing to accept them. In fact, many economists see differences in environmental preferences as laying a legitimate basis for comparative advantage. Nevertheless, scope no doubt exists for closer governmental co-operation on environmental matters with international import, not least because the alternative will likely be mutually destructive retribution and retaliation.

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<sup>77</sup> See WTO (1999a) for a comprehensive survey of the literature on these issues.

### Box IIA.8: Environmental assessments of trade agreements

Since the mid-1990s, a growing number of frameworks or methodologies have been developed for undertaking environmental assessments of trade agreements. They have been developed by national governments, non-governmental organizations, regional institutions and international organizations. Assessments have been performed on, among others, the Uruguay Round Agreements, the European Union single market, the North American Free Trade Agreement and a number of bilateral free trade arrangements involving the US and the European Communities. Canada, the United States and the European Communities have required environmental assessments of certain trade agreements and are now using these frameworks to review various scenarios of current WTO negotiations. The growth of the literature reflects the greater attention paid by the trade community to environmental matters and its willingness to respond to these concerns. The success of trade liberalization initiatives in the 1990s, in an era of greater national and international awareness of environmental and sustainable development issues, contributed to the increased demand for environmental objectives to be taken into account in trade negotiations. The establishment of a binding dispute settlement mechanism in the WTO was seen to have the potential of circumscribing the autonomy of national authorities to take actions in other areas, if these actions had negative trade impacts on another WTO Member.

Environmental assessments of trade agreements seem to pursue several objectives: at the broadest level, they are to ensure better coherence of trade and environmental policies. Second, assessments provided to a country's trade negotiators may allow the negotiating position to be adjusted accordingly. Third, the results of the assessment could be used to design mitigation measures to minimize adverse social or environmental consequences. Last and not least, the conduct of an assessment can allay possible public concerns by showing that the government is giving due importance to environmental concerns in the negotiations.

In some of the frameworks, there is a preparatory phase in which either specific hypotheses about the trade-environment linkage are identified for investigation or trade negotiation scenarios are constructed. However, the first step is usually to determine what provisions of the trade agreement may have significant environmental impacts (screening). The second step is to evaluate the likely economic, environmental or social consequences. By environmental impacts, what is usually meant are the effects on the quality of air, water, land, and on biodiversity. The third step will involve identifying specific sectors or issues to focus on (scoping) and the use of various tools (e.g. economic models, case studies) to derive specific impacts. This is complemented by the conduct of a legal analysis of the possible regulatory impact of the trade agreement. The basic question is whether the trade agreement requires changes to environmental measures of the country or limits its ability to develop and implement environmental regulations. The final element is the design of mitigation or flanking measures to limit potential adverse environmental consequences of the agreement. This may entail changes in the negotiating position of the country or the enactment of complementary measures after the agreement is implemented. All methodologies contain specific provisions and procedures for public consultations at various junctures of the assessment.

Since the literature on environmental assessments of trade agreements is barely a decade old, there are some acknowledged methodological difficulties and data constraints faced by the various frameworks. First, there are severe data limitations on environmental indicators. Good environmental statistics at the national level, and more importantly at the local or regional level, are lacking. Second, few quantitative tools have been used in the assessments contributing to a lack of rigour in the process despite the rapid development of computable general equilibrium (CGE) models incorporating economy-environment interactions in recent years. They could be deployed in the scoping exercise or made more useful by incorporating regional or local conditions. Third, the theoretical framework underpinning trade and environment is still being developed; the empirical evidence for many of the hypothesized links is often inconclusive. The difficulty is far more severe in the case of the relationship between trade and sustainable

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development since a rigorous definition of the concept remains elusive. Finally, most of the frameworks fail to include cost-benefit analyses, making it difficult to undertake an integrated assessment of the economic, social and environmental impacts and to know upon what basis decisions would ultimately be made. The presumption that mitigation or flanking measures would be put in place does not provide sufficient justification for such an omission. Mitigation measures may not always be feasible, or they may be too costly; or they may be unable to completely offset the negative environmental or social impacts. Environmental impact assessment frameworks require improvement in a number of important areas – in modelling trade and environmental linkages, in the collection of environmental data, in the use of quantitative methods and in the valuation of environment resources. These improvements are essential in order to arrive at precise, robust and relevant assessments regarding the environmental impacts of multilateral trade agreements.