OECD DEVELOPMENT CENTRE

POLICY BRIEF No. 18

Multilateral Tariff Liberalisation and the Developing Countries

by

Sébastien Dessus, Kiichiro Fukasaku and Raed Safadi

- Tariffs still matter.
- Full tariff liberalisation to 2010 would generate dynamic welfare gains of $1 200 billion (at 1995 prices), equivalent to 3 per cent of World GDP in 2010, from greater efficiency and higher productivity.
- Developing countries stand to gain relatively more from multilateral tariff liberalisation, with aggregate gains amounting to nearly 5 per cent of their GDP in 2010.
- The next WTO round will provide an opportunity for members to improve their living standards. Realising this potential, however, poses a major policy challenge to developing countries.

POLICY BRIEF No. 18

Multilateral Tariff Liberalisation and the Developing Countries

by

Sébastien Dessus, Kiichiro Fukasaku and Raed Safadi

DEVELOPMENT CENTRE POLICY BRIEFS

In its research activities, the Development Centre aims to identify and analyse problems whose implications will be of concern in the near future to both Member and non-Member countries of the OECD. The conclusions represent a contribution to the search for policies to deal with the issues involved.

The *Policy Briefs* deliver the research findings in a concise and accessible way. This series, with its wide, targeted and rapid distribution, is specifically intended for policy and decision makers in the fields concerned.

This Brief presents the main results of a quantitative assessment of multilateral tariff liberalisation in agricultural and industrial products based on different policy scenarios, and discusses their implications for developing countries. It emphasises that the next round of multilateral trade negotiations to be launched in Seattle in November this year under the auspices of the WTO will provide a window of opportunity for participating countries to improve their living standards through better market access, greater domestic efficiency and higher productivity. The success of these negotiations will depend on the fair distribution of global benefits among participating countries and the implementation of domestic policy reforms that are necessary to capture these benefits.

Table of Contents

Acknowledgements

The authors* are grateful to Ulrich Hiemenz and David O'Connor for helpful comments and suggestions and to Carole Tauzin for research assistance. Special thanks are extended to Dominique van der Mensbrugghe for his kind collaboration.

Introduction

This Brief presents the main results of a quantitative assessment of multilateral tariff liberalisation in agricultural and industrial products based on different policy scenarios, and discusses their implications for developing countries. It emphasises that the next round of multilateral trade negotiations to be launched in Seattle in November this year under the auspices of the WTO will provide a window of opportunity for participating countries to improve their living standards through better market access, greater domestic efficiency and higher productivity. The success of these negotiations will depend on the fair distribution of global benefits among participating countries and the implementation of domestic policy reforms that are necessary to capture these benefits.

Assessing the likely impact of multilateral tariff liberalisation based on a global simulation model can make an important contribution to the preparation of the next trade round, since the emerging agenda for the round contains significant market access components, including negotiations on industrial tariffs. A recent OECD study of post–Uruguay Round tariff regimes in both OECD Member and 13 major non–member countries emphasises that tariffs continue to be an integral part of any future market access liberalisation efforts (OECD, 1999*a*). Moreover, given the proposed three–year time frame for the new round, which has been gathering strong support among WTO members, progress in the negotiations may depend crucially on an "early harvest" from market access negotiations, particularly on tariffs — an area in which the results of negotiations are quantifiable. As a backlash against globalisation has been noticed recently in some quarters in both developed and developing countries, policy makers will have to inform the public, more than ever, of the stakes that are involved in the next round.

Today more than 100 of the 134 WTO Members are developing countries, of which 29 members are least–developed ones. In terms of market access, three agreements established during the Uruguay Round trade negotiations (1986–1994) are of particular interest to developing countries:

— To phase–out Multi–Fibre Arrangements (MFA) quotas and integrate progressively the textile and clothing sector into the WTO;

— To incorporate market–oriented agricultural trading rules and disciplines based principally on bound tariffs and limit the use of export subsidies; and

— To prohibit the use of voluntary export restraints and other "grey–area" measures, such as market–sharing arrangements.

Numerous studies have assessed the impact of Uruguay Round Agreements on developing countries. A voluminous study compiled by the World Bank (1995) indicates that cuts in protection on merchandise trade would increase overall real income of developing countries by an estimated rate of 1 to 2 per cent. A synthesis report published by UNCTAD (1997) provides a useful summary of existing empirical studies on the country–specific impact of Uruguay Round Agreements. A broad picture emerging from these studies is that the developing countries as a whole, especially those in Asia, could reap positive gains largely from the dismantling of MFA quotas, though there would be wide disparities in the distribution of these benefits among the Asian economies. At the same time, certain effects of Uruguay Round Agreements would pose a major challenge to several low–income developing countries. This is either because of greater competition in international textiles and clothing markets once MFA quotas are removed (e.g., Bangladesh and Zimbabwe) or due to food–price increases as a result of reductions in subsidies (e.g., Côte d'Ivoire and Zambia)[1].

Policy makers in both OECD Member and non–member countries are paying increased attention to developing countries' concerns over the implementation of the Uruguay Round Agreements and their active and effective participation in the next trade round. Clare Short, United Kingdom Secretary of State for International Development, urges all governments to work together to make the next round a "Development Round" (Short, 1999). Leon Brittan, outgoing Vice President of the European Commission, points out that the integration of developing countries, and especially the least–developed amongst them into the multilateral trading system is one of the greatest challenges of these times. He states:

> "For too long, some developing countries have been only nominally part of the international trading system. The WTO train must not rush ahead while leaving so many countries trailing behind. We need to ensure that *future trade liberalisation and rule making support sustainable development and take account of the capacities and constraints of developing countries"* (Brittan, 1999; *italics* are added).

This is why this Brief focuses on assessing the *potential* benefits that multilateral tariff liberalisation could bring to developing countries and on identifying the main constraints they are facing in their efforts to realise such benefits. The next section discusses why active participation in the next WTO round is crucial if developing countries are to place their economies on a sound path and sustain healthy economic growth. The penultimate section presents and discusses the main results

of trade policy simulations based on different scenarios with respect to tariff liberalisation. The final section concludes with some suggestions regarding the next steps that need to be taken.

Developing Countries' Interests in the Next Trade Round

Why A New Trade Round?

While attempts at reforms should be "home–grown", initiatives at the multilateral level can provide significant support, and in some cases may define the political feasibility of reforms. The "rules–based" global trading system that has evolved since the end of World War II, epitomised by the GATT (now the WTO), helps countries in implementing economic reforms in a gradual manner through at least two channels. First, the GATT/WTO sponsors concerted multilateral negotiations that aim to liberalise the flow of goods and services internationally. Two important benefits emerge from this: *a)* there is the enhanced prospect for political saleability when reform of domestic protection is part of a global effort; and *b)* there is the additional benefit that can accrue from liberalisation by others. Put differently, the gains from trade liberalisation tend to be greater the larger the number of countries involved. Second, the GATT/WTO provides rules and disciplines for the conduct of international trade. It specifies the restrictions that are prohibited, those that are allowed and under what conditions. These rules and disciplines are legally bound and are subject to clear dispute settlement procedures, which provides added security and certainty to those engaged in international trade, investment and technology transfer.

For developing countries, be they small, medium–sized or even large economies, trading in the international markets on the basis of strong rules and disciplines agreed through multilateral, rather than bilateral negotiations is of critical importance, and relatively more important to them than it is for industrial countries. There are at least two reasons why this is the case. First, unlike developing countries, industrial ones have enough bargaining power to influence the behaviour of others unilaterally. Secondly, the relatively smaller size of developing countries' markets, coupled with the fact that they enjoy comparative advantage in a narrower range of goods and services, means that they have a larger stake in a healthy growing world economy than do industrial countries (Krueger, 1999). It is thus unsurprising to see that one of the most important accomplishments of the Uruguay Round, insofar as

developing countries are concerned, was the substantial strengthening of the rules governing the conduct of international trade and their extension to new areas of activities.

During the eight–year period of the Uruguay Round trade negotiations, more than 60 developing counties undertook unilateral measures to lower their barriers to imports (OECD, 1997*a*). More recently, a significant number of African countries have seriously embarked on a similar trade liberalisation drive. In their attempt to explain why economic performance is more disappointing in Sub–Saharan Africa than in other regions, Collier and Gunning (1999) point out that at the aggregate level a lack of openness to trade is the single most important cause of slow growth. They argue that restrictive trade policy, foreign exchange controls and licensing and high taxation on international trade have damaging effects on growth by depressing investment, reducing competition and distorting resource allocation. The next trade round can provide a timely opportunity for reform–minded African countries to sustain their policy initiatives, while at the same time "locking in" the achievements made so far.

The drive for further trade liberalisation is also necessary to help sustain the recoveries of many emerging market economies that have suffered financial and currency crises over the past two years. In Asia, trade barriers among countries need to be lowered in order to promote the growth of intra–regional trade. Bergsten (1999) argues that the history of trade policy is just like pedalling a bicycle — one must keep it moving forward or it falls. In the same vein, he notes that "failure to move steadily forward toward liberalisation condemns the trading system to tip over in the face of protectionist pressures (p. 7)". The next trade round can and should play a pivotal role in securing trade recoveries of the crisis–affected economies and sustaining their trade policy reforms in this direction.

After the Uruguay Round, however, some doubts were expressed about the lengthy and difficult negotiations that had imparted both human and financial costs to participating countries. Indeed, it took eight years to bring the latest round to a successful conclusion. Many developing countries, especially poorer ones, have recently claimed that the implementation of the Uruguay Round Agreements has posed a heavy burden on their resources. In view of this experience, the majority of WTO Members appear to favour the view that while the next round, like the previous one, should employ a single–undertaking, comprehensive approach, it must be concluded in no more than three years. At the time of writing, opinions differ considerably among major trading nations as to how comprehensive it should be, beyond the mandated "built–in" agenda that contains most importantly negotiations on agriculture and services. The question of "agenda setting" ought to

be weighed against the desirability of having a swift resolution within the agreed timetable. At this stage, no agenda item is excluded from negotiations *a priori,* but at the same time it is obvious that every item can not be treated equally within the proposed three–year time frame.

Tariffs Still Matter

The huge reductions in import duties and the establishment of non–discriminatory tariffs as the principal means of trade protection are commonly viewed as one of the most significant success stories of post–war trade policy and multilateral trade negotiations under the GATT. The Uruguay Round marked the eighth time that GATT members reciprocally negotiated reductions of trade barriers in a multilateral framework. The success of these rounds has been remarkable[2]. Completion of the Uruguay Round has resulted in broad based tariff reductions and the easing of some of the important non–tariff barriers, strongly enhancing the prospects for reaping global welfare gains from further trade expansion. Efforts to calculate the benefits of the Uruguay Round suggest prospective gains of anywhere from between 1 and 5 per cent of world GDP (OECD, 1993). Unsurprisingly, the countries that stand to gain the most from the Uruguay Round are the ones that liberalised the most. Developing countries with open domestic markets are being favoured, especially since their openness implies a relatively better capacity to adjust and adapt to new and emerging market opportunities.

Nevertheless, market access still represents perhaps the single most important trading issue between developing and industrial countries. Developing countries' strongest demands are not only for continued access to industrial countries' markets, but also for increased access. On the other hand, industrial countries look for developing countries to participate more effectively in the negotiations, and for some of them to assume more WTO obligations. In other words, some developing countries should "graduate". For both groups of countries, market access has been hindered by tariffs, non–tariff barriers and other measures including anti–dumping and countervailing duties, and safeguards.

A consensus is emerging that negotiations on industrial tariffs serve as an integral part of the next WTO round. In a meeting in late June 1999, APEC Trade Ministers endorsed this idea and stressed the importance of ensuring that the concerns of developing countries, including the least developed amongst them, are addressed in any new WTO negotiations (APEC, 1999). Likewise, the position paper of the European Commission issued in early July states that a development agenda should be reflected in the new WTO trade negotiations (European

Commission, 1999). It includes, *inter alia*, a proposal on market access: "all industrialised countries should commit themselves to tariff free treatment on essentially all products from the least developed countries to be implemented by 2003, while more advanced developing countries could also make a contribution."

Early in 1999 the OECD Trade Committee concluded a detailed study of post–Uruguay Round tariff regimes maintained by OECD Member and 13 non–member countries, and its report highlights several key features that deserve special attention (OECD, 1999*a*). First of all, the overall mean bound rate in non–Quad OECD countries is much higher than that in Quad–4 countries (i.e., Canada, the European Union, Japan and the United States). In the 13 non–member countries it remains as high as 43 per cent (Table 1). Second, a similar pattern can be observed for both agricultural and industrial products. Third, in the majority of cases, post–Uruguay Round bound tariffs remain higher than those that are currently applied on an MFN basis, and the gap between the two rates remains large in many instances, particularly for the 13 non–member countries. Fourth, tariff peaks continue to affect a number of sectors, both in industry and agriculture. In the OECD countries, high industrial peaks are found in such sectors as textiles and clothing, footwear and motor vehicles. Fifth, despite major achievements during the Uruguay Round negotiations, tariff escalation remains prevalent in many sectors. Finally, in the case of agriculture, border measures such as quotas and variable levies have been converted to tariffs following the Uruguay Round Agreement on Agriculture. In most cases, such "tariffication" process has resulted in the establishment of tariff rate quotas, involving very high rates.

Table 1. **Post–Uruguay Round Simple Bound Mean Tariff Rates**
(in per cent)

	All lines	Agriculture	Industry
Quad–4 OECD Countries[a]	5	10	4
Other OECD Countries[b]	19	40	18
13 non–OECD Countries[c]	43	63	39

a. Canada, EU–15, Japan and United States.
b. Australia, Czech Rep., Hungary, Iceland, Korea, Mexico, New Zealand, Norway, Poland, Switzerland and Turkey.
c. Argentina, Bangladesh, Brazil, Colombia, India, Indonesia, Malaysia, Romania, Sri Lanka, Thailand, the Philippines, Tunisia, and Venezuela.
Source: Authors' own calculation based on OECD (1999*a*), Tables and Figures, Table 2.

These observations cast doubt on the popular assertion that tariffs no longer matter as an instrument of trade policy. An uneven tariff structure, with some high nominal rates stratified along the different stages of production, can yield high levels of effective protection. Thus, from the developing–country perspective, three issues are of high priority for the next WTO round:

— Elimination of peak tariffs on industrial products, notably those that continue to affect many textile and clothing exports into OECD markets after the transition period (1995–2005) of dismantling MFA quotas;

— Elimination of the very high tariffs on agricultural imports in important OECD markets and acceleration of reductions in agricultural subsidies; and

— Elimination of the practice of tariff escalation that twists world–wide distribution of value–added products along processing chains against countries with relatively abundant supplies of raw materials.

At the same time, more advanced developing countries are required to take major steps towards lowering and binding duty rates on the one hand and rationalising and simplifying their tariff regimes on the other. In short, multilateral tariff liberalisation to be launched as an integral part of the next trade round is of strong interest to developing countries, notably the poorer ones.

Assessing the Welfare Effect of Multilateral Tariff Liberalisation

This section attempts to assess the welfare effect of multilateral tariff liberalisation under different policy scenarios and discuss their implications for developing countries.

Trade Policy Simulation Model

The *Trade Policy Simulation Model* used for this study is an "offspring" of the *LINKAGE Model* developed by the OECD Development Centre (OECD, 1997*a*), and the technical aspects of this model are explained elsewhere (OECD, 1997*b*). The basic structures of these two models are the same, but as we discuss below, the *Trade Policy Simulation Model* has incorporated some new features to focus our analysis on the dynamic nature of trade liberalisation. A brief overview of this model is provided in Appendix 1. The parameters used in the model are calibrated so as to reproduce the observed flows given in the GTAP Database (version 4) for the base year 1995. We also use the latest growth projections provided by the World

Bank as the "baseline reference scenario" for 16 countries and regions over the period 1995–2010[3]. Any impact caused by future trade liberalisation is thus measured as a deviation from this baseline scenario.

The model applies two alternative specifications regarding the treatment of total factor productivity (TFP). First, we simulate three trade policy scenarios under the standard assumption of "exogenous TFP". These trade policy scenarios are as follows:

— Full liberalisation scenario (I) — complete elimination of tariffs for agricultural and industrial products for both OECD and non–OECD economies;

— Partial liberalisation scenario (II) — full liberalisation scenario is maintained only for OECD economies, while tariff rates are reduced by 50 per cent for non–OECD economies;

— Partial liberalisation scenario (III) — full liberalisation scenario is maintained only for OECD economies, while tariff rates for non–OECD economies are set across the board at 5 per cent.

Note that for these policy simulations, the Czech Republic, Hungary and Poland are excluded from the OECD area and included in the group "Eastern and Central Europe" (ECE) due to the regional concordance used by the GTAP Database (version 4).

It is assumed that future tariff liberalisation will be phased in from the year 2001 and that tariff rates will be reduced linearly from the *applied* levels prevailing in the base year 1995 which are provided by the GTAP Database (version 4). As we discussed in the previous section, the 1995 applied rates are, in some cases, lower than the corresponding bound rates.

While the trade policy scenarios specified here may sound too ambitious, it should be recalled that APEC leaders agreed at Bogor in November 1994 to create "free and open trade and investment" by 2010 for developed members or by 2020 for the others. More recently, many economists from around the globe endorsed an idea that was put forward by Martin Wolf in the *Financial Times* calling on the WTO to set a target date for achieving full free trade (*Financial Times*, June 25, 1996). There are at least two important reasons for setting a target date for free trade at the border as part of the next WTO round.

The first reason stems from the fact that the WTO and its predecessor, the GATT, were created for the promotion of freer trade over time. Towards this end the GATT has sponsored negotiations for lowering trade barriers by "binding" attained levels of liberalisation against future increases in protection, and by requiring protection levels to be expressed and maintained as tariffs. It is thus natural to set a target date for complete elimination of tariffs in order for the GATT/WTO to reach one of its most important objectives. The second reason, which is closely related to the first, has to do with the proliferation of preferential trading arrangements and the challenge they pose to the most–favoured–nation (MFN) clause, the basic provision of the GATT that guarantees non discrimination. Global free trade by a target date will then put an end to the discrimination in trade policy.

Thus, the simulation scenarios that are specified here not only reflect political commitments, but also serve to further the MFN principle. Within this framework, it is also important to note that under these scenarios, preference margins for developing countries granted by the developed countries would be eliminated completely by the time that tariff rates in the latter are cut down to zero. This has an important ramification for the present preferential policies towards developing countries (see Box on page 14 for further discussion).

The welfare effects of trade liberalisation are evaluated by applying a monetary measure of welfare changes resulting from the price and income changes due to trade liberalisation. Following the formula suggested by Sadoulet and de Janvry (1995, p. 13), this is defined as the sum of the change in disposable income and the change in consumer surplus due to the price change. The latter component is measured as the difference between the actual level of expenditure and the amount that is necessary to reach the same level of utility after the price change[4]. We estimate the welfare effects of tariff liberalisation by calculating this monetary measure at the year 2010 when liberalisation is completed.

Most existing studies aimed at quantifying the welfare effect of trade liberalisation based on general equilibrium models take no account of *dynamic* gains of trade. Trade economists have long claimed that the welfare gains would be much larger if the dynamic impact of trade liberalisation were taken into account, though few attempts have so far been made in this direction (Rutherford and Tarr, 1998)[5]. One reason for this apparent lack of empirical research is the complex nature of the relationship between trade policy and economic growth, as was discussed extensively by Rodrik (1999).

Special and Differential Treatment

Prior to the Uruguay Round, there were five areas where developing countries received special and differential (S&D) treatment: one from the 1947 GATT (Article XVIII, the right to maintain infant industry and balance of payment trade restrictions); one from Part IV of the 1964 GATT (exemption from making reciprocal tariff concessions); and three stemming from the Enabling Clause (the right not to sign the Tokyo Round codes, exemption from Article XXIV, and the legitimisation of the Generalised System of Preferences).

Through the concept of the single undertaking that required Members to adhere to nearly the same set of agreements on trading rules, the Uruguay Round constrained S&D treatment to developing countries, though it did not eliminate such treatment. For example, the Uruguay Round Agreements contain special provisions for developing countries that grant them, among other things, long and gradual phase–in periods for their commitments and fewer obligations in some sectors. However, the most significant area of S&D treatment is the Generalised System of Preferences, or the GSP. This system allows developed countries to exempt some of developing countries' exports from MFN treatment. These exemptions are autonomous policies and they continue quite independently from the outcome of the Uruguay Round under the cover of the Enabling Clause.

The actual impact of the GSP on exports from developing countries has been questioned, however. First, trade preferences granted under the GSP do not purport to cover substantially all trade. Second, they are unilaterally granted and denied, and may be subject to frequent change. More generally, one may ask whether supposedly temporary trade advantages they give to developing countries are in any event an appropriate mechanism to encourage development.

While the academic literature offers a clear response to the above questions, the reality is that developing countries still insist S&D treatment in view of their low level of development. This concerns mainly the least developed countries, a group that includes some 48 countries that remain the weakest partners in the international community with important structural problems, often compounded by natural or human–invoked disasters. Their gradual integration into the multilateral trading system, and their eventual "graduation" from the status of least developed is a priority area for policy action.

Yet, the success of outward–oriented policies observed during the past decades could not be explained unless dynamic gains of trade are properly incorporated into a general equilibrium model. These gains may be either a result of greater incentives to reduce costs in a more competitive environment (e.g., X–efficiency) or due to a rise in imported technology embodied in non–substitutable intermediate and capital goods (e.g., higher TFP), which is made available by the relaxation of foreign exchange constraints. In the context of a general equilibrium analysis, de Melo and Robinson (1990) show that the structural changes that characterise the development process of countries pursuing outward–oriented policies in the post–war years can not be well traced with the standard neo–classical model where TFP is exogenous. Their analysis, based on comparative numerical exercises, indicates that introducing trade externalities might be better able to capture the pattern of industrialisation in countries following outward–oriented development strategies. Seen from this angle, the standard assumption of "exogenous TFP" seems too restrictive, so we introduce a Marshallian externality, which positively links the intensity of trade and the level of TFP.

In order to determine how significant an effect trade externalities have on productivity, an econometric test has been conducted based on the panel data involving 63 countries for the period 1961–95. The summary results of this panel–data analysis are presented in Appendix 2 (Appendix Table 1). It is suggested that a 10 per cent rise in trade intensity (defined as exports plus imports divided by GDP) would lead to a 0.9 per cent rise in the level of TFP. As we discuss in more detail in Appendix 2, this relationship seems very robust with respect to the introduction of other variables conventionally used in the growth equations and the selection of different trade–intensity measures[6]. Given these results, the above trade policy scenarios have been re–simulated, this time by taking explicit account of the endogenous nature of TFP. The two sets of simulation results are reported and discussed in the following paragraphs.

Simulation Results

First, Table 2 presents the summary results of three trade policy simulations conducted under the assumption of *exogenous* TFP. It shows that a full tariff liberalisation of agricultural and industrial products (*Scenario I*) would bring about total welfare gains of $82 billion (in 1995 prices), roughly 0.2 per cent of world GDP. This measure of welfare gains can be divided into two components: the change in consumer surplus (A) and the change in household disposable income (B). The first component indicates that the gains from consumer surplus would reach $284 billion, and 86 per cent of such gains would accrue to non–OECD economies.

15

However, most of these gains would be wiped out by a reduction in household disposable income. This is attributable to the fact that tariff cuts would result in a loss of government revenues which must be compensated for by a corresponding rise in income transfers from the household sector through higher taxes, thereby reducing household *disposable* incomes.

More generally, the simulation results suggest that under the assumption of exogenous TFP developing countries would not necessarily benefit from deeper tariff cuts due to the governments' budgetary constraints. This is a major difference from existing works on trade policy simulations, such as the one published by Australian Department of Foreign Affairs and Trade (1999) in which full tariff liberalisation would generate greater gains than partial liberalisation. All in all, the "static" gains from multilateral tariff liberalisation would be very small for both OECD and non–OECD countries.

Table 2. **The Welfare Effect of Multilateral Tariff Liberalisation**

	Change in Consumer Surplus	Change in Disposable Income	Total Welfare Gains	
			$ billion (1995 Prices)	Percentage of GDP
	[A]	[B]	[C=A+B]	
Scenario I *Full Tariff Liberalisation for both OECD and non–OECD Countries*				
All	284	−202	82	0.2
OECD Countries	40	24	64	0.2
Non–OECD Countries	244	−226	18	0.2
Scenario II *Full Tariff Liberalisation for OECD Countries* *Combined with a 50 % Tariff Cut for non–OECD Countries*				
All	67	6	73	0.2
OECD Countries	47	−17	30	0.1
Non–OECD Countries	20	22	43	0.5
Scenario III *Full Tariff Liberalisation for OECD Countries* *While Setting a 5 % Flat Rate for non–OECD Countries*				
All	142	−61	81	0.2
OECD Countries	35	9	44	0.1
Non–OECD Countries	108	−71	37	0.4

Next, Table 3 presents the results of trade policy simulations conducted under an alternative specification that the level of TFP is endogenously determined as a function of trade intensity. A very different picture emerges from this simulation. It shows that "dynamic" gains from multilateral tariff liberalisation could

be very substantial, particularly for non–OECD countries, when these gains are expressed as a percentage of GDP of their economies. In the case of full tariff liberalisation for both OECD and non–OECD countries (*Scenario I*), the global welfare gains would reach $1 200 billion, which is equivalent to about 3 per cent of world GDP. The dynamic gains from positive trade externalities are manifested as a substantial rise in household disposable income, which is two and half times higher than traditional gains from consumer surplus.

Table 3. **The Welfare Effect of Multilateral Tariff Liberalisation with Endogenous Total Factor Productivity**

	Change in Consumer Surplus	Change in Disposable Income	Total Welfare Gains	
			$ billion (1995 Prices)	Percentage of GDP
	[A]	[B]	[C=A+B]	
	Scenario I *Full Tariff Liberalisation for both OECD and non–OECD Countries*			
All	337	876	1 212	3.1
OECD Countries	62	695	757	2.5
Non–OECD Countries	274	181	455	4.9
	Scenario II *Full Tariff Liberalisation for OECD Countries Combined with a 50 % Tariff Cut for non–OECD Countries*			
All	96	816	912	2.3
OECD Countries	65	555	620	2.1
Non–OECD Countries	31	261	292	3.1
	Scenario III *Full Tariff Liberalisation for OECD Countries While Setting a 5 % Flat Rate for non–OECD Countries*			
All	192	991	1 183	3.0
OECD Countries	57	668	724	2.4
Non–OECD Countries	136	323	459	4.9

Table 3 also shows that in the case of full tariff liberalisation, developing countries as a group stand to gain much more than OECD countries in relative terms, with aggregate gains amounting to nearly 5 per cent of GDP of developing countries in 2010. From the developing–country perspective, *Scenario III* (partial tariff liberalisation with a 5 per cent flat–rate setting for non–OECD countries) would be as beneficial as *Scenario I* (full tariff liberalisation) and substantially more beneficial than *Scenario II* (partial tariff liberalisation with a 50 per cent linear cut for non–OECD countries). This is due to the combination of two *opposing* effects caused by tariff liberalisation. Deeper tariff cuts would bring about higher gains from consumer surplus and greater productivity gains through positive trade externalities, but at the same time they would require larger income transfers to government

Table 4. **Welfare Gains from Multilateral Tariff Liberalisation by Country and Region**
(with Endogenous Total Factor Productivity)

	Scenario I		Scenario II		Scenario III	
			Welfare Gains			
	$ billion (1995 Prices)	Percentage of GDP	$ billion (1995 Prices)	Percentage of GDP	$ billion (1995 Prices)	Percentage of GDP
All	1 212	3.1	912	2.3	1 183	3.0
OECD Countries	757	2.5	620	2.1	724	2.4
Non–OECD Countries	455	4.9	292	3.1	459	4.9
ASE (Other East Asia)	56	4.7	37	3.1	59	5.0
CHN (China and Hong Kong)	103	5.5	67	3.6	105	5.6
ECE (Eastern and Central Europe)	15	2.9	11	2.2	16	3.0
EUR (EU–15, EFTA countries and Turkey)	96	0.8	66	0.6	86	0.7
IDN (India)	13	4.1	8	2.5	13	4.0
IND (Indonesia)	57	9.6	31	5.3	57	9.6
JPN (Japan)	359	6.1	310	5.3	352	6.0
MER (Argentina, Brazil and Chile)	78	4.9	49	3.0	75	4.7
MNA (Middle East and Northern Africa)	16	1.6	11	1.2	17	1.7
NAF (Canada, Mexico and the United States)	231	2.1	186	1.7	219	2.0
NIS (Newly Independent States)	8	1.3	6	0.9	7	1.1
OCD (Australia, New Zealand and Korea)	71	5.4	57	4.3	68	5.2
OLA (Rest of Latin America)	23	4.5	16	3.2	23	4.5
ROW (Rest of the World)	66	10.3	42	6.6	67	10.5
SAF (South Africa)	10	5.0	6	3.2	10	4.9
SSA (Sub–Saharan Africa)	11	3.7	8	2.7	11	3.7

from the household sector to compensate for loss of tariff revenues, thereby reducing disposable income. The latter effect has a significant negative welfare implication for many developing countries that maintain an import regime characterised by high duties.

Finally, Table 4 highlights the fact that *all* 16 countries and regions, including both OECD and non–OECD areas, would benefit from multilateral tariff liberalisation, once the dynamic effect from freer trade is taken into account. To be sure, some could gain more than others. Among OECD Members, for example, Japan and three other Pacific countries (Australia, New Zealand and the Republic of Korea) would enjoy estimated total gains of $430 billion, accounting for 6.1 and 5.4 per cent of their respective GDP. Among non–OECD areas, the world's two most populous countries, China and India, are estimated to obtain combined welfare gains of $160 billion, which is equivalent to 5.5 and 9.6 per cent of their respective GDP. However, this does not mean that other smaller developing countries are excluded from enjoying the benefits of freer trade. A key point to be stressed here is that since multilateral tariff liberalisation involves a wide range of products and a large number of countries, it can offer a best possible outcome for all participating countries.

Concluding Remarks

The results of trade policy simulations presented in the previous section suggest, *first*, that while static gains from multilateral tariff liberalisation are estimated to be very small, dynamic effects through better market access, greater domestic efficiency, and higher productivity could be substantial. This analysis takes explicit account of a crucial link that exists between trade externalities and productivity, which makes a big difference to an assessment of global welfare gains from multilateral tariff liberalisation.

Second, the simulation analysis shows that *all* participating countries could benefit from multilateral tariff liberalisation under three different policy scenarios, once dynamic productivity gains are taken into account. Obviously one could conceive of many other scenarios with respect to the modality of future tariff liberalisation. A best–possible scenario should be further explored by examining carefully the implications of various tariff–cutting mechanisms for developing countries, particularly poorer ones. The simulation results, though they are based

on a highly aggregated model, point to the advantage of setting low, flat duty rates over the medium term. This also contributes to eliminating inefficiencies in tariff regimes characterised by the existence of peak tariffs and tariff escalation.

Third, the simulation analysis also indicates that developing countries as a group could enjoy larger gains from freer trade than OECD countries, when these gains are expressed in terms of respective GDP. Thus, more active and effective participation by the former group of countries in multilateral tariff liberalisation would be desirable for their own sake.

Fourth, any future tariff liberalisation effort has to pay due attention to the heavy reliance of developing countries on trade tax revenues. On average, tariff revenues account for more than one quarter of government revenues in non–OECD countries[7], compared with only 4 per cent in OECD Member countries. Therefore, future trade liberalisation will put the former group of countries under heavy pressure on the fiscal front, and they will have to make substantial adjustments in national tax systems if revenue neutrality is to be maintained. The simulation results highlight the significance of this fiscal effect on a country's net welfare. In order to reap the full benefit of future tariff liberalisation, developing countries must undertake major efforts to improve the government's fiscal position, in tandem with trade liberalisation. Such efforts need to be encouraged and supported, when necessary, by well co–ordinated development assistance from OECD Member countries.

Fifth, for both methodological and data reasons, in this analysis no attempt has so far been made to incorporate the impact of services trade liberalisation[8]. Some existing empirical work, such as the one reported by the Australian Department of Foreign Affairs and Trade (1999), suggests that the welfare gains from lowering barriers to trade in services would be as large as those from trade liberalisation in goods. Therefore, the *potential* gains from future trade liberalisation in both goods and services would be far greater than those presented and discussed in the previous section.

Sixth, and related to the above, more attention needs to be paid to the complementary relationship between liberalisation of trade in goods and liberalisation of trade in services when considering the relationship between trade externalities and productivity. Developing more efficient, dynamic service sectors is of crucial importance for facilitating trade and investment flows into developing countries. Amjadi *et al.* (1996) point out that poor transport infrastructures prevalent in most African countries have damaging effects on trade.

Finally, it should be stressed that dynamic gains from trade will not accrue automatically. To achieve these gains, developing countries, particularly least–developed ones, must secure macroeconomic stability and continue complementary policy reforms so as to improve the domestic supply response to the emerging market opportunities and challenges that will follow from future trade liberalisation. Admittedly, this is easier to say than to do for any country, but particularly difficult in slow–growing, low–income countries. For those working in the sectors that are currently receiving heavy government protection, the opening up of national borders and the ensuing adjustment to foreign competition imply a loss of privilege and economic hardship. Nonetheless, such adjustment is an important source of productivity gains and higher real income in society at large. This is an area where development assistance should play a catalytic role in helping weaker countries to develop competitive capacities and to promote foreign trade.

Thus, reform–minded governments around the globe have a window of opportunity, as momentum is building up for a new trade round scheduled to be launched at the Third WTO Ministerial Meeting in Seattle later this year. Not only do developing countries need to welcome this event, but also they should prepare themselves for becoming fully engaged in both the process and the results of the WTO 2000 negotiations and for contributing as full partners to the universal set of rules and practices that will emerge.

Notes

1. See also Goldin, Knudsen and van der Mensbrugghe (1993).

2. Prior to the Uruguay Round, the past seven rounds had succeeded in lowering the average (trade–weighted) most–favoured–nation tariff rates on industrial goods from a high of 40 per cent at the end of World War II to around 6 per cent at the end of the Tokyo Round (1973–79). And the Uruguay Round (1986–94) further reduced the average trade–weighted tariff rates to 4 per cent (Safadi and Laird, 1996).

3. The 16 countries and regions are listed in Appendix 3.

4. See Appendix 1 for a more detailed account of the welfare measure used in this study.

5. One exception is McKibbin (1999).

6. Sachs and Warner (1997) also found the positive relationship between trade openness and productivity growth in their cross–country growth equations. See also Chand (1999), which shows that reductions in protection tend to raise TFP in Australian manufacturing industries.

7. Devarajan, Go and Li (1999) point out that trade taxes account for 27 per cent of total government revenues in Sub–Saharan Africa and more than 40 per cent in some countries of the region. They argue that given the possible range of elasticities, tariff reform is hardly self–financing. See also Ebrill, Stotsky and Gropp (1999) for further discussion.

8. See, for example, OECD (1999*b*) for detailed discussion on these problems.

Appendix 1

The Trade Policy Simulation Model

The *Trade Policy Simulation Model* is a variant of the *LINKAGE Model* that has been developed by the OECD Development Centre to analyse the evolving relations between OECD Member and non–Member countries (OECD, 1997*a*). A detailed technical description of this model is provided in OECD (1997*b*).

The *Trade Policy Simulation Model* is a dynamic general equilibrium model in which the behaviours of economic agents are modelled according to neoclassical economic theory. The model contains full general equilibrium features of 16 individual countries and regions (see Appendix 3), and these economies are linked through international trade. The following paragraphs give a brief overview of the main features of this model.

Supply: Production is modelled using nested Constant Elasticity of Substitution (CES) functions which describe the substituting and complementary relations among the various inputs: capital, labour, land, fertilisers, energy and other intermediate inputs. Producers are assumed to be cost–minimisers subject to constant returns to scale. The model applies the notion of vintage capital to distinguish the process of allocating capital already installed, from that resulting from contemporary investment (putty/semi–putty production function). "New" capital can be allocated more flexibly than "old" capital. It substitutes for other inputs more easily.

Demand: Household demand is derived from maximising the utility function[1] subject to the constraints of after–tax income and the consumer–price vector. The calibration of the model determines a *per capita* subsistence minimum for each product whose aggregate consumption increases in proportion to the population size of each country or region, while the remaining demand is derived through an optimisation process. Government and investment demands are disaggregated into sectoral demands according to fixed–coefficient functions once their total value is determined.

International trade: The model assumes imperfect substitution among goods originating from different geographical areas[2]. Import demand results from a CES aggregation function of domestic and imported goods. Export supply is symmetrically modelled using Constant Elasticity of Transformation (CET) functions. Producers first decide to allocate their output to domestic or foreign markets, responding to their relative prices. At the second stage, importers (exporters) choose the optimal choice of demand (supply) across regions, again as a function of the relative import (export) prices and the degree of substitution across regions.

Model closure and dynamics: The equilibrium condition on the balance of payments is combined with other closure rules so that the model can be solved for each period. First, capital transfers are exogenous and determine the trade balance. Second, the government surplus / deficit is exogenous, and the household income tax schedule shifts in such way to achieve the pre–determined net government position. Third, investment is treated as "savings–driven", with the latter originating from households, enterprises, government and abroad. The sequential dynamic path of the model results from this closure rule. In other words, a change in savings influences capital accumulation in the following period. Fourth, among those factors that affect the growth path of the economy, growth rates of population, labour, land supply and total factor productivity (TFP) are exogenously determined[3]. Finally, economic agents are assumed to be myopic, basing their decisions on static expectations.

Welfare: The chosen measure of the welfare change resulting from trade liberalisation is called "*compensating variation*" (or "CV") proposed by Sadoulet and de Janvry (1995). This is a monetary measure of the welfare change caused by the price and income changes following trade liberalisation. Suppose that E is the expenditure function representing the minimum income which is necessary to reach the level of utility, u, at given price, p. Then the CV can be expressed as $(y^*-y) + (E(p,u)-E(p^*,u))$ where y is disposable income, and the asterisk stands for the post–reform period. The first term, y^*-y, measures the gain (or the loss) of disposable income after the price change. The second term measures the change in consumer surplus, i.e., the difference between the actual expenditure and the amount needed to attain the same level of utility after the price change. If this is positive, then trade liberalisation allows the consumer to reach the same level of utility with less expenditure than before.

Database and calibration: The parameters used in this model are calibrated so as to reproduce the observed flows given in the GTAP database (version 4.0) for 1995. In addition to the GTAP database, we have used World Bank's (1999) statistics to decompose national savings into private and public components. The current version of the model disaggregates global economic activity into 16 countries and regions (see below) and 4 sectors — agriculture, energy, manufactures and services. The model is solved every year from 1995 to 2010.

Appendix 2

Outward Orientation and Productivity: A Critical Link

In order to quantify the extent to which outward orientation may affect productivity, a panel–data econometric analysis was conducted with samples of 63 countries covering annually the period of 1961–95[4]. The following form of a Cobb–Douglas production function with constant returns to scale was estimated:

$$\ln y_{i,t} = A_i + g_i t + \gamma_t + \alpha \ln k_{i,t} + \beta \ln O_{i,t} + u_{i,t} \tag{1}$$

where i denotes the country and t the year. In this equation, the GDP *per capita* (y) is defined as a function of the *per–capita* physical capital stock (k), the trade–intensity index (O) and an error term (u). We also introduce in equation (1) country–specific intercepts (A_i, the initial TFP level) and trends (g_i, the exogenous technical progress) as well as a period–specific fixed effect (γ_t) to capture temporal shocks common to all countries.

As regards the specification of equation (1), two brief comments may be in order. First, it is well known that a difference in the country size tends to affect an individual country's level of trade intensity. In our sample, the average level of trade intensity observed during the period 1961–95 differs considerably across countries. For example, when expressed as exports plus imports as percentage of GDP, it was 112 for Belgium and 16 for the United States. Any bias arising from differences in the country size thus needs to be corrected. In regression equation (1) country–specific fixed effects are introduced, so what counts for our panel–data analysis is not the actual level of trade intensity *per se* but its relative deviation from an individual country's average. In our example, this means that a 11.2 percentage points' rise in the trade intensity in Belgium will have the same impact on productivity as a 1.6 percentage points' rise in the United States. Second, this effect is not considered permanent in the sense that an increase in trade intensity will affect the *level* of TFP, but not its growth rate. Therefore, if decreasing returns are observed for capital, this model is theoretically comparable to "conditional convergence" models in the economic growth literature.

Original data for GDP, active population, investment and trade intensity variables are taken from the World Bank (1999). Physical capital stock figures are obtained by extrapolating the data provided by Nehru and Dareshwar (1993) for the period 1991–95 using recent investment figures. The choice of trade–intensity measures is admittedly a tricky issue for empirical analysis. The one most frequently applied in the literature, i.e., the ratio of imports plus exports to GDP, has been criticised (Pritchett, 1996), because it does not necessarily reflect the impact of trade policies. However, the aim of our regression analysis is *not* to assess the relationship between trade policy and economic growth but to examine the relative significance of trade externalities by estimating the relationship between *observed* trade intensities and the level of TFP. Besides, a recent debate[5] has evolved around the choice of exports *versus* imports as a measure to capture the real impact of trade on growth. This point, though important in terms of policy prescription, is not an issue greatly sensitive in a general equilibrium framework in which trade balances are fixed. We therefore retain the ratio of exports plus imports to GDP as a measure of trade intensity. This variable, as well as the *per–capita* capital stock, is lagged for one year in order to reduce the simultaneity bias[6].

The results of estimation of equation (1) are summarised in Appendix Table 1. In column [1], the elasticity of GDP *per capita* with respect to lagged physical capital *per capita* (k) is estimated to be 0.34, while the corresponding elasticity of trade intensity (O) equals 0.09. Both elasticities are statistically significant at the 1 per cent level. Tests performed using the method developed for panel data by Levin and Lin (1993) show that the estimated residuals are stationary. Estimating error correction models confirms the long–term character of the relationship.

It is clear from columns [2]–[5] that the relationship between the level of trade intensity and TFP does not change much with respect to the choice of trade–intensity measures. Although the use of GDP expressed in purchasing power parities generates a lower elasticity of 0.06, two other measures, one based on exports and the other on imports, show a higher elasticity of 0.08. Similarly, the results shown in columns [6]–[9] indicate that this relationship is very robust in a range of 0.08–0.10 with respect to the inclusion of traditional parameters of steady states, namely, the terms of trade, inflation rate, government consumption and human capital. In conclusion, the results of our panel–data analysis confirm the significance of trade externalities that provide a critical link between outward orientation and productivity.

Appendix Table 1. **Outward Orientation and Productivity**
The Summary Results of Regression Analysis

Explanatory Variables	Dependent Variable: y								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
k	0.34(13.2)	0.36(6.6)	0.31(5.4)	0.35(13.2)	0.34(13.1)	0.34(11.8)	0.30(10.4)	0.34(14.4)	0.35(14.4)
o	0.09(6.7)	0.09(5.6)				0.08(5.2)	0.10(6.6)	0.08(7.0)	0.08(6.9)
op			0.06(3.4)						
m					0.08(6.5)				
x				0.08(6.2)					
tot							0.07(4.5)		
l							−0.02(8.6)		
g							−0.08(5.7)		
h									0.09(1.6)
Obs	2 205	1 320	1 320	2 205	2 205	1 925	1 925	1 794	1 794
Countries	63	66	66	63	63	55	55	69	69
Period	61–95	76–95	76–95	61–95	61–95	61–95	61–95	62–87	62–87
Adj. R2	0.9989	0.9995	0.9995	0.9989	0.9989	0.9992	0.9993	0.9997	0.9997

Notes:
y — GDP per capita
k — lagged physical capital per capita
o — lagged ratio of exports plus imports to GDP in US dollars
op — lagged ratio of exports plus imports to GDP expressed in purchasing power parities
m — lagged ratio of imports to GDP
x — lagged ratio of exports to GDP
tot — Terms of trade
l — GDP deflator
g — Public consumption as percentage of GDP
h — Average years of schooling of the adult population
All the variables are expressed in natural logarithms.
Figures in parentheses are t–student statistics.

Sources: World Bank (1999) and Nehru and Dareshwar (1993).

29

Appendix 3

Regional Concordance of the Trade Policy Simulation Model

1	ASE	Other East Asia
		Chinese Taipei, Malaysia, Philippines, Singapore, Thailand
2	CHN	China and Hong Kong
3	ECE	Eastern and Central Europe (*)
		Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia
4	EUR	European Union (15), EFTA countries and Turkey
		Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom
5	IND	India
6	IDN	Indonesia
7	JPN	Japan
8	MER	Argentina, Brazil, Chile
9	MNA	Middle East and Northern Africa
		Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen Arab Republic
10	NAF	Canada, Mexico, United States
11	NIS	Newly Independent States
		Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
12	OCD	Australia, New Zealand, Korea
13	OLA	Rest of Latin America
		Antigua and Barbuda, Bahamas, Barbados, Belize, Costa Rica, Cuba, Dominica, Dominican, Republic, El Salvador, Grenada, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, St. Kitts and Nevis, St Lucia, St. Vincent, Trinidad and Tobago, Bolivia, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela
14	ROW	Rest of the World
		Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Sri Lanka, Afghanistan, Andorra, Bosnia, Herzegovina, Brunei, Cambodia, Croatia, Cyprus, Fiji, Kiribati, Laos, Liechtenstein, Macedonia (former Yugoslav Republic of),. Malta, Monaco, Mongolia, Myanmar, Nauru, North Korea, Papua, New Guinea, San Marino, Solomon Islands, Tonga, Tuvalu, Vanuatu, Vietnam, Western, Samoa, Yugoslavia (Serbia and Montenegro)
15	SAF	South Africa
16	SSA	Sub–Saharan Africa
		Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Cambia, Ghana, Guinea, Guinea–Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome & Principe, Senegal, Seychelles, Islands, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Uganda, Zaire, Zambia, Zimbabwe

(*) Three OECD countries, Czech Republic, Hungary and Poland, are classified as part of "Eastern and Central Europe" due to the regional concordance defined by the GTAP date base (version 4) for the base year 1995.

Notes to Appendices

*

1. The demand system used in LINKAGE is the Extended Linear Expenditure System, first developed by Lluch (1973). Household utility is a positive function of consumption and savings.

2. Armington (1969).

3. Exogenous TFP growth rates are computed to reproduce the World Bank's GDP forecasts in the reference scenario. In simulations where dynamic gains of liberalisation are taken into account, TFP gains are recalculated to equally account for the endogenous changes in trade intensities.

4. Countries and periods are selected in order to maximize the number of observations for a balanced panel.

5. See, for example, Clerides *et al.* (1998) and Dessus (1999).

6. Hausman tests of specification show that the two contemporaneous variables are not exogenous. The instruments used for these tests are the terms of trade and population.

Bibliography

AMJADI, A., U. REINCKE AND A. J. YEATS (1996), *Did External Barriers Cause the Marginalization of Sub–Saharan Africa in World Trade?*, World Bank Discussion Paper No. 348, World Bank, Washington, D.C.

APEC (1999), "Meeting of APEC Ministers Responsible for Trade: Statement of the Chair", Auckland, New Zealand, 29–30 June 1999.

ARMINGTON, P. (1969), "A Theory of Demand for Products Distinguished by Place of Production", *IMF Staff Papers*, Vol. 16(1).

AUSTRALIAN DEPARTMENT OF FOREIGN AFFAIRS AND TRADE (1999), *Global Trade Reform: Maintaining Momentum* (available on the web site: www.dfat.gov.au).

BERGSTEN, C.F. (1999), "The Global Trading System and the Developing Countries in 2000", Working Paper 99–6, Institute for International Economics, Washington, D.C.

BRITTAN, L. (1999), "Why do We Need a New Round?", speech delivered at London School of Economics, 1 July 1999 (available on the we–site: www.europa.eu.int/comm/dg01/newround.)

COLLIER, P. AND J.W. GUNNING (1999), "Explaining African Economic Performance", *Journal of Economic Literature*, Vol. 37, March.

CHAND, S. (1999), "Trade Liberalisation and Productivity Growth: Time Series Evidence from Australian Manufacturing", *Economic Record*, Vol. 75, No. 228.

CLERIDES, S., S. LACH AND J. TYBOUT (1998), "Is Learning by Exporting Important? Micro–Dynamic Evidence from Colombia, Mexico and Morocco", *Quarterly Journal of Economics*, Vol. 113(3).

DE MELO, J. AND S. ROBINSON (1990), "Productivity and externalities: models of export–led growth", *Policy Research Working Paper*, No. 387, World Bank, Washington, D.C.

DESSUS, S. (1999), "Total Factor Productivity and Outward Orientation in Taiwan: What is the Nature of the Relationship?" in *Economic Efficiency and Productivity Growth in the Asia Pacific Region*, FU, HUANG AND LOVELL (eds.), Edward Elgar Publishing Limited.

Devarajan, S., D.S. Go and H. Li (1999), "Quantifying the Fiscal Effects of Trade Reform", *Policy Research Working Paper* No. 2162, World Bank, Washington, D.C., August.

Ebrill, L., J. Stotsky and R. Gropp (1999), "Revenue Implications of Trade Liberalisation", *Occasional Paper* No. 180, International Monetary Fund, Washington D.C.

European Commission (1999), "The EU Approach to the Millennium Round" (available on the web site: www.europa.eu.int/comm/dg01/newround).

Goldin, I., O. Knudsen and D. van der Mensbrugghe (1993), *Trade Liberalisation: Global Economic Implications*, OECD and World Bank.

Krueger, A. (1999), "The Developing Countries and the Next Round of Multilateral Trade Negotiations", *The World Economy*, Vol. 22, No. 7, September.

Levin, A. and C.–F. Lin (1993),"Unit Root Tests in Panel Data: New Results", *Discussion Paper* No. 93–56, University of California, San Diego.

Lluch, C. (1973), "The Extended Linear Expenditure System", *European Economic Review*, Vol. 4.

McKibbin, W.J. (1999), "Trade Liberalisation in a Dynamic Setting", Paper prepared for the 2nd Annual Conference on Global Economic Analysis which was held in Denmark on 19–21 June 1999.

Martin, W. and T.W. Hertel (1999), "Developing Country Interests in Liberalising Manufactures Trade", Paper prepared for the 2nd Annual Conference on Global Economic Analysis which was held in Denmark on 19–21 June 1999.

Nehru, W. and A. Dhareshwar, "A New Database on Physical Capital Stock: Sources, Methodology and Results", *Revistas de Análisas Económico*, Vol. 8 (1).

OECD (1993), "Assessing the Effects of the Uruguay Round", Trade Policy Issues No. 2, Paris.

OECD (1997*a*), *The World in 2020: Towards a New Global Age*, Paris.

OECD (1997*b*), "The Linkage Model: a Technical Note", CD/R/(97)2, OECD Development Centre, May, Paris.

OECD (1999*a*), "Review of Tariffs: Synthesis Report", TD/TC(99)7/REV2 and TD/TC(99)7/ANN/REV2, Trade Directorate, June, Paris.

OECD (1999*b*), "Assessing Barriers to Trade in Services: Issues Paper", TD/TC/SE(99)3, Trade Directorate, June, Paris.

Pritchett, L. (1996), "Measuring Outward Orientation in LDC's: Can It Be Done?", *Journal of Development Economics*, Vol. 49 (2).

RODRIK, D. (1999), "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross–National Evidence", *NBER Working Paper* No. 7081, Cambridge, MA., April.

RUTHERFORD, T. AND D. TARR (1998), "Trade Liberalization and Endogenous Growth in a Small Open Economy: A Quantitative Assessment, *Policy Research Working Paper*, No. 1970, World Bank, Washington, D.C.

SACHS, J., AND A. WARNER (1997), "Fundamental Sources of Long–Run Growth", *American Economic Review*, Vol. 87, No. 2, May.

SADOULET, E. AND A. DE JANVRY (1995), *Quantitative Development Policy Analysis*, John Hopkins University Press, Baltimore.

SAFADI, R. AND S. LAIRD (1996), "The Uruguay Round and Developing Countries", *World Development*, Vol. 24, No. 7, July.

SHORT, C. (1999), "Future Multilateral Trade Negociations : a 'Development' Round ?", speech at UNCTAD, Geneva, March.

UNCTAD (1997), *The Uruguay Round and Its Follow–up: Building A Positive Agenda for Development*, United Nations, New York and Geneva.

WORLD BANK (1999), *World Development Indicators*, CD–ROM, Washington, D.C.

Other Titles in the Series

Adjustment and Equity (No. 1)
by Christian Morrisson (January 1992)

Managing the Environment in Developing Countries (No. 2)
by David O'Connor and David Turnham (January 1992)

Privatisation in Developing Countries: Reflections on a Panacea (No. 3)
by Olivier Bouin (April 1992)

Towards Capital Account Convertibility (No. 4)
by Bernhard Fischer and Helmut Reisen (April 1992)

Trade Liberalisation: What's at Stake? (No. 5)
by Ian Goldin and Dominique van der Mensbrugghe (May 1992)

Towards Sustainable Development in Rural Africa (No. 6)
by David Turnham, with Leif E. Christoffersen and J. Thomas Hexner (January 1993)

Employment Creation and Development Strategy (No. 7)
by David Turnham (July 1993)

The Disarmament Dividend: Challenges for Development Policy (No. 8)
by Jean-Claude Berthélemy, Robert S. McNamara and Somnath Sen (April 1994)

Pension Fund Investment from Ageing to Emerging Markets (No. 9)
by Bernhard Fischer and Helmut Reisen (January 1995)

What Institutional Framework for the Informal Sector? (No. 10)
by Christian Morrisson (October 1995)

The Policy Challenges of Globalisation and Regionalisation (No. 11)
by Charles Oman (June 1996)

Policies for Economic Take-off (No. 12)
by Jean-Claude Berthélemy and Aristomène Varoudakis (September 1996)

The Political Feasibility of Adjustment (No. 13)
by Christian Morrisson (October 1996)

Biotechnology Policy for Developing Country Agriculture (No. 14)
by Carliene Brenner (April 1997)

Pension Reform: Lessons from Latin America (No. 15)
by Monika Queisser (January 1999)

After the Great Asian Slump: Towards a Coherent Approach to Global Capital Flows (No. 16)
by Helmut Reisen (January 1999)

Participatory Governance: The Missing Link for Poverty Reduction (No. 17)
by Hartmut Schneider (April 1999)