

*MPIA Network Session Paper*

# **Estimating the Poverty Impacts of a Prospective Doha Development Agenda**

Thomas W. Hertel  
L. Alan Winters



*A paper presented during the 5th PEP Research Network General Meeting,  
June 18-22, 2006, Addis Ababa, Ethiopia.*

# Estimating the Poverty Impacts of a Prospective Doha Development Agenda

Thomas W. Hertel<sup>1</sup> and L. Alan Winters<sup>2</sup>

<sup>1</sup>Purdue University and The World Bank and <sup>2</sup>The World Bank

## 1. INTRODUCTION

**D**EVELOPING country impacts – and especially poverty reduction – have become a centrepiece of the World Trade Organisation (WTO) negotiations for the first time under the Doha Development Agenda (DDA). Of central interest has been the question of rich country agricultural support and its potential impacts on rural poverty in developing countries. Poverty reduction is now widely accepted as a central focus for development efforts and has become the main mission of the World Bank and other development institutions. The ‘Millennium Development Goals’ commit the international community to not only halve poverty by 2015, but also to promote a more open, rule-based trading system, with the latter viewed as reinforcing the former goal.

This paper summarises the findings of a major international research project aimed at assessing the national poverty impacts of specific policy reforms proposed under the auspices of the WTO. To do so, it combines the results from several strands of research in a novel way. First, it draws on an intensive analysis of the July 2004 DDA Framework Agreement, particularly of potential reforms in agriculture, which, as we shall see, have special significance to the poor.<sup>1</sup> Second, the research assesses the implications of these alternative Doha scenarios for world markets. These are established using a state-of-the-art, global modelling

---

This article draws on material from the forthcoming book, entitled: *Poverty Impacts of a WTO Agreement*, Thomas W. Hertel and L. Alan Winters (eds.), forthcoming in December of 2005. This research was conducted while Hertel was on leave with the World Bank. Financial support from the Bank-Netherlands Partnership Programme is gratefully acknowledged.

<sup>1</sup> The paper by Anderson and Martin in the forthcoming Global Trade Policy issue of *The World Economy* discusses this aspect in more detail.

framework which incorporates the most recent econometric evidence on supply and demand elasticities. The outputs of this part of the project include export and import price changes for each region of the world, along with changes in export volumes. Third, these world trade impacts form the basis for analysing the poverty impacts of the DDA in ten individual countries by way of a dozen case studies. These case studies use a variety of innovative techniques to establish the potential impacts of the DDA on different household groups and, in some cases, different regions within the country.

## 2. METHODOLOGICAL ISSUES

In organising the research underpinning this project, we had two contrasting objectives. On the one hand, we wanted the studies to be consistent with one another in order to ensure an accurate global assessment of the DDA, as well as comparability across studies. On the other hand, research into the poverty impacts of trade reform is new, and almost the only consensus it has reached is that impacts across different countries differ widely. The project, therefore, is a composite in which the methodology for deriving the global findings and passing them over to the national case studies is unique and consistent with current standards in the field of quantitative trade policy analysis, while the country case studies display a wide range of methodological innovations and topical design features. This variety has been fruitful, with different country studies emphasising alternative links between trade and poverty and providing a diversity of insights. Some of the studies have utilised simulation techniques, while others have taken an econometric approach.

We have also included two more uniform exercises: a 15-country cross-section analysis, in which a common, fully integrated trade-poverty analysis is provided for a range of developing countries, and a global analysis of aggregate poverty impacts derived by applying simple poverty elasticities with respect to income to the predicted poverty-level income changes for all developing countries.

It is important to distinguish the near-term effects of poverty reform, when the main impact is to redistribute economic activity from protected to competitive sectors of the economy, from those that occur over the longer run, when trade reform alters the growth path of the economy. The near-term impacts generally attract the most attention from the critics of trade reform, and this is where we focus most of our attention by utilising *comparative static* analysis in which authors abstract from the impact of trade reform on investment and productivity and therefore economic growth.

Of course, we are also keenly interested in the potential for economic growth to alleviate poverty, and several of the studies explore the growth effects of changes in investment deriving from trade policy reform. However, quantifying

the impact of trade reform on growth through channels such as the effect on productivity or the benefits of increasing the range of available goods remains a lively topic for current research on which consensus has yet to emerge. Hence a second reason for emphasising the comparative static/near-term effects is to avoid any danger of overstating the poverty-alleviating benefits of liberalisation.

### 3. ASSESSING THE GLOBAL IMPACTS OF A DDA

In assessing the poverty impacts of a potential DDA agreement, it is important to give careful thought to the policy baseline: Which elements of global trade policy are to be examined and which are to be subsumed in the 'business as usual' baseline. For example, China's accession to the WTO and the abolition of textile and apparel quotas will have a substantial impact on poverty in countries like Bangladesh over the next few years, yet these policy decisions lie outside the DDA. Therefore the projected impacts of these changes are subsumed in our baseline simulation. This is also the case for EU enlargement, and the accession of a handful of other countries to the WTO.

The next problem we face in establishing global impacts of the DDA is that the July Framework Agreement upon which our analysis is based does not include numerical targets. Accordingly, we develop a core Doha scenario, with several alternatives in which alternative numerical interpretations are applied (Anderson and Martin, 2005). The most important finding from this work is that, due to the gap between tariff bindings and currently applied rates, unless the Doha Agenda is considerably more ambitious than the Uruguay Round in terms of depth of cuts in bound tariffs and domestic support, it will achieve little liberalisation or development stimulus.<sup>2</sup>

In the central Doha scenario considered by the country case studies, agricultural tariffs are cut using a tiered formula, with marginal cuts changing at 15 and 90 per cent bound tariff rates. The marginal cuts are 45 per cent on the first 15 percentage points of the tariff, 70 per cent for the range between 15 and 90 per cent, and 75 per cent on the remainder.<sup>3</sup> For developing countries, the inflection points are placed at 20, 60 and 120 per cent bound tariff levels in agriculture, with marginal cuts of 35, 40, 50 and 60 per cent, respectively. In non-agriculture, tariffs are subjected to proportional cuts of 50 per cent for developed and 33 per cent for developing countries. The least developed countries (LDCs) are not required to cut tariffs under this central scenario (see Anderson

<sup>2</sup> See also the paper by Anderson and Martin in this issue of *The World Economy*.

<sup>3</sup> For example, a tariff of, say, 100 per cent is cut by 66.95 per cent:  $= [15 \text{ per cent} * 0.45 + (90 - 15) \text{ per cent} * 0.70 + (100 - 90) \text{ per cent} * 0.75]$ . By applying the cuts at the margin we avoid the discontinuities implied by the July Framework.

and Martin, 2005). As a consequence of these relatively ambitious tariff cuts, average world-wide tariffs for all merchandise trade drop from 4.7 per cent in the baseline to 3.2 per cent.<sup>4</sup>

The core Doha scenario assumes that industrial countries with domestic support in excess of 20 per cent of production cut their bound AMS commitments by 75 per cent, while others cut by 60 per cent. Developing countries are assumed to cut their AMS by 40 per cent. However, even with these ambitious reductions, the gap between bindings and applied policies, as well as the inclusion of market price support concepts in the AMS mean that effectively only six WTO members would be required to reduce actual support, based on 2001 notifications: Australia, EU, Iceland, Norway, Thailand and the USA (Jensen and Zobbe, 2005). Export subsidies are the one area where bold cuts (full elimination) are on the table, and we assume this outcome in our core Doha scenario.

Having quantified the core Doha scenario, we turn to the potential implications for world markets. For this purpose, the GTAP-AGR global computable general equilibrium model (Keeney and Hertel, 2005) is used to assess the potential impact on world market prices and trade volumes. This work shows clearly that the core Doha scenario will have the biggest impact on farm and food product prices and trade, followed by textiles and apparel (Hertel and Ivanic, 2005). Given the predominance of the poor in rural areas and their heavy reliance on unskilled wages elsewhere, these are also key industries when it comes to poverty assessment.

As with most global trade analyses, we assume that goods are differentiated by place of production. Hence there is no one 'world price' and careful attention must be paid to bilateral patterns of trade and country-specific price changes. In our study, we pass to the case study authors a full set of country-specific changes in import prices and export demand shifts. (Our methodology assumes that reforms in the focus countries do not affect import price levels, but do potentially affect the prices of the products which they export – see also Hertel and Winters, 2005, Ch. 3.) These changes in the country's external trade environment are each based on a unique model simulation entailing liberalisation in the rest of the world, but not in the focus country. Country authors complete the experiment by combining these external shocks with their own countries' reforms as dictated by the scenario under consideration. Finally, in addition to the core Doha scenario, we asked each author to examine the impacts of a full trade liberalisation scenario (Full-Lib), in order to put the poverty effects of a prospective DDA in perspective.

---

<sup>4</sup> Anderson and Martin (2005) also consider the case in which sensitive and special commodities are exempted from steep tariff cuts, facing instead a modest 15 per cent cut in bound rates. In the case where just two per cent of industrial country tariff lines and four per cent of developing country tariff lines in agriculture are exempted, the overall average tariff cuts are greatly reduced. Furthermore, Anderson, Martin and van der Mensbrugge (2005) find that such exemptions erase any potential for poverty reduction under our Doha scenario.

This becomes particularly important when we come to assessing what additional measures could be taken to make the Doha scenario more poverty-friendly.

#### 4. NATIONAL POVERTY IMPACTS: THE ROLE OF PRICE TRANSMISSION

In considering the national poverty impacts of a prospective Doha agreement, the first question which must be addressed is whether higher world prices for farm and food products will even reach rural households where the bulk of the world's poor reside. The Mexican country case study explores this issue in considerable detail (Nicita, 2005). The author has previously examined the impact of the dramatic opening of the Mexican economy in the 1990s – first under NAFTA, and then under the Uruguay Round and a series of bilateral trade agreements (Nicita, 2004). He found that, while households in the north of Mexico, along the US border, benefited significantly, the households in the south of Mexico saw much smaller gains due to the *incomplete transmission* of world prices to that region of the country. He has applied this understanding of price transmission to his analysis of the likely impacts of the DDA on Mexico. Because of her privileged position in the US market, any type of multilateral tariff cut will erode Mexican preferences, so it is no surprise that the DDA has an adverse impact on most of the population in Mexico. However, the poorest rural households in the border regions show small gains due to higher farm prices. Yet these gains are dissipated by incomplete price transmission as one moves to the south of Mexico.

Nicita (2005) also explores the impact of complementary domestic reforms that might permit rural producers to respond to improved world market conditions without incurring additional costs (e.g., a productivity gain or the employment of surplus labour). This enhances the welfare outcome for rural households in all regions excepting the South. Rural households in the South benefit from Doha only when the reforms are accompanied by enhanced price transmission – e.g., through improved transport and market infrastructure.

Indirect evidence of poor marketing infrastructure is found in very high rates of own-consumption in several of our country case studies. For example, in Mozambique, roughly half of all measured consumption in a recent household survey is accounted for by products produced by the household itself (Arndt, 2005). Households operating on this type of subsistence basis are not integrated into the domestic economy, so the likelihood of their being affected by changes in world prices are remote. Indeed, this is the finding of Arndt (2005) – most rural households would be unaffected by the prospective DDA. Overall, poverty in Mozambique rises slightly in the Doha scenario due to the erosion of Mozambique's preferences in industrial country markets.

While the dominance of subsistence households in many least developed countries tends to dampen the potential impacts of a prospective DDA agreement on

poverty, domestic reforms can have the opposite effect. This is illustrated in the Zambian case study which begins by exploring the impact of recent cotton marketing board reforms on the share of income derived from cotton by low-income producers (Balat and Porto, 2005). By introducing an outgrower scheme in which producers receive seed and fertiliser on loan, for repayment when the crop is harvested, cotton-marketing firms were able to sharply increase the participation of low-income households in cotton production. The authors estimate that households making this switch from subsistence farming to cotton are able to boost their income by an average of 20 per cent, as well as improving long-run nutritional outcomes for their children. Such a switch also puts them in a position to benefit directly from higher prices for cotton anticipated to follow a Doha agreement.

#### 5. THE CENTRAL ROLE OF LABOUR MARKETS IN POVERTY ALLEVIATION

One of the most important, but frequently overlooked, determinants of the poverty impacts flowing from the DDA is the remuneration of low-income households' most plentiful resource: unskilled labour. Consider the case of Brazil. There is little doubt that Brazil will be a big gainer under the DDA due to her competitive production of heavily protected agricultural products ranging from sugar and oilseeds to beef. But some argue that, within Brazil, the bulk of the benefits will go to the large commercial farms, so that the income distribution in Brazil – already one of the most unequal in the world – will further worsen. This line of argument is particularly popular among those with pre-existing interests in continued OECD protection for agriculture.

The authors of the first Brazilian case study, however, find that, on the contrary, the income distribution in Brazil should *improve* under the DDA and poverty fall by about a quarter of a million people (Ferreira-Filho and Horridge, 2005). These findings are based on analysis of the employment – both current and projected – of 260,000 individuals belonging to more than 100,000 households across the 27 states in Brazil. While the Doha scenario causes some individuals to lose their jobs as employment declines – particularly in the industrial states of São Paulo and Rio – it boosts employment in agriculture, which already employs 40 per cent of the lowest skill workers in Brazil. Increased employment for the poorest households means that this group experiences the largest proportional gains from trade reform. As a consequence, Ferreira-Filho and Horridge find that inequality in Brazil would *decline* under the Doha scenario.

Of course it is difficult to predict who will actually get the newly created jobs in the wake of trade reform – and who will lose their jobs in the contracting sectors. The authors of the Brazil study adopt a neutral approach – in effect sharing out the employment impacts evenly amongst relevant segments of the labour force. However, in practice the probability of obtaining a newly created

job will depend on a variety of individual and household characteristics. In their case study of Indonesia, Robilliard and Robinson (2005) develop an econometric model to predict which types of individuals will lose their job when formal sector employment contracts, and which will be hired when employment expands. They point out that the poverty outcome depends critically on who gets the new jobs. If the new jobs go to individuals from non-poor households, i.e. families with other wage earners or other sources of income, this could worsen income inequality since the pool of unemployed workers prevents unskilled wages from rising and, without the benefit of higher wages, the poverty reduction would be muted. Their central finding for Indonesia is that accounting for reductions in unemployment in the wake of multilateral trade reforms would enhance the estimated poverty reduction – although large standard errors preclude them from making definitive statements about this important question.

A closely related issue in the context of labour markets and the poverty impacts of multilateral trade reforms relates to the movement of workers between the farm and non-farm sectors. Bussolo, Lay and van der Mensbrugge (2005) explore this issue in a second case study of Brazil – this one looking at the long-term impacts of trade reform over the period from 2005 to 2015. In their baseline analysis (absent Doha reforms), the authors predict substantial poverty reduction due to relatively high rates of productivity growth. Furthermore, they find that a significant portion of the predicted poverty reduction is due to the exit of labour from the relatively low-wage agricultural sector to higher wage, non-farm jobs. This labour movement is particularly important to the poorest farm households. Indeed, the authors find that the largest percentage point reduction in poverty over the baseline period is for the ‘movers’ who leave agriculture and experience a 22.4 percentage point reduction in poverty headcount (down from 53.4 per cent to 31 per cent). This is also the group that experiences the greatest incremental poverty reduction, above and beyond the baseline, as a result of the prospective Doha reforms.

A country case study of China also highlights the importance of farm/non-farm labour mobility to achieving a favourable poverty outcome in the wake of WTO reforms (Zhai and Hertel, 2005). In this case, the authors focus on education as a vehicle for enhancing off-farm labour mobility. They build on empirical evidence indicating that an additional year of education boosts an individual’s chances of obtaining an off-farm job in China by 14 per cent.<sup>5</sup> Yet rural education

---

<sup>5</sup> In some cases the local labour market may be largely independent of the national labour market. Kuiper and van Tongeren (2005) explore this possibility using a village-level model of a community in Jiangxi Province of China. They explicitly account for the lack of an integrated labour market in modelling the households’ responses to the DDA reforms. Nonetheless, they find that the real income gains – about 1.2 per cent of income – are relatively evenly spread across the different household groups.

expenditures per pupil lag significantly behind urban spending in China. So the authors explore the implications of accompanying trade reform with additional educational investments in rural areas to enhance rural labour mobility, productivity and income. In particular, they boost expenditures per pupil enrolled in mandatory education by 16 per cent to reach the comparable urban level. This combination of educational and trade reforms has a much stronger impact on poverty alleviation than does trade reform alone, with the number of poor (living below \$2/day) falling by ten times as much. Clearly complementary reforms are required in order to make deep inroads into the poverty problem in most developing countries.

#### 6. TAX POLICIES MATTER WHEN TARIFF REVENUE MUST BE REPLACED

The replacement of lost tariff revenue is an important issue in the context of developing country trade reforms. A recent study by the International Monetary Fund identifies a strong tendency among developing countries to ignore this problem, thereby increasing fiscal deficits (IMF, 2005). Of course it is possible that tariff revenue might actually rise in some countries in the wake of the DDA. This is particularly true in those countries with extensive binding overhang that experience a strong expansion in export demand as a consequence of industrialised country reforms. However, in those countries where tariff cuts or reductions in trade volume reduce revenues, the question of replacement taxation can be very important. This is highlighted in the Cameroon case study where the authors view the value-added tax (VAT) as the most likely tax replacement tool (Emini, Cockburn and Decaluwé, 2005). This tax has a very heterogeneous impact on sectors, with effective rates ranging from zero in the case of agriculture, to 13 per cent in the case of petroleum refining. When they combine this tax replacement tool with the core Doha scenario, they find that poverty falls slightly (by about 23,000 people) in Cameroon, as does inequality. In the case of full liberalisation, tax replacement becomes much more important. Here, trade reform coupled with a VAT replacement tax has a poverty-increasing impact, due to the combination of deteriorating terms of trade and an expansion of commodity exports. But when the authors use a consumption tax applied uniformly across all sectors, instead of the VAT, full liberalisation increases the poverty headcount by much more – about half a million people in total. In this case the choice of tax instrument used to replace the lost tariff revenue is just as important as the type of trade liberalisation (full liberalisation vs. Doha scenario).<sup>6</sup>

---

<sup>6</sup> While it is difficult to generalise across developing countries, the country case study for the Philippines also found that the VAT was poverty-friendly (Cororaton, Cockburn and Corong, 2005).

## 7. HOW COULD THE DDA BE MADE MORE POVERTY-FRIENDLY?

The very strengths of our country case studies – namely their differences in methodologies, data and assumptions, depending on local circumstances – also lead to their fundamental limitation – namely the fact that they are non-comparable. This makes it difficult to generalise findings from individual outcomes to the larger group of developing countries. Therefore, we have also included a 15-country cross-section comparison, in which the household surveys and modelling assumptions are all treated in a symmetric manner (Ivanic, 2005). This study finds that the Doha scenario is relatively less poverty alleviating because it contains few of the reforms that are most poverty eradicating, namely the reduction of developing country tariffs, while entailing the complete removal of export subsidies, the reform of which raises national poverty in many countries.

The fact that the removal of export subsidies in the EU and the USA tends to raise poverty in most of the developing countries in Ivanic's sample – even while reducing poverty amongst the agriculture-dependent households in these poorer countries – is hardly surprising in light of earlier studies highlighting the vulnerability of low-income, net food importing countries to higher world prices for these products (e.g., Valdes and McCalla, 2004). Since these export subsidies are fully removed under the Doha scenario, this adverse poverty impact is fully realised under that partial reform scenario. On the other hand, Ivanic finds that cuts in developing country tariffs as a group have a very favourable impact on national poverty in the focus countries.<sup>7</sup> Yet there is very little reform of developing country tariffs under the core Doha scenario – first due to limited reciprocity (part of Special and Differential Treatment), and second due to the extensive binding overhang in developing countries. Thus, while developing country tariff cuts are among the most poverty-friendly elements of global trade reform, very little of the beneficial impact of these reforms is felt under the Doha scenario.

This suggests that deeper cuts in developing country tariffs under the Doha scenario might have a beneficial impact on the poverty outcome. This is explored under an alternative scenario, nicknamed 'Doha-All', in which developing countries fully reciprocate the developed country reductions in tariff bindings. Ivanic shows that Doha-All does indeed have a more favourable poverty outcome than the base Doha scenario. This is a striking finding in light of the frequent assertion that non-reciprocal tariff cuts are necessary in order to promote development.

---

<sup>7</sup> In Ivanic's (2005) model most of these gains come from improved market access to other developing countries.

## 8. LONG-RUN IMPACTS ON PRODUCTIVITY, INVESTMENT AND GROWTH

Sustained reductions in poverty require economic growth, which leads naturally to the question of how a prospective Doha Development Agenda might affect the growth rates of countries currently experiencing the highest levels of poverty. While most of the case studies focus on the near-term impacts of WTO trade reform on poverty, two of them and our single global study do examine the longer term impacts whereby trade reform stimulates investment and productivity – and thus economic expansion. In the case of Bangladesh, trade reforms which involve across-the-board reductions in domestic tariffs tend to stimulate growth and poverty reduction by lowering the price of capital goods and spurring investment. The sector most favourably affected by this trade-led growth is ready-made garments, a major employer of low-income women, and it therefore has a beneficial impact on poverty (Annabi et al., 2005).

The second linkage between trade reform and growth is through increased productivity. This is the focus of the Russian country study (Rutherford, Tarr and Shepotylo, 2005). These authors conclude that, to have a substantial growth impact, trade reforms have to be broad-based and far reaching – going beyond merchandise trade to include services. Because services represent a critical input into nearly every other sector in the economy, improving the quality, cost and variety of services available in the economy can boost productivity substantially. Indeed, while merchandise trade reform under our Doha scenario has a slight adverse impact on poverty in Russia (due to her status as a net food importer), when combined with liberalisation of services trade and investment, substantial productivity gains, growth and poverty reduction are achieved.

In the single, global analysis undertaken for this project, Anderson, Martin and van der Mensbrugge (2005) utilise the latest version of the World Bank's Linkage model, along with the latest GTAP data set, to project the growth path of the global economy from 2001 to 2015. Drawing on a rapidly growing literature, they devote most of their attention to the potential impacts of increased exports on productivity growth, and find that allowing for these gives a substantial boost to the global gains.

Anderson, Martin and van der Mensbrugge estimate the income gains to the poorest households in each country, by deflating the unskilled wage by food and apparel prices and then applying to this real income change an estimated elasticity of poverty reduction with respect to income growth at the poverty line.<sup>8</sup> Applying these estimates of earnings at the poverty line to the poverty elasticity of income in each region, they predict the extent of poverty reduction in developing

---

<sup>8</sup> A critical assumption in their analysis is that the poor do not pay taxes, so that any increase in tax rates required to offset forgone tariff revenues does not affect them.

TABLE 1  
Poverty Impacts of a Prospective Doha Development Agenda

Country	Change in Poverty Headcount							
	Near Term: Fixed Capital				Long Term: Investment Impacts			
	Doha		Full-Lib		Doha		Full-Lib	
	1,000	Per Cent	1,000	Per Cent	1,000	Per Cent	1,000	Per Cent
Bangladesh	38	0.3	1,354	1.1	0	0	-5,758	-4.6
Brazil	-236	-0.4	-482	-0.8				
Brazil					-380	-1.1	-1,030	-2.9
Cameroon	-22	-0.4	303	4.8				
China	-4,590	-1.1	-8,271	-2.0	-5,378	-1.3	-11,170	-2.7
Indonesia	-48	-0.1	-1,384	-3.5				
Mexico	4	0.0	127	1.0				
Mozambique	27	0.3	60	0.6				
Philippines	12	0.0	-7	0.0				
Russia	209	0.9	-122	-0.5				
<i>All Developing</i>								
\$1/day: 2001*	-7,000		-66,300		-9,700		-80,500	
2015**	-1,700	-0.3	-23,800	-3.8	-2,500	-0.4	-31,900	-5.1
\$2/day: 2001	-8,700		103,900		-12,600		123,200	
2015	-4,100	-0.2	52,300	-2.7	-6,200	-0.3	-65,600	-3.3
<i>Productivity Effects Added</i>								
\$1/day: 2001					-12,200		-88,100	
2015					-4,000	-0.6	-35,000	-5.6
\$2/day: 2001					-16,700		-134,400	
2015					-8,600	-0.4	-71,500	-3.7

Notes:

\* Evaluated in 2001, based on percentage changes in 2015 incomes.

\*\* Computed for the year 2015 when the total number of poor is projected to be significantly lower.

countries. Of course, this depends on the poverty line. It also depends on the baseline poverty projections, which decline considerably between 2001 and 2015. For \$1/day poverty, the estimated reduction in 2015 is 4 million for the core Doha scenario and 35 million for Full-Lib. When applied to 2001 poverty levels, the authors' calculations result in poverty reductions of 12.2 million and 88.1 million, respectively. For \$2/day poverty, the reduction in the number of poor is larger (see Table 1). Based on the Doha/Full-Lib comparison, it is clear that the (rather ambitious) Doha scenarios capture only a relatively small portion of the total poverty reduction possible under trade reforms. When the authors consider the (fully reciprocal) Doha-All scenario, they find that implementing deeper cuts in the developing countries enhances the poverty outcome, nearly doubling the poverty reduction obtained under the central Doha scenario. This

finding reinforces Ivanic's conclusion on the beneficial poverty impacts of developing country tariff cuts under the DDA.

## 9. SUMMARY AND INTERPRETATION

Assessing the impact of multilateral trade liberalisation on poverty is a challenging assignment. As Winters (2000, p. 43) notes:

Tracing the links between trade and poverty is going to be a detailed and frustrating task, for much of what one wishes to know is just unknown. It will also become obvious that most of the links are very case specific.

This article summarises the findings from an ambitious attempt to make known a few more of these 'unknown' linkages. As such, the approach has been heterogeneous and opportunistic, calling on experts in this field to undertake in-depth studies in countries for which appropriate data and analytical infrastructure are available. All of this research capacity has been directed towards an assessment of the likely poverty impacts of a successful Doha Development Agenda, and how this outcome could be enhanced.

Table 1 summarises the poverty results from each of the national studies (sub-national studies are not reported here) for both the Doha and Full-Lib scenarios, distinguished by length of run. The long-term studies factor in the impact of trade policy on investment and capital accumulation and, in the case of the global analysis, productivity as well, whereas the short-term studies do not consider either of these factors. The national poverty changes are reported in two different ways – first as the change in the number of persons in poverty, and second as the percentage change in the poverty headcount. Thus a negative number in Table 1 means that the number of poor has fallen as a result of multilateral trade reform, while a positive number indicates that the number of poor has risen. It should be borne in mind that this sample of countries was not chosen to be representative of all developing countries – rather it was dictated by the availability of data and authors capable of delivering high quality analysis.

The first thing to note about Table 1 is that the impacts are mixed, with poverty rising in some cases and falling in others. The largest poverty reductions, both in absolute and relative terms, are in countries with agricultural export potential to the markets that liberalise most (i.e., East Asia and Europe). The strong poverty reduction in Brazil is driven by increased agricultural production, which tends to be concentrated in regions with relatively higher poverty incidence. In China, the poverty reduction is fuelled by increased agricultural exports to the highly protected agricultural markets of East Asia. On the other hand, the poverty increases tend to be in countries which are net importers of agricultural products (e.g., Bangladesh), and which may presently benefit from preferential market access (e.g., Mozambique). Thus the strongest difference between countries

concerns their exposure to the shocks generated by the DDA. Even holding this constant, however, poverty impacts can vary with, for example, the degree of transmission of world prices to rural households, the barriers to the mobility of workers between sectors of the economy, and the incidence of national tax instruments used to replace lost tariff revenue. Taken as a whole, the number of countries where poverty declines under the Doha scenario is about the same as the number of countries where it falls, although looking at the absolute numbers, we see that poverty declines in several of the most populous countries (Brazil, China and Indonesia) and therefore declines overall in this non-random sample of countries.

Turning to the long-run results, we see that all of the studies that consider the impact of trade on capital accumulation and/or productivity predict a reduction in poverty (with the exception of Doha-Bangladesh, where there is no long-run measurable impact). Trade stimulates investment, investment stimulates growth and growth reduces poverty. When productivity impacts are also considered (bottom two rows), this effect is further strengthened. This short-run/long-run distinction is particularly striking in the case of the Full-Lib scenario for Bangladesh, where the short-run impacts of trade reform translate into a rise in head-count poverty, while the long-run impacts of trade reform suggest a substantial decline.

For those policy makers hoping that trade reform will deliver the 'knock-out punch' to the doggedly persistent problem of global poverty, our study is likely to be disappointing. Even under the most ambitious trade reform that could be imagined (full liberalisation), the long-run reduction in the number of poor (70 to 135 million, depending on the base period) is but a fraction of the total number of poor in the world. This raises the question: Why are the poverty reductions so small, relative to the absolute magnitude of this problem?

The first point that must be borne in mind is that world trade represents only about 23 per cent of global economic activity, and, after five decades of global trade reforms, much of this trade is nearly tariff-free. Indeed, total tariff revenue as a share of world trade (including services and intra-EU trade) is only about 3.2 per cent, therefore amounting to just 0.7 per cent of world GDP. So it is hardly surprising that elimination of these 'transfers' from exporters to importers does not have a radical impact overall, on the level of world economic activity, let alone poverty. With respect to the poorest countries in the world, many already have tariff-free access to the industrial country under non-reciprocal preferences, so further tariff cuts in these markets do not stand to benefit the least developed countries where many of the poor reside. Add to this the fact that many of the poorest households in the world operate on a subsistence basis and are not integrated into their respective national economies – let alone the world economy – and it is clear that the poverty-reducing potential of the Doha Development Agenda is inevitably constrained in the near term.

On the other hand, a poverty reduction of 100 million worldwide, even if it is just a fraction of global poverty, is very significant. Even more so, since, unlike many poverty-reduction policies, trade reform is relatively cheap, since it does not involve additional government outlays. It should also be pointed out that we have consciously erred in the direction of *understating* the long-term benefits of trade reform. As noted previously, these have proven hard to measure and we have adopted a rather conservative stance in this research project. To the extent that lower tariffs discipline domestic monopolies, encourage greater efficiency amongst import-competing firms, and stimulate foreign investment, our estimates will understate the global gains from trade reform.

In closing, we believe it is important to highlight the analysis of complementary domestic reforms conducted by many of our country authors. These findings suggest that countries can greatly enhance the impact of trade reform on poverty by pursuing complementary domestic reforms which enable households to take advantage of market opportunities created by the DDA.<sup>9</sup> These include improved infrastructure and reform of domestic marketing institutions to improve price transmission to rural areas, rural education reform to enhance labour mobility between the farm and non-farm sectors, and extension outreach to permit farmers to take advantage of new export opportunities which become available to low-income households as a result of successful completion of a Doha Development Agenda.

#### REFERENCES

- Anderson, K. and W. Martin (2005), 'Evaluation of the Doha Framework Agreement', chapter 2 in Hertel and Winters (eds.).
- Anderson, K., W. Martin and D. van der Mensbrugghe (2005), 'Long Run, Global Impacts of the Doha Scenario on Poverty', chapter 17 in Hertel and Winters (eds.).
- Annabi, N., B. Khondker, S. Raihan, J. Cockburn and B. Decaluwé (2005), 'Implications of WTO Agreements and Domestic Trade Policy Reforms for Poverty in Bangladesh: Short vs. Long Run Impacts?', chapter 16 in Hertel and Winters (eds.).
- Arndt, C. (2005), 'The Doha Trade Round and Mozambique', chapter 5 in Hertel and Winters (eds.).
- Balat, J. and G. Porto (2005), 'The WTO Doha Round, Cotton Sector Dynamics and Poverty Trends in Zambia', chapter 6 in Hertel and Winters (eds.).
- Bussolo, M., J. Lay and D. van der Mensbrugghe (2005), 'Structural Change and Poverty Reduction in Brazil: The Impact of the Doha Round', chapter 9 in Hertel and Winters (eds.).
- Cororaton, C. B., J. Cockburn and E. Corong (2005), 'Doha Scenarios, Trade Reforms, and Poverty in the Philippines', chapter 13 in Hertel and Winters (eds.).
- Emini, C. A., J. Cockburn and B. Decaluwé (2005), 'Poverty Impacts of the Doha Round in Cameroon: The Role of Tax Policy', chapter 12 in Hertel and Winters (eds.).

---

<sup>9</sup> The volume edited by Harrison (2005) reaches a similar conclusion, based on a set of *ex post* analyses of trade reform and poverty.

- Ferreira-Filho, J., B. de Souza and J. Mark Horridge (2005), 'The Doha Round, Poverty and Regional Inequality in Brazil', chapter 7 in Hertel and Winters (eds.).
- Harrison, A. (ed.) (2005), *Globalization and Poverty* (Chicago: University of Chicago Press).
- Hertel, T. W. and M. Ivanic (2005), 'World Market Impacts of the Doha Development Agenda', chapter 3 in Hertel and Winters (eds.).
- Hertel, T. W. and L. A. Winters (eds.) (2005), *Poverty Impacts of a WTO Agreement* (Washington, DC, forthcoming, Pre-publication version at <http://www.gtap.agecon.purdue.edu/poverty>; see [www.gtap.org/poverty](http://www.gtap.org/poverty)).
- IMF (2005), 'Dealing with the Revenue Consequences of Trade Reform', Background Paper (Washington, DC, <http://www.imf.org/external/np/pp/eng/2005/021505.htm>).
- Ivanic, M. (2005), 'The Effects of Prospective Multilateral Trade Reforms on Poverty in Fifteen Developing Countries', chapter 14 in Hertel and Winters (eds.).
- Jensen, H. G. and H. Zobbe (2005), 'Consequences of Reducing AMS Limits', chapter 8 in W. Martin and K. Anderson (eds.), *Agricultural Trade Reform and the Doha Development Agenda* (Washington, DC: World Bank, forthcoming).
- Keeney, R. and T. W. Hertel (2005), *GTAP-AGR: A Framework for Assessing the Impacts of Multilateral Changes in Agricultural Policies*, GTAP Technical Paper No. 24 (Centre for Global Trade Analysis, Purdue University, [http://www.gtap.agecon.purdue.edu/resources/tech\\_papers.asp](http://www.gtap.agecon.purdue.edu/resources/tech_papers.asp)).
- Kuiper, M. and F. van Tongeren (2005), 'Growing Together or Growing Apart? A Village Level Study of the Impact of the Doha Round on Rural China', chapter 8 in Hertel and Winters (eds.).
- Nicita, A. (2004), 'Who Benefited from Trade Liberalization in Mexico? Measuring the Effects on Household Welfare', World Bank Working Papers 3265.
- Nicita, A. (2005), 'Multilateral Trade Liberalization and Mexican Households: The Role of Incomplete Price Transmission', chapter 4 in Hertel and Winters (eds.).
- Robilliard, A.-S. and S. Robinson (2005), 'Social Impact of a WTO Agreement in Indonesia', chapter 11 in Hertel and Winters (eds.).
- Rutherford, T., D. Tarr and O. Shepotylo (2005), 'The Impact on Russia of WTO Accession and The Doha Agenda: The Role of Liberalization of Barriers Against FDI in Services for Growth and Poverty Reduction', chapter 17 in Hertel and Winters (eds.).
- Valdes, A. and A. McCalla (2004), 'Where the Interests of Developing Countries Converge and Diverge', chapter 7 in M. Ingco and L. A. Winters (eds.), *Agriculture in the New Trade Agenda* (Cambridge: Cambridge University Press).
- Winters, L. A. (2000), 'Trade and Poverty: Is There a Connection?', in D. Ben David, H. Nordstrom and L. A. Winters (eds.), *Trade, Income Disparity and Poverty*, Special Study No. 5 (Geneva: World Trade Organisation).
- World Trade Organisation (WTO) (2004), *Doha Work Programme: Decision Adopted by the General Council on 1 August, 2004* (Geneva: World Trade Organisation).
- Zhai, F. and T. W. Hertel (2005), 'Impacts of the Doha Development Agenda on China: The Role of Complementary Education Reforms', chapter 10 in Hertel and Winters (eds.).