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TRADE BARRIERS

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Trade Barriers and Subsidies: Multilateral and Regional Reform Opportunities

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Abstract

Numerous barriers to international trade in goods, in some services, and in capital flows have been reduced considerably over the past three decades. Even so, many remain. Such policies harm most the economies imposing them, but the worst of the merchandise barriers (in agriculture and textiles) are particularly harmful to the world's poorest people. This paper focuses on how costly those anti-poor trade policies are, and examines possible strategies to reduce remaining distortions. The opportunities addressed include completing the stalled Doha Development Agenda process at the World Trade Organization (WTO), and three different ways of freeing up trade in the biggest part of the world economy not yet covered by a comprehensive regional integration agreement, namely the Asia-Pacific region. A review of the economic benefits and adjustment costs associated with these opportunities provides the foundation for undertaking benefit/cost analysis, as required to rank these opportunities against those aimed at addressing the world's other key challenges identified by the Copenhagen Consensus project. The paper notes several analytical caveats before concluding that taking up these opportunities – especially the multilateral Doha Round – could generate huge global social benefit/cost ratios that are considerably higher than the direct economic ones quantified in this study. In addition, they could also contribute to alleviating several of the other challenges identified by the Copenhagen Consensus project, including malnutrition, disease, poor education and air pollution.

Key words: trade policy reform, Doha Development Agenda, regional integration agreements

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Trade Barriers and Subsidies: Multilateral and Regional Reform Opportunities

Opening economies to international trade and investment, and reducing price-distorting subsidies, can generate enormous economic and social benefits relative to the costs of adjustment to such policy reform. Numerous barriers to trade in goods, in some services, and in capital flows have been reduced considerably over the past three decades, but many remain, as do many farm subsidies. Such price-distorting policies harm most the economies imposing them, but the worst of them (in agriculture and textiles) are particularly harmful to the world's poorest people. Addressing this challenge would therefore also reduce poverty and thereby assist in meeting several of the other challenges identified in this project, including malnutrition, disease, poor education and air pollution.

This paper focuses on how costly those anti-poor trade policies are, and examines possible strategies to reduce remaining price-distorting measures. Four opportunities in particular are addressed. The most beneficial involves multilaterally completing the stalled Doha Development Agenda of the World Trade Organization (WTO). If that continues to prove to be too difficult politically to bring to a conclusion in the near future, the other three opportunities considered here involve prospective sub-global regional integration agreements. One involves the proposed Trans-Pacific Partnership (TPP) among a subset of member countries of the Asia Pacific Economic Cooperation (APEC) grouping; another involves extending the free-trade area among the 10-member Association of South East Asian Nations to include China, Japan and Korea (ASEAN+3); and the third opportunity is a free-trade area among all APEC countries.¹

The paper begins by defining the challenge. It then summarizes the arguments for removing price-distorting policies, along with critiques by sceptics, before discussing the various opportunities for reducing trade barriers and farm subsidies and explaining why we choose to focus on the above-mentioned four. The core of the

¹ The nine current countries in TPP negotiations are Australia, Brunei, Chile, Malaysia, New Zealand, Peru, Singapore, the United States and Vietnam. The 21 members of APEC include the TPP participants plus the other main ASEAN+3 economies plus Canada, Hong Kong, Mexico, Papua New Guinea, Russia and Taiwan.

paper is in the next two sections, which review the economic benefits and adjustment costs associated with these opportunities. That provides the foundation to undertake the benefit/cost analysis required to allow this set of opportunities to be ranked against those aimed at addressing the world's other key challenges. The paper concludes with key caveats that suggest that taking up these opportunities could generate social benefit/cost ratios that are even higher than the direct economic ones quantified in this study, not least because they would also go some way towards addressing several of the other challenges identified by the Copenhagen Consensus project.

The challenge

Despite the net economic and social benefits of reducing most government subsidies² and barriers to international trade and investment, almost every national government intervenes in markets for goods, services, and capital in ways that distort international commerce.³ To keep the task manageable, the policy instruments considered will be limited to those trade-related ones over which a government's international trade negotiators have some influence both at home and abroad. That thereby excludes measures such as generic taxes on income, consumption and value added, government spending on mainstream public services, infrastructure and generic social safety nets in strong demand by the community, and subsidies (taxes) and related measures set optimally from the national viewpoint to overcome positive (negative) environmental or other externalities. Also excluded from consideration here are policies affecting markets for foreign exchange.

This challenge in its modern form has been with us for eight decades (Anderson 2012). The latter part of the nineteenth century saw a strong movement toward *laissez faire* in goods and financial capital and widespread international migration, but that development was reversed following the first world war in ways that contributed to the Great Depression of the early 1930s and the conflict that

² Not all subsidies are welfare-reducing, and in some cases a subsidy-cum-tax will be the optimal government intervention to overcome a gap between private and social costs that cannot be bridged à la Coase (1960). Throughout this paper all references to 'cutting subsidies' refer to bringing them back to their optimal level (which will be zero in all but those relatively few exceptional cases).

³ Labor market interventions also are rife, including barriers to international migration. For estimates of the potential global economic benefits from reducing the latter, see Anderson and Winters (2009).

followed (Kindleberger 1989). It was during the second world war, in 1944, that a conference at Bretton Woods in New Hampshire proposed an International Trade Organization. An ITO charter was drawn up by 1947 along with a General Agreement on Tariffs and Trade (GATT), but the ITO idea died when the United States failed to progress it through Congress (Diebold 1952). Despite that, the GATT came into being from 1948 and during its 47-year history (before it was absorbed into the WTO on 1 January 1995) oversaw the gradual lowering of many tariffs on imports of most manufactured goods by governments of high-income countries. Manufacturing tariffs remained high in developing countries, however, and distortionary subsidies and trade policies affecting agricultural, textile, and services markets of both rich and poor countries, plus immigrations restrictions, continued to hamper efficient resource allocation, consumption choices, economic growth and poverty alleviation.

The GATT's Uruguay Round of multilateral trade negotiations led to agreements signed in 1994 that contributed to trade liberalization over the subsequent ten years. But even when those agreements were fully implemented by early 2005, and despite additional unilateral trade liberalizations since the 1980s by a number of countries (particularly developing and transition economies), many subsidies and trade restrictions remained. They include not just trade taxes-cum-subsidies but also contingent protection measures such as anti-dumping, regulatory standards that can be technical barriers to trade, and domestic producer subsidies (allegedly decoupled from production in the case of some farm support programs in high-income countries, but in fact only partially so). Insufficient or excessive taxation or quantitative regulations in the presence of externalities such as environmental or food safety risks also lead to inefficiencies and can be trade distorting. Furthermore, the on-going proliferation of preferential trading and bilateral or regional integration arrangements – for which there would be far less need in the absence of high barriers to trade – is adding complexity to international economic relations. In some cases those arrangements are leading to trade and investment diversion rather than creation, and may be welfare reducing for some (especially excluded) economies.

The reluctance to reduce trade distortions is almost never because such policy reform involves government treasury outlays. On the contrary, except in the case of a handful of low-income countries still heavily dependent on trade taxes for government revenue, such reform may well benefit the treasury (by raising income or consumption/value added tax revenues more than trade tax revenues fall, not to

mention any payments foregone because of cuts to subsidy programs). Rather, trade distortions (and barriers to immigration) remain largely because further liberalization and subsidy cuts would redistribute jobs, income and wealth in ways that those in government fear would reduce their chances of remaining in power (and, in countries where corruption is rife, possibly their own wealth). The challenge involves finding politically attractive ways to phase out remaining distortions to world markets for goods and services.

This challenge is even greater now than it was in the inaugural Copenhagen Consensus project (see Lomborg 2004). One reason is that the WTO membership is struggling to address the Doha Development Agenda that was launched in the immediate aftermath of 11 September 2001 – a time when there was much more goodwill to cooperate multilaterally than seems to be the case now. More generally, in some regions there is a broader disenchantment with globalization that could result not just in a failure to reach agreement under the Doha round to multilaterally liberalize trade, but also in the *raising* of current trade barriers. Such a reversal of past reforms could do huge damage to the global trading system and raise global inequality and poverty. That suggests the counterfactual to opening markets is not the status quo but something potentially much worse than the present, especially in the case of food (Anderson and Nelgen 2011). As well, it underscores the need to re-emphasize the virtues of a more open global trading system – a system to which around 75 additional developing and transition economies have subscribed since the WTO came into being in 1995, with a further 25+ currently striving to join. The case needs to be made within the context of the on-going information and communication technology (ICT) revolution that is globalizing the world's economies ever-more rapidly.⁴

Arguments for Reducing Trade Barriers and Subsidies

⁴ So rapid is this phenomenon that one author felt the need to revise his popular book on the subject three times in three years (Friedman 2007). Its influence on fragmenting the process of production has been sufficiently profound for economists to begin developing a theory of trade in 'tasks', to capture the fact that firms are offshoring an increasing array of their activities (e.g., Grossman and Rossi-Hansberg 2006). It is also increasing the demands by retailers for lower trade barriers which tend to be avoided by consumers buying foreign products online.

Even before examining the empirical estimates of the benefits and costs of grasping various trade-liberalizing opportunities, the case can be made that such reform in principle is beneficial economically.⁵ It then remains to examine whether particular reforms are also positive or negative in terms of net social and environmental outcomes. The latter cannot be dealt with here in the same depth as the narrower economic analysis, but it is important because there are many who believe or assume the net social and environmental consequences are sufficiently negative as to outweigh the net economic benefits of market opening. We begin with the static economic gains from trade arguments and then consider additional dynamic gains.

Static economic gains from own-country reform of trade and subsidy policies

The standard comparative static analysis of national gains from international trade emphasizes the economic benefits from production specialization and exchange so as to exploit comparative advantage in situations where a nation's costs of production and/or preferences differ from those in the rest of the world. This is part of the more general theory of the welfare effects of distortions in a trading economy, as summarized by Bhagwati (1971). Domestic industries become more productive on average as those with a comparative advantage expand by drawing resources from those previously protected or subsidized industries that grow slower or contract following reform. The gains from opening an economy are larger, the greater the variance of rates of protection among industries – especially within a sector, insofar as resources are more mobile within than between sectors (Lloyd 1974). Likewise, the more productive domestic firms *within* industries expand by drawing resources from less productive firms that contract or go out of business. Indeed theory and empirical studies suggest the shifting of resources within an industry may be more welfare-improving than shifts between industries.⁶

The static gains from trade tend to be greater as a share of national output the smaller the economy, particularly where economies of scale in production have not been fully exploited and where consumers (including firms importing intermediate

⁵ This survey does not pretend to provide a comprehensive coverage of the gains-from-trade theory. For more, readers are referred to the handbooks by Grossman and Rogoff (1995) and Harrigan and Choi (2003) and the textbook by Feenstra (2003).

⁶ Melitz (2003) provides the theory behind this point, and many econometricians have since provided strong empirical support for that theory.

inputs) value variety so that intra- as well as inter-industry trade can flourish. Less-than-full exploitation of scale economies is often the result of imperfect competition being allowed to prevail in the domestic marketplace, which again is more common in smaller and poorer economies where industries have commensurately smaller numbers of firms. This is especially the case in the service sector. One example is sub-sectors such as utilities, where governments have been inclined to sanction monopoly provision.⁷ The gain comes from firms having to reduce their mark-ups in the face of greater competition.

Those gains from opening up will be even greater if accompanied by a freeing up of domestic markets and the market for currency exchange. The more stable is domestic macroeconomic policy, the more attractive will an economy be to capital inflows. And the more domestic microeconomic policies are friendly to markets and competition for goods, services and productive factors, the greater the likelihood that adjustments by firms and consumers to trade liberalization will lead to a more-efficient utilization of national resources and greater economic welfare (Corden 1997). If domestic policy reforms included improving the government's capacity to redistribute income and wealth more efficiently and in ways that better matched society's wishes, concerns about the distributional consequences of trade liberalization also would be lessened.

With the vastly increased scope during the past decade to separate in time and space the various productive tasks along each value chain, thanks to the ICT revolution, firms are increasingly able to take advantage of factor cost differences across countries for specific tasks without having to sacrifice gains from product specialization or move the whole of their production operation offshore (Hanson, Mataloni and Slaughter 2005). Trade in many tasks (e.g., emailing data files) is not even recorded in official trade statistics and so is not directly subject to trade policies. That suggests the variance of import protection across all traded items is even greater than across just recorded trade in goods, so the welfare gains from reducing the latter could well be greater than that captured by conventional trade models.

Dynamic economic gains from own-country reform of trade and subsidy policies

⁷ The argument for allowing such monopolies is that they could provide greater technical efficiency via their larger scale. The contrary argument is that, being sheltered from competition, they fall so short of that potential as to be less productive than two or more smaller-scale competing suppliers.

The standard comparative static analysis needs to be supplemented with links between trade and economic growth. The mechanisms by which openness contributes to growth are gradually getting to be better understood by economists, thanks to the pioneering work of such theorists as Grossman and Helpman (1991), Rivera-Batiz and Romer (1991) and the literature those studies spawned, including econometric papers based on firm-level databases. Channels through which openness to trade can affect an economy's growth rate include the scale of the market when knowledge is embodied in the products traded, the degree of redundant knowledge creation that is avoided through openness, and the effect of knowledge spillovers (Romer 1994, Taylor 1999, Acharya and Keller 2007). The latest surge of globalization has been spurred also by the technology 'lending' that is involved in off-shoring an ever-rising proportion of production processes. As Baldwin (2011) point out, this joining of a supply chain has made industrialization potentially far less complex and far faster, especially for countries with reliable workers, a hospitable business environment and located near large industrial countries.

The dynamic gains from openness can be greater when accompanied by reductions in domestic distortions. As one example, Helpman and Itskhoki (2010) develop a two-country two-sector model of international trade in which one sector produces homogeneous products while the other, which produces differentiated products, has firm heterogeneity, monopolistic competition, search and matching in its labor market, and wage bargaining (so that some of the workers searching for jobs end up being unemployed). The two countries are similar except for frictions in their labor markets. They show that both countries gain from trade but that the country with lower labor market frictions gains proportionately more, and that its flexible labor market confers comparative advantage: the flexible country is a net exporter of differentiated products. Either country benefits by lowering frictions in its labor market, although that harms the other country; but a simultaneous proportional lowering of labor market frictions in both countries benefits both of them. With trade integration both countries benefit (even though it may raise their rates of unemployment), but the flexible country has higher total factor productivity in this model.

When that trade reform includes financial markets, more is gained than just a lower cost of credit. The resulting financial deepening can stimulate growth too

(Townsend and Ueda 2010). Prasad et al. (2006) add two other indirect growth-enhancing benefits of financial reform: they discipline firms to look after the interests of shareholders better, and they discipline governments to provide greater macroeconomic stability.

Importantly from a policy maker's viewpoint, the available empirical evidence strongly supports the view that open economies grow faster (see the surveys by USITC 1997, Winters 2004, Billmeier and Nannicini 2007 and Francois and Martin 2010). Notable early macroeconometric studies of the linkage between trade reform and the rate of economic growth include those by Sachs and Warner (1995) and Frankel and Romer (1999). More-recent studies also provide some indirect supportive econometric evidence. For example, freeing up the importation of intermediate and capital goods promotes investments that increase growth (Wacziarg 2001). Indeed, the higher the ratio of imported to domestically produced capital goods for a developing country, the faster it grows (Lee 1995; Mazumdar 2001). Greater openness to international financial markets also boosts growth via the stimulation to investment that more risk-sharing generates.

Rodriguez and Rodrik (2001) examine a number of such studies and claim the results they surveyed are not robust. However, in a more recent study that revisits the Sachs and Warner data and then provides new time-series evidence, Wacziarg and Welch (2008) show that dates of trade liberalization do characterize breaks in investment and GDP growth rates. Specifically, for the 1950-1998 period, countries that have liberalized their trade (raising their trade-to-GDP ratio by an average of 5 percentage points) have enjoyed on average 1.5 percentage points higher GDP growth compared with their pre-reform rate.

There have also been myriad case studies of liberalization episodes. In a survey of 36 of them, Greenaway (1993) reminds us that many things in addition to trade policies were changing during the studied cases, so ascribing causality is not easy. That, together with some econometric studies that fail to find that positive link, led Freeman (2004) to suggest the promise of raising the rate of economic growth through trade reform has been overstated. But the same could be (and has been) said about the contributions to growth of such things as investments in education, health, agricultural research, and so on (Easterly 2001). A more-general and more-robust conclusion that Easterly draws from empirical evidence, though, is that people respond to incentives. Hence getting incentives right in product, input and factor

markets is crucial – and removing unwarranted subsidies and trade barriers is an important part of that process. Additional evidence from 13 new case studies reported in Wacziarg and Welch (2008) adds further empirical support to that view, as does the fact that there are no examples of autarkic economies that have enjoyed sustained economic growth, in contrast to the many examples since the 1960s of reformed economies that boomed after opening up.

Specifically, economies that commit to less market intervention tend to attract more investment funds, *ceteris paribus*, which raise their stocks of capital (through greater aggregate global savings or at the expense of other economies' capital stocks). This is consistent with the findings by Faini (2004) that trade liberalization in the 1990s fostered inward foreign investment (and both had a positive impact on investment in education) while backtracking on trade reform had a negative impact on foreign investment. More-open economies also tend to be more innovative, because of greater trade in intellectual capital (a greater quantity and variety of information, ideas and technologies, sometimes but not only in the form of purchasable intellectual property associated with product and process innovations), and because greater competition spurs innovation (Aghion and Griffith 2005; Aghion and Howitt 2006), leading to higher *rates* of capital accumulation and productivity growth (Lumengua-Neso, Olarreaga and Schiff 2005).⁸

A growing body of industry studies, including ones based on firm-level survey data that capture the reality of firm heterogeneity, provides additional support for the theory that trade reform boosts the rate of productivity growth.⁹ It appears more-productive firms are innately better at exporting, so opening an economy leads to their growth and the demise of the least-productive firms (Bernard et al. 2007). That leads to better exploitation of comparative advantage in terms not only of industries but also of firms within each industry. If those more-productive firms are also foreign owned, as is clearly the case in China (Whalley 2006), then being open to FDI multiplies the gains from product trade openness. And if those foreign firms are involved in retailing, and they enter a country with suppliers whose productivity is below best-practice, they can put pressure on those suppliers to raise their productivity (and perhaps alert them as to ways to do that). Walmart's influence in Mexico provides one

⁸ More open economies also tend to be less vulnerable to foreign shocks such as sudden stops in capital inflows, currency crashes and severe recessions (Frankel and Cavallo 2008).

⁹ For an overview of this new theory, see Helpman, Marin and Verdier (2008).

example of this force at work (Javorcik, Keller and Tybout 2006). Furthermore, if the foreign firms are supplying lower-cost services inputs into manufacturing, that can boost the productivity growth of local manufacturers using those service inputs, according to a recent study of the Czech Republic (Arnold, Javorcik and Mattoo 2011).¹⁰

It need not be just the most-productive firms that engage in exporting. For lower-productivity firms, incurring the fixed costs of investing in newly opened foreign markets may be justifiable if accompanied by the larger sales volumes that come with exporting. Lower foreign tariffs will induce these firms to simultaneously export and invest in productivity (while inducing higher-productivity firms to export without more investing, as in Melitz 2003 and Melitz. and Ottaviano 2008). Lileeva and Trefler (2007) model this econometrically using a heterogeneous response model. Unique 'plant-specific' tariff cuts serve as their instrument for the decision of Canadian plants to start exporting to the United States. They find that those lower-productivity Canadian plants that were induced by the tariff cuts to start exporting increased their labor productivity, engaged in more product innovation, and had high adoption rates of advanced manufacturing technologies. These new exporters also increased their domestic (Canadian) market share at the expense of non-exporters, which suggests that the labor productivity gains reflect underlying gains in total factor productivity.

Liberalizing international financial flows also has been shown to have boosted economic growth, especially in the first wave of globalization up to 1913 (Schularick and Steger 2010, Bordo and Rousseau 2011). An even more-recent study by Hoxha, Kalemli-Ozcan and Vollrath (2011) examines potential gains from financial integration and find that a move from autarky to full integration of financial markets globally could boost real consumption by 9 percent permanently in the median developing country, and up to 14 percent in the most capital-scarce countries.¹¹

In short, international trade and investment liberalization can lead not just to a larger capital stock and a one-off increase in productivity but also to higher *rates* of capital accumulation and productivity growth in the reforming economy because of the way reform energizes entrepreneurs. For those higher growth rates to be sustained,

¹⁰ For a survey of the growth effects of opening to trade in services, see Francois and Hoekman (2010).

¹¹ In a case study of Thailand, Townsend and Ueda (2010) estimate welfare gains from financial liberalization as high as 28 percent.

though, there is widespread agreement that governments also need to (a) have in place effective institutions to efficiently allocate and protect property rights, (b) allow domestic factor and product markets to function freely, and (c) maintain macroeconomic and political stability (Rodrik 2007; Wacziarg and Welch 2008; Baldwin 2004; Chang, Kaltani and Loayza 2005).

Perhaps the best single paper that first brought these ideas together using a numerical open economy growth model is that by Rutherford and Tarr (2002). Their model allows for product variety, imperfect competition, economies of scale and international capital flows. It is dynamic, so the model can trace out an adjustment path to trade reform; and it is stochastic in that it draws randomly from uniform probability distributions for eight key parameters of the model. They simulate a halving of the only policy intervention (a 20 percent tariff on imports) and, in doing so, fully replace the government's lost tariff revenue with a lump-sum tax. That modest trade reform produces a welfare increase (in terms of Hicksian equivalent variation) of 10.6 percent of the present value of consumption in their central model. Systematic sensitivity analysis with 34,000 simulations showed that there is virtually no chance of a welfare gain of less than 3 percent, and a 7 percent chance of a welfare gain larger than 18 percent of consumption. Several modeling variants and sensitivity analysis on all the key parameters found that the welfare estimates for the same 10 percentage point tariff cut ranged up to 37 percent when international capital flows are allowed, and down to 4.7 percent when using the most inefficient replacement tax (a tax of capital). The latter result shows that even the very inefficient tax on capital is superior to the tariff as a revenue raiser. Increasing the size of the tariff cuts results in roughly proportional increases in the estimated welfare gains. Large welfare gains in the model arise because the economy benefits from increased varieties of foreign goods, which dominate the decrease in varieties of domestic goods. In order to assess the importance of variety gains, they then assume that one of the two sectors is subject to constant returns to scale and perfect competition (CRS/PC) – and find in that case that the additional varieties do not increase total factor productivity. Instead, a small welfare gain of about 0.5 percent of the present value of consumption emerges, which is of the same order of magnitude as in the many comparative static CRS/PC computable general equilibrium studies. Their results also illustrate the importance of complementary reforms to fully realize the potential gains from trade reform. In particular, with the ability to access international capital markets the gains are roughly

tripled; and use of inefficient replacement taxes significantly reduce the gains. These combined results underscore the point that complementary macroeconomic, regulatory, and financial market reforms to allow capital flows and efficient alternate tax collection are crucial to realizing the potentially large gains from trade liberalization.

Opportunities for Reducing Trade Barriers and Subsidies

Among the most-feasible opportunities available today for encouraging trade negotiations to stimulate significant market opening, the most obvious is a non-preferential legally binding partial liberalization of goods and services trade following the WTO's current round of multilateral trade negotiations, the Doha Development Agenda (DDA). That continues to prove to be difficult politically to bring to a conclusion, however. Three other opportunities considered here involve prospective sub-global regional integration agreements. One is the proposed Trans-Pacific Partnership (TPP) among a subset of member countries of the Asia Pacific Economic Cooperation (APEC) grouping; another involves extending the free-trade area among the 10-member Association of South East Asian Nations to include China, Japan and Korea (ASEAN+3); and the third opportunity is a free-trade area among all APEC countries.¹²

The TPP began in 2006 when just four small APEC members (Brunei, Chile, New Zealand and Singapore) got together to begin negotiations for greater economic integration. Being already open liberal economies, their leaders saw this not as an end in itself but rather as a pathway for a more-expansive club. In September 2008 the United States announced its interest in joining the TPP, and by 2010 Australia, Malaysia, Peru and Vietnam also joined in to make the current total of nine of APEC's 21 members.¹³

Meanwhile, discussions have been under way between the ten members of ASEAN, who already have their own free-trade agreement (AFTA), and their three

¹² Whether such reciprocal preferential trade agreements are stepping stones or stumbling blocks to freer global trade is a much-debated point among economists. For a recent survey of the impact of regionalism on the multilateral trading system, see Baldwin (2008).

¹³ At the APEC Summit in Honolulu in November 2011, Japan also indicated a possible interest. That idea has yet to be taken forward by Tokyo, however.

big northern neighbours (China, Japan and Korea) with a view to forming a broader East Asian FTA that is generally referred to as ASEAN+3.

APEC leaders have endorsed both of those regional integration tracks and see them as potential pathways to an FTA involving all APEC members (APEC 2010). In what follows we therefore consider this more-encompassing prospect as the third regional opportunity.

Economic Effects of Reducing Trade Barriers and Subsidies

Empirical comparative static model simulation studies of the potential economic welfare gains from prospective multilateral or large regional trade liberalization agreements typically generate positive gains for the world and for most participating countries (as do econometric studies of past trade reforms). In this section we review the latest economy-wide analyses of those prospects.

All the estimates considered below of the costs of current policies and the potential economic welfare gains from these reform opportunities are generated using computable general equilibrium (CGE) models of the global economy. The CGE welfare gains refer to the equivalent variation in income (EV) as a result of each of the shocks described.¹⁴ While not without their shortcomings (see Anderson 2003, Francois and Martin 2010 and the caveats below), CGE models are far superior for current purposes to partial equilibrium models, which fail to capture the economy-wide nature of the adjustments to reform whereby some sectors expand when others contract and release capital and labor. They are also superior to macroeconometric models which typically lack sufficient sectoral detail and are based on time series analysis of the past which may no longer be relevant for the near future (Francois and Reinert 1997). CGE models were first used in multilateral trade reform analysis in ex post assessments of the Tokyo Round of GATT negotiations in the late 1970s/early 1980s (Cline et al. 1978; Deardorff and Stern 1979, 1986; Whalley 1985). Since then they have been used increasingly during and following the Uruguay Round, as well as for ex ante assessments of the Doha Round, of bilateral and other preferential

¹⁴ EV is defined as the income that consumers would be willing to forego and still have the same level of well-being after as before the reform. For a discussion of the merits of EV versus other measures of change in economic welfare, see for example Just, Hueth and Schmitz (2004).

economic integration agreements, and of unilateral reforms such as when a country considers acceding to the WTO.

Empirical comparative static economy-wide CGE model simulations of the potential economic welfare gains from prospective multilateral trade liberalization typically generate positive gains for the world and for most participating countries. In the case of sub-global preferential trade reform studies, the estimated gains to the countries involved are almost always smaller, and some excluded countries – and even some participating ones – may lose. When increasing returns to scale and monopolistic competition (IRS/MC) are assumed instead of constant returns to scale and perfect competition (CRS/PC), and firms are assumed to be heterogeneous rather than homogeneous, and when trade is liberalized not just in goods but also in services and investment flows, the estimates of potential gains can increase several fold. Virtually all such studies are in comparative static mode however, and so are unable to capture the crucially important growth-enhancing dynamic effects of trade reform described in the previous section. It is therefore not surprising that they generate results for gains from trade reform that are typically only a small fraction of GDP.

Such low estimated gains seem to fly in the face of casual empiricism. Irwin (2002), for example, notes that three different countries in three different regions chose to liberalize in three different decades (Korea from 1965, Chile from 1974 and India from 1991 – see Irwin 2002, Figures 2.3 to 2.5), and per capita GDP growth in each of those countries accelerated markedly thereafter by several percentage points per year. Admittedly those historical liberalization experiences involved also complementary reforms to other domestic policies and institutions that would have contributed significantly to the observed boosts in economic growth. Even so, they support the point made in the previous section that trade can generate not only static efficiency gains but also important dynamic gains.

Some CGE modellers have tried to proxy that dynamic effect by adding an additional one-off total factor productivity shock to their trade reform scenarios. But reform may also raise the *rate* of factor productivity growth and/or of capital accumulation. Such endogenous growth has yet to be satisfactorily introduced into CGE models, and in any case it is unclear how to interpret a model's estimated welfare effects if households are reducing current consumption in order to boost their or their descendants' future consumption by investing more.

It should be kept in mind that all the experiments in the comparative static CGE studies surveyed below reduce only trade barriers plus agricultural production and export subsidies. The reasons for including subsidies only in agriculture are that they are the key subsidies explicitly being negotiated at the WTO (where non-agricultural export subsidies are illegal), they represented an estimated two-fifths of all government expenditure on subsidies globally during 1994-98 (van Beers and de Moor 2001, Table 3.1), and they are fully represented in the GTAP database used by almost all economy-wide global modelers whereas subsidies for most other sectors are not included in that database so it is not possible to estimate their welfare cost within the same framework. And the reason for not also explicitly estimating the welfare impacts of other domestic policies and institutions (even though, because of their complementarity, they can affect the payoff from opening up) is that typically they are beyond the sphere of influence of international trade negotiators.

With this as background, consider first the estimated economic consequences of Doha multilateral reform under the WTO, before turning to each of the identified opportunities for preferential trade reforms in the Asia-Pacific region.

Economic consequences of Doha multilateral reform

In the previous Copenhagen Consensus Project undertaken in 2008, hopes were still high that the Doha Round would be soon concluded, and numerous studies of the Round's possible economic effects were available. The one chosen for inclusion in the contribution to that project by Anderson and Winters (2009) was the modeling work of Anderson, Martin and van der Mensbrugghe (2006). That simulation exercise made use of the World Bank's Linkage Model of the global economy. With the stalling of the Round since 2008, there have been few new studies of its prospective effects. An important exception is a new paper by Laborde, Martin and van der Mensbrugghe (2011) that not only analyses what is currently on the Doha negotiation table but also incorporates new and better ways of including estimates of the price distortions caused by trade and farm subsidy policies. It again uses the World Bank's Linkage model (the latest version 7.1, see van der Mensbrugghe 2011), and again provides estimates of gains from partial global liberalization of all merchandise trade and

subsidies, assuming constant returns to scale and perfect competition in all product and factor markets.¹⁵

Laborde, Martin and van der Mensbrugghe (2011) estimate that if the basic formula approach to reducing trade barriers and subsidies, as currently proposed, were to be adopted by all WTO member countries, then global GDP would be 0.36 percent higher. However, that study notes that there are many flexibilities in the current Doha proposals, especially for developing countries. It is not possible to be certain as to how various countries might make use of those flexibilities, but the authors draw on political economy reasoning to suggest likely take-up and then re-do their simulation. With that degree of flexibility the gains as a share of GDP drop to 0.22 percent globally, made up of 0.25 percent for high-income (including Europe's transition) economies and 0.17 percent for developing countries. This is considered here as the lower-bound estimate of the gains from this opportunity.

When economies of scale and monopolistic competition are assumed instead of constant returns to scale and perfect competition, and firms are assumed to be heterogeneous rather than homogeneous, and when trade is liberalized not just in goods but also in services and investment flows, the estimates of potential gains tend to be raised several fold. In their previous contribution to this project, Anderson and Winters (2009) reviewed past literature of modelling efforts that added such features and concluded that an upper-bound estimate of those gains could be five times the lower bound estimate. That would bring the gains as a share of GDP to 1.1 percent globally, made up of 1.25 percent for high-income countries and 0.85 percent for developing countries.

As for timing, again following Anderson and Winters (2009), it is assumed those gains would accrue fully after 2020, following an eight-year phase-in period during which the gains will begin in 2013 at one-eighth the full amount as of 2025 and rise by a further one-eighth each year until 2020.

There are dynamic gains from trade to consider in addition to the above comparative static ones. The past experiences of successful reformers such as Korea, China, India and Chile suggest trade opening immediately boosts GDP growth rates by several percentage points per year for many years. An estimate might be that reform boosts GDP growth rates – projected from 2010 to 2025 by the Asian

¹⁵ Laborde, Martin and van der Mensbrugghe (2011) provide three sets of results, but for simplicity here we include just the middle set ('sigma = 2') which they consider to be the most likely.

Development Bank (2011, p. 57) and Fouré, Bénassy-Quéré and Fontagné (2010) to be around 2.0 percent for high-income countries and 5.0 percent for developing countries and so 3.0 percent globally¹⁶ – by one-fifth or 0.4 of a percentage point for high-income countries and 1.0 percentage points for developing countries, that is, to 2.4 and 6.0 percent, respectively, and hence from 3.0 to 3.6 percent globally through to 2025.¹⁷ As for the period after 2025, a review of the literature by Winters (2004) suggests that while the growth increments due to trade liberalisation will not go on forever, they could last several decades. Thus assume the dollar value of the boost to GDP declines linearly from its 2025 value to zero by 2050, so there is just the continuing comparative static gain of 0.22 percent globally, 0.25 percent for high-income countries and 0.17 percent for developing countries from 2025 to 2100.

Economics consequences of preferential reforms in the Asia-Pacific region

The proposals and negotiations currently under way within the Asia-Pacific region that are considered here are a Trans-Pacific Partnership (TPP) among a subset of member countries of the Asia Pacific Economic Cooperation (APEC) grouping (namely Australia, Brunei, Chile, Malaysia, New Zealand Peru, Singapore and Vietnam); an extension of the free-trade area that is already in place among the 10-member Association of South East Asian Nations to include China, Japan and Korea (ASEAN+3); and a free-trade area among all the APEC countries. Each of these trade liberalization initiatives is assumed to be preferential, in the sense that trade is freed within the group but not between group members and the rest of the world.

Estimates of prospective gains from these three opportunities are provided by Petri, Plummer and Zhai (2011). They use the latest GTAP database (preliminary version 8, with a 2007 baseline) but their CGE model of the global economy is, in several respects, more sophisticated than the one used in the above Doha analysis (see Zhai 2008). In particular, it is distinguished from the standard Linkage model in two

¹⁶ The growth rate of developing countries typically converges on that of high-income countries over time. Hence it is assumed in the baseline that the GDP of developing countries grows at a rate of 4.0 percent during 2025-2050 and at 3.0 percent during 2050-2100.

¹⁷ Econometric support for the claim that this assumed increase in GDP growth rates is conservative is provided by Romalis (2007), who estimates that the elimination of just import tariffs, and only by high-income countries, would boost annual GDP growth in developing countries by up to 1.6 percentage points. In the model by Rutherford and Tarr (2002), their ten percentage point cut in tariffs led to a rise in the steady-state growth rate of 2 percent p.a. to 2.6 percent over the first decade and 2.2 percent over the first five decades (and even after fifty years their annual growth rate is 2.1 percent).

important ways. First, it assumes economies of scale and monopolistic competition in the manufacturing and private services sectors instead of constant returns to scale and perfect competition. Second, following Melitz (2003), firms are assumed to be heterogeneous rather than homogeneous: each industry with monopolistic competition consists of a continuum of firms that are differentiated by the varieties of products they produce and their productivity. Furthermore, trade is liberalized by these authors not just by reducing applied bilateral tariffs on goods but also by raising utilization rates of tariff preferences, lowering non-tariff barriers to both goods and services, and reducing costs associated with meeting rules of origin (for details see the Appendixes of Petri, Plummer and Zhai 2011). Even so, the results summarized below can be considered conservative in the sense that they do not include liberalization of foreign investment barriers, even though such reforms are an important part of the current proposals for economic integration in the Asia-Pacific region.

With these model refinements, the gains from preferential liberalization of trade within this region are non-trivial. This is in part because the Asia-Pacific region is projected to become a much more important part of the global economy by 2025. Specifically, the TPP9 countries are projected by Petri, Plummer and Zhai to account for just under one-quarter of the global economy, the ASEAN+3 economies for just over one-quarter, and the whole of APEC's 21 members for nearly half of global GDP in 2025 (column 1 of Table 1).

The Trans-Pacific Partnership, even if it involves just the current nine members and excludes the three large northeast Asian economies of China, Japan and Korea, would get a 0.3 percent boost to their GDP if they removed their bilateral barriers to trade in goods and services. However, it would boost global GDP by just 0.1 percent. If those three northeast Asian countries formed an FTA with the ASEAN members, by contrast, global GDP would rise by twice as much (0.21 percent). Furthermore, if all 21 APEC members were to form a free-trade area (FTAAP), the global gains would be four times greater again (0.85 percent). The corresponding gains for all developing countries would be 0.1 percent of GDP from TPP, 0.33 percent from ASEAN+3 and 1.17 percent from FTAAP, and for all high-income and transition countries the gains would be 0.1, 0.1 and 0.56 percent of GDP (Table 2). This progression in gains is due to several factors: greater trade complementarity as the mix of economies broadened, greater trade barriers (especially in agriculture) between the full set of APEC economies and the two smaller subsets prior to their

removal, and greater scope for exploiting gains within the manufacturing sectors among the ASEAN+3 countries than among the TPP9 countries.

[Insert Tables 1 and 2 near here]

Two other points are worth noting. One is that non-APEC countries lose very little in aggregate, reflecting the fact that trade creation dominates trade diversion in these three cases. The other is that the gain from full liberalization of trade among all APEC countries yields a higher global gain than that from the partial Doha multilateral reform summarized above.

To make the present value of estimated gains from these prospective preferential reforms comparable with the above estimates of gains from partial multilateral reform under the WTO's Doha agenda, it is assumed the gains would accrue fully after 2020, following an eight-year phase-in period during which the gains begin in 2013 at one-eighth the full amount as of 2025 and rise by a further one-eighth each year until 2020.

While these regional results are from more-complete model simulations of proposed changes than was possible in the Doha analysis, they still exclude proposed foreign investment liberalization. Furthermore, they do not fully capture the dynamic gains from trade reform. Consistent with the Doha analysis, we assume that reform boosts the GDP growth rates of the participating APEC countries and their key trading partners by one-fifth between 2010 and 2025. For the period after 2025, we assume, again very conservatively, that the dollar value of the dynamic boost to GDP growth diminishes linearly after 2025 and disappears by 2050 so the benefits from reform return to just the comparative static gains for the latter half of the century.

Economic Costs of Trade Reform

The benefits from reform are not costless. Expenditure on negotiating, and on supporting policy think tanks and the like to develop and disseminate a convincing case for reform, would be needed. But more significant in many people's eyes are the private costs of adjustment for firms and workers, as reform forces some industries to downsize or close to allow others to expand (Matusz and Tarr 2000; Francois 2003). Those costs are ignored in the CGE models discussed above, where the aggregate

level of employment is held constant. There are also social costs to consider. They include social safety net provisions in so far as such schemes are developed/drawn on by losers from reform (e.g., unemployment payments plus training grants to build up new skills so displaced workers can earn the same wage as before).

Those one-off costs, which need to be weighed against the non-stop flow of economic benefits from reform, tend to be smaller, the longer the phase-in period or smaller the tariff or subsidy cut per year (Furusawa and Lai 1999). The adjustment required also tends to be small when compared with the changes due to exchange rate fluctuations, technological improvements, preference shifts and other economic shocks and structural developments associated with normal economic growth (Anderson et al. 1997). In recent debates about trade and labor, analysts have not found a significant link between import expansion and increased unemployment. One example is a study of the four largest EU economies' imports from East Asia (Bentivogli and Pagano 1999). Another is a study of the UK footwear industry which found liberalizing that market would incur unemployment costs only in the first year, because of the high job turnover in that industry, and they were less than 1.5 percent of the estimated benefits from cutting that protection (Winters and Takacs 1991). A similar-sized estimate is provided by de Melo and Tarr (1990) using a CGE model that focuses just on US textile, steel and auto protection cuts and drawing on estimates of the cost of earnings lost by displaced workers (later reported by Jacobson, LaLonde and Sullivan 1993). For developing countries also the evidence seems to suggest low costs of adjustment, not least because trade reform typically causes a growth spurt (Krueger 1983). In a study of 13 liberalization efforts for nine developing countries, Michaely, Papageorgiou and Choksi (1991) found only one example where employment was not higher within a year.¹⁸

¹⁸ A further impact of trade policy reform about which concern is often expressed is the loss of tariff revenue for the government. This is of trivial importance to developed and upper middle-income countries where trade taxes account for only 1 and 3 percent of government revenue, respectively. For lower middle-income countries that share is 9 percent, and it is more than 20 percent for more than a dozen low-income countries for which data are available, so how concerned should those poorer countries be? The answer depends on whether/how much that revenue would fall and, if it does fall, on whether/how much more costly would be the next best alternative means of raising government revenue. On the first of those two points, government revenue from import taxes will rise rather than fall with reform if the reform involves replacing, with less-prohibitive tariffs, any of import quotas or bans, or tariffs that are prohibitive (or nearly so) or which encourage smuggling or under-invoicing or corruption by customs officials. It is possible even in a tariff-only regime that lower tariffs lead to a sufficiently higher volume and value of trade that the aggregate tariff collection rises. Examples of recent trade policy reforms that led to increased tariff revenue are Chile and Mexico (Bacchetta and Jansen 2003, p. 15) and Kenya (Glenday 2002). See also Greenaway and Milner (1993) and Nash and

If the adjustment costs are so small and may lead to more rather than less jobs even during the adjustment period, why are governments so reluctant to open their economies? The reason is because the anticipated losses in jobs and asset values are very obvious and concentrated whereas the gains in terms of new job and investment opportunities are thinly spread, are less-easily attributed to the trade reform, and are taken up often by people other than those losing from the reform. Moreover, there is considerable uncertainty as to who in fact will end up bearing the costs or reaping net benefits, leading all groups to be less enthusiastic about reform (Fernandez and Rodrik 1991). As discussed above, the few losers are prepared to support politicians who resist protection cuts, while the gains are sufficiently small per consumer and unassisted firm as to make it not worthwhile for those many potential gainers to get together to lobby for reform, particularly given their greater free-rider problem in acting collectively (Olsen 1965). Thus reform has political, and possibly employment, costs for politicians and one should not under-estimate the difficulties of political action to reduce/eliminate trade protection measures. We do not factor these into the economic cost/benefit analysis for society as a whole, however, because they are not of a comparable form and the purpose of the Copenhagen Consensus process is to contribute to their erosion. Nor do we count the transfers among people within each country as part of the gross benefits and costs of reform, since they are clearly transfers rather than net costs or benefits to each national society. Rather, we implicitly assume society costlessly compensates the losers using the extra tax revenue from those whose incomes rise.

The existing estimates of the adjustment costs to trade reform are very small, but they are concentrated on particular individuals and so perhaps deserve large weight socially. It is certainly possible that those estimates omit some elements too, such as the disutility of one-off uncertainty and disruption experienced by everyone in adjusting to policy changes. Hence, so as not to exaggerate the estimated net gains

Takaacs (1998). Since the economy is enlarged by opening up, income and consumption tax collections will automatically rise too. On the second point, about the cost of raising government revenue by other means if tax revenue does fall, Corden (1997, Ch. 4) makes it clear that in all but the poorest of countries it will be more rather than less efficient to collect tax revenue in other ways. Even countries as poor as Cambodia have managed to introduce a value added tax. Hence from a global viewpoint there is no significant cost that needs to be included in response to this concern. To the extent subsidies are also cut as part of the reform, the chances of government revenue rising are even greater. Income and consumption tax revenue also will rise as the economy expands following reform. In any case CGE modellers typically alter those other tax rates when trade tax revenues change so as to keep the overall government budget unchanged.

from trade reform, it is assumed here that there would be an adjustment period of eight years following the beginning of liberalization (assumed to start in 2013), and that in each of those years the adjustment costs would be 10 percent of the estimated annual comparative static benefits as of 2025 (and zero thereafter) in the case of Doha ‘low’ and also in the cases of sub-regional FTA formation in the TPP and ASEAN+3 cases. For the more-comprehensive Doha ‘high’ and the FTAAP cases, where benefits are far higher because reform is far more widespread, costs of adjustment are assumed to be 2.5 times greater than in the other cases (that is, 5% of the 2025 comparative static benefit).

Net Benefits and Benefit/Cost Analysis

The assumptions used to calculate the present (i.e. 2013) value of the net benefits in real (2007) US dollars, and the benefit/cost ratios associated with the policy reform opportunities described in the two previous sections, are summarized in Table 2. Those indicators are calculated using two alternative discount rates: 3 and 5 percent per year. In the Doha trade reform scenarios, the ‘low’ case refers to global comparative static gains of just 0.22 percent of GDP while the ‘high’ case refers global gains five times that lower benefit, to take into account the unmeasured gains due to such things as economies and scale, imperfect competition, and services and foreign investment reforms.

In present value terms the net benefit of a Doha agreement are shown in Table 3 to range from \$12 trillion to \$64 trillion. The costs are less than \$400 billion in present value terms, but they are mostly private rather than government costs and are dwarfed by the gross benefits. Today’s developing countries would reap just over half of those net gains, as their share of the global economy is assumed to grow throughout this century (although at a progressively slower rate after 2025). Their benefit/cost ratios from the trade reform opportunity offered by the Doha round are between 140 and 250, which means it is an extremely high payoff activity, if only the political will to bring about a successful conclusion to the Doha round can be found. The global benefit/cost ratios from Doha are not much lower, at between 90 and 180.

[Insert Table 3 near here]

If for political reasons the Doha round cannot be brought to a successful conclusion with all the flexibilities demanded by developing countries and assumed in the above calculus, governments still have the opportunity to form preferential trade agreements. Of the three possibilities being discussed among countries in the Asia-Pacific region, Table 4 shows that the greatest estimated gain would come if all APEC member countries agreed to form a region-wide free-trade area (FTAAP). That is assumed to involve completely freeing all trade, albeit preferentially within the Asia-Pacific region (including Russia), in contrast to a Doha agreement which would only partially open up trade, albeit non-preferentially so that all trading partners are involved (as the WTO membership now includes nearly 160 members and thus almost all of world trade). Since the APEC members are projected to comprise nearly three-fifths of global GDP by 2025 (see Table 1), it is not surprising that an FTA among them could yield a benefit to the world that is three-quarters of what Doha is projected to deliver. Furthermore, the FTAAP is projected to deliver a slightly greater benefit to developing countries as a group than is Doha. This is partly because under Doha developing countries are assumed to reform less than high-income countries, and partly because by 2025 the APEC grouping will account for around two-thirds of the GDP of all developing countries.

[Insert Table 4 near here]

The two other opportunities analysed involve sub-regional FTAs in the Asia-Pacific region, and so necessarily yield smaller benefits than an FTA for the entire APEC region: fewer countries are liberalizing, and only for their trade with a subset of APEC members. Of those two, the ASEAN+3 proposal would yield more than twice the global and developing country benefits as the Trans-Pacific Partnership between the US and a number of small APEC economies (Table 4).

Social and Environmental Benefits and Costs of Reducing Trade and Migration Barriers

Because trade reform generates large and on-going economic gains while incurring comparatively minor one-off adjustment costs, it would allow individuals and governments the freedom to spend more on other pressing problems, thereby

indirectly contributing to the alleviation of other challenges facing society.¹⁹ But in addition, trade reform would also *directly* alleviate some of those challenges. This section first focuses on the impact of trade reform on poverty alleviation, since that is the solution to many of the world's problems. It then turns to trade reform's impact on the environment, before briefly commenting on its impact on several of the other specific challenges being addressed in this project, namely, communicable diseases, conflicts, under-investment in education, corruption, and malnutrition and hunger.²⁰

Poverty alleviation

Evidence presented by Dollar and Kraay (2002), Sala-i-Martin (2006) and others, and carefully surveyed in Ravallion (2006), suggests aggregate economic growth differences have been largely responsible for the differences in poverty alleviation across regions. Initiatives that boost economic growth are therefore likely to be helpful in the fight against poverty, and trade liberalization is such an initiative. But cuts to trade barriers and subsidies also alter relative product prices domestically and in international markets, which in turn affect factor prices. Hence the net effect on poverty depends also on the way those price changes affect poor households' expenditure and their earnings net of remittances. If the consumer and producer price changes (whether due to own-country reforms and/or those of other countries) are pro-poor, then they will tend to reinforce any positive growth effects of trade reform on the poor.

The effects of trade reform on global poverty can be thought of at two levels: on the income gap between developed and developing countries, and on poor households within developing countries. On the first, CGE estimates such as by Anderson, Martin and van der Mensbrugghe (2006) and Valenzuela, van der Mensbrugghe and Anderson (2009) suggest that current developing countries, which produce just one-fifth of global GDP, would enjoy nearly half of the net present value

¹⁹ On the intrinsic benefits of freedom of opportunity and action that freer markets provide people, apart from their positive impact in boosting income and wealth, see Sen (1999).

²⁰ The economic and social impacts of freeing up international migration are not discussed here, but they were explicitly included in the predecessor to the present project, where they are shown to be potentially enormous in aggregate (Anderson and Winters 2009). Not every small developing country will have less poverty if migration is freed up, because it will depend on the skill mix of the migrants and the extent of remittances they send back, among other things; but in most cases the evidence on international migration's impact on poverty is overwhelmingly positive (World Bank 2006, Ch. 3).

of the global static plus dynamic gains from reducing trade barriers. Clearly that will lower substantially the income gap between developed and poorer countries on average.

How poor households *within* developing countries are affected is more difficult to say (Winters 2002; Winters, McCulloch and McKay 2004). We know that agricultural policies of developed countries could provide a major source of developing country gains from reform, and lowering barriers to textiles and clothing trade also is important. Both would boost the demand for unskilled labor and for farm products produced in poor countries. Since two-thirds of the world's poor live in rural areas and, in least-developed countries, the proportion is as high as 90 percent (OECD 2003a, p. 3), and since many poor rural households are net sellers of farm labor and/or food, one would expect such reforms to reduce the number in absolute poverty. A set of analyses reported in Anderson, Cockburn and Martin (2010, 2011), in which global and national CGE model results are carefully combined with household income and expenditure survey data for nearly a dozen developing countries,²¹ tests this hypothesis and finds strong support for it in most of the country case studies considered.

The environment

The effects of trade reform on the environment have been the focus of much theoretical and empirical analysis since the 1970s and especially in the past dozen or so years (Beghin et al. 2002; Copland and Taylor 2003). Until recently environmentalists have tended to focus mainly on the *direct* environmental costs they perceive from trade reform, just as they have with other areas of economic change.²² That approach does not acknowledge areas where the environment might have been *improved*, albeit indirectly, as a result of trade reform (e.g., from less production by pollutive industries that were previously protected). Nor does it weigh the costs of any net worsening of the environment against the economic benefits of policy reform of the sort described above.

The reality is that while the environmental effects of reform will differ across sectors and regions of the world, some positive and some negative, there are many

²¹ For more on this methodology, see Hertel et al. (2011).

²² See the critique by Lomborg (2001).

examples where cuts to subsidies and trade barriers would reduce environmental damage (Anderson 1992; Irwin 2002, pp. 48-54). For some time the OECD has been encouraging analysis of these opportunities (OECD 1996, 1997, 1998, 2003b). Environmental NGOs are increasingly recognising them too. They and the better-informed development NGOs seem to be coming to the view that the net social and environmental benefits from reducing subsidies and at least some trade barriers may indeed be positive rather than negative, and that the best hope of reducing environmentally harmful subsidies and trade barriers is via the WTO's multi-issue, multilateral trade negotiations process (see, e.g., Cameron 2007; de Melo and Mathys 2012).

If there remains a concern that the net effect of trade reform on the environment may be negative nationally or globally, that should be a stimulus to check whether first-best environmental policy measures are in place and set at the optimal level of intervention, rather than a reason for not reducing trade distortions. This is because if they are so set, we would then know that the direct economic gains from opening to trade would exceed society's evaluation of any extra environmental damage, other things equal (Corden 1997, Ch. 13).

Much environmental damage in developing countries is a direct consequence of poverty (e.g., the slash-and-burn shifting agriculture of landless unemployed squatters). In so far as trade reform reduces poverty, so it will reduce such damage. More generally, the relationships between per capita income and a wide range of environmental indicators have been studied extensively. Because richer people have a greater demand for a clean environment, income rises tend to be associated with better environmental outcomes once incomes rise above certain levels.²³ Even though more pollutive products are being consumed as incomes rise, many abatement practices have been spreading fast enough to more than compensate. And openness to trade accelerates that spread of abatement ideas and technologies, making their implementation in developing countries affordable at ever-earlier stages of development.

²³ This is the theme of the book by Hollander (2003). For statistical evidence of the extent to which different environmental indicators first worsen and then improve as incomes rise (sometimes called the environmental Kuznets curve), see the special issue of the journal *Environment and Development Economics*, Volume 2, Issue 4 in 1997 and the more-recent papers by and cited in Harbaugh, Levinson and Wilson (2002), Cole (2003), Johansson and Kristrom (2007) and Vollebergh, Melenberg and Dijkgraaf (2009).

Estimating the global cost to society of all environmental damage that might accompany a reduction in subsidies and trade barriers, net of all environmental gains, is extraordinarily difficult both conceptually and empirically.²⁴ In the absence of any sufficiently comprehensive estimates it is safest to assume that the net effect of reform on the environment would be zero.

When the environmental impact is global rather than local, as with greenhouse gases and their apparent impact on climate change, international environmental agreements may be required (see Cline 2004; Yohe et al. 2009; de Melo and Mathys 2012). When developing countries are not party to such agreements, however, it is difficult to prevent 'leakage' through a re-location of carbon-intensive activities to those non-signatories. An alternative or supplementary approach that is likely to achieve at least some emission reductions, and at the same time generate national and global economic benefits rather than costs, involves lowering coal subsidies and trade barriers. Past policies encouraged excessive production of coal in a number of industrial countries and excessive coal and petroleum product consumption in numerous developing countries including transition economies. Phasing out those distortionary policies has both improved the economy and lowered greenhouse gas emissions globally – a 'no regrets' outcome or win-win Pareto improvement for the economy and the environment (Anderson and McKibbin 2000). Additional opportunities for reducing greenhouse gases through cutting energy subsidies are pointed to in the UNEP study by von Moltke, McKee and Morgan (2004).

Communicable diseases

Communicable diseases are more common among the poor, so again trade reform's contribution to poverty alleviation will in turn impact on human health in general and the reduced incidence of diseases in particular. Furthermore, the greater openness of economies ensures medicines and prevention technologies are more widespread and cheaper, particularly following the Doha WTO conference of trade ministers and the subsequent Decision of 30 August 2003 on the TRIPS Agreement and Public Health.

²⁴ A beginning nonetheless is being made, with several governments funding ex ante evaluations of the WTO Doha round's potential impact on the environment. The EU's efforts include a workshop on methodological issues which are laid out in CEPII (2003), and further work has been contracted to the University of Manchester whose progress can be traced at <http://idpm.man.ac.uk/sia-trade/Consultation.htm>. Ex post analyses are also being undertaken by NGOs. See, for example, Bermudez (2004) for WWF's sustainability impact assessment of trade policies during 2001-03.

That Decision by the WTO General Council ensures developing country governments can issue compulsory licenses to allow other companies to make a patented product or use a patented process under licence without the consent of the patent owner, while developing countries unable to produce pharmaceuticals domestically can now import generic copies of patented drugs made under compulsory licensing by other developing countries.

Conflicts

Openness tends to break down the common prejudices that accompany insularity, and to broaden mutual understanding between people with different cultures and customs. It also expands economic interdependence among countries, which raises the opportunity cost of entering into conflicts with trading partners. In so far as it reduces income inequality across countries, then that too may diffuse tension between nations – a point that has even greater significance following the terrorist attacks of 11 September 2001. Indeed there is now statistical support for Immanuel Kant's hypothesis that durable peace is supported by representative democracy, trade, and membership of international organizations: Oneal and Russett (2000) find that all three contribute independently to more peaceful relationships with other countries. And casual observation suggests that more-autarchic economies tend to be less democratic (Burma, Cuba, North Korea).

Education under-investment

Parents and governments are less likely to under-invest in education the higher their incomes, other things equal. So to the extent that trade reform raises incomes, it contributes to better educational outcomes. That is especially so for the very poorest who cannot afford even primary education: a slight increase in the cash income of poor farm families, for example following a reform-induced increase in international prices of farm products, can make it possible to pay the (often relatively high) school fees that are otherwise unaffordable.

Poor governance and corruption

A tolerance for subsidies and trade barriers breeds rent-seeking by special interests seeking protectionist policies for their industry. If those policies include import licensing, that breeds corruption through encouraging bureaucrats responsible for allocating licences to accept bribes from would-be importers. Together those activities ensure that the welfare costs of trade barriers are higher than is typically measured, since a share of the private rents they generate is wasted in these lobbying activities. Tax-avoiding corruption is also encouraged in the case of import tariffs, for example through bribing customs officers or through smuggling. For these reasons it is not surprising that statistical analysis has found less-open economies to be more corrupt (Ades and Di Tella 1999).

Malnutrition and hunger

Food security is always a great concern in poor countries, especially those dependent on food imports where there are fears that reducing agricultural subsidies and protectionism globally will raise the price of those imports. But food security is defined as always having access to the minimum supply of basic food necessary for survival, so enhancing food security is mainly about alleviating poverty. That suggests this issue needs to be considered from a household rather than national perspective. And the discussion above argues that poverty is more likely than not to be alleviated by cuts to trade barriers.

Hunger and under-nutrition can be eased by trade not only in goods but also in agricultural technologies, in particular newly bred varieties of staple crops. The introduction of high-yielding dwarf wheat and rice varieties during the Green Revolution that began in Asia in the 1960s is a previous case in point, whereby producers and consumers shared the benefits in terms of higher farm profits and lower consumer prices for cereals. A prospective case in point is the possibility of breeding crop varieties that are not only less-costly to grow but are ‘nutriceuticals’ in the sense they contain vitamin and mineral supplements. The most promising is so-called ‘golden rice’. Consumers in many of poor countries suffer from chronic vitamin A deficiency that can lead to blindness, weakened immune systems, and increased morbidity and mortality for children and pregnant and lactating women. Golden rice has been genetically engineered to contain a higher level of beta-carotene in the endosperm of the grain and thereby provide a vitamin A supplement. By being

cheaper and/or more nutritionally beneficial, it would improve the health of poor people and thereby also boost their labor productivity. Anderson, Jackson and Nielsen (2005) estimate that the latter economic benefit from this new technology could be as much as ten times greater than just the traditional benefits of lower production costs – not to mention that poor people would live longer and healthier lives. This new technology has yet to be adopted, however, because the European Union and some other countries will not import food from countries that may contain genetically modified organisms (GMOs) – even though there is no evidence that GM foods are a danger to human health (see, e.g., King 2003). The cost of that trade barrier to developing countries – which is not included in the above estimates– has been very considerable (Anderson and Jackson 2005).

Caveats

Measuring both the benefits and the costs of liberalizing subsidies and barriers to trade and migration is still an inexact science, despite the huge amount of progress that has been made over the past two decades in global CGE modelling.²⁵ We have tried to accommodate shortcomings by providing a range of estimates and by erring on the conservative side in the above analysis. Nonetheless it is worth reviewing the key areas where analytical improvements are still needed. On the cost side, more empirical research on the real costs of adjustments to trade policy changes, and how they are spread over time for different groups, would be helpful. On the benefit side, economists have made more progress but plenty of scope remains for further improvements, particularly on the size and longevity of dynamic gains from trade reform. Key areas, discussed in turn below, are the assumed policy counterfactual, the tariff aggregation issue, product quality differences, new products, measurement of distortions in markets for service products, and behaviour of labor markets.

The standard approach used in evaluating the consequences of international trade agreements is to compare the agreed tariff binding with the previously applied tariff rate, and to treat the post-agreement tariff rate as the lesser of the two rates. This

²⁵ Parts of this section draw on the survey by Francois and Martin (2010).

essentially involves treating the current applied rate as a deterministic forecast of future protection rates in the absence of the agreement.

There are two potentially serious problems with this specification of the counterfactual. One is that the trend rate of protection responds systematically to underlying determinants that evolve over time. The second is that annual protection rates fluctuate substantially around that trend. Taking account of either or both of these counterfactuals can have large impacts on the estimated benefits of international trade liberalization agreements.

Anderson and Hayami (1986) and Lindert (1991) provide insights into the likely evolution of agricultural trade policies in the absence of international agreements. Key findings include a strong tendency for agricultural protection to rise with economic development because of fundamental changes in the structure of the economy. In particular, there is a tendency for agricultural protection to be low or negative in very poor countries because the number of farmers is large and it is difficult for them to organize to apply pressure on governments. Because farmers are mainly subsisting at that stage, their real incomes are not greatly affected by increases in farm output prices. By contrast, the urban population in a poor country is far smaller and easier to organize, and food is an important part of consumer budgets.

As economies develop, however, all of these economic factors change in ways that shift the political-economy balance more towards agricultural protection. Farmers become fewer in number and find it easier to organize themselves. They also become more commercial in orientation, so that their real incomes are more strongly influenced by agricultural output prices. At the same time, the urban population becomes larger and hence harder to organize, and the importance of food in consumer budgets and hence in real wage determinations declines. The end result can be a very rapid increase in agricultural protection rates in high-growth economies. Without the new discipline of the Uruguay Round's Agreement on Agriculture, agricultural protection rates in Europe and Northeast Asia may well have kept rising over the past 15 years, and may continue to rise in fast-growing middle-income countries whose tariff and subsidy bindings in WTO are still well above applied rates (Anderson and Nelgen 2011).

Also striking is the large variation in national rates of agricultural protection over time. This is because trade and subsidy policies are frequently used also to stabilize domestic agricultural prices in the face of variations in world prices (Tyers

and Anderson 1992; Anderson and Nelgen 2012). The value of legal bindings on those policies via trade agreements, even when the bindings are well above applied rates at the time of the agreement, is non-trivial and yet is not captured in most models because those models are not stochastic. As Francois and Martin (2004) show, even bindings that are set well above average rates of protection may greatly diminish the costs of protection when international prices peak. They estimate, for example, that the European tariff binding on wheat, at 82 percent, reduced the cost of protection to this commodity by almost a third, despite being substantially above the average rate of protection prevailing during the preceding 15 years for which data were available. This is another reason why current CGE models are understating the gains from reducing tariff and subsidy bindings, particularly for farm products.

Conclusion

The theory and available evidence surveyed above show that trade barriers and subsidies are very wasteful. Pre-announced, gradual reductions in them, especially if done multilaterally, would yield huge economic benefits and relatively little economic cost, and hence extremely high benefit/cost ratios. Moreover, such reforms would contribute enormously to reducing global inequality and poverty. Furthermore, while some social and environmental effects of such reform may be perceived as negative, many more will be positive. Even where some of those effects are harmful, there are almost always cheaper ways of obtaining better social and environmental outcomes than via trade and subsidy measures. The reasons these inefficient measures persist is partly lack of understanding of the benefits being foregone, but mostly it is because a small number of vested interests are able to successfully lobby for their retention.

The challenge is to find politically feasible opportunities for ridding the world of trade barriers and distortionary subsidies. This chapter suggests the most obvious way is currently before us in the form of the Doha Development Agenda of multilateral trade negotiations under the World Trade Organization. Seizing that opportunity for reform could reduce government outlays by hundreds of millions of dollars, and make it less attractive to seek preferential trade agreements which are prone to making excluded countries worse off. A successful Doha outcome would

also make it less pressing to lower immigration barriers insofar as trade in products is a substitute for international labor movements – although the global gains and inequality-reducing consequences of more migration are likely to be so large as to make that type of opening-up worthwhile too (see Anderson and Winters 2009). Cuts in trade barriers and subsidies also would provide a means for citizens to spend more on other pressing problems (because under freer trade the world's resources would be allocated more efficiently), thereby *indirectly* contributing to opportunities to alleviate other challenges facing the world; and they could also *directly* alleviate poverty and thereby reduce environmental degradation and address other challenges such as communicable diseases, conflicts and arms proliferation, education under-investment, and hunger and malnutrition. All that is needed is the political will to agree to and implement such reforms.

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Table 1: Comparative static effects on economic welfare of trade reform under three different prospective Asia-Pacific preferential free-trade agreements, 2025

(annual difference from baseline, 2007 US dollars and percent)

	Baseline share of world GDP (%), 2025	US\$ billion			Percent of GDP		
		TPP	ASEAN+3	FTAAP	TPP	ASEAN +3	FTAAP
TPP9 countries	23	71	26	172	0.30	0.11	0.73
ASEAN+3 countries	28	71	219	596	0.25	0.78	2.12
All 21 APEC countries	57	109	216	912	0.19	0.37	1.57
All non-APEC countries	43	-5	-1	-50	-0.01	-0.00	-0.11
WORLD	100	104	215	862	0.10	0.21	0.85

Source: Petri, Plummer and Zhai (2011, Table 7).

Table 2: Assumptions used in the benefit/cost calculus

Baseline GDP levels and assumed growth rates to 2100:

	Real GDP (US\$ billion)		Real GDP growth rate, %/year		
	<u>2010</u>	<u>2025</u>	2010-2025	2025-2050	2050-2100
Developing countries	19,400	40,331	5.0	4.0	3.0
High-income countries ^a	38,800	52,220	2.0	2.0	2.0
World	58,200	90,674	3.0	3.1	2.6

Higher growth rates in alternative policy reform scenarios, 2010-25:

	Doha 'Low'	Doha 'High'	TPP	ASEAN+3	FTAAP
Developing countries	6.0	6.0	5.1	5.5	5.6
High-income countries ^a	2.4	2.4	2.2	2.2	2.2
World	3.6	3.6	3.1	3.3	3.4

Additional comparative static gross benefit from reform (expressed as % of GDP for each year after 2020, and phased in linearly from 1/8th of that rate in 2013 and 1/8th more each year to 2020):

	Doha 'Low'	Doha 'High'	TPP	ASEAN+3	FTAAP
Developing countries	0.17	0.85	0.10	0.33	1.17
High-income countries ^a	0.25	1.25	0.10	0.10	0.56
World	0.22	1.10	0.10	0.21	0.85

Cost of reforms (US\$ billion per year), for each year from 2013 to 2020 inclusive:

	Doha 'Low'	Doha 'High'	TPP	ASEAN+3	FTAAP
Developing countries	7	17	4	13	24
High-income countries ^a	13	335	10	10	15
World	20	50	14	23	39

^a High-income includes Eastern European and former Soviet Union transition economies

Source: See text

Table 3: Net present value of benefits and costs to 2100, and benefit/cost ratios, from reducing trade barriers and subsidies globally under the WTO's Doha Development Agenda

Benefit/cost ratio

	3% discount rate		5% discount rate	
	Low	High	Low	High
World Developing countries	136	179	90	99
	215	249	146	136

Net present value in 2013 of benefits and costs (in 2007 US billion dollars)

	3% discount rate						5% discount rate					
	<u>Low</u>			<u>High</u>			<u>Low</u>			<u>High</u>		
	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit
World Developing countries	19633	145	19488	64624	362	64263	12161	136	12026	33666	339	33326
	10870	51	10819	30549	123	30426	6943	48	6895	15704	115	15589

Table 4: Net present value of benefits and costs to 2100, and benefit/cost ratios, from reducing trade barriers and subsidies under three alternative Asia-Pacific regional trade agreements

Benefit/cost ratio

	3% discount rate			5% discount rate		
	TPP	ASEAN+3	FTAAP	TPP	ASEAN+3	FTAAP
World	65	89	174	38	54	95
Developing countries	121	133	216	65	75	110

Net present value in 2013 of benefits and costs, 3% discount rate (in 2007 US billion dollars)

	<u>TPP</u>			<u>ASEAN+3</u>			<u>FTAAP</u>		
	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit
World	6369	98	6271	14828	166	14662	48991	282	48709
Developing countries	3489	29	3460	12515	94	12421	37430	174	37257

Net present value in 2013 of benefits and costs, 5% discount rate (in 2007 US billion dollars)

	<u>TPP</u>			<u>ASEAN+3</u>			<u>FTAAP</u>		
	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit	Gross Benefit	Cost	Net Benefit
World	3476	92	3384	8450	156	8294	25255	265	24991
Developing countries	1764	27	1737	6619	88	6530	17926	163	17763

Source: Author's calculations based on assumptions in text