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ECONOMIC GROWTH AND POLICY REFORM IN THE ASIA-PACIFIC: TRADE AND WELFARE IMPLICATIONS BY 2005*

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ABSTRACT

Economic Growth and Policy Reform in the Asia-Pacific: Trade and Welfare Implications by 2005*

This paper examines the likely impacts of key trade reforms likely to affect the APEC region over the next decade. It does so by taking an economy-wide perspective using projections to 2005, based on the global CGE model known as GTAP. The paper begins by showing that the empirical impact of implementing the Uruguay Round depends significantly on how China and Taiwan are treated. The paper then explores the market implications of a slowdown in economic growth in China. As well, several policy shocks are examined. It is shown that a slowdown of industrial growth in China -- which might occur if the West fails to encourage China to integrate more into the global economy -- would be very costly to the world, not least because it would reduce industrialization in other Asian countries. Failure to honour Uruguay Round obligations to open textile and clothing markets in OECD countries is shown also to reduce East Asia's industrialization and thereby slow the region's net imports of primary and other products. Further MFN trade liberalization by APEC members, however, could add substantially to the growth and structural changes expected in the region and beyond over the next decade. The latter benefits are shown though to depend heavily on the inclusion of agriculture in the APEC reform, something that Northeast Asian countries are reluctant to do.

Keywords: Asia-Pacific, APEC, Uruguay Round, global CGE modelling, economic projections.

JEL Codes: F13, F17, O53, Q17, R13

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NON-TECHNICAL SUMMARY

Numerous unilateral, regional, and multilateral economic reforms in the Asia-Pacific and elsewhere are under way at present or are scheduled over the next decade or so. This paper examines the likely impacts of key trade reforms affecting the APEC region, and does so by taking an economy-wide perspective using projections to 2005, based on the global CGE model known as GTAP.

The paper begins by showing that the empirical impact of implementing the Uruguay Round depends significantly on how China and Taiwan are treated. If the latter are allowed to enjoy the accelerated access to OECD markets promised WTO members under the Agreement on Textiles and Clothing to phase out the Multifibre Arrangement, the global economic welfare benefits from the Uruguay Round are 40 per cent greater than if China and Taiwan get no additional access. The paper then explores the market implications of a one-fifth slowdown in total factor productivity growth in China's non-farm sectors. If that were to be the consequence of excluding China from the WTO and from greater export opportunities arising from MFA reform, the modelling results suggest this would be not only a huge loss to China but also a considerable loss to its East Asian neighbours with which it trades intensely.

As well, several policy shocks are examined. They include the failure to fully abolish the bilateral quotas on textiles and clothing trade as promised under the Uruguay Round, and further MFN trade liberalization by APEC countries. Failure to honour Uruguay Round obligations to open textile and clothing markets in OECD countries is shown also to reduce East Asia's industrialization and thereby slow its net imports of primary and other products. On the other hand, the trade reform that is likely to accompany China's WTO membership would greatly benefit the economies of China and the world. It would boost exports of manufactures and strengthen primary import demand by not only China but also its densely populated neighbours with whom its intra- and inter-industry trade in manufactures would intensify.

Further MFN trade liberalization by APEC members, as promised in the declaration following the APEC Leaders' Summit in Bogor in November 1994 and confirmed in Osaka a year later, would add even more to the growth and structural changes expected in the region and beyond over the next decade. In our analysis of that scenario, we assume that China has joined the WTO and the Uruguay Round has been

implemented by 2005, and examine the effect of all APEC economies liberalizing trade beyond their Uruguay Round commitments to the extent of a further 50% tariff cut. A key finding is that the results depend very heavily on whether agriculture is included in the reform (as demanded by the APEC food-exporting countries but contrary to what APEC's Northeast Asian members want). Specifically, the welfare gains from this regional liberalization when all goods markets are liberalized are two-thirds greater than when agriculture is excluded. (Services trade liberalization is ignored for want of reliable estimates of services protection rates.) If agriculture *is* included, this further reform by APEC economies would add one-third to the global welfare gains from the reforms under the Uruguay Round. It would also boost world trade in all products by an additional 6% (over and above the 10% boost due to the Uruguay Round plus the additional 4% boost due to China and Taiwan's WTO accession). Agricultural trade would be only 2% greater by 2005 if farm products are excluded from the APEC reform, but would be 18% greater if included. What this clearly indicates is that distortions to agricultural trade in the APEC region remain very large, and that a further reform in the region that excludes farm products will be missing a large part of the gains that remain to be reaped from trade liberalization.

ECONOMIC GROWTH AND POLICY REFORM IN THE ASIA-PACIFIC: TRADE AND WELFARE IMPLICATIONS BY 2005*

Kym Anderson, Betina Dimaranan, Tom Hertel, and Will Martin**

The past decade will go down in history as one in which regional and global economic integration took some sizable steps forward. During 1985-94 the ratio of world trade to GDP rose three times faster than in the preceding ten years and nearly twice as fast as in the 1960s, and since 1985 the flow of foreign direct investment as a share of global GDP has doubled (World Bank 1996). This internationalization is due to a considerable extent to unilateral trade and macroeconomic reforms. But those reforms themselves were stimulated by and contributed to regional integration initiatives in Europe, North America and smaller regions. Moreover, the most comprehensive of multilateral initiatives, the Uruguay Round, promises to contribute during its implementation over the next decade. Arguably the APEC process is now beginning to contribute too. While the nature and extent of the contributions to integration have varied considerably across regions, all these developments have made the national economies of the world -- and especially the Asia-Pacific -- more interdependent.

Integration possibilities are far from being exhausted, however. The Uruguay Round promises a great deal, but its implementation has only just begun and will take six to ten years to complete even if implemented on schedule. There is a great deal of scope for slippage on the way, especially with respect to the Agreement on Textiles and Clothing. Secondly, most of the economies in transition from socialism still have a long way to go in reforming their trade and trade-related policies before they can accede to the World Trade Organisation (or even to the European Union -- see Winters 1995). In Asia, China has made much progress in this respect, but is yet to be admitted to WTO. Hence Taiwan still cannot join. Thirdly, the pace of integration has been driven in part by the rapid growth and export-oriented industrialization of East Asia's developing economies. What impact would a slowdown in growth in, say,

China have on world trade and welfare? On the other hand, if governments of the Asia-Pacific can begin to deliver on their Bogor commitment to reach free trade on an MFN basis by 2010 for rich countries and 2020 for developing countries, that will lead to further integration both within the APEC region and between it and the rest of the world.

The present paper seeks to examine empirically these various possibilities for furthering the regional and global integration of national economies in the context of on-going economic growth. Their production, trade and welfare consequences are simulated using the latest forward-looking version of the global CGE model known as GTAP, described briefly in Section 1. In Section 2 the estimated effects of implementing the Uruguay Round by 2005 are presented first without and then with China and Taiwan participating as WTO members. This is to show just how much difference their accession could make to the world economy. Assuming sanity on that issue prevails and both join the WTO soon, the scenario involving their membership and full implementation of the Round is taken as the modified base case in 2005, and is compared in Section 3 with several scenarios. These examine the effects of a possible slowdown in economic growth in China, of slower reform of the Multifibre Arrangement than promised under the Uruguay Round, and of a 50 per cent MFN liberalization of trade in the APEC region (without and with agriculture). All are shown to have substantial effects on trade and welfare not only in the Asia-Pacific but also in Western Europe and elsewhere. The final section of the paper concludes by drawing out key policy implications of these empirical findings.

A slowdown of economic growth in China is shown to be very costly to the world economy, not least because it would reduce industrialization in other Asian countries. Failure to honour Uruguay Round obligations to open textile and clothing markets in OECD countries is shown also to reduce East Asia's industrialization and thereby slow its net imports of primary and other products. On the other hand, the trade reform that is likely to accompany China's WTO membership would greatly benefit the economies of China and the world. It would boost exports of manufactures and strengthen primary import demand by not only China but also its densely populated neighbours with whom its intra- and inter-industry trade in manufactures would intensify. Further MFN trade

liberalization by APEC members, as promised in the declaration following the APEC Leaders' Summit in Bogor in November 1994 and confirmed in Osaka a year later, would add even more to the growth and structural changes expected in the region and beyond over the next decade. The latter benefits are shown to depend heavily, however, on the inclusion of agriculture in the APEC reform.

1. The GTAP Model

To provide a picture of how world trade might look in a decade's time, use is made of the latest forward-looking version of the GTAP (Global Trade Analysis Project) applied general equilibrium model based in Purdue University (Hertel 1996). The GTAP model is a standard, multiregion model which is currently in use by over one hundred researchers in 30 countries on five continents. The data base builds on contributions from many of these individuals, as well as the national and international agencies in the GTAP Consortium. Perfect competition and constant returns to scale are assumed for all sectors of each economy in the version used here.

The model utilizes a sophisticated representation of consumer demands which allows for differences in both the price and income responsiveness of demand in different regions depending upon both the level of development of the region and the particular consumption patterns observed in that region. In the simulations presented below, many of the East Asian economies are projected to continue to experience extremely rapid growth rates, so that the income elasticities of demand play an important role in the model.

On the supply-side, differences in rates of factor accumulation within and between countries interact with different sectoral factor intensities to drive Rybczinski-type changes in the sectoral composition of output. The GTAP production system distinguishes sectors by their intensities in four primary factors of production: agricultural land, labor, physical capital, and human capital. Thus in a region where physical capital is accumulating rapidly, relative to other factors, we can expect the capital intensive sectors to expand at the expense of labor intensive sectors.

The GTAP framework is built on a complete set of economic accounts for 1992 for each of 30 economies/regions spanning the world. It incorporates an exhaustive description of inter-industry linkages at the 37-sector level. In addition to differences in intermediate input intensities, import intensities are also permitted to vary across uses. Since much trade is in intermediate inputs, the distinction between sales to final consumers and sales to other firms can be quite important. Lowering the cost of imported goods to consumers is quite different from lowering the cost of intermediate inputs to domestic firms which in turn may be competing with imports in the final product market.

As well, products are differentiated by place of production. The linkage between the different prices of a product is typically quite strong, but will depend on the degree of substitutability in consumption. In addition to matching up more effectively with reality, this approach has the advantage of permitting us to track bilateral trade, as opposed simply to reporting net total trade.

The standard GTAP parameters used are documented in Hertel (1996, Ch. 4), with two exceptions. First, the income elasticities of demand for farm and food products have been upgraded (see Anderson et al. 1996, Appendix). Secondly, the values for the Armington elasticities of substitution used to specify the extent to which similar products from different countries substitute for one another have been doubled, following Gehlhar's (1994) study which found that the earlier elasticities used in GTAP were too small to accurately predict -- in a backcasting exercise -- the changes in actual trade shares observed over the 1980s. Even then the current assumed Armington elasticities may be still lower than is reasonable for the long run changes to be projected below for our ever-more integrated global economy.

Since it is cumbersome to conduct projections with the full 37-sector, 30-region GTAP data base, we have aggregated up to a level which highlights sectors and countries of interest for this particular study. The regional aggregation presented in the left margin of Table 1 allows us to identify each of the main APEC economies while keeping the overall dimensions of presentations manageable. The sectoral aggregates are shown in

Table 2. A total of 13 aggregates are shown in the body of Table 2, but for brevity of presentation we somtimes use the five super-aggregate sectors listed below the table.

Table 1 reports the assumed rates of growth in factors and real GDP (from which the rates of productivity growth are derived endogenously). We utilize exogenous projections of each region's endowments of agricultural land, physical capital, human capital, the state of technology, population and the labor force. These are based on combinations of historical data and World Bank projections of the growth in population, labor force, real GDP and investment. Capital stock projections were generated by adding investment in each year and subtracting depreciation using the methodology of Nehru and Dhareshwar (1993). The human capital projections were based on projections of the growth in the stock of tertiary educated labor in each developing country (Ahuja and Filmer 1995) and historical growth rates in developed countries to provide an indication of changes in the stock of those qualified for employment as professional and technical workers. The stock of agricultural land is held constant in this study. Finally, base case estimates of non-agricultural, neutral total factor productivity (TFP) growth rates for each of the countries/regions were obtained by subtracting the growth in total factor inputs from the real, non-agricultural GDP projections. (Agricultural TFP growth rates are treated slightly differently -- see Anderson et al. 1996.)

From the estimates in Table 1 it can be seen that the structure of the world economy will change in a number of important ways over the coming decade. Firstly, given the substantial differential between the growth rates of developed and developing countries, the developing countries will constitute a considerably larger share of the global economy in 2005. Furthermore, given the particularly high rates of savings and investment in East Asia, the capital-labor ratios of these economies are expected to increase, creating supply-side pressures for changes in the composition of output in these economies (Krueger 1977; Leamer 1987). The relatively high rates of accumulation of human capital in developing economies also are likely to contribute to pressures for structural change as developing countries upgrade the skill-intensity of their product mix. Taking all these things into account and starting with the 1992 baseline, the model generates a projection of the world economy in 2005 assuming no changes to existing

trade and other policies. That base scenario is then compared with various alternative scenarios.

2. Effects of global economic growth, Uruguay Round implementation, and China's WTO accession by 2005

In order to examine the effects of implementing the Uruguay Round, Hertel et al. (1995) specify the associated commitments to reform such policies as cuts in tariffs, tariff equivalents of nontariff import restrictions, and export subsidies. Reform of the system of textile and apparel quotas is an especially important part of the Uruguay Round, so we also incorporate the elimination of these quotas under the UR Agreement on Textiles and Clothing. The nonagricultural information is obtained largely from the WTO's Integrated Data Base, and the agricultural cuts are based on work conducted at the World Bank. These modelled offers explicitly exclude protection cuts in China and Taiwan initially (since they are not yet WTO members), as we then consider separately the implications of China and hence Taiwan joining the WTO. Table 3 presents a summary of estimated protection levels prior to implementation of the Uruguay Round, and also of what they would be with the Round's full implementation and with China and Taiwan in the WTO in 2005.

The expected impacts of the Uruguay Round on international product prices, on global trade, and on country/regional export and import volumes and economic welfare are summarized in Table 4. The upper half of the table assumes China and Taiwan are kept out of the WTO over the next decade, and in particular that they are not allowed to enjoy the improved access to OECD markets for textiles and clothing that WTO members have been promised under the Round. The lower half assumes they have joined the WTO, have implemented their commitments by 2005, and have shared with other developing countries the promised acceleration in access to OECD markets for textiles and clothing.

Effects on global trade and welfare

Even without China and Taiwan participating, the Round is projected to boost global trade by 10 per cent in aggregate. Trade in all 13 product groups expands, with the biggest gainers being agriculture, textiles and clothing. Prices in international markets rise most for farm products but fall most for clothing. Developing Asian countries would enjoy by far the largest trade boost, but even OECD trade is boosted 8 per cent. Economic welfare is projected to increase virtually everywhere because of the Round; but the gains are especially large for Asia's developing countries, because of MFA reform. Welfare for the world as a whole is greater by $163 billion in this scenario. This is less than earlier-estimated gains (see, eg, the modelling studies reported in Martin and Winters 1995). The reason for the lower number has to do with the way China and Taiwan are treated: those earlier studies assume MFA quotas are eliminated for all countries including China and Taiwan, whereas in this study we assume the latters' quotas continue to expand only at the slow rates agreed previously under the MFA while they remain outside the WTO.

Should China and Taiwan be allowed to join the WTO, the Round's impact would be considerably larger depending on the level of liberalization they commit to in their accession and the date they join.[1] We have conservatively assumed China's commitments would be the same as they offered WTO members in 1995. Unacceptable as China's offer was at that time, it nonetheless involved very substantial tops-down reductions in protection rates (Bach, Martin and Stevens 1996). Assuming that each tariff is cut only when the tariff binding offered to WTO is below the applied rate, the latest offer involves a fall in the weighted average rate of protection in China from 30 per cent in 1992 to 16 per cent. This reduction would be complemented by a substantial reduction in the coverage of nontariff barriers. In this paper, we have used the reductions in the trade-weighted bilateral tariffs as documented in Bach (1996) to give us an

[1] Our results for China/Taiwan accession to the WTO hinge crucially on the timing of their entry. Most quota rents associated with the bilateral restrictions on textiles and wearing apparel are expected to grow over the period of implementation of the Round, despite expanding market access (Hertel *et al.*, 1995). However, assuming the promise is kept to abolish quotas for all other exporters at the end of the decade-long implementation, quota rents for China and Taiwan will be greatly reduced. In the analysis of China/Taiwan accession reported here, we take that into account. This contrasts with the results reported in Bach, Martin and Stevens (1995), for example, because in their study it is assumed initial quota rents are at the 2005 level predicted *in the absence of implementation of the Uruguay Round.*

indication of the impact of the offer.[2] For Taiwan, in the absence of better information we have simply assumed that its non-agricultural tariffs would be cut by 36 per cent as for other Uruguay Round participants and that its agricultural cuts would be half as deep (18 per cent). The latter assumption is consistent with the tendency for trade-weighted protection cuts in the sensitive agricultural area to be relatively modest under the Round because of 'dirty' tariffication (Hathaway and Ingco 1995).

Admission of these two economies to the WTO would accentuate the rise in international prices of agricultural products relative to light manufactures, and it would boost not only their trade but also that of many other countries, adding substantially to global world trade growth from the Round (a 14 instead of 10 per cent boost). But notice that the trade boost to other Asian developing countries from the Round would be slightly lessened by China's accession. This is because of the extreme assumption made above, namely, that if China and Taiwan were kept out of the WTO they would enjoy *none* of the benefits of MFA reform. A more realistic assumption might be that they would enjoy some but not a full share of the benefits, in which case the difference between the two scenarios in Table 4 would be smaller.

That same assumption affects the welfare results in Table 4. Globally, the inclusion of China and Taiwan boosts the estimated welfare gain from the Round by 40 per cent, to $230 billion. The small loss to Hong Kong from the Round without China participating is because of China's assumed exclusion from textile/clothing trade growth, an effect that is reversed when China joins. Some of East Asia's other developing countries, on the other hand, have their estimated gains from the Round slightly reduced when the greater access to OECD markets for textiles have to be shared with a supplier as large as China. Even so, they remain the largest gainers in terms of percentage boosts to national economic welfare. In absolute dollar terms it is Western Europe that is projected to gain the most from the Round. That gain is as much due to its liberalization of textile and clothing imports as to its agricultural reform.

[2] This specification omits two important, but partially offsetting, features of the situation. The neglect of the current system of tariff exemptions tends to overstate the impact. The omission of NTB abolition tends to underestimate the effect. Dealing with the tariff exemptions will clearly change the specific results, but does not appear to change the broad conclusions (Bach, Martin, and Stevens 1996).

It needs to be kept in mind that these welfare (and probably trade) results are very much lower-bound estimates, for several reasons. One is that the GTAP model assumes constant returns to scale and perfect competition in all sectors. Changing that to allow for increasing returns to scale and less than perfect competition in some sectors can raise very substantially the estimated impacts of liberalization.[3] Secondly, GTAP is not a dynamic model with endogenous growth built in. In so far as liberalization boosts growth, so the effects reported would be underestimated. Specifically, with endogenous growth it would be most unlikely that ASEAN countries would be projected to lose from China's accession to WTO. And the third and related qualification is that there are many positive effects of the Round that are not modelled here. Most notable but least difficult to quantify of these is the strengthening of the multilateral trading system itself and the boost that has given to investor confidence. If these considerations were able to be included, the projected net national benefits from the Round may well be several orders of magnitude larger.

Effects on the sectoral composition of production and trade

Table 5 reports the projected changes in the composition of production in the world's economies over the projection period 1992-2005. (ASEAN-4 includes Indonesia, Malaysia, Philippines and Thailand; NIEs include Hong Kong, South Korea, Singapore and Taiwan.) Entries in each row refer to the percentage change in the relative importance of each sector in the real GDP of each region between 1992 and 2005; the base case assumes no Uruguay Round implementation, case E2 assumes full UR implementation by current WTO members, and case E3 assumes that China and Taiwan also participate. From the first column, for example, we see that the base case projection implies massive structural change in China over the coming decade. Agriculture's share of GDP is projected to decline by 42 per cent, in favour of growth in the relative importance of manufacturing and services. Similar declines in the relative importance of primary sectors are projected for the other East Asian developing countries. For the OECD countries, the primary sectors are already relatively small but they still decline a little with the economic growth assumed over that 13-year period.

[3] See, for example, the various modelling papers in Martin and Winters (1995) and the survey by Francois, McDonald and Nordstrom (1996).

The Uruguay Round is projected to do little to the structure of production in China if China stays out of the WTO, but it accelerates the move away from primary production elsewhere in East Asia (second set of rows in Table 5). In ASEAN-4 light manufacturing booms while in the NIEs and Japan the growth is concentrated in more capital-intensive manufactures. UR reforms help the farm sectors of Australasia and North America while reducing agriculture's share of Western European economies, and in all three regions services and/or capital-intensive manufacturing grow faster because of the Round.

Allowing China and Taiwan to join the WTO and thereby enjoy sharing greater access to OECD markets, especially for textiles and clothing, in return for liberalizing their own trade regimes, would result in even faster relative decline for China's primary sectors (third set of rows in Table 5). It also would ensure that resources released from agriculture to the non-primary sectors were concentrated more in light manufactures, where China has its stongest comparative advantage. That would mean, though, that fewer of the resources released from primary sectors in ASEAN-4 would go into textiles and clothing. It would also mean an even larger contraction in shares of the latter sectors in OECD countries.

The impact on sectoral trade balances of full implementation of the Round, including participation by China and Taiwan, is summarized in Table 6. It shows for China, for example, that net exports of light manufactures would be almost $60 billion greater (in 1992 constant dollars) in 2005 than in 1992, whereas net imports of primary products and other manufactures would be $24 billion and $33 billion greater, respectively. Similar changes occur for ASEAN-4 and the NIEs. We have held each country's trade balance constant (by assumption) in these projections, which is why the column sums are all zero. Japan and Western Europe increase their net imports of primary products while Australasia and North America do the opposite thanks to the agricultural reforms of the Round. For all the OECD country groups except Japan, net imports of light manufactures rise and the big gainers are net exports of other manufactures and services. Services export growth is especially large for North America and Western Europe. All these changes are what one would expect from the theory of changing comparative

advantage and form past Asian growth experience, and together with Table 5 they suggest the Uruguay Round is helping to reallocate global production towards its most efficient locations.

Bilateral trades also are projected to change substantially between 1992 and 2005, partly because of different rates of economic growth but additionally if the Round is implemented. Appendix Table A1 provides the details, but for illustrative purposes consider just the trade between Western Europe and East Asia (see Anderson 1996 for more details). Not surprisingly, given the assumed high rates of growth of East Asia's developing economies and their trade boost from the Round, they are the countries enjoying the largest increases in Western Europe's export shares. Even without the Round their share of Western Europe's exports to non-European regions is estimated to rise from 15 to 21 per cent between 1992 and 2005. With the Round (and China/Taiwan accession to WTO) that share rises to 24 per cent. While this is to a small extent at the expense of Japan's and North America's shares, the APEC region as a whole nonetheless becomes more important to Western Europe's extra-regional exports: its share rises from 54 per cent in 1992 to 56 per cent in 2005 if the Round were not implemented and to 59 per cent if it is and China participates. In proportional terms, it is China's share that rises most, followed by ASEAN's. The Uruguay Round is projected to add about as much of an increase to Western Europe's trade shares with East Asian developing countries as does their economic growth over the 1992-2005 period in the absence of the Round.

By contrast, Western Europe's shares of East Asia's and APEC's exports are projected to continue declining as the relative importance of the region in world trade grows. For East Asia the share with Western Europe drops from 20.8 to 18.0 per cent between 1992 and 2002 if the Round is not implemented; but it drops less, to 19.3 per cent, if the Round is fully implemented. For APEC as a whole also the decline is less in the case where the Round is implemented (Table 10). Their trade growth is slower to Western Europe mainly because of the continuing very rapid growth of imports in the Asian region itself. East Asia's developing countries are projected to increase the volume of their imports by 44 per cent between 1992 and 2005 without the Round, or by 55 per cent with the Round being implemented. Thus the decrease in Europe's share between

1992 and 2005 is projected to occur despite greater openness following the Round, and would fall more without UR implementation.

3. Effects of altering some assumptions and of further trade reform in APEC

The projections presented above depend of course on myriad assumptions, some of which may have a significant effect on the results. Two in particular are worth scrutinizing. The first is the high rate of economic growth assumed for China; the second is the full implementation of the commitment to reform the Multifibre Arrangement. The trade effects of relaxing each of these assumptions are considered in turn. Then the impact of further MFN trade liberalization by APEC countries is examined, both without and then with agriculture included. The estimated welfare consequences of each of these four alternative scenarios are then compared with those for the Uruguay Round and for China and Taiwan's accession to the WTO.

Trade effects of slower GDP growth in China

In the cases presented above, China's real GDP is assumed to grow from 1992 to 2005 at 7.8 per cent pa in total and at 6.9 per cent on a per capita basis. While more than that rate has been sustained during the past 15 years, it is of interest to see what difference it makes if that transforming economy were to slow down. We therefore re-ran the simulation with the Round being implemented and China and Taiwan joining the WTO but with slower total factor productivity growth in non-farm sectors such that real GDP growth was slower by one-fifth or 1.5 percentage points (6.3 instead of 7.8 per cent pa), assuming other countries' growth rates are unchanged. Since there is the possibility that other East Asian economies would slow also, the effects discussed below should be considered lower-bound estimates.

A slowdown in China's industrialization of even just that magnitude means less inter-sectoral adjustment away from primary production and hence a non-trivial decrease in international prices for and trade in farm goods and to some extent other primary products (see first pair of columns in Table 7). China's trade would be one-quarter less

and global trade would shrink by 2 per cent, with ASEAN-4 being the only region shown in Table 8 to not suffer a decline in trade (because they are able to supply some of the shortfall in exports of light manufactures from China). There is a considerable reduction in each region's exports to and imports from China, and only a partial offset in terms of Europe's increased trade with other East Asian economies. For example, Western Europe's exports to China would be lower by $13 billion pa in 2005, and its imports lower by $20 billion, if China's economic growth rate slowed by one-fifth (Appendix Table A2).

Trade effects of incomplete reform of the MFA

Elimination of the bilateral quotas associated with the MFA under the Uruguay Round is designed to occur gradually. The first step involves increases in the growth rates of MFA quotas under the Agreement on Textiles and Clothing during the ten-year transition period to 2005, followed by a progressive integration of textile and clothing items into the GATT system, at which point the quotas are abolished altogether. The tariff lines to be integrated under GATT are selected by the importing countries, and it appears that few commodities subject to binding quotas will be integrated until near the end of the transition period. Therefore the real liberalization of trade in these products is heavily loaded towards the end of the period (2005).

Based on earlier analysis (Hertel et al. 1995), it appears the degree of quota acceleration committed to under the Agreement on Textiles and Clothing is not going to be sufficient to reduce the quota rents for most of the bilateral flows. Therefore, abolition of the quotas is likely to remain a contentious issue, even though the Agreement cannot be extended; and developing countries are sure to resist any artifice that would continue such protection.

Failure to fully eliminate the trade-restricting effects of the MFA would substantially reduce export opportunities for high-performing East Asian economies. We explore the quantitative implications of this possibility in a scenario that permits the MFA quotas to "snap-back" to the same level of restrictiveness observed in our initial (1992) data set. In other words, we conduct a simulation in which the bilateral quotas on textiles and

clothing are reintroduced and tightened to the point where they generate the same quota rent per unit of sales as in 1992. While this may seem extreme in light of the quota acceleration built into the Agreement on Textiles and Clothing, such is not the case. Hertel, et al. (1995) find that even with the ATC growth rates in place, quota rents are expected to *increase* over the period 1992-2005 for 37 of the 44 bilateral flows examined. Given that finding, our MFA snapback scenario may be more modest than the true consequences of failing to abolish these quotas in 2005.

Table 7 shows that such a snapback would raise the international price of light manufactures and reduce global trade in them by 11 per cent (and in agricultural trade by 2 per cent because of less exports of cotton and wool to East Asia). Total trade of most regions but especially China and ASEAN-4 shrinks, with overall global trade being reduced by 2 per cent (Table 8). In terms of bilateral trades, the effect of such an MFA snapback would be to reduce the share of Western Europe's exports going to East Asia by the same extent as in the China slowdown scenario, but it would shrink the real value of its two-way trade with East Asia by twice as much, and with all APEC by four times as much, compared with the slower growth in China scenario (Appendix Table A2).

Trade effects of additional APEC MFN liberalization

APEC Heads of Governments agreed in November 1994 at Bogor to eliminate, on an MFN basis, all trade barriers in the region by 2010 in the case of advanced economies and by 2020 in the case of developing countries. The agreement was reaffirmed a year later in Osaka. If that reform were to be smoothly phased in, then by 2005 advanced countries would be two-thirds reformed and developing countries two-fifths there. Assuming a delayed start by the former, one might expect the region on average to be half way along in a decade's time. To examine the effects of such a scenario, we explored the impact of a further halving of the barriers to merchandise trade that would otherwise have remained in APEC countries in 2005 after the Uruguay Round's implementation (see Table 3 above).[4] This was done first with agricultural policies exempted and then with them liberalized as well.

[4] Without reliable estimates of the barriers to services trade (which are considered likely to be lowered very little under the Uruguay Round -- see Martin and Winters 1995), we only liberalized goods trade.

Under both APEC liberalization scenarios trade would be higher in non-farm primary products by 3 per cent, in light manufactures by 11 per cent, in other manufactures by 6 per cent, and in services by 3 per cent. If agricultural policies are not reformed then trade in farm products only rises by 2 per cent, but if agricultural protection rates were to be halved also, farm trade would be 18 per cent greater in 2005 than without this additional APEC initiative (Table 7). Global trade would be boosted by 5 or 6 per cent (including agriculture makes it one-fifth higher), but notice from Table 8 that most of that trade growth would be confined to the APEC region. Indeed the share of APEC countries' trade that is intra-APEC is 1.5 percentage points greater following APEC liberalization; and among just the East Asian economies their intra-East Asian trade would rise by 1.3 percentage points (Table 10). This concentration of the trade gains within APEC is not surprising, and helps explain why most APEC governments are willing to liberalize on an MFN basis: the strong complementarities between trade patterns within the APEC region, and the bias toward intra-regional trade because of relative proximity and cultural affinities, ensure that most of the benefits from market opening go to other countries of the region even without the liberalization being preferential. Even so, one of the great virtues of the proposal to liberalize on an MFN basis is that the APEC reforms also would boost extra-regional trade. For example, Western Europe's exports to APEC would be about $50 billion greater and its imports from the APEC region would be $30 billion more in 2005 (Appendix Table A2).

Comparing welfare effects in these different scenarios

How do these alternative scenarios compare in terms of their estimated welfare effects? Table 9 summarizes those results. It needs to be recalled that these are very much lower-bound estimates, not least because imperfect competition, economies of scale, dynamic effects, and benefits from the strengthening of the global trading system are not incorporated. That is less of a problem when attention is focused on the

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For an attempt to also include services trade reform and trade facilitation measures in modelling APEC reform, see Dee, Geisler and Watts (1996). See also McKibbin (1996) for a dynamic empirical study of APEC reform. Lewis, Robinson and Wang (1995) also model APEC liberalization beyond the Uruguay Round. On the complexities of modelling multilateral trade liberalization in services generally, see Brown, Deardorff and Stern (1995).

relative orders of magnitudes as between scenarios though. Globally, the gains from the Uruguay Round are estimated to be $163 billion per year if China and Taiwan are not admitted to the WTO during the next decade.[5] The reforms likely to accompany the accession of those two to the WTO is estimated to be a further $67 billion (nearly half of it going to the new members themselves). The size of this additional gain should not be surprising given the huge contribution of the Agreement on Textiles and Clothing to the overall welfare benefits of the Uruguay Round (Hertel et al. 1995), and of the weight of China and Taiwan in global trade in those goods.

Most of those global gains from the Uruguay Round would be lost if, because of slower factor productivity growth there, China's economy were to grow at only four-fifths of the pace assumed in the base case. That highlights the crucialness of facilitating -- or at least not frustrating -- economic growth processes in the region. A failure of OECD countries to deliver on time their MFA reform commitments has a more modest impact, but still would reduce global welfare by a sizable $44 billion per year. That is, not delivering fully on just this one element of the Uruguay Round reduces the expected benefits of the Round by one-quarter if China stays out of the WTO or at least one-fifth if it is admitted. On the other hand, going an additional half way towards free trade in the APEC region would by 2005 boost world welfare by $81 billion per year -- unless the agricultural protectionist interests succeed in having farm trade reform exempted, in which case the estimated gain would be reduced by a hefty $32 billion per year.

Of course the gains or losses are not spread evenly. China gains almost as much as the ASEAN-4 and twice as much as the NIEs from the Uruguay Round, but only if it joined the WTO. This is because the vast majority of China's estimated gain comes from MFA reform, and that it cannot achieve unilaterally. Both other East Asians and Western Europe gain considerably more (half as much again) from the Round if China joins, but for different reasons. East Asia's extra gain is mainly because of inter-and intra-industry trade growth with China and Taiwan, whereas for Western Europe a

[5] This is somewhat lower than earlier estimates by Hertel et al. (1995) and others, because those earlier studies allowed China and Taiwan to enjoy similar increases in market access for textiles and clothing

large part of the extra welfare gain comes from liberalization of its own barriers to textile and clothing imports from China and Taiwan.

Turning to the middle columns of Table 9, the welfare foregone from a slowdown in China's productivity growth can be seen to fall mainly on China. Nonetheless, the ripple effects on the more advanced Asian and European economies are significant. A slowdown on MFA reform, by contrast, has quite mixed effects on national welfare as estimated by this comparative static model. Western Europe would be worse off by $30 billion per year because it would be liberalizing less than promised under the Round; Japan would be slightly better off because the price of its textile and clothing imports would be lower; and China and the NIEs also are projected to be slightly better off, in their case because the rents they would continue to receive from preferential access to the protected EU and US markets would more than offset the effects of a lower volume of trade. The ASEAN-4 producers, with a smaller proportion of their sales so protected, are however expected to lose considerably from any MFA reform delays. Remember, though, that the slight gains estimated for the other East Asians are based on the assumtion that GDP growth does not slow with the slowdown in MFA reform, whereas in reality growth would be slower and those countries most likely would be net losers too.

Finally, APEC liberalization, as with most trade liberalizations, benefits mostly the countries undertaking the reform. But because there are strong complementarities between APEC's resource-rich and resource-poor economies, and much of their remaining protectionism restricts the exploitation of those complementarities, it is not surprising that the gains from regional liberalization are especially concentrated within the region. Nor is it surprising that they are much less when agricultural reform is exempted, given the high levels of agricultural prootection in Northeast Asia. What is surprising is that APEC liberalization does not seem to benefit NAFTA (a loss in fact is reported in Table 9, albeit a very small one as a proportion of NAFTA's GDP). According to our decomposition of the change in welfare, one reason for that result is that while NAFTA is estimated to gain about $18 billion from improved resource

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as WTO members. Experience to date suggests that is not going to happen while China remains outside the WTO.

allocation following the APEC liberalization, it loses almost $22 billion from a decline in its terms of trade (mostly because of lower prices for its exports). Had we assumed slightly higher Armington elasticities of substitution between products of different national origins, the negative terms of trade effect would have been sufficiently smaller to ensure an estimated gain for North America. As well, the way North American economies are included in this version of the GTAP model allows is no way for them to gain from any further liberalization in intra-NAFTA trade. Moreover, that estimated loss would undoubtedly become a gain if services trade liberalization had been included in our APEC liberalization experiment, given the strengthening comparative advantage of North America in services evident in Table 6.

4. Conclusions

The paper began by stressing several strategic issues affecting trade and welfare prospects in the Asia-Pacific over the next decade. One is the accession to the WTO of China and hence Taiwan. Another is the extent to which the Round commitments are implemented on time, particularly with respect to the Agreement on Textiles and Clothing. A third is the extent to which the East Asian economies, and especially China, can continue their rapid growth through export-oriented industrialization. And a fourth is the challenge of delivering further MFN trade liberalization in the region through the APEC process.

Each of these concerns has been addressed in the empirical simulations reported above, all in the context of on-going global economic growth. The results suggest WTO accession for China and thereby an extending of the country coverage of MFA reform would boost the welfare gains from the Uruguay Round by nearly 40 per cent. However, even though it would increase only slightly the pressure for structural adjustment away from light manufactures production in OECD countries (see Table 5), that pressure would be concentrated in the clothing sub-sector. OECD countries may well try to use that as an excuse for not fully implementing their promised reform of the MFA by 2005 -- the costs of which are shown above to be very substantial.

Several other implications can be drawn from the results, all of which are relevant to the APEC Heads of Government meeting in Subic Bay in November and the WTO Ministerial meeting in Singapore in December 1996. First, the importance of fast-tracking the WTO applications for the former centrally planned economies and especially China is clear. Getting them to adopt trade policy regimes consistent with GATT, GATS and TRIPs will help boost their economies and hence global welfare. Second, strengthening the multilateral trading system's capacity to facilitate the continuation of rapid economic growth in East Asia and its positive spillover effects to other regions also is important. Specifically, that might involve keeping issues peripheral to trade (eg, labour standards) off the WTO's agenda, given its potential for damaging the trade growth of developing countries. And thirdly, the idea of setting target dates to achieve certain degrees of trade reform (as the EU did for 1992 and now the APEC Heads of Government have done for 2010 and 2020) might be contemplated for the next round of multilateral trade negotiations, as a way of focusing attention on the still very considerable gains that remain to be exploited from trade liberalization.

Many other issues could have been addressed with the projections results generated for this paper. We conclude with just two examples. One is the concern about how China will be fed and fueled into the next century if its industrialization continues. The above results, on inspection, suggest that can easily be accommodated through trade, and without very much decline in China's self-sufficiency ratios for food and fuels or decline in China's terms of trade.[6] Another is the question of whether the world is becoming more regionalized in its trade. The answer depends on the criterion to be used, the simplest being the share of a region's total trade that is intra-regional. For the APEC region, that share is projected to rise 3.5 percentage points between 1992 and 2005 without the Round, or slightly less (3.2 percentage points) assuming full Uruguay Round implementation (Table 10). A further APEC 50 per cent liberalization would raise it another 1.5 percentage points, to almost 70 per cent (the same as Western Europe's currently -- see Anderson 1996). A more appropriate criterion, though, might be the share of GDP traded extra-regionally, because that

[6] See Anderson and Peng (1996) for a recent empirical analysis of this issue.

would take into account greater openness also. By that criterion the APEC region is projected to become more rather than less outward oriented [check].

Finally, recall that these results in several respects are lower-bound estimates on the gains from trade liberalization. In revising this paper, the sensitivity of the results to raising the Armington elasticities will be explored, as will the effect of liberalizations on raising rates of total factor productivity growth.

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Table 1: Assumptions used in the projections: cumulative percentage growth rates, 1992-2005 (annual rate of change in parentheses)

Regions	Population (1)	Labor Force (2)	Capital Stock (3)	Human Capital (4)	Real GDP (5)
China	12 (0.9)	16 (1.1)	303 (11.3)	57 (3.5)	167 (7.8)
Indonesia	19 (1.3)	30 (2.0)	152 (7.4)	242 (9.9)	129 (6.6)
Philippines	33 (2.2)	40 (2.6)	92 (5.1)	109 (5.8)	76 (4.4)
Thailand	18 (1.3)	26 (1.8)	265 (10.5)	150 (7.3)	173 (8.0)
Malaysia	28 (1.9)	41 (2.7)	214 (9.2)	257 (10.3)	174 (8.1)
Korea	11 (0.8)	12 (0.9)	209 (9.1)	119 (6.2)	131 (6.7)
Taiwan	11 (0.8)	18 (1.3)	211 (9.1)	119 (6.2)	115 (6.1)
Hong Kong/Singapore	11 (0.8)	13 (0.9)	158 (7.6)	83 (4.8)	117 (6.1)
Japan	3 (0.2)	-2 (-0.2)	69 (4.1)	81 (4.7)	44 (2.8)
Australia/New Zealand	15 (1.1)	16 (1.1)	46 (3.0)	155 (7.5)	54 (3.4)
NAFTA	15 (1.1)	18 (1.3)	56 (3.5)	95 (5.3)	40 (2.6)
Western Europe	2 (0.2)	1 (0.1)	36 (2.4)	217 (9.3)	37 (2.5)
Former Soviet Union	6 (0.4)	8 (0.6)	10 (0.7)	10 (0.7)	10 (0.7)
India	24 (1.7)	31 (2.1)	98 (5.4)	107 (5.6)	94 (5.2)
Rest of the World	32 (2.2)	28 (2.6)	50 (3.2)	133 (6.7)	57 (3.5)

Source: Anderson et al.'s (1996) modifications of World Bank projections.

Table 4: Impact of the Uruguay Round (without and then with China/Taiwan accession to WTO) on international prices, trade volumes, and welfare (equivalent variations in income), 2005

(percentage changes)

(a) Without China and Taiwan in the WTO

	World Trade			Reg.Trade Volume		Regional Welfare	
Commodity	Price	Volume	Region	Exports	Imports	% change	US $
							(1992 bill.)
Rice	2.1	147	China	2	2	0.2	2.1
Wheat	5.2	8	Indonesia	38	30	4.5	11.1
Crsgrns	2.3	32	Philippines	28	19	1.8	1.4
OthCrops	2.5	13	Thailand	23	18	2.8	6.5
LstkProd	4.1	25	Malaysia	22	18	7.2	10.4
ProcFood	-0.4	53	R. of Korea	23	20	1.7	9.5
NatRes	0.7	0	Taiwan, China	3	4	0.9	3.5
Textiles	-2.7	29	HK/Singapore	2	1	-0.3	-0.5
WearApp	-10.3	80	Japan	8	9	0.5	19.9
LightMnfc	0.6	6	Australia/NZ	8	8	0.4	1.9
TMEq	0.5	6	North America	7	8	0.4	31.8
HeavyMnfc	0.6	7	Western Europe	6	8	0.4	38.6
Services	0.7	4	Former Sov. Union	1	1	0.0	-0.2
TOTAL	0.0	10	India	72	54	1.5	5.9
			Rest of the World	17	15	0.7	21.1
			WORLD	10	10		163.0

(b) With China and Taiwan in the WTO

	World Trade			RegTrade Volume		Regional Welfare	
Commodity	Price	Volume	Region	Exports	Imports	% change	US $
							(1992 bill.)
Rice	2.5	147	China	61	47	3.0	26.6
Wheat	5.6	7	Indonesia	33	24	3.7	9.1
Crsgrns	2.7	33	Philippines	26	17	1.7	1.3
OthCrops	2.9	16	Thailand	21	18	3.2	7.4
LstkProd	4.4	38	Malaysia	20	16	6.6	9.5
ProcFood	-0.1	57	R. of Korea	24	22	2.1	11.9
NatRes	1.2	1	Taiwan, China	9	11	1.3	5.0
Textiles	-4.4	45	HK/Singapore	3	4	3.0	5.6
WearApp	-13.9	127	Japan	10	12	0.6	27.7
LightMnfc	0.8	11	Australia/NZ	8	8	0.5	2.1
TMEq	0.9	8	North America	8	10	0.5	42.2
HeavyMnfc	1.0	8	Western Europe	8	10	0.6	57.0
Services	1.1	7	Former Sov. Union	3	3	0.0	0.2
TOTAL	0.0	14	India	73	53	1.7	6.6
			Rest of the World	17	15	0.5	17.5
			WORLD	14	14		229.6

Source: Authors' model results.

Table 6. Change in Trade Balance resulting from the Uruguay Round, by Commodity and by Region 1992-2005, in billions of $US.

	China	ASEAN-4	NIEs	Japan	Aus/NZ	NAFTA	WEurope
Agriculture	-13.3	-4.8	-8.4	-12.3	3.1	23.7	-7.2
Other Primary	-10.9	10.4	16.8	-13.4	1.9	3.8	-6.8
Light Manufactures	58.6	40.9	27.7	2.9	-3.8	-70.2	-80.3
Heavy Manufactures	-32.9	-37.5	-33.2	17.0	-3.1	15.3	44.1
Services	-1.5	-9.0	-2.9	5.9	1.9	27.4	50.2

Source: Authors' model results

Table 9: Annual welfare effects (equivalent variations in income) of various scenarios, 2005

(US$ 1992 billion)

	UR without China	China/Taiwan WTOaccession	China slowdown	MFA snapback	APEC non-agric.	APEC all goods
China	2	25	-188	6	4	6
ASEAN-4	29	-2	1	-7	0	2
NIEs	13	10	-5	4	10	16
Japan	20	8	-4	2	33	54
Australia/NZ	2	0	-1	0	0	1
North America	32	10	-4	-28	-6	-4
Western Europe	39	18	-4	-29	8	6
Rest of World	27	-3	-3	8	0	0
WORLD	**163**	**67**	**-208**	**-44**	**49**	**81**

Source: Authors' model results.

Table 10: Impact of economic growth and Uruguay Round implementation on intra-regional shares of East Asian and APEC trade, 1992 to 2005

(per cent)

	Share of exports to:	
Exports from:	East Asia	APEC Total
EAST ASIA		
1992	40.1	
2005 without UR	46.0	
2005 (with UR incl. Ch/Ta)	46.5	
2005 (also with APEC lib)	47.8	
APEC Total		
1992		64.3
2005 without UR		67.8
2005 (with UR incl. Ch/Ta)		67.5
2005 (also with APEC lib)		69.0

Source: Authors' model results.