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Computational Analysis of Multilateral Trade Liberalization in the Uruguay Round and Doha Development Round

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Abstract

We have used the Michigan Model of World Production and Trade to simulate the economic effects of the Uruguay Round of multilateral trade negotiations completed in 1993-94 on the major industrialized and developing countries/regions. We estimate that the Uruguay Round negotiations increased global economic welfare by $73.0 billion. The developed countries overall have an estimated welfare gain of $53.8 billion, and the developing countries an estimated welfare increase of $19.2 billion.

We have also simulated the effects of assumed 33 percent reductions in trade barriers in the ongoing Doha Development Round. There is an estimated increase in global welfare of $574.0 billion. There is a global welfare decline of $3.1 billion from agricultural liberalization due primarily to the assumed reductions in export subsidies. There are global welfare gains of $163.4 billion from reductions in manufactures tariffs and $413.7 billion from reductions in services barriers. All of the countries/regions covered in the Michigan Model show overall welfare increases, with the largest absolute gains going to the developed countries.

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I. Introduction

In this chapter, we analyze the trade liberalization provisions in the Uruguay Round and the prospective trade liberalization in the ongoing Doha Development Round, using the Michigan Model of World Production and Trade. The Michigan Model is a computable general equilibrium (CGE) simulation model designed to assess the potential economic effects of trade liberalization. We present an overview of the Michigan Model in Section II, and the computational results of the analysis of the trade negotiations in the Uruguay Round and the Doha Development Round in Sections III and IV. Conclusions and implications are discussed in Section V.

II. Overview of the Michigan CGE Model

The distinguishing feature of the Michigan Model is that it incorporates some aspects of the New Trade Theory, including increasing returns to scale, monopolistic competition, and product heterogeneity. A complete description of the formal structure and equations of the model can be found on line at www.spp.umich.edu/rsie/model/.

The version of the model that we will use consists of 20 countries/regions (plus rest-of-world) and 18 production sectors. The country/region and sectoral coverage are indicated in the tables noted below. Agriculture is modeled as perfectly competitive and all other sectors as monopolistically competitive with free entry and exit of firms. The model is implemented using GEMPACK software, as described in Harrison and Pearson (1996).

Needless to say, the data needs of the Michigan model are immense. The main data source is "The GTAP-4 Database" of the Purdue University Center for Global Trade Analysis Project (McDougall et al., 1998). The reference year for this database is 1995. We have extracted the following data, aggregated to our sectors and regions, from this source:

1. Bilateral trade flows among 20 countries/regions, decomposed into 18 sectors. Trade with the rest-of-world (ROW) is included to close the model.

1. Input-output tables for the 20 countries/regions, excluding ROW

2. Components of final demand along with sectoral contributions for the 20 countries/regions, excluding ROW

3. Gross value of output and value added at the sectoral level for the 20 countries/regions, excluding ROW

4. Bilateral import tariffs by sector among the 20 countries/regions

5. Elasticity of substitution between varieties in demand

6. Bilateral export-tariff equivalents among the 20 countries/regions, decomposed into 18 sectors

The monopolistically competitive market structure in the nonagricultural sectors of the model imposes an additional data requirement of the number of firms at the sectoral level. These data have been drawn from the United Nations, *International Yearbook of Industrial Statistics, 1998*.[1] We also need estimates of sectoral employment for the countries/regions of the model. These data come from: UNIDO, 1995, *International Yearbook of Industrial Statistics*, and the World Bank, 1997, *World Development Report*. The employment data have been aggregated according to our sectoral/regional aggregation to obtain sectoral estimates of workers employed in manufactures. The *World Development Report* was used to obtain data for the other sectors.

We have projected the GTAP-4 1995 database to the year 2005 by extrapolating the labor availability in different countries/regions by an average weighted growth rate of 1.2 per cent per annum. This figure was computed from the growth-rate forecasts for the period 1997-2010

[1] It should be noted that the above source does not provide number-of-firms data for all countries. We have

provided for various countries in Table 2.3 of the World Bank's 1999 *World Development Indicators*. All other major variables have been projected, using an average weighted growth rate of GDP of 2.5 per cent per annum, for all of the countries/regions of our model during the period 1990-1997, as per Table 11 of the 1989/99 *World Development Report*.[2]

III. Computational Scenarios of Uruguay Round Liberalization

The projected database provides us with an approximate picture of what the world could be expected to look like in 2005 if the Uruguay Round (UR) negotiations had not occurred. The UR reductions in trade barriers were implemented beginning in 1995 and will be completed by 2005. Accordingly, we have analyzed the impact of the UR-induced changes that are expected to occur over the course of the 10-year implementation period as a consequence of the negotiated reductions in tariffs and NTBs.[3] The scaled-up database for 2005 is then readjusted to mimic the world as it might look in the post-UR implementation. In Section IV following, we will report on some liberalization scenarios for the ongoing WTO (Doha) negotiating round, involving possible reductions in tariffs on agricultural products and manufactures and reductions of barriers to services trade.

In this section, we report on the following three scenarios:[4]

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used the number-of-firms data for similar countries in these cases.

[2] See Hertel and Martin (1999) and Hertel (2000) for a more elaborate and detailed procedure for calculating year 2005 projections. See also our discussion below on the 2005 projections.

[3] It should be noted that we are not considering the effects of the Agreement on Trade Related Intellectual Property Rights (TRIPS) and the other agreements on rules and procedures that were encompassed in the Uruguay Round negotiations.

[4] Agricultural liberalization in the Uruguay Round negotiations was presumably to be as follows: agricultural import tariffs were to be reduced by 20 percent for the industrialized countries and by 13 percent for the developing countries; agricultural export subsidies were to be reduced by 36 percent for the industrialized countries and by 24 percent for the developing countries; and agricultural production subsidies were to be reduced by 20 percent for the industrialized countries and by 14 percent for the developing countries. However, as noted in Francois (2001b, p. 11): "Basically, in agriculture, we are in a world that allows scope for great policy discretion and uncertainty as a result of the loose commitments made." What this means is that many countries introduced quantitative restrictions on imports in the form of tariff-rate quotas. There is also evidence of considerable leeway in the choice of the reference period from which to measure reductions in export subsidies. Furthermore, the disciplines on domestic subsidies were weakened by changes in the definition of the Aggregate Measure of Support. As a consequence, relatively little agricultural liberalization

UR-1 *The Agreement on Textiles and Clothing (ATC) is analyzed by simulating the effects of the phase-out of the Multifiber Arrangement (MFA) under the Uruguay-Round (UR) Agreement. This is done by assuming complete elimination of the MFA export-tax equivalents on textiles and wearing apparel for the developing countries/regions subject to the MFA and other quotas imposed on their exports to the industrialized countries.*

UR-2 *All the countries/regions in the model reduce their bilateral import tariffs as per the UR Agreement on manufactures.*[5]

UR-3 *This combines* ***UR-1*** *and* ***UR-2****.*

Computational Results[6]

Table 1 provides aggregate, or economy-wide, results from the scenarios listed above for the countries/regions that have been modeled. Disaggregated sectoral results for the **UR-3** scenario for the United States and for India are reported for illustrative purposes in tables 2-3.

To help the reader interpret the results, it is useful first to review the features of the model that serve to identify the various economic effects that are being captured in the different scenarios. Although the model includes the aforementioned features of the New Trade Theory, it remains the case that markets respond to trade liberalization in much the same way that they would with perfect competition. That is, when tariffs or other trade barriers are reduced in a sector, domestic buyers (both final and intermediate) substitute toward imports and the domestic competing industry contracts production while foreign exporters expand. With multilateral liberalization reducing tariffs and other trade barriers simultaneously in most sectors and countries, each country's industries share in both of these effects, expanding or contracting depending primarily on whether their protection is reduced more or less than in other sectors and countries. At the same time, countries with larger average tariff reductions than their trading

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was accomplished in the Uruguay Round negotiations. In the absence of detailed information on the various agricultural policy changes that have been made, we have chosen therefore not to include agricultural liberalization in the Uruguay Round computational scenarios.

[5] See Francois and Strutt (1999) for details on the post-UR tariff rates.

[6] There have been a substantial number of CGE modeling studies of the Uruguay Round that are summarized and critiqued in Francois, McDonald, and Nordstrom (1996) and Francois (2001a).

partners tend to experience a real depreciation of their currencies in order to maintain a constant trade balance, so that all countries therefore experience mixtures of both expanding and contracting sectors.

Worldwide, these changes tend to cause increased international demand for all sectors, with world prices rising most for those sectors where trade barriers fall the most. This in turn causes changes in countries' terms of trade that can be positive or negative. Those countries that are net exporters of goods with the greatest degree of import-tariff liberalization will experience increases in their terms of trade as the world prices of their exports rise relative to their imports. The reverse occurs for net exporters in industries where liberalization is slight -- perhaps because it already happened in previous trade rounds.

The effects on the economic welfare of countries arise from a mixture of these terms-of-trade effects, together with the standard efficiency gains from trade and also from additional effects due to elements of the New Trade Theory, the latter of which are mostly, but not all, beneficial. [7] Thus, we expect on average that the world will gain from multilateral liberalization, as resources are reallocated to those sectors in each country where there is a comparative advantage. In the absence of terms-of-trade effects, these efficiency gains should raise national welfare measured by the equivalent variation for every country, although some factor owners within a country may lose, as will be noted below. However, it is possible for a particular country whose net imports are concentrated in sectors with the greatest liberalization to lose overall, if the worsening of its terms of trade swamps these efficiency gains.

On the other hand, although the New Trade Theory is perhaps best known for introducing new reasons why countries may lose from trade, in fact its greatest contribution is to expand the list of reasons for gains from trade. It is these that are the dominant contribution of the New Trade Theory in our model. That is, trade liberalization permits all countries to expand their

[7] See discussion below.

export sectors at the same time that all sectors compete more closely with a larger number of competing varieties from abroad. As a result, countries as a whole tend to gain from lower costs due to increasing returns to scale, lower monopoly distortions due to greater competition, and reduced costs and/or increased utility due to greater product variety. All of these effects make it more likely that countries will gain from liberalization in ways that are shared across the entire population.

In perfectly competitive trade models such as the Heckscher-Ohlin Model, one expects countries as a whole to gain from trade, but the owners of one factor – the "scarce factor" – to lose through the mechanism first explored by Stolper and Samuelson (1941). The additional sources of gain from trade due to increasing returns to scale, competition, and product variety, however, are shared across factors, and we routinely find in our CGE modeling that both labor and capital may gain from liberalization. That is often the case here.

One additional point about our model should be mentioned, related to the modeling and role of nontariff barriers (NTBs), such as those applying to textiles and apparel. These are quantitative restrictions, captured in the model by endogenous tariff equivalents that rise and fall with changing supplies and demands for trade. The tariff equivalents generate quota rents that accrue to whatever group is granted the rights to trade under the restriction, which in the case of the MFA are the developing countries that export textiles and wearing apparel. Liberalization of these NTBs reduces or eliminates these quota rents, and this can be costly to those who possessed them disproportionately beforehand. Therefore, it is not the case that exporting countries necessarily benefit from relaxation of these trade barriers, since their loss of quota rents can more than outweigh their gains from increased exports. Indeed, their exports can actually decline, along with their national welfare, if increased exports from other countries displace them in world markets.

In the real world, all of these effects encompassed by the Michigan Model occur over time, some of them more quickly than others. Our model is however static, based upon a single set of equilibrium conditions rather than relationships that vary over time. Our results therefore refer to a time horizon that is somewhat uncertain, depending on the assumptions that have been made about which variables do and do not adjust to changing market conditions, and on the short- or long-run nature of these adjustments. Because our elasticities of supply and demand reflect relatively long-run adjustments, and because we assume that markets for both labor and capital clear within countries, our results are appropriate for a relatively long time horizon of several years – perhaps two or three at a minimum.

On the other hand, our model does not allow for the very long-run adjustments that could occur through capital accumulation, population growth, and technological change. Our results should therefore be thought of as being superimposed upon longer-run growth paths of the economies involved. To the extent that these growth paths themselves may be influenced by trade liberalization, therefore, our model does not capture that.

Aggregate Results

In table 1, we report various economy-wide changes for each of the countries/regions of the model. These include changes in exports and imports in millions of dollars, the changes in terms of trade, real wage rate and real return to capital in percentages, and changes in economic welfare measured by equivalent variation, both in millions of dollars and as percent of country GDP. The terms of trade is the world price of a country's exports relative to its imports. The equivalent variation is the amount of money that, if given to the country's consumers at initial prices, would be equivalent in terms of their level of welfare to the effects of the assumed liberalization. In general, as discussed above, a worsening (fall) in a country's terms of trade has an adverse effect on its consumers' welfare. But this can be outweighed by the other gains from trade due to economic efficiency and the other benefits modeled by the New Trade Theory.

UR-1: Elimination of the MFA Quota Constraints – The results for the Uruguay Round elimination of the MFA quota and other bilateral constraints on developing country exports of textiles and apparel, shown in Scenario **UR-1** of table 1, indicate an increase in global welfare of $16.5 billion. In interpreting the results, it should be noted that, with increased exports of these goods to world markets, their prices will fall and the terms of trade of the MFA exporting countries and their economic welfare may deteriorate. This decline in terms of trade is experienced as a loss of quota rents from the MFA and can be seen in column (3) in table 1 for most of the developing countries/regions. Several of those countries/regions also experience reductions in welfare. The developed countries all gain from MFA elimination. Changes in returns to labor and capital are mostly small.

UR-2: Liberalization of Manufactures – Scenario **UR-2** in table 1 covers the reductions in import tariffs on manufactures that were negotiated in the Uruguay Round. Global economic welfare increases by $56.5 billion and the gains are positive for all countries/regions. The largest welfare increases noted are for EU/EFTA ($17.4 billion), the United States ($11.2 billion), and Japan ($6.6 billion). The effects on returns to labor and capital are uniformly positive.

UR-3: Combined Liberalization Effects (UR-1 + UR-2) – The combined effects of the Uruguay Round (UR) liberalization are indicated in Scenario UR-3 of table 1. As noted, this table is the linear combination of **UR-1** and **UR-2**. Global welfare is increased by $73.0 billion. It is noteworthy that the developed countries all gain, with an increase in welfare of $23.7 billion for the EU/EFTA, $19.8 billion for the United States, and $6.9 billion for Japan. All the developing countries/regions, except Hong Kong, show an increase in welfare from the combined UR liberalization. Changes in the real wage and the return to capital are positive but relatively small for the developed countries, and relatively sizable in several of the Asian developing countries.

Sectoral Results

A major contribution of our CGE modeling is to identify those sectors that will expand and those that will contract as a result of various patterns of trade liberalization, as well as the sizes of these changes. Given our assumption that expenditure adjusts within each country to maintain a constant level of total employment, it is necessarily the case that each country experiences a mixture of expansions and contractions at the industry level. This must be true of employment, and it is likely to be true as well for industry output. To report these sectoral results in any detail is tedious, since there are 18 sectors in each country/region. We therefore report, in tables 2-3, the sectoral results only for the combined UR liberalization for the United States and India, for illustrative purposes. The sectoral results for the other scenarios and countries/regions are available from the authors on request.

For the United States, there are increases in employment in all sectors, except for textiles (-32,077) and wearing apparel (-97,094), reflecting especially the effects of elimination of the MFA quota constraints. For India, the largest employment increases are in textiles (388,154), wearing apparel (231,338), trade and transport (124,360), leather products & footwear (42,892), and mining (46,546). India's largest employment declines are in agriculture (-143,922), wood & wood products (-226,363), and industrial products and machinery. The percentage changes in employment are relatively small for the United States, except in textiles and wearing apparel. The employment changes for India are relatively sizable in several sectors. In interpreting the employment changes, it should be noted that these changes would be mitigated given that the UR liberalization has been phased in over a ten-year period. We may also note, from the changes reported for Scale (output per firm), that there is evidence of positive scale effects for most of the sectors.

IV. Computational Analysis of the Doha Development Round

In this section, using the Michigan Model, we report some of the economic effects that may result from the ongoing Doha Development Round of multilateral trade negotiations. The Doha Round was launched officially at the beginning of 2002 and is scheduled for conclusion by the end of 2004.[8] The Doha Round scenarios here assume 33 percent reductions in post-Uruguay Round tariffs and services barriers, as follows:

DR-1 *Agricultural liberalization is modeled as a 33 percent reduction in post-Uruguay Round agricultural import tariffs, export subsidies, and domestic production subsidies.*

DR-2 *Liberalization of manufactures is modeled as a 33 percent reduction in post-Uruguay Round tariffs on manufactures.*

DR-3 *Services liberalization is modeled as a 33 percent reduction in estimated post-Uruguay Round services barriers.*

DR-4 *This combines* ***DR-1, DR-2, and DR-3***.

Data

As noted in Section II, our basic data source is the GTAP-4 Database, supplemented with employment data, and projected to 2005, which is when the Uruguay Round will have been fully implemented. The projected database has in turn been readjusted to include the results of the Uruguay Round implementation as analyzed above.

While services issues were addressed in the Uruguay Round, the main accomplishment was the creation of the General Agreement on Trade in Services (GATS), which is an umbrella agreement setting out the rules governing the four modes of providing services transactions. These modes include: (1) cross-border services (e.g., telecommunications); (2) services provided to consumers visiting from abroad (e.g., tourism); (3) services requiring a domestic presence in the form of foreign direct investment (FDI); and (4) movement of natural persons. In an earlier study, Brown and Stern (2001) developed a new version of the Michigan Model for the purpose

[8] As was the case in our analysis of the Uruguay Round negotiations, we do not consider the effects of the

of analyzing the behavior of multinational firms, which are major providers of services, both intra-firm as well as in the production and sales of foreign affiliates located in host countries.[9] To approximate existing services barriers, Brown and Stern used estimates of barriers to FDI provided by Hoekman (2000), based on the gross operating margins of services firms listed on national stock exchanges for the period, 1994-96.[10] We use these estimates here as ad valorem equivalent tariffs for the services sectors included in the current version of the Michigan Model. Our simulation **DR-3** assumes then that the services barriers are to be reduced by 33 percent in the Doha Round.

Aggregate Results[11]

The aggregate results of the assumed Doha Round scenarios are presented in table 4, and the sectoral results of the combined scenarios (**DR-4**) for the United States and India are presented in tables 5 and 6.

DR-1: Agricultural Liberalization – The results for assumed 33 percent reductions in post-Uruguay Round agricultural import tariffs, export subsidies, and production subsidies (taken here as a proxy for the Aggregate Measure of Support) are shown in table 4. The more detailed

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negotiations on the various rules and procedures to be covered in the Doha Round.

[9] Because of computer-capacity constraints, Brown and Stern used a 3-sector aggregation consisting of agriculture, manufactures, and services and a 20-country/region breakdown. They also made allowance for international flows of FDI and increases in capital stocks in response to the multilateral trade liberalization that they analyzed.

[10] The gross operating margins were calculated as the differences between total revenues and total operating costs for construction, trade and transport, other private services, and government services. Some of the differences between total revenues and costs are presumably attributable to fixed cost. Given that the gross operating margins vary across countries, a portion of the margins can also be attributed to barriers to FDI. For this purpose, we have selected as a benchmark for each sector the country with the smallest gross operating margin, on the assumption that operations in this country can be considered to be freely open to foreign firms. The excess in any other country above the lowest benchmark is then taken to be due to barriers to establishment by foreign firms. That is, the barrier is modeled as the cost increase attributable to an increase in fixed cost borne by multinational corporations attempting to establish an enterprise locally in a host country. We further assume for purposes of our analysis here that we can interpret this cost increase as an ad valorem equivalent tariff on international services transactions generally. Further details are available from the authors on request.

[11] The potential gains from the Doha Round are also analyzed in Hertel (2000) and Hertel, Hoekman, and Martin (2002). These studies are based on the GTAP CGE model, which is a widely used modeling structure. Perfect competition is assumed in all sectors. National product differentiation (i.e., the

results are available from the authors on request. In the model, the reductions in agricultural import tariffs will have the effects of tariff reductions already described. In the case of export subsidies, their effects will be to reduce world prices and raise domestic prices. When export subsidies are reduced, world prices would then rise and domestic prices in the subsidizing countries would fall, with the possible consequences that economic welfare may rise in the countries reducing their export subsidies and fall in net-importing countries now facing higher world prices. Similarly, production subsidies will have the effect of reducing prices both domestically and abroad. When production subsidies are reduced, the cost of agricultural products will rise with consequent terms-of-trade effects similar to those just discussed. In addition, depending on the input-output structure, a rise in the cost of agricultural inputs will push up marginal cost relative to average total cost in some sectors. In order to return to the optimal markup of price relative to marginal cost, firm output in these sectors has to fall, and economic welfare may then decline due to reduced scale economies.

In the underlying results, the reductions in agricultural import tariffs alone increase global economic welfare by $9.5 billion. Welfare increases in the EU/EFTA, Japan, the Asian developing countries, Mexico, and Turkey as resources are shifted away from agriculture. Correspondingly, welfare declines in Australia/New Zealand, Canada, and the United States as resources are shifted to agriculture and away from nonagricultural increasing returns industries. As noted above, when export subsidies are reduced, world prices would rise and domestic prices would fall. This is borne out in the underlying results insofar as welfare increases in the EU/EFTA and declines in all of the countries/regions in the model, except Thailand. Global welfare falls by an estimated $23.2 billion. When production subsidies are reduced, domestic and foreign prices rise, and depending on input-output structures, the increased cost of agricultural inputs may cause firm output in some sectors to decline for the reasons discussed above. In the

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Armington assumption) is also assumed, which may tend to exaggerate terms-of-trade effects.

underlying results, it turns out that the EU/EFTA region benefits the most when its agricultural production subsidies are reduced, whereas welfare declines for most developing countries/regions. Global welfare rises by $10.6 billion. Agricultural liberalization thus involves a complex of differential changes because both tariffs and subsidies are being reduced. The net effect indicated in Table 4 is a reduction in global welfare of $3.1 billion.

DR-2: Liberalization of Manufactures – The assumed 33 percent reduction of post-Uruguay Round manufactures tariffs results in an increase in global welfare of $163.4 billion, which is considerably greater than the $56.5 billion welfare gain from the Uruguay Round manufactures liberalization. As was the case in the Uruguay Round results, the assumed liberalization of manufactures in the Doha Round would increase welfare in all of the countries/regions listed and would have positive effects as well on real wages and the return to capital. The largest welfare gains are for Japan ($45.2 billion), the EU/EFTA ($39.3 billion), and the United States ($23.6 billion). While the welfare gains for the developing countries/regions are much smaller in absolute terms, the percentage gains are mostly larger, ranging from 0.2 percent for Central & South America to 5.5 percent for the Philippines.[12] There are also sizable percentage increases in the real factor returns in the Asian developing economies.

DR-3: Services Liberalization – As noted above, the Uruguay Round negotiations on services resulted in creation of the GATS, but no significant liberalization of services barriers occurred. Following the conclusion of the Uruguay Round, there have been successful multilateral negotiations to liberalize telecommunications and financial services. While it would be desirable to assess the economic effects of these sectoral agreements, we cannot do so because of lack of data. What we have done then is to use the estimates of services barriers based on the

[12] Our results differ from those obtained by Hertel, Hoekman, and Martin (2002, p. 121), who conclude that: "…the bulk of the gains go to developing countries, which are estimated to receive three quarters of the total gains from liberalizing manufacturing trade." The differences in our results compared to Hertel et al. most likely stem from the assumptions made in projecting the database for the model to 2005. That is, Hertel et al. project significantly greater expansions of the output and trade of the developing countries than

calculations of gross operating margins for services firms in the countries/regions in our model, as already described. These estimates of services barriers are intended to be indirect approximations of what the actual barriers may in fact be. Assuming that the ad valorem equivalents of these barriers are reduced by 33 percent, it can be seen in table 4 that global economic welfare rises by $413.7 billion, which exceeds the $163.4 billion welfare increase for manufactures liberalization. All of the countries/regions listed experience positive welfare gains as well as increases in real wages and returns to capital. The EU/EFTA region has the largest welfare gain of $142.0 billion for the group of industrialized countries, compared to $131.4 billion for the United States, and $57.9 billion for Japan. For the smaller industrialized and developing countries, the percentage increases in welfare and factor returns are especially noteworthy. It should be borne in mind that these results of services liberalization depend on the size of the services barriers that have been calculated indirectly from financial data and may possibly be overstated. It seems fair to say nonetheless that services barriers tend to be considerably greater than the tariff on manufactures.

DR-4: Combined Liberalization Effects (DR-1 + DR-2 + DR-3) – The results for **DR-4** are a linear combination of the other three scenarios. Overall, in table 4, global welfare rises by $574.0 billion. Among the industrialized countries, the EU/EFTA region has a welfare gain of $209.6 billion, the United States a gain of $144.0 billion, and Japan a gain of $100.2 billion. The percentage welfare gains and increases in returns to factors are sizable in most of the smaller industrialized countries and in the developing countries.

Sectoral Results

The sectoral results for **DR-4** in the United States and India are presented for illustrative purposes in tables 5 and 6. The sectoral results for other scenarios and countries/regions are available from the authors on request. The largest employment increases for the United States are

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in our simpler extrapolations noted above.

in agriculture (75,688), food, beverages, and tobacco (23,186), wood & wood products (12,854), and government services (14,902). There are employment declines in textiles (-18,400), wearing apparel (-52,045), leather products & footwear (-3,642), trade and transport (-23,770), and other private services (-32,537). For India, there are employment increases in mining (69,399), food, beverages, and tobacco (60,680), textiles (148,189), wearing apparel (95,004), leather products & footwear (69,967), construction (20,273), and government services (340,109). The employment declines are in agriculture (-449,828), industrial products and durable manufactures, and trade and transport (-35,549). As was the case with the sectoral results for the Uruguay Round trade liberalization noted in tables 2 and 3, it can expected that the Doha Round trade liberalization will be phased in over a period of several years so that possible sectoral employment dislocations would be mitigated.

V. Conclusions and Implications

The following conclusions can be drawn from our computational analysis of the Uruguay Round trade negotiations:

- The elimination of the MFA quota constraints is beneficial to economic welfare in the developed countries but detrimental to some of the developing countries/regions. The detrimental effects occur because of the decline in world prices and deterioration of the exporting countries' terms of trade, including the loss of quota rents.

- Because there is considerable evidence of backsliding from the formal Uruguay Round commitments to reduce agricultural import tariffs, export subsidies, and production subsidies, we assumed that no significant agricultural liberalization resulted from the Uruguay Round.

- The liberalization of trade in manufactures was beneficial to all the developed and developing countries/regions covered in the model.

- The combined effects of the Uruguay Round trade liberalization were welfare increasing for the developed and developing countries/regions, except for Hong Kong. The largest absolute gains were for the developed countries.

- The sectoral effects of the Uruguay Round trade liberalization varied, depending on the patterns of liberalization for individual countries. Employment dislocations appeared

relatively small, considering that the trade liberalization was to be phased in over a ten-year period.

The computational results of assumed 33 percent reductions of trade barriers in the Doha Development Round negotiations can be summarized as follows:

- The assumed reductions in agricultural import tariffs, export subsidies, and production subsidies suggested that the EU/EFTA were the prime beneficiaries. The net effect on global welfare was negative, with the overall welfare decline from the reduction in export subsidies offsetting the overall gains from reductions in import tariffs and production subsidies.

- The effects of manufactures liberalization were uniformly positive for all developed and developing countries/regions. The industrialized countries had the largest absolute welfare increases, while several developing countries/regions had sizable gains as a percentage of their GDP.

- All of the developed and developing countries/regions had significant increases in welfare due to the assumed liberalization of services barriers. These welfare increases were substantially greater than the increases due to manufactures liberalization, although that result especially depends, of course, on the estimated sizes of the trade barriers in services and the extent to which they will be reduced.

- The combined effects of the assumed Doha Development Round liberalization were sizable in both absolute and percentage terms for the developed and developing countries/regions. The largest absolute gains were for the developed countries.

- Sectoral employment dislocations would be mitigated insofar as the Doha Round liberalization would be phased in over several years time.

Our computational results thus suggest that there are substantial benefits to be realized from the Doha Development Round negotiations, especially for manufactures and services and for both developed and developing countries. This is in contrast to the effects of the Uruguay Round trade liberalization, which may have been tilted against developing countries.[13]

We should note, as discussed above, that our computational model is based on a comparative static approach, meaning that we move from an initial position to a new equilibrium

[13] See Finger and Nogues for arguments of how and why many of the aspects of the Uruguay Round negotiations resulted in an outcome that was unbalanced against the developing countries and the implications from the Uruguay Round experience that may be applicable in a new trade round.

in which all of the liberalization occurs at one time. That is, we abstract from a variety of dynamic and related effects that may occur through time, especially the international mobility of real capital, increases in real investment via capital accumulation, and technological improvements. The economic benefits that we have calculated, especially for the Doha Development Round, may therefore be interpreted as a lower bound for the benefits that may be realized from the multilateral trade negotiations.[14]

[14] See Francois (2001a, esp. pp. 31-34) for an elaboration of how the usefulness of CGE modeling studies can be improved in applications to the Doha Round negotiations.

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Table 1
Summary Results of the Uruguay Round
Change in Imports, Exports, Terms of Trade, Welfare and the Real Return to Capital and Labor

Country	Imports	Exports	Terms of Trade	Welfare		Real Wage	Return to Capital
	(Millions)	(Millions)	(Percent)	(Percent)	(Millions)	(Percent)	(Percent)
Scenario UR-1: Removal of the Multifiber Arrangement							
Developed Countries							
Australia & New Zealand	144.7	114.0	0.030	0.018	94.5	0.012	0.028
Canada	782.3	719.4	0.065	0.094	683.8	0.066	0.133
European Union and EFTA	2517.7	2275.1	0.055	0.058	6320.8	0.051	0.071
Japan	-121.4	191.0	-0.050	0.004	257.1	-0.002	0.012
United States	6497.4	4482.0	0.148	0.095	8608.2	0.084	0.114
Developing Countries							
Asia							
India	1517.9	1992.1	-0.954	0.231	972.2	0.224	0.238
Sri Lanka	98.7	159.1	-1.101	0.143	23.8	0.032	0.251
Rest of South Asia	449.1	652.8	-1.088	0.263	307.4	0.207	0.319
China	1849.7	2760.4	-0.366	-0.161	-1458.5	-0.120	-0.194
Hong Kong	1544.3	1364.5	0.187	-0.473	-609.2	0.121	-0.988
South Korea	405.0	428.0	-0.015	0.025	142.7	0.045	0.006
Singapore	-510.4	-591.4	0.054	-0.001	-0.8	-0.025	0.020
Indonesia	147.5	207.8	-0.089	-0.005	-13.8	0.030	-0.032
Malaysia	223.0	354.0	-0.121	0.275	328.7	0.735	0.025
Philippines	2080.9	2513.8	-1.316	0.900	794.3	2.057	0.045
Thailand	140.3	259.0	-0.143	0.029	59.4	0.161	-0.019
Other							
Mexico	-45.3	24.8	-0.030	-0.010	-36.6	-0.010	-0.010
Turkey	-157.3	-120.0	-0.094	-0.015	-31.6	-0.031	-0.006
Central Europe	-20.3	-0.6	-0.026	0.037	138.3	0.026	0.054
Central & South America	-162.9	-106.2	-0.050	-0.004	-73.9	-0.002	-0.006
Total	**17380.9**	**17679.5**			**16506.8**		

Table 1 (continued)

Country	Imports (Millions)	Exports (Millions)	Terms of Trade (Percent)	Welfare (Percent)	Welfare (Millions)	Real Wage (Percent)	Return to Capital (Percent)
Scenario UR-2: Tariff Reductions in Manufactures							
Developed Countries							
Australia & New Zealand	2848.0	2527.6	0.347	0.327	1674.8	0.345	0.300
Canada	1071.9	1354.5	-0.086	0.127	926.3	0.137	0.114
European Union and EFTA	16826.6	15358.5	0.145	0.159	17405.6	0.157	0.163
Japan	8680.6	8331.3	0.062	0.102	6608.4	0.092	0.115
United States	12426.0	13459.3	-0.133	0.123	11187.1	0.124	0.122
Developing Countries							
Asia							
India	2585.3	3628.9	-2.099	0.446	1875.4	0.316	0.577
Sri Lanka	98.8	106.3	-0.193	0.558	93.0	0.507	0.608
Rest of South Asia	3454.8	4820.1	-7.541	2.025	2366.5	2.224	1.828
China	3112.6	1917.7	0.456	0.305	2762.2	0.347	0.271
Hong Kong	763.5	480.1	0.254	0.360	464.1	0.346	0.373
South Korea	2858.6	2733.2	0.068	0.422	2403.3	0.409	0.435
Singapore	3539.8	3647.5	-0.078	2.111	1570.3	1.943	2.258
Indonesia	936.5	894.5	0.068	0.247	626.0	0.291	0.215
Malaysia	2790.9	3411.4	-0.563	1.919	2293.9	1.816	1.974
Philippines	2452.6	3102.1	-1.989	1.917	1691.7	1.853	1.964
Thailand	1264.7	1002.3	0.291	0.366	753.9	0.597	0.283
Other							
Mexico	-64.9	1.4	-0.026	0.019	66.3	0.038	0.010
Turkey	319.3	253.9	0.143	0.123	259.1	0.122	0.124
Central Europe	1871.7	1846.1	0.020	0.294	1091.2	0.311	0.270
Central & South America	3778.8	2999.5	0.423	0.022	377.1	0.043	0.004
Total	**71616.2**	**71876.4**			**56496.0**		

Table 1 (continued)

Country	Imports (Millions)	Exports (Millions)	Terms of Trade (Percent)	Welfare (Percent)	Welfare (Millions)	Real Wage (Percent)	Return to Capital (Percent)
Scenario UR-3: Uruguay Round Combined Liberalization							
Developed Countries							
Australia & New Zealand	2992.8	2641.6	0.377	0.345	1769.3	0.357	0.328
Canada	1854.2	2073.9	-0.021	0.221	1610.1	0.202	0.247
European Union and EFTA	19344.2	17633.6	0.200	0.216	23726.4	0.208	0.234
Japan	8559.2	8522.3	0.011	0.106	6865.5	0.090	0.127
United States	18923.4	17941.3	0.014	0.218	19795.3	0.208	0.236
Developing Countries							
Asia							
India	4103.2	5620.9	-3.053	0.677	2847.5	0.540	0.815
Sri Lanka	197.5	265.4	-1.293	0.701	116.8	0.539	0.859
Rest of South Asia	3903.9	5473.0	-8.629	2.288	2673.9	2.430	2.147
China	4962.4	4678.2	0.089	0.144	1303.8	0.227	0.077
Hong Kong	2307.9	1844.7	0.442	-0.113	-145.1	0.467	-0.615
South Korea	3263.6	3161.2	0.053	0.447	2546.1	0.454	0.441
Singapore	3029.4	3056.1	-0.024	2.110	1569.4	1.917	2.278
Indonesia	1084.0	1102.4	-0.021	0.242	612.2	0.321	0.183
Malaysia	3013.9	3765.4	-0.684	2.194	2622.6	2.552	1.999
Philippines	4533.4	5615.9	-3.305	2.817	2486.0	3.910	2.009
Thailand	1405.0	1261.3	0.148	0.395	813.3	0.758	0.264
Other							
Mexico	-110.2	26.1	-0.056	0.008	29.6	0.027	0.000
Turkey	162.0	133.9	0.049	0.108	227.6	0.091	0.117
Central Europe	1851.4	1845.5	-0.006	0.331	1229.4	0.336	0.324
Central & South America	3615.9	2893.3	0.373	0.017	303.2	0.041	-0.002
Total	**88997.2**	**89555.9**			**73002.8**		

Table 2
Sectoral Results of the Uruguay Round
Percent Change in Exports, Imports, Output, Scale and Employment
United States

Product	**Exports** (Percent)	**Imports** (Percent)	**Supply** (Percent)	**Scale** (Percent)	**Employment** (Percent)	(000's)
Agriculture	1.24	-0.89	0.37	0.00	0.37	14967.1
Mining	2.53	-0.93	0.77	0.33	0.44	3103.9
Food, Beverages & Tobacco	8.40	12.27	0.24	0.22	0.04	1236.0
Textiles	-0.08	8.38	-2.59	0.01	-2.59	-32076.8
Wearing Apparel	-1.83	26.37	-7.94	0.57	-8.39	-97094.5
Leather Products & Footwear	2.86	0.33	0.20	0.21	0.04	27.0
Wood & Wood Products	2.04	0.18	0.28	0.16	0.17	7512.7
Chemicals	2.13	1.57	0.21	0.22	0.03	931.1
Non-metallic Min. Products	1.74	2.61	0.07	0.16	-0.04	-283.1
Metal Products	2.15	0.39	0.42	0.25	0.21	5823.1
Transportation Equipment	2.12	-0.49	0.65	0.27	0.40	10645.1
Machinery & Equipment	1.61	2.02	0.23	0.21	0.11	2366.5
Other Manufactures	2.24	0.28	0.60	0.21	0.46	8227.8
Elec., Gas & Water	0.25	-0.04	0.16	0.17	0.03	1341.3
Construction	1.54	-1.00	0.15	0.17	0.01	1918.4
Trade and Transport	1.27	-2.63	0.25	0.18	0.11	34642.6
Other Private Services	1.49	-1.39	0.25	0.21	0.08	30102.6
Government Services	1.05	-0.97	0.05	0.06	0.02	6609.4
Average	**1.95**	**1.74**	**0.15**		**0.00**	**0.00**

Table 3
Sectoral Results of the Uruguay Round
Percent Change in Exports, Imports, Output, Scale and Employment
India

Product	Exports (Percent)	Imports (Percent)	Supply (Percent)	Scale (Percent)	Employment (Percent)	Employment (000's)
Agriculture	0.70	-2.04	-0.09	0.00	-0.05	-143922.3
Mining	3.73	-2.07	1.79	0.67	1.41	46546.0
Food, Beverages & Tobacco	5.18	10.66	0.06	0.35	-0.07	-7841.8
Textiles	18.86	7.43	4.34	1.25	3.34	388153.9
Wearing Apparel	54.34	-9.57	29.23	1.33	28.26	231337.8
Leather Products & Footwear	7.97	34.60	4.61	1.21	3.70	42892.0
Wood & Wood Products	4.81	31.29	-2.68	0.60	-3.09	-226363.1
Chemicals	4.44	12.54	-1.02	0.70	-1.46	-21998.1
Non-metallic Min. Products	6.55	22.26	-0.45	0.66	-0.94	-32502.0
Metal Products	4.37	7.23	-2.34	0.65	-2.76	-96777.2
Transportation Equipment	7.09	25.24	-1.62	0.79	-2.23	-30912.3
Machinery & Equipment	2.65	16.36	-5.65	1.10	-6.56	-156588.3
Other Manufactures	2.60	19.31	-1.55	0.76	-1.98	-106883.9
Elec., Gas & Water	4.37	-2.27	1.21	1.11	0.36	6171.9
Construction	2.86	-2.68	-0.27	-0.03	-0.08	-11520.2
Trade and Transport	2.49	-2.99	0.33	0.28	0.26	124360.2
Other Private Services	2.05	-2.39	-0.24	-0.06	-0.03	-962.6
Government Services	1.57	-2.12	-0.18	-0.03	-0.01	-3189.9
Average	**11.31**	**8.22**	**0.43**		**0.00**	**0.0**

Table 4
Summary Results of the Doha Development Round
Change in Imports, Exports, Terms of Trade, Welfare and the Real Return to Capital and Labor

Country	Imports	Exports	Terms of Trade	Welfare		Real Wage	Return to Capital
	(Millions)	(Millions)	(Percent)	(Percent)	(Millions)	(Percent)	(Percent)
Scenario DR-1: 33 Percent Reduction in Agricultural Protection							
Developed Countries							
Australia & New Zealand	566.2	-168.1	0.798	-0.063	-320.7	-0.182	-0.224
Canada	-248.6	-768.3	0.168	-0.051	-368.4	-0.218	-0.209
European Union and EFTA	157.1	416.2	-0.041	0.258	28328.0	-0.045	0.023
Japan	564.3	3199.9	-0.470	-0.044	-2826.4	-0.039	-0.003
United States	2690.9	928.3	0.219	-0.122	-11081.1	-0.190	-0.193
Developing Countries							
Asia							
India	324.2	285.3	0.066	0.384	1617.4	-0.109	-0.030
Sri Lanka	-93.9	-67.5	-0.240	-2.734	-455.7	-0.307	-0.480
Rest of South Asia	106.6	157.2	-0.118	0.310	362.1	-0.078	-0.119
China	-522.8	-652.7	-0.013	-0.434	-3932.0	-0.163	-0.320
Hong Kong	-380.7	-256.9	-0.026	-0.294	-379.0	-0.186	-0.180
South Korea	285.4	912.9	-0.333	-0.230	-1311.4	0.132	0.134
Singapore	-153.9	-39.5	-0.067	-0.244	-181.4	-0.038	-0.068
Indonesia	-436.5	-466.7	-0.006	-1.259	-3185.5	-0.113	-0.462
Malaysia	-10.8	49.0	-0.076	-0.264	-315.8	0.189	0.104
Philippines	-344.8	-241.8	-0.199	-1.336	-1179.1	-0.062	-0.076
Thailand	-621.2	-1119.3	0.613	0.045	92.4	-0.703	0.054
Other							
Mexico	-200.7	-193.6	-0.089	-0.121	-425.6	-0.354	-0.185
Turkey	-189.1	-119.0	-0.087	-0.414	-871.4	-0.327	-0.347
Central Europe	-432.7	-428.6	0.025	-0.457	-1695.6	-0.363	-0.391
Central & South America	1500.6	870.3	0.377	-0.285	-4988.0	-0.252	-0.358
Total	**2559.5**	**2297.3**			**-3117.2**		

Table 4 (continued)

Country	Imports (Millions)	Exports (Millions)	Terms of Trade (Percent)	Welfare (Percent)	Welfare (Millions)	Real Wage (Percent)	Return to Capital (Percent)
Scenario DR-2: 33 Percent Reduction in Manufactures Tariffs							
Developed Countries							
Australia & New Zealand	3720.7	3457.2	0.267	0.545	2790.6	0.508	0.515
Canada	1996.0	2097.3	-0.013	0.347	2526.2	0.216	0.251
European Union and EFTA	23184.8	22840.3	0.050	0.358	39273.0	0.190	0.199
Japan	19071.4	15817.0	0.548	0.696	45190.9	0.234	0.304
United States	20454.2	18337.3	0.167	0.260	23634.2	0.198	0.224
Developing Countries							
Asia							
India	3280.4	4054.2	-1.384	0.733	3084.4	0.439	0.592
Sri Lanka	536.8	592.1	-1.025	3.207	534.5	1.565	2.010
Rest of South Asia	1892.0	2018.4	-0.604	1.895	2214.7	0.889	1.025
China	16080.3	19416.3	-1.221	1.199	10859.3	1.470	1.323
Hong Kong	3182.8	1840.3	1.246	1.444	1859.1	0.947	0.647
South Korea	8023.4	8440.7	-0.233	1.515	8622.9	1.158	1.003
Singapore	4382.9	4161.8	0.131	2.276	1692.5	2.481	2.611
Indonesia	2362.7	2336.0	0.053	0.835	2113.3	0.645	0.447
Malaysia	4242.8	4805.2	-0.488	2.555	3055.1	2.896	2.812
Philippines	3984.0	4535.1	-1.192	5.478	4834.4	3.310	2.461
Thailand	3406.1	3970.1	-0.675	0.873	1798.6	1.664	0.972
Other							
Mexico	916.3	1132.6	-0.166	0.364	1283.1	0.195	0.204
Turkey	1421.0	1558.6	-0.335	0.827	1740.3	0.349	0.272
Central Europe	3866.3	4366.4	-0.428	0.734	2724.2	0.816	0.722
Central & South America	5038.9	6103.2	-0.612	0.206	3610.0	0.159	0.108
Total	**131043.7**	**131880.0**			**163441.4**		

Table 4 (contined)

Country	Imports (Millions)	Exports (Millions)	Terms of Trade (Percent)	Welfare (Percent)	Welfare (Millions)	Real Wage (Percent)	Return to Capital (Percent)
Scenario DR-3: 33 Percent Reduction in Services Barriers							
Developed Countries							
Australia & New Zealand	2354.4	1962.3	0.385	1.050	5379.6	0.694	0.657
Canada	2244.0	2136.3	0.083	0.811	5910.4	0.317	0.316
European Union and EFTA	35478.1	35336.8	0.032	1.295	142003.2	0.553	0.546
Japan	14797.7	15501.6	-0.067	0.891	57875.1	0.247	0.277
United States	32467.7	32231.5	-0.033	1.448	131426.8	0.524	0.534
Developing Countries							
Asia							
India	919.2	803.9	0.212	0.552	2321.6	0.170	0.204
Sri Lanka	121.7	99.1	0.335	1.202	200.4	0.881	0.507
Rest of South Asia	374.3	286.7	0.286	0.689	804.9	0.293	0.453
China	5660.3	6210.9	-0.128	1.320	11959.1	0.840	0.603
Hong Kong	7587.2	8058.4	-0.611	4.382	5643.1	5.638	5.927
South Korea	4842.2	5002.5	-0.102	1.339	7619.5	0.913	0.956
Singapore	3325.1	3776.2	-0.297	3.322	2470.8	4.821	3.972
Indonesia	1401.3	1469.4	-0.072	1.256	3177.0	0.327	0.307
Malaysia	1487.6	1466.8	0.049	1.267	1514.5	1.026	0.928
Philippines	1986.7	2195.0	-0.462	2.342	2067.1	1.739	1.622
Thailand	3324.2	3625.3	-0.413	1.401	2886.4	1.088	0.904
Other							
Mexico	863.1	809.1	0.110	0.878	3099.3	0.204	0.195
Turkey	1733.3	1462.9	0.589	1.781	3745.9	0.695	0.884
Central Europe	3841.7	3744.5	0.061	1.409	5227.2	1.067	0.996
Central & South America	4199.9	4442.8	-0.179	1.050	18363.5	0.256	0.272
Total	**129009.6**	**130621.8**			**413695.4**		

Table 4 (continued)

Country	Imports (Millions)	Exports (Millions)	Terms of Trade (Percent)	Welfare (Percent)	Welfare (Millions)	Real Wage (Percent)	Return to Capital (Percent)
Scenario UR-4: 33 Percent Reduction in all Trade Barriers							
Developed Countries							
Australia & New Zealand	6641.2	5251.4	1.449	1.532	7849.3	1.020	0.947
Canada	3991.3	3465.3	0.238	1.107	8068.2	0.315	0.359
European Union and EFTA	58819.3	58592.5	0.041	1.911	209609.8	0.697	0.768
Japan	34433.4	34518.5	0.012	1.544	100239.5	0.442	0.579
United States	55612.4	51496.8	0.353	1.586	143980.5	0.533	0.565
Developing Countries							
Asia							
India	4523.7	5143.3	-1.106	1.669	7023.4	0.500	0.766
Sri Lanka	564.6	623.7	-0.930	1.675	279.2	2.139	2.037
Rest of South Asia	2372.9	2462.3	-0.436	2.894	3381.8	1.104	1.360
China	21217.8	24974.6	-1.361	2.085	18886.9	2.148	1.606
Hong Kong	10389.2	9641.7	0.609	5.532	7123.1	6.399	6.394
South Korea	13151.0	14356.1	-0.668	2.624	14930.8	2.203	2.094
Singapore	7554.0	7898.6	-0.233	5.354	3982.0	7.264	6.516
Indonesia	3327.5	3338.6	-0.025	0.832	2104.8	0.858	0.292
Malaysia	5719.6	6321.0	-0.515	3.558	4253.8	4.111	3.845
Philippines	5625.9	6488.3	-1.854	6.485	5722.5	4.987	4.007
Thailand	6109.1	6476.1	-0.475	2.319	4777.4	2.050	1.930
Other							
Mexico	1578.6	1748.0	-0.145	1.122	3957.0	0.045	0.214
Turkey	2965.1	2902.4	0.167	2.194	4614.5	0.718	0.809
Central Europe	7275.2	7682.1	-0.342	1.686	6255.3	1.521	1.327
Central & South America	10739.4	11416.1	-0.414	0.971	16985.8	0.163	0.021
Total	**262611.2**	**264797.6**			**574025.4**		

Table 5
Sectoral Results of the Doha Development Round of Trade Negotiations
Percent Change in Exports, Imports, Output, Scale and Employment
United States

Product	**Exports** (Percent)	**Imports** (Percent)	**Supply** (Percent)	**Scale** (Percent)	**Employment** (Percent)	(000's)
Agriculture	13.90	4.06	1.86	0.00	1.87	75688.4
Mining	1.26	0.52	0.61	0.65	-0.02	-131.6
Food, Beverages & Tobacco	7.63	-2.83	0.27	-0.44	0.73	23186.0
Textiles	2.18	5.96	-1.29	0.28	-1.53	-18399.5
Wearing Apparel	6.15	11.31	-4.30	0.76	-4.89	-52044.9
Leather Products & Footwear	3.44	6.18	-4.56	0.94	-5.31	-3642.3
Wood & Wood Products	2.23	-0.10	0.50	0.29	0.29	12853.9
Chemicals	3.36	1.94	0.67	0.61	0.12	3424.3
Non-metallic Min. Products	3.06	3.89	0.25	0.48	-0.07	-571.0
Metal Products	2.11	1.87	0.44	0.60	-0.08	-2239.2
Transportation Equipment	1.63	2.33	0.39	0.66	-0.23	-6108.3
Machinery & Equipment	1.88	1.97	0.48	0.48	0.18	4030.0
Other Manufactures	2.50	1.89	0.49	0.53	0.13	2336.8
Elec., Gas & Water	0.70	-0.18	0.42	0.47	0.03	1284.8
Construction	10.25	11.80	0.42	0.47	0.01	1737.6
Trade and Transport	9.79	16.71	0.44	0.64	-0.08	-23770.4
Other Private Services	13.44	22.60	0.59	0.79	-0.09	-32536.9
Government Services	12.47	17.68	0.25	0.32	0.06	14902.1
Average	**5.49**	**4.98**	**0.42**		**0.00**	**0.00**

Table 6

Sectoral Results of the Doha Development Round of Trade Negotiations

Percent Change in Exports, Imports, Output, Scale and Employment

India

Product	**Exports** (Percent)	**Imports** (Percent)	**Supply** (Percent)	**Scale** (Percent)	**Employment** (Percent)	(000's)
Agriculture	11.50	0.71	-0.19	0.00	-0.15	-449827.9
Mining	5.43	-1.84	2.68	1.03	2.07	69399.1
Food, Beverages & Tobacco	7.75	17.83	0.40	0.06	0.52	60679.6
Textiles	8.69	21.56	1.82	0.78	1.23	148188.9
Wearing Apparel	14.06	24.77	9.30	0.86	8.75	95004.0
Leather Products & Footwear	9.30	9.13	6.63	1.10	5.82	69966.9
Wood & Wood Products	5.40	5.53	0.03	0.46	-0.27	-18859.3
Chemicals	5.75	10.53	-0.65	0.92	-1.29	-19167.5
Non-metallic Min. Products	7.61	15.32	0.55	0.92	-0.20	-6811.1
Metal Products	5.23	11.70	-2.15	1.13	-3.01	-102891.1
Transportation Equipment	7.33	12.93	-0.03	1.23	-1.05	-14198.4
Machinery & Equipment	4.53	10.83	-3.04	1.58	-4.44	-99199.1
Other Manufactures	4.93	15.52	-0.51	1.21	-1.32	-70109.0
Elec., Gas & Water	6.33	-4.53	0.71	0.75	0.17	2982.9
Construction	15.90	2.99	0.63	0.72	0.14	20273.2
Trade and Transport	15.06	14.66	0.26	0.64	-0.07	-35549.3
Other Private Services	16.86	10.16	0.58	0.58	0.35	10009.5
Government Services	15.45	-2.91	1.22	0.86	0.81	340108.6
Average	**9.22**	**8.30**	**0.50**		**0.00**	**0.0**