US Permanent Normal Trade Relations with China: What is at Stake?
-- A Global CGE Analysis[*]

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Abstract

The China-US trade relation has been plagued by the threat of MFN
revocation in the past 10 years and will continue to be haunted by similar
threats. This paper tries to assess the stakes of the PNTR in the US-China
trade relation, by simulating the removal of MFN with special attention given
to Hong Kong's re-export trade and MFA. It has the following findings: (1).
Revoking China's MFN in the US improves the welfare of other regions at
the expense of the US, China and Hong Kong; (2) The existence of MFA
provides the US an opportunity to buffer the damage by relaxing the quota
restrictions on textile and clothing on its part, but the effectiveness of this
option is diminishing with the phase-out of the MFA under Uruguay round
agreement; (3). Ignoring Hong Kong's role in US-China trade over-states the
damage done to the US.

JEL classification:

F13: Commercial Policy; Protection; Promotion; Trade Negotiations
F14: Country and Industry Study of Trade
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1. Introduction

The recent passage of China WTO bill in US House of Representatives paves the way for eventually granting China Normal Trade Relations (NTR) status on a permanent basis. As a result, the annual review of China trading status in the US mandated by the Jackson-Vanik legislation will come to an end. What are the stakes of the permanent NTR? Against the background of the NTR debate in the past 10 years and its prospects after China's WTO entry, the same question can be posed in a different way: what would happen if *not* granting China NTR? This paper tries to answer this question, with particular reference to Hong Kong's re-export trade and the Multi-fiber Arrangement (MFA).

The Background of US NTR with China

According to the most-favored-nation treatment principle, the US is required to grant the MFN rates to all WTO members[1]. For non-WTO members, the US grants the MFN rates on a voluntary basis. The Jackson-Vanik Amendment to the Trade Act of 1974 mandates that the MFN granted to a non-market economy be renewed every year. The president has to issue a waiver certifying that the country does not impedes emigration or that providing MFN status will lead to increased emigration. The issue of emigration is the original criteria of renewing the MFN status for countries that include China (Lardy 1994, pp99-101).

China first gained the MFN in 1980 shortly after the two countries established diplomatic ties. Until 1989, its annual renewal had been a low profile issue and gone largely unnoticed, as China gradually relaxed its emigration control and the two countries shared a geo-political interest. The 1989 June 4th Tiananmen crackdown and the end of

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[1] The US has two basic sets of tariff schedules: MFN rates and "Column 2" rates. The MFN rates are determined through multilateral trade negotiations under GATT/WTO and has been declining over several rounds of trade talks; the "Column 2" rates were promulgated in the Smoot-Hawley Tariff Act of 1930, a Depression Era legislation and they have remained unchanged ever since. Based on the author's calculation, the trade-weighted average of the two rates applied to Chinese exports to the US are 5.20% and 44.49% respectively.

the Cold War have fundamentally changed the nature of the bilateral relations. The MFN renewal has become an annual ritual to condemn China's human rights abuse, and China's MFN status has been under constant threat of revocation. Tensions around this debate were high in 1993 when then the newly elected president Bill Clinton decided to link China's MFN to its human rights records; but only to reverse this decision the next year due to pressure from US business community. Since there are only a handful of countries that currently do not have the MFN privileges (Afghanistan, Cuba, Laos, Montenegro, North Korea, Serbia and Vietnam), supporters of China's MFN believe that the term "most favored nation" is a misnomer and lobbied to have it changed to the "normal trade relations" in 1998[2].

WTO Membership and NTR

China is in the process of gaining membership into the World Trade Organization. The common understanding is that WTO membership will guarantee China's MFN in the US and the MFN issue will go away thereafter. This is not true, at least in theory. In order to understand the prospect of the MFN issue, one has to understand the role of the bilateral trade in the overall US-China relations, the underlying motives of the MFN debate, and related clauses in international trade law.

The annual MFN debate has never meant to be a serious policy deliberation, despite high tensions around this issue in years after the Tiananmen crackdown. Due to deeply rooted ideological and political mutual hostility, the relationship between the two countries has never been smooth, especially after the Cold War. Today, the only major area in which the two countries have a common interest is trade, rather than geo-politics as in the Cold War era. But even this trade relation is hardly harmonious, as evidenced by the ballooning US trade deficit with China[3]. The irreconcilable political and ideological difference and the imbalanced trade relation put the two countries on a

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[2] This paper will use the terms "MFN" and "NTR" interchangeably.

[3] The official US and China trade data have huge discrepancy in the size of the bilateral trade balance due to different treatment of Hong Kong's re-export trade. For a reconciliation, see Feenstra, etc. (1998, 1999) and Fung and Lau (1998).

collision course, and as such, bilateral trade, the supporting pillar of the fragile overall US-China relations, is bound to be caught in a crossfire. In the US, human rights advocates, religious conservatives and other China critics believe MFN is the only potentially effective leverage to influence the behavior of Chinese government; and the MFN renewal has become a forum for the debate of a wide range of issues concerning the US-China relations, such as human rights, weapon proliferation, campaign contributions and more recently, nuclear espionage. Therefore, the MFN debate is not an economic issue *per se*, and much less about emigration; it is about politics[4]. Given the cynicism of the debate, *The Los Angeles Times* calls denying China's MFN "a most farcical notion" (Mann 1999). The annual MFN debate is only a manifestation of strong political anger toward China that is given a chance to be vented by the Jackson-Vanik bill. One can predict that once China enters the WTO, other legal bases would be exploited to carry out this debate.

In fact, several clauses in GATT make it possible for China to lose its MFN despite a WTO membership. According to GATT, MFN privileges can be suspended on national security grounds (Article XXI); on morality and health grounds (Article XX); and on anti-dumping grounds (Article VI); and finally, the US can invoke non-application clause (Article XXXV) to deny China's MFN (cited in World Bank 1994, pp155). Issues covered by these GATT clauses are more relevant to current US-China relations than the emigration issue. Even the China WTO bill itself, which will exempt China from scrutiny of the Jackson-Vanik legislation, contains human rights provisions that provide another forum to continue this debate. The alternative legal bases exist and the underlying forces that have motivated the MFN debate remain. As such, the US-China trade relation will continued to be haunted by the threat of MFN revocation, even after China's WTO entry, although may under different legal justification and in different semantics. Thus, it is still pertinent to examine the consequences of revoking China NTR status.

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[4] Although the US trade deficit with China may be a legitimate motive for the MFN debate, the hype around this debate has gone far beyond economics. Japan is the US no. 1 deficit country, but we do not see

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US-China Trade Patterns

The economies of US and China are complementary in trade in terms of comparative advantage. China imports mainly capital or technology intensive goods from the US and exports mainly labor intensive products. China's foreign trade epitomizes 3 of the four new aspects of modern world trade identified in Krugman (1995): the "slicing up of the value chain", the emergence of super-trading nations, and the surge of manufactured exports from low wage countries. With abundant labor resource, China is a major outsourcing destination of high-tech or capital intensive manufacturers from industrialized countries that include the US. This in part explains the surge of Chinese exports to the US market, which consist of a large portion of high-tech or seemingly high-tech goods, such as transport equipment, electronics and machinery, in addition to traditional labor intensive goods. Also, the success of China's opening up owes a great deal to its geographic and ethnic linkage to Hong Kong (Sung, 1991). On the trade front, thanks to its sophisticated overseas marketing expertise, Hong Kong handles about 75% of US-China trade and has value added to these goods during the re-export process (Fung, 1998).

China, Hong Kong and the US are contracting parties to MFA, which sets quotas for textile and clothing trade. China and Hong Kong are major exporters of textile and clothing to the US. According to the version 4 GTAP database, China exports $5,161 million worth of textile and clothing to the US in 1995 (11% of its total exports to the US). Hong Kong exports $4,759 million worth of textile and clothing to the US in the same year (28% of its total exports to the US), only second to its service export to the US ($9,165 million). On the US import side, combined imports from China and Hong Kong accounts for over 20% of its total import of textile and clothing.

In assessing the stakes of China's permanent NTR status in the US, the special role of Hong Kong and the binding effects of the MFA in China-US trade deserve particular attentions. This paper will take on these two factors. It is organized as

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a trade dispute between the two countries as tense as the MFN debate.

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follows. Section 2 reviews related literature. Section 3 lays out the simulation strategy. Simulation results and their analysis are presented in section 4. Section 5 concludes.

2. Literature Review

Despite of being a high-profile policy debate, the MFN issue has motivated only a few quantitative studies. IBERC (1996) and World Bank (1994) employ computable partial equilibrium models (CADIC and SMART[5], respectively) at commodity level to evaluate the cost to US consumers and impact on trade flow from China to the US. These analyses are based upon the demand and supply condition of the US market for tradable goods. Given the supply elasticity, demand elasticity and the cross-elasticity of substitution between different suppliers for a commodity, they conduct simulations on a price hike for Chinese goods due to MFN revocation in the US market. The simulation is made at each commodity level and the results come solely from changes in the demand and supply conditions for the commodities. The simulation results are then aggregated to desired level for final report. There is no economy-wide cross-sectoral interactions, and much less about interactions among regions.

The recent development of the Global Trade Analysis Project (GTAP) model (Hertel, 1997) -- a multi-region CGE model, -- makes it possible to study the MFN issue from a global perspective. Using GTAP and its version 3 database with 1992 as base year and 10-digit US Harmonized Tariff Schedule, Arce and Taylor (1997) gives the most sophisticated study. Given the fact that textile and wearing apparel account for a big chunk of Chinese exports to the US, their study is placed in a context of quantitative restriction of Multi-Fiber Arrangement (MFA). Compared to IBERC (1996) and World Bank (1994), Arce and Taylor (1997) is undoubtedly a major advance in evaluating the impact of China's MFN removal, in terms of data and methodology. However, it still has two drawbacks as stated below.

First of all, they adopt a two-step simulation strategy: first abolish MFA; and then based on the updated MFA-free database, revoking China's MFN. Effectively, the final result of the two-step simulation is equivalent to remove world-wide MFA and China's MFN simultaneously. Or, the second step of the simulation gives the results of revoking China's MFN in a MFA-free world. While the US can unilaterally relax its MFA quotas from all exporting countries to mitigate the adverse impact of higher price of textile and wearing apparel, it is not up to the US to decide whether or not other countries relax MFA quotas as well. Thus, their work is not a simulation of realistic policy actions debated in the US Congress.

Secondly, due to a lack of information on Hong Kong's re-export of Chinese goods, the study is unable to produce the adverse effects of MFN revocation on Hong Kong. Instead, it shows that Hong Kong benefits from US sanctions against China, which contradicts common sense[6]. As Hong Kong serves as a middleman in US-China trade, business community and policy makers are fully aware of the potential damage done to Hong Kong by the MFN removal. Hong Kong has long maintained a strong lobbying campaign for China's MFN and Hong Kong's prosperity is also a concern for the Clinton Administration when it recommends the annual renewal (Barshefsky 1998).

This paper takes into consideration the above two issues in simulations of MFN revocation. It uses updated version of the GTAP model and the version 4 database (McDougal, etc., 1998). One new feature of this version database is the inclusion of Hong Kong's re-export margins (Yao, 1998[7]), which enables the author to estimate the effective tariff on Hong Kong's service export to the US induced by MFN revocation,

[5] CADIC (currently called COMPAS) was developed at the US International Trade Commission for use in unfair trade investigation. SMART was developed by UNCTAD/World Bank and used for evaluating multi-lateral trade liberalization under GATT before GTAP became available.
[6] The authors were aware of this problem, though.
[7] This is an experimental work on the estimation of Hong Kong's re-export margin. The upcoming version 5 database will include new estimates made with an improved method developed in Feenstra etc. (1998, 1999) and detailed in chapter 2 of Yao (2000).

together with Hong Kong's re-export data, US import data and tariff schedules[8]. The simulations are run with GEMPACK described in Harrison and Pearson (1994).

3. Simulation Strategy

This is a simulation with 10 regions and 10 sectors. The 10 regions consist of 4 single regions and 6 composite regions. The grouping of composite regions is based on the levels of economic development. To highlight the role of Hong Kong in US-China trade and the impact of US-China trade conflict on it, Hong Kong is kept as a separate single region (HK), like China, US, and Japan. But all other Newly Industrialized Countries (NICs) are grouped into one region (NIC_HK). The 10 sectors include primary goods: agricultural and agricultural products (AGRP), resource materials (RESM), resource products (RESP), metal and metal products (METAL); and non-primary goods: textile and wearing apparel (TEXWAP), transport equipment and parts (TRANS), electronic equipment (ELECTONIC), machinery equipment (MACHINE), other manufactures (OMF), and services (SERVICES). Textile and wearing apparel are grouped into one category to facilitate the analysis of MFA restriction. OMF includes toys and furniture, main items of China's exports to the US. Further breakdown of these regions and sectors is listed in the appendix.

The removal of China's MFN status in the US is simulated by shocking the power of US import tax[9] for Chinese goods. Since the tariffs are calculated in part with US merchandize import data, which does not include services trade, the tariffs on services are given as the average merchandize tariffs. Based on Yao (1998), it estimates the effective tariff on Hong Kong's service export to the US induced by China's MFN revocation[10] and applies it in the simulations. The detailed MFN and non-MFN rates, and the percentage changes in the power of import tax due to tariff rise from MFN to non-MFN rates are listed in table 1.

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[8] The US tariffs are on the 8-digit Harmonized Tariff Schedule for February 1997 and were obtained from the US ITC website during a window period in early 1998.
[9] Defined as 1 + tariff rate.
[10] The estimation method is listed in Appendix 1.

As discussed in section 3, China and Hong Kong are major exporters of textile and clothing; and the US is a major importer. Based on the information on textile and clothing export tax drawn from the version 4 GTAP database and discussions on the MFA regime in Cline (1990), the contracting parties in these 10 regions are identified as US, EU, ANC on the importing side and China, HK, NIC_HK, Asia_sse on the exporting side. Note that Japan does not impose MFA restrictions. This paper adopts the traditional MFA closure, that is, exogenizing the initial volume of textile and clothing trade among the above MFA contracting countries[11].

This paper conducts simulations for 4 scenarios. The first scenario is a baseline simulation, revoking MFN with MFA in place. The second scenario revokes MFN and at the same time unilaterally relaxes MFA quota for US-bound textile and wearing apparel only. The welfare effects of the two scenarios are compared to highlight the cost of MFA to the US in the case of MFN removal. The third scenario revokes MFN and abolishes world-wide MFA simultaneously. The purpose of this exercise is to show the differences that different treatments of MFA can make. The fourth scenario ignores the role of Hong Kong's re-export in China-US trade to show what differences this omission can make.

4. Simulation Results

In this section, I will first examine the impact of MFN removal for scenario 1, focusing on its impact on trade flow (subsection 4.1) and welfare (subsection 4.2) for related regions. Subsection 4.3 focuses on the interactions between MFN removal, Hong Kong's re-export and MFA, and their implications for US welfare.

4.1 MFN Removal and Re-orientation of Trade Flow

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[11] The traditional MFA closure assumes that quantity restrictions remain binding throughout the simulations, which turns out to be true for this application. Bach and Pearson (1996) develops a general method that can implement quotas in GTAP for cases where quantity restrictions change from binding to non-binding during simulations.

China and US

With MFN removal, the US-China trade will experience serious disruption. Tables 2 reports the percentage change in volume[12] of trade flow for China's export (Part A) and the US import (Part B) by regions and sectors. In part A, a switch of tariff from MFN rates to Column 2 rates cuts down China's exports to the US by 63-86% in all but agricultural and resource material sectors, which experience cuts of 23% and 5% respectively. The declines of trade flow in these two sectors are relatively modest in part because the percentage increases in import prices are modestly 10.3% and 3.0%, compared to average 37.3%; and also in part because demand for food and resource materials is generally inelastic. With a lower than average tariff raise (25.4%), however, the transport equipment sector experiences the largest drop in export to the US (86%), reflecting that US demand for transport imports from China is more price sensitive.

As the US is a major export destination for Chinese goods, a rise in tariff will force China to turn to other countries for export market. As a result, China's export to all other regions see a substantial increase, for all sectors except textile and wearing apparel to EU and ANC which is subject to MFA quota.

Turning to table 2b, the non-MFN tariffs force the US to switch to other countries for substitutes for Chinese goods. Positive trade replacement effects occur to almost all countries and sectors, with a few exceptions that include: (1) the decline of its services import from HK, due to shrinking re-export activities associated with China-US trade; and (2) unchanged textile and wearing apparel imports from countries (including Hong Kong) that are subject to MFA quota.

To what extent can trade replacement offset trade diversion for the US and China? To answer this question, I need to look at the absolute changes (instead of percentage changes) in trade volume/value for the two countries. Table 3 reports changes in US

imports in volume (part A) and value (part B) by sectors and sources. It shows that the US total import volume decline for all but transport equipment and resource material sectors; and in terms of value, import rise also occurs for farm goods. With 7-8 out of 10 sectors experiencing a decline in total import in both volume and value, the overall trade replacement may fall short of fully offsetting the trade diversion from China, which turns out to be true since the increase in value of total US imports from other countries is smaller than the decline in value of total US imports from China. For China, table 4 reports its exports in volume (part A) and value (part B) by sectors and destinations. Although about half of the 10 sectors experience export replacements bigger than export diversions both in terms of volume and value, the grand total exports in value decline, which is an indicator that overall export replacement is smaller than export diversion for Chinese exports. In short, in value term, I see net trade losses for US imports and Chinese exports.

What explains the loss of trade for both Chinese exports and the US imports? This is because, with everything else being equal, higher tariffs put an extra constraint on the two countries' foreign trade. The US has to switch to other regions for goods that could have been produced at lower cost in China; and for China, restriction on its exports forces it to sell goods to other regions that has lower demand than the US does. The resulting re-orientation of trade must be at a less than optimal point so that trade replacement can not fully offset trade diversion for overall Chinese exports and US imports.

Hong Kong

Given its special role in China-US trade, the impact of MFN removal on Hong Kong deserves separate discussions. Similar to previous analysis, I will look into the trade diversion and replacement effects for Hong Kong entailed by the US trade sanctions

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[12] The GTAP database has only value variables and the volume variables are derived. The unit of a commodity is defined to be the amount that one dollar will buy at pre-simulation prices. Thus, a *volume* change does not equal a *value* change in general.

against China. Table 5 reports percentage volume changes in Hong Kong's exports and imports and table 6 reports the volume changes.

Hong Kong is a service dominated economy and the re-export service is an important part of it. As Hong Kong handles about 75% of China's export to the US, its service export to the US associated with China-US trade account for 84% of its total re-export service export. US trade sanctions against China amount to sanctions against Hong Kong's service exports to the US, but not against other sectors. For Hong Kong-US trade, table 5 shows that, the US sanctions against China will result in a 60% decline in Hong Kong's service export but a large rise in other exports. The cause of the sharp decline of service exports is straightforward, but causes of the rise of other exports to the US are two-fold. Firstly, the US import replacement increases its demand for goods produced on other regions that include Hong Kong. Secondly, the contraction of Hong Kong's services sector pushes resources to other sectors and subsequently increases their exports. Given the fact that the services sector is the dominant sector in Hong Kong's economy, the decline in service exports cuts the overall export value of Hong Kong to the US by $3,060 million (part B in table 3), although exports of other goods actually increase. Thus, the impact of the US-China conflict on Hong Kong's exports to the US is mixed: in value term, Hong Kong exports less to the US, but at the sectoral level, 9 out of 10 sectors see improved exports to the US. Although the exports to the US change differently for services and non-service sectors, for other destinations, they appear to be increasing for all sectors except textile and clothing export to MFA contracting regions. This is true also for exports to China, even as China's overall imports decline as discussed earlier. For services sector, the rise in Hong Kong's export to regions other than the US is the export replacement effect; and the rise in non-services sector export, however, is the result of resource allocation that entails the expansion of these sectors. On the import side, a weakened economy explains the decline in imports from most countries but China. More imports from China are caused by China's export replacement, due to its export diversion from the US.

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Now let us turn to table 6 to see the net effect of Hong Kong's trade. On the export side, Hong Kong's non-service exports increase over all regions and I see a net increase in export for all these sectors. For services sector, I see a net loss in export, as replacement of export to other regions can not fully cover the export diversion from the US. On the import side, the decline in import of all goods except metal from non-China regions outweighs its import rise from China, and thus, I see a net loss of imports for almost all sectors.

In summary, countries other than HK export more to the US and import more from China. At the same time, they export less to China and import less from the US. Thus the flow of goods increases along the China-third country-US route and declines in the reverse direction. The patterns hold across almost all sectors. Hong Kong trades more with China in both import and export; while it exports more to the US (except services), it buys less US goods and services.

What is the impact of a US-China trade conflict on countries' integration with the rest of the world? Table 7 reports percentage changes in total export and import value by regions and sectors. If changes in their overall import and export values can serve as indicators of their economic integration/dis-integration through trade with the rest of the world, countries that are directly involved in the trade conflict (China, US and HK) are further isolated from the world economy, since they all experience declines in import/export for almost all sectors and the overall import/export values decline. On the other hand, all other countries that are not directly involved in the trade conflict are more integrated with the wold economy, since they experience increases in trade (import/export) for almost all sectors (except NIC_HK that sees more trade in only about half of the 10 sectors) and in value term, their overall trade with the rest of the world increase.

In theory, if a country is more integrated with the rest of the world, its foreign trade will expand along the line of comparative advantage; and vice versa for countries

that are further isolated from rest of the world. The following section will show the resulting welfare effects.

4.2 Welfare Analysis

The costs and benefits of the trade re-orientation can be evaluated with money metric based welfare measurement in the GTAP model, as detailed in Huff and Hertel (1996), where welfare changes and their decompositions are measured with the equivalent variations. Table 8 reports the total welfare effects (part A) and their decompositions (part B) for 4 different scenarios.

With MFA in place, the US revocation of China's MFN, and its induced effective imposition of tariffs on Hong Kong's service exports to the US will make the US, China and HK all suffer overall welfare loss. China suffers the most with $16,793 million loss, followed by the US with $2,361 million loss and Hong Kong with $2,733 million. All other countries are better off. The world as a whole suffers a net welfare loss of $10,394 million. These results suggest that, in terms of overall welfare, more integration with the rest of the world is beneficial and the opposite is true for countries that are less integrated with the rest of the world.

The welfare effects can be decomposed into three parts: allocative effects, income effects and the terms of trade effects. For the three countries that are directly involved in the trade conflict (US, China and HK), China and US have big allocative efficiency losses while HK has a very negligible efficiency improvement. Compared to the allocative effects, the income effects are minor. As for the terms of trade effects, China and HK have substantial losses ($12,643 and $2,728 million respectively) while the US gains $5,304 million. For countries that are not directly involved in the trade conflict, most of them have allocative efficiency improvements except Japan and NIC_HK. All have little income effects but substantial terms of trade gain.

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Most of the results reported here are expected in the directions, since countries usually tax their comparative advantage sectors and subsidize their comparative dis-advantage sectors. Further integration with the world economy will expand the former and contract the latter. Thus, for most countries, I see allocative efficiency gains. But what explains the allocative efficiency loss for Japan and NIC_HK? This has something to do with their agricultural trade with the US. I have shown in section 6.1 that the trade sanctions result in more trade flow along the China-third country - US route. On the reverse route, trade flows are reduced. For agricultural trade, Japan sees its imports from China increased and from US reduced. Since Japan has much higher tariffs on farm products from the US than those from China (98% vs 20%), the loss due to reduced imports from US more than offsets the gain from increased imports from China. As a result, the allocative efficiency loss in Japan is the result of dis-integrated agricultural trade with the US and the pre-existing high tariffs. This is also the case for NIC_HK. In other words, it is not economic integration but economic dis-integration that causes the efficiency loss. After all, despite their allocative efficiency loss, the overall welfare change in the two regions are positive, which is the ultimate indication of benefit from further integration with the world economy, yet ironically, as a result of others' economic dis-integration with the world economy.

4.3 MFA, Hong Kong re-export and US Welfare

Above analysis focuses on scenario 1, that is, the US revokes China's MFN with MFA in place. Now let us turn to other simulation scenarios that try to answer the following questions: What are the costs to the US of its own protection in textile in the case of the US trade sanctions against China (scenario 2)? How much does the world-wide MFA help the US in lowering the cost of trade replacement in textile (scenario 3)? And how much difference would it make to the US welfare if Hong Kong's re-export is ignored (scenario 4)? Finally, I will discuss the timing issue of the MFN removal in view of the gradual abolition of MFA.

China is a major supplier of textile and clothing to the US and the MFN removal would cut the supply from China by 70%. It is true that the US can mitigate the cost of higher price for Chinese textile and clothing by import replacement. But the other major suppliers can not increase their exports to the US given the restriction of MFA. Thus, the ability of the US to replace Chinese textile and clothing from other sources is limited if the MFA is kept in place. In theory, however, the US can relief the damage by unilaterally relaxing MFA restriction, if it could override the political pressure from the US textile producers. Scenario 2 is a simulation on US revocation of China's MFN and at the same time unilaterally abolishes quota restriction on other countries that supply the US market. Note that this MFA relaxation only applies to the US but not other textile importing countries under MFA. The results show that MFA relaxation on the part of the US reverses the welfare results in scenario 1: the US has a net welfare gain of $425 million! There are 2 reasons that this reverse in US welfare effect may happen. First, the pre-sanctions import prices of Chinese textile and clothing are already high due to the MFA quota and this limits the potential of a further price rise caused by MFN removal. On the other hand, also due to the MFA quota, the pre-sanction import prices for textile and clothing from countries other than China is high and also is the potential of a price drop if the US relaxes the quota restrictions. The small potential of a price rise and the high potential of a price drop together contribute to the reverse of US welfare change from loss to gain. Thus, the US welfare gains not only depend on the US MFA relaxation, but also on other countries that keep the MFA in place on their parts. To further illustrate this, scenario 3 simulates the MFN removal and the world-wide MFA abolition at the same time. In this scenario, the US suffers $58 million loss, compared to $424 million gain in scenario 2. Thus, by sticking to the MFA quota, other countries provide the US with a buffer of $482 (58 + 424) million.

As stated in the literature review part (section 2), Arce and Taylor (1997) removes the world-wide MFA and MFN simultaneously, but ignores Hong Kong's re-export. Removing world-wide MFA effectively increase the demand for textile and clothing by other importing countries and increase the cost of US import replacement. Thus, the US welfare loss calculated under this scenario (scenario 3) is over-stated, as compared to

scenarios 2. On the other hand, ignoring Hong Kong's re-export omits the effect of resource re-allocation away from services sector and into other sectors including textile and clothing in Hong Kong. As Hong Kong is a major textile and clothing exporter under MFA, the boost of HK textile and clothing export can contribute the US terms of trade improvement, whether or not the US unilaterally relaxes the MFA restrictions. Thus, ignoring Hong Kong's re-export will overstate the cost of US import replacement of textile from Hong Kong, and in turn, the overall cost of import replacement. Since this study uses an updated version of GTAP database, I do not attempt to make a quantitative comparison between my simulation results (scenario 3) and theirs. Instead, I use the new database to repeat their work, that is, revoking China's MFN and world-wide MFA at the same time without considering the role of Hong Kong in the US-China trade (scenario 4). The difference between scenarios 3 and 4 is attributable to the different treatments of Hong Kong's re-export in US-China trade. As shown in table 8, compared to scenario 3, their method produces a larger US welfare loss (-$466 million).

The MFA is going to be phased out in 2005 under the Uruguay round agreement[13]. As the US import replacement of textile and clothing can alter the welfare effects for itself and its ability of import replacement is aided by the existence of MFA, timing of the US trade sanctions becomes an issue. In the presence of MFA, it is possible that the US gains from the sanctions against China (scenario 2). But what about if without MFA? That is, after abolishing the MFA, what will be the welfare effect for the US? This can be illustrated by first abolishing the world-wide MFA, and then based on the MFA free database, removing the MFN. It turns out that, abolishing MFA alone will contribute $2,840 million gains to the US welfare, and we also have known from scenario 3 that removing MFN and MFA all together will cost the US $58 million. Thus, the cost to the US of removing the MFN in a MFA-free world will be $2,898 million (58 + 2840). This would be the only outcome and the US would not have any options to cushion the damage. Therefore, timing is important. As time passes by and the MFA is being

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[13] Under the US-China WTO entry agreement reached on November 15, 1999, the US will keep quota restriction on Chinese textile and clothing for 4 more years after 2005.

gradually phased out, damage done to the US by revoking China's MFN is increasingly unlikely to be remedied with import replacement in textile and clothing.

5. Conclusion

Granting China's permanent NTR would be a giant step toward strengthening the US-China trade relation against the threat of MFN revocation. One way to assess the stakes of the US permanent NTR with China is to evaluate the cost to the US of revoking China's MFN. This paper makes an attempt to shed lights on how Hong Kong's re-export and the MFA can complicate the assessment. When Hong Kong's role as a middleman in China-US trade is properly considered, the cost of MFN revocation to the US will be lower than otherwise it would be, though the welfare loss to the US is still substantial. However politically infeasible it might be, welfare improvement from the US unilateral relaxation of MFA quota could more than offset its welfare loss. With the gradual phase-out of the MFA under Uruguay round, the US will exhaust its options to buffer the damage of MFN revocation done to itself. In light of this, granting China permanent NTR is a wise move for the US.

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Appendix

1. Estimating the Effective Tariff on Hong Kong's Service Export to the US

Let t_e denote the effective tariff on Hong Kong's service export; t_i denote the tariff on Chinese goods, TS denote the value of Hong Kong's total service export to the US and VAC_i denote the value-added to Chinese exports to the US. Then,

$$t_e = \sum_i \frac{VAC_i}{TS} t_i$$

VAC is obtained by multiplying Hong Kong's re-export value obtained from HK re-export dataset) and the estimated re-export markup (Yao 1998). The total service export TS is from the GTAP version 4 database. And t_i is US tariff on Chinese goods for commodity i and is calculated using US import data and the US tariff schedule obtained from the US ITC. As US has 2 tariff rates MFN rate (t_i^0) and C2 rate (t_i^1), I have two effective tariff rates in HK's service export to the US: t_e^0 and t_e^1:

$$t_e^0 = \sum_i \frac{VAC_i}{TS} t_i^0 \text{ and } t_e^1 = \sum_i \frac{VAC_i}{TS} t_i^1$$

2. Regions and Descriptions

Regions	GTAP Regions & Descriptions	
CHINA	CHN	China
USA	USA	United States of America
JAPAN	JPN	Japan
EU	GBR	United Kingdom
	DEU	Germany
	DNK	Denmark
	SWE	Sweden
	FIN	Finland
	REU	Rest of European Union
NIC_HK	KOR	Republic of Korea
	SGP	Singapore
	TWN	Taiwan
HK	HKG	Hong Kong
ANC	AUS	Australia
	NZL	New Zealand
	CAN	Canada
ASIA_SSE	IDN	Indonesia
	MYS	Malaysia
	PHL	Philippines
	THA	Thailand
	VNM	Viet Nam
	IND	India
	LKA	Sri Lanka
	RAS	Rest of South Asia
AMERIC_CS	MEX	Mexico
	CAM	Central America and Caribbean
	VEN	Venezuela
	COL	Colombia
	RAP	Rest of Andean Pact
	ARG	Argentina
	BRA	Brazil
	CHL	Chile
	URY	Uruguay
	RSM	Rest of South America
ROW	EFT	European Free Trade Area
	CEA	Central European Associates
	FSU	Former Soviet Union
	TUR	Turkey
	RME	Rest of Middle East
	MAR	Morocco
	RNF	Rest of North Africa
	SAF	South African Customs Union
	RSA	Rest of Southern Africa
	RSS	Rest of Sub Saharan Africa
	ROW	Rest of World

3. Sectors and Descriptions

Sectors	Descriptions	GTAP Sectors & Descriptions	
AGRP	Agr. goods	pdr,	Paddy rice
	and agr. pruducts	wht,	Wheat
		gro,	Cereal grains nec
		v_f,	Vegetables, fruit, nuts
		osd,	Oil seeds
		c_b,	Sugar cane, sugar beet
		pfb,	Plant-based fibers
		ocr,	Crops nec
		ctl,	Bovine cattle, sheep and goats, horses
		oap,	Animal products nec
		rmk,	Raw milk
		wol,	Wool silk-worm cocoons
		for,	Forestry
		fsh,	Fishing
		cmt,	Bovine cattle, sheep and goat, horse meat prods
		omt,	Meat products nec
		vol,	Vegetable oils and fats
		mil,	Dairy products
		pcr,	Processed rice
		sgr,	Sugar
		ofd,	Food products nec
		b_t,	Beverages and tobacco products
RESM	Resource materials	col,	Coal
		oil,	Oil
		gas,	Gas
		omn,	Minerals nec
TEXWAP	Textiles	tex,	Textiles
	and wearing apparel	wap,	Wearing apparel
OMF	Other manufactures	lea,	Leather products
		lum,	Wood products
		ppp,	Paper products, publishing
		omf,	Manufactures nec
RESP	Resource Products	p_c,	Petroleum, coal products
		crp,	Chemical, rubber, plastic products
		nmm,	Mineral products nec
METAL	Metal	i_s,	Ferrous metals
	and metal products	nfm,	Metals nec
		fmp,	Metal products
TRANS	Transportation equip.	mvh,	Motor vehicles and parts
	and parts	otn,	Transport equipment nec
ELECTRONIC	Electronic equip.	ele,	Electronic equipment
MACHINE	Machinery equip.	ome,	Machinery and equipment nec
SERVICES	Services	ely,	Electricity
		gdt,	Gas manufacture, distribution
		wtr,	Water
		cns,	Construction
		t_t,	Trade, transport
		osp,	Financial, business, recreational services
		osg,	Public admin and defence, education, health
		dwe,	Dwellings

Table 1: Tariff Rates and Shocks for MFN Removal

	MFN_AVE	C2_AVE	% change in TMS_L *	
China-US Trade:				
AGRP	0.0167	0.1214	10.3	
ELECTRONIC	0.0169	0.3496	32.7	
MACHINE	0.0357	0.3828	33.5	
METAL	0.0353	0.3961	34.9	
OMF	0.0507	0.4799	40.8	
RESM	0.0087	0.0386	3.0	
RESP	0.0671	0.4269	33.7	
SERVICES	0.0520	0.4449	37.3	**
TEXWAP	0.1153	0.6544	48.3	
TRANS	0.0548	0.3223	25.4	
Average	0.0520	0.4449	37.3	
Services for China-HK-US Trade	0.0435	0.4007	34.2	***

*:TMS_L=1+tariff rate

**:Tariff rates on services are the average rates on merchandize trade

***:Service VA on China-HK-US trade over that on total US-bound re-export trade = 0.8370

Table 2: % Volume Change of Chinese Export (A), US Import (B) and Power of Export Tax on TEXWAP (C)

Part A	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW
AGRP	19.52	0	-23.04	11.38	19.07	19.81	21.38	20.26	21.24	19.71
RESM	10	0	-5.88	9.11	9.27	9.91	10.74	10.13	10.24	10.37
TEXWAP	14.77	0	-69.52	7.51	15.72	18.48	23.56	0	0	20.88
RESP	12.43	0	-63.16	10.26	12.33	12.25	14.11	13.22	14.05	13.17
METAL	18.93	0	-76.8	17.81	18.87	19.33	21.72	20.4	21.5	20.2
TRANS	42.32	0	-86.2	30.64	41.65	41.23	43.31	41.74	44.33	41.44
ELECTRONIC	16.77	0	-74.95	14.72	17.34	17.17	18.14	16.87	17.99	17.1
MACHINE	19.78	0	-75.32	18.53	20.45	20.55	21.78	20.72	21.69	20.62
OMF	17.94	0	-79.09	13.12	19.29	19.77	21.06	19.5	20.72	19.66
SERVICES	16.14	0	-63.76	6.14	15.91	16.31	17.19	16.52	17.85	16.38
Part B										
AGRP	1.22	-23.04	0	17.4	1.62	1.22	-0.21	1.08	-0.87	1.27
RESM	0.49	-5.88	0	5.48	1.02	0.82	-0.16	0.47	0	0.61
TEXWAP	10.24	-69.52	0	0	0	0	7.56	9.64	6.45	10.33
RESP	2.83	-63.16	0	13.31	3.19	2.89	1.78	2.75	1.38	2.94
METAL	3	-76.8	0	17.73	3.64	3.06	1.26	2.87	0.51	3.11
TRANS	2.6	-86.2	0	61.86	3.58	2.59	-0.25	2.43	-1.18	2.84
ELECTRONIC	4.05	-74.95	0	22.32	4.69	4.07	2.35	4	1.74	4.2
MACHINE	3	-75.32	0	20.09	3.58	3.09	1.31	2.9	0.64	3.13
OMF	16.85	-79.09	0	39.02	17.55	16.74	14.72	16.7	13.74	16.97
SERVICES	4.12	-63.76	0	-60.26	4.53	4.02	2.69	4.04	1.87	4.22

Table 3: Change in US Imports in Volume (a) and Value (b) by Sectors and Source

Part A

Part A	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW	Total
1 AGRP	4.56	-157.78	0.00	13.35	10.16	70.39	-25.29	80.88	-78.94	30.21	-52.45
2 RESM	1.23	-29.02	0.00	1.49	0.55	18.14	-25.15	21.00	-0.41	136.46	124.30
3 TEXWAP	69.09	-2887.06	0.00	0.00	0.00	0.00	755.27	399.23	137.39	455.89	-1070.18
4 RESP	223.25	-2689.89	0.00	7.32	111.10	71.10	161.63	607.74	213.26	229.42	-1065.07
5 METAL	128.98	-1412.21	0.00	14.66	138.02	32.07	81.93	248.87	64.17	201.82	-501.68
6 TRANS	848.34	-787.40	0.00	0.06	114.78	24.02	-28.03	454.94	-513.14	16.13	129.70
7 ELECTRONI	832.94	-4133.84	0.00	100.60	1255.86	367.43	215.50	240.72	110.39	33.35	-977.04
8 MACHINE	1392.03	-5851.65	0.00	358.20	751.71	328.25	250.35	1171.30	109.53	177.74	-1312.54
9 OMF	994.81	-13513.15	0.00	264.34	1303.92	1379.33	1212.94	2091.07	3326.78	320.48	-2619.48
10 SERVICES	508.78	-1366.35	0.00	-6274.35	422.18	179.58	203.88	2482.90	194.81	453.74	-3194.83

Part B

Part B	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW	Total
1 AGRP	5.34	-184.46	0.00	11.66	11.35	83.46	34.59	92.84	-25.52	33.68	62.94
2 RESM	1.64	-48.43	0.00	1.28	0.58	19.56	8.66	26.75	27.05	173.94	211.03
3 TEXWAP	73.40	-3906.07	0.00	79.77	96.32	173.04	851.14	432.65	160.16	479.15	-1560.44
4 RESP	254.12	-2518.27	0.00	6.26	121.82	84.61	219.97	703.37	316.19	261.73	-550.19
5 METAL	142.75	-1360.17	0.00	13.05	146.39	36.07	118.38	279.60	144.57	220.19	-259.17
6 TRANS	931.32	-814.35	0.00	0.05	121.06	29.05	21.86	505.46	-297.59	17.35	514.21
7 ELECTRONI	898.65	-4216.20	0.00	87.54	1320.90	426.60	265.89	261.01	151.18	35.59	-768.86
8 MACHINE	1515.41	-5615.50	0.00	312.67	790.66	382.05	353.46	1289.28	216.00	191.52	-564.44
9 OMF	1048.53	-15895.38	0.00	245.97	1372.81	1505.37	1326.27	2220.15	3688.07	336.30	-4151.91
10 SERVICES	530.10	-1395.81	0.00	-6436.55	428.46	193.99	247.03	2621.00	273.57	477.76	-3060.45
Total	5401.27	-35954.64	0.00	-5678.29	4410.35	2933.81	3447.25	8432.10	4653.66	2227.22	-10127.28

Table 4: Change in China Exports in Volume (a) and Value (b) by Sectors and Destinations

Part A	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW	Total
1 AGRP	716.43	0.00	-157.78	206.72	229.71	267.18	15.82	238.73	32.68	255.75	1805.23
2 RESM	181.10	0.00	-29.02	16.40	82.23	33.41	11.00	67.43	4.27	36.61	403.43
3 TEXWAP	2023.36	0.00	-2887.06	418.32	486.00	367.67	345.99	0.00	0.00	1089.34	1843.63
4 RESP	348.83	0.00	-2689.89	105.57	231.69	296.36	89.49	594.64	132.93	262.91	-627.47
5 METAL	451.63	0.00	-1412.21	155.84	519.32	329.91	64.82	486.78	94.08	226.92	917.09
6 TRANS	91.70	0.00	-787.40	84.64	131.66	162.37	106.23	101.98	49.45	260.94	201.56
7 ELECTRONI	312.47	0.00	-4133.84	67.71	234.75	130.13	195.98	928.34	137.65	196.05	-1930.77
8 MACHINE	862.66	0.00	-5851.65	226.77	699.74	470.45	206.95	1482.16	321.00	493.59	-1088.34
9 OMF	1203.08	0.00	-13513.15	161.96	386.11	152.71	301.78	2077.34	565.06	665.69	-7999.43
10 SERVICES	671.95	0.00	-1366.35	74.16	104.62	100.22	152.49	948.53	66.72	228.28	980.64
Part B											
1 AGRP	571.02	0.00	-175.92	132.58	178.98	167.20	13.36	199.49	26.13	216.68	1329.52
2 RESM	179.85	0.00	-44.59	12.58	69.55	27.79	8.53	52.16	3.36	33.33	342.55
3 TEXWAP	1473.84	0.00	-3732.01	219.73	350.08	272.13	274.97	11.95	11.37	855.74	-262.20
4 RESP	211.67	0.00	-2351.73	59.28	145.03	182.84	57.51	374.90	84.54	165.44	-1070.53
5 METAL	332.58	0.00	-1297.94	111.45	386.79	245.97	48.15	356.70	69.55	166.53	419.77
6 TRANS	81.77	0.00	-797.03	75.01	111.57	143.25	92.02	86.88	43.78	230.83	68.08
7 ELECTRONI	245.87	0.00	-4069.61	51.76	185.97	102.89	156.60	731.35	109.82	154.89	-2330.46
8 MACHINE	633.03	0.00	-5421.22	164.08	516.96	347.89	154.75	1097.82	239.86	365.25	-1901.57
9 OMF	1014.57	0.00	-15123.86	107.93	352.41	147.91	297.48	1940.52	517.51	569.88	-10175.65
10 SERVICES	488.52	0.00	-1395.81	24.37	75.71	73.11	113.06	694.74	50.01	166.59	290.30
Total	5232.70	0.00	-34409.72	958.76	2373.05	1710.97	1216.43	5546.52	1155.93	2925.15	-13290.20

Table 5: % Change of Hong Kong's Export (a) and Import (b) in Volume by Sectors and Sources/Destinations

Part A	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW
AGRP	14.67	6.08	17.4	9.67	16.18	16.74	17.61	16.28	17.7	16.58
RESM	4.53	0.16	5.48	3.67	3.94	4.62	5.2	4.86	5.08	4.79
TEXWAP	16.53	13.85	0	10.59	17.53	20.33	25.42	0	0	22.55
RESP	9.82	3.67	13.31	7.83	9.66	9.68	10.93	10.14	10.99	10.11
METAL	12.82	5.17	17.73	12.46	12.77	13.41	15.58	14.29	15.33	14.05
TRANS	58.57	38.87	61.86	47.02	57.7	58.93	59.61	57.84	60.45	58.84
ELECTRONIC	16.78	7.83	22.32	15.12	17.38	17.06	18.01	16.82	17.77	16.94
MACHINE	15.59	7.4	20.09	14.86	16.16	16.28	17.51	16.41	17.36	16.43
OMF	16.6	6.75	39.02	12.55	17.7	18.14	19.56	17.92	19.18	18.07
SERVICES	16.72	3.36	-60.26	6.67	16.49	16.9	17.78	17.11	18.44	16.97
Part B										
AGRP	-6.77	11.38	-7.75	9.67	-6.41	-6.76	-8.09	-6.89	-8.53	-6.72
RESM	-1.26	9.11	-2.02	3.67	-0.75	-0.93	-1.86	-1.26	-1.72	-1.13
TEXWAP	-12.44	7.51	-14.86	10.59	-11.6	-12.48	-14.56	-12.92	-15.46	-12.37
RESP	-2.73	10.26	-3.64	7.83	-2.38	-2.67	-3.75	-2.8	-4.13	-2.62
METAL	-2.19	17.81	-3.72	12.46	-1.58	-2.13	-3.86	-2.31	-4.55	-2.08
TRANS	-7.71	30.64	-10.42	47.02	-6.83	-7.71	-10.27	-7.86	-11.1	-7.49
ELECTRONIC	-2.4	14.72	-4.04	15.12	-1.8	-2.39	-3.97	-2.45	-4.57	-2.26
MACHINE	-1.94	18.53	-3.44	14.86	-1.39	-1.86	-3.55	-2.04	-4.19	-1.82
OMF	-6.06	13.12	-8.28	12.55	-5.49	-6.15	-7.77	-6.18	-8.57	-5.96
SERVICES	-9	6.14	-9.84	6.67	-8.65	-9.09	-10.25	-9.07	-10.97	-8.91

Table 6: Volume Change in Hong Kong's Export (a) and Import (b) by Sectors and Sources/Destinations

Part A	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW	Total
AGRP	31.63	12.19	13.35	0.00	22.01	15.84	0.42	13.30	6.57	13.45	128.76
RESM	0.78	0.00	1.49	0.00	0.24	0.30	0.00	0.39	0.11	0.17	3.49
TEXWAP	38.75	221.61	0.00	0.00	64.89	83.76	22.08	0.00	0.00	69.79	500.89
RESP	5.27	41.41	7.32	0.00	9.65	16.15	1.57	16.38	4.58	6.37	108.70
METAL	11.39	29.06	14.66	0.00	13.39	15.03	1.23	14.21	3.91	3.94	106.82
TRANS	0.02	0.32	0.06	0.00	2.31	0.01	0.02	3.37	0.02	2.95	9.08
ELECTRONIC	22.61	84.72	100.60	0.00	96.74	14.56	1.84	130.41	22.93	21.76	496.15
MACHINE	70.17	151.94	358.20	0.00	217.57	80.72	31.24	234.98	28.72	47.51	1221.05
OMF	67.20	82.73	264.34	0.00	50.23	43.46	9.49	140.68	20.73	39.62	718.47
SERVICES	697.06	302.92	-6274.35	0.00	608.49	390.51	261.41	1331.69	289.67	554.89	-1837.70

Part B	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW	Total
AGRP	-28.88	206.72	-118.71	0.00	-47.35	-89.63	-27.88	-82.34	-75.10	-31.41	-294.57
RESM	-1.61	16.40	-5.85	0.00	-0.27	-10.11	-0.25	-6.09	-1.71	-8.42	-17.91
TEXWAP	-74.77	418.32	-45.01	0.00	-380.07	-142.45	-4.97	-161.13	-4.89	-15.77	-410.74
RESP	-43.93	105.57	-37.21	0.00	-81.54	-17.12	-2.71	-50.58	-9.64	-17.44	-154.61
METAL	-21.96	155.84	-15.88	0.00	-14.57	-4.36	-4.18	-19.79	-17.14	-13.55	44.41
TRANS	-99.25	84.64	-87.66	0.00	-44.59	-6.04	-2.14	-191.44	-31.49	-31.85	-409.82
ELECTRONIC	-34.55	67.71	-62.80	0.00	-56.00	-18.42	-0.19	-31.55	-12.86	-1.64	-150.29
MACHINE	-132.66	226.77	-93.58	0.00	-101.60	-36.56	-2.00	-62.51	-10.76	-17.46	-230.36
OMF	-139.63	161.96	-70.39	0.00	-102.18	-62.24	-14.46	-114.27	-20.70	-14.61	-376.53
SERVICES	-255.07	74.16	-149.86	0.00	-290.31	-140.62	-48.21	-242.86	-35.00	-431.53	-1519.30

Table 7: % Change in Value of Total Import (a) and Export (b) by Sectors*

Part A

	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW
AGRP	0.53	-9.24	0.15	-3.86	-0.04	0.35	0.83	0.13	1.11	0.10
RESM	0.03	-4.31	0.33	-0.59	-0.26	0.00	0.57	0.11	0.18	0.15
TEXWAP	3.20	-6.53	-3.14	-4.95	-0.04	1.34	1.94	0.24	1.07	0.66
RESP	0.29	-5.53	-0.70	-1.78	-0.14	0.21	0.70	0.47	0.75	0.14
METAL	0.61	-7.43	-0.55	0.18	0.41	0.40	0.98	0.64	0.76	0.19
TRANS	0.10	-12.05	0.45	-6.49	-0.15	0.42	1.06	-0.23	0.27	0.11
ELECTRONIC	0.60	-6.98	-0.87	-1.68	0.85	0.49	0.98	0.86	0.72	0.21
MACHINE	0.64	-7.10	-0.32	-1.06	0.25	0.28	0.62	0.68	0.55	0.16
OMF	0.92	-8.74	-4.47	-4.27	0.45	0.71	1.44	2.06	2.03	0.35
SERVICES	0.36	-5.89	-2.36	-8.23	0.21	0.49	1.12	0.54	1.42	0.23
Total	0.59	-7.13	-1.15	-3.60	0.17	0.37	0.95	0.57	0.86	0.21

Part B

	JAPAN	CHINA	USA	HK	NIC_HK	ASIA_SSE	AMERIC_CS	EU	ANC	ROW
AGRP	-1.50	11.34	-1.07	10.18	-0.36	-0.59	-0.99	-0.03	-1.90	0.07
RESM	-0.26	6.19	-0.63	3.98	-0.24	-0.23	-0.28	-0.02	-0.36	0.00
TEXWAP	-4.34	-0.59	-2.87	4.15	-3.86	-1.11	6.43	-1.67	1.98	1.57
RESP	-0.23	-6.05	-0.61	3.52	-1.07	0.06	0.94	0.37	0.86	0.19
METAL	-1.02	3.30	-1.14	7.07	-0.55	-0.17	-0.67	0.14	-0.52	-0.01
TRANS	1.07	2.05	-1.78	50.53	1.10	0.83	-0.36	0.21	-0.92	0.20
ELECTRONIC	1.03	-12.95	-1.65	11.64	1.71	1.28	2.53	-0.07	0.63	0.40
MACHINE	0.19	-6.68	-1.21	11.88	0.27	0.71	1.26	0.21	0.23	0.23
OMF	3.07	-19.75	-2.59	14.39	2.38	2.58	6.72	2.25	8.10	0.53
SERVICES	0.47	1.69	-0.70	-7.96	0.39	-0.03	-0.33	0.88	-0.58	0.04
Total	0.39	-6.32	-1.20	-1.11	0.18	0.34	0.76	0.43	0.70	0.18

*: Do not include intra-region trade for composite regions.

Table 8: Welfare Effects: Total (Part A) and Decomposition (Part B)
Part A: Total Welfare Effects

REGIONS	scenario 1	scenario 2	scenario 3	scenario 4
JAPAN	2515.25	2331.34	2149.00	1811.63
CHINA	-16793.06	-16932.08	-16196.89	-16521.65
USA	-2361.39	424.79	-58.09	-466.51
HK	-2732.94	-1994.42	-1859.88	719.31
NIC_HK	388.12	240.05	288.72	359.99
ASIA_SSE	1283.55	2134.34	2488.90	2568.44
AMERIC_CS	1623.39	662.29	622.02	545.65
EU	2810.52	2437.93	3194.76	2320.93
ANC	1942.95	1814.70	2276.60	2127.74
ROW	929.69	429.37	-199.35	-239.28
Total	-10393.91	-8451.68	-7294.21	-6773.76

Part B: Welfare Decomposition

REGIONS	Allocative Effects				Income Effects				TOT Effects			
	scenr 1	scenr 2	scenr 3	scenr 4	scenr 1	scenr 2	scenr 3	scenr 4	scenr 1	scenr 2	scenr 3	scenr 4
JAPAN	-111.74	-50.91	-35.99	-15.00	-0.03	-0.02	-0.02	-0.01	2627.02	2382.28	2185.01	1826.64
CHINA	-4150.01	-4335.17	-3877.63	-4050.65	0.08	0.07	-0.09	-0.08	-12643.13	-12596.98	-12319.16	-12470.92
USA	-7665.43	-6514.77	-6593.59	-5628.65	0.00	0.13	0.14	0.10	5304.04	6939.43	6535.36	5162.05
HK	1.64	494.75	541.16	416.53	-6.51	-2.87	-2.34	-0.78	-2728.07	-2486.29	-2398.70	303.56
NIC_HK	-27.92	-1.35	18.56	34.44	0.00	0.00	0.00	0.00	416.04	241.40	270.16	325.55
ASIA_SSE	416.53	1122.33	1323.00	1334.71	-0.06	-0.08	-0.08	-0.09	867.08	1012.09	1165.98	1233.83
AMERIC_CS	331.03	186.98	181.63	164.47	-0.17	-0.06	-0.06	-0.05	1292.53	475.37	440.44	381.23
EU	325.25	309.74	792.46	657.27	0.00	0.00	-0.07	-0.04	2485.27	2128.18	2402.37	1663.70
ANC	317.45	276.82	460.59	417.28	-0.07	-0.06	-0.15	-0.14	1625.56	1537.94	1816.16	1710.59
ROW	381.83	246.41	62.65	38.48	-0.01	0.00	0.00	0.00	547.87	182.96	-262.00	-277.76
Total	-10181.37	-8265.16	-7127.15	-6631.12	-6.77	-2.90	-2.67	-1.09	-205.78	-183.62	-164.38	-141.55

unit: millions of 1995 dollar.

scenario 1: removing MFN with MFA in place
scenario 2: removing MFN and relaxing MFA on the part of US in one simulation
scenario 3: removing MFN and world-wide MFA in one simulation
scenario 4: removinh MFN and world-wide MFA all together without shocking HK's services export to the US

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