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**Issues in U.S.-ROK Economic Relations**

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### **Abstract**

This paper builds on the analysis of Kiyota and Stern (2007) of the economic effects of a Korea-U.S. free trade agreement (KORUSFTA). We review the objectives and main features of the KORUSFTA as perceived prior to the negotiation of the agreement and then outline the main features of the actual KORUSFTA that was concluded at the end of June 2007 and is now awaiting legislative approval by the authorities in both nations. We summarize the results of a modeling study by the USITC (2007) that is based on the changes in bilateral tariffs and tariff rate quotas (TRQs) that were actually negotiated in the KORUSFTA. We also present for comparative purposes our earlier results from Kiyota and Stern (2007) that used the pre-negotiations data and some specially constructed estimates of services barriers. Finally, we presents some calculations of the effects of alternative negotiating options that may be considered especially if it turns out that the KORUSFTA is not approved by either or both Korea and the United States.

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## **Issues in U.S.-ROK Economic Relations**

**Kozo Kiyota, Yokohama National University and University of Michigan**  
**Robert M. Stern, University of Michigan**

### **I. Introduction**

This paper builds on Kiyota and Stern (2007) in which we analyzed the economic effects of a Korea-U.S. free trade agreement (KORUSFTA). In Section II, we review the objectives and main features of the KORUSFTA as perceived prior to the negotiation of the agreement. In Section III, we then outline the main features of the actual KORUSFTA that was concluded at the end of June 2007 and is now awaiting legislative approval by the authorities in both nations. Section IV summarizes the results of a modeling study by the USITC (2007) that is based on the changes in bilateral tariffs and tariff rate quotas (TRQs) that were actually negotiated in the KORUSFTA. We also present for comparative purposes our earlier results from Kiyota and Stern (2007) that used the pre-negotiations data and some specially constructed estimates of services barriers. Section V presents some calculations of the effects of alternative negotiating options that may be considered especially if it turns out that the KORUSFTA is not approved by either or both Korea and the United States. Section VI concludes.

### **II. Objectives and Main Features of a Korea-U.S. Free Trade Agreement**

#### **U.S. Objectives**

USTR Robert Portman notified the U.S. House and Senate on February 2, 2006 that the Administration intended to initiate free trade negotiations with the Republic of Korea. Some of the key points mentioned in the notification were as follows:

An FTA with Korea will help foster economic growth and create higher paying jobs in the United States and enable American companies to increase their exports of goods and services to Korea and promote bilateral investment.

An FTA will level the playing field for U.S. exports in Korea by providing U.S. products treatment comparable to that which Korea has offered its other FTA partners.

FTA negotiations will provide a unique opportunity to improve further the protection that Korea affords to intellectual property, including strengthened measures in Korea against the illegal online distribution and transmission of copyrighted works.

The FTA will provide for regulatory transparency in trade and investment matters, including a public comment period, the publication of general administrative actions, and other appropriate provisions.

An FTA will help strengthen Korea's cooperation with the United States in multilateral and regional trade fora.

An FTA will further enhance the strong United States-Korea regional partnership, which is a force for stability and development in Asia, cooperation on military and security matters, and the bolstering of strategic interests in the region.

In pursuing bilateral FTAs, the United States uses a common framework covering the issues to be negotiated with the partners involved. This framework, which is patterned after the North American Free Trade Agreement (NAFTA) negotiated in 1992-93, has been updated and adapted for the new FTAs negotiated in recent years and currently in process. The issues to be covered include:

1. Trade in Goods
2. Customs Matters, Rules of Origin, and Enforcement Cooperation
3. Sanitary and Phytosanitary (SPS) Measures
4. Technical Barriers to Trade (TBT)
5. Intellectual Property Rights
6. Trade in Services
7. Investment
8. Electronic Commerce
9. Government Procurement
10. Transparency/Anti-Corruption/Regulatory Reform
11. Competition
12. Trade Remedies
13. Environment
14. Labor
15. State-to-State Dispute Settlement

It is also of interest to cite the U.S. objectives in a KORUSFTA noted in Schott, Bradford, and Moll (2006, pp. 2-3): For the United States, an FTA with Korea would be the largest bilateral trade deal since NAFTA, yielding substantial export gains while also advancing important US

foreign policy objectives in East Asia. While this was true when FTA talks were initially vetted years ago, a number of factors have changed:

(1). Korea agreed to include agriculture in the pact, including reinstatement of imports of certain types of US beef and to liberalize screen quotas by cutting in half the number of days on which movie theaters must show domestic films. From the US perspective, these actions removed important impediments to launching the FTA talks.

(2). U.S.–South Korean relations have been strained at times over U.S. military redeployment and differences over how to respond to North Korean provocations. An FTA might therefore reinforce the political commitment to work cooperatively to deal with the security challenges on the Korean peninsula.

(3). The U.S. share of Korean imports has been declining due in part to greater competition from China, Japan, and the European Union. While the U.S. still accounts for a substantial share of Korea's imports, a number of U.S. products and services may still face significant market-access barriers.

(4). The prospect of a KORUSFTA has apparently attracted support in Congress from members of both parties and may serve to help rebuild the pro-trade coalition that has become fractured in recent years. Such support will be essential in addressing the potential problems in the negotiations involving automobile and beef trade and the potential labor issues involved in the Kaesong Industrial Complex in North Korea.

It is evident from the foregoing that a KORUSFTA reflects a myriad of objectives from the U.S. perspective, with a focus on expanding the market access in Korea for U.S. goods and services and shaping the regulatory environment in Korea to conform to U.S. principles and institutions.

## **Korea's Objectives**

According to Seok-Young Choi, Minister for Economic Affairs in the Korean Embassy in Washington (2006):

The Korea-US. FTA will be commercially significant in terms of trade and foreign direct investment and serve to further the longstanding regional and bilateral political and strategic interests of both countries.

While supportive of the multilateral approach to freer trade, Korea's position is being broadened to avoid the opportunity cost of exclusion from the general trends of FTAs, achieve a level playing field in its foreign markets, and enhance its international competitiveness.

In pursuing FTAs, Korea has followed a multi-track approach in terms of strategy and has sought comprehensive FTAs in terms of coverage and content and broad geographic coverage with trading partners.

It is expected that a Korea-U.S. FTA would contribute significantly to bilateral trade, increase economic welfare and employment, provide more secure market access, lock in a variety of domestic reforms, and generate greater efficiency, productivity, and economic growth. Other countries may in turn be motivated to pursue preferential trading arrangements with Korea and the U.S.

Since there will be winners and losers from the integration process, Korea will seek longer implementation periods for vulnerable sectors particularly in agriculture and services and develop domestic programs for adjustment assistance.

Time is of the essence in completing and signing the FTA before the mid-2007 expiration of the U.S. Trade Promotion Authority. The overall package of the FTA must be balanced in order to receive the necessary domestic approval in both countries. A high level of political will is therefore needed throughout the negotiation and ratification process.

Schott, Bradford, and Moll (2001, p. 2) also provide their views on Korea's FTA objectives. As they note, Korean interest has been derived mainly from concerns about trade diversion generated by regional agreements among North American countries and from the desire for special treatment under trade remedy statutes and dispute settlement systems comparable to that accorded to the NAFTA signatories. But more broadly, the FTA is seen as critical to Korea's future for two related reasons: first, the Korean economy will have to undergo a substantial transformation to address the competitive challenges of China and India and to counter the

adverse demographic trends facing Korean society over the next generation; and second, Korean officials recognize that they face a large challenge in achieving their goal of becoming the economic and financial “hub” of Northeast Asia. An FTA with the United States is viewed accordingly as buttressing domestic reform and securing better access to the US market than their East Asian competitors. On the political front, Korean officials hope that there will be positive spillover effects from an FTA on the broader bilateral relationship. In part, they hope that the FTA will produce a better climate for pursuing North-South trade and stimulating investment and development on the Korean peninsula, including the Kaesong Industrial Complex.

Korea’s objectives in seeking an FTA thus reflect a variety of considerations, including a desire to avoid being left out from the general trend of FTAs, to secure access to foreign markets and achieve the static and dynamic benefits of trade liberalization, to enhance their global competitiveness, and to strengthen their political and strategic alliances with the United States.

### **III. Major Provisions of the KORUSFTA Negotiations**

As mentioned above, the KORUSFTA was concluded on June 30, 2007, prior to the expiration of the President’s authority to negotiate trade agreements as specified in U.S. legislation. The agreement is currently awaiting legislative deliberation in both nations. Korea is likely to begin the ratification process in December 2007 following the forthcoming national election. The U.S. Congress approval process will probably be sometime in 2008. The major provisions of the FTA have been summarized in a number of Fact Sheets prepared by the Office of the USTR:

“The United States concluded historic free trade agreement negotiations with Korea on April 1, 2007. The KORUS FTA will be the United States’ most commercially significant FTA in 15 years. This comprehensive trade agreement will eliminate tariffs and non-tariff barriers to trade in goods and services promote economic growth, and enhance trade between the United States and Korea.

Korea is a trillion dollar economy and is the United States’ 7th largest trading partner. In 2006, U.S. goods exports to Korea were \$32.5 billion, an increase of 16.9 percent from the previous year. In 2005, U.S. foreign direct investment in Korea totaled roughly \$18.8 billion and was concentrated largely in the

manufacturing, banking, and wholesale trade sectors. Korea currently enjoys broad access to the U.S. market, and the United States is Korea's third largest market, importing 17 percent of Korea's worldwide exported goods.

**New Market Access for U.S. Consumer and Industrial Products** – Under the agreement, nearly 95 percent of bilateral trade in consumer and industrial products becomes duty-free within three years of entry into force of the agreement, including many key U.S. exports such as industrial and consumer electronic machinery and parts, auto parts, power generation equipment, the majority of chemicals, medical and scientific equipment, motorcycles, and certain wood product. Most remaining tariffs will be eliminated within 10 years. Korea has also agreed to allow trade in remanufactured goods under the agreement. This will provide significant export and investment opportunities for U.S. firms involved in remanufactured products such as medical equipment, machinery, and auto parts.

**Expanded Markets for U.S. Farmers and Ranchers** – More than half (or \$1.6 billion) of current U.S. farm exports to Korea will become duty-free immediately, including wheat, corn for feed, soybeans for crushing, hides and skins, and cotton, plus a broad range of high value agricultural products such as almonds, pistachios, bourbon whiskey, wine, raisins, grape juice, orange juice, fresh cherries, frozen french fries, frozen orange juice concentrate, and pet food.

U.S. farm products benefiting from expanded market opportunities with two-year tariff phase-outs include avocados, lemons, dried prunes, and sunflower seeds. In addition, U.S. farm products benefiting from expanded market opportunities with five-year tariff phase-outs include food preparations, chocolate and chocolate confectionary, sweet corn, sauces and preparations, other fodder and forage (alfalfa), breads and pastry, grapefruit, and dried mushrooms.

**Increased Access for U.S. Autos** – The U.S.-Korea FTA contains an unprecedented package of provisions designed to ensure that U.S. automobiles can compete in Korea on a level playing field. Part of that package is an immediate elimination of Korean tariffs on most U.S. priority passenger vehicles and trucks. Korea has also agreed to overhaul its system for taxing cars based on “engine displacement”, including the Special Consumption Tax, the Annual Vehicle Tax, and the Subway/Regional Development Bond. In addition, under the FTA, Korea has committed to address specific auto non-tariff barriers, including current standards, to ensure they do not impede the market access of U.S. autos, and to create an Autos Working Group to serve as an early warning system to address regulatory issues that may develop in the future. Finally, the agreement contains an innovative expedited dispute settlement process for auto-related measures that violate the FTA, with a full snapback of MFN car tariffs in the case of a violation.

**Textiles and Apparel: Promoting Cooperation and Benefits** – Apparel products made in South Korea will qualify for preferential treatment under the agreement if they use U.S. or Korean fabric and yarn, thereby supporting U.S. fabric and yarn exports and jobs. Customs cooperation commitments between the U.S. and South Korea will allow for verification of claims of origin or preferential treatment, and denial of preferential treatment or entry if claims cannot be verified. A special textile safeguard will provide for temporary tariff relief, if imports under the agreement prove to be damaging to domestic

producers.

**Promoting the Competitive Process** – Korea will take measures to ensure that anticompetitive practices by private parties and activities by government established monopolies or state enterprises do not undermine the benefits of the FTA, while ensuring strengthened due process protections for subjects of competition law enforcement actions, such as providing an opportunity to present evidence and to be heard, to review and rebut information, and to cross examine any persons who testify in administrative hearings of antitrust agencies. In addition, under the agreement, antitrust agencies must have the authority to enter into settlement agreements with respondents in administrative and civil enforcement actions.

**Strong Protections for U.S. Investors** – The agreement establishes a stable legal framework for U.S. investors operating in Korea. All forms of investment are protected under the agreement. U.S. investors will enjoy in almost all circumstances the right to establish, acquire, and operate investments in Korea on an equal footing with local investors. Investor protections will be backed by a transparent, binding international arbitration mechanism. The investment protections in this FTA are as strong as in any U.S. FTA to date.

**Open Services Markets** – Korea vastly improved upon its WTO commitments in services, providing meaningful market access commitments that extend across virtually all major service sectors. Significant progress was made in the area of express delivery services, where Korea provided greater and more secure access to international delivery services and charted a course for future reform on domestic services. Korea also made great strides on legal services, opening up for the first time to foreign legal consulting services.

Other areas where Korea offered improved access include the following sectors: research and development, legal, accounting, maintenance and repair of equipment, education, health, environmental, telecommunications, audio-visual, and services incidental to mining.

For financial services, Korea will accord substantial market access and adopt a negative list approach to financial services regulation, as well as regulatory reform in important areas such as transparency and regional integration of data processing. In addition, the FTA contains commitments by Korea to begin the process to ensure that the same rules and regulations apply equally to cooperatives selling insurance and Korea Post and private insurers.

**A More Open Broadcast Market for U.S. Audio-Visual Products** – Korea agreed to make significant improvements concerning treatment of broadcasting and audiovisual services, including by allowing within three years 100% foreign ownership of program providers by U.S. firms, reducing quotas on animation and film, increasing allowable content from a single country, and locking in current content quotas in other areas.

**An Open and Competitive Telecommunications Market** – Korea committed to permit U.S. controlled companies to own 100 percent of Korean phone companies, up from a current cap of 49 percent, within two years. The agreement

requires the parties to ensure access to telecommunications services. In addition, the agreement requires the parties to ensure that dominate phone companies provide cost-based interconnection and access to essential facilities, including submarine cable landing stations. The agreement also establishes groundbreaking provisions to safeguard operators' technology choices, particularly in wireless technologies, where U.S. service and equipment suppliers have strong competitive advantages.

**E-Commerce: Free Trade in the Digital Age** – Korea and the United States agreed to non-discriminatory and duty-free treatment of all digital products (e.g., software and audio-visual products), whether imported in physical form or over the Internet, and to principles promoting access to the Internet to conduct electronic commerce.

**Pharmaceutical and Medical Devices** – The agreement contains provisions on pharmaceutical and medical device market access issues that go far beyond those in other U.S. FTAs. The agreement includes commitments to improve access to innovative products and to ensure the transparent, predictable, and non-discriminatory pricing and reimbursement of innovative and generic pharmaceutical products and medical devices. In addition, the agreement contains provisions to enhance ethical business practices, improve the predictability and transparency of the pricing and reimbursement system, and to establish a Medicines and Medical Devices Committee to monitor implementation of commitments in this area. The agreement also requires Korea to create an independent mechanism to review pricing and reimbursement decisions.

**Greater Protection for Intellectual Property Rights** - The agreement provides standards for protection and enforcement of a broad range of intellectual property rights, including trademarks, copyrights and patents, which are consistent with U.S. standards and will provide effective protection and enforcement for emerging technologies.

These standards include state-of-the-art protections for digital products such as U.S. software, music, text, and videos. Additionally, the agreement provides for stronger, more comprehensive protection for patents, trademarks and test data, as well as rules on civil, criminal and customs enforcement, and a commitment to establish a patent linkage system to ensure adequate enforcement of pharmaceutical patent rights.

**Commitments and Cooperation to Protect the Environment** – The Agreement commits the parties to effectively enforce their own domestic environmental laws and adopt, maintain, and implement laws, regulations, and all other measures to fulfill obligations under the seven covered multilateral environmental agreements (MEAs). All obligations under the Environment Chapter are subject to the same dispute settlement procedures and enforcement mechanisms as commercial obligations. In addition, the agreement also requires both parties to implement a process for public submissions to ensure consideration of civil society views on the implementation of the Chapter. The agreement is complemented by an environmental cooperation agreement that provides a framework for undertaking cooperative activities on a bilateral, regional, and multilateral basis.

**Internationally-recognized Labor Rights** – The Agreement includes an enforceable reciprocal obligation for the countries to adopt and maintain in their laws and practice the fundamental labor rights as stated in the 1998 ILO Declaration on Fundamental Principles and Rights at Work, including a prohibition on the worst forms of child labor. Neither Party may waive or derogate from laws implementing this obligation in a manner affecting trade or investment. There is also an enforceable obligation to effectively enforce labor laws related to those rights and to working conditions. These labor obligations are subject to the same dispute settlement procedures and enforcement mechanisms as commercial obligations. The Agreement also establishes a Cooperative Mechanism for the governments to develop cooperative activities aimed at promoting and advancing fundamental labor rights.

**Open and Fair Government Procurement** – The government procurement obligations build and expand on the two countries' obligations under the plurilateral WTO Agreement on Government Procurement (GPA). Under the FTA, Korea will provide U.S. firms with non-discriminatory access to nine Korean central government entities that are not covered under the GPA. The FTA will also expand procurement open to U.S. suppliers by setting a threshold (contract values above which procurement is opened) that is nearly half the GPA threshold. The FTA also includes improvements in procurement practices, including reductions in tendering periods for purchasing commercial goods and services, and improvements in making procurement notices and other information available electronically. The FTA provides for a working group on government procurement to take up any issues, in particular, those related to information technology.

**Increased Transparency** – The parties have committed to strong transparency obligations including commitments by their respective national governments to publish proposed regulations in advance, allow a reasonable opportunity to comment on the proposed regulations, address significant substantive comments received, and publish final regulations in an official journal of national circulation

Additional transparency obligations are included in a wide range of chapters, including National Treatment and Market Access for Goods, Customs Administration and Trade Facilitation, TBT, Cross-Border Trade in Services, Financial Services, Telecommunications, Labor, Environment, Competition-Related Matters, and Pharmaceuticals and Medical Devices.

The agreement's dispute settlement mechanisms provide for open public hearings, public access to documents, and the opportunity for third parties to submit views.

**Strengthened Protection against Technical Barriers to Trade** – The Chapter on Technical Barriers to Trade builds upon and reinforces Korea's commitments in the WTO Agreement on Technical Barriers to Trade. Notably, the Chapter goes beyond other TBT chapters in recent U.S. FTAs through disciplines to promote transparency in the way governments develop and apply technical regulations and related conformity assessment procedures (e.g., testing and certification). The agreement also contains commitments by the Korean

government to address concerns relating to specific emissions and safety standards issues. Further, the agreement provides for the establishment of an Autos Working Group to address regulatory issues that may arise in the future. Finally, the Chapter establishes a committee mechanism to allow for quick resolution of problems as they arise, backed by FTA dispute settlement provisions if needed.

**Customs Administration and Rules of Origin** – The United States and Korea have agreed on significant commitments on customs administration, rules of origin, and origin procedures that will ensure that the U.S. and Korean private sector stakeholders lock-in and maximize the benefits of the FTA, including provisions on transparency and publication, efficient release of goods, automation, express shipments, advance rulings, importer focused origin procedures, and comprehensive product-specific rules of origin.”

### **Contentious Issues in the KORUSFTA**

Schott (2007) identifies a number of contentious issues in the negotiated FTA that are troublesome from the U.S. standpoint especially. These issues include the auto provisions, agriculture, services, and the Kaesong Industrial complex.

#### ***Autos***

In the case of autos, Schott notes (p. 3) that:

“The disparity in bilateral trade flows...has provoked heated concerns that continue to echo in the congressional debate on the KORUS FTA—including a demand issued in March 2007 that the pact include quantitative indicators to ensure increased US exports to Korea. ...To some US observers, the disparity in the volume of Korean exports to the US market compared with US exports to Korea (150 to 1) is prima facie evidence of discrimination. They remain skeptical that the KORUS FTA will provide meaningful market access for US exporters, given the limited results from attempts over the past two decades to break down barriers to the Korean auto market. ...They conclude that US sales will not increase significantly, and therefore the United States should not remove its remaining trade restrictions affecting Korean shipments to the US market.

The KORUS FTA provisions on autos were a high priority for both countries. For Korean firms, the primary objective was to secure the immediate elimination of the small US tariff on passenger vehicles (2.5 percent) [and the phasing out of the 25 percent tariff on light trucks]. For the United States, the goal was to remove the obstacles to market access in Korea.”

Schott asks (p. 5):

“Are the auto provisions on the KORUS FTA ‘unbalanced?’ In terms of the requirements to change existing policies, the answer is definitely yes. Korea is

required to lower its barriers to trade and investment much more than the United States.

Claims that the pact is ‘unbalanced’ because the *balance of trade* is one-sided reflect confused economics and confuse the policy debate. The real issue is whether tariff liberalization and regulatory reform in Korea will create new export opportunities for US automakers. ...The scope and pace of ...reforms do not provide ironclad guarantees of increased sales to Korea but the cost advantage alone should generate higher demand for US-made autos. ...In terms of what should be done to restore the health of the US auto industry, FTAs have positive, albeit limited, medicinal powers. Curing the US industry’s chronic problems, particularly healthcare and pension costs, require domestic policy reforms that should be urgently addressed by the US Congress.”

### *Agriculture*

Schott (p. 6) notes that the most important issues in the agricultural negotiations were rice for Korea and beef for the United States. Rice was exempted in the negotiations in deference to Korea’s concern about the potential disruptive effects of permitting significant imports of rice. With regard to U.S. beef, the main obstacle has been the Korean ban on imports on health grounds because of some evidence of the presence of “mad cow” disease. Bilateral discussions are in progress with regard to the lifting of the import ban, but it remains to be seen how the Korean authorities will respond. In any event, bilateral agricultural trade is relatively small, and the coverage and timing of the removal of agricultural trade barriers will apparently benefit U.S. exporters the most.

### *Services*

As noted in the above summary of the negotiations, significant concessions were made in liberalizing services barriers, especially for Korea. Schott suggests (p. 8) that while the United States stands to gain from these concessions, the gains for Korea may turn out to be the most important effects of the FTA:

“By committing to greater transparency of administrative and regulatory procedures and by removing obstacles to investment and the provision of services (where restrictions often raise production and distribution costs for producers of goods and services alike), the Korean government will help promote a more conducive environment for investment from both domestic and foreign

sources, The ancillary benefits of the required investment and regulatory reforms, as well as the increased productivity of services industries, should accrue across the Korean economy.”

### ***Kaesong Industrial Complex***

Korea’s position in the negotiations was that it wanted goods produced in the Kaesong Industrial Complex to be given preferential treatment in the FTA. But the United States was opposed, given its opposition to the North Korean regime because of North Korea’s nuclear stance and its alleged international financial and other illicit activities. In recognition of the possible future rapprochement with North Korea, Schott notes (p. 9) that the FTA establishes a committee to “(1) identify geographic areas that *may be* designated OPZs [outward processing zones on the Korean peninsula]; and (2) develop criteria for evaluating whether goods produced in OPZs *may be* considered eligible for FTA preferences.” Schott further notes that the granting of these preferences raises a question of whether the goods involved meet the requisite labor standards that are specified in U.S. FTAs, and that U.S. congressional action might be required in granting the preferences.<sup>1</sup>

### **The Ratification Process**

It is not at all clear when the U.S. Congress will consider the implementing legislation for the KORUSFTA. There are a number of other FTAs on the congressional agenda, each of which may raise difficult questions given the different interest groups involved and whether there may be issues of labor rights and national security that need to be resolved. Trade legislation also has to compete with many other and more important legislative issues that the Congress must consider. But perhaps of greatest significance is the unfolding of the presidential campaign and the outcome of the various primary elections to be held in January and February 2008. Under the circumstances, the congressional vote on the KORUSFTA could come at the earliest sometime in

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<sup>1</sup>For a comprehensive analysis of the issues posed by the Kaesong Industrial Complex, see Graham (2007)

the spring or early summer of 2008 or very possibly in 2009 following the November 2008 presidential election

The ratification timetable in Korea is also not clear. The Korean government submitted the KORUSFTA bill on September 9 to the National Assembly. But the ratification process may be complicated because there will be two elections in eight months: a presidential election in December 2007 and a general election in April 2008. The general election may be the most important since it is more tied in with the interests of constituents in the rural and industrial sectors, some of whom may support or oppose the KORUSFTA. The ratification process is further complicated by the ongoing negotiations for an FTA with the European Union and possible FTAs with China, Japan, and other countries. It may well be that the legislators will decide first to move ahead with the KORUSFTA possibly to goad the U.S. Congress into more rapid and favorable action and to expedite the negotiations with other potential FTA partners.

#### **IV. Computational Analysis of the KORUSFTA**

Having reviewed the objectives and main features of the KORUSFTA as perceived prior to the negotiation of the agreement and the actual KORUSFTA that was concluded, we now turn to computational analysis of the economic effects of the KORUSFTA. This analysis will provide some insight into the potential benefits and costs of the FTA that will in turn be useful to the policy makers in the two countries in their deliberations of whether or not to ratify the FTA. We will first review the computational results of the analysis of the KORUSFTA reported in USITC (2007). We will then review our earlier computational results of the KORUSFTA reported in Kiyota and Stern (2007). Before considering the computational results, it will be useful to provide some commentary on the use and interpretation of computable general equilibrium (CGE) models.

## **CGE Modeling**

CGE models provide an economy-wide framework for analysis that takes into account the interdependencies that exist both within and between countries. The framework is essentially microeconomic in character. When combined with data covering the sectoral production, trade, and employment of the component countries together with measures of import tariffs and other forms of trade barriers, it is possible then to simulate the economic effects of various patterns of trade liberalization. The computational results based on the model simulations will then provide estimates of the effects of trade liberalization on aggregate economic welfare for individual countries together with the impacts on production, trade, and employment at the sectoral levels.

It is important to understand that the CGE modeling simulation results provide indications of the potential economic changes involved. In this respect, they are not meant to be empirical forecasts or predictions of the changes since they are not derived from econometric methods that can yield statistically-based estimations. Further, because they are microeconomic in character, CGE models of necessity abstract from the macroeconomic forces at work at the aggregate level in individual countries. As a consequence, it may be very difficult to compare CGE modeling results with the actual changes that occur in the economic variables over given periods of time. A further important consideration is that CGE models used to analyze the effects of trade liberalization may differ because of the assumptions that characterize their framework. In any event, CGE modeling results are therefore to be interpreted as the potential effects of trade liberalization at the microeconomic level, holding macroeconomic influences constant. The magnitudes and directions of change indicated by the CGE models are thus very useful in their own right, subject to the caveats just mentioned.

As noted in Kiyota and Stern (2007), many studies of a KORUSFTA have relied on what is commonly referred to as a GTAP (Global Trade Analysis Project) model, using different versions of the GTAP database and base year. GTAP models typically rely on a structure of perfect competition with constant returns to scale and assume that products can be distinguished

by national origin. This latter assumption is often called the Armington assumption, and, conceptually, it affords countries elements of monopoly power that is reflected in their tariff rates. As a result, when tariffs are reduced in this framework, there may be large terms-of-trade-effects as the assumed monopoly power is eroded. In our judgment, GTAP models may therefore yield results that are not altogether plausible because of their reliance on the Armington assumption of national product differentiation. As we note below, the Michigan Model of World Production and Trade, which we have used for our computational analysis, contains features of imperfect competition and product differentiation at the firm level that are not typically captured by GTAP-based models. The Michigan Model thus does not exhibit the often large terms-of-trade effects associated with GTAP-based models.

#### **USITC (2007) Analysis of the KORUSFTA**

The USITC report assesses the likely impact of the KORUSFTA on the U.S. economy as a whole and on specific industry sectors. A GTAP type model has been used, consisting of 54 sectors—40 merchandise and 14 service sectors--and 10 countries, including the United States and Korea. The model permits measurement of the effects of the actually negotiated KORUSFTA tariffs and quota reductions on aggregate economic sectors and labor markets. The standard GTAP model in current use is based on data for 2001. The USITC model was updated to reflect the state of the economy in 2005 and then projected to 2008, when the FTA is assumed to take effect. The CGE model-based analysis was supplemented with analysis of sector-specific market access provisions, services, and the impact of trade-facilitation measures and regulatory environment provisions. The supplemental analyses were qualitative rather than quantitative because of data limitations.

The USITC's computational results indicate (pp. 2-5/6) that the removal of the tariffs and tariff-rate-quotas (TRQs) specified in the FTA would increase U.S. aggregate economic welfare

by \$1.8-2.1 billion, which is less than 0.05 percent of 2008 projected GDP.<sup>2</sup> By far the largest gain comes from improved terms of trade, which as noted, is characteristic of GTAP models. The estimated changes in trade flows due to the KORUSFTA (p. 2-9) are an increase in U.S. exports to Korea of \$9.7-10.1 billion and U.S. imports from Korea of \$6.4-6.9 billion. U.S. exports to the world are estimated (p. 2-14) to increase by \$4.8-5.3 billion and imports from the world by \$2.8-3.1 billion. U.S.-Korea bilateral trade thus increases more than U.S. trade with the world as the result of the KORUSFTA. Finally, the USITC model suggests (p. 2-15) that the KORUSFTA will have modest effects on output or employment for most sectors in the U.S. economy. It is noteworthy that the USITC study does not report welfare, trade, and output and employment effects for Korea even though these effects could be obtained from the model simulations.

#### **Kiyota and Stern (2007) Analysis of the KORUSFTA**

It is of interest to consider for comparative purposes the modeling results of Kiyota and Stern (2007), based on the Michigan Model of World Production. However, this comparison is limited because Kiyota and Stern used the data adapted from the GTAP 2001 database together with specially constructed measures of services barriers for computational purposes, whereas the USITC (2007) study has used measures of the actual changes in tariff rates and TRQs that were negotiated in the KORUSFTA.<sup>3</sup> Keeping the differences in mind, the Kiyota and Stern results may nonetheless be of interest in their own right.

The version of the Michigan Model that Kiyota and Stern used covered 27 economic sectors, including agriculture, manufactures, and services, in each of 30 countries/regions.<sup>4</sup> The

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<sup>2</sup> It is interesting to note that in an earlier USITC (2001) study, using a GTAP model comprising 5 regions and 10 sectors and a base year of 1995, it was estimated that U.S. economic welfare would increase by \$19.6 billion (0.23% of GDP), and Korean economic welfare would increase by \$3.9 billion (0.69% of GDP) as of 2005.

<sup>3</sup> Kiyota and Stern focused on the removal of trade barriers. Other issues such as rules of origin, intellectual property rights, environmental issues, and labor rights are difficult to quantify and are therefore not covered in the analysis.

<sup>4</sup> North Korea is not available in the current GTAP database and, therefore, is included as part of the rest of the world.

distinguishing feature of the Michigan Model is that it incorporates some aspects of trade with imperfect competition, including increasing returns to scale, monopolistic competition, and product variety.<sup>5</sup> Details of the Michigan Model are available in Deardorff and Stern (1990, esp. pp. 9-46) and Brown and Stern (1989a, b). A more complete description of the formal structure and equations of the model can be found on line at [www.Fordschool.umich.edu/rsie/model/](http://www.Fordschool.umich.edu/rsie/model/).

The effects of the combined U.S.-Korea bilateral liberalization of agricultural protection, manufactures, and services are shown in columns (9) and (10) of Table 1. U.S. welfare increases by \$25.12 billion (0.14% of GDP), and Korea's welfare increases by \$9.28 billion (1.26% of GDP). Most of the other countries/regions show small, positive increases in welfare. Global economic welfare rises by \$41.04 billion. These results are in contrast to the magnitudes of the welfare effects generated in the USITC (2007) study based on the GTAP framework, making allowance as mentioned that the USITC study has used the actually negotiated changes in bilateral trade barriers. The effects of bilateral services liberalization noted in columns (7) and (8) of Table 1 are considerably larger as compared to the agricultural and manufactures liberalization, suggesting that the greatest gains from the KORUSFTA may come from services liberalization.

The changes in U.S. exports and imports arising from the FTA are indicated in the first four columns of Table 2. Total exports and imports increase by \$7.8 billion. Agricultural exports increase by \$1.6 billion, food, beverages, and tobacco by \$1 billion, manufactures by \$2.6 billion, and services by \$2.5 billion. There are negligible imports of agricultural products, imports of manufactures increase by \$4.9 billion, and imports of services increase by \$2.6 billion. These changes in U.S. trade are not materially different from those reported in the USITC study.

Changes in the value of output are indicated in the fifth and sixth columns of Table 2. It is evident that output expands in all of the agricultural sectors, food, beverages, and tobacco,

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<sup>5</sup> In the real world, the various effects occur over time, some of the more quickly than others. However, the Michigan Model is static in the sense that it is based upon a single set of equilibrium conditions rather than relationship that vary over time. It is not feasible therefore to use the model to analyze the speed of adjustment to the new equilibrium.

chemicals, non-metallic mineral products, machinery & equipment, other manufactures, and other private services. Output declines especially in textiles and wearing apparel. These results are similarly small compared to the USITC output results.

Changes in employment shown in the seventh and eighth columns in Table 2 mirror the changes in output. It appears that employment is shifted to the expansion of the agricultural sectors and food, beverages, and tobacco, and away from most of the manufacturing sectors and from services. But the employment changes noted are all comparatively small in percentage terms, which is again similar to the results reported in the USITC study. It should be noted that the employment changes sum to zero because of the assumption of full employment of the fixed labor supply.<sup>6</sup> That is, there will be positive and negative shifts in employment that balance out for the economy as a whole.

The changes in Korea's exports and imports arising from the FTA are indicated in Table 3. Korea has minor changes in its agricultural exports. Its exports of manufactures increase by \$6.3 billion and services by \$2.3 billion. Korea's imports of agricultural products and food, beverages, and tobacco increase by \$1.7 billion, manufactures by \$3.7 billion, and services by \$2.9 billion. There are noticeably large increases in output and employment in textiles, wearing apparel, leather products & footwear, and transportation equipment and declines in the other manufacturing sectors and in services. The employment changes thus reflect the shift of labor from the more capital-intensive to the relatively labor-intensive manufacturing sectors, and the changes are large enough to suggest that adjustment problems may be encountered depending on how rapidly the bilateral barriers would be removed.

Table 4 provides an indication of the changes in the bilateral trade flows in all the countries/regions of the model in response to the KORUSFTA. U.S. bilateral exports to Korea increase by \$9.2 billion but decline across all other countries/regions as trade diversion takes

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<sup>6</sup> The Michigan Model assumes that any initial trade imbalance remains constant as trade barriers are changed and exchange rates adjust. The Model also assumes that there are no nominal rigidities. Therefore, there is no role for a real exchange rate mechanism.

place. U.S. imports from Korea increase by \$6.9 billion, there are increased U.S. imports from several other trading partners, and small reductions in imports from a number of other countries. Korea's bilateral exports increase to most of its trading partners. Its bilateral imports from the United States increase, but its imports decline from most of its trading partners, again indicating the presence of trade diversion.

It is evident from Tables 1-4 that the Michigan Model generates potential effects of the KORUSFTA that differ significantly in a number of respects from the effects reported in the USITC (2007) study. These differences no doubt reflect the fact that the Michigan Model results are based on the pre-negotiation trade barriers. But perhaps of greater importance is that the Michigan Model takes into account measures of services barriers and also makes allowance for a variety of aspects of imperfect competition that are not represented in the USITC model that is based on the assumption of perfect competition and national product differentiation (Armington assumption).

To shed more light on the differences in data and modeling structures, the authors plan to use the actually negotiated changes in tariffs and TRQs in the framework of the Michigan Model. This will provide insight accordingly into why the modeling results are different and possibly yield a more definitive analysis of the potential effects of the KORUSFTA.

## **V. Computational Analysis of Alternative Negotiating Options**

Having analyzed the economic effects of the KORUSFTA, we now compare U.S. and Korean economic interests for other FTAs that the two nations have negotiated or are in progress, and how and whether their interests would be more or less enhanced by unilateral free trade and global (multilateral) free trade as compared to the adoption of the KORUSFTA and other bilateral FTAs.<sup>7</sup> The welfare comparisons are indicated in Table 5.

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<sup>7</sup> For an analysis of Korea's trade policy options, see Deardorff (2007).

### **Korean FTAs**

The first column in Table 5 summarizes the welfare effects of the KORUSFTA and below this the welfare effects of the actual and potential bilateral FTAs between Korea and a number of partner countries, including Canada, Chile, Japan, Mexico, and Singapore. It is evident that Korea's welfare gain from a KORUSFTA of \$9.3 billion is considerably greater than any of the other FTAs listed. The global welfare increase of \$41.0 billion from a KORUSFTA is similarly greater than the increases of the other FTAs.

The third column in Table 5 indicates the welfare effects of a Korea-ASEAN FTA. Korea's welfare gain of \$8.7 billion is similar to the gain from a KORUSFTA. The global welfare gain of \$33.2 billion is less than \$41.0 billion increase from a KORUSFTA.

### **U.S. FTAs**

The second column in Table 5 summarizes the welfare effects of some selected U.S. bilateral FTAs, including those with Australia, Chile, and Singapore that are now operative and one with Thailand that is being negotiated. The United States has also been negotiating bilateral FTAs with several additional countries. The welfare increase for the United States of \$25.1 billion for the KORUSFTA is substantially greater than the increase for any of the other four countries indicated. This is the case as well for the global welfare increase of \$41.0 billion for the KORUSFTA as compared to the other bilateral FTAs. These conclusions would hold for any of the other bilateral FTAs that the United States has negotiated or that are in process. The third column of Table 5 lists the welfare effects of regional free trade represented by the Free Trade Area of the Americas (FTAA). The U.S. welfare increase of \$73.0 billion from the FTAA is about three times greater than the gain from the bilateral KORUSFTA.

### **U.S. and Korean Unilateral Liberalization**

The bottom of the second column of Table 5 shows the welfare gains from unilateral free trade undertaken individually by the United States. The increase in U.S. welfare with unilateral free

trade of \$358.9 billion is much greater than the increase associated with any of the U.S. bilateral and regional FTAs shown in the table. This is the case as well for the increase in global welfare with U.S. unilateral free trade. Similarly, Korea's welfare increase with unilateral free trade of \$33.8 billion is greater than the welfare increases of any of the FTAs listed individually and in total.

### **Global (Multilateral) Free Trade**

The last column of Table 5 shows the welfare effects of global free trade. U.S. welfare rises by \$614.3 billion and Korea's welfare rises by \$86.1 billion. Global welfare rises by \$2.9 trillion. The welfare benefits of global free trade are therefore much greater than the benefits to be derived from the bilateral FTAs, regional FTAs, and from unilateral free trade for both the United States and Korea. It can also be seen that most of the welfare gains from global free trade come from the elimination of manufactures tariffs and services barriers.

These calculations clearly show that multilateral trade liberalization offers potentially far greater increases in economic welfare for the United States, Korea, their FTA partner countries, and the other countries/regions that are covered in the global trading system. This is the case even if there would be less than complete free trade globally. That is, if existing trade barriers in the ongoing Doha Development Agenda negotiations were to be reduced, for example, by one-third or one-half, the resulting global and national gains would be proportionally lower. But these welfare gains but would still far exceed the welfare gains from the FTAs noted and the gains from the possible adoption of unilateral free trade by the United States and Korea. This would almost certainly remain true even if there are other benefits stemming from the FTAs that have not been taken into account in the Michigan Model simulations.

## **VI. Conclusion**

We have had occasion in this paper to review the objectives and main features of the KORUSFTA as perceived prior to the negotiation of the agreement and to outline the main features of the actual KORUSFTA that was concluded at the end of June 2007 and is now awaiting ratification by the authorities in both nations. We summarized in particular the results of a modeling study by the USITC (2007) that is based on the changes in bilateral tariffs and tariff rate quotas (TRQs) that were actually negotiated in the KORUSFTA. We also presented for comparative purposes our earlier results from Kiyota and Stern (2007) that used the pre-negotiations data and some specially constructed estimates of services barriers. To provide some perspective on KORUSFTA, we presented some calculations of the effects of alternative negotiating options that may be considered especially if it turns out that the KORUSFTA is not approved by either or both Korea and the United States.

There are significant potential benefits that the United States and Korea could realize from multilateral trade negotiations. But we know of course that the Doha Round has been at an impasse for some years now and could fail. The KORUSFTA might then offer some worthwhile benefits to the two nations if ratified, and there could be gains from other FTAs as well. Unilateral liberalization is always an option, but it may be difficult to implement politically. It will be interesting accordingly to see how the different negotiating options for the United States and Korea will play out.

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**Table 1: Global Welfare Effects of Korea-U.S. FTA (billions of U.S. dollars and percentage)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Agricultural protection			Manufactures tariffs			Services barriers		Total		Real returns		Terms of trade
	Tariff	Export subsidy								Capital	Labor		
	% of GDP	Billions of dollars	% of GDP	Billions of dollars	% of GDP	Billions of dollars	% of GDP	Billions of dollars	% of GDP	Billions of dollars	%	%	%
Japan	0.01	0.83	0.00	-0.01	-0.00	-0.09	0.00	0.24	0.01	0.97	0.01	0.00	0.01
United States	-0.01	-1.40	0.00	0.05	0.04	7.27	0.11	19.20	0.14	25.12	0.03	0.02	0.05
EU and EFTA	0.01	0.74	0.00	-0.01	0.00	0.08	0.00	0.39	0.01	1.21	0.00	0.00	0.01
Canada	0.01	0.10	0.00	-0.00	0.01	0.08	0.01	0.09	0.02	0.28	0.01	0.00	0.00
Australia	0.01	0.05	0.00	-0.00	0.01	0.03	0.01	0.04	0.02	0.12	0.01	0.01	0.01
New Zealand	0.01	0.01	0.00	-0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.01	-0.00
Hong Kong	0.02	0.05	0.00	-0.00	0.02	0.05	0.00	0.00	0.04	0.10	0.02	0.02	0.02
Korea	-0.07	-0.50	-0.02	-0.16	0.61	4.48	0.74	5.46	1.26	9.28	1.36	1.53	-0.28
Singapore	0.01	0.01	0.00	-0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.01	0.01	0.00
Taiwan	0.01	0.05	0.00	-0.00	-0.02	-0.11	0.01	0.04	-0.01	-0.03	0.00	-0.01	0.00
China	0.08	1.69	0.00	-0.00	0.02	0.44	0.00	0.07	0.11	2.20	0.11	0.08	-0.03
India	0.00	0.02	0.00	-0.00	0.00	0.00	0.00	0.02	0.00	0.04	0.00	0.00	-0.01
Indonesia	0.02	0.05	0.00	-0.00	0.01	0.01	0.01	0.02	0.03	0.08	0.02	0.01	0.01
Malaysia	0.02	0.03	-0.00	-0.00	-0.04	-0.06	0.02	0.02	-0.01	-0.01	0.01	-0.01	0.01
Philippines	0.02	0.03	0.00	-0.00	-0.01	-0.01	0.01	0.02	0.02	0.03	0.01	0.01	0.00
Thailand	0.03	0.06	0.00	-0.00	-0.02	-0.05	0.01	0.01	0.01	0.02	0.01	-0.01	-0.00
Vietnam	0.04	0.02	0.00	-0.00	0.05	0.03	0.01	0.00	0.10	0.06	0.07	0.07	-0.06
Russia	0.01	0.04	0.00	-0.00	-0.00	-0.00	0.00	0.00	0.01	0.04	0.00	-0.00	-0.00
Turkey	0.00	0.01	0.00	-0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	-0.01
Mexico	0.01	0.09	0.00	-0.00	0.00	0.01	0.01	0.07	0.02	0.17	-0.00	-0.00	0.00
Argentina	-0.01	-0.05	0.00	-0.00	-0.00	-0.01	0.00	0.01	-0.01	-0.05	0.00	0.01	-0.03
Brazil	0.05	0.48	0.00	-0.00	0.00	0.02	0.00	0.02	0.06	0.51	0.07	0.03	-0.03
Chile	0.02	0.02	0.00	-0.00	0.01	0.01	0.01	0.01	0.03	0.04	0.02	0.02	0.01
Colombia	0.01	0.01	0.00	-0.00	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.01	0.00
Peru	0.01	0.01	0.00	-0.00	0.00	0.01	0.00	0.01	0.01	0.03	0.00	-0.00	0.01
Uruguay	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
Rest of Asia	0.02	0.07	0.00	-0.00	-0.00	-0.02	0.00	0.01	0.01	0.06	0.01	0.01	-0.02
Rest of Middle East	0.01	0.11	0.00	-0.00	0.01	0.11	0.02	0.18	0.03	0.39	0.02	0.01	0.01
Rest of Central and Latin America	0.01	0.04	0.00	-0.00	0.01	0.05	0.00	0.03	0.02	0.12	0.01	0.01	0.00
Africa	0.01	0.09	0.00	-0.00	0.01	0.09	0.00	0.03	0.02	0.21	0.02	0.01	0.01
<b>Total</b>		<b>2.73</b>		<b>-0.15</b>		<b>12.43</b>		<b>26.05</b>		<b>41.04</b>			

Source: Kiyota and Stern (2007)

**Table 2: Korea-U.S. Free Trade Agreement: Change in Exports, Imports, Outputs, and Number of Workers for the United States**

	Exports		Imports		Output		Employment Number of workers <sup>a</sup>	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Rice	30	4.8	0	0.3	33	1.1	460	1.1
Wheat	25	0.4	1	0.2	28	0.2	388	0.2
Other grains	618	5.8	2	0.2	649	1.6	7,446	1.6
Vegetables and fruits	99	1.1	13	0.1	83	0.2	1,064	0.2
Oil seeds	494	4.6	1	0.3	527	1.7	7,151	1.7
Sugar	0	0.1	0	0.2	4	0.1	67	0.1
Plant-based fibers	26	0.6	-0	-0.1	6	0.0	63	0.0
Other crops	185	3.3	16	0.2	193	0.3	3,390	0.3
Livestock	78	1.1	8	0.1	197	0.1	1,092	0.1
Other natural resources	10	0.4	2	0.1	8	0.0	-2	-0.0
Mining	5	0.1	131	0.1	-72	-0.0	-363	-0.0
Food, beverages and tobacco	1,046	2.0	101	0.2	1,226	0.1	1,880	0.1
Textiles	-19	-0.1	784	1.5	-1,109	-0.4	-4,426	-0.5
Wearing apparel	-10	-0.1	1,209	1.4	-954	-0.5	-3,482	-0.6
Leather Products & Footwear	14	0.4	70	0.2	-32	-0.1	-171	-0.2
Wood & Wood Products	32	0.1	148	0.1	-54	-0.0	-483	-0.0
Chemicals	784	0.4	434	0.2	490	0.0	119	0.0
Non-metallic Min. Products	149	0.6	43	0.1	104	0.0	289	0.0
Metal Products	157	0.3	288	0.3	-87	-0.0	-1,077	-0.0
Transportation Equipment	51	0.0	1,009	0.3	-704	-0.1	-2,287	-0.1
Machinery & Equipment	1,341	0.3	716	0.1	792	0.0	1,438	0.0
Other Manufactures	125	0.5	177	0.2	-8	-0.0	-186	-0.0
Construction	-2	-0.1	3	0.1	2	0.0	-68	-0.0
Elec., Gas & Water	-5	-0.1	2	0.2	20	0.0	-639	-0.0
Trade & Transport	646	0.6	1,043	0.7	-72	-0.0	-5,379	-0.0
Other Private Services	1,534	0.8	1,064	0.9	612	0.0	-569	-0.0
Government Services	322	0.4	470	1.3	-344	-0.0	-5,714	-0.0
Total	7,735		7,735		1,537		0	

a) Changes in employment sum to zero because of assumption of full employment.

Source: Kiyota and Stern (2007)

**Table 3: Korea-U.S. Free Trade Agreement: Change in Exports, Imports, Outputs, and Number of Workers for Korea**

	Exports		Imports		Output		Employment Number of Workers <sup>a</sup>	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Rice	0	6.6	36	27.7	380	2.7	23,659	2.7
Wheat	-0	-0.4	39	4.0	17	0.7	512	0.7
Other grains	0	2.2	161	8.3	-90	-34.7	-4,294	-34.7
Vegetables and fruits	-5	-1.0	112	22.1	-39	-0.2	-2,317	-0.3
Oil seeds	-0	-0.3	327	34.8	-129	-58.2	-8,655	-58.2
Sugar	0	0.1	0	2.4	0	1.9	0	1.8
Plant-based fibers	-0	-1.8	74	8.9	3	4.2	190	4.1
Other crops	-5	-1.1	176	13.6	-120	-3.1	-6,939	-3.1
Livestock	4	3.9	65	3.4	459	3.5	6,656	3.5
Other natural resources	1	0.6	18	1.3	79	1.4	289	0.2
Mining	-1	-1.8	386	1.0	-41	-1.3	-317	-1.6
Food, Beverages & Tobacco	277	6.9	663	7.6	2,255	3.1	-2,373	-0.7
Textiles	2,123	8.6	242	3.6	3,942	9.5	29,591	7.6
Wearing Apparel	1,746	27.7	-182	-6.0	2,181	15.5	33,033	13.2
Leather Products & Footwear	327	7.7	12	0.6	592	8.0	5,168	5.8
Wood & Wood Products	10	0.2	111	2.0	250	0.7	-1,694	-0.4
Chemicals	407	1.0	1,034	3.5	1,515	0.9	-1,374	-0.2
Non-metallic Min. Products	4	0.2	170	3.4	-43	-0.2	-2,215	-1.4
Metal Products	94	0.4	357	1.7	283	0.3	-3,556	-0.7
Transportation Equipment	1,244	2.7	243	2.1	1,904	2.0	4,116	0.7
Machinery & Equipment	-213	-0.2	1,575	1.8	-841	-0.3	-20,385	-1.4
Other Manufactures	261	5.3	112	4.2	287	2.8	1,077	1.4
Construction	0	0.1	2	1.1	580	1.2	63	0.1
Elec., Gas & Water	-0	-0.1	1	1.4	250	0.3	-4,476	-0.3
Trade & Transport	1,018	7.9	591	2.7	2,783	1.4	-23,553	-0.3
Other Private Services	904	6.1	1,837	7.8	1,831	0.6	-9,512	-0.4
Government Services	396	9.7	432	15.8	158	0.1	-12,692	-0.3
<b>Total</b>	<b>8,594</b>		<b>8,594</b>		<b>18,449</b>		<b>-0</b>	

a) Changes in employment sum to zero because of assumption of full employment.

Source: Kiyota and Stern (2007)

**Table 4. Korea-U.S. Free Trade Agreement: Changes in Bilateral Trade Flows (millions of dollars)**

From	To																											Exports						
	JPN	USA	EUN	CAN	AUS	NZL	HKG	KOR	SGP	TWN	CHN	IND	IDN	MYS	PHL	THA	VNM	RUS	TUR	MEX	ARG	BRA	CHL	COL	PER	URY	ROA		XME	CLA	AFR	ROW		
Japan	JPN	0	104	-16	8	-0	-0	-12	25	1	-4	-77	-2	-3	1	1	-1	-2	-0	-1	4	-2	-3	-0	-0	-0	-0	-7	5	-17	-3	-1	-3	
United States	USA	-136	0	-530	-138	-22	-6	-27	9,173	-32	-41	-79	-14	-10	-16	-9	-14	-1	-14	-10	-95	-20	-41	-5	-3	-8	-1	-12	-28	-83	-42	0	7,735	
EU and EFTA	EUN	-58	264	0	17	-6	-3	-28	-117	-8	-12	-76	-18	-7	-6	-3	-9	9	-25	-19	7	-20	-28	-2	-1	-0	-1	-16	29	-23	-50	-31	-241	
Canada	CAN	-7	54	-29	0	-1	-0	-2	-5	-1	-2	-11	-1	-1	-1	-0	-1	0	-1	-0	-1	-1	-2	-0	-0	-0	-0	-1	-0	-4	-2	-0	-21	
Australia	AUS	-6	9	-5	1	0	-3	-1	10	-0	-3	-7	-1	-1	-1	-1	0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-2	1	-0	-1	-1	-14	
New Zealand	NZL	-0	4	-1	0	0	0	-0	-10	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	0	-0	-0	0	-0	-0	-0	-0	0	-0	-0	-0	-0	-9	
Hong Kong	HKG	-1	6	-2	1	0	-0	0	-19	0	-2	-30	-1	-0	-0	-1	-1	1	-0	-0	0	-1	-1	0	-0	0	-0	-2	2	-0	-0	-0	-52	
Korea	KOR	205	6,930	289	57	11	5	60	0	-11	-12	468	12	66	-12	15	15	43	25	17	21	4	14	6	4	6	2	81	105	111	70	-12	8,594	
Singapore	SGP	-5	12	-9	1	-0	-0	-7	-5	0	-1	-11	-2	-2	-3	-1	-1	1	-0	-0	0	-0	-1	-0	-0	-0	-0	-7	2	-1	-1	-0	-41	
Taiwan	TWN	-0	27	3	2	-0	-0	-10	-1	2	0	-48	-1	-7	1	-6	-2	-10	-0	-0	2	-1	-1	-0	-0	-0	-0	-0	-13	-3	-4	-2	-0	-73
China	CHN	36	218	141	19	6	0	-9	-428	18	14	0	4	2	8	1	7	4	-2	1	10	0	2	1	0	1	0	-8	11	-0	6	-3	60	
India	IND	-1	-8	-7	-0	-0	-0	-1	-11	-0	-1	-3	0	-1	-1	-0	-1	0	-1	-0	0	-0	-1	-0	0	-0	-0	-5	-1	-1	-1	-0	-47	
Indonesia	IDN	-3	8	6	1	-0	-0	-1	35	-1	-2	-5	-1	0	-1	-1	-1	-1	-0	-0	0	-0	0	-0	0	-0	-0	-2	-0	-0	0	-0	29	
Malaysia	MYS	-7	16	-5	1	-0	-0	-4	-3	-5	-1	-11	-4	-1	0	-0	-1	-1	-0	-0	1	-1	-0	-0	-0	0	-0	-5	1	-0	-1	-0	-33	
Philippines	PHL	-4	8	-1	1	0	-0	-1	-7	-1	-0	-2	-0	-0	-0	0	-0	0	-0	-0	0	-0	-0	0	-0	0	-0	-0	0	0	0	-0	-7	
Thailand	THA	0	6	3	1	1	-0	-1	-21	3	1	-3	-0	-1	1	-0	0	0	-0	-0	1	-0	-0	0	0	0	-0	-4	0	0	-1	-0	-16	
Vietnam	VNM	12	3	43	1	-0	0	0	-14	-0	2	-1	-0	-0	0	0	0	0	-0	0	1	0	0	0	0	0	0	1	-0	0	-0	47		
Russia	RUS	-2	10	-12	0	0	-0	-0	-7	-0	-0	-10	-1	-0	-0	-0	-0	0	-1	0	-0	-1	-0	-0	0	-0	-0	-1	2	-1	-0	-13	-39	
Turkey	TUR	-0	-2	-10	0	0	-0	-0	-3	-0	-0	-1	-0	-0	-0	-0	0	-1	0	0	0	-0	-0	0	-0	0	-0	-0	-1	-0	-1	-2	-22	
Mexico	MEX	-2	-8	-9	1	-0	-0	-1	-3	-0	-1	-2	-2	-0	-0	-0	0	-0	-0	0	-1	-1	-0	-0	-0	-0	-0	0	-7	-1	-0	-39		
Argentina	ARG	1	9	8	1	0	0	-0	-90	0	-0	0	0	0	-0	0	0	0	0	0	1	0	4	4	0	0	-0	3	2	2	-0	-54		
Brazil	BRA	3	41	20	2	0	0	-0	-156	0	0	0	0	0	0	0	0	0	0	6	-3	0	2	0	2	0	-0	4	3	2	-1	-72		
Chile	CHL	-2	6	-1	0	-0	-0	-0	6	-0	-0	-2	-0	-0	-0	-0	0	-0	0	0	-1	-1	0	-0	-0	-0	-0	0	-1	-0	-0	3		
Colombia	COL	-0	1	-0	0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	0	-0	-0	0	0	0	-0	-0	0	-1	-0	-0	-1	
Peru	PER	-0	12	-2	-0	-0	-0	-0	0	-0	-0	-4	-0	-0	-0	-0	0	-0	-0	-0	-0	-1	-0	-0	0	-0	-0	0	-4	-0	-0	-0		
Uruguay	URY	-0	0	0	0	-0	-0	-1	0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	0	-1	-0	0	-0	0	0	-0	0	-0	-0	-0	-2		
Rest of Asia	ROA	1	-25	6	1	0	-0	-1	3	-1	-0	-2	0	-0	-0	1	-0	0	-0	1	-0	-0	-0	0	0	0	-0	0	-1	-0	-0	-0	-19	
Rest of Middle East	XME	-20	14	-39	-0	-1	-0	-3	248	-3	-8	-14	-6	-2	-2	-1	-4	0	-1	-2	-0	-1	-3	-0	-0	-0	-0	-11	0	-1	-5	-1	133	
Rest of Central and Latin America	CLA	-1	-16	-4	2	0	-0	-0	-12	-0	-0	-1	-0	0	0	-0	0	-1	-0	2	-2	-2	-0	-0	0	-0	-0	1	0	-0	-0	-37		
Africa	AFR	-3	34	-33	1	-0	-0	-1	-7	-0	-3	-6	-4	-1	-0	-0	-1	0	-1	-1	0	-1	-4	-0	-0	0	-0	-1	2	-1	0	-1	-32	
Rest of the World	ROW	-2	-0	-43	-0	-1	-0	-0	15	-0	-1	-6	-1	-0	-0	-0	-1	0	-15	-4	-0	-0	-1	-0	-0	-0	-0	-1	-1	-1	-2	0	-69	
Imports		-3	7,735	-241	-21	-14	-9	-52	8,594	-41	-73	60	-47	29	-33	-7	-16	47	-39	-22	-39	-54	-72	3	-1	-0	-2	-19	133	-37	-32	-69		

Source: Kiyota and Stern (2007)

**Table 5: Computation of Welfare Effects of Bilateral FTAs, Unilateral Free Trade, and Global Free Trade (billions of dollars and percentage)**

<b>Bilateral Free Trade</b>			<b>Bilateral Free Trade (continued)</b>			<b>Regional Free Trade</b>			<b>Global Free Trade</b>		
	Welfare			Welfare			Welfare		Welfare		
	(U.S.\$)	(% of GDP)		(U.S.\$)	(% of GDP)		(U.S.\$)	(% of GDP)	(U.S.\$)	(% of GDP)	
<i>Korea-U.S.</i>			<i>Australia-U.S.</i>			<i>Korea+ASEAN</i>					
United States	25.1	0.1	United States	15.7	0.1	Indonesia	4.5	1.8	United States	614.3	3.4
Korea	9.3	1.3	Australia	3.8	0.6	Malaysia	5.1	3.3	Korea	86.1	11.7
Global	41.0		Global	18.1		Philippines	2.2	1.8	Global	2,857.7	
<i>Canada-Korea</i>			<i>Chile-U.S.</i>			Singapore	3.1	2.2	<b>Global Free Trade: Decomposition</b>		
Canada	1.8	0.1	United States	5.5	0.0	Thailand	4.0	2.0	<i>Agricultural</i>	Welfare	
Korea	2.0	0.3	Chile	1.0	0.9	Vietnam	0.8	1.4	<i>Protection</i>	(U.S.\$)	(% of GDP)
Global	4.1		Global	6.4		Korea	8.7	1.2	United States	19.5	0.1
<i>Chile-Korea</i>			<i>Singapore-U.S.</i>			Global	33.2		Korea	-1.9	-0.3
Chile	0.4	0.3	United States	13.0	0.1	<i>FTAA</i>			Global	7.8	
Korea	0.5	0.1	Singapore	2.0	1.5		Welfare		<i>Manufactures</i>	Welfare	
Global	0.7		Global	16.1		United States	73.0	0.4	<i>Tariffs</i>	(U.S.\$)	(% of GDP)
<i>Japan-Korea</i>			<i>Thailand-U.S.</i>			Canada	6.2	0.5	United States	85.2	0.5
Japan	15.7	0.2	United States	12.4	0.1	Mexico	11.9	1.1	Korea	52.3	7.1
Korea	2.2	0.3	Thailand	5.0	2.5	Argentina	10.7	2.2	Global	965.0	
Global	18.4		Global	16.3		Brazil	13.5	1.5	<i>Services</i>	Welfare	
<i>Korea-Mexico</i>			<b>Unilateral Free Trade</b>			Chile	4.0	3.5	<i>Barriers</i>	(U.S.\$)	(% of GDP)
Mexico	2.2	0.2	<i>United States</i>			Colombia	2.3	2.4	United States	509.6	2.8
Korea	2.1	0.3	United States	358.9	2.0	Peru	2.9	1.3	Korea	35.7	4.8
Global	3.0		Global	471.8		Uruguay	0.8	2.3	Global	1,885.0	
<i>Korea-Singapore</i>			<i>Korea</i>			Rest of FTAA	15.9	2.6			
Singapore	0.5	0.3	Korea	33.8	4.6	Global	130.1				
Korea	0.9	0.1	Global	92.4							
Global	1.8										

Source: Kiyota and Stern (2007)