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## Working Paper

# Is the ASEAN-Korea Free Trade Area (AKFTA) an Optimal Free Trade Area?

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Is the ASEAN-Korea Free Trade  
Area (AKFTA) an Optimal Free  
Trade Area?

Donghyun Park, Innwon Park,  
and Gemma Esther B. Estrada





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November 2008

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## **Abstract**

The 1997/98 Asian currency crisis has led a once high-flying East Asia to realize its vulnerability to external shocks. This realization has given strong impetus to greater economic integration among East Asian economies, with the ASEAN-Korea Free Trade Area (AKFTA) a case in point. This paper qualitatively and quantitatively examines the economic feasibility of AKFTA: qualitatively using the theory of economic integration, and quantitatively by applying a CGE model. Our two-dimensional analysis provides some, but not overwhelming, support for AKFTA's prospects as an effective means of promoting trade between ASEAN and the Republic of Korea.

*Keywords:* ASEAN, Korea, trade, free trade area, economic integration.

*JEL Classifications:* F10, F14, F15

## I. Introduction

The Republic of Korea (Korea) and the countries of the Association of Southeast Asian Nations (ASEAN) have been integral to the miracle that has transformed East Asia from a group of typically poor third world countries into the world's most dynamic economies. More precisely, Korea and ASEAN's Indonesia, Malaysia, Singapore, and Thailand have sustained rapid growth in the postwar era, alongside Hong Kong, China; Japan, and Taipei, China to put East Asia on the world map as an economic powerhouse. Hong Kong, China; Korea; Singapore; and Taipei, China are newly industrialized economies, while Indonesia, Malaysia, and Thailand have transformed themselves from stagnant agricultural economies into dynamic manufacturers. These eight "miracle" economies share a number of elements, including sound macroeconomic policies, high savings and investment rates, and heavy investment in education. Above all, the remarkable success of these countries has been based on export-oriented industrialization and is a powerful tribute to the potential benefits of globalization.

But that same globalization turned against these countries with a vengeance in the 1997/98 Asian financial crisis. The massive capital inflows that had helped fuel rapid economic growth wreaked financial havoc as foreign investors suddenly lost confidence, beginning with Thailand's forced baht devaluation in May 1997. Turmoil in the financial markets soon spread to the real economy and saw output contract sharply. Passionate debate rages about the causes of the crisis, but it is likely that a combination of external and internal factors played a role. What is beyond doubt is that the crisis was a painfully clear reminder that globalization holds opportunities as well as risks. Furthermore, there has been an unmistakable loss of momentum and self-confidence among many of these once high-flying economies.

There is a widespread perception throughout the region that external forces, such as investors from the United States (US) and Europe, were largely responsible for the Asian crisis. Regardless of their accuracy, such perceptions gave rise to a region-wide sense of vulnerability to and suspicion of external forces, which, in turn, fostered a greater sense of regional identity and gave a strong impetus to regional economic integration.<sup>1</sup> In the immediate aftermath of the Asian crisis, the focus of economic regionalism lay in promoting regional financial cooperation, best exemplified by the Chiang Mai Initiative (CMI) among the ten ASEAN countries, the People's Republic of China (PRC), Japan, and Korea. The focus of regionalism has more recently been shifting toward the expansion of intra-regional trade. The region's governments increasingly view intra-regional trade and domestic demand as a means of reducing their heavy dependence on extra-regional trade.

The ASEAN-Korea Free Trade Area (AKFTA)<sup>2</sup> is a concrete example of the active promotion of intra-regional trade. In May 2006 the two sides signed a free trade agreement that would lead to a free trade area by 2016. (Thailand did not sign due to the exclusion of rice from the agreement.) Greater economic cooperation between the two—with Korea the world's eleventh largest economy and ASEAN collectively a substantial economic presence—can yield

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<sup>1</sup> Asian Development Bank (2005, 2008), Ahn, Baldwin and Cheong (2005), Moon and Andreosso-O'Callaghan (2005), Harvie, Kimura and Lee (2005), Lee and Park (2005), Park (2006), and Lincoln (2004) provide overviews of East Asian economic regionalism in the post-crisis period.

<sup>2</sup> For more detailed information about the "Framework Agreement on Comprehensive Economic Cooperation Among the Governments of the Member Countries of the Association of Southeast Asian Nations (ASEAN) and the Republic of Korea," visit <http://www.aseansec.org/18063.htm> (ASEAN site) and <http://www.mofat.go.kr/english/econtrade/fta/issues/index.jsp> (Korea site). For recent developments related to the ASEAN-Korea FTA, visit [http://www.bilaterals.org/rubrique.php3?id\\_rubrique=142](http://www.bilaterals.org/rubrique.php3?id_rubrique=142).

significant benefits for both sides. And Korea and ASEAN face many common challenges in the post-crisis period—such as growing competition from the PRC for manufactured exports and foreign direct investment—that strengthen the case for economic integration.

While economic integration refers to the removal of barriers to the cross-border flows of goods, services, capital, and labor, economic integration between ASEAN and Korea realistically means only more trade between the two sides before they can contemplate moving toward deeper levels of integration. The central objective of our paper is to examine the extent to which economic criteria favor AKFTA's prospects. That is, our central question is whether AKFTA is an optimal free trade area in the sense that it is likely to be mutually beneficial for ASEAN and Korea from a purely economic viewpoint. To address this question we use qualitative analysis based on the theory of economic integration pioneered by Viner (1950), which tells us whether theoretical criteria favor AKFTA, and quantitative analysis using the CGE model, providing us with quantitative estimates of the impact of AKFTA.

In Section II, we review the theory of economic integration. In Section III, we explore the issue of whether AKFTA would be beneficial for ASEAN and Korea through the prism of this theory. In Section IV, we present a CGE model and its quantitative estimates of AKFTA's trade and welfare impact. And in Section V, we summarize our key findings.

## **II. Theory of Economic Integration**

The theory of economic integration is anchored in the theory of customs union, formally developed by Viner (1950). The key feature of regional economic integration is that the component economies of a region or trading bloc agree to undertake a progressive removal of barriers to free movement of goods, services, capital, and labor. Reduction or removal of tariffs and non-tariff barriers will obviously lead to economic integration within the region by facilitating the flow of goods. For example, in the European Union (EU) the Maastricht Treaty of 1992 established, in principle, free movement of goods, services, capital, and labor in Western Europe. The EU probably represents the most advanced form of international integration in the world today.<sup>3</sup> More generally, there are six types of economic integration.

- Preferential Trade Agreement (PTA) is the most basic form of economic integration. It imposes lower tariffs on imports from member countries than from third countries.
- A Free Trade Area is an agreement among countries under which tariffs and non-tariffs barriers (NTBs) such as quotas, licensing, and product safety regulations are abolished among members. However, each member retains its external tariffs and other regulations for trade with non-member countries. AKFTA is essentially a free trade area in progress.
- In a customs union, member states abolish all tariffs and quantitative restrictions on trade among member states. At the same time, they impose a common set of tariffs for trade with non-member states.

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<sup>3</sup> See Baldwin and Wyplosz (2006), De Lombaerde (2006), El-Agraa (1999), Jovanovic (2005, 2006), and Robson (2006) for overviews of economic integration theory

- A common market involves a customs union as well as free movement of factors of production such as capital and labor. The EU has been a common market since the Maastricht Treaty of 1992.
- In an economic union among countries, in addition to a common market, there is also harmonization of fiscal, monetary, industrial, and other economic policies. An example is the monetary union which came into existence on 1 January 1999 among eleven members of the EU.
- The highest degree of economic integration is a supranational union. Member governments hand over their sovereignty for economic and social policies to a supranational government. A supranational union is unlikely since nations are generally reluctant to surrender their sovereignty.

In the context of AKFTA, economic integration realistically means the expansion of trade between ASEAN and Korea. Removing all barriers to the movement of goods and services, capital and labor between Korea and the ten ASEAN states is at best a long-run goal. Substantial and concrete progress has already been made so far. In 2006–2007, ASEAN and Korea signed free trade agreements on goods and services, including a dispute settlement accord. In the early part of 2008, both parties agreed to complete the negotiations on the investment accord within the year. If the implementation of the free trade agreements turns out successfully, then perhaps ASEAN and Korea can, at a later stage, contemplate moving toward more advanced stages of integration.

#### **A. Theory of Customs Union**

Under a customs union, member-economies of a region agree to phase-out tariffs and quantitative restrictions on imports from the region, and impose a set of common external tariffs on imports from non-member countries. What distinguishes a customs union from a free trade area is that in the former there are common external tariffs against non-members as well as free trade, whereas in the latter, each member retains its own tariffs against non-members. It is thus possible to view a free trade area as a variant of the customs union or vice versa.

Theoretically, a customs union entails both positive and negative welfare effects. The positive effect, referred to as trade creation, arises from the replacement of higher cost domestic products with lower cost imports from member countries. The change from an expensive to a cheaper source of supply is beneficial because it is a move toward freer trade. For example, in the case of AKFTA, Malaysia may be better off importing automobiles from Korea instead of producing them locally. In turn, Korea may be better off importing some electronic components from Malaysia rather than producing them locally.

The negative effect, trade diversion, occurs when a member-country replaces low cost imports from non-members with higher cost imports from member nations. This diversion occurs because non-members face higher tariffs than members of the customs union. Trade diversion has a negative effect on welfare since it implies greater access to a more costly source of supply. In this sense, it is a move toward protectionism and away from free trade. For example, in the case of an ASEAN-Korea customs union, Korea may be worse off by importing some primary commodities from Indonesia rather than Australia.

The net gain of customs union depends on which effect is larger. If trade creation outweighs trade diversion, then the net effect of the customs union on welfare will be positive. However, if trade diversion outweighs trade creation, customs union could do more harm than good.

## **B. Static Factors**

As we have just seen, whether a customs union is beneficial depends on whether the magnitude of trade creation is greater or less than trade diversion. In answering this critical question, it is important to consider both static and dynamic factors. Static factors are important considerations in evaluating the one-off change in welfare arising from the formation of a customs union. Among these factors are the size of the free trade area (FTA), geographical proximity of member-economies, levels of economic development of member-economies, and complementarity of economic structures among member economies. In addition, factors related to external trade, including tariff structures of member economies prior to customs union, are important considerations. Finally, it is crucial to look at the substitutability between products of member states and products of non-member states in determining whether a customs union will be beneficial or not.

## **C. Dynamic Factors**

In contrast to static factors, dynamic factors do not pertain to one-off changes in welfare but gradually emerge over time. For example, we can expect firms and industries of a country more exposed to competition from its neighbors after the formation of a customs union to become more efficient. But those efficiency gains will not be realized overnight. The main dynamic benefits are improvements in efficiency due to greater competition and gains from greater specialization, economies of scale, and learning-by-doing. Other dynamic benefits include reduction in intra-regional transactions costs, some protection from adverse developments in world markets, and bargaining power vis-à-vis industrialized countries.

Against these potential dynamic benefits, we must also consider the dynamic cost of polarization. Integration among countries with different levels of income and economic development could lead to an unequal distribution of gains. Any perception that the benefits or costs of integration are disproportionately falling upon a country or a subset of countries is likely to produce a backlash which will threaten the viability of the union over time.

## **D. Non-Economic Factors**

Besides the largely economic criteria discussed in previous sections, a large number of non-economic factors determine the success or failure of economic integration. The experience of the EU highlights the central role of such non-economic variables in economic integration. Some examples are a common desire to put an end to violent conflicts, a shared feeling of vulnerability, and political leaders who realize there are common problems which require common solutions. By far the most important non-economic variable is political leadership seriously committed to integration and cooperation. The political commitment of the governments of both ASEAN and Korea to AKFTA is a pre-condition for the success of AKFTA. The political commitment, in turn, depends to a large extent on whether it is in the geopolitical self-interest of both sides to strengthen their overall relationship. AKFTA is a key channel for strengthening this relationship between ASEAN and Korea.

### **III. Prospects of AKFTA**

In this section, we examine whether the theoretical considerations discussed in the preceding section favor the success of AKFTA. Economic integration between ASEAN and Korea at this stage essentially means more trade between the two sides. ASEAN-Korea trade currently occurs primarily between Korea and ASEAN's richer inner core—Indonesia, Malaysia, Philippines, Singapore, Thailand and Brunei Darussalam. But Korea's trade with its poorer periphery—Cambodia, the Lao People's Democratic Republic, (Lao PDR) Myanmar, and Viet Nam—is also growing rapidly.

#### **A. Static Economic Factors**

Here we look at the various static factors that impinge on AKFTA's ability to become an effective mechanism for promoting mutually beneficial trade between ASEAN and Korea. We have already examined the criteria which theoretically support the creation of a customs union and now apply those criteria to AKFTA to evaluate its prospects for success.

##### **1. Size of FTA**

Trade creation is positively related to the economic size of the FTA, that is, the larger the economic size, the larger the potential trade creation. While AKFTA is much smaller in economic weight than NAFTA or the EU, it is by no means an economic lightweight. The 11 countries of AKFTA together had gross national income (GNI) of around \$1.84 trillion in 2006. In purchasing power parity (PPP) terms, AKFTA's GNI was about \$3.38 trillion, with Korea's at about \$1.11 trillion and ASEAN's at \$2.26 trillion. And the region is home to about 605 million people. These two factors indicate substantial potential for trade creation.

##### **2. Pre-FTA Tariff Structure**

Despite a general trend toward trade liberalization in Korea and ASEAN—especially the WTO members of the ASEAN inner core—under the multilateral WTO system, tariffs and non-tariff trade barriers between the two sides remain high enough to create significant opportunities for trade creation. For example, for political reasons, Korea has relatively high tariff rates against agricultural goods, which are a major export of Thailand and Viet Nam. Likewise, ASEAN countries that have sizable automobile industries, such as Thailand and Malaysia, have relatively high tariff rates against automobiles, a major Korean export.

The level and variance of tariffs against non-members also suggests some scope for trade diversion. According to WTO (2005), the simple average ad valorem tariff rate of Korea (11.2%) was higher than the rates in Indonesia, Malaysia, the Philippines, and Singapore, which ranged from 0.0% to 8.4%. Among the more advanced ASEAN countries, only Thailand had a higher average tariff rate (15.4%) than Korea. For nonagricultural goods, Korea's average tariff rate was 9.5%, almost twice the average for the five ASEAN countries above. Tariffs of agricultural goods had a higher variance—the average tariff rate for Korea was 41.6% while average tariff rates in the five ASEAN countries ranged from 0.0% to 29.6%. There also existed a wide variability in the tariff rates of the ASEAN countries and Korea for different specific product categories. Therefore, the structure of AKFTA's tariffs against outsiders does not rule out significant trade diversion.

### **3. Intra-FTA Trade Prior to AKFTA**

The trade creation effect is stronger the greater the size of pre-FTA trade. The underlying intuition is simple: countries that trade heavily with each other stand to gain the most from eliminating impediments to trade. By the same token, removing trade impediments will no longer matter to those who trade little with each other. ASEAN and Korea are already important export and import markets for each other. In 2006, ASEAN's exports to and imports from Korea reached \$27.2 billion and \$29 billion, respectively. ASEAN has become Korea's fifth largest trading partner and vice versa. Korea's exports to and imports from ASEAN accounted for around 9.8% of the country's total exports and 9.6% of its total imports in the same period. ASEAN-Korea trade has grown rapidly in recent years, rising from \$38.3 billion in 2000 to \$56.2 billion in 2006.

Although Indonesia, Malaysia, and Singapore capture about 70% of ASEAN's trade with Korea, other ASEAN economies have also become increasingly important. For Cambodia, Lao PDR, and Viet Nam, trade with Korea expanded around 10–30% between 2000 and 2006. The level and growth of trade between ASEAN and Korea is such that the removal of trade barriers will yield substantial benefits.

### **4. Substitutability of Products**

Substitutability of products of member states for those of non-member states increases the chances of trade creation. Substitutability refers to the production of similar but differentiated products. For example, Malaysia can theoretically substitute semi-conductors from Taipei, China with similar but slightly different semi-conductors from Korea. While ASEAN's trade with Korea is large and growing, most of ASEAN's exports go to other markets and most of its imports come from other markets. ASEAN's biggest trading partners are also Korea's biggest trading partners, namely, the PRC, EU, Japan, and the US. Such a trade pattern provides stylized evidence of the limited substitutability of products. The extent to which Korea and ASEAN can substitute imports from external markets with imports from each other is likely to be limited.

### **5. Disparity in Pre-FTA Level of Development**

If pre-FTA income levels are similar among members, integration will be more beneficial. A major reason for the EU's success is that all its countries are developed market economies with relatively small disparities in income levels and other structural characteristics. In AKFTA, Korean per capita income is significantly ahead of the ASEAN countries. Korea's 2006 per capita GNI was \$17,690 compared with ASEAN's \$1,881 (excluding Brunei and Singapore). In purchasing power parity terms, Korea's 2006 per capita GNI was \$22,990 and ASEAN's \$4,563, making Korea about five times richer. Only the city-state of Singapore and the small, oil-based economy of Brunei have higher per capita incomes than Korea. Income levels in ASEAN and Korea do not seem to be similar enough to provide potential for extensive intra-industry trade.

### **6. Geographical Proximity and Transportation Infrastructure**

Geographical proximity, along with good land, sea and air links, is important for economic integration. ASEAN and Korea are separated by the PRC and it takes six hours to fly between Seoul, the Korean capital, and Singapore, ASEAN's commercial hub. Nevertheless, ASEAN and Korea are much closer to each other than some of their other major trading partners, especially the US and the EU. Air and sea links are especially relevant to ASEAN-Korea trade given the absence of direct land links. There are frequent and expanding commercial flights linking

ASEAN and Korea and extensive commercial shipping activity between ASEAN (Singapore in particular) and major Korean ports, such as Pusan. All in all, some geographical distance separates ASEAN and Korea, but relatively good and improving air and sea links place the two in a strong position to efficiently increase bilateral trade under AKFTA.

## **7. Complementary or Competitive Economic Structures**

Whether the members' economic structures are complementary or competitive influences the success or failure of a free trade area. The insights of Meade (1955) suggest that the trade creation effect will be stronger if pre-FTA economic structures are competitive but post-FTA economic structures are complementary. High tariffs and non-tariff barriers may induce FTA members to produce similar goods before the FTA. Afterward, more efficient producers replace less efficient ones and the number of similar goods produced falls, resulting in welfare gains associated with specialization and economies of scale. That is, the removal of trade barriers within an FTA allows member countries to take better advantage of their comparative advantage. Korea and the ASEAN economies are competitive to some extent now, but trade barriers are high enough to protect inefficient domestic producers from effective competition in selected high-priority sectors such as Korea's agriculture and certain manufacturing sectors in ASEAN. The more significant question is whether ASEAN and Korea will become complementary after AKFTA so that they produce less similar goods than before the FTA, but the answer to this is unclear. Although the rapid growth of ASEAN-Korean trade in recent years does provide some indirect evidence of potential complementarities (See Kwon 2004), such evidence is far from conclusive.

### **B. Dynamic Economic Factors**

Although static benefits are an important motivation for economic integration, potentially large dynamic benefits provide an additional impetus. In particular, greater competition and improved efficiency arising from AKFTA will create positive welfare gains for both Korea and ASEAN.

As a consequence of globalization, both these regions face the challenge of the emergence of and competition from the PRC and India. Fostering greater competition through deeper and broader integration with each other can be highly useful in promoting productivity and efficiency, a pre-condition for success in an increasingly competitive global economy.

In fact, dynamic economic considerations seem to be a powerful underlying motivation behind the AKFTA initiative. While ASEAN and Korea have suffered an unmistakable loss of self-confidence and momentum in the post-Asian crisis period, ASEAN faces a much more urgent need to sharpen its international competitiveness. That's because Korea is still substantially ahead of the PRC and India in its position in the manufacturing value chain and therefore less vulnerable to competition from the two emerging giants. By contrast, the technology and skill gap between ASEAN and the PRC and India is much smaller, leaving ASEAN more vulnerable. Although exports and economic growth are not a zero-sum game, and, indeed, ASEAN is benefiting from large and growing exports to the PRC and India, there is little doubt that the emergence of the two giants poses long-run challenges to ASEAN. ASEAN economies can compete effectively in the global marketplace only by significantly improving productivity and efficiency. As for Korea, even though it is less exposed to competition from the PRC and India than ASEAN, it will also benefit from greater competition with ASEAN in those industries in which both economies are significant producers. Korea's active post-crisis pursuit of bilateral free trade agreements, including AKFTA, reflects to some extent a realization among policymakers and the general public of the need to improve the economy's adaptability and

flexibility in light of intensifying global competition. The formation of AKFTA may also increase the foreign direct investment (FDI) into the ASEAN economies and Korea by creating a larger common market from the perspective of outside investors. Foreign multinational companies (MNCs) locating in ASEAN will find it easier to export to Korea, and MNCs in Korea to export to ASEAN.

### **C. Non-Economic Factors**

While economic factors are clearly a powerful rationale for economic integration, we cannot ignore the importance of non-economic factors. The political commitment, will, and leadership of governments, by facilitating close cooperation among governments, are critical pre-conditions for a successful FTA. While many outside observers have often criticized ASEAN for being excessively consensual and hence largely ineffective, the group has in fact been remarkably successful in promoting political cooperation among member governments. Therefore, to a large extent, ASEAN countries have been able to speak with a single voice in negotiations with Korea over the formation of AKFTA. As noted earlier, Thailand is a significant exception in this regard due to its objections to the exclusion of rice from the agreement. In addition, there seems to be an ASEAN-wide consensus about the desirability and feasibility of AKFTA.

The political commitment of ASEAN and Korean governments to AKFTA is further reinforced by fundamental economic considerations. For ASEAN, AKFTA is a mechanism for benefiting from closer economic interaction with the world's eleventh biggest economy, a significantly richer and technologically more advanced country. This includes not only the opportunity to expand exports into a big market but also to attract capital and technology from Korean companies. For Korea, AKFTA is a means to expand trade with an economically significant region which is already a major trading partner. As such, AKFTA can help diversify both export and import markets, and reduce the country's reliance on trade with the PRC and the US.

## **IV. Quantitative Analysis Using the CGE Model**

In our qualitative analysis of static factors, we have noted that several factors, such as pre-FTA size, initial trade, and tariff barriers appear to bode well for the economic integration of ASEAN and Korea. At the same time, other factors such as pre-FTA level of development and limited substitutability of products between what ASEAN exports (imports) and what Korea imports (exports) may work against the success of AKFTA. This means that, depending on the importance of each factor, it is not clear whether a free trade area between Korea and ASEAN will be beneficial for its member-countries.

Several studies have investigated the impact of AKFTA using CGE models. These have mostly relied on the model and data base of the Global Trade Analysis Project (GTAP) and differ mainly in their assumptions. For the most part, these studies look at all the proliferating proposals for free trade agreements in East Asia rather than only AKFTA, and compare the welfare implications of various alternative scenarios of FTAs. While these studies tend to show AKFTA's impact on Korea, they do not always show its effect on individual ASEAN countries.

A common finding across several CGE-based studies is that AKFTA can benefit the ASEAN region as a whole. However, they are divided in terms of (1) the impact on Korea, (2) which countries are likely to benefit the most, or (3) whether Korea or ASEAN is likely to gain more from AKFTA. A study by Choi, Park, and Lee (2003) indicates that both Korea and ASEAN will experience welfare gains, but Korea will gain more than ASEAN. In contrast, simulations by

Cheong (2003) show that ASEAN will benefit but Korea is likely to suffer welfare and output losses. Ando and Urata (2006) incorporate trade liberalization, capital accumulation, and trade facilitation into their model, and found that individual ASEAN countries, in particular Thailand and Singapore, will benefit from AKFTA.

More recent studies based on CGE modeling takes into account countries' commitments to trade agreements as well as expected trade liberalizations over several years. Kawai and Wignaraja (2008) found that AKFTA generated positive income effects for Korea and individual ASEAN countries relative to their baseline scenario. Based on deviations in equivalent variations, the highest gains accrued to Viet Nam, Korea and Thailand while the lowest gains accrued to the CLM countries. Lee and van der Mensbrugghe (2007) examined AKFTA's welfare effects relative to a baseline scenario of no FTAs over the period 2001-2015. They found that AKFTA raised the welfare of Korea and ASEAN as a whole, but did not analyze the welfare effects for individual ASEAN countries.

Having reviewed the existing quantitative studies of AKFTA, we are now ready to perform our own quantitative analysis of AKFTA. More precisely, we apply the CGE model to quantify the gains and losses for the entire free trade area as well as individual countries. Information on individual country impact is particularly relevant for AKFTA, since the free trade area encompasses a great deal of heterogeneity in income and development levels.

## **A. Model and Data**

The CGE model used in this section is the "GTAP6inGAMS" model developed by Rutherford (2005). The model has three economic agents: producer, representative consumer consisting of both private household and government, and trading partners. The GTAP6inGAMS model is a traditional static Arrow-Debreu type of general equilibrium model in which the zero profit condition and market clearance define the equilibrium. The GTAP6inGAMS is a modified version of the GTAP model version 6 developed for GAMS users.<sup>4</sup>

We use the GTAP 6 database, which provides global production and trade data for 89 countries/regions and 55 sectors. For simplicity, we aggregate sectors into 7 general industries (See Table 1). We measure trade, output and welfare effects for (1) the free trade area as a whole and (2) individual member countries, except Cambodia, Lao PDR, and Myanmar, which we aggregate into a single economy and refer to as CLM.<sup>5</sup> Our simulations assume 2001 to be the base year using the GTAP Version 6.<sup>6</sup> The model is implemented using the GAMS MPSGE.<sup>7</sup>

In order to quantitatively measure the effects of the AKFTA on welfare, output production, and trade flows for member economies, we assume that both import tariffs and export taxes between members are eliminated, but trade barriers between members and nonmembers remain.

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<sup>4</sup> The GTAP (Global Trade Analysis Project) is providing both a multi-region and multi-sector CGE model and a global economic dataset for use in the quantitative analyses of international economic issues. For the GTAP, visit <https://www.gtap.agecon.purdue.edu>. For the GAMS (Generalized Algebraic Modeling System), visit <http://www.gams.com>.

<sup>5</sup> Owing to data limitations, we also exclude Brunei Darussalam.

<sup>6</sup> See Dimaranan and McDougall (2006).

<sup>7</sup> MPSGE (Mathematical Programming System for General Equilibrium analysis) is a subsystem within GAMS. See <http://www.gams.com/solvers/mpsge/index.htm>.

**Table 1: Sectoral Aggregation of the CGE Model (7 Sectors)**

Sector	Commodities
Agricultural Products	Paddy rice, wheat, cereal grains not elsewhere classified (nec), vegetables, fruit, nuts, oil seeds, sugar cane, sugar beet, plant-based fibers, crops nec, cattle, sheep and goats, horses, animal products, raw milk, wool, silk-worm cocoons,
Food Products	Meat products nec, vegetable oils and fats, dairy products, processed rice, sugar, food products nec, beverages and tobacco products
Extractive Industry	Forestry, fishing, coal, oil, gas, minerals nec, petroleum, coal products
Light Manufacturing	Textiles, wearing apparel, leather products, wood products
Heavy Manufacturing	Paper products, publishing, chemical, rubber, plastic products, mineral products nec, ferrous metals, metals nec
Technology-intensive Manufacturing	Metal products, motor vehicles and parts, transport equipment nec, electronic equipment, machinery and equipment nec, manufactures nec
Services	Electricity, gas manufacture, distribution, water, construction trade, transport, financial, business, recreational services, public admin and defense, education, health, dwellings & services

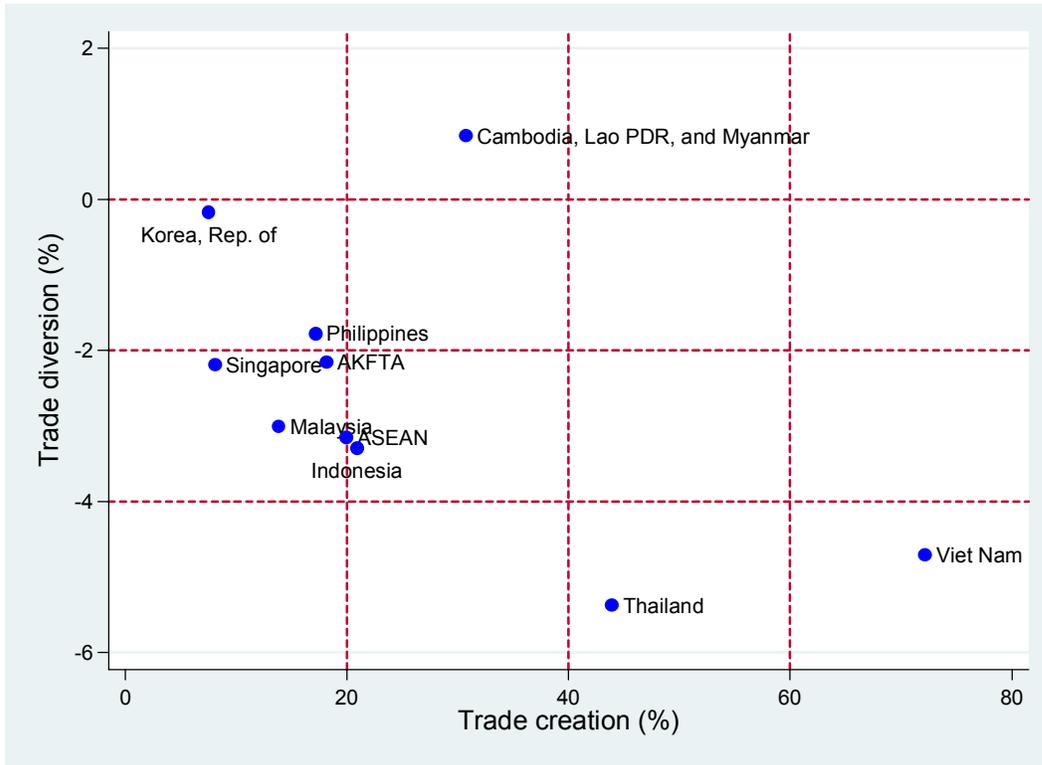
## B. Empirical Results

Results of the simulations indicate that for the free trade area and most member-countries, the creation of an AKFTA will bring about welfare and output gains, that is, the benefits from integration will outweigh the losses. In addition, since trade diversion is smaller than trade creation, net trade creation is positive. However, gains are unevenly distributed, with a few countries gaining more than the others. In addition, while some economic sectors are likely to grow, other sectors are likely to contract. While it is important that net welfare effects for the whole region be positive, it is also crucial to consider the distribution of net benefits across countries, in particular whether richer economies benefit more than poorer economies. On the other hand, for an individual country, an important issue is the distribution of net benefits across industries. It matters whether or not the FTA's impact falls primarily on industries of high significance for the national economy.

## C. Trade Effects

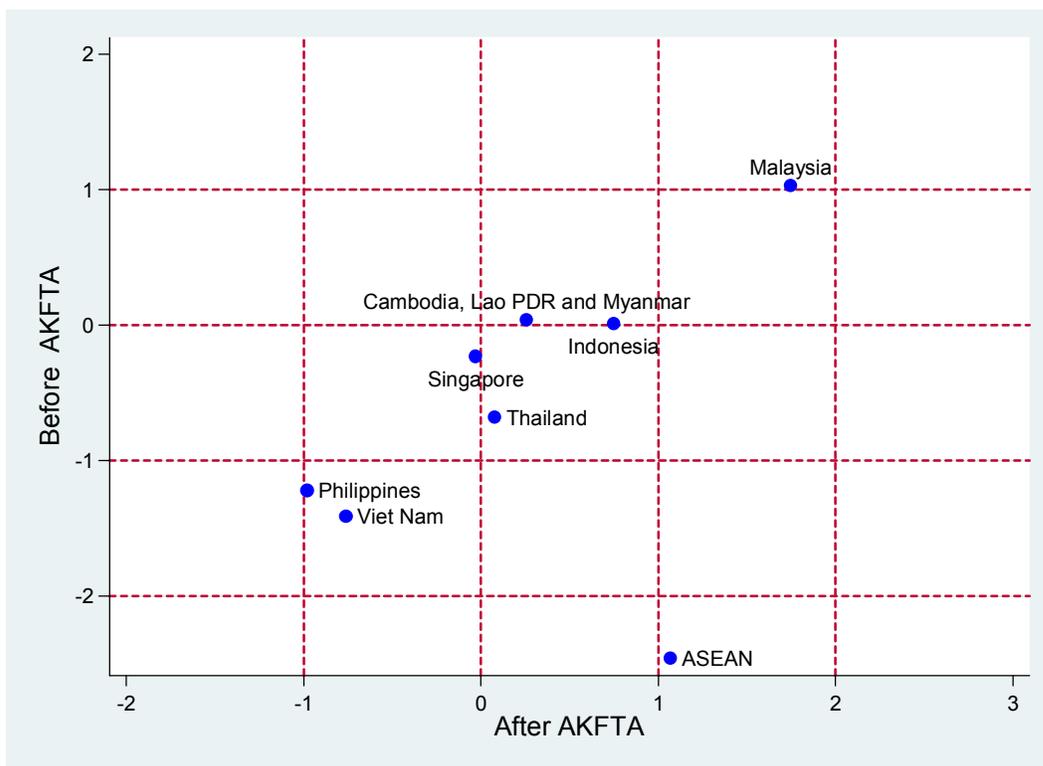
Figure 1 illustrates trade creation and diversion effects, which are computed as percentage deviations from the base value of trade volumes with members and nonmembers, respectively. Positive trade creation means expansion of trade within the free trade area, while negative trade diversion means reduction of trade with nonmembers. For the free trade area as a whole, trade among member-economies will rise by 18.1% while trade with non-members will fall by only 2.2%.

**Figure 1: Trade Creation and Diversion Effects of AKFTA**



As expected, AKFTA will accelerate trade between ASEAN and Korea. Indonesia and Malaysia will account for about half of the growth in trade between ASEAN and Korea. AKFTA will shift the trade balance in favor of ASEAN, whose exports to Korea will rise by 20% and imports from Korea will fall by 3%. ASEAN countries' bilateral trade balance with Korea will improve. More specifically; (i) Indonesia, Malaysia and, to a lesser extent, the CLM countries will see an increase in the trade surplus; (ii) Thailand will see a shift from a negative to a positive trade balance; and (iii) Philippines, Singapore, and Viet Nam will see a decrease in the trade deficit (see Figure 2). As a result, ASEAN's total trade balance with Korea will shift from negative prior to AKFTA to positive after its implementation.

**Figure 2: Bilateral Trade with Republic of Korea (\$ billion)**

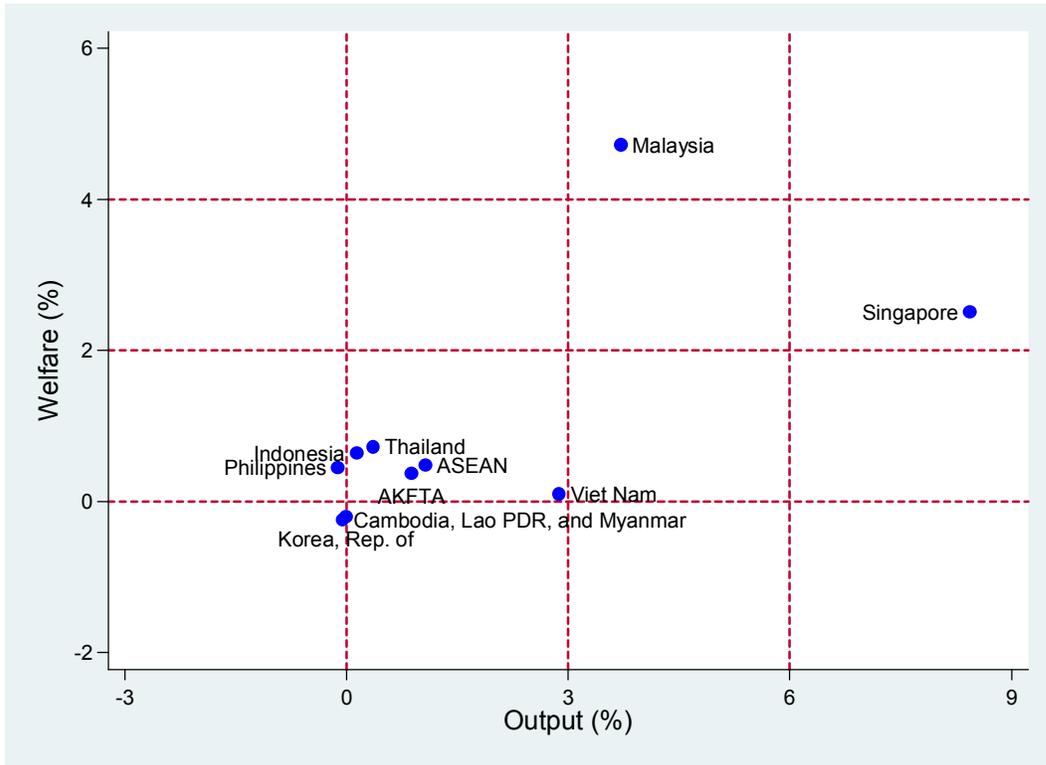


We now explore the impact of AKFTA on the trade of less developed ASEAN member-countries. Four points are worth noting: first, Viet Nam and CLM will account for less than 10% of ASEAN's growth in trade with Korea. Second, while Korea's trade with Viet Nam will expand by only 2%, its trade with CLM will grow by no less than 18%. CLM-Korea trade will thus become the fastest-growing component of ASEAN-Korea trade. Third, CLM's trade surplus with Korea will increase and Viet Nam's trade deficit with Korea will decrease. Finally, along with Thailand, CLM and Viet Nam will experience the highest net trade creation among all member-countries. This is because they benefit from relatively high trade creation and suffer little trade diversion. Overall, AKFTA seems to have a favorable impact on the trade of ASEAN's poorer countries.

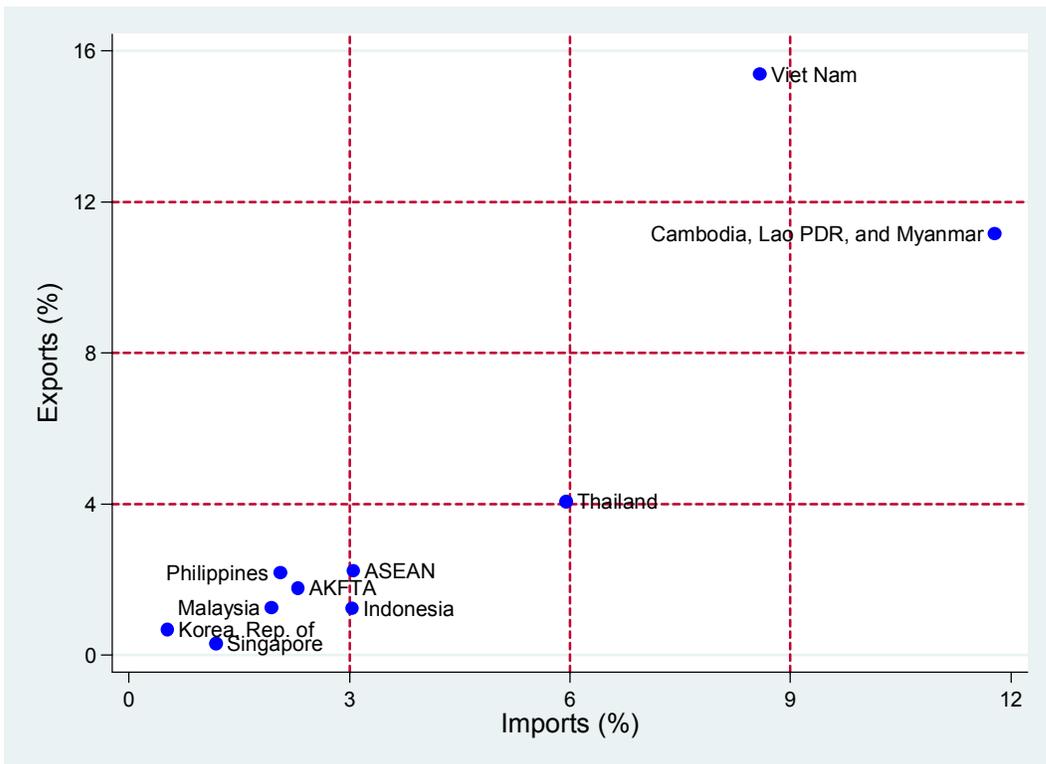
#### **D. Welfare and Output Effects**

The formation of AKFTA will increase aggregate welfare (0.4%) and raise real GDP (0.9%). ASEAN as a group will experience positive welfare and output gains. We can divide AKFTA into three groups based on welfare effects: (i) Malaysia and Singapore will enjoy relatively high welfare gains of 2–5%; (ii) Indonesia, Philippines, Thailand, and Viet Nam will experience modest gains of less than 2%, and (iii) CLM and Korea will suffer welfare losses (see Figure 3). Broadly speaking, real output effects more or less correspond to welfare effects so that countries which gain the most in welfare also tend to gain the most in real output. What is interesting and troubling is that the CLM countries will suffer net welfare and output losses despite net trade gains. Output losses can be partly traced to total imports rising faster than total exports. Although CLM's exports will rise by 11.2% under AKFTA, this will be more than offset by an 11.8% rise in imports (see Figure 4).

**Figure 3: Welfare and Output Effects of AKFTA on Member-Countries**



**Figure 4: Effects of AKFTA on Trade of Member-Countries**



Unlike CLM, Viet Nam will enjoy welfare and output gains under AKFTA. In fact, Viet Nam's output gains will be greater than those of higher income countries such as Indonesia, Thailand, or Philippines. This is mainly because Viet Nam's total exports will grow rapidly, by 15.4%, the fastest among member-economies. Viet Nam's total export growth will be much higher than its total import growth.

Looking at the sectoral impacts in Table 2, the real output of all sectors listed in Table 1 will contract in CLM countries, except in two sectors: the extractive industry and light manufacturing. The real output of agricultural products and food products will contract by 2.7% and 4.1%, respectively. Since agriculture is a key sector in these countries in both output and employment, a marked decline in real agricultural output would have large repercussions for their fragile economies. This helps explain why CLM countries are likely to suffer a decline in real welfare and output under AKFTA. Viet Nam, however, will not suffer a similar fate, despite the contraction of its agricultural and food products sectors, as high growth in its manufacturing sector more than compensates those losses. While we have not quantified the dynamic gains here, a source of optimism for CLM is that dynamic gains may exceed static losses. This is not unlikely since growing trade with advanced member-countries within the region can deliver potentially large productivity gains for poorer countries over time.

**Table 2: Sectoral Real Output Impacts of AKFTA (% Deviations from the Base)**

	Total Output	Agricultural Products	Food Products	Extractive Industry	Light Mfg.	Heavy Mfg.	Technology-intensive Mfg.	Services
Indonesia	0.14	1.73	3.54	0.26	-0.06	0.21	1.24	0.94
Malaysia	3.72	-10.16	19.63	0.49	7.29	-0.05	-0.94	0.00
Philippines	-0.12	3.96	0.20	0.87	-1.25	1.34	1.10	1.01
Singapore	8.43	0.34	51.87	7.13	4.05	4.94	-0.82	0.93
Thailand	0.36	7.49	-1.77	0.21	-0.20	3.88	2.99	0.77
Viet Nam	2.88	-0.43	-0.09	-0.97	7.64	0.85	10.99	-0.38
CLM	-0.06	-2.69	-4.06	1.04	1.41	-1.62	-3.25	-1.30
Korea, Rep. of	-0.01	-0.66	-1.07	-0.09	-0.19	0.19	0.11	-0.14

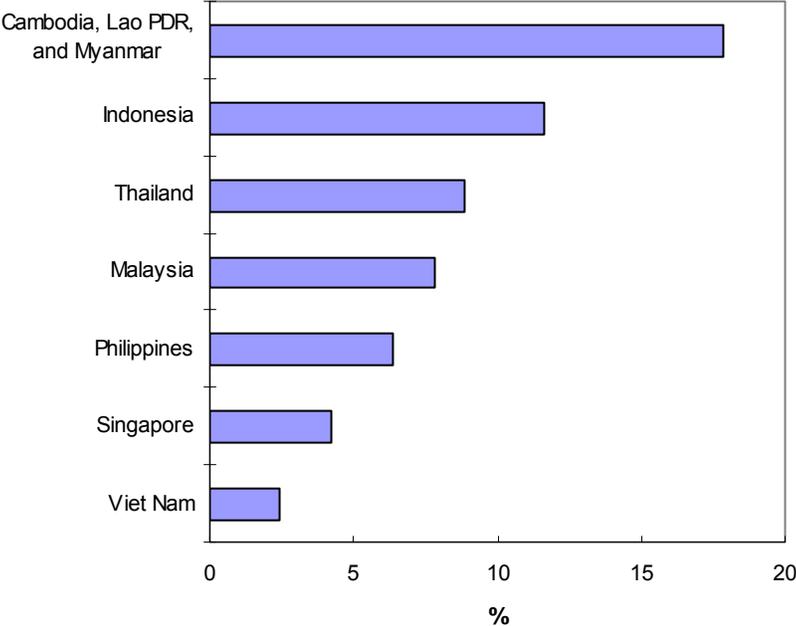
CLM = Cambodia, Lao People's Democratic Republic, Myanmar.

Korea will suffer net welfare and output losses from a free trade area with ASEAN. Out of the seven sectors considered in this paper, all but two manufacturing sectors will contract. However, being left out of the general trend toward ASEAN+1 free trade agreements may bring about substantial dynamic losses for Korea, which competes against China and Japan. Since our analysis suggests that Korea is unlikely to experience positive static trade, welfare or output net gains, dynamic gains or non-economic factors are likely to be Korea's main underlying motivation for pursuing AKFTA. This reinforces the point made in Section 3 that dynamic economic considerations appeared to be a key impetus behind the AKFTA, especially from the point of view of Korea. More specifically, Korea is expecting the relatively fast-growing ASEAN region to grow in importance as an export market over time. Securing a stable and

geographically close supply of mineral and energy resources would be another important long-run motive for Korea. Finally, ASEAN will continue to be a major destination for Korea's large and growing FDI outflows, especially for firms which seek geographical diversification of their production.

Dynamic considerations are likewise important for ASEAN. In addition to productivity gains from greater competition, transfer of technology through trade – e.g. imports of capital goods – can benefit ASEAN, which lags substantially behind Korea in terms of technological capabilities. This is especially true for the CLM countries since not only will they experience the fastest growth in trade with Korea (see Figure 5) but their low technology levels imply a larger scope for improvement. Measures to promote technology diffusion will facilitate the transfer of technology from Korea to ASEAN.

**Figure 5: Growth in Bilateral Trade with Korea**



**V. Concluding Remarks**

Korea and ASEAN, through sustained, rapid growth, have been part of the East Asian miracle that has transformed this group of once poor developing countries into the world's most economically dynamic region. This miracle was based on export-oriented industrialization and provides compelling evidence of the enormous potential benefits of globalization. However, the Asian financial crisis which devastated the economies of ASEAN and Korea in 1997/1998 gave equally compelling evidence of the potential risks of globalization. The crisis gave rise to a new-found sense of vulnerability to external forces and, in turn, to economic regionalism. Although the initial focus of post-crisis East Asian economic regionalism lay in promoting financial cooperation through the Chiang Mai Initiative, this has gradually shifted to expanding intra-regional trade.

The subject of our paper is the ASEAN-Korea Free Trade Area (AKFTA) initiative, a concrete example of East Asia's effort to boost intra-regional trade in the post-crisis period. The two sides signed a free trade agreement in May 2006 to create a free trade area by 2016. Our central objective was to perform a qualitative and quantitative analysis to assess the feasibility and desirability of AKFTA. Our qualitative analysis, which used the theory of economic integration to critically examine whether purely economic static considerations are conducive for AKFTA, suggested that there are grounds for both optimism and pessimism. For example, the large and growing level of pre-FTA trade between ASEAN and Korea is a conducive factor, whereas the large income gap between Korea and ASEAN as a whole is an impediment.

Our quantitative analysis, which is based on application of a CGE model, also suggests that AKFTA will entail both costs and benefits. The costs include AKFTA's negative welfare and output effects on poorer member countries, especially CLM, while the benefits include positive net trade creation for the AKFTA region as a whole and for each member-country.

Since AKFTA entails potential welfare losses, the creation of structural funds such as those implemented by the EU may be necessary. The case for structural funds is all the stronger for AKFTA since our analysis indicates that welfare losses will fall disproportionately on poor CLM. Structural funds can help to narrow the gap between poor and rich countries by providing support for infrastructure, technological improvement, and human capital development. They can also enhance transportation and communication linkages between member countries, and provide structural adjustment assistance for adversely affected industries. The EU experience offers useful lessons in terms of how the costs and benefits of structural funds can be shared without disrupting cohesion among member countries.

Taking into account dynamic economic factors and non-economic factors provides grounds for optimism. ASEAN and Korea share the challenge of growing competition from the PRC and India, and, more generally, competing in an increasingly competitive global economy. As such, improving economic efficiency by exposing their firms and industries to greater foreign competition can bring significant benefits. AKFTA will thus improve the international competitiveness of ASEAN and Korea by promoting competition and efficiency. In addition, ASEAN and Korea share a desire for a multi-polar East Asia not dominated by Japan and the PRC, and this shared geopolitical objective provides a solid cornerstone for economic cooperation between the two sides, in particular through AKFTA.

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## About the paper

In this paper, Donghyun Park, Innwon Park, and Gemma Estrada examine the economic case for the ASEAN-Korea Free Trade Area (AKFTA). They use both qualitative and quantitative analysis to do so. Their analysis provides some support for AKFTA's prospects as an effective means of promoting trade between ASEAN and the Republic of Korea.