(2) Agricultural production and policy in Korea

Korean agricultural production has been showing a consistent growth based on the value of the Gross Agricultural Product until 2002, when it decreased for the first time against the previous year. In Korea, the main agricultural policy target was changed toward environmentally friendly farming from enhancing competitive farming starting in the mid 1990s. Although agricultural productivity has grown rapidly, Korean farm household income has declined compared with urban office workers. Now, therefore, its main agricultural policy target is shifting to income.

(3) Vegetable production and trade in Korea

Since the 1980s, Korean vegetable production has increased rapidly, attributing to fruit-vegetables grown in facilities. Although there is a large deficit in agricultural trade, Korea has a surplus in agricultural trade with Japan. Japan imports 90% of all fruit-vegetables exported from Korea. On the other hand, vegetable imports from China have increased rapidly after trade liberalization. The vegetable trade between China, Korea and Japan looks like a domino effect (Fig. 1).

List of Research Members

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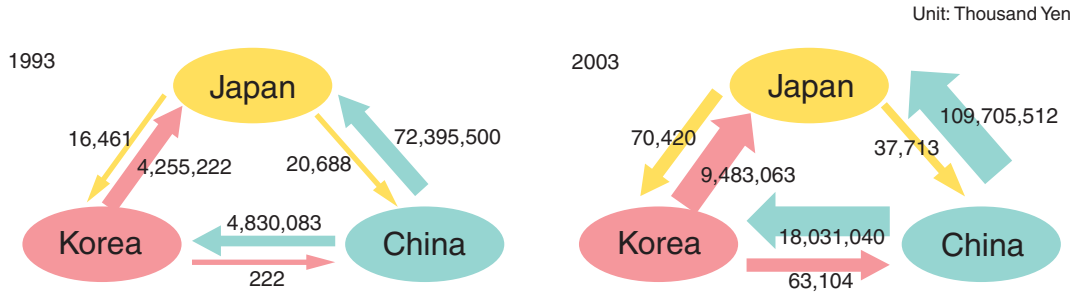

Fig. 1. Trade Flow of Vegetables between Japan, Korea and China

Source: Data Base of Korea Trade Association, "Trade Statistics" Ministry of Finance, Japan

The Quantitative Analysis of the North American BSE Outbreak on the Japanese and World Beef Markets

Atsuyuki UEBAYASHI

1. Objective

The purpose of this article is to present a quantitative analysis of the impact of the outbreak of Bovine Spongiform Encephalopathy (BSE) in Canada and in the US on the world beef market, using the AGLINK model, which is a global partial equilibrium model for agricultural products, developed by the Organization of Economic Cooperation and Development (OECD).

2. World Beef Market Overview

The pattern of beef trade has changed substantially since the outbreak of BSE, in Canada in May 2003 and in the US in December 2004, because many beef-importing countries immediately established an import ban on Canadian and US beef. This has led to a shortage of supply of beef in the global market and in individual domestic markets, which consequently has increased the price of beef.

There is no single world beef market, i.e., the world beef market is already divided into two groups. One is the Foot and Mouth Disease (FMD)-free market, and the other is the non-FMD-free market. FMD does not damage the health of people — it only affects the health of animals. However, FMD damage rapidly destroys the value of livestock. Therefore, FMD-free countries banned imports of beef and pork from non-FMD free countries. Many pacific countries, such as Japan, the US, Canada, Australia, New Zealand, and Korea are FMD-free countries, whereas the European Union (EU) and Latin American countries are non-FMD-free areas.

Before the outbreak of US BSE, Japan relied on the US for a large part of its beef supplies. In 2003, Japan produced 495 thousand tons of beef, and imported 824 thousand tons, of which, 382 thousand tons were imported

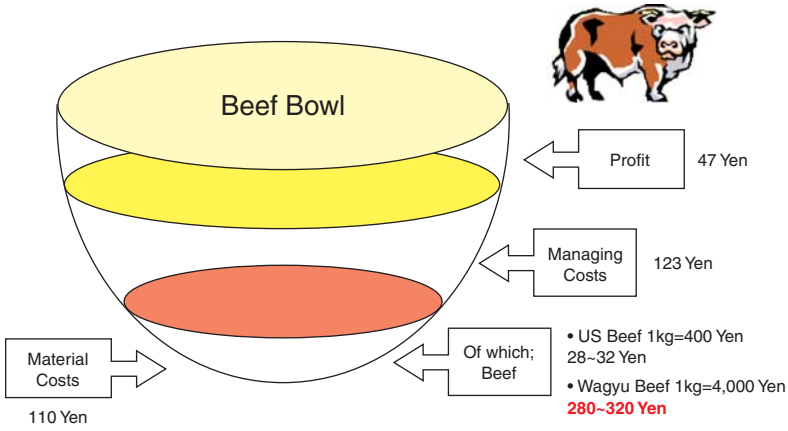

Fig. 1. The Cost Structure of "Beef-Bowl"

from the US. Therefore, the import ban due to the outbreak of BSE in the US resulted in 29% of the total beef supply suddenly disappearing.

This sudden ban brought about an increase in the price of domestic beef, as well as that from Australia, the largest exporter of beef to the Japanese market. The price of Australian beef in January 2004 was 64% higher than that in the previous year.

The most affected sector in Japan is perhaps restaurants and the eating-out industry. Because "Beef-bowl" restaurants had totally depended on the US for supplies of beef and no alternative source was available, the total import ban of US beef puts the restaurants into a very difficult situation (Fig. 1).

3. Methods - AGLINK model

The AGLINK model is a global supply and demand model for agricultural products, which was developed by the OECD, with the cooperation of its member countries. It is a dynamic, partial equilibrium model for medium-term forecasts of the global agricultural market. It consists of many country modules, i.e., 1) the US, 2) EU, 3) Japan, 4) Canada, 5) Australia, 6) New Zealand, 7) Korea, 8) Mexico, and non-OECD countries, i.e., 9) China, 10) Russia, 11) Argentina, and 12) the Rest of the World. It covers many important commodities, i.e.: 1) wheat, 2) maize, 3) rice, 4) other coarse grains, 5) soybeans, 6) rapeseed, 7) milk and dairy products, 8) beef, 9) pork, and 10) chicken meat, etc. Normally, demand for a particular product is decided by population, income, own price and prices of competing products. Supply is decided by own and competitive prices in the previous year, technological developments, beef cattle stocks, etc.

The world beef market in AGLINK is divided into 1) the Pacific market, which consists of such FMD-free countries as Japan, the US, Australia, Canada, Korea, New Zealand, etc., and 2) the non-Pacific market, which consists of the EU, Brazil, etc..

Following the outbreak of BSE in Canada and in the US, the following revisions to the model and the scenario were made to analyze BSE.

Firstly, for the purpose of scenario analysis, I separated US beef market from the Pacific beef market due to BSE. Domestic beef prices in the US are no longer linked to the world price, but determined by the domestic market-clearing system.

Secondly, I changed US beef exports from being an endogenous variable to an exogenous variable; and in 2004 and 2005, I set only 40% of normal beef exports as being possible, which comprise US beef exports to only to Canada and Mexico, NAFTA countries, but after 2006, I assumed a gradual recovery of exports; and in 2008, that there would be a gradual return to normal conditions, and US and Canadian beef would resume 100% of normal exports.

4. Results

By observing the results of this experiment, I made the following observations:

(1) In 2004 and 2005, due to the complete halting of US and Canadian beef exports outside NAFTA, the supplies in the Pacific market decrease substantially, which brought an increase in beef prices in the Pacific market. In 2004 and 2005, Pacific beef prices increase by 33% and 36%, respectively. However, after 2006, the US and Canada gradually start to resume beef exports to the Pacific market, and in 2006, 2007, and 2008, beef prices deviate by 8%, 6%, and –6% from the baseline (Fig. 2).

(2) In the US, due to the halting of beef exports to the Pacific market and consequent over-supply, beef prices decrease by 14% and 12% in 2004 and 2005, compared to the baseline level. However, after 2006, with the resumption of exports to the Pacific market, this over-supply situation gradually disappears, and in 2006, 2007, and 2008, beef prices deviate by –1%, 1% and 3% from the baseline.

(3) The importing countries of the Pacific market are confronted with an increase in beef prices due to the exit of US beef from the market. This reduces beef consumption, and as a substitution effect, consumption of other meats, i.e. pork and chicken, increases. In 2004 and 2005, consumption of beef in Japan decreases by 12% in both years, and in contrast, consumption of pork increases by 2% and 1%; and consumption of chicken increases by 1% in both years. After 2006, such a substitution effect becomes much smaller as beef imports from the US resume.

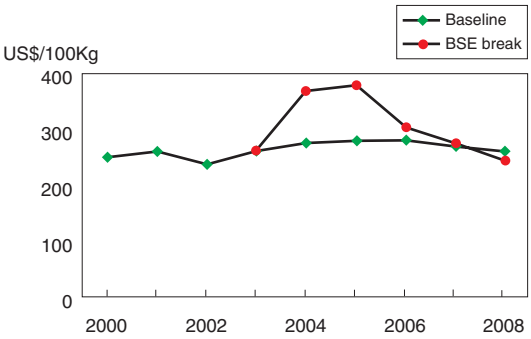

Fig. 2. Outlook of Beef Price in World (Pacific) Market

5. Concluding Remarks

As we have seen, the halting of US beef exports to the Pacific market due to the outbreak of BSE will bring a large-scale ripple effect to Pacific countries. This article tries to identify the effect using the AGLINK model and the partial equilibrium modeling framework.

The BSE event is important not only for the modeling framework, but it also directly influences dietary life in many countries. Therefore, we have to continuously monitor the effects of the BSE outbreak, as well as the measures taken by each country to secure safety and resume beef imports.

Background of Brazil's Farm Trade Growth and Its Effects on Japanese Agriculture

Junichi SHIMIZU

1. Objective

Brazil has been the world's largest net exporter of agricultural products since 2003. In addition, Brazil is endowed with more than 140 million hectares of potential cropland which could be converted to arable cropland. Brazil's agriculture has a significant impact on the world's supply and demand of food. It is especially important for Japan, as its self-sufficiency rate for food is only 40%. The purpose of this research is to analyze the factors of the growth of Brazil's farm trade and to investigate the effect of Brazil's strategy of multilateral agricultural trade negotiations on Japanese agriculture.

2. Method

Firstly, the time-series database of the main agricultural commodities in Brazil was created. Then the impact of the economic policy change on Brazilian agriculture and the farm trade was investigated.

3. Outline of the results

(1) Changes in main agricultural exportables

The value of Brazil's agricultural exports has been increasing rapidly since 1990. The export boom has been driven primarily by soybeans, but supported by other products, notably sugar, ethanol, poultry, pork, and beef (Fig. 1). As a result of these change, there has been a significant change in the composition of agricultural exports. The export shares of soybean products, sugar and ethanol, and meat have increased, while the shares of orange juice and coffee have declined.

(2) The change of the economic policy and competitive power of agribusiness

At the beginning of the 1990s, Brazil went through a policy change from import substituting industrialization (ISI) policies into neo-liberalism. Under the policy change, trade was liberalized, domestic markets deregulated and a customs union (Mercosul) established. The agricultural sector benefited the abandonment of ISI policies through the improved agricultural terms of trade. At the same time, the devaluation of Brazil's currency, real, operated positively to agricultural exports.

(3) Growing presence in the WTO

Brazil has gradually strengthened its