# Analysis of the Economic Impact of the US-Australia Free Trade Agreement

## —Focusing on Agricultural Issues—

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Summary

This paper deals with the Free Trade Agreement between US and Australia (US-Australia FTA), which came into force in January 2005, and aims to analyze the negotiation process and economic impact focusing on agriculture. The points are summarized as follows: firstly the theoretical conditions for successful agreement between two countries on the general bilateral reduction of tariff rates are analyzed. Free trade as negotiated and agreed by and between two countries to eliminate tariffs should always be Pareto optimal, but negotiations will not always have such results. Secondly, the effect and impact of the US-Australia FTA are measured quantitatively using a GTAP (Global Trade Analysis Project) approach, in order to compare cases where tariffs are completely eliminated between the US and Australia and cases where the drafted agreement is completely implemented. As a result of the analysis, equivalent variation and GDP are positive both for the US and Australia in the case of perfect tariff elimination. Under the agreed tariff system, however, equivalent variation and GDP rise slightly above the levels of perfect tariff elimination on the part of the US and decline slightly for Australia. According to bargaining theory, the agreement reached is significantly disadvantageous to Australia. And there remains room for Australia to gain further concession from the US. Australia suffers greatly from the US deferment of elimination of a tariff quota system on sugar and dairy products. Sugar producers in particular are losing out.

## 1. Introduction

In the wake of the failure to start up a new round at the WTO Ministerial Conference of 1999 held in Seattle, many countries soon came to focus on FTAs (Free Trade Agreement). One reason is the promptness with which an FTA agreement can be concluded, selecting a country with less conflict of interest compared to the multilateral WTO negotiations for trade liberalization. The multi-layered global situation, where there are many bilateral FTAs, is known to be inefficient [(1)]. However, in circumstances where no substantial progress is expected from the WTO, FTAs play a role in liberalizing world trade, and "multi-channeled" trade liberalization is likely to continue for some time.

In the meantime, even if an FTA enables free selection of a trade partner, it still aims for further trade liberalization, and makes it difficult to address the problem of weak domestic industries or declining industries, which suffer from aggressive export thrust from the other party. In the event that interest groups from declining domestic industries unite and strongly resist the FTA, such a move would hinder the progress of negotiation significantly. Agriculture is one field where such resistance is easily aroused, against both the WTO and FTAs.

Agriculture became a particular issue for many FTAs concluded after the Seattle Conference. A typical instance could be FTAs between the US and Australia (hereinafter "US-Australia FTA") agreed in February 2004 and made effective in January 2005. For the first time the US-Australia FTA has presented a solution to a very interesting problem of how to treat agricultural products in an FTA between two advanced countries that are major exporters of agricultural products. The solution suggests the conclusion that trade liberalization without exception is inconvenient even for a country that actively promotes trade liberalization. As is well known, both the US and Australia call for aggressive liberalization of trade in agricultural products in WTO negotiations. Nonetheless, between themselves, they faced difficulty on agricultural trade and finally reached a compromise to exclude certain products from liberalization.

This paper will analyze the negotiation process of the FTA concluded between the US and Australia, and its economic impact, focusing on agriculture. The paper is composed as follows: first, conditions of a successful negotiation for general tariff rate reduction between two countries are analyzed, employing bargaining theory. More specifically speaking, the necessity of negotiation and conditions for successful compromise is discussed within the framework of game theory. Secondly, highlighting agriculture, this paper analyses the effect

and impact of the US-Australia FTA on economic welfare, prices and trade of third party countries including Japan by GTAP (Global Trade Analysis Project), a general equilibrium model for analyzing trade liberalization. Finally future perspectives and research themes for FTAs will be summarized.

Note (1) Bhagwati［2］on the issues arising from disorderly conclusion of FTAs

## 2. Analysis of Trade Liberalization Negotiations, Based on Bargaining Theory

(1) Analysis of Tariff Competition

Riezman [8] applied the combined analysis framework of a non-cooperative game and a cooperative game to the analysis of tariff competitions with tariff negotiation and without. First, a tariff competition is explained in a framework of non-cooperative competition.

A presumed situation is expressed by a strategic game. Each of the two countries in the game has a strategy to keep current import tariff rates and a strategy to remove its tariff barrier. The set of strategies each player can opt for is designated as "Set S". Each country has two strategies. Therefore, $S_1 = \{1,2\}$ and $S_2 = \{1,2\}$. When the first country employs strategy $i$ and the second takes strategy $j$, the first country's profit is designated as "$a_{ij}$" and the second as "$b_{ij}$". This game is then expressed as a profit matrix, as shown below;

$$A = \begin{vmatrix} (a_{11}, b_{11}) & (a_{12}, b_{12}) \\ (a_{21}, b_{21}) & (a_{22}, b_{22}) \end{vmatrix} \quad (1)$$

where $a_{11} > a_{21}, a_{12} > a_{22}$ and $b_{11} > b_{12}, b_{21} > b_{22}$. Temporary values are given in this game, as shown in Table 1.

Each player anticipates the strategy to be taken by the other player and opts for a strategy that will maximize his own profit based on such anticipation. This is called an optimal solution. When a strategy selected by a player is the optimal solution to the other party's strategy with respect to both players, the combination of these strategies is called the Nash equilibrium. When each player adopts strategy $s_1 \in S_1, s_2 \in S_2$, he wins profit $f_i(s_1, s_2)$. When Strategy $s^*$ is the optimal solution to the other player's strategy $s^*_{-i}$ or the Nash equilibrium, the following formula comes into effect with respect to all players.

$$f_i(s^*) \geq f_i(s_i, s^*_{-i}), \quad \forall s_i \in S_i \quad (2)$$

Assuming a profit matrix of the tariff competition game as given in Table 1 above, the Nash

equilibrium is the “maintenance of the tariff” for both countries. Firstly, if the first country opts for “tariff elimination”, the second country can obtain a higher profit by “maintaining the tariff”. However, when the second country opts for the “maintenance of the tariff”, the first country can obtain a higher profit by “maintaining the tariff”. When the first country changes its strategy to the “maintenance of the tariff”, the second country can obtain a higher profit by “maintaining the tariff” than by taking any other strategy, so that the second country does not change its strategy. When both countries take the strategy of “maintaining the tariff”, there will be no incentive for each party to change its strategy. This is the Nash equilibrium formed in a tariff competition.

However, the Nash equilibrium is not the best combination of possible and desirable strategies. As a party is able to increase its own profit from the Nash equilibrium without damaging the other party’s profit, the Nash equilibrium is not Pareto optimal. In other words, both parties can increase profits above the Nash equilibrium when both parties take the strategy of “tariff elimination”. In a tariff competition, the result of each party’s reasonable policy option will not be reasonable as a whole. This is called unsatisfied common rationality. In order that both parties pursue profit higher than the Nash equilibrium, it is necessary to introduce negotiation.

(2) Analysis of Tariff Negotiation

Next examined is the case where the parties will cooperate for the purpose of increasing their own profits, or a negotiation case [(1)]. First it is necessary that both parties are always able to win more profit through negotiation than the non-negotiation case. Otherwise, neither party has any motive to start negotiation. This is called the assumption of individual rationality. Profit obtained without negotiation is called the reference point of negotiation $d = (d_1, d_2)$ [(2)]. Here, based on Table 1, the reference point of negotiation is deemed to be the Nash equilibrium where both countries “maintain the tariff”. Starting from this point, both countries set out to negotiate to seek further profits.

The non-cooperative game was a definitive analysis [(3)] composed of two strategies for each party and four conclusions. Now a statistical concept is introduced to single out one conclusion from the four. This is called the concept of mixed strategy. Each of the four conclusions is given a probability of occurrence as follows;

$$z = (z_{11}, z_{12}, z_{21}, z_{22}), \quad z_{ij} \geq 0, \quad \sum_{i}^{2} \sum_{j}^{2} z_{ij} = 1 \quad (3)$$

The method of determining in correlation with each other's option is called a correlated mixed strategy. Each player must negotiate in order to increase his own expected profit.

By setting up as above, a set of realizable expected profits can be determined. This set is called a realizable negotiation set ***U***. A vector in ***U*** of expected profits realizable through cooperation is expressed as $u = (u_1, u_2)$. Besides, the expected profit realizable through negotiation shall satisfy the condition of individual rationality. Therefore,

$$u_i > d_i, \quad i = 1,2, \quad d \in U \qquad (4)$$

When a set of realizable negotiation is charted, based on Table 1, Figure 1 is drawn. The origin O is made the reference point of negotiation *d*. The reference point represents the expected profit obtained by both countries when taking the strategy of "maintaining the tariff". Negotiation will not be agreed upon unless expected to increase profit further. Therefore, Point B, realized only when the first country selects the strategy of "maintaining the tariff" and the second country opts for the strategy of "tariff elimination", or its opposite point C is excluded from negotiation. To be negotiated is the region above the point of reference O in the set of realizable negotiation. The shaded area OEFD in Figure 1 represents that region. Point F represents the expected profit obtained when both countries opt for "tariff elimination" at 100% probability.

In the region of negotiation any random point on EFD is Pareto optimal. For example, the point of negotiation conclusion is assumed to be point G in the shadowed region. Point G represents increased profit for both countries, being in the shadowed region. But negotiation continues for further profit increase, because negotiation makes it possible for both countries to increase expected profit of the first country without decreasing expected profit of the second country realized at point G. Conversely it is possible to increase the profit of the second country without decreasing the first country's. At point G Pareto optimum is not satisfied, and there remains room for negotiation to increase expected profits mutually. On EFD, however, it is not possible to increase one party's profit without sacrificing the expected profit of the other party, so that Pareto optimum is satisfied.

Now the expected profit that is added to the profit at the point of reference is expressed as $W_i = u_i - d_i$ and the product of both countries' profits is written as $W_0 = W_1 \cdot W_2$. So far as negotiation aims to maximize $W_0$, the point of negotiation conclusion is the point of contact of EFD satisfying Pareto optimum and $W_0$ in the region of negotiation. Figure 1 shows a case where the point of contact comes on Point F. At this time tariff elimination is opted for in both countries as a solution of negotiation.

(3) Free Trade Being No Solution of Negotiation

In the course of FTA negotiation, an agreement, short of perfect free trade, is often reached incidentally through compromise, by excluding exceptional commodities or establishing a long transition period until tariff elimination. Such a compromise could be theoretically affirmed, because it is required that some conditions are satisfied in order to conclude a negotiation for perfect tariff elimination.

Two examples demonstrating that a negotiated solution is not free trade with perfect tariff elimination are shown (Figure 2). Figure 2 (a) illustrates a situation where the second country can only earn profit below the point of reference in free trade. As Point F is located in the 3rd quadrant, free trade is out of the region where free trade is negotiable. In other words, free trade does not satisfy the condition of individual rationality, so that it is not negotiated. This kind of case is called “Johnson’s case”.

In Figure 2 (b) it is indicated that free trade may not become a solution of negotiation, even if it satisfies the condition of individual rationality and is found in the quadrant where it is negotiable. Point F is located in the first quadrant, satisfying the condition of individual rationality for both countries, but Curve $W_0$ does not contact Point F, so that Point F is not chosen as a solution of negotiation.

Let us consider the condition that free trade becomes a solution of negotiation. Point B was expected profit when the second country eliminated tariffs and the first country maintained its tariff system. On the other hand, Point F was expected profit when both countries eliminated tariffs. The inclination of BF is equal to (Increment to the second country’s expected profit)/(Decrease in the first country’s expected profit) when shifting from Point F to Point B. Meanwhile, Point C is expected profit when the first country eliminates tariffs and the second country maintains tariffs. Therefore, the inclination of Slope CF is equal to (Decrease in the second country’s expected profit)/(Increment to the first country’s profit) when shifting from Point F to Point C. After all, Point F contacts $W_0$ when the inclination of Point F and the tangent to Curve $W_0$ is greater than the inclination of BF and smaller than the inclination of CF. The inclination of Point F and the tangent to Curve $W_0(W_1, W_2)$ is $W_2/W_1$. In the meantime, the inclination of BF equals $(b_{21} - b_{11})/(a_{11} - a_{21})$ according to Equation (1) and that of CF equals $(b_{11} - b_{12})/(a_{12} - a_{11})$. From the foregoing discussion, the condition required to select Point F, which represents free trade, is,

$$\frac{b_{21}-b_{11}}{a_{11}-a_{21}} < \frac{W_2}{W_1} < \frac{b_{11}-b_{12}}{a_{12}-a_{11}} \quad (5)$$

Incidentally, if the profits of both countries are equal at Point F, the condition of the above expression is apparently satisfied and free trade is always chosen as a solution of negotiation.

Note (1) In this paper the word "cooperation" means all activities from discussion and negotiation to agreement and sure performance with enforceability.

(2) The point of reference for negotiation also means profit obtainable after negotiation has failed, so that it is also called the breakdown point of negotiation.

(3) The definitive analysis as described above is called a pure strategy.

## 3. US-Australia Free Trade Agreement

With respect to agriculture, the US-Australia FTA stipulates as follows;

(1) Beef

The United States' tariff quota system on beef imports will lower the barrier gradually, as detailed below, until it is finally eliminated (Table 2). In the second year after the FTA took effect (i.e. 2006) a 15,000 ton quota is permitted in addition to the current quota, provided, however, that the 15,000 ton quota becomes effective only if beef exports by the US recover to the level of 2003 before the outbreak of BSE. In the 3rd year (2007) the quota will be increased by 5,000 tons to total 20,000 tons per year. Then the quota will be increased by 5,000 tons every two years, and then increased by 5,000 tons a year from the 15th year (2019). Finally in the 18th year (2022) the quota will reach 70,000 tons and the tariff quota will be abolished and inapplicable from the 19th year (2023). Currently the in-quota tariff rate is zero. The tariff rate applicable to over-quota exports begins at 26.4% and will be gradually lowered over the period from the 9th to the 18th year (2013-2022) and from the 18th year onward, the over-quota tariff rate will be reduced to zero.

The US was allowed to set a safeguard system to prevent an abrupt increase in beef imports. The safeguard is triggered in two ways. The first is quantity-based. During the 18-year transitional period after the effective date of the Agreement, the safeguard is triggered when beef exports from Australia to the US exceed 110% of the quota allowed for the year under the FTA. In the 15th year (2019), for example, the authorized quota is 50,000 tons. Therefore, if over-quota imports exceed 5,000 tons, the quantity safeguard will be triggered. When this

happens, any additional over-quota exports would be subject to tariff at the rate of 11.84%, three quarters of the difference (15.84%) between the current 26.4% tariff and the 10.56% tariff in the 15th year. In effect, the over-quota tariff is 10.56% in the 15th year, but is raised to 22.44% after the quantity safeguard is triggered. Nonetheless, the tariff is still lower than the current over-quota tax rate.

Secondly a price-based safeguard applies. For this safeguard a trigger import quantity is fixed. The price-based safeguard will be invoked only when annual beef imports from Australia exceed 448,634 tons or the total of the existing 378,214 ton quota at the effective date of the FTA and additional 70,000 tons to be permitted by the 19th year under an agreement plus 420 tons. This trigger import quantity is to be increased by 420 tons every year. If beef imports exceed the standard quantity and (a) the monthly average index of retail beef prices is lower than the 24-month trigger price (1) for two months in the latest quarter, the safeguard is invoked in the said quarter; or (b) if the monthly average index of retail beef prices is lower than the 24-month trigger price in any one month of the 4th calendar quarter, the US is entitled to trigger the safeguard even in the remaining period of the 4th quarter. Once this safeguard is invoked, any beef imports in excess of the minimum 448,214 ton quota become subject to an additional 17.16 % tariff, equal to 65% of the current 26.40% over-quota tariff.

(2) Dairy

Dairy arrangements are shown in Table 3. First, a quota of 7.5 million liters is set for milk, cream and ice cream, and the quota is increased by 6% every year. For butter a 1,500 ton quota is established and it is increased by 3% every year. For powdered skim milk a 100 ton quota is added to the existing 600 tons under this FTA, and is increased by 3% annually. Cheeses vary by kind or type, but new quotas are made and increase annually. For these dairy products no tariff is imposed within the quota, with the current tariff rates applicable to the excess imports.

(3) Horticulture

The safeguard mechanism established for some horticultural products is summarized as follows. It covers 33 products (onion, garlic, asparagus, tomatoes, peaches, pears, fruit juice, etc.). The safeguard trigger price is based on the average price for the two years when prices were lowest in the latest 5-year period. If the F.O.B. price goes below the trigger price, it will trigger the safeguard. The additional tariff rate is determined as follows: (a) if the difference

between the F.O.B. price and the trigger price is less than or equal to 10% of the trigger price, no additional tariff shall be imposed; (b) if the same difference is greater than 10% but less than or equal to 40%, additional duty equal to 30% of the difference between the MFN (Most Favored Nation) rate and the tariff rate shall be imposed; (c) if the same difference is greater than 40% but equal to or less than 60%, additional duty equal to 50% of the difference between the MFN rate and the tariff rate shall be imposed; (d) if the same difference is greater than 60% but equal to or less than 75%, additional duty equal to 70% of the difference between the MFN rate and the tariff rate shall be imposed: (e) if the same difference is greater than 75%, additional duty equal to 100% of the difference between the MFN rate and the tariff rate shall be imposed. This safeguard shall be effective for 18 years after the Agreement took effect, and then trade will be liberalized completely.

(4) Other

Finally, other arrangements concerning agriculture are mentioned: (a) both countries confirm their cooperation in WTO negotiations and other international negotiations or at international committees, etc for promotion of free trade in agricultural products; (b) an agricultural committee under the US-Australia FTA will be established; at the annual meeting of the committee a wide range of agricultural issues will be discussed; (c) the US and Australia could not reach agreement on the elimination of export subsidies for agricultural goods, but the parties agreed not to introduce export subsidies for any agricultural product, with some exceptions; (d) both countries shall cooperate on setting international standards for BSE.

Note (1) Price to be 6.5% below the average index price for the latest 24 months

## 4. Economic Impact of the US-Australia Free Trade Agreement

(1) Outline of the Economic Power of Both Countries

Firstly, population, GDP, trade amount and other basic data are briefly presented in Table 4 for comparing the economic power of the US and Australia. The US has a total population of 290 million, 14.6 times as many as Australia's 20 million. The US GDP is $11 trillion, 21.6 times Australia's $500 billion. The US per capita GDP amounts to $37,600, 1.5 times Australia's $25,300. Seeing the major economic indices as above, the scale of the US economy is huge, 15 to 20 times that of Australia.

US exports amount to $982 billion, 12 times Australia' s $82 billion. Trade between the US and Australia is also asymmetrical. US exports to Australia amount to $20 billion, accounting for 2% of its total exports. Australia's exports to the US total $9 billion, accounting for 11% of the total. The US is the 3rd largest importer of Australian goods, after Japan (17% of total Australia's exports) and the EU (14%). But it should be said that Australia, as a trade partner, carries far less weight than the US.

Further looking into the exports of agricultural goods from both countries (Table 5), US exports amounted to about $60 billion in 2003. The major agricultural products exported by the US are soybeans, valued at $7,980 million (13.4% of total export of agricultural products), beef, etc. valued $5,750 million (9.7% of the total), vegetables at $4,820 million (8.1%), corn at $4,747 million (8.0%) and so on. Meanwhile, Australia's exports of agricultural products amounted to about $16 billion in 2002. The major export agricultural products were beef, valued at $2,193 million (13.9% of total agricultural export), wool and wool products at $2,071 million (13.1%), wheat $1,815 million (11.5%), dairy products $1,388 million (8.8%), sugar $826 million (5.2%), etc. Additionally, in 2003 Japan imported corn valued at ¥248.5 billion, pork valued at ¥145.9 billion, soybeans valued at ¥130 billion, beef valued ¥128.5 billion, etc from US. Among Japan's agricultural imports from Australia beef imports were overwhelmingly large, valued ¥110 billion, and the other imports included wheat valued ¥28.2 billion, natural cheese ¥ 22.3 billion, barley (including hulled barley) ¥16.6 billion, coleseed (for oil expression) ¥14.1 billion, and sugar ¥13.5 billion.

(2) GTAP and Past Researches

GTAP is a tool for analyzing the impact of a change in tariff or export subsidy on production or trade from a global viewpoint within the framework of general equilibrium analysis. To name literature that details GTAP, Hertel's [6] will be a typical text for further details. In a general equilibrium model, economic agents such as households maximize utility under budgetary constraint or those such as enterprises maximize profit under the constraint of the production function in a perfectly competitive economy. GTAP makes it possible to compute and analyze what change is caused in the model-calculated equilibrium prices and quantities at the time of a policy change, for instance, tariff reduction, based on the actual data.

A shock or change resultant from tariff reduction or elimination in the market of goods affects derived demand for the production factors needed in production. For example, if demand for wheat increases for a certain reason and wheat production is boosted, demands for

primary factors of production such as labor, land and capital and intermediate goods increase, derived from wheat production. If the supply of primary factors is fixed, an increase in derived demand for primary factors in the wheat sector decreases derived demand in the other sector. This sort of change causes a change in income. As GTAP is a general equilibrium model, it can describe the changes in the overall economy in a unified way. And it is able to make a calculation in a form of equivalent variation by countries for judging whether a certain shock has a favorable impact or not, taking into consideration various influences comprehensively.

GTAP used here is version 5. Version 5 has a somewhat old datum point in 1997. In this paper the equilibrium in 1997 and the equilibrium to be newly formed by the tariff deduction, which is presumed on a case-by-case basis, are comparatively analyzed. As already seen, some tariff rates will be reduced by stages. Also, it would take some time to make adjustment such as the shift between production factors until a new equilibrium forms after a shock. However, any such thing is disregarded and any change is deemed adjusted momentarily. This assumption that neglects any adjustment implies that the analysis aims at the middle-term effect of a change in tariff rate on the economy. Also, such impact or effect as an increase in investment, acceleration of competition or progress in technology is entirely disregarded, and only the simple static effect of tariff rate reduction is measured.

Berkelmans, et al. [3] and the Centre for International Economics [4] measured the economic impact of the US-Australia FTA. The former analyzes the economic impact expected in each sector, using GTAP, before the US-Australia FTA negotiation, and it is needless to say that it offers no analysis on the compromise made this time. The latter analyzes the impact of the US-Australia FTA as concluded by the G-cubed model, a dynamic general equilibrium model, and indicated that the FTA would serve to push up Australia's real GDP by $6.1 billion (+0.7%). It also offers detailed sector-by-sector analysis on the effect of the Agreement, but it is not a comparative analysis to ascertain the economic losses of the compromise by comparing perfect tariff elimination and the agreed scheme, but only offers analysis on the sector-by-sector change in production or export/import, lacking study of the effect of the compromise. Furthermore, neither analysis pays attention to the economic impact of the US-Australia FTA on Japan.

(3) Data and Scenario

One strength of GTAP would be that it offers a "quite segmented analysis of agriculture for a general equilibrium model covering all industries". When segmentation is made to the limit,

employing GTAP version 5, 57 categories of goods in 66 countries/regions can be analyzed. In this paper these regions and goods are re-grouped into 20 countries/regions and 33 categories of goods, and the results are calculated. Table 6 details such calculation. As the main purpose is to analyze the impact on the agricultural sector, the category of goods is made more detailed for agricultural and fishery products and simplified in other industries, with several industries summed up.

As already mentioned, the US-Australia FTA is not a free trade agreement, excluding sugar, dairy, etc. What a difference does this sort of exception make on economic impact, compared with perfect free trade? Now it is assumed as Case 1 that the US and Australia both eliminate any tariff on imports from the other country. On the other hand, if based on the draft agreement, it is necessary to recreate the tariff quota system of the US for sugar, dairy, etc. When a tariff quota system is directly expressed in GTAP, however, it is necessary to add new data concerning model adjustment or tariff quota system. Here the tariff quota system itself is not expressed directly, but the barrier for the excepted goods is converted into tariff rate equivalent. Specifically speaking, the tariff rate on sugar is not changed, but kept at the level of the datum point. The tariff quota is maintained for dairy products, so that the products are made subject to a 4.1% tariff rate of the US, based on CIE [4] estimation. It is scheduled that tariffs will be finally eliminated for beef, so the US tariff rate is set at zero. With respect to the other products, the tariff rate is assumed to be zero as in Case 1. These assumptions constitute Case 2 based on the draft agreement, and this is compared with Case 1.

In addition, a BSE-infected cow was found in December 2003 and Japan and several other countries are temporarily suspending beef imports from US as of May 2005. Also, beef imports from Canada are temporarily suspended, as a BSE-infected cow was confirmed there in May 2003. However, the effect of these events is deemed tentative until safety is reconfirmed. Therefore, the effect is not considered in this analysis, and it is assumed that all countries are importing beef from US and Canada under normal conditions [(1)].

(4) Result of Analysis

1) Equivalent Variation and GDP

In Table 7 the equivalent variation of each country is shown for both cases. For Australia it increases slightly by $44.3 million in Case 1 of perfect tariff elimination but decreases by $42.6 million in Case 2, which is based on the draft agreement excepting some agricultural products. In order to conclude whether the US-Australia FTA as agreed has an adverse effect

on Australia, a further examination or analysis considering dynamic effects, for instance, is necessary. However, it may be well imagined that the compromise, which has allowed the US to keep the tariff quota system on imported sugar and dairy, costs Australia at least $80 million, compared with perfect trade liberalization. Meanwhile, the US gains $378.9 million in Case 1 and $456.9 million in Case 2. The difference between Case 1 and Case 2 only amounts to $78 million, but the equivalent variation becomes larger in Case 2 than Case 1. Thus, it can be said that the agreement as drafted is more favorable for the US.

Any third party country other than the US and Australia has a minus equivalent variation regardless of Case 1 or 2. Japan's equivalent variation is minus $110.2 million in Case 1 and minus $98.8 million in Case 2, and Europe's minus $134.2 in Case 1 and minus 133.6 million in Case 2. The world total of equivalent variations for these countries and regions being the third parties amounts to minus $116.3 million in Case 1 and minus $49.7 million in Case 2. The US-Australia FTA itself, either in the case of perfect tariff elimination or as agreed, is not favorable from a worldwide viewpoint. But the negative impact of the compromise in the agreement as drafted is more than halved, compared with perfect free trade.

The GDP changes by 0.02% in Australia, a party to the FTA, in Case 1 and minus 0.11% in Case 2. Even in Case 1 the GDP increase is very small and it turns negative in Case 2. The US GDP hardly changes either in Case 1 or 2; 0.03% in Case 1 and 0.04% in Case 2. For third party countries the impact is negative in either case. For Japan GDP hardly changes at minus 0.02% either in Case 1 or 2 and the change is minus 0.02% in Europe in either case. New Zealand suffers from a decrease in GDP of 0.12% in Case 1 and 0.13% in Case 2. As the country is strongly tied with Australia, it suffers from comparatively stronger impact as a third party. It is considered that New Zealand's agricultural exports to US will be driven out by Australia.

Generally it could be said that the US-Australia FTA has a very small static effect on the overall economy in either country. The reason is that from the very start most of the high tariff goods are agricultural products, accounting for a small share of the overall economy, and the reduction in tariff rate therefore does not have much impact on the overall economy. Although the FTA has negative impacts on the overall economy of each third party country/region, including Japan and Europe, it has turned out to be less than free trade, and it could be said that the impact is very minor.

2) Application of Bargaining Theory

In Section 2, the concept of probability has been introduced in the definitive analysis of a

non-cooperative game and a solution of negotiation was analyzed. Now let us analyze the US-Australia FTA negotiation employing bargaining theory, assuming that equivalent variation is the profit gained by negotiation.

First the point of reference, being the starting point of negotiation, is set to be the situation before negotiation begins, and equivalent variation is set at zero in both countries. Profit obtained in case of perfect tariff elimination by both countries has the equivalent variation gained in Case 1 set as the point of free trade. Finally profit obtained when one country keeps tariffs and the other country eliminates them is regarded as the equivalent variation respectively in case that the US (or Australia) keeps all tariff rates and Australia (or the US) sets all tariff rates at zero.

Based on the above assumptions, Figure 3 charts the US-Australia FTA negotiation within the framework of the analysis by Riezman [8]. The horizontal axis represents a scale to measure the US's expected profit (equivalent variation) and the vertical axis shows Australia's. When one country keeps tariffs and the other eliminates them, the former party's equivalent variation=expected profit is positive but the latter party's becomes negative to a large extent. The point of free trade is the combination of equivalent variations of the US and Australia in Case 1. Looking individually, profit from free trade is bigger for the US and smaller for Australia. If negotiation addresses the maximization of the product of the profits obtained by both countries, the solution of negotiation is given when the profits both countries obtain are equal. In dollar terms, such obtained profit amounts to $142.0 million for each country. Meanwhile, profits calculated for the actually agreed scheme is the "point of agreement" in the same chart, far distant from a theoretical solution of negotiation and even out of the set of realizable negotiation away from the region of negotiation.

This set of realizable negotiation is charted by giving probability to definitive profit, not by manipulating the tariff rates of the US and Australia within GTAP. Accordingly all of the combinations of profit obtained by manipulating tariff rates on all products are not included in this set of realizable negotiation. In the first place the profit obtainable from negotiation must be larger than the point of reference. Otherwise, individual rationality is not met and negotiation becomes meaningless. However, Australia's profit calculated at the point of agreement is lower than Australia's point of reference, and is not included in the region for negotiation.

The calculation results did not present any justifiable explanation on the ground of bargaining theory for Australia's acceptance of the agreement as drafted. However, the following two points are still open to dispute. In the first place only the static effect of the

tariff elimination of the US-Australia FTA is handled in the model, and the results are not based on a comprehensive analysis including the dynamic effect of the liberalization of investment. Secondly the point of reference is placed time-wise before negotiation, but there is a possibility that a failure of negotiation may result in a level of welfare below the original level or otherwise the point of reference might shift to another position. Depending upon where the point of reference for negotiation is set, it would be possible to explain the formation of individual rationality of the agreement as drafted.

For explaining why the US consistently maintained an obstinate stance and made a compromise in the field of agriculture it should also be pointed out that the economic effect of the US-Australia FTA is small and that exports to Australia hardly weigh for the US. The US-Australia FTA is estimated to generate potential economic advantage of $1.3 per head in the terms of equivalent variation in Case 1 for the US, well below Australia's $2.2.

The results of this analysis cannot instantly confirm that the US-Australia FTA is unreasonable for Australia, but it is imagined that Australia had a chance to win higher profit by further negotiation and that Australia's concession was excessive.

3) Impact on Production

(i) Production Value

Table 8 sets forth the changes in production value both in the US and Australia. With Australia sugar production increases greatly by $333.0 million (+22.9%) in Case 1. And the production of sugar cane and sugar beet as material is expected to rise by $162.5 million (+24.4%). However, in Case 2 where sugar is treated as an exception, maintaining the status quo, its production only increases by $1.1 million (+0.08%). The production of sugar cane and sugar beet also increases slightly by $1.7 million (+0.26%). Not much change is made from the days before the FTA was concluded.

Next, dairy production increases by $175.9 million (+3.1%) in Case 1 and $143.1 million (+2.5%) in Case 2, where the increase is somewhat lower in percentage but substantial in amount. And the production of milk, the material for dairy products, increases by $77.0 million (+3.3%) in Case 1 and $61.1 million (+2.7%) in Case 2. As for dairy the US maintains its tariff quota system, but is planning to establish and broaden the quota. Therefore, the impact is very different from sugar on which TRQ is maintained as it is.

With respect to beef it is expected that the tariff quota system is maintained for 20 years or so, and the barrier will be gradually eliminated over a transition period. As the tariff quota system will be all eliminated finally, in this paper it is assumed that tariffs are completely

eliminated on beef and beef products in Case 2 as well. Tariff elimination increases the production of beef, mutton and related products by $82.8 million (+1.6%) in Case 1 and by $91.9 million (+1.8%) in Case 2, more than Case 1. This is interpreted as an increase in production of beef, etc. to make up for the dull production increase of sugar and dairy. The production of livestock being intermediate goods is expected to increase by $46.2 million (+1.1%) and $49.8 million (+1.2%) in Case 2. There are some other agricultural products, whose production increase rate is higher in Case 2 than Case 1. Raw and husked rice, vegetables, fruits and nuts, oil seeds, wool and silk, etc. are such products. Also, some farm products decrease in production in both cases. Wheat production decreases by $16.3 million (-0.6%) in Case 1 and by $4.5 million (-0.2%) in Case 2. The decrease rate is smaller in Case 2, but production decreases in either case. Finally other food products are mentioned. The production also increases by $49.7 million (+0.4%) in Case 1 and by $46.2 million (+0.4%) in Case 2.

Other than agricultural products, car production decreases by $199.6 million (-1.6%) in Case 2 and production decreases for most other products except clothes. Australia's overall production increases by $746.4 million (+0.1%) in Case 1 but slightly decreases by $35.6 million (-0.01%) in Case 2.

On the part of the US, meanwhile, sugar production sharply decreases by $252.0 million (-3.3%) in Case 1 but increases slightly by $0.2 million (0.00%) in Case 2. For sugar cane and beet a production decrease is quite large in Case 1 but limited in Case 2. Dairy production decreases by $86.9 million (-0.15%) in Case 1 and less by $64.6 million (-0.11%) in Case 2. Milk production decreases as much as dairy. The production of beef and mutton also decreases but the drop is far smaller by $46.5 million (-0.08%) in Case 1 and $50.2 million (-0.08%) in Case 2. Beef and mutton decrease more in Case 2 than Case 1. Domestic animal production also decreases, but the impact is quite limited. The decrease is only $45.2 million (-0.1%) in Case 1 and $48.0 million (-0.1%) in Case 2. For most other agricultural products the change is less than $50 million and below 0.1% in terms of percentage.

Other than agricultural products, car production increases by $789.9 million (+0.22%) in Case 2 and production increases for other products, excluding some exceptions. Provided, however, any change is small at a rate below 0.3%. After all, aggregate production increases by $4,540.7 million (+0.03%) in Case 1 and $5,268.7 million (+0.04%) in Case 2: slightly more than Case 1. In either case, production increase is minimal.

(ii) Market of Production Factor

A change in production affects the market of production factor such as labor or land

through derived demand. Table 9 shows the change in real price of each production factor. In Australia land price changes widely; a 4.83% rise in Case 1 and 2.31% in Case 2. The price rise is quite large, compared with other production factors, which rise about 0.1% in price, excluding natural resources. In Australia production increases mainly in agricultural sector, and such increase expands derived demand for land. But the supply of land is limited, and land prices rise. Figure 4 shows the percentage change in demand for land by sector in Australia. In Case 1 the derived demand increases markedly by 16.2% for sugar cane and beet production and 6.8% for sugar. In Case 2, however, demand for land in the sugar-related sector turns out to diminish slightly. Regarding milk production, demand for land shows positive growth in either case; 1.5% in Case 1 and 1.6% in Case 2. In other agricultural sectors demand for land rather diminishes in most cases because of price rises. While beef and mutton production increases, demand for land in this sector diminishes in both cases. However, the derived demand in this sector for labor or capital grows. The agricultural sectors, where derived demand turns to decrease for the production factors other than natural resources, are rice and husked rice, wheat, plant fiber (cotton), etc. By the way, derived demand for land, labor and capital decreases in the non-agricultural sector, with a few exceptions.

On the other hand, agricultural production decreases in the US because of the US-Australia FTA, and land prices decline. Table 9 as presented in the foregoing shows a decrease of 0.28% in Case 1 and 0.21% in Case 2. Meanwhile, the cost of labor and other production factors rise due to expansion in the non-agricultural sectors. However, growth is about 0.01%, except for natural resources. Generally the markets of production factors change less in the US than Australia.

4) Impact on Trade

(i) By Country or Region

Seeing the changes in total export by country or region in Table 10, the US's increase is greatest in monetary terms at $1,316.1 million in Case 2 but the percentage change is only 0.15%. On the other hand, Australia' increase amounts to $882.5 million, slightly lower than the US, but the percentage change is 1.25%, well above the US, and the greatest proportional change. Total global exports increase slightly by $1,053.8 million (+0.02%) but the total export changes in a negative direction everywhere except the US and Australia. New Zealand's decline is the sharpest, amounting to $29.9 million in Case 2 and at the rate of 0.18%. Japan's decrease amounts to $159.6 million, not small, but the percentage change is

only 0.03%. Europe also decreases its exports largely by $543. 3 million in Case 2 but the percentage change is only about 0.02%.

(ii) Change in Exports from the US, Australia and Japan

Table 11 shows the percentage change in export by destination from the US, Australia and Japan. Firstly Australia's exports to the US are expected to increase by 14.76% in Case 1 and by 10.61% in Case 2. And all its exports to countries other than the US decrease in Case 1 but increase in Case 2, except for those shipped to "other Asian regions". However, the percentage change in exports to third party countries is less than 0.5%. The percentage change in exports to Japan is only about 0.01% in Case 2.US exports to Australia increase by about 17% in both cases. US exports to third party countries decrease in both cases. US exports to Japan decrease by 0.16% in Case 2. Finally, the change in Japan's total exports by destination is examined; its exports to Australia decrease by 5.42% in Case 2 and to New Zealand drop by 0.30%. Its exports to other destinations all increase. Among them, exports to NAFTA countries increase comparatively widely. In Case 2 Japan's exports to Canada, the US and Mexico increase by 0.21%, 0.13% and 0.18% respectively. However, as already seen, Japan's total exports decrease and the increase in exports to NAFTA is far short of the decrease in exports to Australia and New Zealand.

(iii) Change in Trade between the US and Australia

Table 12 shows the change in the value of trade between the US and Australia by product. Among the products exported to the US from Australia, sugar shows a remarkably large change in Case 1. Sugar exports increase by $332.2 million or 431.43%. In Case 2, however, sugar exports decrease by $0.2 million (-0.24%). Meanwhile, the tariff barrier on dairy imports is largely reduced, and exports increase accordingly in either case. The increase is $137.8 million (+341.91%) in Case 1 and $111.6 million (+276.81%) even in Case 2. As tariffs are also lowered greatly on beef and mutton, exports increase by $89.5 million (+20.14%) in Case 1 and $92.4 million (+20.78%) in Case 2. Other than agricultural products, textile and apparel exports show a large increase; $299.7 million (+137.42%) in Case 2.

For the US's part, exports to Australia generally increase mainly for non-agricultural products. Car exports increase most by $884.9 million (+104.22%) in Case 2. Other manufacturing exports increase largely in dollar terms by $703.1 million but the percentage change is only 18.03%. Textile and apparel exports increase more than 100% by $299.7 million (+137.42%) in case 2. Turning to agricultural products, exports of vegetables, fruits and nuts increase by $3.2 million (+8.71%) in Case 2, and dairy exports by 1.4 million (+37.72%). Sugar exports show a large percentage change but the change in dollar terms is

less than $1 million.

(iv) Change in Japan- US Trade and Japan- Australia Trade

According to Table 13, which shows a change in Japanese exports to the US and Australia by product, car exports to Australia decline most sharply both in dollar and percentage by $307.5 million (-12.35%) in Case 2. In other manufacturing industries, exports decrease significantly by $120.4 million (-4.59%). Meanwhile, car exports to the US slightly increase by $75.4 million (+0.23%), and other manufacturing industries also increase their exports by $34.0 million (+0.11%).

When the changes in export to Japan are inversely seen from the side of the US and Australia in Table 14, Australia's exports of many agricultural products decrease. Beef and mutton exports decrease by $3.7 million (-0.38%) and wheat exports are down by $1.1 million (-0.40%). Contrastingly, the US increases agricultural exports to Japan, mainly the same products for which Australia's exports decrease. Plant fiber (cotton) exports increase by $0.6 million (+0.23%) in Case 2, wheat by $0.7 million (+0.11%) and beef and mutton by $1.2 million (+0.07%) in Case 2. Because of the US-Australia FTA, weight shifts from Australia to the US for part of Japanese imports of agricultural products, but such shift is very minimal.

Note (1) It is undeniable that such a shock, once it occurs, might have after-effects both in supply and demand for some time after the problem is solved.

## 5. Conclusion

In this paper the negotiation process and economic impact of the US-Australia FTA have been analyzed and are summarized as follows. First, theoretical explanations were given on the necessity of compromise, which is widely recognized in a general FTA negotiation, including that between the US and Australia. Although free trade can become a solution of negotiation, it is not assured that negotiations reach such a solution, and it remains likely that negotiations can be concluded even if certain tariffs are kept. Next, tracing the negotiation process and background of the US-Australia FTA, things that led to the exceptional treatment of sugar, dairy, etc. on the part of the US were clarified. The analysis of the economic impact of the conclusion of FTA between the US and Australia in employment of GTAP showed that under the US-Australia FTA, tariffs are eliminated mainly for agricultural products; that the static effect of tariff elimination is not so great macro-economically for both countries

because of the limited weight of agricultural products in the overall economy; that the FTA has a limited adverse effect on third countries; that it is difficult to understand Australia's concession as inevitable from the viewpoint of bargaining theory; and that the US deferment in eliminating tariff quotas on sugar significantly harmed the expectable profit of Australia's sugar producers.

The conclusion of the US-Australia FTA is not expected to bring a great deal of macro-economic benefit to the US, and is probably more significant as a lever to gain the initiative in the WTO negotiations, and as a means to reinforce security. Meanwhile, Australia made a great concession by accepting the exclusion of sugar at the beginning of the negotiation, when tariff elimination on sugar was strongly expected in Australia, and as the macro-economic impact of the FTA is not small, it is difficult to understand Australia's justification of the agreement.

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**Table 1 Profit Matrix**

| | | Strategy of 1st Country | |
|---|---|---|---|
| | | Tariff Eliminated | Tariff Maintained |
| Strategy of 2nd Country | Tariff Eliminated | $(a_{11},b_{11})$= (6, 3) | $(a_{12},b_{12})$= (8, -2) |
| | Tariff Maintained | $(a_{21},b_{21})$= (-2, 6) | **$(a_{22},b_{22})$= (0, 0)** |

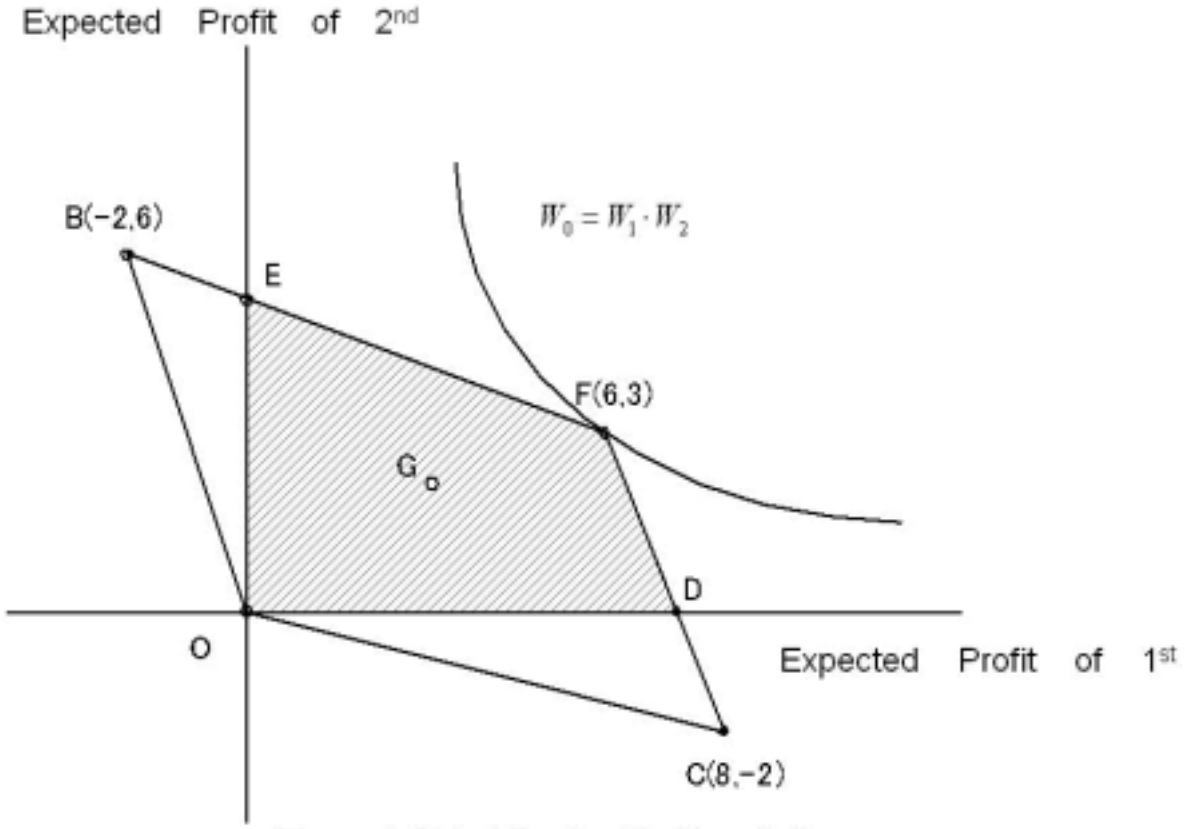


Figure 1 Set of Realizable Negotiation

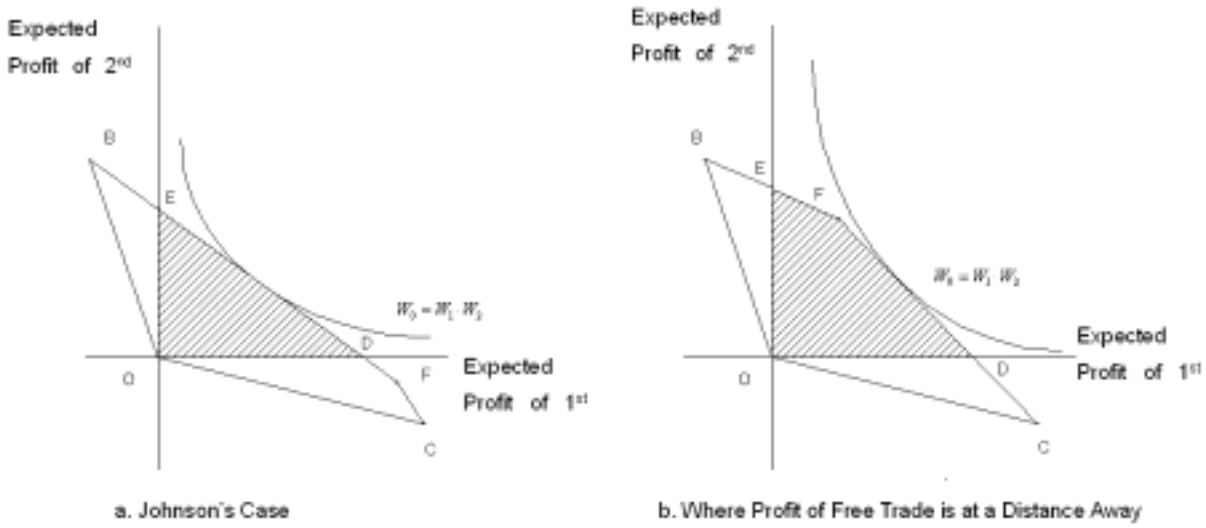


Figure 2 Example of a solution for negotiation that is not the point of free trade

**Table 2 Elimination of U.S, Tariff Quota on Beef Import**

(ton,%)

| Years after the Agreement Took Effect | Calendar Year | Additional Quota under FTA | Total of Existing and Additional Quotas | In-quota Tariff Rate | Over-quota Tariff Rate |
|---|---|---|---|---|---|
| 1st year | 2005 | 0 | 378,214 | 0 | 26.40 |
| 2 | 2006 | 15,000 | 393,214 | 0 | 26.40 |
| 3 | 2007 | 20,000 | 398,214 | 0 | 26.40 |
| 4 | 2008 | 20,000 | 398,214 | 0 | 26.40 |
| 5 | 2009 | 25,000 | 403,214 | 0 | 26.40 |
| 6 | 2010 | 25,000 | 403,214 | 0 | 26.40 |
| 7 | 2011 | 30,000 | 408,214 | 0 | 26.40 |
| 8 | 2012 | 30,000 | 408,214 | 0 | 26.40 |
| 9 | 2013 | 35,000 | 413,214 | 0 | 24.64 |
| 10 | 2014 | 35,000 | 413,214 | 0 | 22.88 |
| 11 | 2015 | 40,000 | 418,214 | 0 | 21.12 |
| 12 | 2016 | 40,000 | 418,214 | 0 | 19.36 |
| 13 | 2017 | 45,000 | 423,214 | 0 | 17.60 |
| 14 | 2018 | 45,000 | 423,214 | 0 | 14.08 |
| 15 | 2019 | 50,000 | 428,214 | 0 | 10.56 |
| 16 | 2020 | 55,000 | 433,214 | 0 | 7.04 |
| 17 | 2021 | 60,000 | 438,214 | 0 | 3.52 |
| 18 | 2022 | 70,000 | 448,214 | 0 | 0.00 |
| 19- | 2023- | unlimited | unlimited | 0 | 0.00 |

Source: Australia-United States Free Trade Agreement: Guide to the Agreement 2004.3

Note: Additional quota of 15,000 tons scheduled for 2006 is effected when US exports of beef recover to the level before the BSE outbreak (2003)

**Table 3 Expansion of US Tariff Quota of Major Dairy Products**

(ton,%)

| Product | Additional Quota | Existing Quota | % Change in Quota (Annual) |
|---|---|---|---|
| Milk, cream, ice cream | 7.5M liters | 0 | 6.0 |
| Condensed milk | 3,000 | 92 | 6.0 |
| Butter, butterfat | 1,500 | 0 | 3.0 |
| Skim milk powder | 100 | 600 | 3.0 |
| Other milk powder (including whole milk | 4,000 | 57 | 4.0 |
| Other dairy products | 1,500 | 3,016 | 6.0 |
| Cheddar cheese | 750 | 2,450 | 3.0 |
| American-type cheese | 500 | 1,000 | 3.0 |
| Swiss cheese | 500 | 500 | 5.0 |
| European-type cheese | 2,000 | 0 | 5.0 |
| Other cheese | 3,500 | 3,050 | 5.0 |

Source: Australia-United States Free Trade Agreement Guide to the Agreement 2004.3

Table 4 Comparison of Economic Power of US and Australia

| | US (a) | Australia (b) | (a) ÷ (b) |
|---|---|---|---|
| Population (thousand, 2003) | 291,049 | 19,881 | 14.6 |
| GDP ($billion,2003) | 10,934 | 506 | 21.6 |
| Per capita GDP ($billion, 2003) | 37,600 | 25,300 | 1.5 |
| Total Exports ($billion, 2002) | 982 | 82 | 12.0 |
| | | | % of total exports |
| To US | - | 9 | 11 |
| To Australia | 20 | - | 2 |
| To Japan | 79 | 14 | US 8<br>Australia 17 |

Source: OECD,CIE [4]

Table 5 Agricultural Trade of US, Australia & Japan -2003 Summary

Total Exports of Major Agricultural Products ($million, %)

| | US | | | Australia (2002) | |
|---|---|---|---|---|---|
| | Amount | Percentage | | Amount | Percentage |
| Total | 59,553 | 100.0 | Total | 15,785 | 100.0 |
| Soybean | 7,980 | 13.4 | Beef | 2,193 | 13.9 |
| Beef, etc. | 5,750 | 9.7 | Wool | 2,071 | 13.1 |
| Vegetable | 4,820 | 8.1 | Wheat | 1,815 | 11.5 |
| Corn | 4,747 | 8.0 | Dairy | 1,388 | 8.8 |
| Wheat | 3,933 | 6.6 | Sugar | 826 | 5.2 |
| Sugar, etc. | 1,807 | 3.0 | Rice | 113 | 0.7 |
| Dairy | 1,057 | 1.8 | | | |
| Rice | 1,027 | 1.7 | | | |

Japanese Imports of Agricultural Products (\100 million,%)

| | Import from US | | | Import from Australia | |
|---|---|---|---|---|---|
| | Amount | Percentage | | Amount | Percentage |
| Total | 7,363 | 100.0 | Total | 2,196 | 100.0 |
| Corn | 2,485 | 33.8 | Beef (including scrap meat) | 1,100 | 50.1 |
| Pork (including scrap meat) | 1,459 | 19.8 | Wheat | 282 | 12.9 |
| Soybean | 1,300 | 17.7 | Natural cheese | 223 | 10.2 |
| Beef (including scrap meat) | 1,285 | 17.4 | Barley (including hulled barley) | 166 | 7.5 |
| Wheat | 683 | 9.3 | Coleseed (for oil expression) | 141 | 6.4 |
| Rice | 150 | 2.0 | Sugar | 135 | 6.1 |
| | | | Cotton | 103 | 4.7 |
| | | | Rice | 46 | 2.1 |

Source: USDA/ERS "U.S. Agricultural Trade Update", ABARE "Australian Commodity Statistics 2003", Ministry of Finance "Trade Statistics of Japan"

Table 6 GTAP Goods and Countries/Regions - Data Reclassification

| Goods Category | Country/Region |
|---|---|
| Raw rice/husked rice | Australia |
| Wheat | New Zealand |
| Other grain | China |
| Vegetable, fruit, nut | Japan |
| Oilseed | Korea |
| Sugar cane/beet | Taiwan |
| Plant fiber (cotton) | Indonesia |
| Other crop | Malaysia |
| Domestic animals | The Philippines |
| Other animal products | Singapore |
| Milk | Vietnam |
| Wool/silk | Thailand |
| Forestry | Other Asian regions |
| Fisheries | Canada |
| Oil/coal/gas, etc. | US |
| Beef/mutton | Mexico |
| Pork/poultry | Brazil |
| Vegetable oil | Other Latin America |
| Dairy | Europe |
| Polished rice | Other regions |
| Sugar | |
| Other food | |
| Beverage/tobacco | |
| Textiles/apparel | |
| Wood products | |
| Paper/publishing | |
| Chemistry | |
| Mining products | |
| Metal | |
| Automobiles | |
| Plant and equipment | |
| Other manufacturing | |
| Services | |

**Table 7 Change in Equivalent Variation and GDP**

($million, %)

| | Equivalent Variation | | Change in GDP | |
|---|---|---|---|---|
| | case1 | case2 | case1 | case2 |
| Australia | 44.3 | -42.6 | 0.02 | -0.11 |
| New Zealand | -16.8 | -16.2 | -0.12 | -0.13 |
| China | -37.4 | -31.4 | -0.02 | -0.02 |
| Japan | -110.2 | -98.8 | -0.02 | -0.02 |
| Korea | -37.5 | -35.2 | -0.03 | -0.03 |
| Taiwan | -14.0 | -12.3 | -0.02 | -0.02 |
| Indonesia | -10.7 | -6.5 | -0.02 | -0.02 |
| Malaysia | -8.8 | -6.2 | -0.02 | -0.02 |
| The Philippines | -8.1 | -1.6 | -0.04 | -0.01 |
| Singapore | -7.0 | -5.7 | -0.02 | -0.02 |
| Vietnam | -0.8 | -0.6 | -0.02 | -0.02 |
| Thailand | -5.6 | -5.7 | -0.02 | -0.02 |
| Other Asian regions | -13.9 | -10.5 | -0.02 | -0.02 |
| Canada | -39.0 | -38.0 | -0.02 | -0.01 |
| US | 378.9 | 456.9 | 0.03 | 0.04 |
| Mexico | -14.4 | -15.1 | -0.01 | -0.01 |
| Brazil | -13.9 | -8.0 | -0.02 | -0.01 |
| Other Latin America | -41.7 | -16.4 | -0.03 | -0.01 |
| Europe | -134.2 | -136.6 | -0.02 | -0.02 |
| Other regions | -25.6 | -19.2 | -0.01 | -0.01 |
| Total | -116.3 | -49.7 | 0.00 | 0.00 |

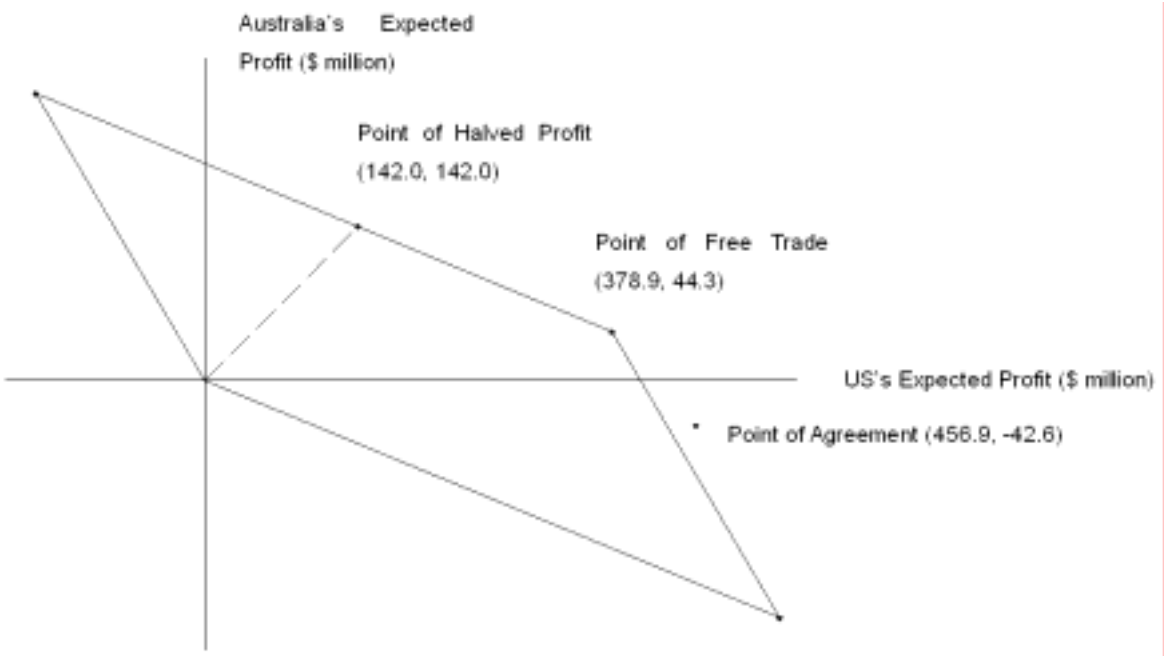


Figure 3 Example of Negotiable Area in the US-Australia FTA negotiation

Table 8 US and Australia - Change in Production

($ million, %)

| | Australia | | | | US | | | |
|---|---|---|---|---|---|---|---|---|
| | Value Change | | % Change | | Value Change | | % Change | |
| | case1 | case2 | case1 | case2 | case1 | case2 | case1 | case2 |
| Raw rice/husked rice | -0.2 | 0.1 | -0.10 | 0.04 | -0.1 | -0.2 | -0.01 | -0.01 |
| Wheat | -16.3 | -4.5 | -0.60 | -0.17 | 7.6 | 0.7 | 0.08 | 0.01 |
| Other grain | 6.5 | 5.1 | 0.44 | 0.35 | -26.0 | -25.7 | -0.06 | -0.06 |
| Vegetable, fruit, nut | 7.9 | 8.2 | 0.27 | 0.28 | -0.7 | -1.9 | 0.00 | -0.01 |
| Oilseed | 4.4 | 5.5 | 1.40 | 1.74 | -4.1 | -5.8 | -0.02 | -0.03 |
| Sugar cane/beet | 162.5 | 1.7 | 24.36 | 0.26 | -77.7 | -0.4 | -3.12 | -0.02 |
| Plant fiber (cotton) | -15.6 | -2.6 | -0.78 | -0.13 | 8.6 | 4.9 | 0.12 | 0.07 |
| Other crop | 31.9 | 24.6 | 1.29 | 1.00 | -4.6 | -5.0 | -0.02 | -0.02 |
| Domestic animals | 46.2 | 49.8 | 1.13 | 1.22 | -45.2 | -48.0 | -0.08 | -0.08 |
| Other animal products | -1.3 | 1.1 | -0.06 | 0.05 | -0.9 | -0.9 | 0.00 | 0.00 |
| Milk | 77.0 | 61.1 | 3.34 | 2.65 | -32.6 | -25.2 | -0.14 | -0.11 |
| Wool/silk | 6.8 | 9.2 | 0.30 | 0.41 | -0.4 | -0.8 | -0.12 | -0.26 |
| Forestry | -1.0 | -1.4 | -0.07 | -0.10 | 0.4 | 0.5 | 0.00 | 0.00 |
| Fisheries | 0.0 | 0.3 | 0.00 | 0.01 | -0.8 | -0.7 | -0.05 | -0.04 |
| Oil/coal/gas, etc. | -21.6 | -2.7 | -0.08 | -0.01 | 4.6 | 3.1 | 0.00 | 0.00 |
| Beef/mutton | 82.8 | 91.9 | 1.61 | 1.78 | -46.5 | -50.2 | -0.08 | -0.08 |
| Pork/poultry | 8.4 | 4.7 | 0.31 | 0.17 | 1.9 | 4.1 | 0.00 | 0.01 |
| Vegetable oil | -2.4 | -2.1 | -0.40 | -0.34 | 2.3 | 1.6 | 0.02 | 0.01 |
| Dairy | 175.9 | 143.1 | 3.06 | 2.49 | -86.9 | -64.6 | -0.15 | -0.11 |
| Polished rice | -0.5 | 0.0 | -0.16 | -0.01 | -0.3 | -0.5 | -0.02 | -0.03 |
| Sugar | 333.0 | 1.1 | 22.89 | 0.08 | -252.0 | 0.2 | -3.25 | 0.00 |
| Other food | 49.7 | 46.2 | 0.40 | 0.37 | 10.2 | 38.4 | 0.00 | 0.02 |
| Beverage/tobacco | 5.4 | 5.7 | 0.09 | 0.09 | 46.4 | 48.3 | 0.04 | 0.04 |
| Textiles/apparel | 120.6 | 143.0 | 1.14 | 1.35 | 271.6 | 267.9 | 0.13 | 0.13 |
| Wood products | -13.1 | -14.5 | -0.15 | -0.16 | 37.7 | 41.3 | 0.02 | 0.02 |
| Paper/publishing | -21.3 | -29.6 | -0.14 | -0.19 | 107.3 | 118.1 | 0.03 | 0.04 |
| Chemistry | -61.1 | -60.2 | -0.23 | -0.23 | 361.2 | 370.3 | 0.05 | 0.05 |
| Mining products | -45.1 | -44.3 | -0.58 | -0.57 | 80.2 | 79.1 | 0.08 | 0.08 |
| Metal | -80.3 | -18.5 | -0.23 | -0.05 | 198.7 | 183.1 | 0.05 | 0.04 |
| Automobiles | -225.7 | -199.6 | -1.79 | -1.59 | 802.2 | 789.9 | 0.22 | 0.22 |
| Plant and equipment | 11.8 | 28.9 | 0.14 | 0.35 | -266.1 | -291.8 | -0.06 | -0.07 |
| Other manufacturing | -109.6 | -84.0 | -0.70 | -0.54 | 479.1 | 459.8 | 0.07 | 0.07 |
| Services | 230.9 | -202.6 | 0.05 | -0.04 | 2965.0 | 3379.0 | 0.03 | 0.03 |
| Total | 746.4 | -35.6 | 0.11 | -0.01 | 4540.7 | 5268.7 | 0.03 | 0.04 |

Table 9 Price Change of Production Factors

(%)

| | Australia | | US | |
|---|---|---|---|---|
| | case1 | case2 | case1 | case2 |
| Land | 4.83 | 2.31 | -0.28 | -0.21 |
| Unskilled Labor | 0.15 | 0.13 | 0.01 | 0.01 |
| Skilled Labor | 0.10 | 0.10 | 0.01 | 0.01 |
| Capital | 0.12 | 0.11 | 0.01 | 0.01 |
| Natural Resource | -0.32 | 0.19 | -0.08 | -0.10 |

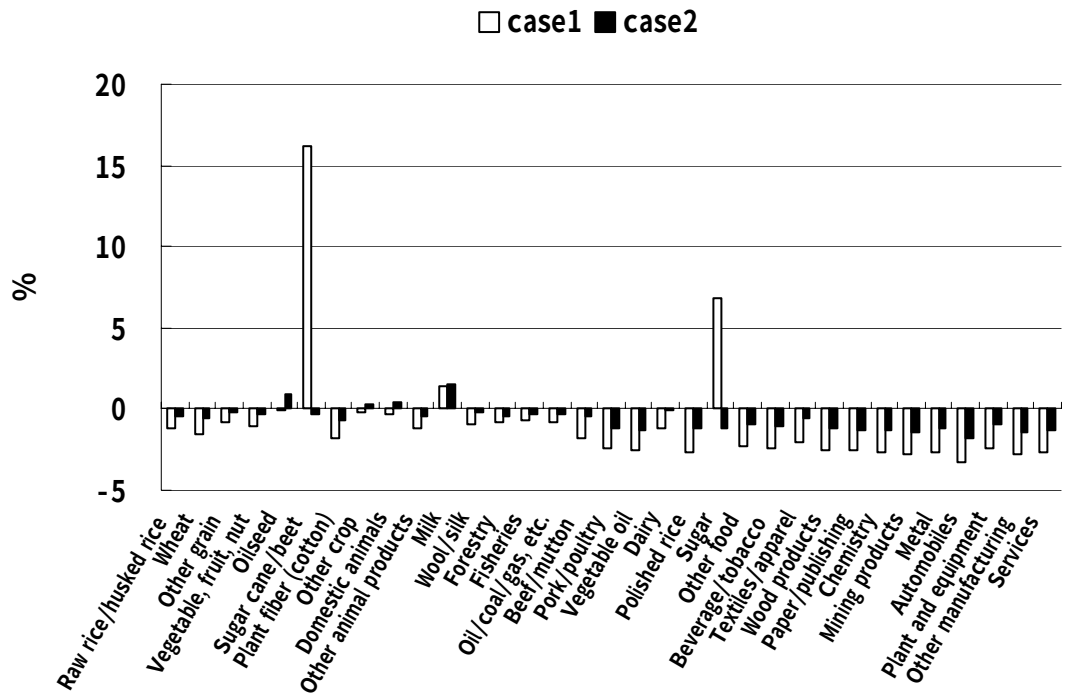


**Figure 4 Change in Derived Demand for Land (Australia)**

**Table 10 Change in Total Exports by Country/Region**

($ million, %)

| | Value Change | | % Change | |
|---|---|---|---|---|
| | case1 | case2 | case1 | case2 |
| Australia | 985.3 | 882.5 | 1.40 | 1.25 |
| New Zealand | -29.7 | -29.9 | -0.17 | -0.18 |
| China | -77.6 | -75.3 | -0.03 | -0.03 |
| Japan | -160.1 | -159.6 | -0.03 | -0.03 |
| Korea | -50.3 | -48.8 | -0.03 | -0.03 |
| Taiwan | -23.2 | -22.2 | -0.02 | -0.02 |
| Indonesia | -14.0 | -14.2 | -0.02 | -0.02 |
| Malaysia | -11.3 | -10.6 | -0.01 | -0.01 |
| The Philippines | -7.9 | -6.7 | -0.02 | -0.02 |
| Singapore | -25.1 | -24.7 | -0.02 | -0.02 |
| Vietnam | -3.1 | -3.1 | -0.03 | -0.03 |
| Thailand | -12.7 | -13.2 | -0.02 | -0.02 |
| Other Asian regions | -20.1 | -18.6 | -0.03 | -0.03 |
| Canada | -40.6 | -40.6 | -0.02 | -0.02 |
| US | 1454.4 | 1316.1 | 0.17 | 0.15 |
| Mexico | -13.4 | -11.9 | -0.01 | -0.01 |
| Brazil | -18.1 | -10.8 | -0.03 | -0.02 |
| Other Latin America | -52.7 | -22.3 | -0.04 | -0.02 |
| Europe | -549.8 | -543.3 | -0.02 | -0.02 |
| Other regions | -94.1 | -89.3 | -0.02 | -0.02 |
| Total | 1236.3 | 1053.8 | 0.02 | 0.02 |

**Table 11 Percentage Change in Total Export by Destination from US, Australia and Japan**

(%)

| | Australia | | US | | Japan | |
|---|---|---|---|---|---|---|
| | case1 | case2 | case1 | case2 | case1 | case2 |
| Australia | - | - | 17.45 | 17.27 | -5.29 | -5.42 |
| New Zealand | -0.09 | 0.22 | -0.31 | -0.40 | -0.19 | -0.30 |
| China | -0.28 | 0.09 | -0.16 | -0.18 | 0.02 | 0.02 |
| Japan | -0.28 | 0.01 | -0.14 | -0.16 | - | - |
| Korea | -0.16 | 0.19 | -0.15 | -0.17 | 0.04 | 0.03 |
| Taiwan | -0.16 | 0.06 | -0.15 | -0.16 | 0.04 | 0.04 |
| Indonesia | -0.37 | 0.03 | -0.13 | -0.17 | 0.01 | 0.00 |
| Malaysia | -0.30 | 0.15 | -0.16 | -0.18 | 0.04 | 0.04 |
| The Philippines | -0.33 | 0.03 | -0.14 | -0.16 | 0.05 | 0.05 |
| Singapore | -0.16 | 0.22 | -0.17 | -0.19 | 0.04 | 0.04 |
| Vietnam | -0.24 | 0.19 | -0.15 | -0.17 | 0.01 | 0.00 |
| Thailand | -0.29 | 0.11 | -0.15 | -0.17 | 0.03 | 0.02 |
| Other Asian regions | -0.53 | -0.13 | -0.11 | -0.15 | 0.02 | 0.02 |
| Canada | -0.40 | 0.14 | -0.07 | -0.08 | 0.20 | 0.21 |
| US | 14.76 | 10.61 | - | - | 0.12 | 0.13 |
| Mexico | -0.34 | 0.08 | -0.06 | -0.07 | 0.17 | 0.18 |
| Brazil | -0.22 | 0.08 | -0.14 | -0.14 | 0.06 | 0.08 |
| Other Latin America | -0.31 | 0.06 | -0.15 | -0.14 | 0.07 | 0.09 |
| Europe | -0.24 | 0.09 | -0.16 | -0.17 | 0.04 | 0.04 |
| Other regions | -0.41 | 0.11 | -0.14 | -0.16 | 0.04 | 0.04 |

Table 12 Change in Trade by Commodity between US and Australia

($ million, %)

| | Australia's Export to US | | | | US Export to Australia | | | |
|---|---|---|---|---|---|---|---|---|
| | Value Change | | % Change | | Value Change | | % Change | |
| | case1 | case2 | case1 | case2 | case1 | case2 | case1 | case2 |
| Raw rice/husked rice | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 7.00 | 5.00 |
| Wheat | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 5.50 | 4.00 |
| Other grain | 0.1 | 0.1 | 51.00 | 52.00 | 0.0 | 0.0 | 4.25 | 3.62 |
| Vegetable, fruit, nut | 7.7 | 8.3 | 19.70 | 21.12 | 3.6 | 3.2 | 9.57 | 8.71 |
| Oilseed | 6.7 | 6.8 | 98.65 | 100.25 | 1.0 | 0.9 | 4.53 | 4.27 |
| Sugar cane/beet | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Plant fiber (cotton) | 0.4 | 0.4 | 53.57 | 55.14 | 0.0 | 0.0 | -33.00 | -33.00 |
| Other crop | 14.2 | 14.5 | 131.29 | 133.85 | 3.6 | 3.4 | 12.90 | 12.29 |
| Domestic animals | 0.0 | 0.0 | 1.79 | 3.29 | 0.6 | 0.5 | 5.59 | 4.75 |
| Other animal products | 0.2 | 0.4 | 1.26 | 2.49 | 0.2 | 0.2 | 3.17 | 2.36 |
| Milk | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Wool/silk | 1.3 | 1.6 | 1.51 | 1.93 | 0.0 | 0.0 | 0.00 | 0.00 |
| Forestry | 0.1 | 0.1 | 27.80 | 28.20 | 0.0 | 0.0 | -0.27 | -0.41 |
| Fisheries | 0.4 | 0.4 | 5.72 | 5.91 | 0.0 | 0.0 | -4.00 | -4.25 |
| Oil/coal/gas, etc. | 7.0 | 7.1 | 1.64 | 1.68 | 0.0 | 0.0 | -0.08 | -0.01 |
| Beef/mutton | 89.5 | 92.4 | 20.14 | 20.78 | 0.1 | 0.1 | 3.80 | 3.33 |
| Pork/poultry | 2.0 | 2.1 | 15.75 | 16.58 | 1.0 | 1.0 | 20.06 | 19.41 |
| Vegetable oil | 0.3 | 0.3 | 24.91 | 25.45 | 5.1 | 5.1 | 10.81 | 10.71 |
| Dairy | 137.8 | 111.6 | 341.91 | 276.81 | 1.4 | 1.4 | 38.58 | 37.72 |
| Polished rice | 0.0 | 0.0 | 42.00 | 43.00 | 0.0 | 0.0 | 3.00 | 2.57 |
| Sugar | 332.2 | -0.2 | 431.43 | -0.24 | 0.4 | 0.3 | 88.00 | 82.00 |
| Other food | 58.4 | 59.5 | 59.66 | 60.74 | 40.6 | 39.7 | 25.29 | 24.74 |
| Beverage/tobacco | 26.0 | 27.3 | 19.33 | 20.29 | 39.3 | 38.8 | 62.74 | 61.96 |
| Textiles/apparel | 179.8 | 182.2 | 79.75 | 80.82 | 300.8 | 299.7 | 137.90 | 137.42 |
| Wood products | 3.0 | 3.2 | 9.27 | 9.72 | 23.0 | 22.7 | 26.56 | 26.31 |
| Paper/publishing | 0.7 | 0.8 | 1.48 | 1.73 | 42.1 | 41.4 | 9.23 | 9.08 |
| Chemistry | 37.4 | 38.0 | 12.70 | 12.91 | 230.5 | 228.3 | 10.83 | 10.73 |
| Mining products | 7.0 | 7.2 | 19.63 | 20.10 | 81.2 | 80.6 | 25.52 | 25.32 |
| Metal | 40.0 | 43.8 | 4.24 | 4.65 | 86.7 | 86.4 | 27.83 | 27.72 |
| Automobiles | 110.8 | 115.3 | 27.35 | 28.47 | 889.4 | 884.9 | 104.74 | 104.22 |
| Plant and equipment | 27.4 | 29.0 | 8.74 | 9.24 | 94.9 | 92.5 | 3.51 | 3.42 |
| Other manufacturing | 72.3 | 74.6 | 14.66 | 15.12 | 708.0 | 703.1 | 18.15 | 18.03 |
| Services | -8.3 | 3.1 | -0.23 | 0.09 | 8.3 | 1.0 | 0.25 | 0.03 |
| Total | 1154.3 | 829.8 | 14.76 | 10.61 | 2561.4 | 2535.0 | 17.45 | 17.27 |

Table 13 Change in Japan's Export to US & Australia

($ million, %)

| | Japan's Export to Australia | | | | Japan's Export to US | | | |
|---|---|---|---|---|---|---|---|---|
| | Value Change | | % Change | | Vlaue Change | | % Change | |
| | case1 | case2 | case1 | case2 | case1 | case2 | case1 | case2 |
| Raw rice/husked rice | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Wheat | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Other grain | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Vegetable, fruit, nut | 0.0 | 0.0 | 0.24 | -0.60 | 0.0 | 0.0 | -0.10 | -0.05 |
| Oilseed | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | -0.97 | -0.97 |
| Sugar cane/beet | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Plant fiber (cotton) | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Other crop | 0.0 | 0.0 | 0.11 | -0.40 | 0.0 | 0.0 | -0.17 | -0.13 |
| Domestic animals | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | -0.16 | -0.13 |
| Other animal products | 0.0 | 0.0 | 1.92 | 0.00 | 0.0 | 0.0 | 0.00 | 0.06 |
| Milk | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Wool/silk | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Forestry | 0.0 | 0.0 | 0.00 | -0.35 | 0.0 | 0.0 | 0.09 | 0.09 |
| Fisheries | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | -0.10 | -0.05 |
| Oil/coal/gas, etc. | 0.0 | 0.0 | -0.12 | -0.12 | 0.0 | 0.0 | 0.09 | 0.09 |
| Beef/mutton | 0.0 | 0.0 | 0.92 | 0.31 | -0.2 | -0.2 | -3.11 | -3.22 |
| Pork/poultry | 0.0 | 0.0 | 0.00 | -0.80 | 0.0 | 0.0 | -0.09 | -0.07 |
| Vegetable oil | 0.0 | 0.0 | -1.43 | -2.14 | 0.0 | 0.0 | -0.06 | -0.03 |
| Dairy | 0.0 | 0.0 | 0.67 | 0.00 | -0.2 | -0.2 | -5.53 | -4.57 |
| Polished rice | 0.0 | 0.0 | 0.52 | 0.17 | 0.0 | 0.0 | 0.06 | 0.05 |
| Sugar | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | -15.79 | 0.00 |
| Other food | -0.5 | -0.6 | -1.40 | -1.73 | -0.7 | -0.5 | -0.20 | -0.14 |
| Beverage/tobacco | -0.2 | -0.3 | -5.44 | -5.84 | 0.0 | 0.0 | -0.07 | -0.05 |
| Textiles/apparel | -3.3 | -3.4 | -4.25 | -4.42 | -0.1 | 0.0 | -0.02 | 0.00 |
| Wood products | -0.2 | -0.2 | -1.37 | -1.55 | 0.1 | 0.1 | 0.12 | 0.13 |
| Paper/publishing | -1.1 | -1.2 | -1.41 | -1.55 | 0.4 | 0.5 | 0.09 | 0.10 |
| Chemistry | -14.5 | -15.0 | -2.17 | -2.25 | 5.6 | 6.1 | 0.06 | 0.07 |
| Mining products | -4.3 | -4.4 | -4.72 | -4.85 | 1.4 | 1.5 | 0.11 | 0.12 |
| Metal | -6.6 | -6.9 | -1.67 | -1.74 | 5.2 | 5.4 | 0.12 | 0.12 |
| Automobiles | -302.5 | -307.5 | -12.15 | -12.35 | 70.0 | 75.4 | 0.22 | 0.23 |
| Plant and equipment | -12.5 | -13.3 | -1.04 | -1.11 | 33.8 | 36.0 | 0.09 | 0.10 |
| Other manufacturing | -118.2 | -120.4 | -4.50 | -4.59 | 31.3 | 34.0 | 0.10 | 0.11 |
| Services | 2.0 | -0.2 | 0.19 | -0.02 | 9.8 | 10.3 | 0.10 | 0.11 |
| Total | -461.8 | -473.4 | -5.29 | -5.42 | 156.2 | 168.3 | 0.12 | 0.13 |

Table 14 Change in Export to Japan from US & Australia

($ million, %)

| | Australia's Export to Japan | | | | US Export to Japan | | | |
|---|---|---|---|---|---|---|---|---|
| | Value Change | | % Change | | Value Change | | % Change | |
| | case1 | case2 | case1 | case2 | case1 | case2 | case1 | case2 |
| Raw rice/husked rice | -0.3 | -0.1 | -1.30 | -0.51 | 0.1 | 0.0 | 0.29 | 0.06 |
| Wheat | -2.9 | -1.1 | -1.07 | -0.40 | 2.3 | 0.7 | 0.35 | 0.11 |
| Other grain | -0.2 | -0.1 | -0.93 | -0.34 | 0.6 | 0.3 | 0.03 | 0.01 |
| Vegetable, fruit, nut | -0.8 | -0.4 | -1.65 | -0.72 | -0.3 | -0.5 | -0.04 | -0.06 |
| Oilseed | -1.8 | -0.9 | -1.60 | -0.79 | 0.8 | 0.1 | 0.06 | 0.00 |
| Sugar cane/beet | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Plant fiber (cotton) | -1.6 | -0.6 | -1.04 | -0.42 | 1.5 | 0.6 | 0.60 | 0.23 |
| Other crop | -1.1 | -0.5 | -1.69 | -0.75 | 0.1 | -0.1 | 0.03 | -0.03 |
| Domestic animals | -0.3 | -0.2 | -2.45 | -1.17 | 0.2 | 0.1 | 0.23 | 0.06 |
| Other animal products | -1.4 | -0.5 | -1.81 | -0.67 | 0.3 | -0.2 | 0.10 | -0.06 |
| Milk | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.00 | 0.00 |
| Wool/silk | -0.5 | -0.2 | -0.77 | -0.35 | 0.0 | 0.0 | 0.00 | 0.00 |
| Forestry | 0.0 | 0.0 | -0.07 | 0.24 | -1.3 | -1.4 | -0.10 | -0.11 |
| Fisheries | -0.1 | 0.1 | -0.05 | 0.05 | -0.1 | -0.1 | -0.03 | -0.05 |
| Oil/coal/gas, etc. | -0.9 | 0.5 | -0.02 | 0.01 | -0.8 | -0.8 | -0.11 | -0.11 |
| Beef/mutton | -8.7 | -3.7 | -0.89 | -0.38 | 4.7 | 1.2 | 0.28 | 0.07 |
| Pork/poultry | -0.6 | -0.2 | -1.23 | -0.49 | -0.3 | -0.7 | -0.04 | -0.07 |
| Vegetable oil | 0.0 | 0.0 | -0.17 | 0.24 | 0.0 | -0.1 | -0.01 | -0.04 |
| Dairy | -2.7 | -1.3 | -1.14 | -0.55 | 0.3 | 0.0 | 0.24 | 0.03 |
| Polished rice | -0.3 | -0.1 | -0.77 | -0.23 | 0.0 | -0.1 | 0.05 | -0.07 |
| Sugar | -2.3 | -0.2 | -3.72 | -0.30 | 0.1 | 0.0 | 2.50 | -0.04 |
| Other food | -3.1 | -0.2 | -0.63 | -0.04 | -0.8 | -3.2 | -0.03 | -0.14 |
| Beverage/tobacco | -0.5 | 0.0 | -0.67 | 0.01 | -3.1 | -3.9 | -0.15 | -0.19 |
| Textiles/apparel | 0.5 | 1.8 | 0.26 | 0.86 | -3.1 | -3.5 | -0.23 | -0.25 |
| Wood products | -0.5 | 0.6 | -0.10 | 0.13 | -2.7 | -3.1 | -0.16 | -0.18 |
| Paper/publishing | 0.0 | 0.0 | -0.07 | 0.18 | -1.7 | -1.8 | -0.11 | -0.11 |
| Chemistry | 0.2 | 0.6 | 0.11 | 0.29 | -8.6 | -9.2 | -0.11 | -0.12 |
| Mining products | -0.1 | 0.1 | -0.19 | 0.18 | -2.8 | -3.0 | -0.19 | -0.20 |
| Metal | -3.0 | 2.1 | -0.22 | 0.15 | -3.6 | -4.2 | -0.20 | -0.24 |
| Automobiles | 1.8 | 2.8 | 1.48 | 2.30 | -12.5 | -13.5 | -0.36 | -0.39 |
| Plant and equipment | 0.3 | 0.9 | 0.25 | 0.69 | -29.2 | -31.1 | -0.20 | -0.21 |
| Other manufacturing | 0.5 | 1.5 | 0.20 | 0.60 | -27.1 | -29.0 | -0.19 | -0.20 |
| Services | -6.2 | -0.1 | -0.31 | -0.01 | -32.0 | -34.9 | -0.14 | -0.16 |
| Total | -36.5 | 0.7 | -0.28 | 0.01 | -118.9 | -141.4 | -0.14 | -0.16 |