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1. Introduction

The purpose of this paper is to sort out the trends of the livestock industry in Japan, especially those after the trade liberalization (in 1991 and thereafter) and discuss the potential of exporting Japanese livestock products. As is well known, a large amount of livestock products are imported into Japanese market as a result of the trade liberalization under tariffication after the ratification of the GATT Uruguay Round trade agreement. Against this backdrop, the livestock industry in Japan has pursued the differentiation of its products from imported livestock products by using survival strategies in which it has improved product quality and expanded its operation scales.

The changes that have been experienced by the livestock industry in Japan since the trade liberalization (in 1991 and thereafter) are sorted out and the achievements of the survival strategies are discussed in the beginning of this paper. Then, the changes in the market environment related to the livestock industry after the earthquake (March 2011) are briefly presented. Finally, the current status of Japan's livestock exports is reviewed and future challenges in livestock exports are discussed.

2. Changes of Livestock Industry (beef and pork) after Liberalization

Since the liberalization started under tariffication in 1991, the beef production industry in Japan has promoted the improvement of product quality and operation scales for its survival. More specifically, the quality improvement here means promoting crossbreeding operations (to increase F1 beef cattle) in the dairy bull cattle sector of which meat competes with import beef and narrowing focus to household consumption (chilled beef) in the selling sector.

Fig. 1 shows the changes in the number of feeding beef cattle. The self-sufficiency rate for beef in Japan has decreased and is now 40% while the number of beef cattle is kept almost constant at about 2.5 million heads during the same period. The similar trend is observed in the breeding and feeding sectors of Wagyu beef cattle. Of all livestock products, beef is one of few items of which demand increased for the past 20 years. The growing demand has been satisfied by the combination of imported beef and domestically produced beef, which may explain that the number of beef cattle on feed in Japan has been kept at a certain level for these years. The figure shows that the number of purebred dairy cattle has

sharply decreased whereas the number of crossbred cattle has dramatically increased in the dairy bull cattle sector. Today, about a half of the cattle in this sector is represented by crossbred cattle. The shift from dairy bull cattle to crossbred cattle leads to better quality of beef. Only about 7% of beef from dairy cattle is Grade 3 or higher with the majority of Grade 2 while about 50% of beef from crossbred cattle is Grade 3 or higher and about 10% is Grade 4 or higher (See Fig. 2). As described, the shift from dairy cattle to crossbred cattle has made a great contribution to the improvement of beef quality. Fig. 3 indicates the changes in beef supply after the trade liberalization. Beef imports sharply increased in the beginning of the period after the trade liberalization. Since 2000, however, it stays almost flat or rather in a downward trend partially because of the beef import ban for the reason of BSE outbreak in the United States. This indicates that, under the strategy for differentiating domestic beef from imported beef as mentioned earlier, both domestic and imported beef have earned the steady appreciations from the market and consumers and thus respective stable shares in the market.

Furthermore, domestically produced beef displays its strength much better in the segment of household consumption (chilled beef) rather than in the segments of food service, restaurant and food processing industries. Today, about 40 % of beef is consumed by the household (Fig. 4). In this segment, domestically produced beef has established a certain position in terms of freshness and palatability. However, in food service, restaurant and processing segments, it is rather losing out to imported beef due to its higher prices (costs).

Next, let's take a look at the changes in livestock operation scales. Fig. 5 shows the number of cattle fed by each producer. As indicated by the figure, the Wagyu breeding operation does not yet reach the level of having 10 heads of cattle, and even the size of the Wagyu feeding operation is as small as about 60 heads. The feeding operation for dairy bull cattle (including crossbred), however, expanded its scale from 46 heads to 230 heads, about five times as much, during the period from 1990 to 2007. As stated earlier, beef from dairy bull cattle experienced a fierce competition with imported beef. Immediately after the trade liberalization, the price of beef from dairy bull cattle sharply decreased, which accelerated the efforts by the dairy bull cattle sector to find a way for its survival and realized substantial cost reduction by promoting crossbreeding (to increase F1 cattle) and expanding the operation scales. As a result, quite a few operations in the sector of dairy bull cattle shifted from family business to corporation business. In other words, only robust operations that could manage to complete the operational restructuring consisting of quality improvement and scale expansion survived the harsh competition in this sector.

Unlike beef cattle, the breeding of pigs has not been pursued. Fig. 6 shows the breakdown of pigs by breed. Three-way crossbred pigs, the major breed, and Berkshire pigs, which are better known as black pigs in Japan, account for about 80% and 20% of the total, respectively. These percentages are kept almost constant since the trade liberalization up to the present. The reason may be explained by the fact that the reasonable pricing was very

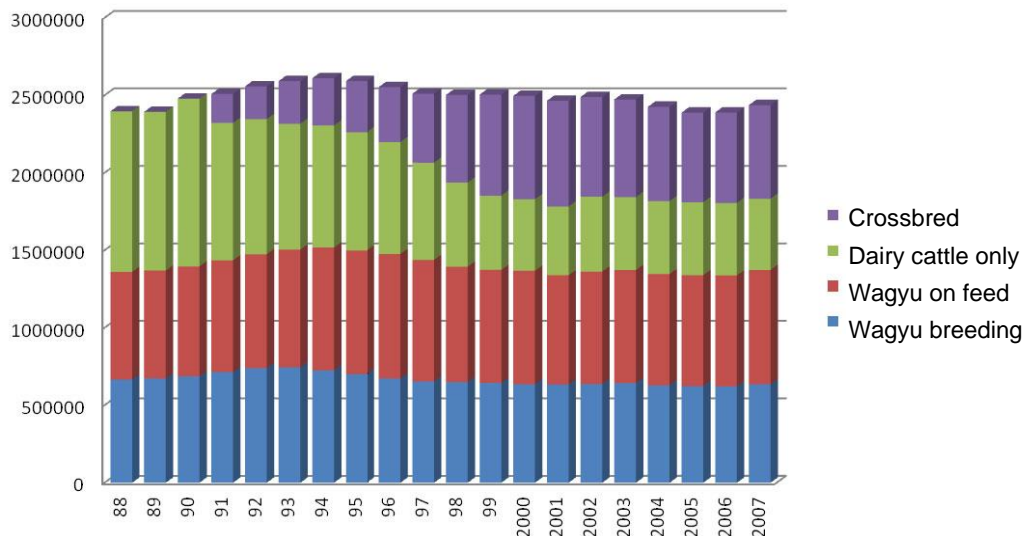
important for pork as an affordable meat and, unlike beef, it was difficult to clearly differentiate port by grade.

As a result, the survival strategy chosen by the domestic pork industry was to compete with imported pork in cost and palatability from freshness. Fig. 7 shows the changes in the number of pigs on feed. During the period from 1990 to 2006, the number of pigs per producer dramatically increased from about 300 heads to about 1,300 heads. The total number of pigs on feed, on the other hand, slightly decreased during the same period. Only the producers who successfully reduced costs by expanding operation scale have survived and a larger number of swine producers than that of dairy bull cattle producers have changed their operations from family business to corporation business.

Under these circumstances of the domestic pork production, the production is rather stable after a slight increase (Fig. 8). Unlike beef, both imported frozen pork and chilled pork show no significant increase or decrease and continues with a slight increase. Similar to the situation of the beef market, domestically produced pork and imported pork seem to have earned respective stable shares in the market over the years.

Like beef, domestically produced pork has established a certain position in terms of freshness and palatability in the household consumption segment which accounts for about 40% of the total consumption today (Fig. 9). It, however, is rather losing out to imported pork in the food service, restaurant and processing segments due to its higher prices (costs).

Fig. 1 Changes in Number of Beef Cattle on Feed (head)



A sharp increase in number of crossbred cattle shifted from dairy cattle. Total number of cattle has been constant even after the trade liberalization.

Fig. 2 Grade Breakdown by Breed

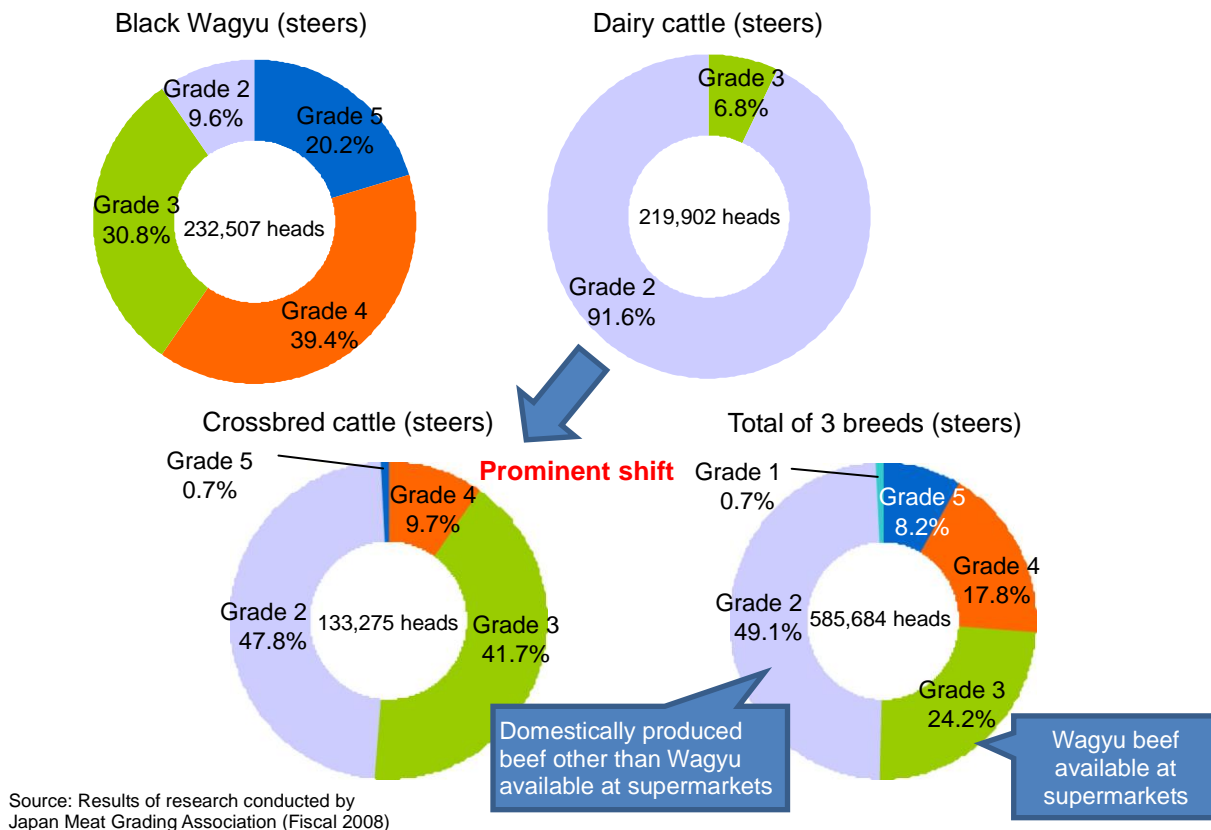
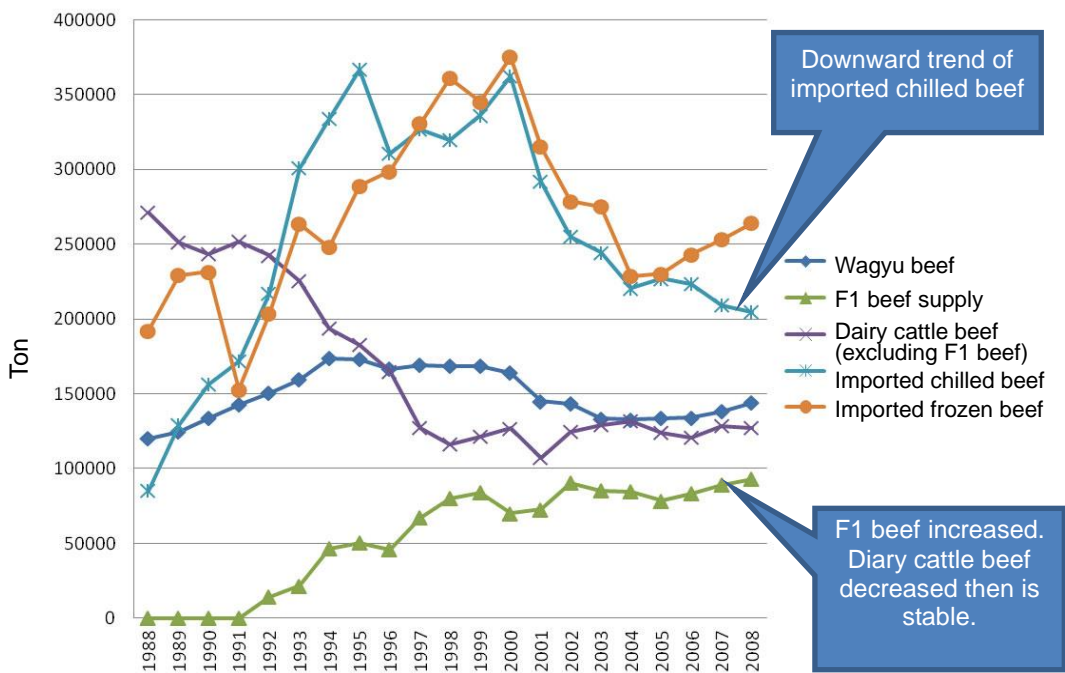
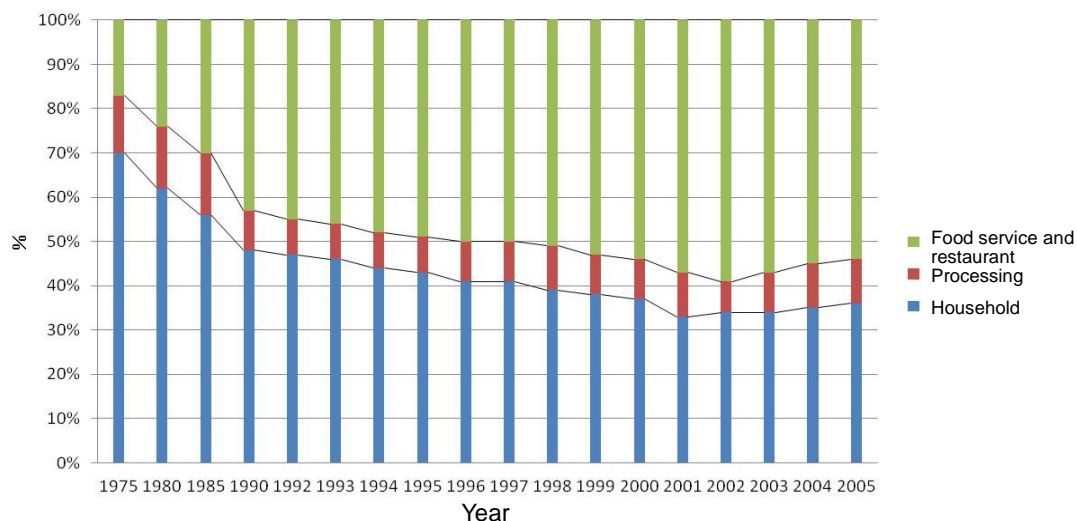


Fig. 3 Changes in Beef Supply



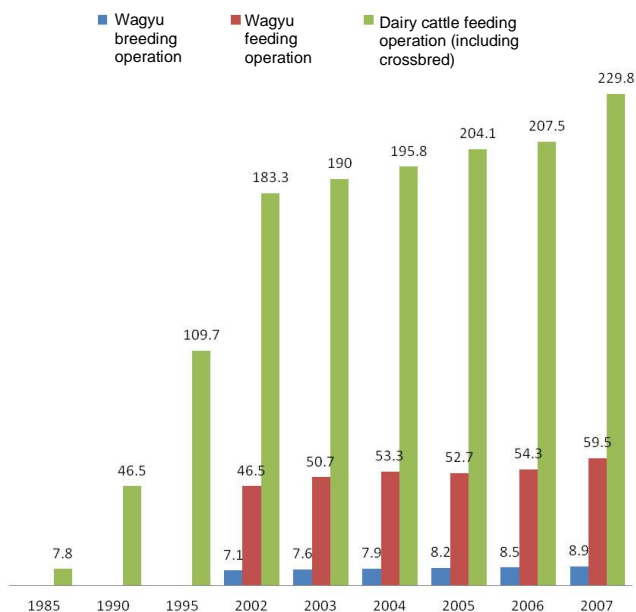
Self-sufficiency rate for beef is about 40%.
 Imported beef sharply increased soon after the liberalization, and maintains a stable share in the domestic market and so does domestic beef.
 Beef imports have decreased mainly due to the import ban imposed on U.S. beef.
 Downward trend of imported chilled beef is apparent.

Fig. 4 Changes in Beef Consumption by Segment



Domestic beef maintains a stable share in segment of household consumption (chilled).

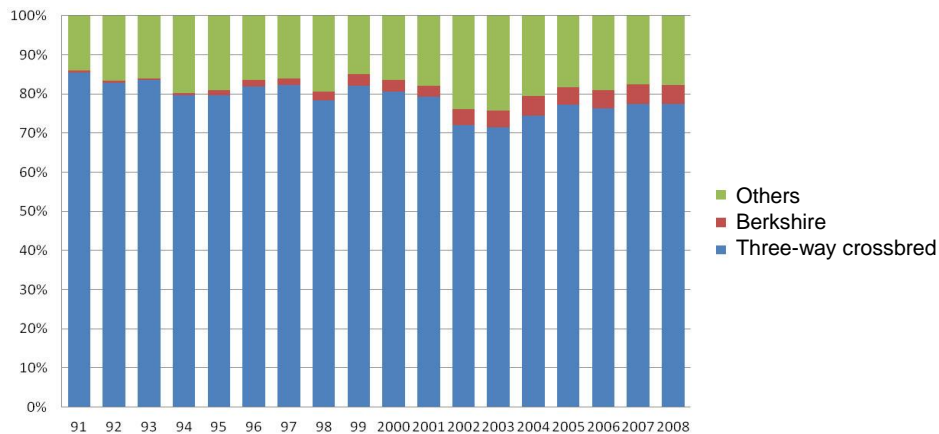
Fig. 5 Changes in Number of Cattle on Feed per Producer



In the sector of dairy cattle (including crossbred) of which meat competes with imported beef, the operation scale expressed as the number of cattle has been rapidly expanded. Corporate operations have increased.

Wagyu feeding operations expand in scale, mainly by families specializing in Wagyu feeding. Almost all of breeding operations are yet performed as small size family business.

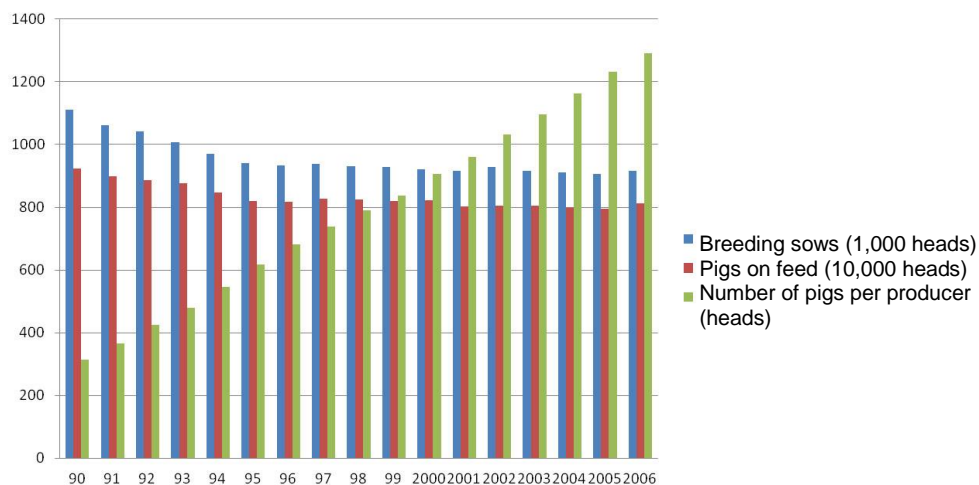
Fig. 6 Breakdown of Pork by Breed



Percentages of the breeds are rather constant. Producers pursue expanding scale in operation for survival.

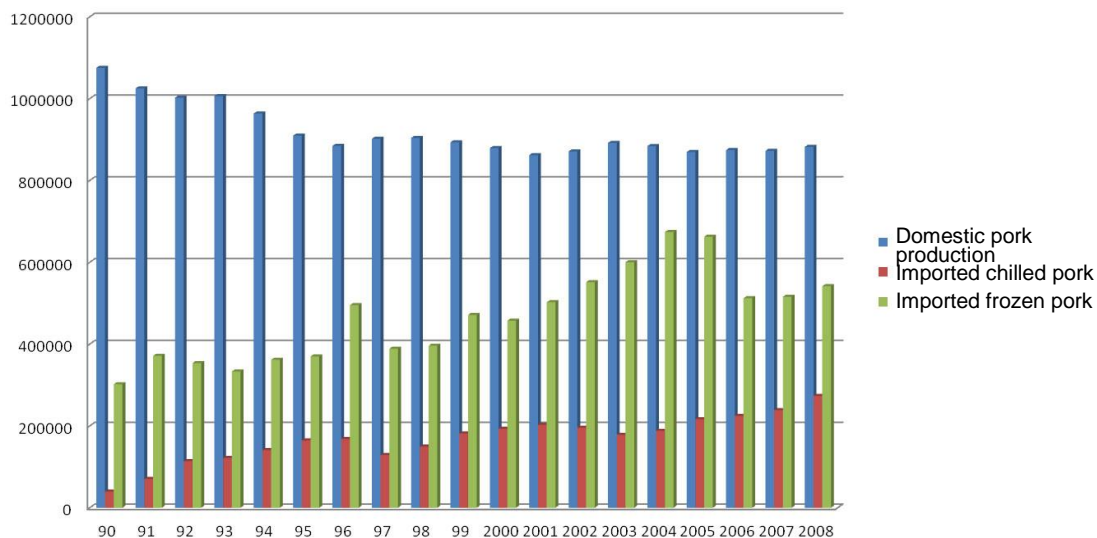
This difference from beef is explained by the fact that pork must be an affordable meat and its palatability cannot be easily distinguished by breed.

Fig. 7 Changes in Number of Pigs on Feed



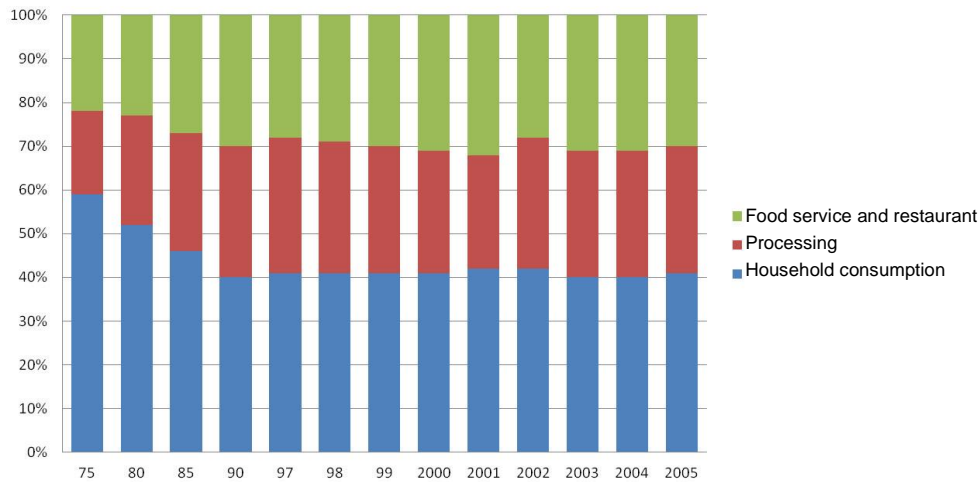
Like the operations for beef cattle production, swine feeding operations prominently grow, from about 300 heads per producer in 1990 to 1300 heads in 2008.

Fig. 8 Changes in Pork Supply (tons)



Unlike beef supply, no sharp increase or decrease is observed and domestically produced pork and imported pork to some extent seem to maintain respective stable shares in the market.

Fig. 9 Breakdown of Pork Consumption



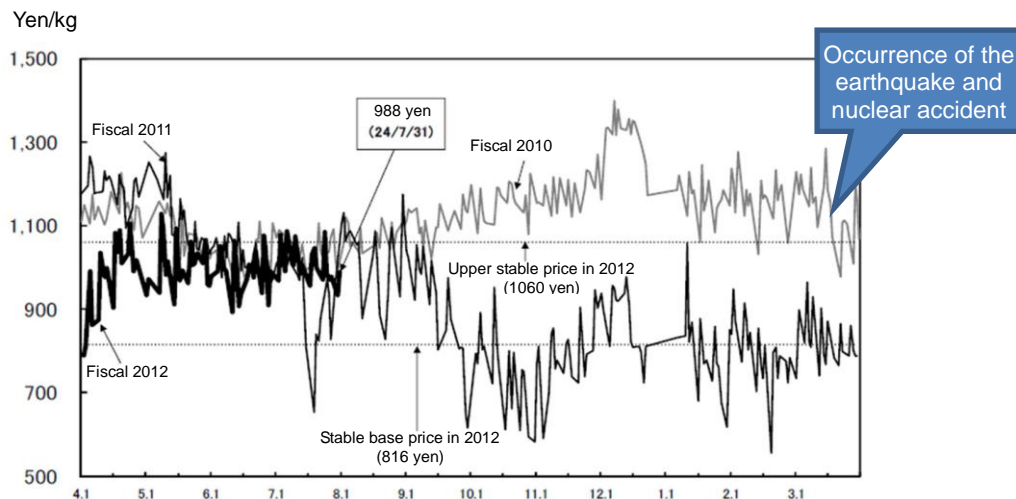
Like beef, pork is also strong in the segment of household consumption.

3. Market Environment Surrounding Livestock Industry after the Earthquake (March 2011)

As discussed earlier, beef and pork have maintained their production levels even after the trade liberalization by improving quality and expanding operation scales. This section briefly describes the market environment surrounding the livestock industry after the earthquake (March 2011).

Figs. 10 and 11 show the changes in wholesale prices of beef and pork after the earthquake. The wholesale prices of beef were significantly low after the earthquake for more than one year due to the influence of the persistent economic slowdown after Lehman's collapse in 2008 and harmful rumors after the earthquake. The prices, however, almost recovered in June 2012 to the pre-earthquake level. On the other hand, pork prices declined not so remarkably as beef prices, but they were also at a lower level for a while after the earthquake. It is not difficult to understand that the low sales prices would cause great impact on the livestock operations if the high feed prices for these years persist (Fig. 12). Needless to say, as mentioned earlier, only the economically viable operations at the current levels of prices of product and feed survive the prolonged harsh competition with imported livestock products. More stable prices of feeds and products seem to be crucial to the sustainable development of the livestock industry in Japan.

Fig. 10 Changes in Wholesale Prices of Beef Carcass
(Prices specified by ministerial ordinance, weighted average in Tokyo and Osaka Central Wholesale Markets)



Source: Hearing in markets

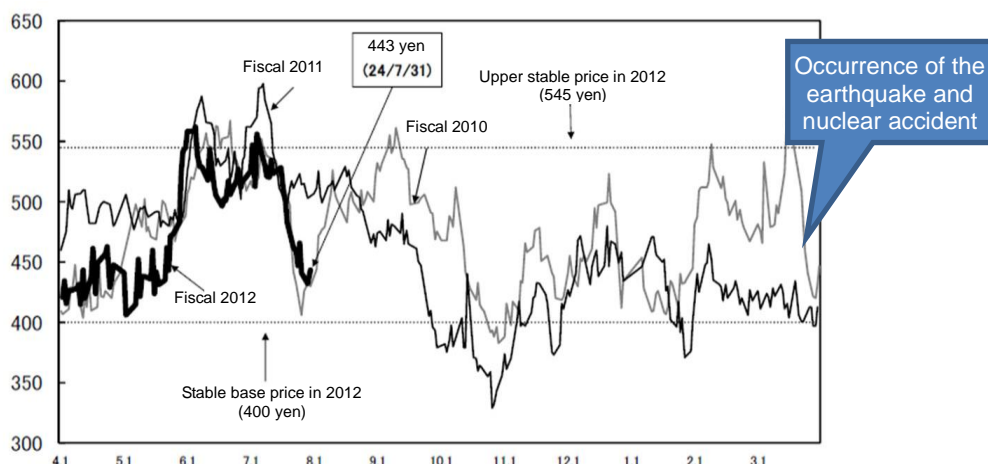
Note 1: Weight average prices of all living cattle delivered to the Tokyo and Osaka Meat Markets

Note 2: Excluding the prices on Saturdays, Sundays and holidays.

Contact: Price Investigation Unit,
 Meat and Egg Division, Agricultural Production Bureau
 03-3502-5990 (direct),

Beef prices decreased after the earthquake due to slumping economy and harmful rumors.

Fig.11 Changes in Wholesale Prices of Pork Carcass
(Prices specified by ministerial ordinance, weighted average in Tokyo and Osaka Central Wholesale Markets)



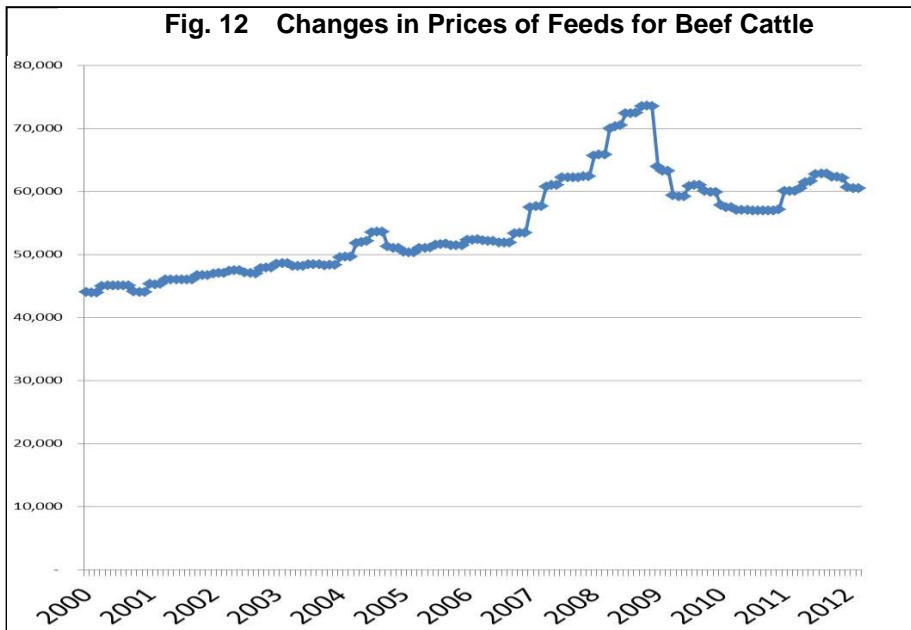
Source: "Preliminary Report on Livestock Product Market Trend" released by Statistics Department, Ministry of Agriculture, Forestry and Fisheries

Note 1: Weighted average prices of all living swine delivered to the Tokyo and Osaka Meat Markets

Note 2: Excluding the prices on Saturdays, Sundays and holidays.

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The decrease of pork prices is not as remarkable as in the sector of beef probably because it is regarded as an affordable meat.



Feed prices have not yet reached the level in 2008, but are again entering a rising phase.

4. Actual Conditions of Livestock Exports

This section discusses the actual condition of livestock exports, taking beef exports as an example. Japan's beef exports were limited to 344 tons in 2007 and 550 tons in 2008. Its main importers are the U.S., Hong Kong and Vietnam. The exports are usually handled by the Japan Agricultural Cooperatives (JAs) in prefectures and export companies established by prefectural governments. One case of Miyazaki Prefecture is presented here. Miyazaki is a leading prefecture in Wagyu production and exported 56 tons and 48 tons of beef in 2009 and 2010, respectively, through Minami Kyushu Chikusan Kogyo Co. Ltd ("Nanchiku"), a group company of JA-Miyazaki. Miyazaki is the beef exporting prefecture, accounting for about 20% of the total beef exports in Japan, however, its exports drastically dropped to 15 tons in 2011 partly due to the outbreak of foot-and-mouth disease in March 2010 and damage from the rumors about the entire "Japan Brand" after the earthquake.

As described above, Japan's beef export has just started, and it is said that there are the following problems to be solved to increase the export volume. First, all efforts must be exerted to completely prevent the outbreak of domestic animal infectious diseases such as foot-and-mouth disease and BSE, as we learnt from the case of the development of foot-and month disease in Miyazaki Prefecture. As soon as any of such infectious diseases is reported, importing countries would require export suspension. The probability of developing BSE seems to have been substantially reduced by eliminating the use of meat-and-bone meal feeds, establishing traceability systems and completely removing risky parts from products. However, it is difficult to prevent foot-and-mouth disease even if preventive measures are thoroughly taken in Japan because the risk of the infectious disease does not

decrease in the neighboring countries/areas such as Taiwan, Korea and China, and it may occur through imported forages, and human beings and birds. Challenges of prevention of foot-and-mouth disease have yet to be solved.

Furthermore, livestock products to be exported must be cut and packed in certified plants dedicated for export purpose which satisfy the safety standards imposed by the importer. At present, there are only four certified plants throughout the country. More plants are absolutely necessary to expand beef exports. At present, a monthly examination to monitor residual substances, i.e. time and labor-consuming steps, are mandated in the production process of beef cattle for export which are not required for the production for domestic consumption. It is also necessary to increase beef producers and living cattle for export. Currently, beef producers export only selected parts of beef of the class as high as Grade 5 such as sirloin steak at similar prices to the domestic sales prices, which does not provide much benefit to the producers or domestic distributors. Therefore, the efforts for export made by producing prefectures seem to have a focus not on increasing profits from export but on gaining publicity and improving recognition in the domestic market through mass media.

5. Conclusion

In the current situation, Japanese agricultural products that sell well in the foreign markets are limited to a few products such as *nagaimo* (Chinese yam) from Kawanishi Agricultural Cooperative in Hokkaido Prefecture and apples in Aomori Prefecture. Kawanishi Agricultural Cooperative is extensively exporting to Taiwan products that do not meet the standards. In neighboring South Korea, pears are actively exported. The efforts for exporting the pears are made to prevent price decline in the domestic market because the pear market in Korea is relatively smaller than that in Japan. In other words, they intend to prevent a decline in pear prices by reducing the glut in the domestic market through aggressive exports of pears in cold storage and other second grade pears.

As discussed above, the aggressive exports are driven by foreseeable price slump in the domestic market, possible lower pricing acceptable in foreign markets and presence of agricultural products that are below standards. In the light of these actual conditions, agricultural exports are facing the following challenges:

(1) Lack of Crisis Awareness

It is clear that the domestic livestock market will be declining due to the influence by a shrinking and aging population, and it is inevitable that prices of livestock products will drop sooner or later, if the current production systems remain unchanged. Therefore, it is necessary, needless to say, to explore foreign markets in time before the shrink of the domestic market. However, as mentioned earlier, no crisis awareness is observed in the initiatives for promoting exports by respective prefectures. Organizations concerned must aggressively promote exports with a fully understanding that low prices will continue due to

the shrink of the domestic market that will eventually have to occur. Among others, the most important is raising crisis awareness among them.

(2) Establishment of Export Promotion Programs as National Commitment

Leading livestock exporting countries such as Australia have nation-wide export promotion programs. These programs include updated slaughter plants dedicated for export purpose, and active sales promotion and marketing activities by Meat & Livestock Australia in their export counterpart countries that is widely known as its Oz beef. At present, Japan exports only selected parts of Wagyu beef. It should engage in effective sales promotion and advertising activities. Some examples could include approaches by presenting how to cook and eat all parts of Wagyu beef and opening Wagyu beef barbecue restaurants.

(3) Review of Export Products and Export Business Participants

At present, beef exported by Japan is limited to certain parts of Wagyu beef such as sirloin steak of the highest class, Grade A5, or similar. On the other hand, beef exported by Australia, so-called Australian Wagyu beef seems to be equivalent to Japanese crossbred beef of Grade A3. Apart from extremely high quality but highly priced Wagyu beef of Grade A5, beef of Grade A3 or domestically produced crossbred beef would be fully accepted in foreign markets. It is necessary to thoroughly investigate what quality and price zone of livestock products could be well accepted by consumers in foreign markets. As discussed earlier, Wagyu beef production in Japan is often operated as family business and crossbred beef production is operated as large scale corporate business. The majority of crossbred beef producers are closely related to leading food manufacturers who are ready to enter into various export businesses. At present, the central government's export promotional suggestions are responded only by prefectural governments and agricultural cooperatives. It seems absolutely necessary to enhance the collaboration in nation-wide export promotional programs involving companies and organizations that can effectively handle livestock export businesses.