



The Sixth Sector Industrialization of Agriculture and the Relay Shipping of Vegetables in Japan: Implications for the Agricultural and Rural Development of Middle Income Countries

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ABSTRACT

This paper aims to extract lesson from the experiences of Japan for escaping from the middle income trap which many countries in Asia and Africa confront. This paper will review in detail the efforts to increase the income levels of rural and agricultural firms by establishing a value chain under an almost zero growth economy in the 2000s in Japan. After referring to the condition of Japan agriculture and the framework of structural reform of agricultural policy of Japan, the core action schemes of the Sixth Industrialization and Relay Shipping are focused on. The mechanisms of relay shipping of vegetables and the institutions for facilitating the scheme are reviewed in detail. It is revealed that institutional capacity for greater inter-sector and government coordination are essential for implementing the schemes to establish effective and efficient value chain. These are institutional reform and capacity building efforts in Japan. Experiences in Japan reveal that various executing agencies with good governance are required to establish the mechanism of effective resource mobilization and implement reform of value chain. There have been no detail studies on implementing such reform for establishing sustainable value chain in countries where escaping middle income trap is needed. This study should be useful lesson for countries confronting the middle income trap.

Keywords: institutional reform executing agencies value chain middle income trap relay shipping the Sixth Industrialization

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INTRODUCTION: ESCAPING THE MIDDLE INCOME TRAP

Recently, a condition termed the “middle income trap” has received considerable attention, especially in Southeast Asia and Latin America (Gill and Kharas [2]), where many middle income or close to middle income countries have experienced growth stagnation. There are two strategies to escape this trap, as follows.

- (1) On a broad level, escaping countries experience a much more rapid transition out of agriculture and more rapid increases in manufacturing/industry.
- (2) Perhaps more important is the allocation of resources across subsectors and across firms within sectors.

Because the productivity levels of firms in the same subsector can be markedly unequal, the entry of new firms and exit of unproductive firms (creative destruction) and the extent to which productive firms are able to gain a larger market share by reallocating inputs between firms are important for TFP (Total Factor Productivity) growth (World Bank [12]).

The neoliberal Washington consensus of the 1990s revolved primarily around a set of policies. The new, more pragmatic consensus of the 2000s emphasized, by contrast, institutions in industrial policy, human capital, and governance (Doner and Schneider [1], p. 30). The following three objectives of development concerning the middle income trap are in line with the 2000s Washington consensus (World Bank [12], p. 160; see also Doner and Schneider [1]).

- (1) Efficient resource allocation and industrial upgrading require a different set of institutions from those that enable growth through resource accumulation.
- (2) Efficient allocation requires new institutions to manage competition and creative destruction.
- (3) Industrial upgrading requires the institutional capacity for greater intersectoral and governmental coordination, possibly through a strategic alliance between government and business.

Increased productivity of rural firms and agricultural farms is also crucial to decreasing the widening gap between urban and rural areas or between agriculture and other industries. However, increased productivity is not yielded only by the technological progress of a firm or farm. This paper aims to extract lessons from the experience of Japan and to clarify the necessary institutional or organizational considerations for escaping the middle income trap.

The World Bank has paid a great deal of attention to the “value chain in the agricultural sector” for low and middle income countries in the context of the sustainable development goals and defines it as follows: “agricultural value chains, in a broad sense, are comprised of farmers, input suppliers, traders, processors, distributors and marketers in a set of interlinked activities that work to deliver higher quality and higher value products to meet consumer demand” (World Bank [11], p. 7). The Sixth Industrialization Plan and the Relay Shipping Scheme implemented in Japan can be regarded as development efforts that sought to establish a value chain. Both were also related to small- or medium-scale enterprise

Development in local areas. One Village One Product (VOP) in Japan and OTOP in Thailand (with T referring to “tambon,” the equivalent of “village”) were popular development schemes for exploring potential local resources and establishing value chains to develop small- or medium-scale industries in rural areas (see, e.g., Kurokawa et al. [6]). Such efforts in Japan and some Asian countries have nevertheless required substantial institutional reform and capacity building of the local people and local governance. To reduce various risks and transaction costs and to ensure repeatable and practical business activities for players’ capacity building, a substantial amount of government support is essential.

For the World Bank, “maximizing finance for development (MFD) requires crowding-in private resources to help achieve development goals, optimizing the use of scarce public resources, promoting good governance, and ensuring environmental and social sustainability..... A key consideration is whether there is a sustainable private sector solution that can substitute for

public expenditure and contingent liabilities, and whether there is an enabling role for the public sector” (World Bank [11], p. 15). To establish a value chain, public expenditure in establishing an institutional setting is crucial, particularly for establishing workable market mechanisms at an earlier stage of effort.

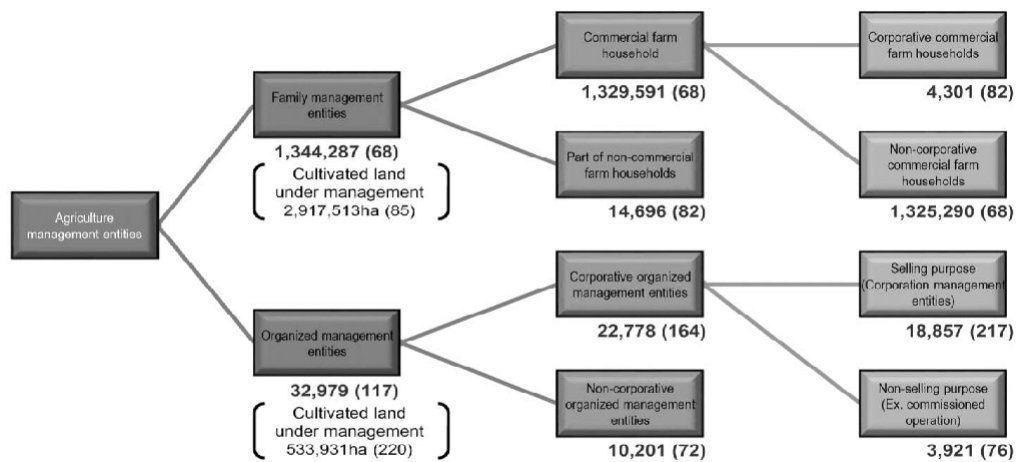
This paper will review in detail the efforts to increase the income levels of rural and agricultural firms by establishing a value chain under an almost zero growth economy in the 2000s in Japan. After outlining agriculture and the basic policy of Japan (Section 1) and the framework of structural reform (Section 2), an explanation of the Sixth Industrialization and Relay Shipping, core action schemes of the reform, will be provided (Sections 3 and 4). These two schemes are regarded as institutional reform and capacity building efforts in Japan to confront growth stagnation. Section 4 will exemplify the players who undertake the relay shipping of vegetables by focusing on their organizations. Section 5 will be devoted to revealing the mechanisms of relay shipping and the institutions for facilitating the scheme. Institutional capacity for greater inter-sector and government coordination will be regarded as essential condition. The regulation system for executing the relay shipping scheme will be clarified to extract useful lessons for establishing sustainable value chain and escaping from middle-income trap. Section 6 will wrap up the lessons extracted from relay shipping and the Sixth Industrialization in Japan.

OVERALL REVIEW ON ENHANCING THE COMPETITIVENESS OF JAPAN’S AGRICULTURE

Under the globalization and free trade regime, enhancing competitiveness and maintaining/increasing farm income are critical issues in Japan and middle income countries. This study focused on the program of “structural reform of distribution and processing” (MAFF [7]) in Japan. How has Japan approached this issue to develop and revitalize rural areas and agriculture?

The Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan formulated “The Policy Package for Enhancing Competitiveness of Japan’s Agriculture,” which incorporates the directions of 13 New agricultural administration reforms (MAFF [7]).¹ The MAFF prioritizes the implementation of the structural reform of distribution and processing. Figure 1 shows the numbers for various types of agricultural management in 2015. Basically, there are two types of the agricultural management, namely, family management and organized management. The major type was non-cooperative commercial farm households with family management of commercial farming (1,329,591 in 2015). Recently, the number of corporative types of organized management entities (22,778) has been increasing, particularly selling purpose cooperation management (18,857) increased 117% from 2005. This trend may imply that individual farmers have integrated their shipping of products by establishing some sort of corporation.

Regarding the outline of recent agriculture in Japan (in 2015), the gross agricultural output was 8.8 trillion yen (US\$ 80 billion), and its income was 3.3 trillion yen (US\$ 30 billion).² Agricultural income by major farming type is shown in Table 1. Farm size was generally small, comprising 1.72 ha of paddy farming, 0.43 ha of vegetables, and 0.99 ha of fruits. Vegetable growing facilities were very small, but their income was relatively high. The larger the scale of farming, the income of farm management was the higher in any farming type.



Note: Figures are the number of management entities in 2015. Figures in brackets are the index number set as 2005 = 100.

Figure 1. Breakdown of Agricultural Entities: From the 2015 Census of Agriculture
Source: MAFF [7]

The 13 reforms are as follows: 1. Reducing the cost of farm inputs; 2. Structural reform of distribution and processing; 3. Development of manpower; 4. Development of a strategic export system; 5. Indication of country of origin of ingredients; 6. Study of introduction of check-off program; 7. Introduction of revenue insurance system; 8. Revision of land improvement system; 9. Improvement of employment structure in farm villages; 10. Promotion of feed rice; 11. Reinforcement of production structure for beef cattle and dairy farming; 12. Steady management of the compound feed price stabilization system; and 13. Reforming of the raw milk distribution system.

²Agricultural income per management entity is calculated by deducting agricultural expenditure from agricultural gross in major farm types.

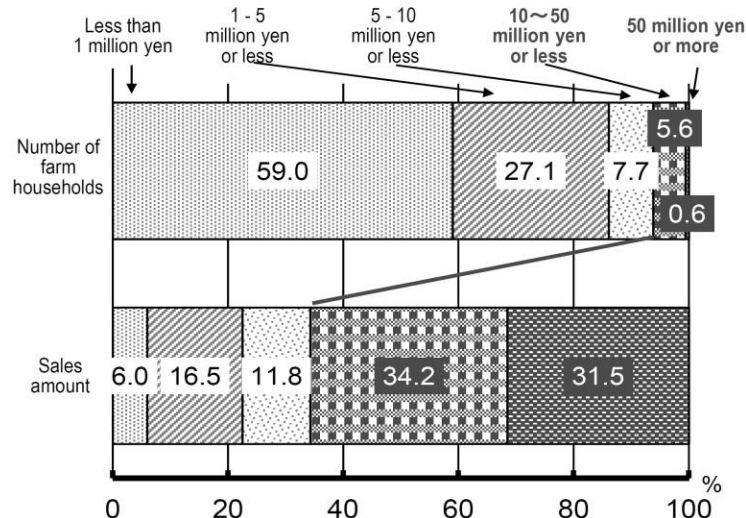


Figure 2. Shares by Farm Size of Commercial Households in Terms of Sales Amount in 2015
Source: MAFF [7]

Figure 2 shows the shares of farm household types in terms of number and sales. The commercial households with the sales amount of less than 1 million yen shared approximately

60% of all farm households; however, its share in terms of sales amount was only 6%. The share of the commercial households with less than 10 million yen was 94% and 34% in terms of sales amount, respectively. The sales amount of 10 million yen or more was only 6.2%, but it shares 65.7% of total sales. The business

Table 1. Agricultural Income by Major Farm Type

(Unit: ha, 10,000 m², numbers, 10,000 yen)

		2014	2015
Paddy farming	Total area of paddy farming	1.67	1.72
	Agriculture incomes	27.2	52.6
	More than 10.0ha	Total area of paddy farming	19.12
		Agriculture incomes	681.3
	More than 20.0ha	Total area of paddy farming	31.20
		Agriculture incomes	1,087.1
Vegetable grown in facilities	Total area of vegetable grown in facilities	0.43	0.43
	Agriculture incomes	423.8	496.6
	More than 10,000m ²	Total area of vegetable grown in facilities	2.14
		Agriculture incomes	1,054.3
Fruit farming	Total area of fruit planting	0.98	0.99
	Agriculture incomes	187.6	207.9
	More than 3.0ha	Total area of fruit planting	4.20
		Agriculture incomes	694.3
Dairy cattle	Number of cattle farmed for milking	43.9	44.2
	Agriculture incomes	832.5	1,054.2
	More than 100	Number of cattle farmed for milking	159.8
		Agriculture incomes	2,235.2
Fattening cattle	Number of fattening cattle farmed	107.5	103.2
	Agriculture incomes	671.2	1,243.2
	More than 200	Number of fattening cattle farmed	375.4
		Agriculture incomes	1,572.4

Source: MAFF, Management Statistics by Farming Type (Individual Management)

Note: Cited from MAFF [7].

size of farms was highly skewed, and larger farming businesses occupied the agricultural market in Japan. Under conditions of depopulation in the agricultural sector, integrating or merging small-scale management is essential to promoting structural reform and increasing farm size with higher efficiency in production. In this regard, vegetable farming and its shipping reform should be core targets of the Sixth Industrialization Scheme promoted by MAFF Japan (will be explained later).

In Japan, a production center is identified by its agricultural output. In 2015, most of the top 20 municipalities (cities) regarded as production centers prioritized the production sectors of vegetables or livestock. In eight municipalities,³ more than half of the total area was located in hilly and mountainous areas. Although these municipalities included many disadvantaged regions for farming, they maintained high output, mainly from livestock and fruit farming.

The average age (63.7) of the core people engaged in farming in these municipalities was slightly younger than the national average (67.0). In any case, depopulation of the agricultural sector in Japan is in a critical phase. Within 10 or 15 years, almost all farmers over the average age of 67 will retire and exit from agricultural labor. In these areas, younger farmers are expected to commit and play a more significant role in agricultural production to maintain the position of the production center. Higher income is a critical condition for younger people in the agriculture sector to maintain a sufficient and stable supply of agricultural products.

STRUCTURAL REFORM OF DISTRIBUTION AND PROCESSING OF AGRICULTURAL PRODUCTS

Structural reform policy approach

To improve the competitive power of agriculture and promote structural reform, MAFF has addressed the issues of input material pricing, distribution and processing of agricultural products, and enhancement of competitiveness in agriculture. MAFF has emphasized the following government actions:

- (i) To provide support for farmers' efforts through farmland concentration and intensification, export of agricultural products, and primary producers' diversification into processing and distribution ("AFFriinnovation," to use MAFF's term).
- (ii) To develop an environment in which farmers can take business actions freely and solve structural problems they cannot solve by themselves.
- (iii) To reform measures and regulations on the distribution of input materials and agricultural outputs and to induce the spontaneous reorganization of the industry by businesses.
- (iv) To review legal systems and regulations for implementing structural reform.

Based on the understanding that involving more distribution activities in the farming business causes

³ Six out of the eight cities locate in Kyushu Island and the other two locate in Honshyu Island.

inefficiency at a higher cost of management, MAFF brought up the following points regarding distribution and processing (MAFF [7]). MAFF emphasized the necessity to streamline intermediate distribution systems, such as wholesale markets, and to develop direct sales routes from farmers or agricultural organizations to consumers. MAFF pointed out that farmers had insufficient information on various marketing channels, such as farmers' markets, online sales, and wholesale markets. This insufficiency made it difficult for farmers and agricultural organizations to choose proper sales methods to benefit their businesses and improve their efficiency.

Diversification of marketing routes: intermediate marketing to direct marketing

Wholesale market institutions established and operated by local governments in Japan are expected to stabilize the prices of fresh and perishable foods and to smooth their distribution. There are 74 central wholesale markets established by large cities and authorized by MAFF minister and 1,185 local wholesale markets established by other local governments and authorized by each prefecture governor. However, due to the diversification of marketing styles, shares of distribution routes through the wholesale market have declined. In the rice wholesaler industry, for example, the demand for rice as a staple food has been decreasing, and the share of the wholesale market was only 20–40%. Rice wholesalers suffer annual deficits. Domestically produced vegetables and fruits tended to decrease the share of wholesale market channel but still maintained a major position at 86% (Figure 3). However, in the case of all vegetables and fruits including overseas production was only 60% in 2013, 26 point below the share of domestically produced. This means imported vegetables and fruits from overseas tended to bypass wholesale market channel. Diversified distribution channels make it difficult for governments to plan and propose policies for wholesale market operations.

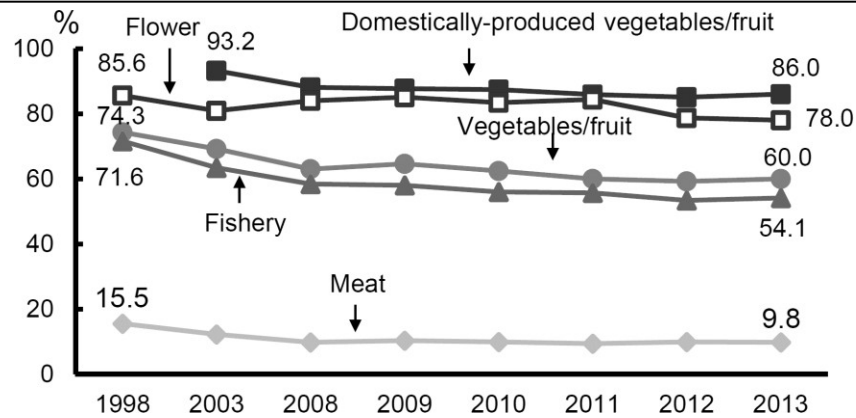


Figure 3. Share of Channel through Wholesale Market by Product (weight basis)

Source: MAFF [7]

MAFF has argued that producers are unable to produce high-quality products if they remain in a price-cutting competition. This makes it difficult for retailers to continuously secure good quality agricultural products and leads to the impoverishment of both producers and retailers. Competition itself should not be averted; however, a continued excess supply of products could result in the reduced revenue of farmers and retailers and eventually cause the supply mechanism itself to deteriorate. It is necessary to reform the market with a pertinent competitive mechanism and enable farmers and retailers to obtain proper income.

Marketing structure and its changes

Table 2 shows the shipment destination by marketing route and sales scale. Agricultural cooperatives share a major channel of 60–70% approximately 2/3 for smaller scale producers with less than 100 million yen in sales. Smaller scale producers, however, tend to sell directly to consumers. This implies that they try to shorten the distribution route to increase their income. A realistic and drastic reform of supply mechanism that enables production to obtain higher income involves shortening the distribution route.

MAFF has estimated that a vegetable producer can increase their profit and reduce marketing costs, even when product prices decrease (see Figure 4). Direct sales distribution leads to a higher percentage of money being received by producers than in a via-market distribution. Based on this understanding, direct sales efforts, such as sales in farmers' markets and online sales, have been promoted by MAFF under the scheme of "AFFriinnovation" and through the use of advanced information and communication technologies (ICT). Shipping operations undertaken by the producers themselves enable them to access consumer preferences directly. These efforts of direct marketing shortened marketing routes, enable an

Table 2. Share of Shipment Destination by Product of Commercial Farm Households (2015)(%)

Sales of agricultural products Scale	Agricultural cooperatives	Shipper's unions other than agricultural cooperatives	Wholesale markets	Retailers	Food processors, food service industry	Direct sales to consumers	Other
Less than 3 million	67.0	8.2	4.4	5.1	1.3	9.5	4.4
3 - 7 million	64.6	9.6	11.9	3.3	1.5	7.6	1.5
7 - 15 million	64.6	9.8	12.9	3.1	1.6	6.4	1.6
15 - 30 million	67.7	11.0	11.2	3.1	1.4	4.0	1.7
30 - 50 million	71.7	10.7	9.2	2.8	1.7	2.3	1.6
50 - 100 million	67.5	13.4	9.6	3.3	2.9	1.4	1.9
100 - 300 million	56.6	16.8	13.3	5.1	4.8	0.6	2.8
300 - 500 million	45.7	18.9	20.0	5.1	5.7	1.1	3.4
More than 500 million	44.0	16.0	24.0	4.0	4.0	4.0	4.0

Source: MAFF [7].

increase in the added value of products and farmers' income.

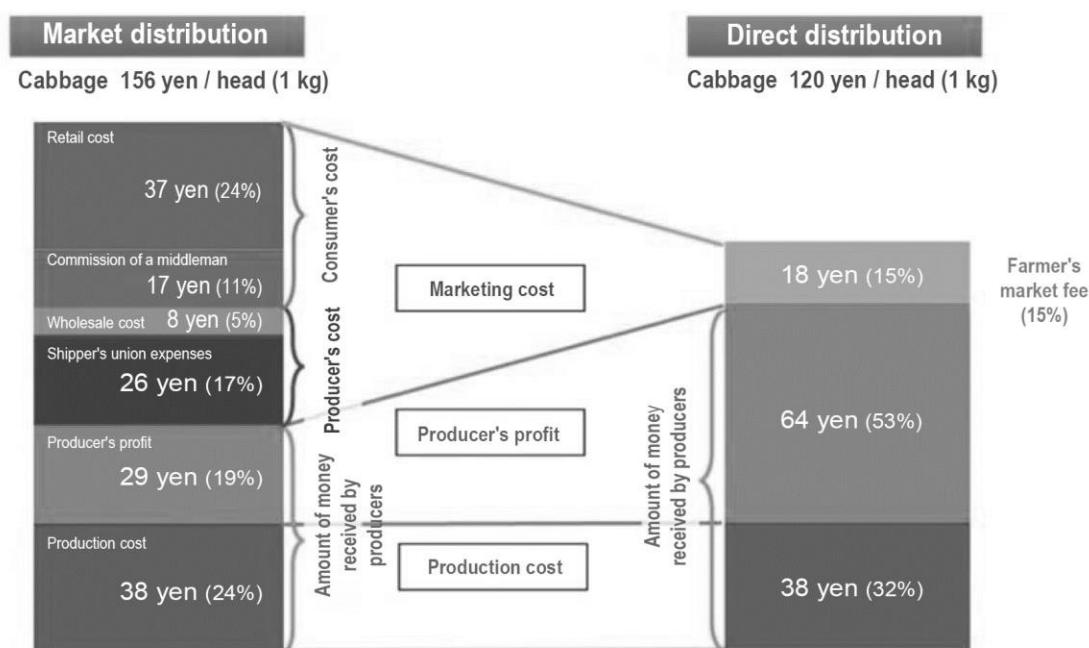


Figure 4. Cost Structure of Market Distribution and Direct Distribution (Cabbage)(%)

Source: MAFF [7]

THE SIXTH SECTOR INDUSTRIALIZATION PLAN AND RELAY SHIPPING

Government policy to improve farm income and obtain the market through structural reform

To increase farm income by integrating production, processing, and distribution activities, MAFF tried to reform the farming mode of operation and correspondingly facilitate the market mechanism.

MAFF implemented various related schemes to facilitate the market mechanism, for example: (1) geographical indication (GI); (2) good agricultural practices (GAP) as a strategy to capture further export markets by establishing trust around the world; and (3) the introduction of the revenue insurance system.⁴ The reform of the farming mode of operation was mainly promoted under the scheme of the Sixth Industrialization, which aims to diversify primary producers' activities into processing and distribution.

The Law of the Promotion of the "Sixth Industry" was proclaimed on December 3, 2010, and its enforcement date was March 1, 2011. The Sixth Industry aimed to create new value-added agricultural products in rural areas. The "Sixth Industry" term refers to the vertical integration of primary, secondary, and tertiary industries ($1 \times 2 \times 3 = 6$) for greater value added in products and services. Through

⁴ See Yonekura [13].

cooperation with a spectrum of industries, it aims to spur growth in the agricultural, forestry, and fishery industries (Japan for Sustainability [8]). An extensive range of sectors and people including finance, consumers, think tanks, and researchers was expected to interact and pool their knowledge to form a network offering opportunities for people to try to change the mode of operation into what is referred to as the Sixth Industry.

The number of business plans approved under "AFFriinnovation" based on the Law of the Promotion of the "Sixth Industry" was 2,227 (as of the end of FY 2016). Promotion councils organized based on the participation of a wide range of related people were established at the municipal level to formulate strategies concerning "AFFriinnovation" in each municipality (MAFF [7]).

Exploring local resources is also considered to be a very important strategy for increasing local income and developing the rural economy. The following five projects are examples of the Sixth Industrialization, which involves exploring and utilizing local resources other than manufacturing, such as food processing or marketing of products: (1) farmers' markets and retailers for selling processed products; (2) hotels and food/beverage services comprised of rural/green tourism and farm restaurant businesses; (3) an electricity industry comprised of woody biomass power generation using thinned wood; (4) healthcare and welfare services; and (5) the information and communications industry.

The advantages of the Sixth Industrialization are: (1) the additional value acquired by secondary and tertiary industries can be allocated to the primary industry; (2) new businesses comprised of secondary and tertiary industries are created to develop rural areas where primary products as input materials are produced; and (3) these businesses also promote rural economies (see Nakano [9], p. 61).

Various problems

Many researchers have pointed out the "mismatch" between farmers, food processors, and consumers that causes problems in the creation of new businesses (Nakano [9], p. 61, see also Saitou [10] and Hotta [4]). For example, five factors of the mismatch were pointed out by Saito: (1) conflict between the downstream of the food system and consumers; (2) conflict between

farmers and the middle and lower streams of the food system; (3) logistics innovation based on the vertical integration of food makers; (4) adjustment of the domestic food system through imported foods; and (5) transition to a safer food system. Other factors of the mismatch pointed out by Hotta were that (1) farmers want to sell irregular products as processing input goods, but (2) food processors want to buy standard inputs for stable production, and (3) consumers tend to avoid buying expensive food products, even if they state strong preference for food safety and quality. To promote the Sixth Industrialization, it is essential to overcome such mismatches.

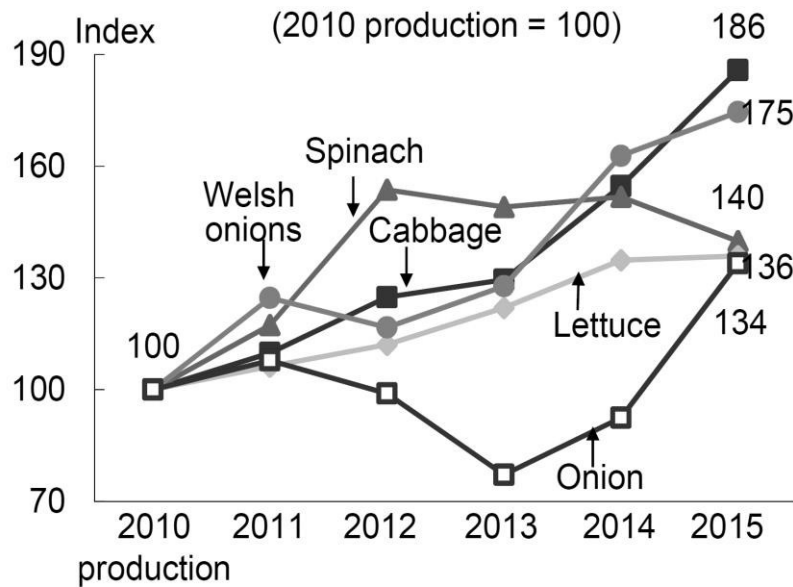
RELAY SHIPPING OF VEGETABLES

Focal Products and the Method of the Six Industrialization

The total planted area of vegetables and fruits and their production were 756,000 hectares and 17.1 million tons in 2017, respectively. Their value was ¥3,529 billion, or approximately 40% of all agriculture (¥8,797.9 billion, ¥110 yen/US\$). In recent years, production for processing and manufacturing uses has increased (Figure 4). The government has promoted new cultivar development and the introduction of a coherent mechanized system to increase the ratio of domestic production of vegetables for processing and manufacturing uses.

In this situation, vegetables and fruits became the focal products of the Sixth Industrialization. The shipment of stem vegetables such as lettuce, cabbage, and Welsh onions increased: they are seasonally produced on Japanese islands widely in the north and south, and a large quantity of lettuce was produced in Gunma and Nagano, cabbage in Gunma and Aichi, and Welsh onions in Osaka and Tokushima. Therefore, a stable supply for a longer period is essential to attract consumers and maximize their benefits. Collaborating with distributors and processors, vegetable producers have tried to create mutual cooperation between the production areas of vegetables, referred to as “relay shipping.” These production areas arrange their harvesting and shipment season, among other things, to reduce excess supply.

MAFF aims to promote relay shipping among producing areas and assist in regulating year-round shipping by contracting shipments on a weight basis. It is emphasized to enhance credibility among stakeholders, to avoid mismatching among them through information sharing, and to reduce the cost of transportation and marketing.



Sources: MAFF, Statistics on Production and Shipment of Vegetables
Figure 4. Shipment of Vegetables for Processing and Manufacturing
 Source: MAFF [7].

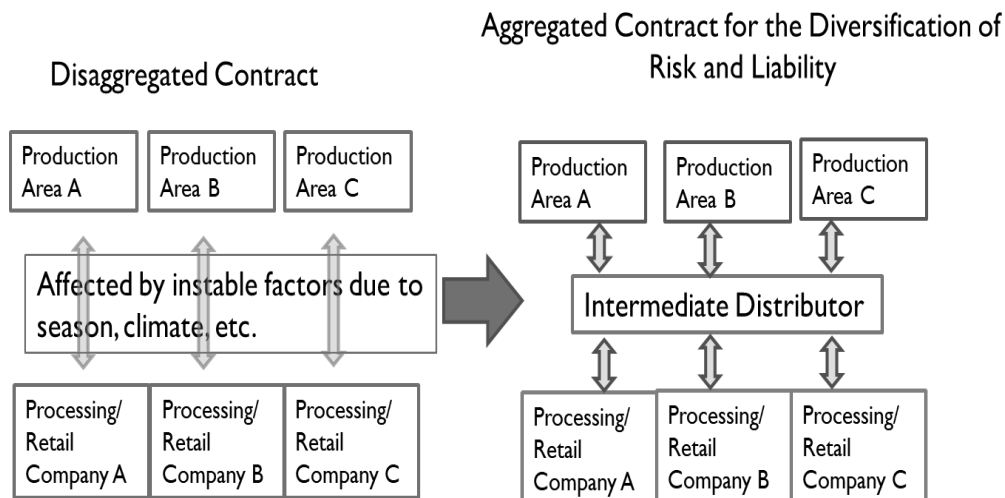


Figure 5. Aggregated Contract for the Base of Relay Shipping
 Source: ALIC, processed by author.

To execute shipping cooperation, an intermediary is necessary to aggregate contracts between producers in the production area and processors/retailers instead of the disaggregated one-by-one contract (see Figure 5). Without such an intermediary, an appropriate arrangement of shipping volume and schedule is very difficult for farmers, and they cannot reduce the risk and liability pertaining to dispersed individual transactions. Such intermediate functions are usually undertaken by intermediate distributors. The Agriculture and Livestock Industries Corporation (ALIC), a governmental executing agency, subsidizes essential activities that facilitate relay shipping under the scheme of “Stable Production and Supply of Vegetables.” The following are real cases ongoing in Japan with various types of executors.

Aggregation of Shipping Contracts by Intermediate Entity

(i) A case implemented by a private business: seasonal relay shipping between producing areas (figure 6)

A small independent distributor in Nagoya city, who sells organic farming vegetables, organized a relay shipping group of producers in several different areas from Kyusyu to Hokkaido. This family-owned agribusiness used Internet marketing for consumers, which we called “home delivery.” The starting motive was to stably capture qualified organic products directly from producers and deliver them to consumers.

(ii) Farming corporation undertakes the distribution sector (Figure 7)

TopRiver in Miyota Town, Nagano Prefecture, is an agricultural legal person (farming corporation) and employs about 100 people (50 permanent and 50 seasonal employees). This company operates

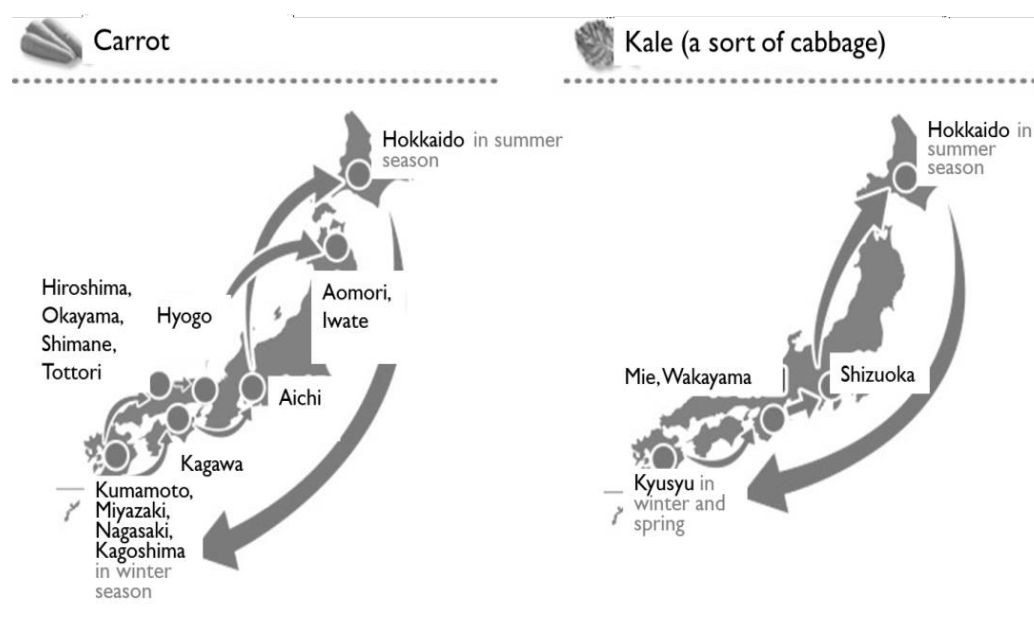


Figure 6. Seasonal Relay Shipping between Producing Areas

Source: Budou-no-ki, <https://www.budounoki.info/info/relay.html>, processed by author.

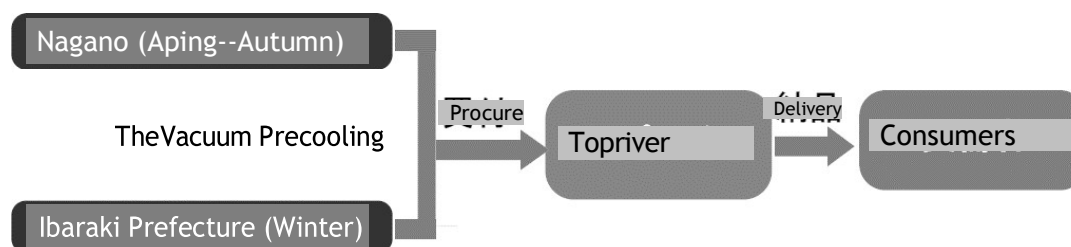


Figure 7. Farming Corporation Undertakes Distribution Sector

Source: MAFF [8], processed by author.

vegetable farming and has a training course for new farmers. For the year-round supply of vegetables, TopRiver established a cooperation comprising some producing areas. It uses vacuum precooling trucks and carries out year-round supply to actual consumers who use the

products for cooking or retailing. The year-round supply is operated by relay farming between Nagano Prefecture (spring–autumn) and Ibaraki Prefecture (winter). TopRiver and actual consumers operate stable delivery based on contracts.

(iii) Relay shipping mediated by cooperative

The wider range of relay shipping for dealing with larger quantities requires some functions, such as a council to coordinate not only the shipping schedule but also the farming technologies, qualification of

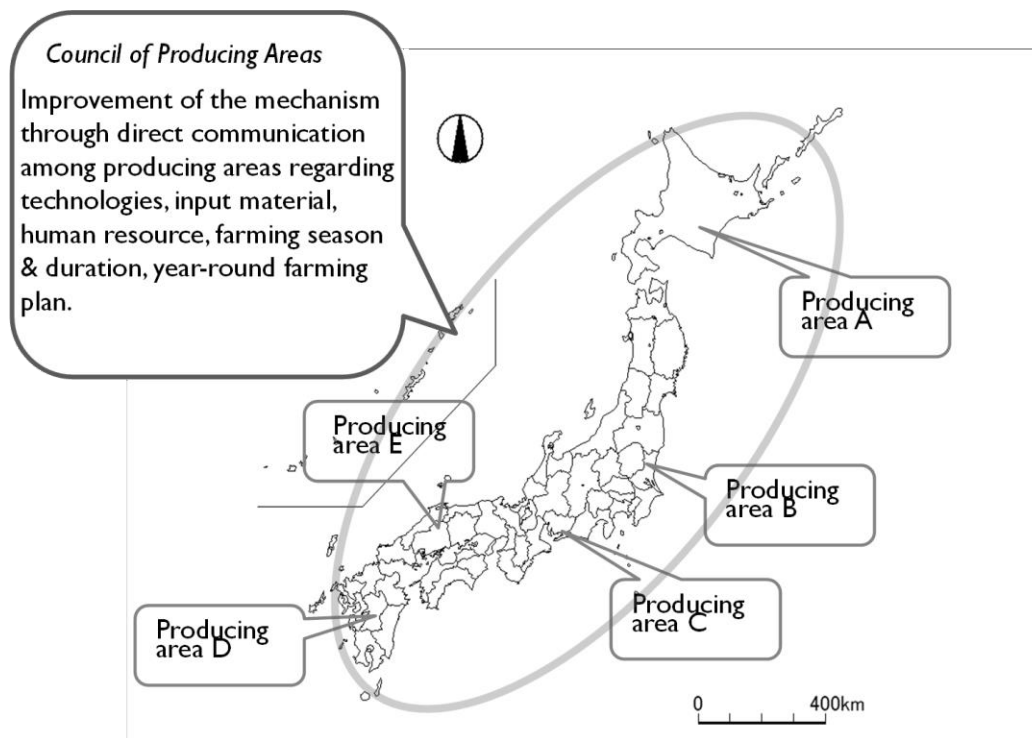


Figure 8. Scheme of Nationwide Relay Shipping
Source: ALIC and others, processed by author.

input materials, and outputs. In addition, collecting various information is essential to respond appropriately to changes in the market situation and climate and to avoid various mismatches. An aligned central organization, a sort of council, needs to be built to integrate the faster areas of production from north to south in Japan, as shown in Figure 8.

The business activities of individual agricultural cooperatives are linked and supervised by the National Federation of Agricultural Cooperative Associations (ZEN-NOH) under JA (Japan Agricultural Cooperatives: JA-ZENCHU). Business units at the prefecture level of JA became branches of ZEN-NOH after the merger; however, in the case of Hokkaido, the Prefectural Federation of Agricultural Association was established. ZEN-NOH or its branches do not directly execute relay shipping, but individual agricultural cooperatives organize and operate reliant shipping schemes.

Figure 9 shows a case of relay shipping promoted by the agricultural cooperative, Ibaraki Central Horticultural and Agriculture Cooperation Association (ICEN) in Ibaraki Municipality.

This relay shipping system aims to enable a year-round stable supply of winter cabbage that is suitable for processing and restaurant use during the summer season. ICEN, cooperating with the Federation of Agricultural Associations (formerly Keizai-ren) in other prefectures, has set up contracts with trading distributors to leverage their coordination function of intermediation. ICEN facilitates the stable farm management of vegetables and enables the arrangement of meticulous shipping schedules.

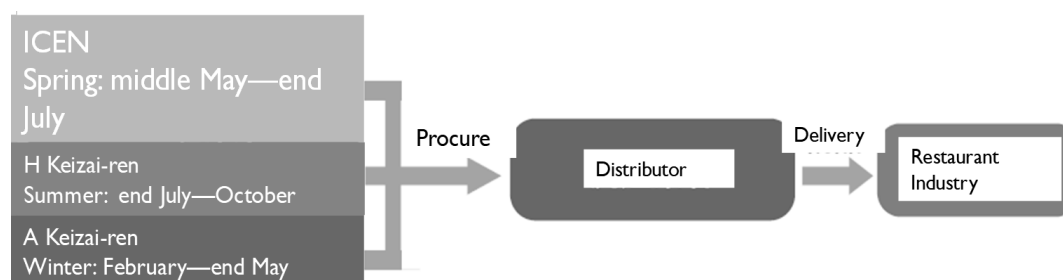


Figure 9. Relay Shipping with a Cooperative as Intermediary
Source: MAFF [8], processed by author

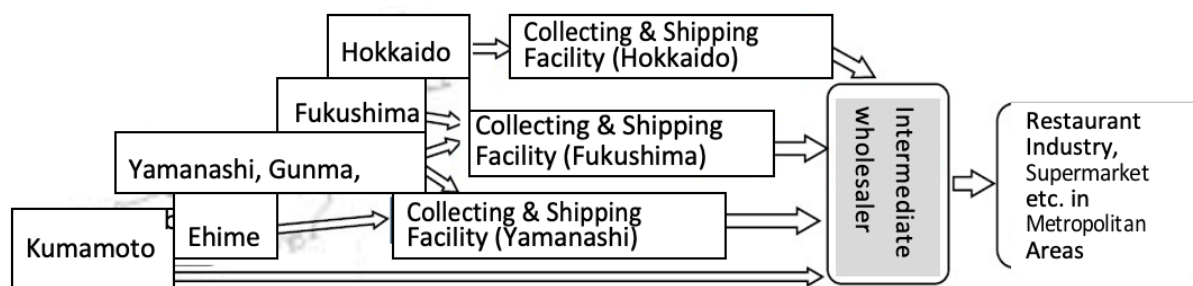


Figure 10. Relay Shipping among Production Areas Based on Multiple Farming Cooperation: JBAC
Source: MAFF [8], processed by author

(iv) Relay shipping among production areas based on multiple farming cooperation

The Japan Brand Agriculture Cooperative (JBAC) depicted in Figure 10, a promoter of relay shipping, is an actual case of multiple farm cooperation. In 2003, small-scale farm corporations established the JBAC to operate a year-round stable supply to intermediate wholesalers. The members were 24 corporations (from Hokkaido to Kumamoto in Kyushu) in 2017. The head office was in Nihonbashi, Tokyo. Member corporations operated contract farming and shipping in the form of relay shipping. The quantities of shipping by product in 2008 were 220 tons of tomatoes, 2,438 tons of onions, 545 tons of green onions, and 2,393 tons of lettuce.

This farming and shipping cooperation covered various vegetables and producing areas as follows: tomatoes in Gunma, Chiba, and Yamanashi; onions in Hokkaido, Chiba, Kumamoto, Fukushima, Gunma, and Yamanashi; green onions (Welsh onions) in Gunma and Yamanashi; and lettuce in Yamanashi, Gunma, and Chiba.

INSTITUTIONS FOR FACILITATING THE RELAY SHIPPING SCHEME

Legislative background of the scheme

To promote the relay shipping of vegetables, a preferential measure of the Sixth Industrialization (“Law on the Promotion of the Sixth Industry”) was applied to contract farming. In line with this, ALIC implemented the scheme of the “Stable Supply by Contract Farming of Vegetables” (SSCFV) aimed at reducing producer risks accrued to the contract. This role of ALIC, as executing agency, is based on Law No. 103 of the “Stable Production and Supply of Vegetables” (SPSV) Law enacted in 1966. The SSCFV scheme comprised three types, namely, Quantitative Securement Type (QST), Shipping Control, and Compensation of Price Fall.

The SSCFV scheme is applied to producers authorized by the Law of the Sixth Industrialization. They make contracts for relay shipping among producers in various producing areas (in other words, partnership supply contracts) (see Figures 11 and 12).

Mechanism under the scheme of “Stable Supply by Contract Farming of Vegetables”

Producers and shipping groups authorized by ALIC are asked to make bookings in advance to receive subsidies and to allow them to execute their activities. They must make shipping contracts with actual buyers (wholesalers or retailers but not brokers). An authorized shipping group or producer can provide grant aid to member farmers in producing areas to secure procurement for shipping.

A case of QST under SSCFV is depicted in Figure 12. This subsidy contributes to securing the

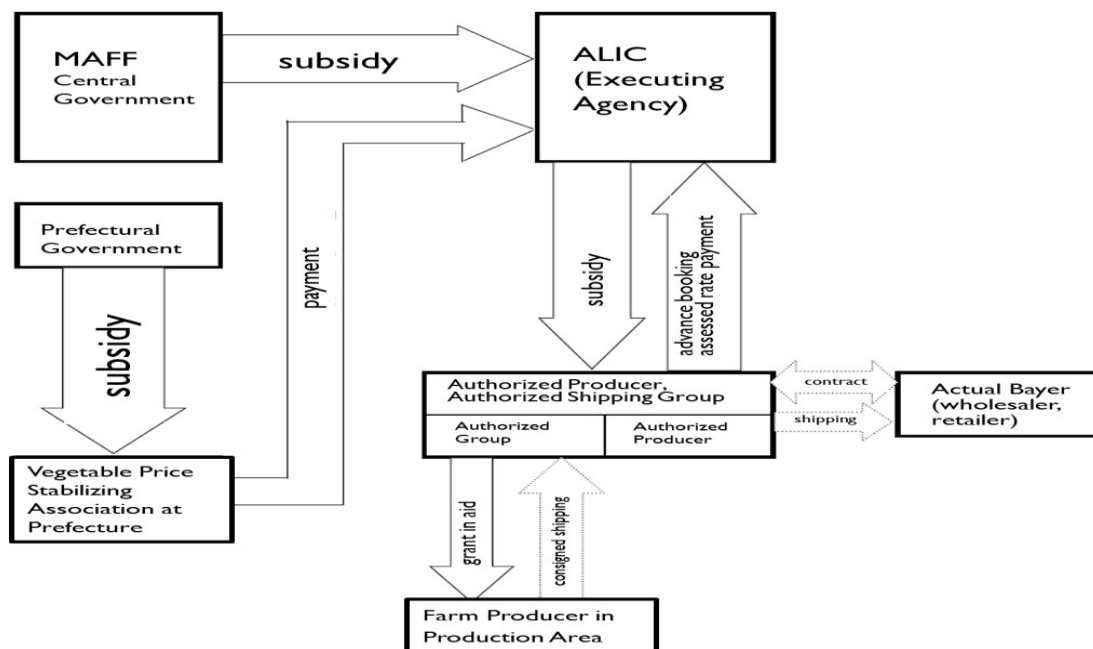


Figure 11. Mechanism under the Scheme of “Stable Supply by Contract Farming of Vegetables”

Source: ALIC website: https://www.alic.go.jp/y-keiyaku/yagyomu03_000006.html, processed by author.

contract volume of shipping for buyers under the relay shipping scheme. If a shortfall in production occurs, and the average market price becomes 130% or more than the standard price fixed by ALIC for the criteria of compensation, an authorized shipping group or producer

can procure from markets for contract shipping. In this case (see the case (1) in Figure 12), 90% of the additional expenses (AE) are compensated up to the average market price, which is 150% of the contract price.⁵ On the other hand (see the case (2) in Figure 12), when the authorized group or producer needs to reallocate to contract shipping from its prearranged shipping quota for market, 70% of the difference between the average market price and contract price can be compensated.

ALIC may allow authorized groups/producers and producing areas to obtain the following merits or incentives:

1. Producers not in production areas designated by MAFF are included.
2. Prefectural governments are allowed to reduce subsidies to the producers: from 25% to 10% or no subsidy.
3. The conditions for receiving subsidies can be eased: if the market price is more than a 10% (usually 30%) increase over the standard price fixed by ALIC, an authorized group can receive a subsidy. There were 14 target vegetables, including cabbage, cucumber, *satoimo* (aroid), radish, onion,

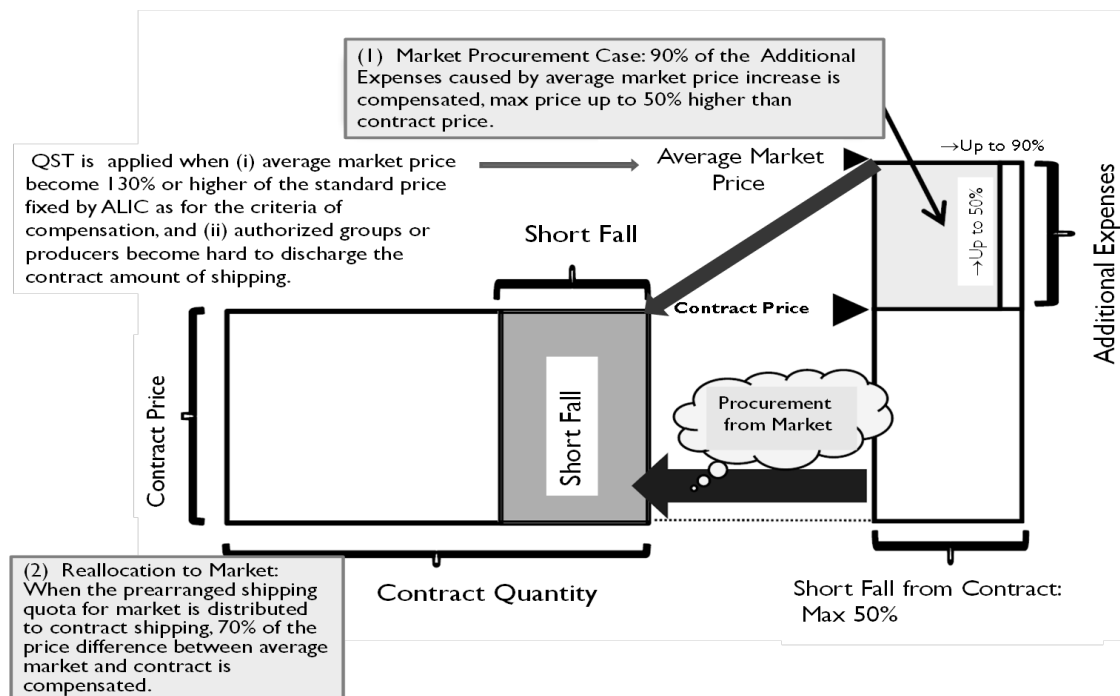


Figure 12. Mechanism of the Quantitative Securement Type (QST)

Source: ALIC website, processed by author.

⁵ The upper limitation of the average market price can be selective from 150%, 200%, 300% through 400%. The average market price is aggregated by ALIC based on the data of all major markets in Japan.

tomato, eggplant, carrot, green onion, celery cabbage (*napa*), potato, bell pepper, spinach, and lettuce in the production areas designated by MAFF. According to an ALIC report, the expense of the subsidy for the “SPSV” scheme was ¥10.59 billion in April–March 2016, while it was ¥8.78 billion for the Stabilizing Price Program.

Role of ALIC: specialized institutions for executing government policies

Government schemes/programs are institutionalized and executed by ALIC, which is owned by the central government. It was established and is regulated by laws with a historical background, as shown in Table 3. There are 10 board members and 237 employees in total. Its capital assets were ¥30.554 billion (US\$280 million) in 2018. ALIC covers livestock products, vegetables, sugar and its raw crops, and starch and its raw crops. The gross agricultural production in 2016 was as follows: livestock products ¥3162.6 billion (34.4%), vegetables ¥2556.7 billion (27.8%), root crops ¥237.2 billion (2.6%), sugar beet/cane and its raw crops ¥71.7 billion (0.8%), and rice ¥1654.9 billion (18.0%). The production value of the commodities in the charge of the ALIC accounts for 66% of the gross agricultural production in Japan. The ALIC has played a decisive role in the development of Japanese agriculture.

To implement governmental schemes, specific institutions or organizations such as ALIC are

Table 3. History of ALIC

November 1958: Establishment of the Foundation for Promotion of Livestock Farming
March 1959: Establishment of the Agency of Silkworm and Cocoon
October 1966: Establishment of the Fund Association for Stable Production and Supply of Vegetables
August 1972: Establishment of the Foundation for Vegetable Price Stabilization
October 1976: Establishment of the Foundation for Stable Supply of Vegetables by merging the Fund Association for Stable Production and Supply of Vegetables and the Foundation for Vegetable Price Stabilization
October 1996: Establishment of the Promotion Agency of Agriculture and Livestock Production by the dissolution of the two agencies; agency for livestock, silkworm, and cocoon and agency for sugar
October 2003: Establishment of ALIC by dissolution of the Foundation for Stable Supply of Vegetables and Promotion Agency of Agriculture and Livestock Production

Source: ALIC website and others.

essential to (1) undertake operations management, including government subsidy disbursement, (2) act as intermediaries in local governments and central governments, (3) provide technical and advisory services, and (4) monitor markets and players, including price data making. Without such an institutional framework or specialized agency, the various mismatch problems that arose in the Sixth Industrialization could have worsened, and its implementation could have encountered major obstacles. In many middle income or close to middle income countries, the central government tends to execute all of these functions without specialized agencies. This could create a lack of implementation capacity and governance failure,

particularly in local governance. To accelerate local activities, instructional and authorized agencies are essential. The central government pro se cannot effectively discharge its role and function at the local level.

SUMMARY: IMPLICATIONS FOR MIDDLE INCOME COUNTRIES

To realize the increase in added value received by farmers and the effective utilization of local resources, the Sixth Industrialization and Relay Shipping Scheme have been prioritized for rural and agricultural development in Japan. The Relay Shipping Scheme is a component of the Sixth Industrialization of the MAFF. In line with this, relay shipping has been arranged to merge the three different activities of farming, processing, and distribution to shorten or integrate the distribution system and increase producers' income. A typical type of relay shipping is designed to realize a stable year-round supply of perishable and seasonal products, such as vegetables. The establishment of a cooperation/partnership based on contracts is a means to facilitate collaboration between farmers and players in other industries. Relay shipping is a substantive scheme to establish the sustainable value chain of agricultural products.

Effectively linked supporting institutions and facilities are essential to realize relay shipping and the Sixth Industrialization. Agricultural cooperatives such as ZEN-NOH and its subsidiaries, the governmental executing agency ALIC, and local founding associations execute or facilitate government policy schemes. These institutions undertake institutional arrangements to incentivize cooperation among players. Without them, it is impossible to link or merge farmers scattered in different territories into a coordination unit or execution unit to enable the operation of relay shipping.

To effectively utilize development resources considering their attributes, such as seasonality and others, and to increase rural peoples' income, the agricultural sector requires the reform of industrial organization, which could include shortening the distribution routes, inducing economic activities in rural areas, and establishing companies or cooperatives as players/stakeholders. These strategic efforts aim to improve the market mechanism and create new markets of agricultural products. To realize such sustainable value chain, various policy programs must be assembled through legislative and institutional rearrangements. Various executing agencies with good governance are required to implement reform of value chain. These various efforts implemented in Japan should be useful lessons for middle or middle income countries confronting the middle income trap.

References

- [1]. Doner, Richard F., and Ben Ross Schneider (2016) "The Middle-Income Trap: More Politics than Economics." *World Politics* 68 (4), pp. 1–37.
- [2]. Gill, Indermit S., and Homi Kharas (2007) *An East Asian Renaissance: Ideas for Economic Growth*. Washington, DC: World Bank.
- [3]. Gill, Indermit S., and Homi Kharas (2015) "The Middle-Income Trap Turns Ten." Policy Research Working Paper 7403, Washington, DC: World Bank.
- [4]. Hotta, Kazuhiko (2012) *Noushoukou-kan no Kyouousou-teki Renkei to Noleiji Maneijimento* (in Japanese; *Co-creative Alignment between Agriculture, Commerce and Industry and Knowledge Management*), Nourin Toukei Syuppan.
- [5]. Japan for Sustainability (2012) "MAFF Announces Creation of Networking Organization to Encourage 'Sixth' Industrialization." May 6. (https://www.japanfs.org/en/news/archives/news_id031890.html)

- [6]. Kurokawa, Kiyoto, Fletcher Tembo and Dirk Willem te Velde (2010) "Challenges for the OVOP movement in Sub-Saharan Africa – Insights from Malawi, Japan and Thailand." Tokyo: JICA Research Institute.
- [7]. MAFF (2017) "FY 2016, Summary of the Basic Plan for Food, Agriculture and Rural Areas: Food, Agriculture and Rural Areas in Japan." Tokyo: Ministry of Agriculture, Forestry, Fisheries Japan (MAFF).
- [8]. MAFF, Agricultural Production Bureau (2010) "Case Studies of Approaches to the Sixth Industrialization (in Japanese)."
- [9]. Nakano, Ken (2014) "The "Sixth Industrialization" for Japanese Agricultural Development." *The Ritsumeikan Economic Review*, 63(3&4), pp. 60–72.
- [10]. Saitou, Osamu (2010) "Food Industrial Clusters and Local Brands in Japan (in Japanese), *Food System Studies*, 17(2), pp. 90-96.
- [11]. World Bank (2018) *Future of Food: Maximizing Finance for Development in Agricultural Value Chains*, Washington, DC: World Bank.
- [12]. World Bank (2017) "Spotlight 6: The Middle-income Trap." in *World Development Report 2017*, Washington, DC: World Bank.
- [13]. Yonekura, Hitoshi (2019) "Implication of the Mutual Relief Insurance Scheme in Japan for the Development of Agricultural Insurance in Monsoon Asian Countries." *Journal of Farm Management Economics*, No. 50, pp. 1–21.
- [14]. ALIC website: <https://www.alic.go.jp/english/index.html>
- [15]. MAAF website: <http://www.maff.go.jp/e/index.html>