

# Globalization of Agriculture and New Japanese Dietary Cultures in the Asia-Pacific Region

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## 1. Introduction

The globalization of agriculture has changed the international grain trade over the last half century. In international trade, wheat is the most important grain, and in the 1950s, the international wheat trade was mainly intra-Western trade. However, Western countries are currently the main suppliers of wheat, while the main importers are the monsoon Asian countries and the African countries.

From an economic perspective, an increase in food supply leads to a shift in the labor force from the agricultural to the industrial sector—a necessary condition of industrialization. Although this theory has become a reality in monsoon Asia, the same cannot be said for Africa.

The traditional major African grains are sorghum, millet and maize, although African production of sorghums and millet has decreased due to the import of wheat from the West. In other words, imported wheat has replaced part of the traditional grain diet. Conversely, in monsoon Asia, imported wheat has not replaced rice, so rice production is being maintained, and the total supply of grain is being increased. Therefore, in monsoon Asia, the shift in the labor force from the agricultural to the industrial sector has arisen, and industrialization has progressed comparatively smoothly.

So why didn't imported wheat replace rice? This is because instant noodles, invented in Osaka, Japan, have become a popular food in the monsoon Asian countries. Instant noodles, which are made from wheat, have played the role of an auxiliary food to rice, hence explaining why instead of replacing rice, wheat is actually consumed alongside it.

## 2. The Structure of the Global Wheat Trade and Change

In global trade, wheat is the most important grain, comprising 61% of total international trade in 1951, and 48% in 2001 (see Table 1). In 1951, the United States had a 44% share of global wheat exports (in volume). The United States, Canada, and Australia together, meanwhile comprised 83%. The main wheat importing region was Europe (except the Soviet Union), representing 54% of global wheat imports (by volume). In addition, Asia and Africa, which were net wheat import regions, occupied 24% and 7%, respectively. The largest wheat importing country in Asia was India, which occupied 46% of the whole of Asia. In the northern and western areas of India, people live on wheat. The second largest importing Asian country was Japan, which occupied 25% in Asia.<sup>1</sup>

1 FAO 1954, pp. 35, 43–45.

One ton of grain can support 6.7 persons over one year.<sup>2</sup> Thus, the population that can be supported in one year with this amount of wheat is as follows. On the export side, the total of the United States, Canada, and Australia represented about 162 million persons. On the import side, Europe's total was about 99 million persons, India about 21 million, Japan about 11 million, and Africa about 13 million (see Table 2). Thus, in the 1950s, the basic structure of the global wheat trade was intra-wheat producing regions of trade, especially intra-Western trade.

However, nowadays, the basic structure of global wheat trade has changed significantly, since Europe became a wheat exporting region (see Table 3). In 2001, Europe exported wheat for about 73 million persons. In addition, the total wheat exported by the United States, Canada, and Australia was about 404 million persons. On the other hand, the main wheat importing regions were only Asia and Africa. Asia represented about 217 million persons and Africa about 159 million persons. In the net wheat import regions, the shares of Asia and Africa occupied 57% and 42%, respectively (see Table 4). The Asian region can be divided into monsoon and non-monsoon Asia by climatic variation. The total wheat imported by the monsoon Asian countries represented about 73% of total Asian wheat imports, and an amount of wheat capable of supporting about 159 million persons.<sup>3</sup>

The United States is the most important wheat supplier, so we must check its exports by countries of destination (see Table 5). In 1951, European countries, such as Germany, Italy, and the United Kingdom, occupied six of the top ten ranked nations, while India and Japan were the only Asian countries included, and there were none from Africa. However, in the top ten ranking for 2001, the only European country was Italy, in ninth place, compared to African countries, with Egypt in first place and Nigeria in fifth. Moreover, five Asian countries, namely Japan, the Philippines, South Korea, Taiwan, and Indonesia were included in the list. These Asian countries are located in monsoon Asia, and the populations continue to live on a mainly rice-based diet, even now.

Therefore, the main wheat importing regions are monsoon Asia, for the rice dietary cultural sphere, and Africa for the sorghum-millet dietary cultural sphere (see Figures 1 and 2). In Africa (except the northern area), sorghum and millet occupied 37% of the staple food, while maize occupied 37% too.<sup>4</sup> Africa, with a population of about 800 million, imported wheat equivalent to about 160 million persons, hence we can presume that the production of sorghums and millet decreased by around twenty percent. Actually, in Africa, the grain production per person represents about 40 percent of the world average.<sup>5</sup> One of the causes of famine<sup>6</sup> in Africa is the reduction in the production of traditional grain and the aggravation of dependence on imported wheat from the West.

Monsoon Asia has imported wheat in virtually the same volume as Africa. Presently, in Asia, India has become a wheat exporting country (about 20 million persons), although the wheat imports of the People's Republic of China are modest (about 5 million persons).

2 Nishikawa 1991, p. 90.

3 FAO 2003, pp. 95–97.

4 Hirano 2001, p. 57.

5 *Ibid.*, pp. 57–61.

6 Commission for Africa 2005.

Although Asia has a population of around 1,300 million, excluding India and China, Asia has imported wheat capable of supporting 17% of the population. In other words, monsoon Asia and Africa find themselves in virtually identical situations as regards the wheat trade. Nevertheless, wheat did not replace rice, and monsoon Asia maintains its rice production.

### 3. Invention of Instant Noodles in Japan and Noodles Culture of Asia

In 2001, the population of Japan was 127 million.<sup>7</sup> The wheat which Japan imported for 37 million persons was a quantity capable of supporting 29% of the overall population. Nevertheless, rice still occupies the status of a food staple as far as the dietary habits of Japan are concerned. The share of rice occupied in grain, directly eaten, was 65% in 2001, as compared to 72% in 1955, representing a drop of just 7%.<sup>8</sup> This meant wheat was unable to replace rice and become a food staple and is one of the most important factors explaining why rice production was maintained. However, wheat is cheaper than rice, with its international price around half that of rice generally.<sup>9</sup> With this in mind, why couldn't wheat be replaced with rice? This is because, noodles, especially instant noodles made from wheat, have become popular, and instant noodles have played the role of an auxiliary food of rice. From the second half of the 1950s to the first half of the 1970s, a period of high economic growth period for Japan, about 40 percent of wheat was processed into noodles, and about 30 percent into bread (see Table 6).

Rāmen was an example of a new dish created thanks to the influence of Chinese cuisine in the early twentieth century in Japan. The first instant noodles were *Chicken ramen*, invented by Ando Momofuku from Taiwan in 1958. He lived in Osaka, which had an insufficient supply of rice in the latter half of the 1940s. He took note of the abundant supply of wheat from the United States at that time, applied the manufacturing method used for tempura, and made *Chicken ramen* from American wheat.<sup>10</sup>

Instant noodles are a hybrid cultural food; the result of cultural exchange between Japan and China, and based on a traditional noodle culture that has spread throughout Asia for many thousands of years. For this reason, instant noodles quickly spread through all of monsoon Asia, except India, within a short period. Firstly, the technology for instant noodles was transferred to South Korea, which had an insufficient supply of rice in 1963, and the production of instant noodles increased rapidly using American aid wheat. The technology was then transferred to various parts of Asia, and both production and consumption increased rapidly in various places (see Table 7). In 2003, consumption was equivalent to about 5.4 billion meals in Japan, about 3.6 billion in South Korea, about 28 billion meals in China and about 57 billion meals in Asia as a whole.<sup>11</sup> Instant noodles have also played the role of an auxiliary food of rice in monsoon Asia.

Then, why are instant noodles considered an auxiliary food? Because they have

7 Data Book 2004, p. 48.

8 Ibid., p. 70.

9 In 2001, the price of wheat was 54% of rice (FAO 2003, pp. 95, 101.).

10 Teramoto 2000.

11 JCFIA 2005.

played the same role as miso soup (see Figures 3 and 4). The soup of general *rāmen* comes in three varieties, namely soy sauce, miso, and boiled pork ribs flavors. Therefore, *rāmen* soup evolved from traditional Japanese soup exposed to the influence of Chinese cuisine. The basic structure of a Japanese meal is *ichijū-issai* (一汁一菜). *Ichijū-issai* consists of three elements: a bowl of rice, a soup, and a plate. Therefore, the *rāmen* set, which is served in many *rāmen* stores, consists of rice (or fried rice), *rāmen*, and a *gyōza* (*jiaozi* 餃子; a dumpling with minced pork and vegetable stuffing). Also in South Korea, *rāmen* is taken together with rice instead of *Thige* (the spicy Korean-style stew).<sup>12</sup>

By the way, since American wheat is relatively unsuitable for noodle-making,<sup>13</sup> so, Andō Momofuku had trouble developing instant noodles.<sup>14</sup> Wheat can be classified into four categories, namely hard-wheat flour, semihard-wheat flour, middle-wheat flour, and soft-wheat flour according to the gluten (vegetable protein) content (see Table 8). Middle-wheat flour is best suited for noodles, hard- and semihard-wheat flours are best for bread, and soft-wheat flour is applicable when making a cake. Although all native Japanese wheat is middle-wheat flour, about 70 percent of American wheat for export is hard- and semihard-wheat flour, while the remainder is soft-wheat flour.<sup>15</sup> That is, although they are the same wheat, American and Japanese varieties of wheat are incompatible due to differences in physical quality.<sup>16</sup> However, Andō succeeded in making American wheat noodles by devising a thickener and after this breakthrough, we can process American wheat for bread into noodles.

Therefore, no friction occurred between the spread of instant noodles and the rice dietary culture. Instant noodles, made from American wheat, have not replaced rice, but rather been consumed alongside it. If instant noodles had not been invented or not spread, the rice dietary culture would have probably declined, since only bread was manufactured with American wheat. However, bread has been regarded as the chief staple food in Western cooking in Japan (see Figure 3) and it stands to reason that we cannot have two foods representing chief staples at the same time. If the consumption of bread increases, the consumption of rice decreases. In other words, the rice production of Japan is likely to have been sharply reduced; presuming bread has replaced the position of rice.

#### 4. Conclusion

Based on the above study, it is apparent that globalization of agriculture has changed the basic structure of the global wheat trade over the last half century. At the present time, the West is the main supplier of wheat, and the main importers are monsoon Asia and Africa. As a result, in Africa, the production of traditional grain has decreased, prompting frequent famine, while, in monsoon Asia, rice production has been maintained owing to the spread of instant noodles, which are based on traditional Asian noodle culture, and the supply of grain has increased, signaling progress in industrialization (see Figure 5).

12 Ishige and Morieda 2004, p. 100.

13 Ito et al. 1991.

14 Teramoto 2000, pp. 40–41.

15 MAFFJ 2004, USDA 2004.

16 There is same example also about textiles. See Kawakatsu 1991.

The zero-sum game is one of a relationship whereby when one individual endures a specific loss, another obtains an equivalent profit.<sup>17</sup> That between the West and Africa is a zero-sum game, because the West exported wheat and obtained a considerable profit. On the other hand, that between the West and monsoon Asia is a plus-sum game, whereby both parties obtain some profits. The West exported wheat and has obtained profits, while Monsoon Asia has supplied great profit to the West by importing large quantities of wheat. At the same time, monsoon Asia maintains its rice production and has seen its industrialization advance, in addition to the development of a new dietary culture called the rāmen culture. In other words, the cultural power of monsoon Asia has changed the international wheat trade to the plus-sum game.

Table 1. Composition of the Global Grain Export (Quantity)

Grain/year	1951	2001
Wheat	61%	48%
Rice	11%	10%
Maize	9%	30%
Others	19%	12%

Table 2. Composition of the Global Wheat Trade, 1951

Main exporters	Share	Annual support population	Main importers	Share	Annual support population	Population (1950)
Anglo-new continents	83%	162	Europe	54%	99	393
U.S.A.	44%	86	Asia	24%	45	1377
Canada	27%	53	India	11%	21	
Australia	12%	22	Japan	6%	11	
			Africa	7%	13	222

Note: Populations are in millions. The Soviet Union is not included in Europe.

Table 3. Composition of the Global Wheat Trade, 2001

Main exporters	Share	Annual support population	Main importers	Share	Annual Support Population (Net)	Population (2000)
Anglo-new continents	48%	404	Asia	36%	217	3598
U.S.A.	21%	178	Monsoon Asia	21%	159	
Canada	14%	120	Japan	5%	37	
Australia	13%	106	Africa	21%	159	794
Europe		73 (Net)				

Note: Populations are in millions. Russia is included in Europe.

17 Thurow 1980.

Table 4. Composition of the Global Wheat Trade (Net), 2001

Net exporting region	Ratio	Net importing region	Ratio
North America	58%	Asia	57%
Oceania	24%	Africa	42%
Europe	18%	South America	1%

Sources: (Table1-4) FAO 1954, pp. 35, 43-45, FAO 2003, pp. 92-106. Data book 2004, p.40.

Table 5. U.S. Wheat Export by Countries of Destination

1951			2001		
Rank	Country	Quantity (1000 bushels)	Rank	Country	Quantity (1000 tons)
1	India	104,249	1	Egypt	4,186
2	Germany	54,301	2	Japan	3,032
3	Japan	45,479	3	Mexico	1,992
4	Brazil	31,109	4	Philippines	1,942
5	Italy	24,296	5	Nigeria	1,476
6	U.K.	20,558	6	South Korea	1,434
7	Greece	17,131	7	Taiwan	942
8	Mexico	16,402	8	Indonesia	770
9	France	15,123	9	Italy	725
10	Belgium	14,590	10	Israel	670

Sources: USDA 1954, USDA 2002.

Note: Luxembourg is included in Belgium.

Figure 1. Traditional Main Grains in the World

[ Wheat ] Europe North America South America Oceania Non-monsoon Asia (West Asia, Central Asia, Northern and western India, Northern China)	[ Cereals ] Africa
	[Rice] Monsoon Asia (Japan, South Korea, Southern China, Southeast Asia, Eastern India )

Figure 2. The Basic Structure of the Global Wheat Trade

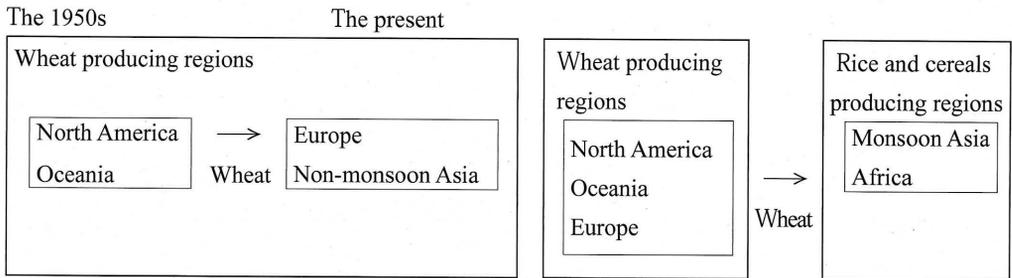


Table 6. Share of Flour by Purpose in Japan

Year	Bread	Noodles	Cake	Others
1960	33%	43%	13%	11%
1970	34%	38%	14%	14%
1980	36%	33%	14%	17%
1990	36%	36%	13%	15%
1995	36%	35%	13%	16%
2000	40%	34%	12%	14%

Sources: Nippon Seifun 2001, pp.215, 293, 382, 474. MAFFJ 2005.

Note: "Others" are "for industry," "for home use," and so on.

Table 7. Demand for Instant Noodles, 2003

Rank	Country	Consumption
1	China	277
2	Indonesia	112
3	Japan	54
4	U.S.A.	37.8
5	South Korea	36
6	Vietnam	23
7	Philippines	22
8	Thailand	17.2
9	Russia	15
10	Brazil	11.1
11	Taiwan	10
12	Malaysia	8.2
	Asia	565.9
	whole world	652.5

Source: JCFIA 2005.

Note: The unit of consumption is 100 million meals. China includes Hong Kong.

Table 8. Sorts of Flour

Sorts	The ratio containing gluten	Major producing countries	Aptitude
Hard-wheat flour	11.5–13.0	Canada U.S.A.	Macaroni, pasta, bread
Semihard-wheat flour	10.5–12.5	U.S.A. Australia	Rāmen noodles
Middle-wheat flour	7.5–10.5	Australia Japan	Udon (Japanese noodles)
soft-wheat flour	5.5–9.0	U.S.A.	Cake

Sources: MAFFJ 2004.

Table 9. Japan Wheat Imports by Country of Origin, 2001

Countries	Quantity (tons)	share
Total	5,521,251	
U.S.A.	2,891,752	52%
Canada	1,449,937	26%
Australia	1,157,311	21%

Sources: JETRO 2002.

Figure 3. Composition of Japanese Meals

Chief staple food	Side dish		
	Soup	Side plate	
Rice	Miso soup	Chief side plate	Fish (J)
	Traditional Japanese soup		Meat (W), (C), (J)
	Noodles (soba, udon, ramen)	sub-side plate	vegetables (J), (C), (W) Potatoes (J) Beans (J)
Bread	soup	Chief side plate	Meat (W)
	Pasta		sub-side plate

Note: (J) is Japanese style, (W) is Western style, (C) is Chinese style.

Note 2: Rice and bread are the chief staple food in Japanese meals. Japanese can not have the chief staple food of two kinds at the same time.

Figure 4. *Ichijū issai* and Rāmen set

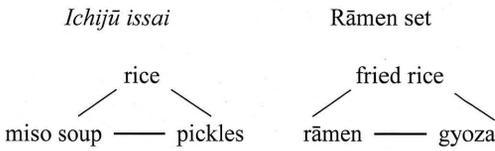
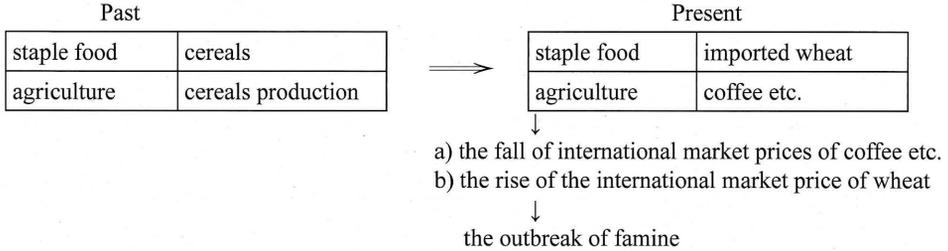
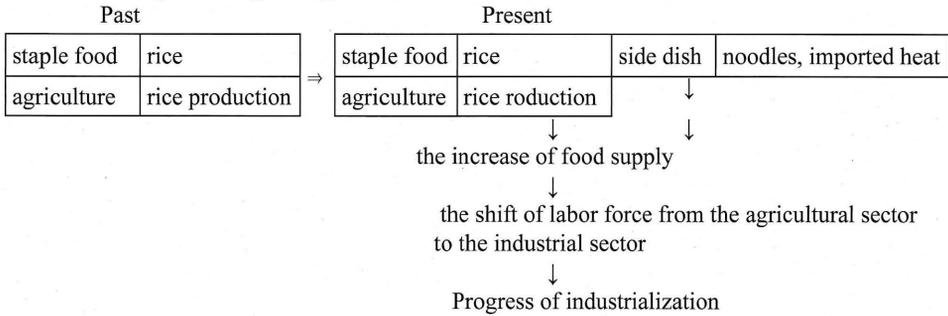


Figure 5.

*Africa: zero-sum game type*



*Monsoon Asia: plus-sum game type*



**REFERENCES**

Commission for Africa 2005

Commission for Africa. "Report of Commission for Africa, part 1, The Argument." 2005.

Data Book 2004

Ninomiya Kenji 二宮健二, ed. *Data Book of the World 2004* データブック・オブ・ザ・ワールド2004年版. Ninomiya Shoten.

FAO 1954

Food and Agriculture Organization of the United Nations. *Yearbook of Food and Agricultural Statistics—Trade*. Rome, 1954.

## FAO 2003

Food and Agriculture Organization of the United Nations, *FAO Yearbook—Trade*, Rome, 2003.

## Hirano 2001

Hirano Katsumi, ed. 平野克己編. *Africa hikaku kenkyū: Shogaku no chōsen* アフリカ比較研究—諸学の挑戦 (Comparing Africa). The Institute of Developing Economies, 2001.

## Ishige and Morieda 2004

Ishige Naomichi and Morieda Takushi 石毛直道・森枝卓士. *Kangaeru ibukuro* 考える胃袋 (Consideration about Stomach). Shūeisha, 2004.

## Itō et al. 1991

Itō Kanako 伊藤嘉奈子, Yamada Takashi 山田高司, Goshima Gishō 五島義昭, Tsuge Haruhito 柘植治人. “Some Physico-Chemical Properties and Noodle Making Quality of Domestic Wheats.” *Journal of the Japanese Society for Food Science and Technology*, No. 390.

## JCFLA 2005

Japan Convenience Foods Industry Association 日本即席食品工業協会. *Instant Ramen's Home Page* 即席麺家頁.

## JETRO 2002

JETRO (The Japan External Trade Organization) *Trade of Agriculture, Forestry, Marine Product: Agro-Trade Handbook*, 2002.

## Kawakatsu 1991

Kawakatsu Heita 川勝平太 *Nihon bunmei to kindai Seiyō: Sakoku saikō* 日本文明と近代西洋—鎖国再考 (Japanese Civilization and the Modern West). Nihon Hōsō Shuppan Kyōkai, 1991.

## MAFFJ 2004

Ministry of Agriculture, Forestry, and Fisheries of Japan 農林水産省 “Mugi seisaku no genjō to kenshō” 麦政策の現状と検証 (The Present Condition of a Wheat Policy and Verification), 2004.

## MAFFJ 2005

Ministry of Agriculture, Forestry, and Fisheries of Japan 農林水産省, “Shokuryō jukyū hyō” 食料需給表 (Tables about Demand and Supply of Food), 2005.

## Nippon Seifun 2001

Nippon Seifun Kabushiki Gaisha 日本製粉株式会社. *Nihon Seifun sha shi* 日本製粉社史 (History of Nippon Flour Mills Company), 2001.

## Nishikawa 1991

Nishikawa Jun 西川潤. *Sekai keizai nyūmon* 世界經濟入門 (A Guide to the World Economy). 2<sup>nd</sup> ed. Iwanami Shoten, 1991.

Teramoto 2000

Teramoto Masuhide 寺本益英. “Ando Momofuku and Development of Instant Noodles.” *Journal of Commercial Science* 『関西学院大学商学論究』, No. 47-4.

Thurow 1980

Lester C. Thurow. *The Zero-Sum Society*. Basic Books, Inc., New York, 1980.

USDA 1954

United States Department of Agriculture. *Agricultural Statistics: Distribution and the Possibilities for Economic Change, 1954*, United States Government Printing Office, Washington, 1954.

USDA 2002

United States Department of Agriculture, *Agricultural Statistics 2002*. United States Government Printing Office, Washington, 2002.

USDA 2004

United States Department of Agriculture. *Agricultural Statistics 2004*. United States Government Printing Office, Washington, 2004.