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### The First Food Regime in Asian Context? Japan's Capitalist Development and the Making of Soybean as a Global Commodity in the 1890s-1930s

Midori Hiraga; and Shuji Hisano\*\*

#### Abstract

This paper argues that soybean transformed from traditional Asian food into a global commodity about a century ago with the active contribution from Japan, who was becoming Asian imperial state. With the Food Regime framework, literature research found the rising demand for soy *meal* to fertilize Japanese modernizing agriculture triggered development of soybean crushing industry in "Manchuria", Northeast region of China, and its international trade around the Sino-Japanese War (1894-95). The South Manchuria Railway (the colonizing arm of Imperial Japan), special specie banks, trading companies (later *sogo-shosha*) and *Zaibatsu* invested crushers, developed Manchuria soybean economy especially after the Russo-Japanese War (1904-05), exporting meal to Japan, and oil to Europe and the US. By the 1930s, Manchuria became the global source of soybean, until WW2 cut its supply and urged the US to develop their soybean production. Conclusion argues this was a case of the First Food Regime in Asian Context.

Keywords: soybean, food regime, vegetable oil, sogo-shosha, zaibatsu

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#### **1. Introduction**

Sovbean is an important agroindustrial commodity in the world today (Oliveira & Hecht, 2015). Soybean has gathered attention as China rapidly increased its import since the middle of the 1990s (Schneider, 2011), and as investment for expansion of soybean in South America is reactivated (see The Journal of Peasant Studies, 2016). Soybean is also regarded as a key flex crop, which attracts increasing investment for food, feed, and fuel (Oliveira & Schneider 2015). A huge accumulation of English literature on soybean exists, however, most studies start with soybean as a traditional Asian food, then skip their focus to the USA or Brazil/Argentina as the major soybean producers and exporters. A few historical studies mention soybean export from Northeast Asia around the beginning of the 20th century (for example: Prodöhl (2013); Wolff, (2000)). In fact, this was the original point that soybean transformed into a global commodity with strong political economic involvement, and laid the groundwork for soybean to become a tool for capital accumulation in the soy-corn-livestock complex and durable food complex of the following Food Regimes, as was argued in Friedmann and McMichael's influential paper of 1989. Japanese historical literature, on the other hand, discusses the development of "Manchuria soybean" in relation with Japan's capitalist and imperial development, but they pay little attention to its significance related to soybean in the current agrifood system. Hoping that the integrated study of English, Japanese, and Chinese research on the development trajectory of soybean should suggest a fundamental structure and characteristics for better understanding of the current global soybean complex, this paper studies a historical case of Japan's political, economic, and imperial involvements in the transformation of soybean into a global commodity.

Applying the Food Regime frameworks, the paper first outlines how Japanese players contributed to the rapid development of the soybean crushing industry in "Manchuria"<sup>1</sup>, in the North East part of today's China, and international trade of soybean products from the 1890s to 1930s. The related Japanese players are: 1) the Japanese state and its special financial institutions including Yokohama Specie Bank; 2) the dominant trading companies (especially Mitsui&Co.), who are origins of today's *sogo-shosha* (general trading company)<sup>2</sup>; 3) Japan's

<sup>&</sup>lt;sup>1</sup> Manchuria is a historical term vaguely referring to the region of Northeast China. The term was mainly used by foreigners including Japanese, and it should be differentiated with the "Manchukuo", a puppet state built by Japanese in 1932-1945. Strictly speaking, the term should be used with the quotation marks ("Manchuria"), but to avoid complication, this paper use the term without specific emphasis.

<sup>&</sup>lt;sup>2</sup> Sogo-shosha are regarded to be unique in Japan, and they have played particular roles in Japan's capitalist development as dominant arms of *zaibatsu*, Japan's financial and industrial conglomerates. They shifted their

major colonial institution of the South Manchuria Railway Co. (SMR); and 4) the origins of today's dominant edible oil company groups in Japan. These players accumulated capital partially but significantly taking advantage of Manchuria soybean and they have continued to be influential (except the colonial institution of SMR). The Japanese government was involved in expanding soybean production overseas in the following decades, such as in Cerrado of Brazil in the 1970s, and now in the ProSavanna project in Mozambique. Mitsui&Co., founded in 1876 with strong connection to and support from the national government, is an influential sogo-shosha, also investing in Brazil and Mozambique today. Honen Oil and Nisshin Oil, who began their business with soybean crushing factories in Manchuria, have developed to become two dominant oil company groups in the edible oil market of Japan: Nisshin Oil (Nisshin OilliO Group) is regarded to be the top supplier of oils and fats for the household, and Honen Oil (J-Oil Mills) for the commercial sector<sup>3</sup>. In addition to developing these directly related players, the paper discusses how Manchuria soybean contributed to Japan's industrial and capitalist development by restructuring international trade around the Imperial Japan and by supplying cheap fertilizer for Japan to accumulate capital for further industrial development. Soybean did not disappear in from history either; on the contrary, it has been playing a key role in the following Food Regimes. In conclusion, the paper argues this as a case of the First Food Regime in Asian context. Although the original Food Regime theory was developed focusing on the Anglo-American world, we hope its application to the case of Manchuria soybean and Japan's capitalist development, which happened more than a century later than the British case and far away from the Western world, can strengthen the theory to be applied for other latecomers to capitalist development, for example, the case of contemporary China and other Asian countries. We believe this political economic structure which transformed soybean from traditional Asian food into a global agroindustrial commodity is related to current push for more soybean production and global trade furthering the capital accumulation of related players for the reasons far beyond food security.

#### 2. Background

roles as government's traders (政商) in the Meiji era, leaders in development of *zaibatsu* in the 1920s and *Keiretsu* post-WW2. They are inevitable in discussions on food and capitalist development in Japan, though full research on *Shosha, zaibatsu,* or *Keiretsu* and their shifting roles and dynamics are beyond the scope of this paper.

<sup>&</sup>lt;sup>3</sup> The supply of edible oils and fats in Japan is about 2.3 million tonnes annually. In which, about half is supplied for food processing industry by tank trucks, about 30% for commercial sectors by oil cans to restaurants and small-scale food industry, and about 20% for households in various bottled products.

#### 2.1 Theoretical framework (food regimes)

The original framework of the First Food Regime (1870 -1914) was developed focusing on wheat produced in the settler-states entered the world trade, which was imported to European states to provid cheap-food for wage-labor that supported their industrial and capitalist development (Friedmann & McMichael, 1989). New production and export zones were developed for specialized crops, and they were connected to the world market by railways (Friedmann, 2005). American soybean appears in discussion of the Second Food Regime as a key commodity for manufactured feed in the "meat/soy/maize complex" and food aid for the postwar international food order (p.107 Friedmann & McMichael, 1989; Friedmann, 1982). Soy oil, also produced from American soybean, appears in this post-WW2 Food Regime as replacing tropical oils in the durable food complex. Soy oil was also a dominant commodity in food aid, which composed a large share of cooking oil, second to wheat, shipped from the USA through PL480 in the 1950s and 1960s (Friedmann & McMichael, 1989). Soybean, however, became such a key product in the USA only in the latter half of the 1930s. Before that, the USA imported soybean, and even imported soy oil, mainly from the Far East.

#### 2.2 The beginning of international trade of soybean

The center of world soybean export was Manchuria in the 1930s, as a map of often-cited *Le monde du soja* shows (p.41 Bertrand, Laurent, & Leclercq, 1983. Fig. 1). Manchuria and China are regarded as the origin of soybean (Berger & Martin, 2000) and soybean had been a traditional food in both China and Japan for centuries - mainly eaten in fermented forms. However, soybean was not crushed for oil and meal until much later in the modern era.

In Japan, soybean was planted at the edge of paddy field and sometimes called *aze-mame* (levee bean). It was eaten mostly in fermented forms as miso, soy sauce, tofu or various other traditional food. Soybean was not crushed, nor its oil extracted in Japan until after soy MEAL began to be imported from Manchuria (Oura, 1948, Sasama, 1981). Soy OIL entered Japanese diet only in the 1930s, with the active marketing effort of oil companies (Honen Oil, 1944; Nisshin Oil, 1969) and its real proliferation happened only after WWII. Although other oilseed crushing industries existed in Japan long before the modernization, they produced oil for illumination from oilseeds like perilla, sesame, and later from cottonseed and rapeseed (Oura, 1948).

In Manchuria and China, local people traditionally crushed oilseeds like sesame and rapeseed. Then later, about a few centuries ago, they also began crushing some soybean, though only on a small scale with a manual method, and some soybean products were traded locally (SMR, 1924). Various historical records say that the purpose of crushing soybean was to squeeze oil for illumination, food, and lubrication. Soy meal was a by-product for them and the meal was first fed to animals or thrown away. It began to gather attention from Chinese traders of the huge canal which had connected the capital city in the North and the major food production sites in the South of China, and from around the middle of the Qing dynasty (1616 -1912), soy meal was used to fill the empty cargo ships heading back South after food and products were shipped to the Northern capital. The southbound shipment of Manchuria soybean and soy meal increased around 1775 because Chinese farmers in Shanghai area began to use soy meal to enhance production of cotton as a cash crop. Then, British custom reports began to record soy meal trade from Yingkou (Niuzhuang) to further ports in Canton and Fujian to fertilize sugar plantations in the Southern part of China. After two opium wars (1841-1842, and 1856-1860), Britain made China open key ports, and British traders also began to ship soy meal from Yingkou to Southern China. Soybean production as well as some soybean crushing industry began to develop in Manchuria. However, the industry remained "old-fashioned and of wedge-press type" (Adachi, 1925), and the trade remained domestic from Manchuria to Chinese ports until the 1890s when a real export market for soy meal was found in Japan (Adachi, 1978; Hori, 2009; Yasutomi & Fukao, 2009; p.505 Sasama, 1979; Shaw, 1911; p.358- SMR, 1924).

The port of Yingkou (営口 also called 牛荘 Niuzhuang) was opened to the world by the British Consul in 1861 as the first port of Manchuria. The major commodities shipped from Manchuria were soy products (beans, meal, and oil), accounting for about 70 to 80 per cent of outbound shipment. The trade was first limited to the Southern ports of China, but Japan became a major export destination in the 1890s. The export of soy meal to Japan increased rapidly, and Japan even accounted for 100% of the export destination in the year 1892 (p23 Kaneko, 1991). Historians argue that the economy of Manchuria was a "soybean economy" and that it "expanded from domestic trade inside of China, into international trade toward East Asian countries" starting with the export of soy products to Japan (e.g. p.24 Kaneko, 1991). Table 1.

Japan wanted soy meal not for food but for fertilizer, and they did not want soy oil, as

discussed in more detail in a later part of this paper. Thus, the overall trade pattern of Manchuria soy products developed to export soy meal to Japan, soy oil to Europe and the USA, and soybean mainly to Europe and later some to Japan. The trade returns in 1930 from three key ports of Southern Manchuria show that 86% of the volume of soy meal was exported to Japan, while 99% of soy oil was exported to Europe and American countries and almost zero to Japan (Fig. 2: SMR, 1930). The year 1908 is often quoted as the debut of Manchuria soybean in the European market, with Japan's Mitsui&Co making the first trial shipment to Liverpool, UK (Shaw, 1911; Adachi, 1925; and summarized in (Prodöhl, 2013). Europe was the leading importer of oil crops in those days, including copra, palm kernel, groundnuts, and linseed from their colonial territories, for use in soap, margarine and various other oil-related industries (Imperial Economic Committee, 1927). Lever Brothers, which later became Unilever by consolidating a British soap company and a Dutch margarine company, is said to be the first soap manufacturer to use soy oil on an extensive scale (Shaw, 1911). Export of soy oil skyrocketed during WW1 to the USA, and after WW1, export of soybean increased to Europe, especially to Germany, as well as to Japan (Fig. 3 chart from Honen Oil, 1944).

The Japanese were not the only players in the soy industry and trade but definitely were the most significant players, though Chinese and Western traders were active as well. By the time that the Manchuria soybean industry and international trade developed in 1932, four Japanese companies, namely Mitsui&Co., Mitsubishi Corporation (trading companies), Honen, and Nisshin (oil companies) together handled 83% of the export volume of soy oil from Manchurian ports; Mitsui&Co. alone handled 17% of the soybean export mainly to Europe, 17% of the soy meal export mainly to Japan, and 45% of the soy oil export to Europe and the USA. (pp.95-97 SMR, 1932).

The following section outlines how Japanese players developed and accumulated capital while they contributed to transforming Manchuria soybean into a global commodity.

3. How Japanese players contributed to transforming soybean into a global commodity on their way toward capitalist development

#### 3.1 Development of the Japanese players in the birth of a nation state

### **3.1.1.** National government: To resist Western colonization as Japan opened its markets

Japan developed an almost self-sufficient economy during its seclusion since the

beginning of the 17th century. International trade was strictly limited and controlled under the monopoly of the feudal government. Domestic trade flourished inside of Japan from which Japanese traders and financial institutions accumulated capital. Then in the middle of the 19th century, Western delegates came to demand that Japan open its markets. Finally Japan agreed to the Japan-US Amity Treaty in 1854 and the Friendship and Trade Treaty in 1858, with Britain, France, the Netherlands, and Russia following suit. Rapid social and economic changes triggered the political turnover, which led to the Meiji Restoration in 1867 and the modern state of Japan was established.

The newly established Japanese government tried to resist Western colonization, thus they insisted on limiting foreign trade to designated "concessions (居留地)" near the ports starting with Yokohama, and prohibited foreign traders to enter the Japanese domestic market, although they agreed to renounce its tariff autonomy and consular jurisdiction, and approved most-favoured-nation treatment (p.2 Ishii, 2005). Just announcing such a policy might not have worked in the unbalanced global power context in those Western colonial days. However, relatively well-established Japanese domestic traders from the seclusion era, led by merchants and money lenders including Iwasaki (today's Mitsubishi), Mitsui, and Sumitomo, had already accumulated significant capital by that time to compete with the Western traders. The government utilized this existing domestic power by promoting, supporting, and making them to handle "government's business"; for example, Mitsui&Co. handled the new tax collection in money instead of goods (rice) and expanded to Asia, while Mitsubishi Corporation developed shipping transport (Oishi & Miyamoto eds. 1975). The new foreign trade provided significant business opportunity for these traders and Japan managed to prevent incoming foreign capital and traders by quickly developing Japan's own financial system and traders, which is regarded as one of the reasons why Japan could maintain its independence and accomplish its industrial revolution, as almost the only case in Asian countries in those days (Ishii, 2005; Ishii, 2012).

### 3.1.2. Banks: Modernizing Japanese financial institutions to secure capital in Japanese

As one of attempts to resist Western investment and financial institutions entering the country as a step for colonization, the Japanese government quickly modernized Japan's financial system. Domestic currency exchange and financial institutions had already developed during the seclusion era when multiple domestic currencies of gold, silver, and copper were used for domestic trade. With this preferable background, the Japanese government quickly organized the legal frameworks for a modern national banking system in the latter half of the 1870s (Oishi & Miyamoto eds. 1975). The government also founded Yokohama Specie Bank (YSB: 横浜正金銀行, one of origins of today's Bank of Tokyo-Mitsubishi UFJ) in 1880 to secure control over foreign currency exchange and international trade settlement in Japanese hands. The Bank of Japan was established in 1882 as a central bank to issue national bank notes. Thus, Japan's modern financial system was established in a few decades after opening its market, and they accumulated capital in Japanese hands to invest in Japan's industrial revolution (p.61: Ishii, 2012).

# **3.1.3. Traders: Promoting Japanese trading companies to accumulate capital from foreign trade and to expand overseas**

In order to "increase wealth and military power (富国強兵)", Japanese government actively promoted Western-style industrial development in Japan. International trade was key to modernize Japan: to import machinery and industrial materials (e.g. steel, iron ore, cotton, textile machines), and to export finished products (e.g. cotton clothes and silk) to achieve foreign currency for further development. Thus the Japanese government actively promoted trading companies as a national strategy. Domestically, the government first built government enterprises in key industries including transportation, mining (gold, silver, coal), as well as both light industries (silk and cotton textile) and heavy industries (steel and military equipment). Then about a decade later, these government enterprises were given to private companies (払い下げ), many to *zaibatsu* groups including Mitsubishi and Mitsui, to accelerate industrial development. This government-led development strategy gave advantageous opportunities to *zaibatsu* trading companies to rapidly accumulate a huge amount of capital (p.4 Kasuga, 2010), leading finally to the development of *seisho* capital (政商 literally meaning "government's trader") (p.39 Oishi & Miyamoto eds. 1975).

Among them, Mitsui&Co. (Mitsui Bussan) was the dominant trading company, handling up to 20% of Japan's international trade by the time of the Russo-Japanese War (1904-05), and was called the *de facto* "Trading Department of Japan Inc." (p.1 Kasuga, 2010). A cabinet member of the Meiji government founded a trading company (先収会社), which was succeeded by Mitsui group and incorporated as Mitsui&Co. in 1876 (Japan Business History Institute, 1976). With this strong connection to the national government, Mitsui&Co. worked for the

government especially at the earlier stage; in particular, handling government's business; opening a branch office in Shanghai on the government's request to sell Japanese coal and providing a loan to the Chinese government (p.75 Kiyama, 2009). When Mitsui&Co. expanded to Manchuria as a business opportunity, the domestic soybean industry was just beginning to grow there, and Mitsui&Co. became the pioneer for trading soy products to Japan and the world.

By that time, Manchuria had been opened by Western forces, starting with the port of Yingkou in 1861. The British were dominant there but Japanese also cut into the business and trade; a Japanese consulate was built there in 1876, the Nippon Yusen (of Mitsubishi group) began regular services from Yingkou to Japan in 1890, and Mitsui&Co. began investigating business opportunities in Manchuria and opened their office around 1892-93. The special financial institute of YSB opened its branch office in Yingkou in 1900 (p.28 Kaneko, 1991; p.18 Nisshin Oil, 1969). In this way, Japanese consulate offices, YSB, and traders together expanded to the key cities in Manchuria as "the trinity" of Japan's overseas expansion (p.1 Kasuga, 2010), such that Japanese players were ready to respond when the huge demand for Manchurian soy meal came from Japan around the Sino-Japanese War (1894-95).

# 3.2 The Sino-Japanese War (1894-95): Exporting Manchurian soy meal to Japan for fertilizer: the beginning of international trade in Manchurian soy products

## 3.2.1. National government: Promoted purchased fertilizer to modernize Japan's agriculture

When Japan began industrial and capitalist development, the Japanese government promoted new "Meiji Farming Method" to use more animal power and purchased fertilizer to replace existing self-sufficient soil management in order to modernize agriculture and rural communities. Fishmeal from Japan's northern sea was first used as a purchased fertilizer but its supply was limited, and chemical fertilizer was not yet produced domestically so it was relatively expensive. Eventually, soy meal from Manchuria began to gather attention as a new material for purchased fertilizer in Japan. A historical document says that a small amount of soy meal was imported from Manchuria around the beginning of the 1890s (p.53 Nisshin Oil, 1969). Another document says that Chinese traders in Yokohama began importing soy meal from Manchuria and supplied it to Japan's fertilizer industries (SMR, 1924). A Japanese fertilizer broker spotted this new product and became one of the founding members of later Nisshin OilliO Group, the dominant oil company in Japan today.

## 3.2.2. Nisshin Oil: The dominant oil company established as a soy meal manufacturer by a fertilizer broker and the Okura zaibatsu

Kyujiro MATSUSHITA, the fertilizer broker, began importing Manchurian soy meal to replace his business with fishmeal. He even moved his office from the traditional center of Japan's fertilizer business (Fukagawa) to the port city of Yokohama for the convenience of import (p.53 Nisshin Oil, 1969). Around the Sino-Japanese War (1894-95), when Japan achieved its first boost of industrial revolution (mainly in light industry), demand for soy meal for fertilizer increased rapidly in Japan. Matsushita became a significant player in the fertilizer industry, and he caught the attention of the Okura group, another major zaibatsu in those days, which was aiming at expanding their business in Manchuria following Japan's national policy of the day. Thus, the fertilizer broker and the *zaibatsu* established a new company in 1907, the origin of today's Nisshin OilliO Group. The original company name was "Nisshin Mame-kasu Seizou Kabushikigaisha (Japan-China Bean Meal Manufacturing Company)", reflecting the main product of the day being soy meal rather than soy oil. The company history records that "soybean oil was little utilized for edible purpose in those days but rather as a by-product. The main use of soybean was to manufacture soy meal rather than to extract oil" (p.5 Nisshin Oil, 1969). Some other Japanese companies that began crushing soybean in those days also had "soy meal" in their company names rather than "oil" or "refinery" (p.40 Kikuchi, 1994). Nisshin Oil remained a dominant Japanese company in the Manchurian soy industry until the end of WW2 (Zhu, 2014).

#### 3.2.3. Beginning of international trade of Manchurian soy products

The first thing the new Japanese company did was to open an office in Yingkou and build a factory in Dalian, Manchuria, which remained as their main production site until the end of WW2. Mitsui&Co. had already been trading Manchurian soy meal to Japan (Nisshin Oil, 1969). The sudden rise in demand for soy meal from the Japanese fertilizer sector triggered the rapid expansion of the soybean crushing industry in Manchuria and the beginning of international trade of soy meal mainly to Japan. Trade data show that soy products (beans, meal and oil) were the major export goods from Manchuria, accounting for about 80% of total export value in the 1870s to 1900s from Yingkou, the major port before the Russo-Japanese War. Meanwhile, Japan was the largest export destination, accounting for up to 100% in 1892 (Table 1, Kaneko,

A decade later, Japan achieved a stronger foothold in Manchuria by winning the Russo-Japanese War. This progressed Japanese involvement in Manchurian soybean into another stage.

### 3.3 The Russo-Japanese War (1904-05): Stronger Military and Imperial expansion, facilitating the golden era of Manchurian soybean industries and international trade

### 3.3.1. National government: Gained key port districts and railway from Russia, establishing a stronghold for imperial expansion

With a victory in Russo-Japanese War of 1904-05, Japan gained the Russian leaseholds of Port Arthur (旅順) and Dalian (大連), the strategically important ports on the Liaodong (遼東) Peninsula, and the rights for a part of the Chinese Eastern Railway (東清鉄道), by the Treaty of Portsmouth in 1905. This progressed Japanese expansion to Korea and Manchuria/China to the next stage. Japan achieved a dominant control over Korea, installed its governor, bought the railway, and ultimately annexed Korea in 1910.

This was the time that Japan began its imperial control in full-scale. The Japanese government positioned Taiwan, Korea, and Manchuria as parts of its division of labor, namely to import agricultural and industrial raw materials from the territories to Japan, and to export industrial products from Japan (mainly textile products). Sugar and rice were exported from Taiwan, mainly by the "government's traders", including Mitsui&Co. and Mitsubishi Corporation. The railway in Korea played important role transporting agricultural products, including rice and soybean, from inland Korea to be exported to Japan, and transporting back Japanese textile products into the Korean market. The Japanese government politically and financially supported its special banks including YSB, the Taiwan Bank and the Korean Bank, as well as transport companies in shipping and railways (Japan nationalized its domestic railways about the same time), and working more closely with *zaibatsu* groups (Oishi & Miyamoto eds. 1975).

In order to properly manage the newly acquired colonial territory in Manchuria, Japan stationed a unit of the Imperial Japanese Army (the Guandong Army 関東軍) there in 1906, and established the South Manchuria Railway Co., Ltd. (SMR) as the "national policy corporation (国策会社)" for colonization, which is sometimes called the "East India

Corporation of Japan" (Kasuga, 2010). The protected public order, organized trading and financial institutions, and promotion of the soy business by the South Manchuria Railway facilitated Dalian to become the center of the Manchurian soy business (p.24 Nisshin Oil, 1969).

### 3.3.2. South Manchuria Railway: Japan's colonial institution promoted the soybean industry and soybean supported their colonial operation

The South Manchuria Railway Co., Ltd. (SMR) was established by Japanese government order in 1906. Japan's SMR was far more than an ordinary "railway" company. Although it took the form of a limited liability company, half of its funding came from the government, and its founding board members consisted of officials from the government, special banks including YSB, as well as Mitsui&Co., which indicates the strong connection between SMR and the trading company (p.88 Kaneko, 1991). SMR was Japan's *de facto* colonial institution, and its main aim was to execute Japan's national policies rather than to seek profit.

Still, SMR needed to conduct some business in order to support its operation in Manchuria, and transportation of Manchuria soy products became the most important profit making business for this colonial institution of Japan, especially at the beginning. The transport of soy products accounted for about 40% of SMR's cargo transport profit, peaked at 57.4% in 1908, which was much more than that of coal (less than 10% until 1908). In this way, the Manchurian soybean related business contributed to the stable development of SMR, thereby supporting Japan to establish a stronghold of its colonial operation in Manchuria (pp.106-107 Kaneko, 1991).

SMR and the Japanese government acknowledged the importance of the Manchurian soy industry (Kaneko, 1991), so they actively developed the soybean crushing industry, transport network of soy products, and facilitated a more efficient business environment suitable for large-scale international trade of Manchurian soy products, with Dalian at its center (大連中心 主義). SMR's efforts for the Manchurian soybean industry includes:

• SMR invested heavily in transport facilities around the railway network, expanding port facilities, building storage houses and hotels, and increasing rail and ship transport capacity. Mitsui&Co. handled a large part of the purchase of train cars and construction materials for SMR (p.100 Kaneko, 1991).

- SMR aimed to re-organize the trade route of Manchurian soy products via the port in Dalian, rather than the previously developed trade route via Yingkou. One of its attempts was advantageous price setting for Manchurian soy products to be transported by SMR and exported from the port in Dalian (「開港発着特定運賃制度」「大豆三品貸切扱特定 運賃制度」).
- SMR contributed to organizing a more efficient trading system, providing quality control by mixing and inspecting products, thus securing uniform and stable quality of soy products for bulk trade. SMR began a warehouse business in 1911, promoted standardization of quality of soy products and started an insurance system.

In this way, SMR contributed to facilitating the large-scale trade of standardized soy products as an industrial ingredient for export to the world market (p.506 Sasama, 1979).

In addition to promoting trade, SMR had top-level research and development sections as the national policy company, and they were active in technological innovations for the soy industry. SMR built the Central Research Laboratory in Dalian in 1907 in order to develop soybean varieties with higher oil content, and to develop a more efficient technology of oil extraction (p.79 Kikuchi, 1994). They investigated cutting-edge technologies in oil press machinery and oil extraction methods, especially focusing on the solvent extraction using benzine. The SMR Laboratory obtained this technology from Germany, and built the SMR Soy Oil Manufactory, which began test production in 1915. Then, this technology and facilities were transferred to a private company, which later became an originator of the other dominant oil company in Japan today.

## 3.3.3. Oil companies: Privatization of colonial innovation - the origin of the Honen Oil group (豊年製油株式会社)

An originator of the other major oil company, J-Oil Mills, came from SMR's innovation. SMR (national policy company) transferred its technology and the factory to Suzuki Shoten<sup>4</sup>, another large *zaibatu* in those days. Suzuki Shoten expanded production capacity of its Dalian factory, and began building more solvent extraction factories inside of Japan, in Shimizu, Naruo,

<sup>&</sup>lt;sup>4</sup> Suzuki Shoten began as a sugar trader in Kobe, and strongly involved in Japan's colonial occupation in Taiwan. The company developed rapidly to become one of major zaibatsu of the day, even bigger than Mitsubishi or Mitsui around WW1. However, it went bankrupt in 1927 after suffering the damage of post-WW1 depression and political conflicts (Katsura, 1976; Katsura, 1977). Suzuki Shoten is one of the origins of today's Sojitzu.

and Yokohama - all in port districts that featured convenient access to imported soybean from Manchuria and shipping of its finished products (p.40 Honen Oil, 1944). Suzuki Shoten was very active in a wide range of international trade, being the best-known Japanese trader in London in those days and making huge profit during WW1. However, when the post-war economic turmoil began in the 1920s, Suzuki Shoten faced severe difficulties. In its restructuring effort, the vegetable oil sectors of Suzuki Shoten was cut off, and a new company, Honen Oil Company, was incorporated in 1922, succeeding factories in Dalian and Japan. The trader continued to struggle due to economic and political conflicts, and finally became bankrupt during Japan's financial panic of 1927 (Honen Oil, 1944; Katsura, 1976).

### 3.4 The golden era of Manchurian soybean: Crushing industries flourished in Dalian, then in Japan, expanding international trade of soy products (WW1 to 1930s)

The soybean industry in Dalian and the trade of its products via SMR and the port in Dalian flourished under Japanese control of the region (p.111 Kaneko, 1991; p.24 Nisshin Oil, 1969; others). Japanese companies expanded their business, including in soybean in Manchuria, with favorable advantage from SMR and YSB, and protection from the military (p.139 Kaneko, 1991). While most of local mills were observed as "old-fashioned and of wedge-press type" (p.222 Adachi, 1925), Japanese and Western companies were able to invest significant capital in larger factories with the latest technologies. While local firms used manpower provided by coolies, the British built a factory with a steam-powered machine in Yingkou in 1896, and the Japanese built a factory with hydraulic presses soon after the Sino-Japanese war, replacing manpower with mechanical power for the first time in the bean oil industry (Adachi, 1925). While local factories could produce a maximum of 800 sheets (about 22 tonnes) of soy meal per day, Japan's Nisshin Oil factory in Dalian could produce 7,000 sheets (about 200 tonnes) soon after its opening, and remained one of the most pioneering and high-capacity soybean crushing factories in Dalian (Nisshin Oil, 1969). Solvent extraction was praised as producing more oil and making meal into better quality fertilizer with less oil waste, even as it required "a much greater amount of initial capital to build [...] than an old-style expression plant", as well as the continued higher cost for benzine and other chemicals used for the process (p.227 Adachi, 1925). SMR and Japanese capital were the only few who could afford it; Dr. Masuno, who published his research on the world's soybean and industry situation in 1942, reported that there were only two factories with solvent extraction facilities in Manchuria, both related to SMR (Masuno, 1942).

The great success of the soybean industry in Manchuria and increased import of soy meal to Japan, especially after the Russo-Japanese War, encouraged more Japanese capital to flow into construction of factories and provide impetus for the government to develop the soybean crushing industry in Japan. The first soybean crushing factory in Japan was built in 1902 in Tsuruga, on the coast facing toward China. The government made various tariff adjustments to make import of Manchurian soyBEAN favorable relative to import of soy MEAL around 1906 (Masuno, 1942; Honen Oil, 1944), and this promoted more soybean crushing factories to be built in Japan, mainly in the ports districts of Osaka, Kobe, Yokohama, Aichi, Fukuoka and Shizuoka, all of which crushed imported soybean from Manchuria (map Fig. 4). There were 23 mills with solvent extraction facility out of 38 mills in Japan in the peak year of the bean oil business in 1918, indicating how capital was driving the industry in Japan (p.227-228 Adachi, 1925). Accumulated Japanese capital, especially that of *zaibatsu*, spurred construction of solvent extraction factories, and was also justified by the increasing cost of manpower in Japan (Masuno, 1942).

The outbreak of WW1 surged the world demand for oils and fats. Together with the withdrawal of European forces from Asia, the war provided a great business opportunity for soy-related industries in Manchuria and Japan. WW1 made the golden era of soybean crushing industry inside of Japan and Suzuki Shoten regarded WW1 as "heaven's blessing" because their soybean business received huge loads of orders from many countries (p26 Honen oil; p.4# Nisshin Oil, 1969). Honen Oil's data, for example, shows skyrocketing soy oil exports to the USA. US statistics also shows that the soybean oil import to the USA, which was 21 million pounds in 1915, increased to 145 million the next year, and reached a maximum of 336 million in 1918 (USDA, 1937).

As the importance of vegetable oil increased in the post-WW1 era and Manchurian soybean became a global commodity supplying oil industries in Europe and the USA, local Manchurian forces also wanted to take a slice of the cake from this successful "soybean economy" and incoming foreign currency. Together with the increasing Japanese military control in Manchuria, this contributed to conflicts that led to decades of wars.

### 3.5 Conflicts over Manchurian soybean and the new soybean frontier in the USA (1920s-45)

#### 3.5.1. Manchurian players advance their power over "soybean economy"

To begin with, soybean production and domestic trade of soybean (from farm to railway or port) were mainly handled by local players in Manchuria. Local farmers and immigrant Chinese farmers produced soybean, and local traders (糧桟) bought, stored, transported soybean, as well as financing farmers or selling daily goods to them (Zhu, 2014). Japanese players including Mitsui&Co. tried to cut into this local trade, but the complicated local networks and multiple currencies prevented their entrance, so Japanese players mainly handled large-scale soybean crushing industries and international trade (Zhu, 2014). In the latter half of the 1920s, as Manchurian soybean was established as an important global commodity, the industry became an important source of foreign currencies for Zhang Zuolin of the Fengtian Clique<sup>5</sup> to buy leading-edge arms from overseas, and they began to push out Japanese players from the Manchurian soy business (p.321 Yasutomi & Fukao, 2009). This mounting pressure between local forces and Japan over Manchurian soybean was said to be one of the causes of military conflicts (Kaneko, 1991). Although a comprehensive analysis of the causes of these wars is beyond the scope of this paper, the history includes the following conflicts: Zhang Zuolin's Assassination in 1928, the Manchurian Incident in 1931, the establishment of Japan's puppet state "Manchukuo" in 1932, and the Japanese-Chinese war (1937) leading up to WW2. Japanese military occupation cut off export of oil crops from Asia to Europe and the USA, which triggered the development of a new frontier for soybean in the USA.

### 3.5.2. Rapid increase in soybean production in the USA, promotion of domestic oil crops (cotton and soybean) established the USA as the primary soybean exporter in the 2nd Food Regime

The great success of Manchurian soybean also caught the attention of the Americans. The USDA and US growers became more interested in soybean after seeing the growth of Manchurian soybean following the Russo-Japanese War (USDA, 2009). Although the USA is regarded as a world major soybean producer and exporter today, its soybean production has a

<sup>&</sup>lt;sup>5</sup> Zhang Zuolin (aka Chang Tso-lin) is one of Chinese warlords who ruled Manchuria from the 1920s until his assassination in June 1928. He and his son, Zhang Xueliang (aka Chang Hsüeh-liang) led the Fengtian Clique and ruled the Northeast part of China in a complicated relationship between Japanese and other Chinese authorities.

relatively short history. Soybean production is said to have started in the 19th century "as a curiosity until 1880", with about 2,000 acres planted in 1914. The domestic production of soybean oil was too small to be recorded in the official statistics until 1922, and its quality was too poor to be marketed (Eisenschiml, 1929). It is also said that soybean was cultivated mainly for seed and animal fodder until 1933 (Berlan, Bertrand & Lebas, 1977). The USA actually imported soy oil from Manchuria, and that import skyrocketed during WW1 (Honen Oil, 1944; USDA, 1937). The large amount of soy oil import from the Far East raised interest in producing soy oil in the USA, and some cottonseed mills began experimenting with crushing imported soybean during their off-season (Eisenschiml, 1929). The use of soy meal for animal feed in Europe also raised interest among Americans. Soybean farmers and extension workers founded and organized the American Soybean Association in the 1920s and USDA sent out the Oriental Agricultural Exploration Expedition in 1929 (USDA, 2009). The government and the ASA promoted production of domestic soybean and a soybean crushing industry in the USA, while placing protective duties to block the import of soybean and soy oil from Manchuria and tropical oils from Southeast Asia. Especially after the war broke out in Asia, they actively campaigned to save fats and oil for war (Prodöhl, 2016) and demanded that margarine be made with "raw material produced on American soil" (Berlan et al., 1977), for example. The production of soybean and crushing of domestic soybean rapidly increased in the USA from the latter half of the 1930s, which made the USA the global soybean producer and hegemonic country in the Second Food Regime (Friedmann & McMichael, 1989), while Japan became the largest overseas market for US soybean post-WW2 (USDA, 2009).

### 4. Discussions: How Manchurian soybean contributed to capitalist development of Japan in the Food Regime framework

As a latecomer to capitalist development, Japan initiated rapid industrial development under the strong promotion and support of the government, together with closely connected financial institutions and traders (Shibagaki, 1968). When the embassy, financial institutions, and traders expanded to nearby Asian countries, seeking business and trade opportunities to accumulate capital for further development of Japan, Manchurian soybean provided a great opportunity for Japanese players to do so. It also supported the stable operation of a Japanese colonial institution (SMR) to achieve profits from transport, as this paper has demonstrated. In addition to this point, this section discusses how Manchurian soybean contributed to industrial and capitalist development of Japan by (1) developing overseas markets for Japanese textile products, and (2) as purchased fertilizer for rice and mulberry (for silk cocoon) to save foreign currency and accumulate more capital for further industrial development.

### 4.1 Expanding the textile market for industrial development - restructuring of international trade and colonial division of labor

Like industrial revolutions in other Western countries, the textile industry was one of the important driving forces of Japan's industrial development, and Japan needed overseas markets to sell their surplus products to develop further and accumulate foreign currency.

As soy meal export from Manchuria to Japan increased, the trade pattern in East Asia was restructured. In the 18th century, soy meal from Manchuria was shipped to Southern China within a domestic trade loop, but the trade was redirected to Japan by the end of the 19th century, marking the beginning of international trade in soy products. In the opposite direction, Japan's cotton textile was exported to China as a part of the Japanese imperial division of labor (p13 Murakami, 2000). In Manchuria, export of soy products became a good counterpart to the Japanese cotton products import. Under the policy of the "Cotton and Soybean Exchange System (「綿豆交換体制」)", meaning export of soy products from Manchuria to Japan and import Japan's cotton products to Manchuria, SMR could utilize cargo transport in both ways, keep balance in currency exchange, and increase the purchasing power of Manchurian farmers to buy Japanese cotton products (p. 42 Kaneko, 1991).

This was just part of a more complicated relationship in the division of labor among Japan and its East Asian territories. As Japan strengthened its imperial power and Japanese players expanded their forces, significant volume of rice and sugar from Taiwan, rice and soybean from Korea, soy products and coal from Manchuria were exported to Japan, and Japanese industrial products came into these territories. The international trade increased significantly along with Japan's capitalist development, and the complicated relationship developed among these Asian countries and territories in those days is said to have influenced the industrial and capitalist development of Asian countries for the following decades (Hori, 2009). The "Japan-centered East Asian import complex", which is often discussed as starting post-WW2 (McMichael, 2000), in fact, began building its groundwork in the pre-WW2 era and soybean was already one of key crops at that time.

#### 4.2 Cheap fertilizer boosted rice and mulberry production as a means to save

#### and accumulate foreign capital

As a part of the effort to accumulate foreign currency for further industrial development, the Japanese government promoted both an industrial revolution AND agricultural production of silk and rice at the same time. Soy meal from Manchuria became an important fertilizer to modernize Japanese agriculture, a process described in this paper. Manchurian soy meal accounted for over 70% of imported fertilizer around WW1, when imported fertilizer accounted about half of the fertilizer consumed in Japan after the Russo-Japanese war and until the 1920s (Sakaguchi, 2003). This fertilizer was mainly used for cash crops like cotton and mulberry (to feed silk worms) as well as for rice production.

Raw silk and silk products were the leading export products, accounting for about half of the total export value in the 1880s to 1920s (Ushiyama, p.37 2003=2008), and this export earned foreign currency for Japan to buy machinery and ingredients for its industrial revolution, especially in its earlier stage. Contrary to the experience of the British industrial revolution, which accompanied enclosure of farmland and cheap colonial wheat feeding urban wage-laborers (Friedmann & McMichael, 1989), the Japanese industrial revolution kept farming households in rural areas producing silk cocoons there. Raw silk was reeled in rural area or in nearby factories, and the main workers of factories were daughters and sons sent temporally from rural areas while their families and their eldest sons stayed in agriculture. Thus, instead of shifting the labor force away from agriculture to urban industries, Japanese capitalism developed by subordinating home and small producers in the rural area, and thereby "kept them in a position of economic dependence on landowners and merchant capital, and cleverly used and exploited them" (Ushiyama, p.40 2003= p.65 2008).

Regarding the wage-food for urban workers, the Japanese government was reluctant to rely on import, and rather promoted an increase in domestic production of rice to save foreign currency. Although some rice was imported from Asian territories including Taiwan and Korea, Japan maintained a relatively high self-sufficiency rate of rice with the increased domestic production (Ushiyama, p.40 2003=2008). In addition to that, although rice is generally assumed to be the staple food of Japanese people, in fact, it was only after modernization that majority of Japanese people became able to eat rice almost everyday (p318 Harada, 2005; p72 Oonuki, 1994). For majority of Japanese people, rice was a festive food that could be eaten only occasionally, although they were farmers who produced rice with relatively high skill and

knowledge (p.291-2 Harada, 2005). Historically, rice was collected as tax instead of being eaten by farmers, and the Japanese authorities controlled the entire system of rice production and distribution, such that rice represented economic power (石高制社会). In the modernization process, some imported rice was fed to workers in the textile industry and to soldiers, but rice consumption also increased among Japanese farmers in rural areas, rather than excluding them from agriculture (p.69, p.75 Omameuda, 2007). More detailed research is required to understand how rice became a staple food for the majority of Japanese during capitalist development, but the situation was different from the British case, where agriculture was enclosed and urban workers were fed with colonial wheat instead.

In this context, Manchurian soybean did not directly feed urban wage-laborers in Japan's capitalist development, but it surely supported modernization of agriculture through cheap and abundant purchased fertilizer. Modernization of agriculture and the increasing export of agricultural products contributed to the industrial development of Japan<sup>6</sup>. In this way, Manchuria and its soybean sector was incorporated into Japan's capitalist development as an exporting market for its domestic textile industry which was towing its industrialization, and as a source of cheap fertilizers to modernize Japanese agriculture to support Japan's capitalistic development (p.42 Kaneko, 1991).

#### 5. Conclusion: The First Food Regime in Asian Context

In conclusion, this paper argues that strong political and economic drivers laid the foundation for soybean to become a global commodity to provide raw materials for non-food and food industries for capitalist development, with purposes beyond purely to secure food for the population. In the case of Japan, 1) the Japanese state, colonial institutions (e.g. SMR) and companies (e.g. trading companies and oil companies) took advantage of Manchurian soybean and accumulated capital in the soybean crushing (later oil refinery) industry and international trade of soy products (beans, meal, and oil); while 2) Manchurian soybean contributed to the capitalist development of Japan, though not as wage-food of urban workers but as purchased fertilizer for rice and mulberry (thus for silk products) in the modernization of its agriculture,

<sup>&</sup>lt;sup>6</sup> As Japan gained control of Taiwan in 1895 and annexed Korea in 1910, and the industrial development of Japan reached another stage after WW1 by increasing urban wage-labor and soldiers, the Imperial Government shifted its policy of feeding its nation with rice inside of its expanded territory, including Japan, Taiwan, and Korea (Ushiyama, p.69 2003=2008). The dissemination of rice as wage-food, however, exhibits a wide variety of patterns among big cities and rural towns, their locations, and their different stages of industrial progress, a topic which requires further research (Omameuda, 2007). The government also began the policy of sending Japanese farmers out to Manchuria and Mongolia in the 1930s as it progressed its imperial and military colonization of neighbouring Asian countries.

which in turn supported industrial development; these two factors contributed to 3) the transformation of soybean into a global commodity and the laying of the foundation for soybean to become a key flex crop in the current global soy complex. The Japanese soybean complex that developed based on Manchurian soybean, including major trading companies like Mitsui&Co., and oil companies like Honen Oil and Nisshin Oil, continued to be dominant in international trade and the crushing industry until surplus wheat and soybean exported from the USA to Japan in the Second Food Regime made, these companies into recipient players on Japanese side.

Therefore, although some differences can be found from the established discussion of the Food Regime based on Anglo-American relations, the relationship between Japan's capitalist development and Manchurian soybean can be argued as a case of the First Food Regime in Asian context, especially when we consider Food Regime frameworks as "food and capitalist history", as McMichael summarize in his recent work (p.ix McMichael, P., 2013). As the soybean crushing industry and international trade of soy products was established in Manchuria while it contributed to the capitalist development of Japan in the 1890s to 1930s, this traditional Asian food was transformed into a global commodity in this First Food Regime in Asian context, out of which soybean later became one of the dominant global commodities in the following Food Regimes.

Some Japanese scholars argue that, being a latecomer to the capitalist world, the Japanese government needed to actively advance industrial and capitalist development with strong government initiative by supporting existing financial and trading powers. In the case of Japan, such powers had already developed in the preceding seclusion era. International trade was difficult yet essential to accumulate foreign currency for Japan, which did not have a colony at first, a factor which encouraged the Japanese state, financial and trading powers to promote international trade and expansion into Asian territories, as this paper discussed.

When Japan opened the country and began looking for business opportunity outside, the world trade of some key agricultural products including wheat and sugar had been established already by European countries who led the capitalist development about a century earlier in the First Food Regime. Thus the Japanese "government's traders", including Mitsui&Co. and Mitsubishi Corporation, began to seek out comparable agricultural commodities. Manchuria soybean became one of the key trade products for them to accumulat capital. *Zaibatsu* groups

became the main players because they could afford to invest in large-scale mechanized food and non-food industries with agricultural crops, including textile and soybean processing industries, with technological innovations imported from the West. Their trading arms, *sogo-shosha*, are dominant players in Japan's large-scale food industry today, including sugar, wheat, soybean and vegetable oils.

In this way, Japan structured its modern agro-food industries (including the vegetable oil industry) based on the import of global agricultural commodities, with *zaibatsu* and *sogo-shosha* mainly handling the international trade and supporting the development of large-scale food factories near port districts. Once Japan developed its soybean crushing industry based on imported soybean from Manchuria in the pre-war period, they could rather easily shift the source of imported soybean from Manchuria to the USA after WW2, and later to Brazil in the 1970s.

It is suspected that a similar structural change has occurred in recent history as China opened its soybean market in the middle of 1990s, with large-scale soybean crushing facilities being built on the coast districts to crush imported soybean to provision meal and oil for their industrial livestock and food sectors (Hiraga, 2012). Although more empirical research is needed for this argument, we hope Japan's preceding development trajectory can provide useful example for the structural analysis of other latecomer countries.

Once huge capitals were accumulated and channelled into establishing the soybean complex, especially with strong government support, these large players would not disappear even when their main products become obsolete in the market. The Japanese government, traders, and soybean crushing/oil companies developed the soybean complex based on imported Manchurian soybean for fertilizer in the First Food Regime, and when chemical fertilizer became popular, they began marketing soy oil as cooking oil, after which, in post-WW2 Second Food Regime, they targeted the food and feed market based on imported US soybean, thereby becoming part of the soybean-animal complex and global vegetable oil complex.

Similar to the difference between cash crop and subsistence production, the social-economic characteristics of soybean differ when soybean was planted at the edge of paddy field and eaten as fermented food, and when it is processed in large-scale facilities as an agroindustrial commodity. The historical trajectory of soybean transformation involved strong

political, economic, and even some military drivers, as this paper argues, and we hope this analysis of the original transformation of soybean and its relationship with capitalist development can contribute to a better understanding of the current soy complex, in which soybean has developed to be a key flex crop for fertilizer then feed, illuminating oil and biofuel, as well as industrial food products.

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**Fig. 1 The map of the world soybean trade (1935-39)** Source: p.41 Bertrand, J., Laurent, C., & Leclercq, V. (1983) *Le monde du soja*, Maspero.

Table 1 Trade from Yingkou, Manchuria (1872-1904)
and the Destinations of the Shipment from Yingkou (1891-1904)

Trade from Yingkou			Destination of direct export					
(includes	ncludes indirect export via inland China ports)			Destination of un etc export				
money value	total export	soy products	% of soy	to Japan	% of Japan	to Hong	to UK	total
HK. TIS.	(輸移出)	(bean, oil,	products			Kong		
taels 海関両)		inearj						
1872	2.001	1.740	106.9%					
1873	1.582	1,254	84.5%					
1874	1,754	1,374	93.6%					
1875	2,688	2,215	143.4%					
1876	2,639	2,090	140.7%					
1877	3,130	2,389	166.8%					
1878	4,387	3,511	233.6%					
1879	3,655	3,152	194.5%					
1880	3,353	2,719	178.4%					
1881	3,552	2,802	188.8%					
1882	3,626	2,961	192.7%					
1883	3,913	3,242	207.8%					
1884	4,123	3,282	218.8%					
1885	4,574	3,577	242.7%					
1886	4,527	3,136	240.0%					
1887	5,477	4,008	290.2%					
1888	5,686	4,358	301.2%					
1889	5,568	3,987	294.8%					
1890	7,198	5,070	380.8%	to Japan	% of Japan	to Hong Kong	to UK	total
1891	8,070	6,363	426.8%	460	99.8%			461
1892	9,066	6,496	479.2%	1,173	100.0%			1,173
1893	9,310	7,065	491.8%	1,732	79.9%	433	0	2,167
1894	8,532	6,676	450.5%	1,129	84.6%	181	0	1,335
1895	5,605	4,579	295.8%	54	9.8%	441		550
1896	11,277	9,455	594.8%	3,104	87.3%	433	1	3,556
1897	13,809	11,373	727.9%	5,114	92.2%	414	9	5,548
1898	17,448	14,075	919.3%	6,683	93.1%	433	5	7,179
1899	20,616	16,686	1085.6%	8,092	93.1%	589	0	8,691
1900	11,470	9,643	603.7%	3,458	88.6%	426	3	3,905
1901	18,742	16,089	985.9%	6,562	89.9%	597	1	7,303
1902	17,525	14,314	921.4%	8,019	91.8%	604	2	8,733
1903	19,982	14,636	1050.0%	9,374	92.1%	695	13	10,179
1904	12,159	8,751	638.6%	1,084	69.0%	449	38	1,571

Source: Data summarised and corrected by Kaneko in pp.22-23: 1991;



translated and assembled by the author.

in the trade returns of 1930, according the destinations Source: Chart made by the author, with the data from the North-China Trade Returns of 1930.



**Fig. 3 Soy Oil Export from Manchuria according to the Destination, 1910-1938** Source: Chart section of Honen Oil, 1944; translation added by the author in blue fonts.



(daily crushing capacity more than 50 tonnes) around 1918 Source: Data from Nisshin Oil 1969 pp.69-71; Translated and plotted on a map by the author.