



The Canon Institute for Global Studies

CIGS Working Paper Series No. 24-016E

Japan's economic warfare in the 1930s and early 1940s

Tetsuji Okazaki (Meiji Gakuin University)

Akira Okubo (Nagoya University)

August, 2024

※Opinions expressed or implied in the CIGS Working Paper Series are solely those of the author, and do not necessarily represent the views of the CIGS or its sponsor.

※CIGS Working Paper Series is circulated in order to stimulate lively discussion and comments.

※Copyright belongs to the author(s) of each paper unless stated otherwise.

General Incorporated Foundation

The Canon Institute for Global Studies

一般財団法人 キヤノングローバル戦略研究所

Phone: +81-3-6213-0550 <https://cigs.canon/>

Japan's economic warfare in the 1930s and early 1940s[†]

Tetsuji Okazaki (Meiji Gakuin University)*

and Akira Okubo (Nagoya University)**

Abstract

Japan's participation in World War II was a consequence of self-reinforcing cycles of Japan's aggressions in East Asia and the economic sanctions imposed on Japan by the Western countries. During the war, the United States blocked transportation of natural resources to Japan from the Great East Asia Co-Prosperity Sphere using its naval power, particularly submarine attacks on Japanese ships. Japan managed to adapt to this blockade strategy of the United States by adopting various measures, including accelerating merchant ship building to maintain the marine shipping capacity and substituting domestic resources for imported raw materials. Although limits were ultimately reached, these measures for adaptation enabled Japan to continue the war for more than three and a half years.

Key words: Economic sanction, blockade, international politics, adaptation, autarchy, sea lane battle, shipbuilding, import substitution, national nutrition, gun-butter trade off, Japan

JEL classification codes: F51, F52, N45, N65, N75

[†] The authors are grateful to Professors Stephen Broadberry, Mark Harrisson, and other participants at the Economic Warfare Conference in Venice in 2024, for their valuable comments. All remaining errors are our own.

* teokazakitokyo@gmail.com

** okubo.akira.b9@f.mail.nagoya-u.ac.jp

1. Introduction

Japan participated in World War II as one of the Axis Powers from December 1941 and continued to fight in the war until August 1945, despite Germany and Italy having surrendered to the Allied Powers several months earlier. World War II had a long prehistory for Japan. The tension between Japan and the United States and the United Kingdom dated back to September 1931, when Japan invaded Manchuria, motivated by ideas of economic warfare and autarchy that had prevailed among the middle-class army officers since the early 1920s, following the experiences of these officers during World War I.

Japan began to construct a sphere of autarchy by integrating Manchuria and northern China in the early 1930s, incurring criticism and economic sanctions by the United States and the United Kingdom for its endeavors. As we describe in the following sections, self-reinforcing cycles occurred involving Japan's aggressions to achieve an autarchy and economic sanctions by the United States and the United Kingdom, which finally resulted in war between Japan and these nations. During the war, the United States imposed a strict blockade on Japan's war economy using its military power. Although these sanctions caused serious damage to Japan's wartime economy, Japan made great efforts to adapt to the sanctions. Although there was ultimately a limit to Japan's adaptation and endurance, it was able to continue fighting the war for more than three and a half years as a result of these actions.

In this paper, we describe the self-reinforcing cycles of economic sanctions imposed by the Western countries and the aggressions by Japan, as well as Japan's adaptation to the economic sanctions during World War II.

2. The international politics of economic sanctions on Japan: The League of Nations and the United States

The question of whether economic pressure should be imposed on Japan was a key issue in international politics during the decade preceding the Pacific War. The changes in international policy toward Japan during this decade can be considered by dividing the decade into three periods. First, between 1931 and 1933, member states of the League of Nations and the United States considered their response to the 1931 Japanese invasion of Manchuria. Second, between 1933 and 1937, there was a period of continued international tensions stemming from Japan's encroachment in the northeast of China combined with failed attempts at rapprochement between Japan and the West. Third, between 1937 and 1941, in

response to the commencement of the Second Sino–Japanese War, the United States gradually embarked on its first serious efforts to impose sanctions on Japan. This third period ended with the commencement of the Pacific War in December 1941 and the complete severance of economic and diplomatic relations between Japan and the United States.

On September 18, 1931, elements of the Japanese Army staged an explosion ostensibly by the Chinese on the Japanese-controlled South Manchuria railway near the city of Mukden. The Japanese Army, with government approval following soon after, used the incident as a pretext to invade China's northeastern provinces, commonly known as Manchuria. On September 21, the Chinese Nationalist government in Nanjing requested the League of Nations to respond, with the goal of galvanizing international support and pressuring Japan to withdraw from Manchuria (Thorne 1972, pp. 131–134; Craft 2000).

However, the Western reaction to the incident was cautious. Most Western leaders lacked the appetite to involve themselves in a Far Eastern conflict in the midst of a severe economic depression. The permanent members of the Council of the League of Nations were united in opposition to the application of sanctions. According to Sir John Simon, the British Foreign Secretary, “the only thing the Council can do is to avoid threatening Sanctions and to give good advice and to appeal to everybody to behave” (Butler and Bury 1960, p. 921). The United States, which was not a member of the League but closely associated with the negotiations, was equally reluctant. Despite public criticism of Japan by the United States' Secretary of State, Henry Stimson, President Herbert Hoover was decidedly opposed to the idea of sanctions, urging that Western countries “not to stir the boiling pot” (Jeansonne 2012, p. 344). After months of discussion, the League merely decided to launch a fact-finding mission headed by Lord Lytton, a British peer. The Japanese government had been concerned that sanctions would be raised as a possibility under Article 16 of the Covenant of the League of Nations and was relieved to learn that the leading Western powers preferred a moderate solution (Higuchi 2021, pp. 29–32).

Disdain for the concept of sanctions was not uncommon among policymakers of the era. In February 1932, Sir Maurice Hankey, the British Cabinet Secretary, stated that “[a]fter the present failure [regarding Manchuria], following Corfu and Vilna, no-one is ever likely to believe in sanctions, and they will become more and more a dead letter. Personally, I would like to see them got rid of.” (Thorne 1972, p. 240) Many British officials held the “sanctionist approach” of Article 16 in contempt (Steiner 1993, p. 52). They preferred the League to be a forum of consultation, rather than risking embarrassment or worse consequences through attempts at coercion (Obiya 2021).

Detailed governmental studies on sanctions also advocated caution. In March 1932, the British government produced a secret report on the possibility of applying sanctions to Japan. The report estimated that sanctions would have negligible effects without the cooperation of the United States. Even with United States' cooperation, Japan could exploit loopholes with relative ease, and effective enforcement would require a state of war. The report raised the issue of a "double-edged effect," with impacts not just on Japan but also on the economies of the British Commonwealth, and the dangers of driving Japan into a collision course with the sanctioning powers (ATB 1932).

The Lytton Commission, assigned by the League to investigate the Mukden incident, released its report on October 2, 1932. The report was written to avoid a major fallout between Japan and the League, and it adopted a balanced approach in the sense that, while acknowledging Japan's treaty rights in China and sympathizing with Japanese concerns regarding China's anti-Japanese boycotts, it denied Japanese claims that their military actions were an act of legitimate self-defense (Nish 2009, pp. 173–179). The 139-page report, which made no mention of even the possibility of imposing sanctions, was well received among Western diplomats. Many of them wished the whole affair to be "filed and forgotten," to initiate reconciliation with Japan, while avoiding recognition of the Japanese-imposed puppet state of Manchukuo (Thorne 1972, p. 290). Such conciliatory attitudes generally persisted even after the Japanese Army invaded Jehol province in January 1933 and advanced toward the Great Wall.

In contrast, the Japanese government was in no mood for reconciliation. The Lytton Report was poorly received in Japan. Nationalists were frustrated with the Western refusal to recognize the legitimacy of Manchukuo and advocated for Japan to leave the League (Nish 2009, p. 184). Furthermore, the Japanese government calculated that leaving the League would lessen the risk of being sanctioned under the Covenant because, although sanctions were applicable to non-members, the procedures for conflict resolution were designed primarily for disputes between member states. Moreover, Japanese diplomats had observed that smaller powers were more sympathetic toward the plight of China, whereas the major powers were conciliatory toward Japan. Hence, leaving the League and focusing on bilateral talks with the major powers seemed a less embarrassing and potentially more fruitful course for Japan than remaining a member (Higuchi 2021, pp. 52, 58–59). Thus, after the League Assembly adopted a statement based on the Lytton Report on February 24, 1933, which denied the legitimacy of Manchukuo, the Japanese government withdrew from the League.

On May 31, 1933, Japan and China signed a bilateral ceasefire agreement at Tanggu. Japan was able to secure its conquests with minimal international repercussions. The non-recognition of Manchukuo was the limit of Western resistance to Japan during this phase.

A minor exception to this lackluster response was the short-lived British arms embargo of February–March 1933, which was imposed in response to the fighting in Jehol. The embargo was aimed at both Japan and China, and avoided differentiating between the aggressor and the victim in the same spirit as the subsequent American Neutrality Acts. However, there were advocates within the British political sphere who argued for the embargo to target Japan alone, and the embargo marked a downturn in Anglo–Japanese arms trade relations, which had been intimate until the 1920s (Thorne 1970). Anglo–Japanese economic relations steadily deteriorated in the mid-1930s. From April–May 1933, Britain abrogated several commercial treaties between its colonies and Japan. The decision to do so was not meant as a sanction but was a protectionist response to intense lobbying from the Lancashire cotton industries as a result of an overflow of Japanese trade goods caused by a weaker yen. The increased barriers limiting access to the markets of the British Empire hampered the recovery of the Japanese textile industry and further cultivated anti-British feelings in Japan (Sharkey 2000).

In the mid-1930s, Neville Chamberlain, the British Chancellor of the Exchequer, led a British attempt to improve relations with Japan to stabilize the Far East and focus British rearmament efforts toward Europe. In 1934, British and Japanese officials exchanged ideas on a possible Anglo–Japanese non-aggression pact. Concurrently, a mission of the Federation of British Industries visited Japan and Manchuria to improve business relations and probed the possibility of investing in Manchuria. Both initiatives fell through despite Chamberlain’s efforts to persuade the Cabinet and Foreign Office because most British officials were more concerned with the damage that an Anglo–Japanese agreement would cause to Britain’s relations with China and the United States, both of which were critical of Britain’s rapprochement with Japan (Bennett 1992).

Chamberlain was undeterred by this setback and in 1935 pursued a new initiative, inviting Japan to join a British-led financial rescue package for China. China faced economic difficulties owing to spiking silver prices and sought to leave the traditional silver standard. The British government sent its chief economic adviser, Sir Frederick Leith-Ross, on a mission to assess the Chinese financial situation and assist in reforms. During the Leith-Ross mission from September 1935 to June 1936, the British attempted to persuade Japan to contribute to an international loan package for China. However, the Japanese saw the British initiative as a ploy to restrict Japanese freedom of action in China and declined

to participate. Chinese currency reforms were implemented under British leadership and a new Chinese currency, the *fapi*, which was pegged to sterling, was introduced in November 1935. The currency reform was well received in China and helped to stabilize the economy. As a result, the Chinese leaders gained the confidence to resist Japan. However, the Japanese government and army were frustrated with China's tightening of relations with Britain and the circulation of the *fapi* in north China, where Japan was establishing buffer regimes to secure Manchukuo (Hatano 1978; Best 2013).

On July 7, 1937, Japanese and Chinese troops exchanged fire on the outskirts of Beijing close to the Marco Polo Bridge. The Japanese government decided to send reinforcements and escalate the conflict. The Chinese government also chose escalation to bolster resistance. The conflict spread to Shanghai in August and, by the end of the year, Japan occupied several key cities, including Nanjing, causing mass harm. It was a full-scale Sino–Japanese War in all but name because both governments avoided declaring war to bypass the United States Neutrality Act.

The Neutrality Act, initially passed in 1935 and renewed in January 1937, prohibited arms exports to all belligerents at war. President Franklin Roosevelt, being sympathetic to China, decided not to apply the Neutrality Act to the undeclared Sino–Japanese War to keep war provisions flowing to China. However, despite his famous “quarantine” speech of October 5, 1937, which stressed the need to cordon off aggressor states, isolationism was at its height in the United States and Roosevelt was not ready to apply sanctions to Japan. The Japanese sinking of United States’ gunboat *Panay* on the Yangtze River in December drove Roosevelt to consider options to seize Japanese assets, impose an embargo on oil imports, and blockade the Japanese, with British cooperation. Yet, he decided against forceful economic measures because of the risk of provoking an armed reaction by Japan. Moreover, the British were not ready to cooperate (Dallek 1995, pp. 146–157). The United States did little to damage the Japanese economy until mid-1938 apart from private anti-Japanese boycott campaigns.

For the British government, the outbreak of the Sino–Japanese War was a further setback to its already stagnant efforts to improve Anglo–Japanese relations. The Foreign Office, led by Anthony Eden, advocated supporting China’s war effort. However, Chamberlain, who became Prime Minister in May 1937, held the view that risking a confrontation with Japan was “suicidal,” considering the parallel threats in Europe. When the British government contemplated the possibility of imposing sanctions against Japan in the autumn of 1937, the Foreign Office was supportive, but the Treasury, the service departments, and most Cabinet members were united in their disapproval. A governmental study on the possibility of applying sanctions to Japan reiterated the findings of 1932 that sanctions would have

limited effects without the support of the United States. The report observed that Japan's vulnerability lay in its textile exports, along with imports of iron ore, machine parts, and especially oil, which the United States dominated. However, Japan had large oil reserves and the war in China was not particularly heavy on oil consumption. Hence, the study concluded that even with the United States on board, the sanctions would not take effect for one or two years (ATB 1937; Best 1995, pp. 38–44; Strang 2019). The first notable intervention by Britain occurred only in March 1939 when it authorized a loan of £5 million to China (Lee 1973, p. 164).

Essentially, international coordination to restrain Japan's aggressions failed. In November 1937, signatories of the Nine Power Treaty of 1922 met in Brussels to discuss Japan's violation of this treaty, which was designed to preserve the territorial integrity of China. A coordinated boycott on Japanese goods and a ban on credit to Japan were discussed, but both the United States and Britain opposed strong measures. The conference concluded by merely reaffirming principles (Lee 1973, pp. 70–77). In 1938, the League of Nations discussed the possibility of adopting sanctions under Articles 16 and 17 of the Covenant, pressed by China and supported by the Soviet Union. On 30 September, the League Council adopted a report recognizing that member states were entitled to impose economic sanctions against Japan. However, due to British and French insistence, implementation was left to the discretion of individual member states and consequently no state acted upon it (Walters 1960, p. 738; Higuchi 2021, pp. 187, 214).

The continuing Japanese invasion of China and aerial bombardments of Chinese cities gradually led Roosevelt to adopt measures to hinder the Japanese war effort. In June 1938, Roosevelt ordered a "moral embargo" against Japan on aircraft armaments, engine parts, accessories, aerial bombs, and torpedoes. In December, he approved a \$25 million loan to China. In December 1939, the "moral embargo" list was expanded to include molybdenum, aluminum, and equipment required for producing aviation fuel. In January 1940, Roosevelt's decision to abrogate the United States–Japan commerce treaty of 1911 came into effect, clearing the way for further trade restrictions. The fall of the Netherlands and France between May and June 1940 led the Japanese to pressure the cornered Europeans for concessions in Southeast Asia. In July, to reassure European allies and China in their resistance to Japan, and to send a message to Japan, Roosevelt restricted exports to Japan through licensing of aviation fuel and high-grade scrap metal. In September, the list was expanded to include iron and steel scrap. Undeterred, Japan signed the Tripartite Pact with Germany and Italy on 27 September. In early 1941, the United States' effective embargo expanded to include copper, brass, zinc, bronze, nickel, and potash.

Furthermore, in March, the Lend–Lease Act came into force, invigorating United States’ assistance to countries resisting the tripartite powers. China was granted eligibility for Lend–Lease assistance and received \$26 million worth of material in 1941 (Newcomb 1941; Young 1963, p. 207; Dallek 1995, pp. 192–196, 238–241, 273; Miller 2007, pp. 77ff.).

As the Sino–Japanese War expanded, Japanese officials became increasingly concerned about the possibility of private anti-Japanese boycott campaigns escalating into government-led sanctions. A special committee of Japan’s Planning Board (*Kikakuin*) was tasked to consider the possibility of Western sanctions, and studied the precedent of League sanctions imposed on Italy. Japanese officials were aware of their vulnerability to Western sanctions but believed that damage could be mitigated by increasing domestic production, and that retaliatory measures targeted at Western possessions in China could alleviate the asymmetry somewhat. According to historian Akio Watanabe, the United States’ adoption in the early period of the Sino–Japanese War of “intermediate measures,” which fell between full-scale sanctions and inaction, complicated Japanese perceptions of the intentions of the United States. These actions empowered the “hawks” in Tokyo, who believed that Western sanctions would be manageable in the short term and that, in the long term, Japan would gain self-sufficiency by taking over Western possessions in Southeast Asia (Watanabe 1985).

The United States was not alone in restricting trade with Japan and assisting China. The Soviet Union was the most active supporter of China during the early period of the war. The Soviets aided China with credits that amounted to \$250 million by mid-1939, and substantial military equipment, including tanks and aircraft (Young 1963, p. 125; Haslam 1992, pp. 92–94). In May 1938, Australia, responding to public anger at Japanese aggression, not only ousted Japan from a planned iron ore project in the Yampi Sound but also banned all iron ore exports to Japan. Pig iron exports to Japan continued, but not without controversy. In November, workers at Port Kembla refused to load pig iron shipments bound for Japan. The strike was lifted in January 1939 only when the government promised the workers to strengthen its policy stance against Japan (McDougall 1977; Tsokhas 1995). The Netherlands also decreased resource exports to Japan from 1937 to 1939. After the fall of the Dutch mainland in 1940, Japan pressured the Dutch East Indies to increase resource exports, particularly oil. The Dutch authorities in Batavia yielded somewhat by increasing exports to Japan but held out on accepting inflated Japanese demands (Mook 2011, pp. 15, 36–59; Iwama 2018, pp. 51–72). By 1940, Britain had become more proactive in restricting trade to Japan. It assisted Batavia to resist Japanese pressure and coordinated with Washington to block resource exports from South America to Germany and Japan

(Best 1995, pp. 148–150). France, although cautious on sanctions, was the earliest Western power after the 1937 outbreak of war to provide China with a notable loan, equivalent to US\$5 million, in April 1938. In September, France banned exports of iron ore from Indochina to Japan. Furthermore, French Indochina evaded persistent Japanese pressure for closure and functioned as a major route for supplies to China until Japan occupied northern Indochina in September 1940 (Young 1965, p. 72; Dreifort 1991, pp. 135–145, 152).

The fatal decisions that set Japan and the United States on a collision course were made in the summer of 1941. In July 1941, Japan occupied southern Indochina to gain bases for a southward expansion. The United States immediately responded by freezing Japanese assets on July 25, 1941. Britain and other Western governments followed suit shortly after. On August 1, the United States effectively banned, through strict licensing, all oil exports to Japan. With oil reserves declining, the Japanese military pressed for war. On September 6, the Japanese government and emperor decided to commence war with the United States, Britain, and the Netherlands from late October (later postponed to early December) if diplomacy failed to resolve the situation. Roosevelt, aware of Japanese intentions from signal intelligence and advised by China and Britain to hold firm, refused to resupply oil to Japan unless it withdrew from China. Diplomacy on its own terms having failed, Japan launched its attack on December 7 (Iriye 1987, pp. 148–184).

3. The idea of autarchy: Building the Japan–Manchuria–China Economic Bloc

World War I had a considerable impact on the ideas and behavior of the Japanese Army. Experiencing the first total war in human history, the Army, particularly the middle-class officers, came to consider broader preparation for a coming total war—including reforms of Japan’s military, political, and economic systems—as essential. These army officers organized informal study groups, the most influential of which was *Issekikai*, organized in 1929. Many field grade officers were members of *Issekikai*, including Tetsuzan Nagata, Seishiro Itagaki, Kanji Ishihara, Renya Mutaguchi, Teiichi Suzuki, and Hideki Tojo¹, all of whom became major players in the sequence of incidents and wars in the 1930s

¹ Tetsuzan Nagata, one of the founders of *Issekikai*, became the Director of Military Affairs, the Ministry of the Army, but he was assassinated by a radical Army officer in the building of the Ministry of the Army in 1935. Seishiro Itagaki and Kanji Ishihara initiated the Manchurian Incident in 1931,

and 1940s (Kato 2007, pp. 2–3; Japan Broadcasting Corporation 2015, pp. 124–130; Furukawa 2016; pp. 96–97).

Some of these officers, in particular Kanji Ishihara, devised the idea of enhancing Japan's economic power based on industries and natural resources within its territory (Ito 1989, pp. 326–327; Johnson 1982, p. 116). Ishihara stayed in Germany from 1923 to 1924 to study the cause of Germany's defeat in World War I. Through these studies, he developed an understanding that to win a long-lasting battle, it was important to establish conditions that would enable endurance of an economic blockade by the enemy. Specifically, he considered that Japan should fight a long-lasting ground battle for the resources of the East Asian continent (Kato 2007, pp. 94–97). When he was an instructor at the Military Staff College of the Army, Ishihara reported at an informal meeting of middle-class officers that Japan would be able to continue the war without any burden if it could utilize the resources of the whole of mainland China (*ibid*, pp. 100–101). In 1928, Ishihara transferred to the military staff of the Kwantung Army, which took charge of the Kwantung Province of China as well as the area along the railroads of the South Manchurian Railways, which Japan had obtained through the Russo–Japanese War in 1905. As a member of the military staff of the Kwantung Army, Ishihara had an opportunity to materialize his ideas on autarchy. In an article written in 1929, he argued that it was necessary to make an economic plan for the area including Japan, Manchuria, and northern China on the assumption that this area would face an economic blockade (*ibid*, p. 103).

In September 1931, the Kwantung Army commenced aggressions toward the whole of Manchuria, using as a pretext the staged explosion of a South Manchurian Railways railroad, which had been planned and executed by the Kwantung Army itself. One of the reasons for this aggression was the ideas of Ishihara that Japan should occupy Manchuria as a first step in preparation for the long-lasting war in the future. By the end of 1931, the Kwantung Army occupied almost all of Manchuria. In March 1932, they founded a puppet country, Manchukuo, installing Puyi, the last Emperor of the Qing Dynasty

when they were staff officers of the Kwantung Army. Renya Mutaguchi became the commander of the First Regiment of the China Stationing Army, and initiated the Marco Polo Bridge Incident in July 1937. Teiichi Suzuki was President of the Planning Board and Hideki Tojo the Prime Minister when Japan opened the Pacific War in 1941.

as the Emperor of Manchukuo. Japan officially recognized Manchukuo by concluding the Japan–Manchukuo Protocol in September 1932 (Furukawa 2016, p. 99; Tomatsu 2015, pp. 94–96).

The foundation of Manchukuo became the starting point of Japan’s efforts to establish an autarchy, as well as the start of the tensions with the United States and the United Kingdom. Immediately after its occupation of Manchuria, the Kwantung Army embarked on the project of developing the Manchurian economy as part of Japan’s autarchic sphere. The Kwantung Army’s project of developing the Manchurian economy and its supervision of the Manchukuo government can be considered in terms of two subperiods, 1932–1936 and 1937–1941. In the first period, from 1932 to 1936, the Kwantung Army focused on establishing public security and the construction of economic infrastructure, including the monetary and fiscal systems. Semi-public corporations (also known as “special corporations” and “quasi-special corporations”) were founded for each essential industry, thus leading to the monopolistic development of industry under the supervision of the Kwantung Army. The capital for these semi-public corporations was provided by the Manchukuo government and the South Manchurian Railways. This approach to developing industries reflected the anti-capitalist ideology shared by middle-class Japanese Army officers. Indeed, in a December 1931 document, the Staff Section of the Army stated that “we will not allow monopolization of profit by Japanese capitalists in Manchuria” (authors’ translation) (Hara 1972a, pp. 4–9; Yamamoto 2003, p. 28).

In late 1935, the Ministry of Army, Japan, started to consider to update the plan of Manchurian development, given the experience until then. A trigger was the transfer of Kanji Ishihara to the role of chief of the Operation Section of the General Staff Office. Observing the progress of the Soviet Union’s Second Five-Year Plan, he considered it necessary to accelerate Manchuria’s industrial development, given that it shared a border with the Soviet Union. In June 1936, the General Staff Office sent a document to the Manchukuo government, requesting an acceleration of the industrial development in Manchuria to prepare for the war with the Soviet Union. The General Staff Office intended to develop the strategic industries necessary for enduring the war in the area encompassing Japan, Manchuria, and northern China (Hara 1972a, pp. 57–58).

Meanwhile Ishihara organized an informal institution, the Research Institute for the Public Finance and Economy in Japan and Manchuria (RIPFEJM; in Japanese, *Nichiman Zaisei Keizai Kenkyukai*), inviting Masayoshi Miyazaki, a representative of the Tokyo office of the Research Institute of the South Manchuria Railways (RISMR) to participate. RIPFEJM drafted a five-year plan for developing industries in Japan and Manchuria in July 1936, which, combined with one made by the RISMR, came

to form the basis of the official plan to develop the Manchurian economy during the period from 1937 to 1941. After examination of the drafts and negotiation with the General Staff Office of the Army, the Ministry of the Army, and the Kwantung Army, “The Five-Year Plan for Manchurian Industrial Development” was finalized in January 1937, and the Kwantung Army instructed the Manchukuo government to implement the plan (Hara 1972a, pp. 57–65).

The plans by the RIPFEJM and the RISMR covered Japan as well as Manchuria. The Ministry of Army used them to establish the “Outline of the Five-Year Plan of Important Industries” in May 1937, covering both Japan and Manchuria. The production targets established for the “important industries” are shown in Table 1. Notably, the plan was quite ambitious. For example, production of aircraft and pig iron were expected to be 7.8 and 5.2 times their 1936 levels by 1941. Furthermore, the role assigned to Manchuria was substantial. In 1941, Manchuria was expected to be responsible for 30.0% and 34.8% of aircraft and iron ore production, respectively.

Table 1

The Ministry of Army requested the Cabinet (the first Cabinet of Fumimaro Konoe) to implement the Japanese part of the Five-Year Plan in June 1937. The Cabinet accepted the plan, and the Minister of Finance (Okinori Kaya) and the Minister of Commerce and Industry (Shinji Yoshino) announced “The Three Principles of Public Finance and Economy.” These were: (1) expansion of production capacity, (2) maintenance of the international balance of payments, and (3) adjustment of the demand and supply of commodities. The three principles implied that the government would implement the policies for the expansion of production capacity requested by the Army under the constraint of maintaining the international balance of payments and, to do so, it would impose controls on demand for and supply of commodities (Hara 1980, pp. 7–8).

As stated above, by June 1937, the plan for expanding the production capacities of strategic industries in both Japan and Manchuria was ready to be implemented, when the military and economic environment changed drastically. On July 7, 1937, the Second Sino–Japanese War broke out. The Kwantung Army intended to occupy northern China to “secure their backyard” in preparation for the war with the Soviet Union. The Kwantung Army expected that the operation would end quickly and,

indeed, it had occupied Nanjing by December 1937. However, contrary to expectations, the Chinese government continued to resist even after the fall of Nanjing, moving the capital to Chongqing.

The war with China had positive and negative impacts on the plan for autarchy. On the one hand, by occupying northern China, the Japan–Manchuria Economic Bloc was extended to become the Japan–Manchuria–China Economic Bloc, enabling Japan to acquire natural resources that had been lacking in Japan and Manchuria, such as high quality iron ore and coking coal. On the other hand, the war undermined the assumptions of the plan for expanding production capacity. First, the plan assumed peace during its term, but instead Japan and Manchukuo were required to allocate resources for the war effort at the same time as attempting to expand capacity. Second, the aggression toward China caused further backlash from the United States and the United Kingdom, finally resulting in them imposing economic sanctions on Japan, as described in the next section.

4. Economic sanctions and reaction I: Building the Great East Asia Co-Prosperty Sphere

The first step in the imposition of economic sanctions on Japan by the United States occurred in July 1939, when Japan was notified of the cancellation of the Japan–United States Commerce and Navigation Treaty. The cancellation enabled the United States to impose economic sanctions on Japan at its discretion from January 1940 (Kitaoka 2011, pp. 196–197; Yoshida 2007, pp. 6–7). The Japanese government and the military regarded the outbreak of World War II in September 1939 and the success of Germany’s aggression as a chance to address Japan’s difficult situation. In September 1940, Japan advanced its army to the northern part of French Indochina, intending to close the route for aid from the United States and United Kingdom to China. Japan also intended to establish a base for the expansion of its sphere to Southeast Asia (Yoshida 2007, pp. 3–5), motivated by the acquisition of natural resources lacking in the Japan–Manchuria–China Economic Bloc, including petroleum, bauxite, and rubber (Nakamura 1977, p. 112; USSBS 1946, pp. 11–14). Meanwhile, Japan approached Germany and Italy and signed the Tripartite Pact in September 1940 to restrain the United States and United Kingdom.

Japan’s actions in advancing into the northern part of French Indochina and signing the Tripartite Pact incurred the imposition of a severe economic sanction by the United States. In October 1940, the United States imposed a total ban of steel scrap exports to Japan (Furukawa 2016, pp. 161–162; Asahi Shinbun-sha 1941, pp. 180–181). This sanction had serious implications for Japan because its iron and

steel industry was heavily dependent upon imported scrap from the United States as raw material for steelmaking, as discussed in more detail in the next section.

However, the sanction was not effective in checking Japan's aggression toward Southeast Asia. On the contrary, the hardliners opposed to the United States gained strength in the Japanese Army and Navy as a result of this measure (Yoshida 2007, pp. 6–7). In July 1941, Japan advanced the Army to the southern part of French Indochina. The United States immediately imposed further economic sanctions, totally banning exports of petroleum to Japan and freezing Japan's assets in the United States. Following the United States's example, the United Kingdom and the Netherlands also froze Japan's assets in their territories (Hara 1976a, pp. 261–262).

As indicated in Figure 1 and Table 2, in 1940, Japan was highly dependent on crude oil imports, with the United States and the Dutch East Indies accounting for 76.7% and 14.6%, respectively, of Japan's petroleum imports. Hence, disruption of imports from the United States and the Dutch East Indies was critical to Japan, given that petroleum was essential for waging war. In this sense, the ban on petroleum exports to Japan was the last card of the United States to gain concessions from Japan. In the negotiation between Japan and the United States in 1941, the United States requested Japan to withdraw its military forces from China and French Indochina.

Figure 1, Table 2

Again, however, the economic sanctions were not successful in gaining concessions from Japan. The Japanese government, the military, and the Emperor made a decision to enter into war with the United States, the United Kingdom, and the Netherlands. They calculated that Japan's petroleum stocks would be depleted within two years under the economic sanctions, and hence Japan would no longer be able to resist pressure from the United States; however, opening the war would give Japan a chance to establish its autarchy by occupying Southeast Asia, including the Dutch East Indies and Malaya (Nakamura 1977, p. 115; USSBS 1946, pp. 10–11; Yamamoto 2011, p. 17).

Based on these considerations, Japan opened the war on December 8, 1941 (Japan time). In the six months that followed, the optimistic scenario of the Japanese government and the military seemed to become reality. Japan occupied a broad area of Southeast Asia, including French Indochina, the Dutch

East Indies, Malay, Singapore, Borneo, and the Philippines, and named the whole area under Japan's administration the "Great East Asia Co-Prosperity Sphere" (Hara 1976b, p. 9; Nakamura 1977, p. 118; Yamamoto 2011, pp. 17–18).

5. Economic sanctions and reaction II: Adaptation of industries

A. The battle over sea lanes and the mass production of merchant ships

The "Great East Asia Co-Prosperity Sphere" was endowed with most strategic natural resources, and it appeared that Japan had finally established its autarchy by occupying this sphere. An important point was that mainland Japan and the occupied areas in East and Southeast Asia were separated by the sea. Hence, for Japan to utilize the Sphere's natural resources for its industrial production, it was necessary to transport them via the sea lanes from the occupied areas to Japan. This situation made the battle over sea lanes crucial for both Japan and the United States (Cohen 1949, pp. 104–109).

When the war commenced, the Japanese Navy was not well prepared for defending the sea lanes from submarines over a wide area including Southeast Asia. When World War I broke out, the Navy established the Special Department for European War History to study the experience of the war, including the British Navy's anti-submarine operations for safely escorting merchant ships through sea lanes. However, despite these studies, the knowledge gained was not reflected in the subsequent actual preparations for the war. When the Pacific War broke out, sea transportation defense was included in the missions of the Third Section of the Bureau Armament, the Ministry of the Navy. However, the retrospective reflections of an ex-lieutenant from this section suggested that they were overwhelmed with another mission, i.e., drafting merchant ships (War History Section, Institute for Defense Study, Agency of Defense 1971, pp. 13–18). In November 1943, the Marine Escort General Headquarters was established in the Navy when losses of merchant ships reached a critical level. In his speech on opening the General Headquarters, the President of the Naval General Staff, Shushin Nagano, stated that:

"Founding the Marine Escort General Headquarters now may be like calling a doctor after a patient fall[s] critically ill, but I ask all of the concerned officers to make wholehearted efforts in this national crisis" (ibid, pp. 301–303, authors' translation).

Just before the Pacific War was declared, a Navy lieutenant, Atsushi Oi, who later joined the Marine Escort General Headquarters when it was founded, attempted to inform the naval officers that obtaining oil in the Dutch Indies and transporting the oil to Japan were completely different issues, arguing that the sea transportation was the most difficult aspect; however, his arguments were not met with approval (Oi 1975, pp. 33–34). The negative attitude of the Navy to the merchant ship escort reflected its conventional strategy of focusing on decisive encounters between fleets (War History Section, Institute for Defense Study, Agency of Defense 1971, pp. 7–8).

Before the Pacific War, the United States Navy also focused on decisive encounters between fleets. However, the Japanese attack on Pearl Harbor and the serious damage to the Pacific Fleet completely changed its strategy. Immediately after the attack, the headquarters of the United States Navy gave the order for unlimited submarine and air attacks on Japan. One of the reasons for the change in strategy was that the United States Navy lost a substantial part of its Pacific Fleet. The United States Navy followed the example of the German submarine operations during World War I and World War II in conducting the unlimited submarine and air attacks (War History Section, Institute for Defense Study, Agency of Defense 1971, pp. 183–184). Initially, however, its submarine operations were not very successful because of the low quality of its torpedoes; issues with detonating devices and depth sensors prevented torpedoes from exploding. In early 1943, when these problems were fixed, the efficiency of the submarine operations was enhanced. Furthermore, the United States Navy adopted a new tactic of attacking merchant ships with a group of submarines, which made the operations highly effective (*ibid.*, pp. 183–184, pp. 291–292).

The evolution of the submarine operations of the United States Navy was reflected in the damage to Japanese merchant ships. The dotted lines in Panels A and B of Figure 2 indicates the gross tons of sunk cargo ships and tankers, respectively. Even in the first and second quarters of 1942, when Japan prevailed in the Western Pacific Ocean, more than 150,000 gross tons (GT) of cargo ships were sunk in each quarter as a result of attacks by the United States Navy. After the Midway Sea Battle in June 1942, the quantity of sunk cargo ships in the third and fourth quarters of 1942 increased to 300,000–400,000 GT in each quarter. These losses were much larger than anticipated by the military, as reported at the Liaison Conference between the Government and the Imperial Headquarters on October 23, 1941, where the propriety of opening the war with the United States, the United Kingdom, and Netherlands was discussed. At that Conference, the military reported that it had anticipated merchant ship losses of 800,000–1 million GT annually, i.e., losses of 200,000–250,000 GT quarterly (The Staff Headquarters

of Army 1967, p. 369). In the third quarter of 1943, cargo ship losses rose even higher, exceeding 600,000 GT. In addition to cargo ships, substantial quantities of tankers were sunk. In 1943, such losses amounted to 20,000–70,000 GT each quarter; in the first quarter of 1944, losses of tankers increased very sharply to more than 200,000 GT.

Figure 2

In May 1942, facing huge losses of cargo ships and tankers, the government and the Navy took the drastic measure of adopting the “Planned Shipbuilding” scheme, the aim of which was to mass produce merchant ships (Okazaki 2023). This scheme had the following components. First, the administration of shipbuilding was transferred from the Ministry of Communication to the Ministry of the Navy, so that the Navy could coordinate the building of naval ships and merchant ships. In addition, it was expected that the political power of the Navy would ensure the distribution of materials for shipbuilding. Second, private shipyards concentrated on building the Wartime Standard Vessels, for which priority was given to mass production and saving materials at the cost of cruising speed and durable years, especially in the case of the Second Wartime Standard Vessels designed by the Technical Department of the Navy in late 1942. Each private shipyard was assigned to build one or two types of Wartime Standard Vessels. Third, the Technical Department of the Navy managed shipbuilding at private shipyards according to the “Bar Chart.” That is, the Technical Department planned a timeline for each ship built at each shipyard, using a bar chart to illustrate the timeline. Finally, Wartime Standard Vessels were purchased by a public corporation, Industrial Equipment Corporation, from shipyards to sell to marine shipping companies. Under this scheme, private shipyards not only adopted basic technological innovations, block building, and electric welding, but also devised various ingenuities at the shop-floor level in customizing the design of the Wartime Standard Vessels and improving operations, which resulted in sharp increases in production and labor productivity, as well as reductions of shipbuilding periods.

The effect of the Planned Shipbuilding scheme is reflected in Figure 2. The quantity of cargo ships newly built increased from around 60,000 GT in each quarter in 1942 to 200,000–300,000 GT in each quarter in 1944. In addition, the quantity of tankers newly built increased from around 60,000 GT in each quarter in 1942 to around 250,000 GT in each quarter in 1944. Furthermore, substantial numbers

of cargo ships were transformed to tankers, reflecting the strategy of giving priority to transporting petroleum from the Dutch East Indies to Japan.

It is apparent that the loss of merchant ships exceeded the rate at which they could be replaced by shipbuilding despite the sharp acceleration in production under the Planned Shipbuilding scheme. To evaluate the contribution of the Planned Shipbuilding scheme, Panels A and B of Figure 3 present simple simulations based on assuming that the quantity of newly built ships and net transformations is fixed at the average for 1942, before the Planned Shipbuilding scheme was fully fledged. Figure 3 illustrates how swiftly and how much earlier Japan's marine shipping capacity would have collapsed if the shipbuilding had not been accelerated from 1943. In this sense, the mass production of merchant ships under the Planned Shipbuilding scheme was an adaptation of the Japanese economy to the blockade that was effective to some extent.

Figure 3

B. Adaptation of the iron and steel industry

The iron and steel industry was the industry most seriously and negatively impacted by the economic sanctions in the early stages. As mentioned above, the United States banned steel scrap exports to Japan when the Japanese Army advanced to the northern part of French Indochina in September 1940. Figure 4 indicates the consumption of scrap and pig iron by the Japanese iron and steel industry for steelmaking. As shown, the industry consumed much larger quantities of scrap than of pig iron for steelmaking. In 1939, more than half of Japan's scrap was imported, and the United States accounted for 98.9% of its total scrap imports. In 1940, scrap import from the United States halved, and in 1941 they were almost zero (Table 3).

Figure 4, Table 3

To cope with this difficult situation, the government decided to expand production equipment for the integrated production of pig iron and steel to overcome its dependency on imported scrap.

Simultaneously, the government stressed the importance of collecting domestic scrap and asked for the Japanese people's cooperation in doing so (*Asahi Shinbun*, December 28, 1940). Indeed, the government carried out a "Special Collection of Iron and Steel" for public institutions from April 1941, and for private establishments from July 1941. Furthermore, in September, the Metal Collection Act was legislated, which authorized the compulsory collection of metal. In November 1942, metal collection was expanded to ordinary households (*Asahi Shinbun-sha* 1944, p. 118). From April 1943, metal collection was related to the policy of industrial adjustment. That is, the government ordered "nonessential" establishments to close and scrap their equipment, which was then used for steelmaking (*Asahi Shinbun-sha* 1945, pp. 118–119). As indicated in Table 3, the domestic supply of scrap more than doubled between 1939 and 1943.

From the time of the government's decision in December 1940, pig iron production in Japan increased consistently (Figure 5). Based on the increase in pig iron production, the ratio of pig iron to scrap in steelmaking rose (Figure 4). While the consumption of scrap per unit of steel declined sharply from 1939, the consumption of pig iron per unit of steel increased sharply. In other words, the Japanese iron and steel industry substituted pig iron for scrap to cope with the embargo on scrap exports to Japan by the United States.

Figure 5

To produce pig iron, Japan required iron ore, and it was largely dependent on imports for its supply of iron ore (Table 4). In 1939, more than 80% of Japan's total iron ore supply was imported, and only 22% of its imports came from Japan's overseas sphere, i.e., from Korea, Manchuria, and China. During the Pacific War, Japan occupied major areas from which it had imported iron ores before the war. However, as iron ores were heavy and bulky, it was difficult to transport them to Japan during the war when constraints on marine shipping capacity were severe. Nevertheless, the total supply of iron ores increased until 1941, and remained at a fairly high level until 1944. The major sources of iron ores were imports from China, domestic production, and stocks. Importing from China was relatively easy because China was not geographically close to Japan, but also the sea lane between Japan and China in the East China Sea was relatively safe from submarine attacks by the United States Navy. Thus, Japan's

maintenance of its iron ore supply enabled its maintenance of pig iron production and, thereby, of steel production until 1944.

Table 4

6. The limit of adaptation

There was a limit to the extent to which Japan could adapt to the blockade as it became increasingly strict. As mentioned in the previous section, although merchant shipbuilding increased very sharply, the increase in the loss of merchant ships was still sharper, and the stock of ships for importing natural resources, therefore, continued to decline. The impact of this decline in Japan's marine shipping capacity is reflected in the decline of imports at the macro level (Figure 6). Real imports to Japan (in 1934–36 prices) declined from 5,474 million yen in 1940 to 2,445 million yen in 1944. Real gross national product (GNP) was 20,796 million yen in 1940 and 20,634 million yen in 1944. The fact that real GNP was maintained despite the sharp decline in imports indicates the effectiveness of Japan's adaptation efforts to substitute domestic materials for the imported materials that were no longer available. These efforts were exemplified by the example of the iron and steel industry discussed above. Nevertheless, despite these efforts, Japan was not able to increase production.

Figure 6

The stagnation of production highlighted the various trade-offs being made. At the macro level, increasing military expenditure suppressed private consumption. Figure 7 clearly illustrates this trade-off. In the period from 1937 to 1944, when Japan was at full-scale war, real private consumption and real government expenditure were negatively correlated, exemplifying the typical “gun–butter” trade-off of wartime. Declines in private consumption affected the Japanese people's nutrition. As shown in Figure 8, food consumption measured in calories declined continuously from 1937. The deterioration in nutritional status was reflected in children's physical development. In December 1943, the Ministry of

Welfare conducted a nutritional status survey (Research Institute of the Ministry of Welfare 1943), which provides data on heights and weights for two cohorts born in 1924 and 1931. Panels A and B of Figure 9 show the age–height profiles of boys (girls) in the industrial and agricultural/fishing areas in Panels A and B (C and D), respectively. It is evident that the growth in height for children born in 1931 is lower than that for children born in 1924 in the industrial area, whereas children in agricultural/fishing areas were not affected. This implies that the nutritional status in the industrial area deteriorated from the late 1930s.

Figure 7, Figure 8, Figure 9

The literature on the Japanese war economy has emphasized that the deterioration of people's living standards during the war was serious and that the Japanese people stoically adapted and endured this deterioration (Nakamura 1971; Yamazaki 1979). This view is supported by Figures 7, 8, and 9, but there was nevertheless a limit to this endurance. The Material Mobilization Plan for April–June in 1945 gave higher priority to food supply than to materials for munitions production. This was because the government and the military were concerned with social instability (Okazaki 1997). In other words, in the final stage of the war, the government and the military changed the balance in the gun–butter trade-off toward the latter.

Finally, there was a trade-off between naval ship building and merchant ship building. Because private shipyards built substantial quantities of naval ships from the prewar period, there was potential conflict between naval ship building and merchant ship building. This is indeed one of the reasons why the Navy took charge of both merchant and naval shipbuilding in 1942. Figure 10 shows the quantity of naval ships built at naval and private shipyards, indicating that private shipyards built more naval ships than did naval shipyards during the Pacific War. However, the ratio of naval ships in the total quantity of ships built by private shipyards declined sharply in this period. This suggests that the sharp increase in merchant shipbuilding constrained naval shipbuilding by private shipyards, which was also an effect of the submarine attacks by the United States Navy.

Figure 10

7. Conclusion

Japan's participation in World War II was a consequence of self-reinforcing cycles of Japan's aggressions in East Asia and the economic sanctions imposed on Japan by the Western countries. The motivation for Japan's aggressions was to construct an autarchic sphere that would enable it to endure future total war. However, the aggressions themselves incurred economic sanctions by the Western countries. In particular, the embargoes on steel scrap and petroleum imports to Japan by the United States caused serious damage to the Japanese economy, which finally pushed Japan to open the war with the United States, the United Kingdom, and the Netherlands.

During the war, the United States blocked transportation of natural resources to Japan from the Great East Asia Co-Prosperity Sphere using its naval power, particularly submarine attacks on Japanese ships. Japan managed to adapt to this blockade strategy of the United States by adopting various measures, including accelerating merchant ship building to maintain the marine shipping capacity and substituting domestic resources for imported raw materials. Although limits were ultimately reached, these measures for adaptation enabled Japan to continue the war for more than three and a half years.

References

- Advisory Committee on Trade Questions in Time of War (ATB) (1932), 'Economic Sanctions against Japan', CAB 4/21/1083-B, The National Archives, Kew.
- Advisory Committee on Trade Questions in Time of War (ATB) (1937), 'Economic Sanctions against Japan', CAB 4/26/1365-B, The National Archives, Kew.
- Asahi Shinbun-sha (1944) *Asahi Keizai Nenshi (Asahi Economic Yearbook)* 1942/1943 issue, Tokyo: Asahi Shinbun-sha (in Japanese)
- Asahi Shinbun-sha (1945) *Asahi Keizai Nenshi (Asahi Economic Yearbook)* 1944 issue, Tokyo: Asahi Shinbun-sha (in Japanese)
- Bennett, Gill (1992), 'British Policy in the Far East 1933-1936: Treasury and Foreign Office', *Modern Asian Studies*, 26:3, pp. 545-68.

- Best, Antony (1995), *Britain, Japan and Pearl Harbor: Avoiding War in East Asia, 1936-41*, Oxon: Routledge.
- Best, Antony (2013), 'The Leith-Ross Mission and British Policy towards East Asia, 1934-7', *The International History Review*, 35:4, pp. 681-701.
- Butler, Rohan and J.P.T. Bury, eds. (1960), *Documents on British Foreign Policy 1919-1939*, Series 2, Vol. 8, London: HMSO.
- Cohen, Jerome B. (1949) *Japan's Economy in War and Reconstruction*, Minneapolis: University of Minneapolis Press
- Craft, Stephen G. (2000), 'Saving the League: V.K. Wellington Koo, the League of Nations and Sino-Japanese Conflict, 1931-39', *Diplomacy & Statecraft*, 11:3, pp. 91-112.
- Dallek, Robert (1995), *Franklin D. Roosevelt and American Foreign Policy, 1932-1945*, Oxford: Oxford University Press.
- Dreifort, John E. (1991), *Myopic Grandeur: The Ambivalence of French Foreign Policy toward the Far East, 1919-1945*, Kent OH: Kent State University Press.
- Economic Planning Agency (1961) *Kokumin Shotoku Hakusho (White Paper of National Income)*, Tokyo: Printing Bureau of the Ministry of Finance (in Japanese).
- Furukawa, Takahisa (2016) *Showa-shi (History of the Showa Era)*, Tokyo: Chikuma Shobo (in Japanese)
- Hara, A (1972a) "1930 nendai no Manshu keizai tosei seisaku" (Economic control policies in Manchuria in the 1930s) in Manshu Shi Kenshukai (ed.) *Nihon Teikokushugi Kano Manshu (Manchuria under the Japan Empire)*, Tokyo: Ochanomizu Shobo: 3-114 (in Japanese)
- Hara, Akira (1976a) "Senji Keizai tosei no kaishi," (Start of wartime economic controls), in Naohiro Asao et.al. eds., *Iwanami Koza Nihon Rekishi (Iwanami Lectures on the Japanese History)* 20, Tokyo: Iwanami Shoten: 217-268 (in Japanese)
- Hara, Akira (1976b) "'Daitoa Kyo-eiken" no keizaiteki jittai' (Economic reality of the 'Great East Asia Co-prosperity Sphere,' *Tochi Seido Shigaku (Journal of Agrarian History)* 71: 1-28 (in Japanese)

- Hara, Akira (1980) “Manshu Gokanen Keikaku Ritsuanshorui Kaidai” (Commentary on the documents on the Five-Year Plan for Manchuria,” Tokyo; Ryukei Shosha: 1-13 (in Japanese)
- Haslam, Jonathan (1992), *The Soviet Union and the Threat from the East, 1933-41: Moscow, Tokyo and the Prelude to the Pacific War*, Basingstoke: Macmillan.
- Hatano, Sumio (1978), ‘Leith-Ross no Kyokuto Homon to Nihon: Chugoku Heisei Kaikaku o Megutte [Leith-Ross Mission’s Visit to Far East and Japan’s Response]’, *Kokusai Seiji* [International Relations], 58, pp. 86-104.
- Higuchi, Mao (2021), *Kokusai Renmei to Nihon Gaiko: Shudan Anzenhosho no ‘Saihakken’* [The League of Nations and Japanese Diplomacy: The Rediscovery of Collective Security], Tokyo: University of Tokyo Press.
- Inaba, Masao et. al. eds., *Taiheiyo senso eno Michi: Kaisen Gaiko-shi (Road to the Pacific War: Diplomatic History toward the Outbreak of the War)*, supplementary volume, Tokyo: Asahi Shinbunsha (in Japanese)
- Ito, Takashi (1989) “Kokuse’ to ‘kokusaku,’ tosei,’ ‘keikaku” (‘National policy,’ ‘policy,’ ‘control,’ and ‘plan” in Takafusa Nakamura and Konosuke Odaka eds., *Niju Kozo (Dual Structure)*, Tokyo: Iwanami Shoten: 324-366 (in Japanese)
- Iriye, Akira (1987), *The Origins of the Second World War in Asia and the Pacific*, London: Longman.
- Iwama, Satoshi (2018), *Asia Taiheiyo Senso to Sekiyu: Senbi, Senryaku, Taigaiseisaku* [War in the Asia-Pacific and Oil: War Preparation, Strategy, Foreign Policy], Tokyo: Yoshikawa Kobunkan.
- Japan Broadcasting Corporation (2015) “Kyodai soshiki ‘Rikugun’ boso no mekanizumu,” (Mechanism of the Army’s runaway” in Japan Broadcasting Corporation ed. *Nihonjin ha Naze Sensou ni Mukattanoka: Gaiko, Rikugun Hen* (Why Did Japanese Walk the Path to the War?: Volume on Diplomacy and Army), Tokyo: Shincho-sha (in Japanese).
- Japan Iron and Steel Federation (1961) *Nihon no Tekko Tokei* (Statistics on Iron and Steel in Japan), 1960 issue, Tokyo: Japan Iron and Steel Federation (in Japanese)

- Jeansonne, Glen (2012), *The Life of Herbert Hoover: Fighting Quaker 1928-1933*, New York: Palgrave Macmillan.
- Johnson, Charmers (1982) *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*, Stanford: CA, Stanford University Press
- Kitaoka, Shinich (2011) *Nihon Seiji-shi (Political History of Japan: Diplomacy and Power)*, Tokyo: Yuhikaku (in Japanese)
- Kato, Yoko (2007) *Manshu Jihen kara Nicchu Senso e (From the Manchurian Incident to the Second Sino-Japanese War)*, Tokyo: Iwanami Shoten (in Japanese)
- Kokumin Keizai Kenkyu Kyokai (1954) *Kihon Kokuryoku Dotai Soran (Compendium of the Movement of the Basic National Resource)*, Tokyo: Kokimin Keizai Kenkyu Kyokai (unpublished, in Japanese)
- Kokumin Keizai Kenkyu Kyokai and Kinzoku Kogyo Chosakai (1946) “Seisanryoku kakuju keikaku to sono jisseki: Sokatsu Ichiran-hyo (Production Capacity Expansion Plan and its results: Summary tables) (unpublished, in Japanese).
- Lee, Bradford A. (1973), *Britain and the Sino-Japanese War, 1937-1939: A Study in the Dilemmas of British Decline*, London: Oxford University Press.
- McDougall, Derek (1977), ‘The Australian Labour Movement and the Sino-Japanese War, 1937-1939’, *Labour History*, 33, pp. 39-52.
- Metal Bureau, Ministry of Commerce and Industry (1943) *Seitesugyo Sanko Siryo (Reference for the Iron and Steel Industry)*: Tokyo, Metal Bureau, Ministry of Commerce and Industry (in Japanese)
- Miller, Edward S. (2007), *Bankrupting the Enemy: The U.S. Financial Siege of Japan before Pearl Harbor*, Annapolis: Naval Institute Press.
- Mook, H.J. Van (2011), *The Netherlands Indies and Japan: Their Relations 1940-1941*, Oxon: Routledge (original work published in 1944).
- Nakamura, Takafusa (1971) *Senzen-ki Nihon Keizai Seisho no Bunseki (Analysis of the Growth of the Japanese Economy in the Prewar Period)*, Tokyo: Iwanami Shoten (in Japanese).

- Nakamura, Takafusa (1977) “Senso Keizai to Sono Hokai (War economy and its collapse) in Naohiro Asao et. al. eds., *Iwanami Koza Nihon Rekishi (Iwanami Lectures on the Japanese History)* 21, Tokyo: Iwanami Shoten: 110-160 (in Japanese)
- Newcomb, Robinson (1941), ‘American Economic Action Affecting the Orient’, *The Annals of the American Academy of Political and Social Science*, 215:1, pp. 133-139.
- Nish, Ian (2009), *Japan’s Struggle with Internationalism: Japan, China and the League of Nations, 1931-3*, Oxon: Routledge (originally published in 1993).
- Nutrition Section of the Public Health Bureau, Ministry of Welfare (1946) ‘Showa 21 nendo kokumin eiyo jokyo chosa (Survey on the nutrition status of the people in 1946 FY) (<https://www.digital.archives.go.jp/DAS/meta/listPhoto?LANG=default&BID=F2007021516453307030&ID=&TYPE=>) (unpublished, in Japanese).
- Obiya, Shunsuke (2021), ‘Between “Coercive League” and “Consultative League”’: a Reappraisal of Debates Surrounding the “Reform” of the League of Nations’, *International Relations of the Asia-Pacific*, 21:3, pp. 465-492.
- Oi, Atsushi (1983) *Kaijo Goei-sen (Convoy Escort)*, Tokyo: Asahi Sonorama (in Japanese)
- Okazaki, Tetsuji (1997) *Kogyoka no Kiseki: Keizai Taikoku Zenshi (The Path of Industrialization: Prehistory of the Economic Giant)*, Tokyo: Yomiuri Shinbun-sha (in Japanese).
- Okazaki, Tetsuji (2023) “Planning mass production of merchant ships in Japan during the Pacific War,” CIRJE Discussion Paper Series F-1213 (The University of Tokyo)
- Research Institute of the Ministry of Welfare (1943) “Kokumin eiyo no genkyo ni kansuru chosa hokoku (Report of the survey on the nutrition status of the people) in Shun Kaneko ed., *Senji-ka Kokumin Eiyo no Genkyo Chosa Hokokusho (Showa 18 nen (Report on the Nutrition Status Survey during the War)*, Tokyo: Fuji Shuppan, 1998 (in Japanese).
- Resources Agency (1951) *Sekiyu Tokei Nenkan (Yearbook on Petroleum Statistics)*, 1950 issue. Tokyo: Agency of Natural Resources (in Japanese)

Sharkey, John (2000), 'Economic Diplomacy in Anglo-Japanese Relations, 1931-41', in Ian Nish and Yoichi Kibata, eds., *The History of Anglo-Japanese Relations, 1600-2000: Volume II: The Political-*

Diplomatic Dimension, 1931-2000, Basingstoke: Macmillan.

Staff Headquarters of Army ed.(1967) *Sugiyama Memo (Sugiyama Memorandums)*, vol.1:
Tokyo: Hara Shobo (in Japanese)

Steiner, Zara (1993), 'The League of Nations and the Quest for Security', in R. Ahmann, A.M. Birke and M. Howard, eds., *The Quest for Stability: Problems of West European Security 1918-1957*, Oxford: Oxford University Pres.

Strang, G. Bruce (2019), 'Imperial Hubs and their Limitations: British Assessments of Imposing Sanctions on Japan, 1937', in T.G. Otte, ed., *British World Policy and the Projection of Global Power, c.1830-1960*, Cambridge: Cambridge University Press.

Thorne, Christopher (1970), 'The Quest for Arms Embargoes: Failure in 1933', *Journal of Contemporary History*, 5:4, pp. 129-149.

Thorne, Christopher (1972), *The Limits of Foreign Policy: The West, the League and the Far Eastern Crisis of 1931-1933*, London: Macmillan.

Tomatsu, Haruo (2015) "Manshu Jihen kara Kokusai Renmei dattai e" (From the Manchurian Incident to the withdrawal from the League of Nations" in Kiyotada Tsutsui ed., *Showa-shi Kogi: Saishin Kenkyu de Mioru Senso eno Michi (Lectures on the History of the Showa Era: The Road to the War revealed by Recent Studies)*, Tokyo: Chikuma Shobo: 89-106, (in Japanese)

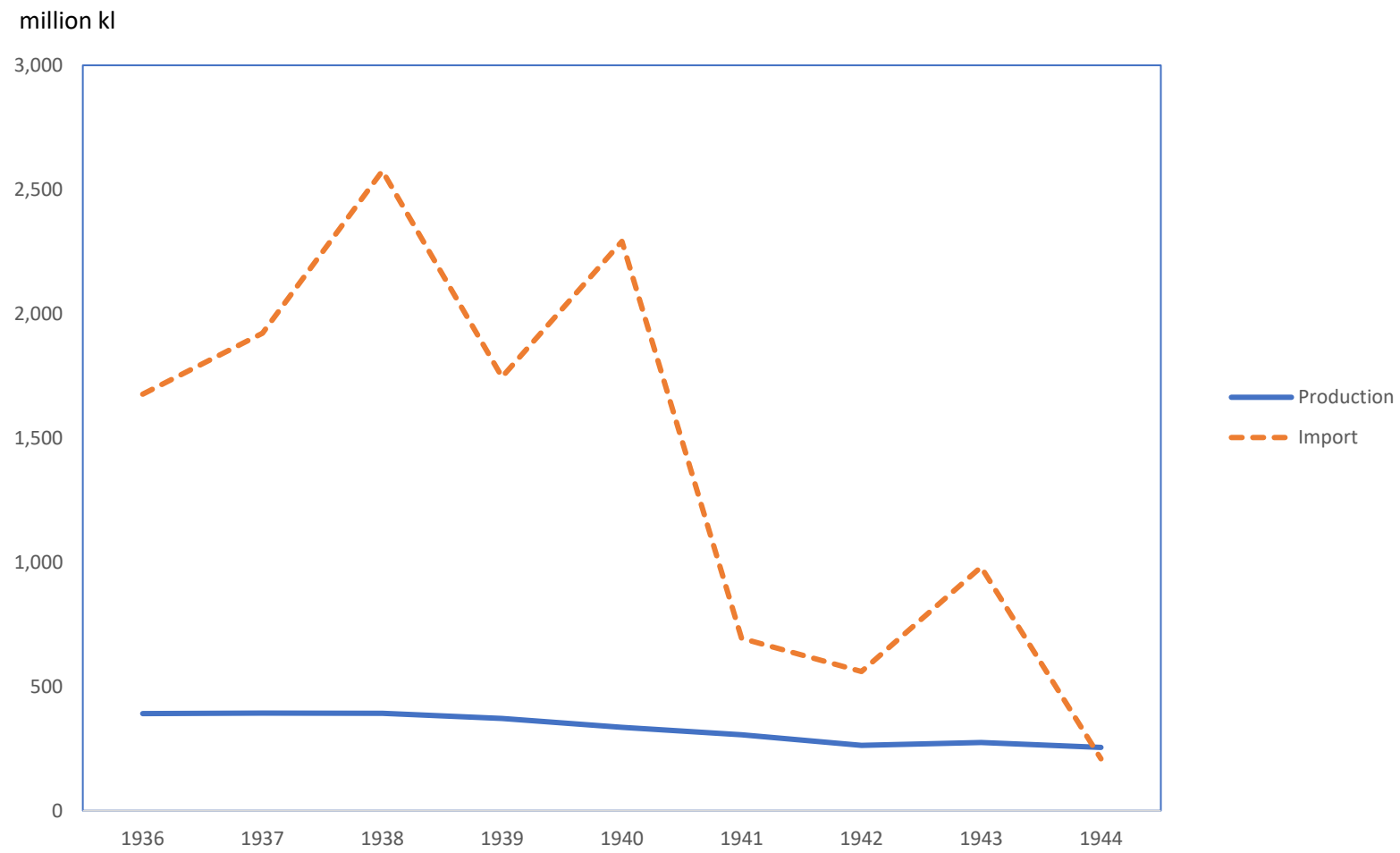
Toyo Keizai Shinpo-sha (1950) *Showa Sangyo-shi (Industrial History of Showa Era)*, vol.3 (in Japanese)

Tsokhas, Kosmas (1995), "'Trouble Must Follow": Australia's Ban on Iron Ore Exports to Japan in 1938', *Modern Asian Studies*, 29:4, pp. 871-892.

United States Strategic Bombing Survey (USSBS) (1946) "The effects of strategic bombing on Japan's war economy," *Final Reports of the United States Strategic Bombing Survey 1945-1947* (National Archives Microfilm Publications)

- Walters, F.P. (1960), *A History of the League of Nations*, London: Oxford University Press.
- War History Section, Institute for Defense Study, Agency of Defense (1971) *Kaijo Goei-sen (Battle for Escorting Merchant Ships)*, Tokyo: Asagumo Shinbun-sha (in Japanese)
- Watanabe, Akio (1985), 'Eibei ni yoru Keizai-seisai no Kiki to Nihon no Taio: 1937-1939 [Japan's Response to the Economic Sanctions of the United States and England, 1937-1939]', in Kindai Nihon Kenkyu-kai, ed., *Nihon-gaiko no Kiki-ninnshiki* [Threat Perception in Japanese Diplomacy], Tokyo: Yamakawa.
- Yamamoto, Yuzo (2003) *'Manshukoku' Keizaishi Kenkyu* (Research on the Economic History of 'Manchukuo'), Nagoya: Nagoya University Press (in Japanese)
- Yamamoto, Y. *"Daitoa Kyoeiken" Keizaishi Kenkyu (Economic History of "Greater East Asia Co-Prosperity Sphere")* Nagoya: Nagoya University Press, 2011 (in Japanese)
- Yamazaki, Hiroaki (1979)
- Yoshida, Hiroshi (2007) *Ajia Taiheiyo Senso (The Asia and Pacific War)*, Tokyo: Iwanami Shoten (in Japanese)
- Young, Arthur N. (1963), *China and the Helping Hand, 1937-1945*, Cambridge MA: Harvard University Press.

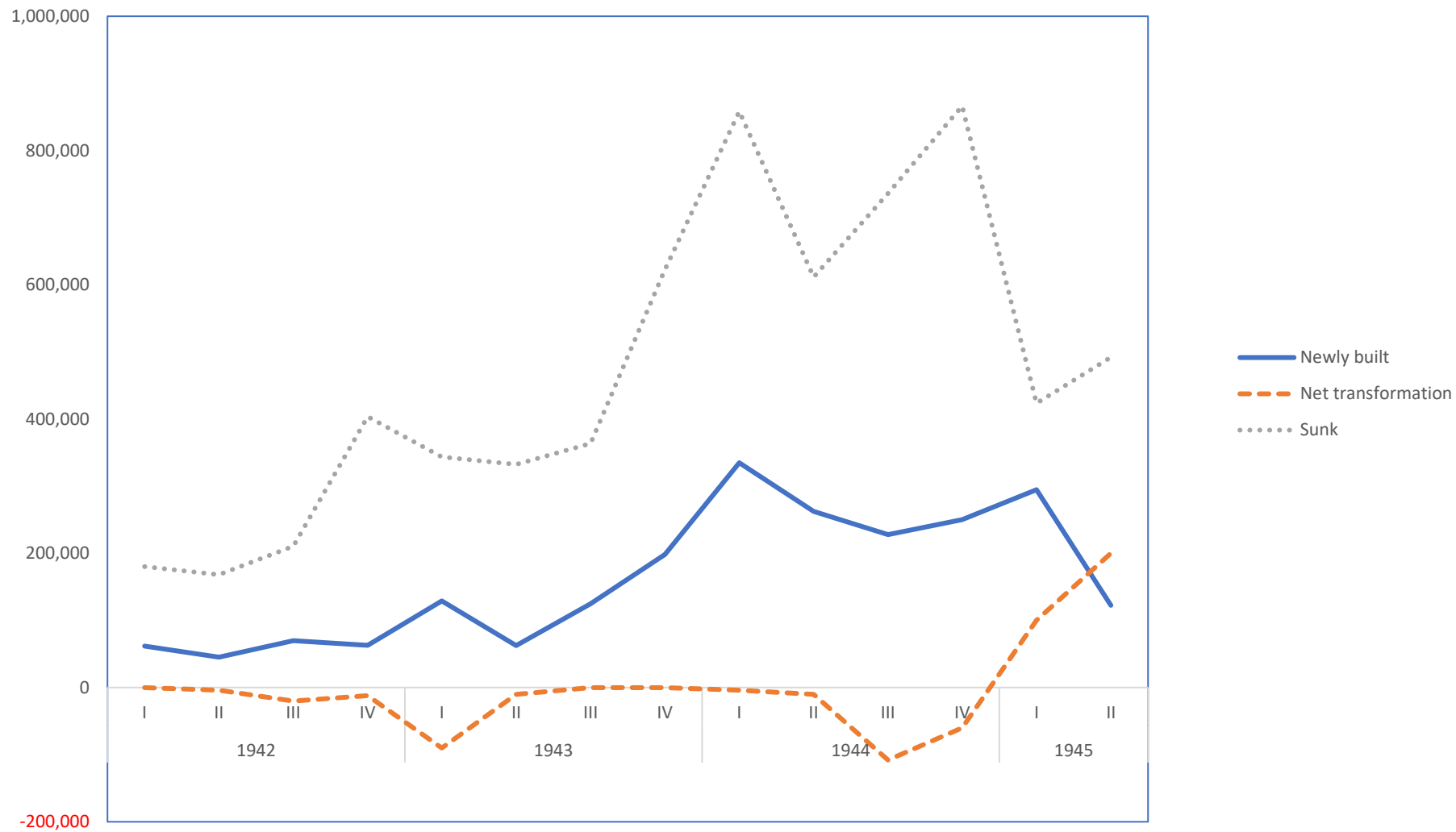
Figure 1 Supply of crude oil in Japan



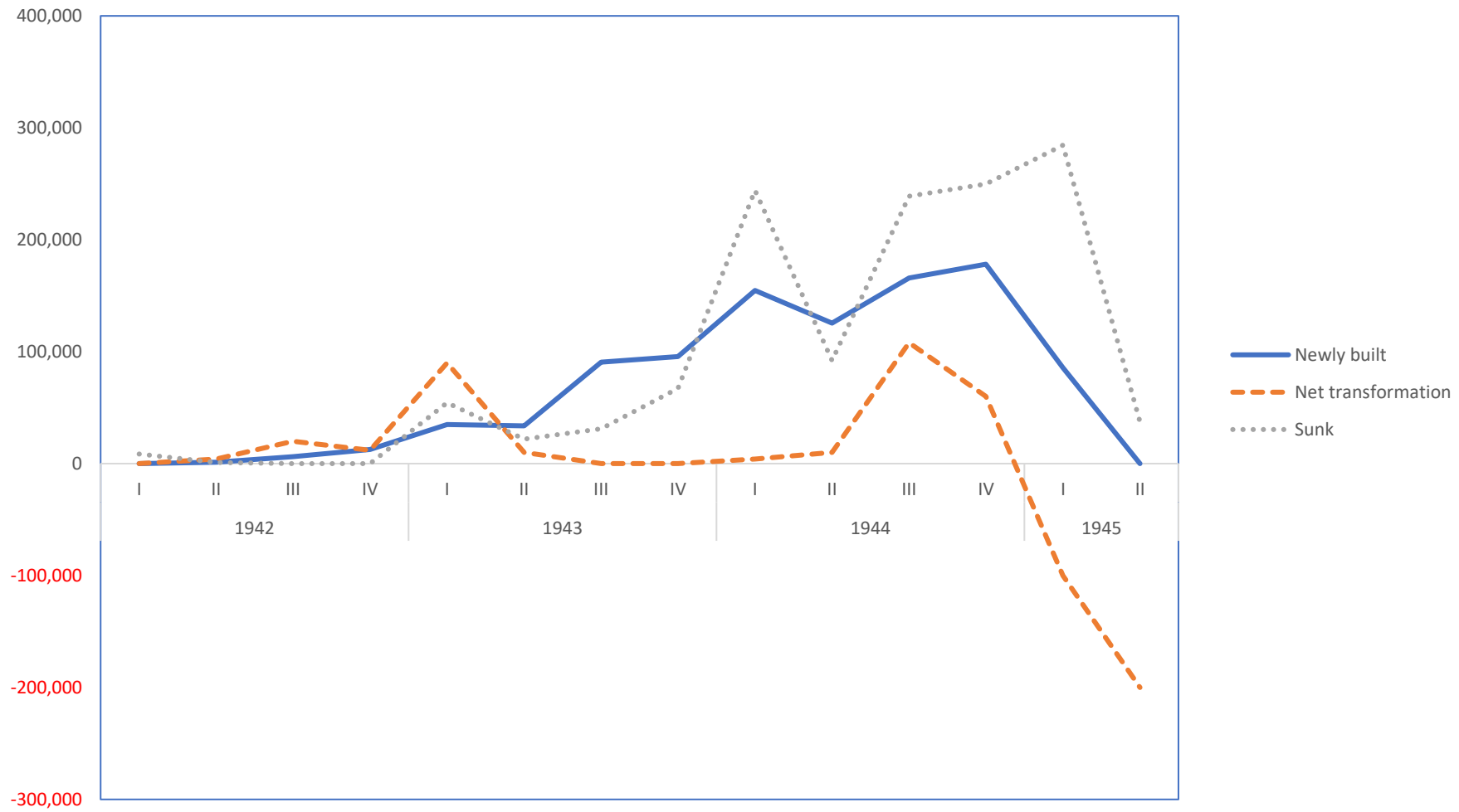
Source: Resources Agency (1951), p.7, p.77.

Figure 2 Increase and decrease of merchant ships

A. Cargo ship
GT



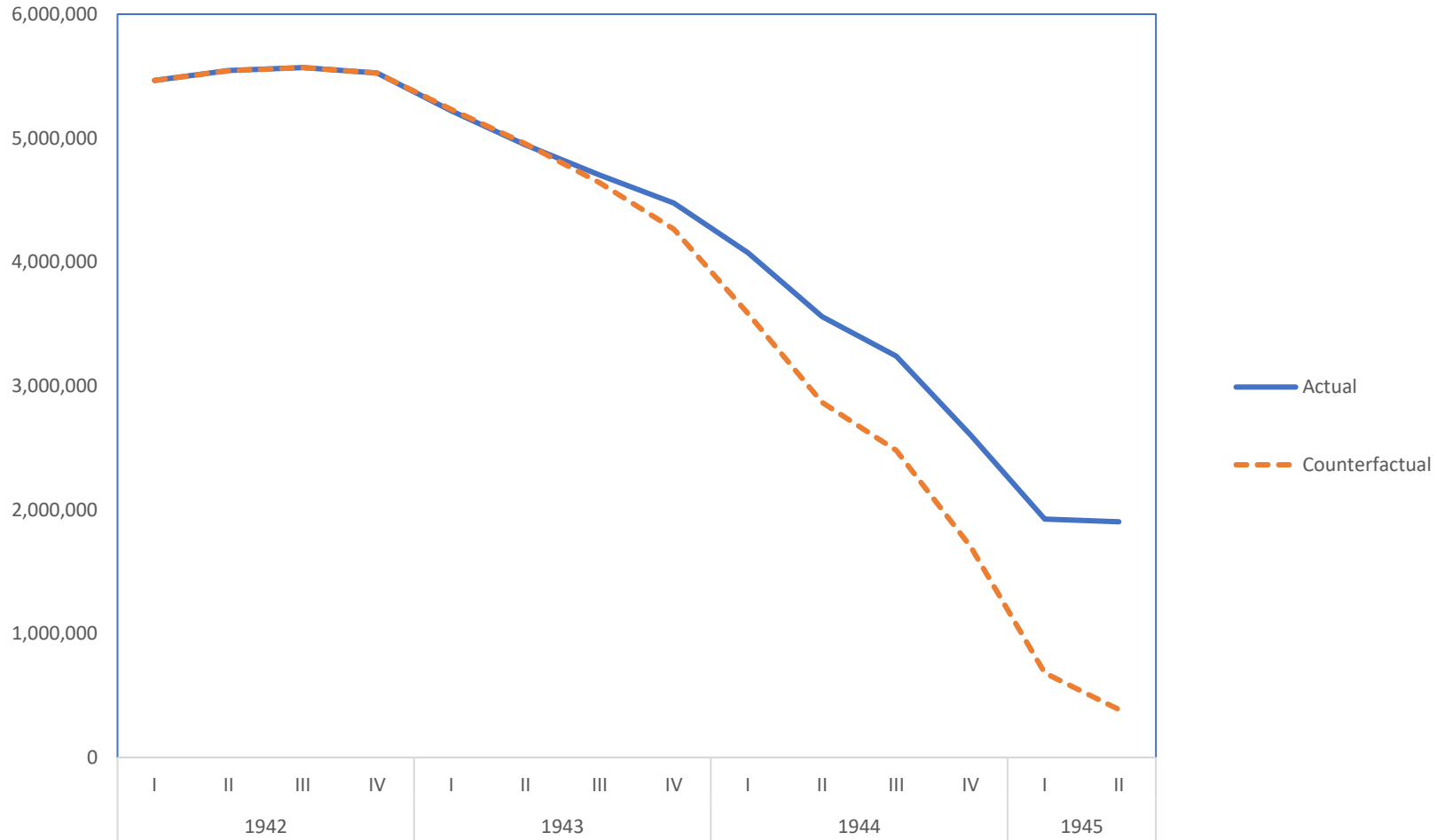
B. Tanker
GT



Source: Oi (1983), pp.383-389

Figure 3 Simulation of marine shipping capacity

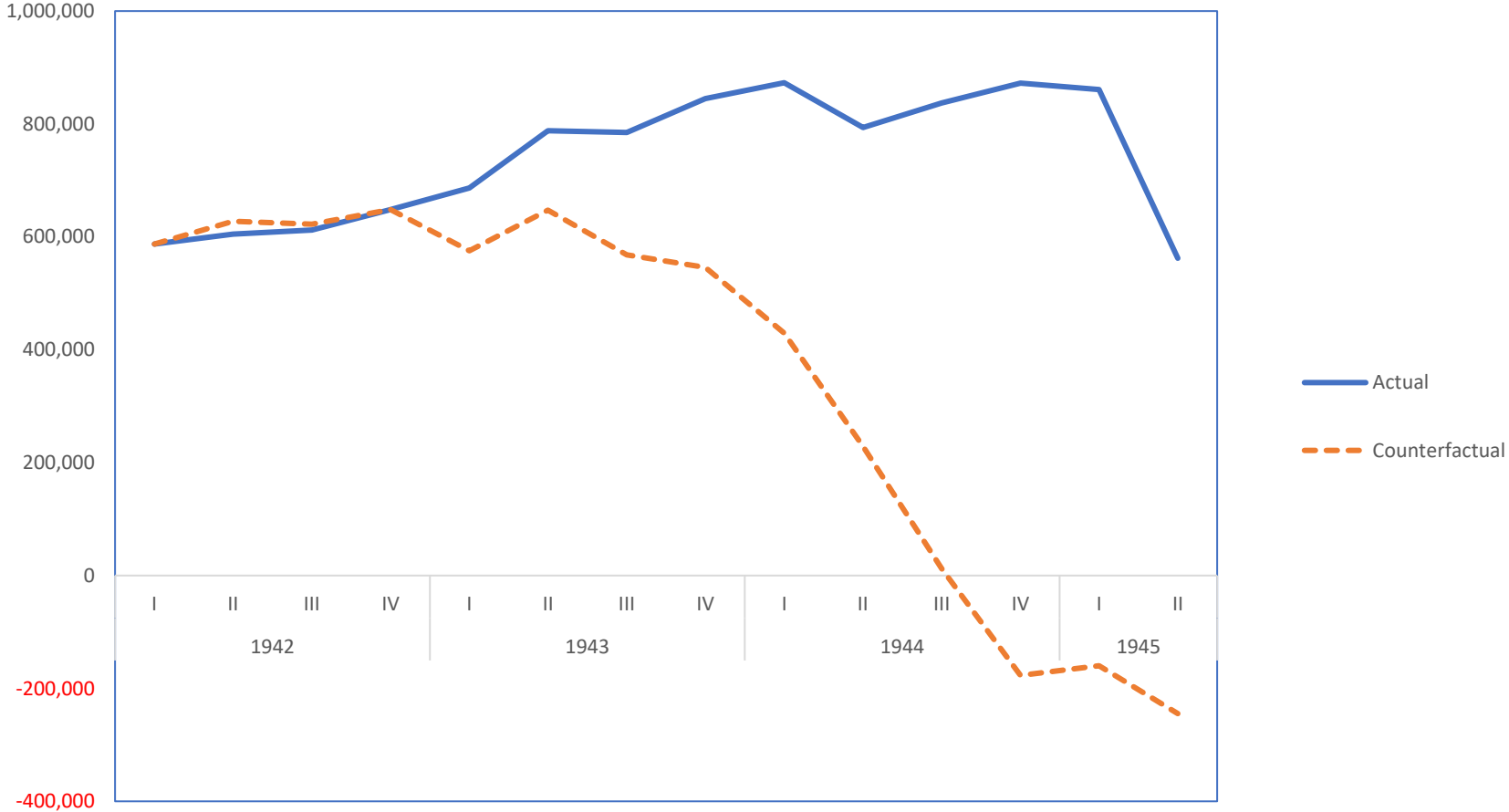
A. Cargo ship
GT



B. Tanker

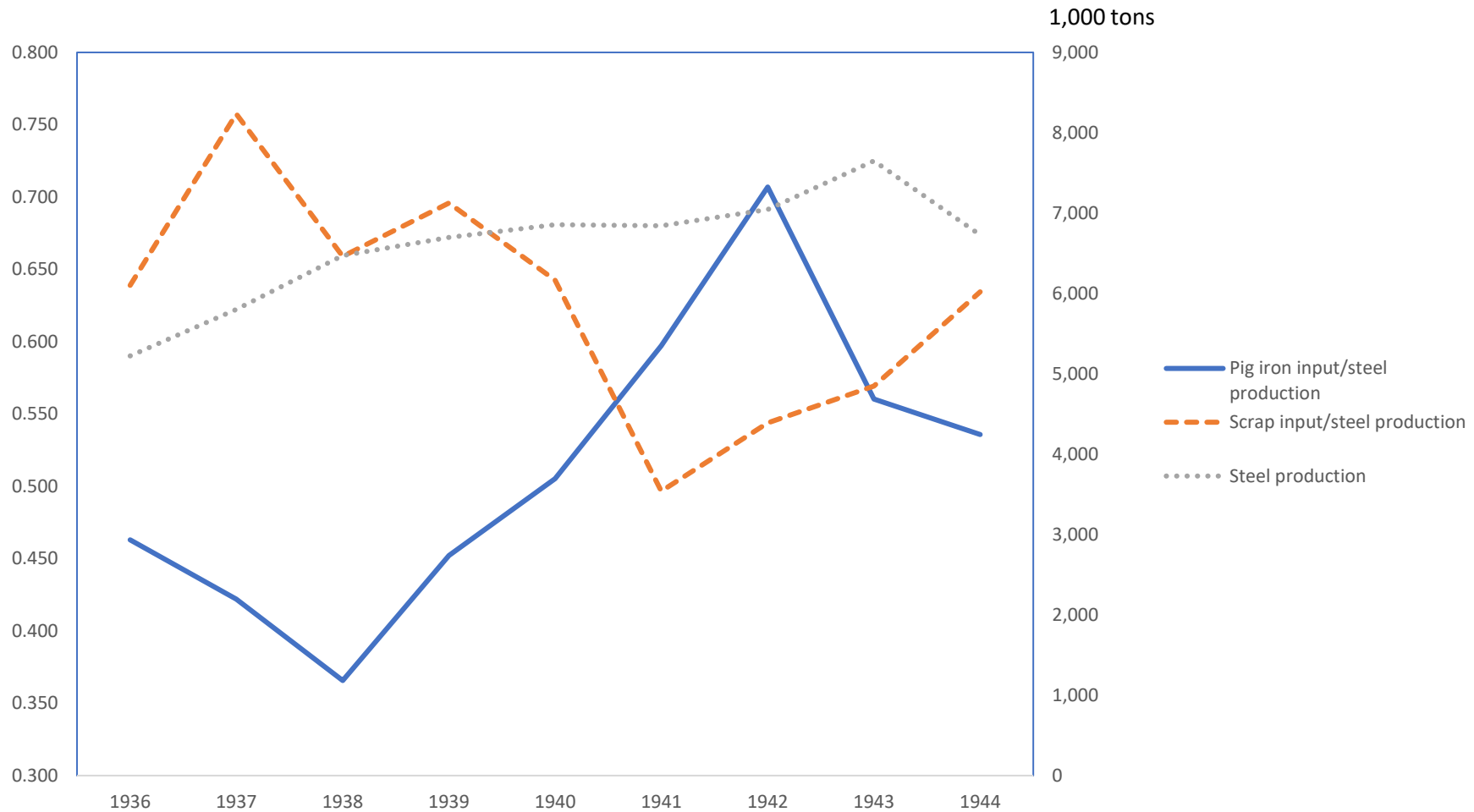
GT

1,000,000



Note: The actual quantities are from Oi (1983), pp.383-389. The counterfactual quantities are the author's calculation.

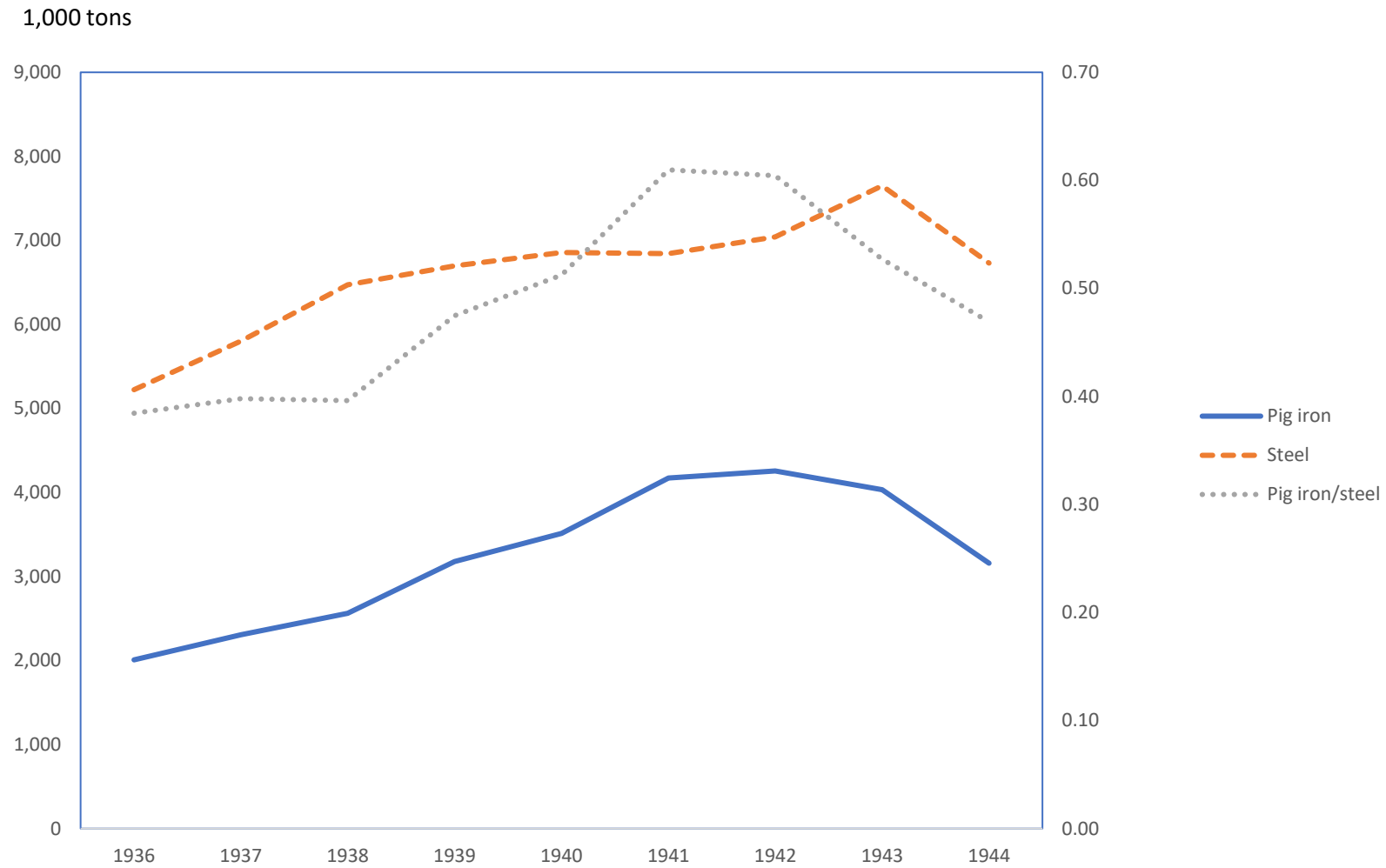
Figure 4 Consumption of scrap and pig iron for steelmaking



Note: Consumption of pig iron in 1941 was obtained from Metal Bureau, Ministry of Commerce and Industry (1943), pp.308-309.

The other data are from Japan Iron and Steel Federation (1961), p.3, p.6.

Figure 5 Production of pig iron and steel in Japan



Source: Japan Iron and Steel Federation (1961), p.1, p.3.

Figure 6 Blockade, import substitution, and real GNP

million yen (1934-36 price)

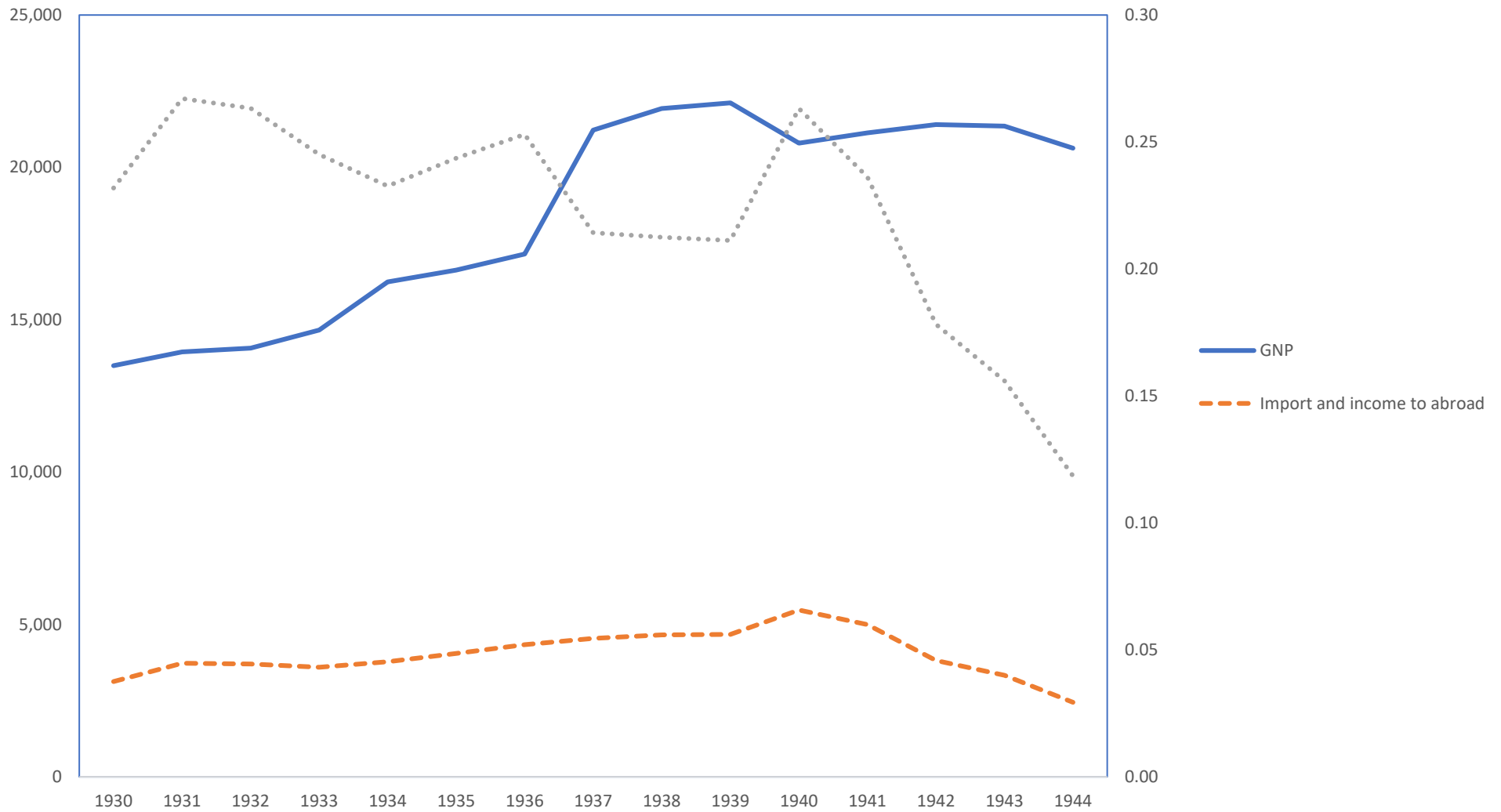


Figure 7 Trade off between government expenditure and private consumption

Government expenditure
(million yen, 1934-36 price)

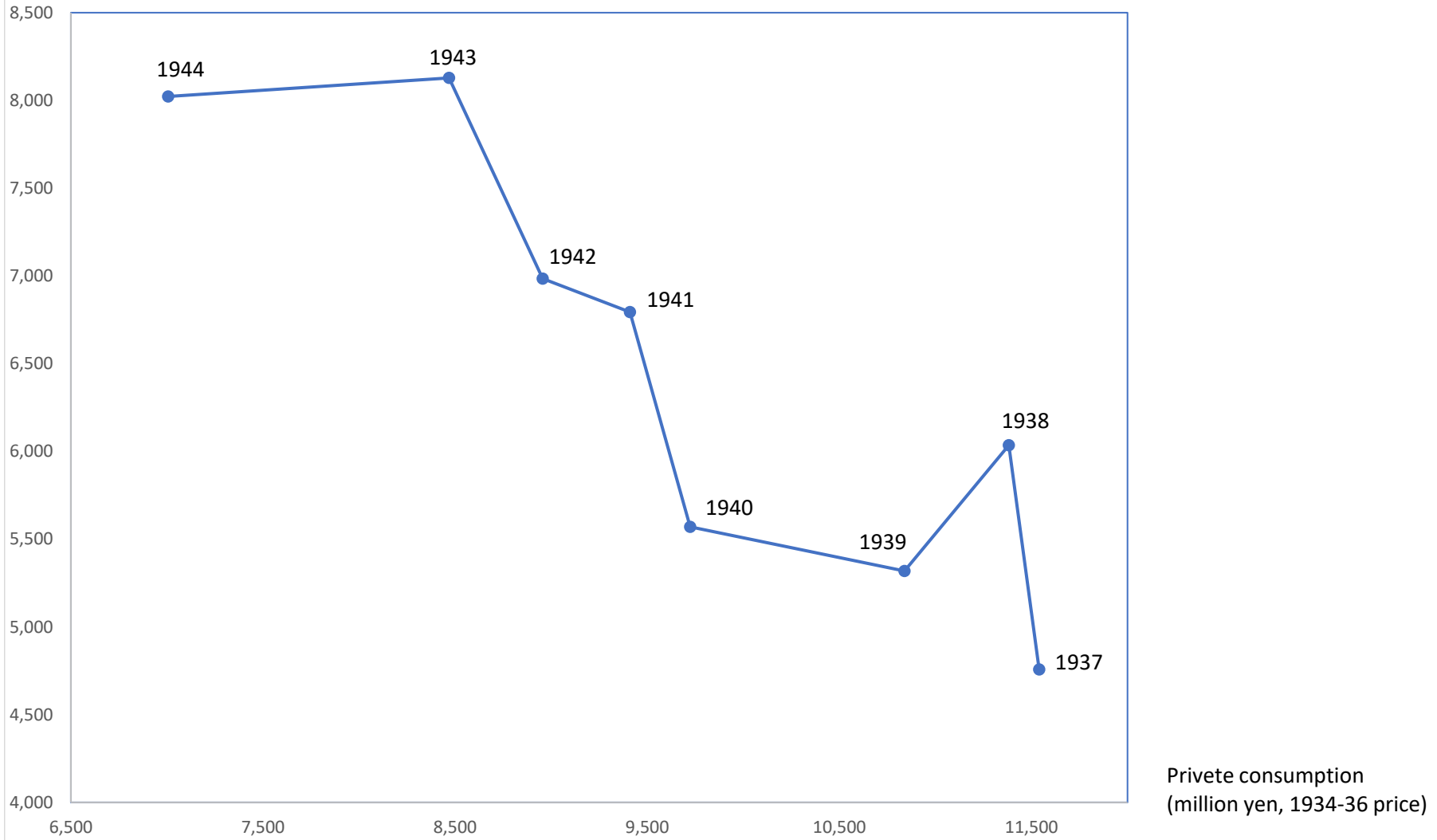
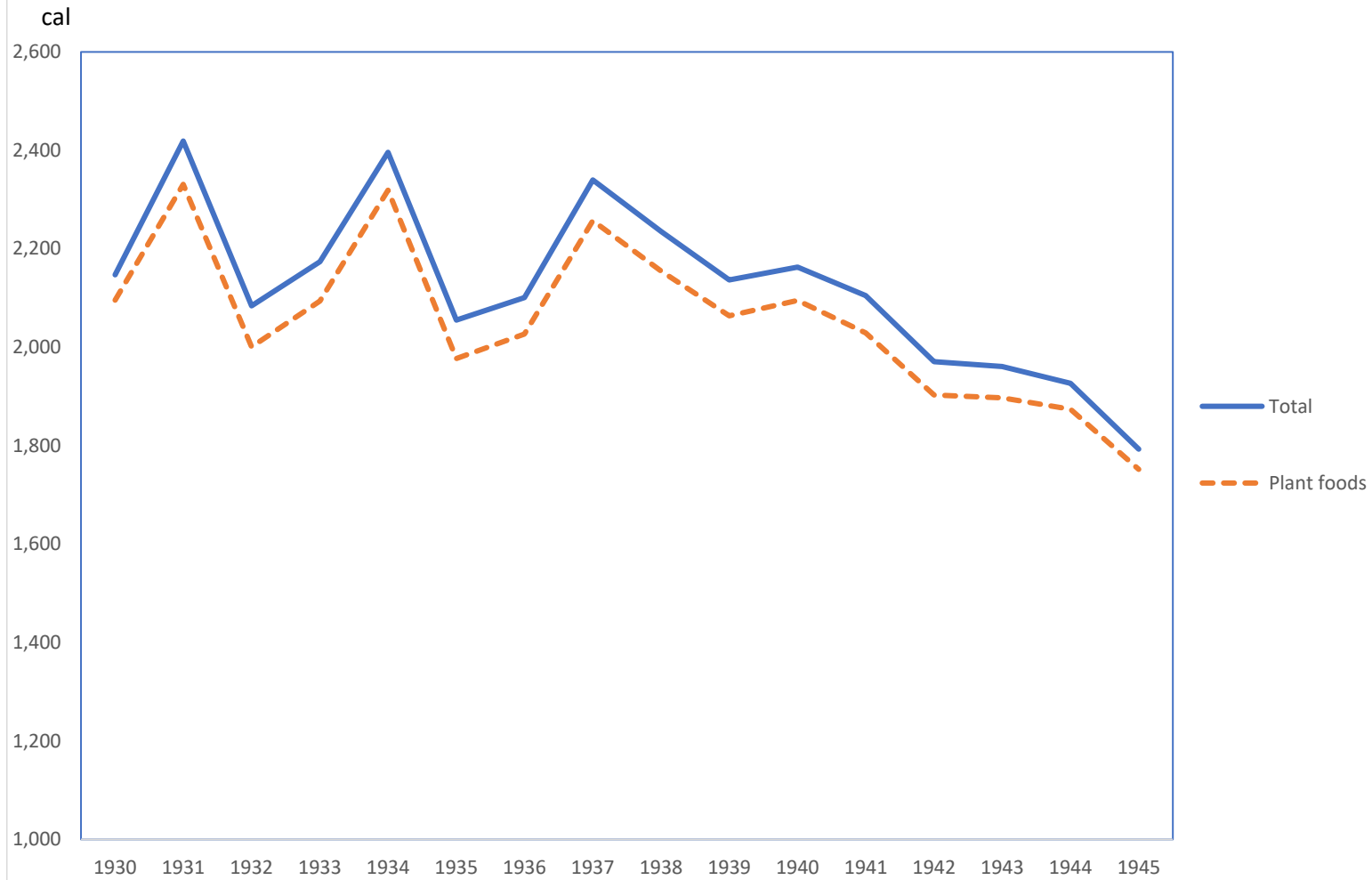


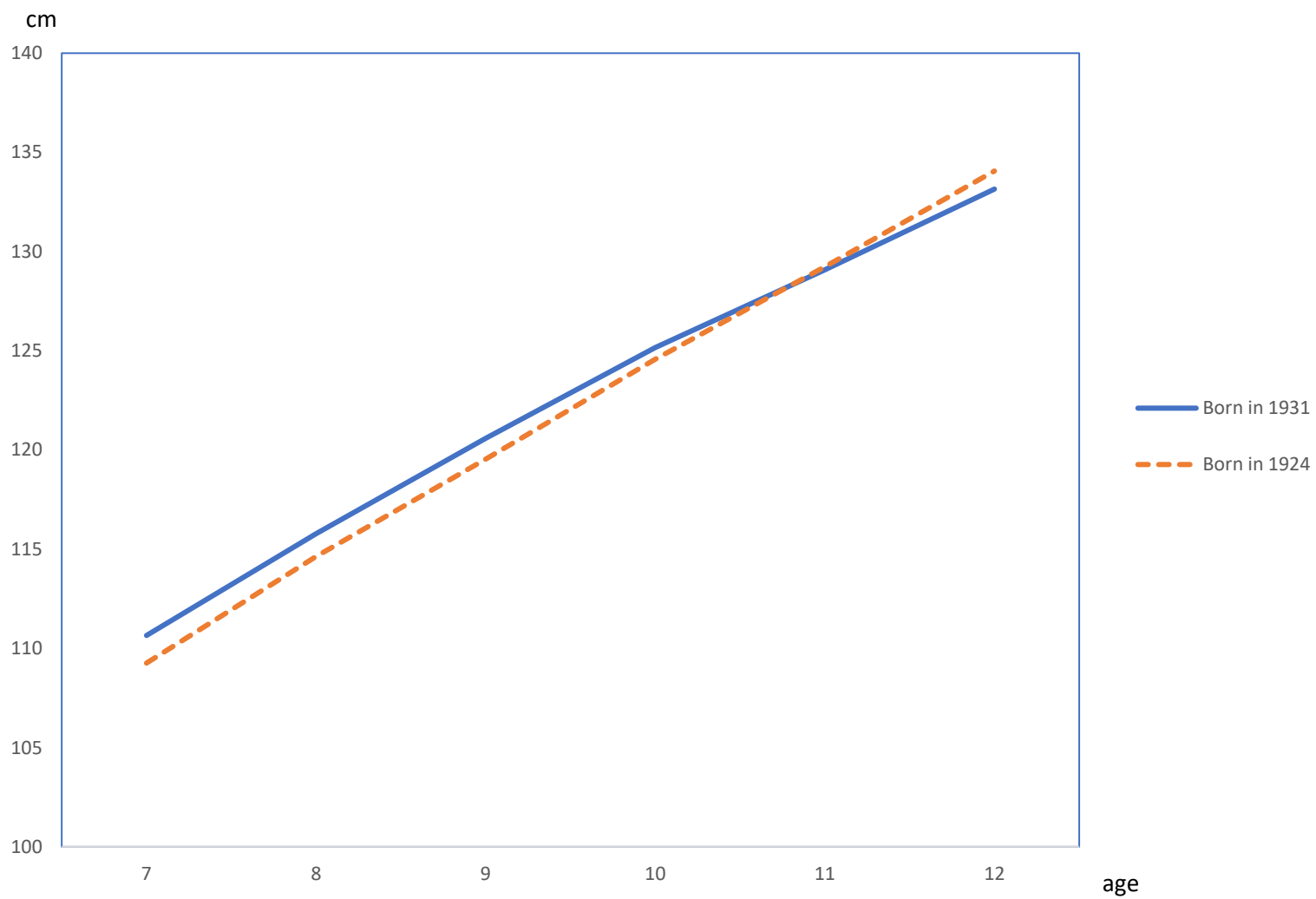
Figure 8 Per capita food consumption in Japan



Source: Nutrition Section of the Public Health Bureau, Ministry of Welfare (1946) .

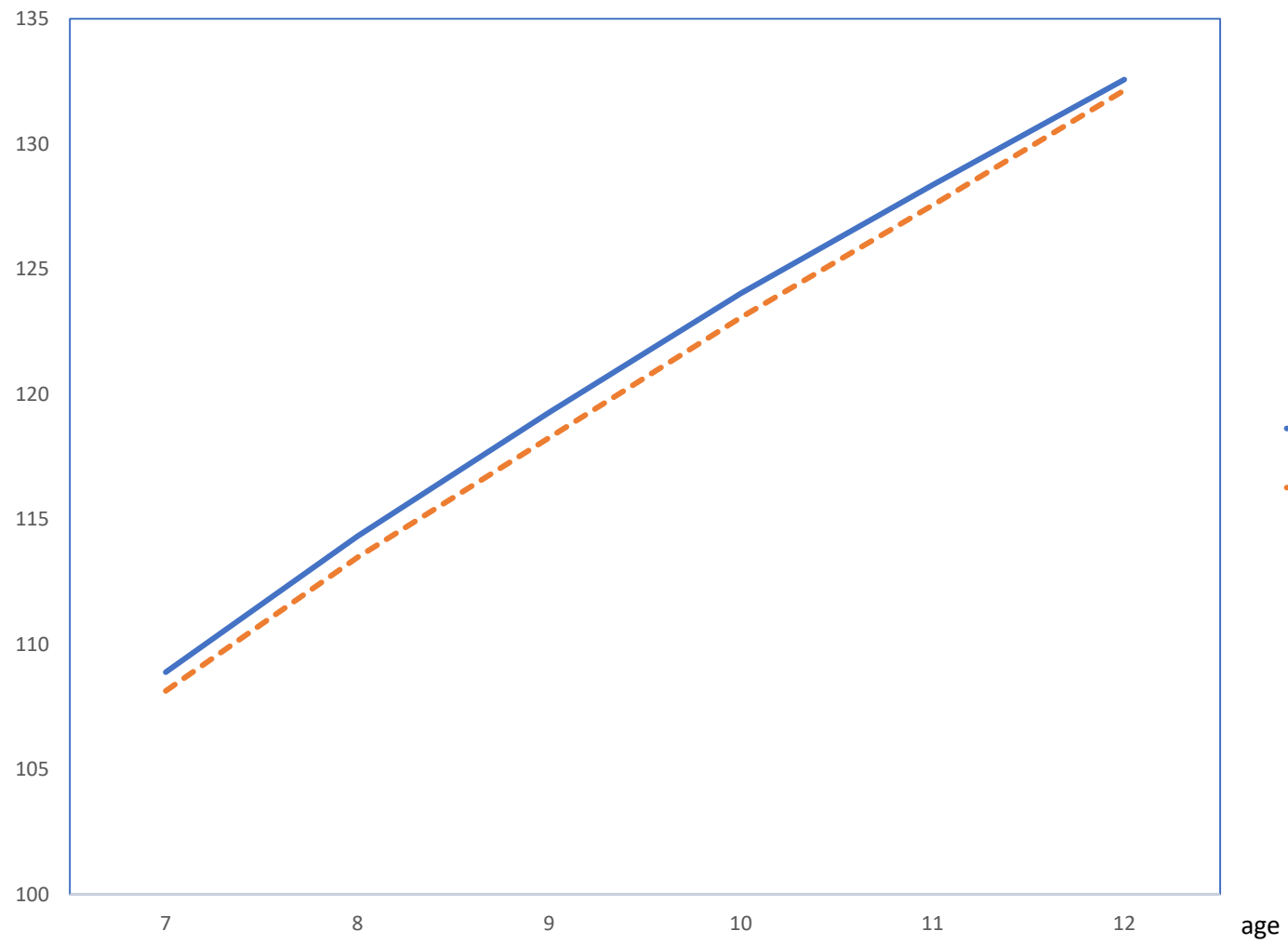
Figure 9 Age-height profile by cohort and by area

A. Boys in the industrial area



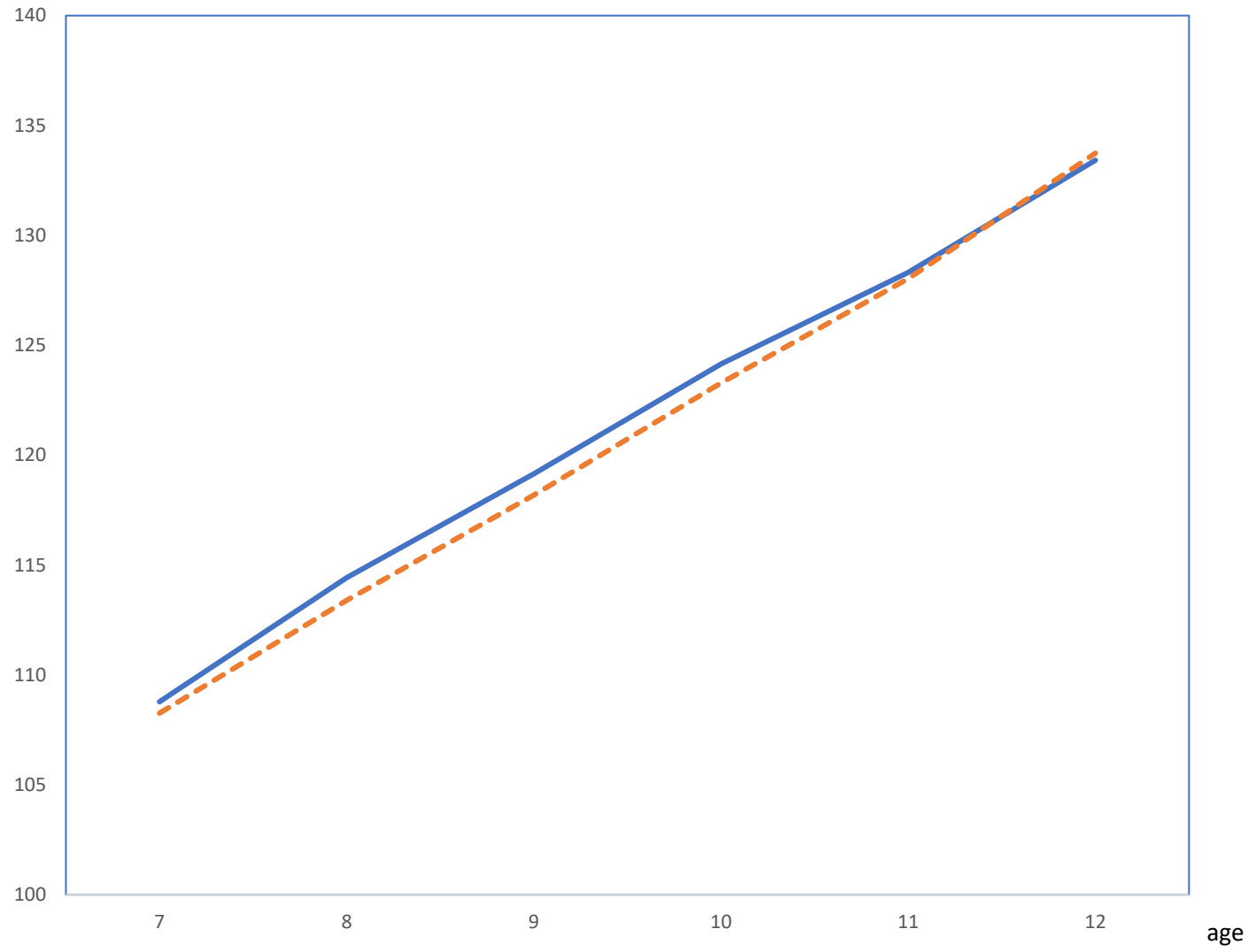
B. Boys in the agricultural/fishing area

cm



C. Girls in the industrial area

cm

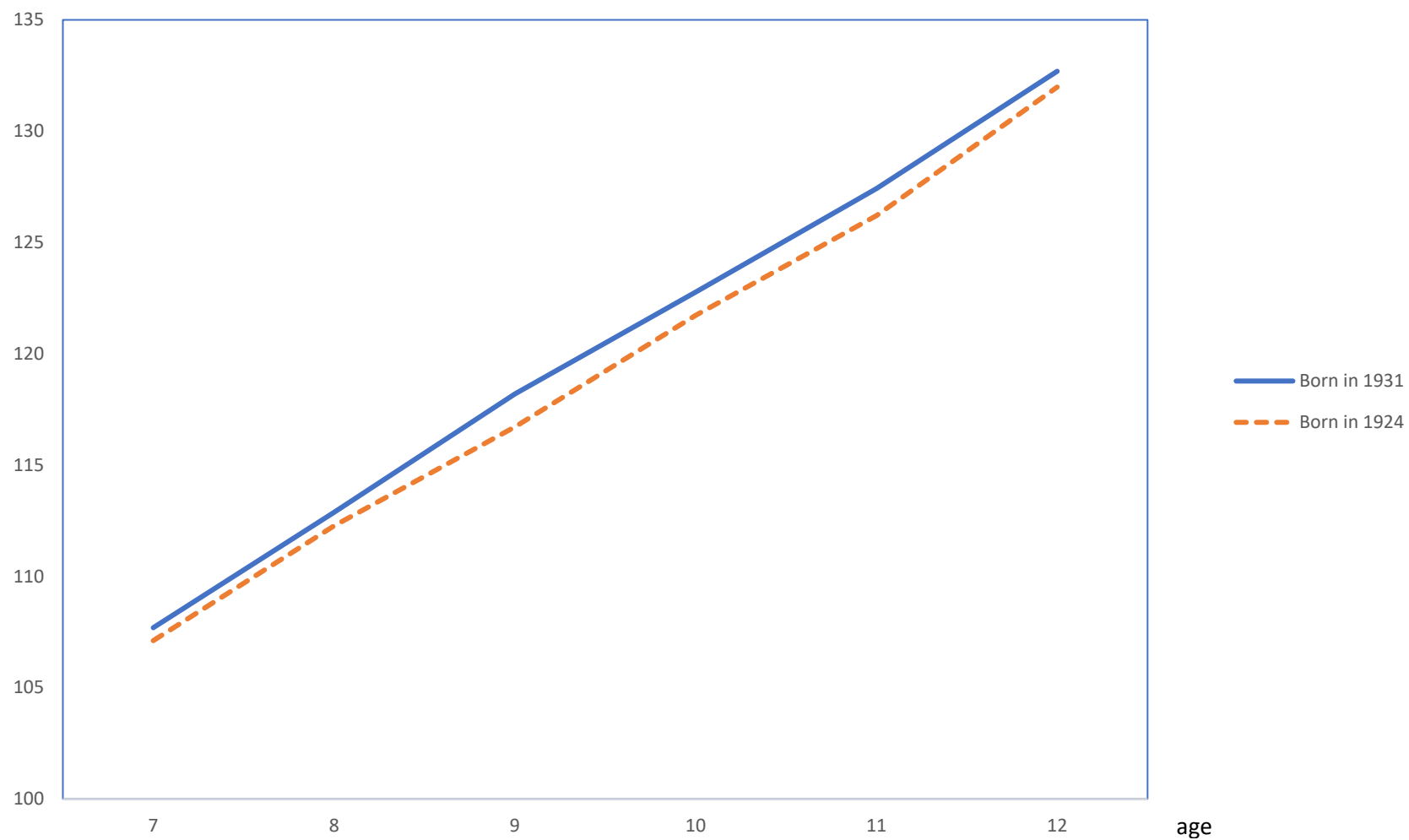


— Born in 1931

- - - Born in 1924

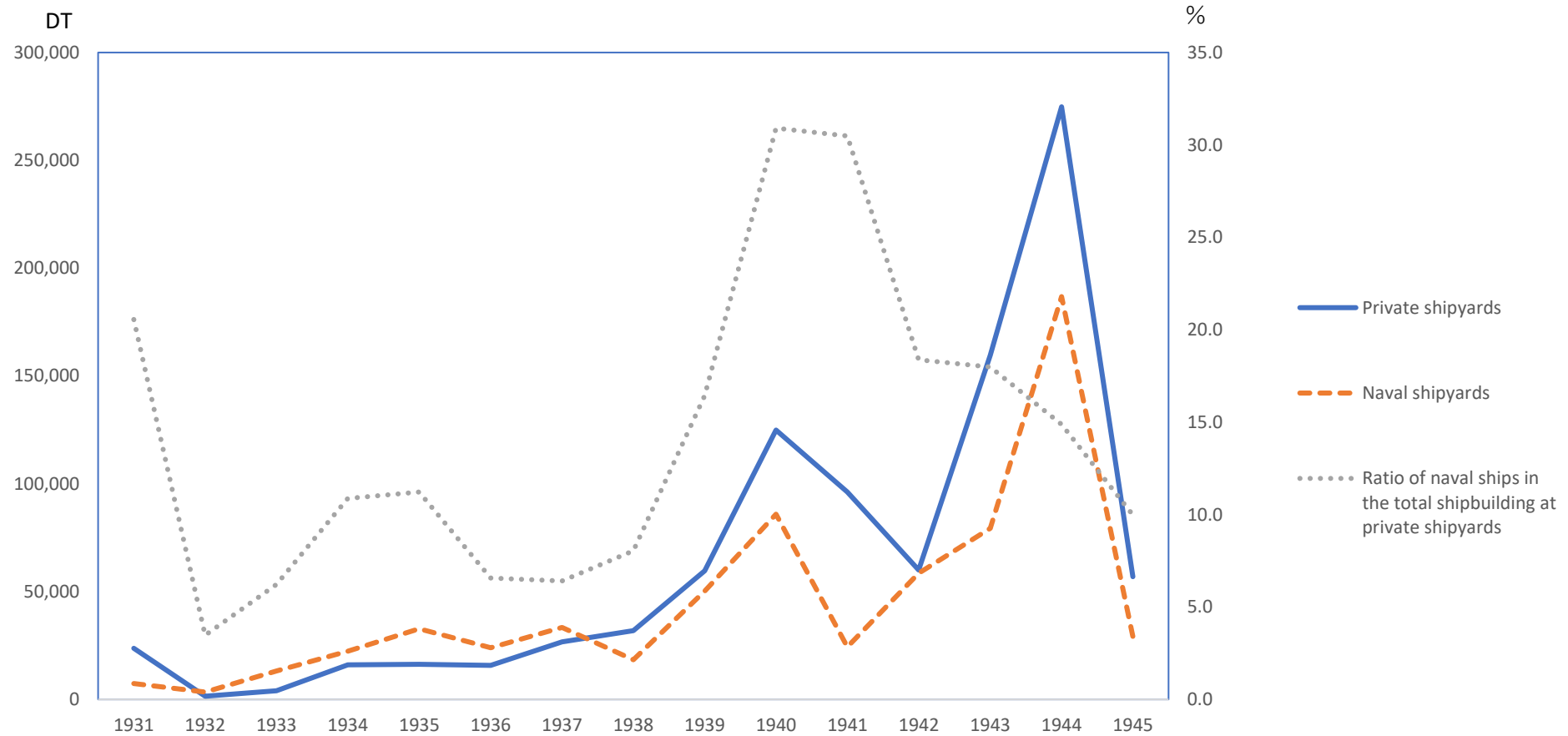
D. Girls in the agricultural/ fishing area

cm



Source: Research Institute of the Ministry of Welfare (1943) .

Figure 10 Naval ship building by naval shipyards and private shipyards



Source: Ministry of Transportation (1952), pp.164-165; Toyo Keizai Shinpo-sha (1950), p.492.

Note: In calculating the ratio of naval ships in the total shipbuilding at private shipyards, we converted GT into DT by divided by 1.1 (see Okazaki 2024).

Table 1 Outline of the "Five Years Plan of Important Industries"

		Production target (1941)		Actual production (1941)		Actual production (1936)
		Japan	Manchuria	Japan	Manchuria	Japan
Aircraft	planes	7,000	3,000	6,260	n.a.	1,280
Automobile	10,000 vehicles	9	1	4	n.a.	1 *
Machine tool	10,000 machiens	45	5	5	n.a.	2
Steel products	10,000 tons	700	300	437	46	432
Pig iron	10,000 tons	750	400	472	142	222
Iron ore	10,000 tons	1,050	1,200	303	424	125
Gasoline	10,000 kl	190	140	103	n.a.	65
Alcohol	10,000 kl	45	5	24	n.a.	3
Benzol	10,000 kl	14	6	5	n.a.	
Heavy oil	10,000 kl	135	100	47	13	46
Coal	10,000 tons	7,200	3,800	6,241	2,452	4,790
Alminium	10,000 tons	7	3	7	1	0
Magnesium	10,000 tons	6	3	3	0	1 *
Ship	10,000 tons	86	7	31	0	25 *
Electlicity	10,000 kw	1,117	140	82	107	654

Source: Inaba et.al. eds (1963); Kokumin Keizai Kenkyu Kyokai (1946), Toyo Keizai Shinpo-sha (1950).

Note: The production data with "*" does not include production in the colonies.

The production of alcohol is for 1937.

Table 2 Import of petroleum to Japan

		1,000 yen				
		1939	1940	1941	1942	1943
Total		253,625	352,460	336,247	23,989	83,960
Areas Japan occupied before the Pacific War	Total	2,055	2,988	4,109	4,012	7,086
	Manchuria	2,055	2,962	4,109	4,012	7,086
	China	0	26	0	0	0
Areas Japan merged into the Great East Asia Co-Prosperity Sphere during the Pacific War	Total	36,208	56,901	60,152	16,660	76,661
	Borneo	5,963	5,581	3,089	7,202	18,719
	Dutch East Indies	29,718	51,316	57,058	8,379	45,882
	Singapore	527	0	0	1,077	12,060
	Other areas	Total	215,363	292,572	271,986	3,317
	United States	200,393	270,371	259,483	2,538	212

Source: Ministry of Finance, *Annual Return of the Foreign Trade of Japan*, various issues.

Table 3 Supply of scrap

		1936	1937	1938	1939	1940	1941	1942	1943	1944
Total		3,337	4,394	4,265	4,660	4,405	3,399	3,830	4,356	4,269
Domestic supply		1,840	1,974	2,907	2,105	3,014	3,196	3,791	4,326	4,047
Import	Total	1,497	2,420	1,358	2,555	1,391	203	39	30	222
	Areas Japan occupied before the Pacific War									
	Total	61	55	77	28	17	24	36	19	219
	Manchuria	31	44	47	3	0	5	11	9	199
	China	30	11	30	25	17	20	25	10	20
	Areas Japan merged into the Great East Asia Co-Prosperity Sphere during the Pacific War									
	Total	0	0	0	0	0	0	0	0	0
	Other areas	1,466	2,376	1,280	2,527	1,374	179	3	11	3
	United States	1,028	1,777	1,007	2,175	1,116	109	1	0	0
	Britain	6	6	4	2	0	0	0	0	0
	India	139	200	82	107	78	1	0	0	0
	Australia	57	84	30	93	66	4	0	0	0
	Others	206	298	157	151	114	65	2	11	3

Source: Japan Iron and Steel Federation (1961), p.6 and p.14.

Note: Total supply = total consumption.

Domestic supply = Total supply - import.