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Building a Potemkin village in occupied China: Japan's wartime system of linked trade, 1939–43

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Two-sentence summary
The paper reconstructs the exchange rate system of Japanese-occupied North China during the Sino-Japanese War, in which exporters were given the right to import that could be sold to a third party. It shows that the system mimicked a flexible exchange rate system to work around the incentive problem posed by the overvaluation of the official rate fixed to the Japanese yen.

Abstract

The paper discusses the novel but little-known exchange rate system of Japanese-occupied North China during the Second Sino-Japanese War, in which exporters were given the right to import in the form of a piece of yellow paper, which could be sold in the secondary market. In an environment of rapid inflation where North China's currency was pegged to the Japanese yen and devaluation was not politically feasible, the system incentivized exports by allowing the exporters to offset their losses with the profits from selling goods imported, or the right to import goods, at the overvalued exchange rate. Following the start of the Pacific War, the system evolved to become a major scheme of facilitating trade between North and Central China under Japanese occupation. The paper, utilizing the classified documents of the Yokohama Specie Bank, reconstructs analytically how the system operated. Further, our analysis, based on monthly average data, confirms that the secondary market pricing of yellow paper broadly mimicked the operation of a flexible exchange rate. The system died a natural death when exploding inflation in Central China eliminated the export disincentive in North China.

KEYWORDS
currency overvaluation, Japanese-occupied China, linked trade, second Sino-Japanese war, special yen, yen bloc

JEL CLASSIFICATION
F31, F33, E42, N25

This paper introduces a hitherto little-known exchange rate system of Japanese-occupied China during the Second Sino-Japanese War in the English language and reconstructs the system analytically on the basis of archival documents and laboriously fetched data. Although we find fragments of information in the extant economic history literature,[1] no scholar has yet provided a convincing economic analysis of this wartime institution. The paucity of publicly available information is a serious obstacle to scholarly research. To make an analytical reconstruction of the system, we use contemporary sources, especially the classified internal documents of the Yokohama Specie Bank (YSB). The YSB, a semi-public institution supporting Japanese colonialism in China, was principally responsible for the technical management of the system we discuss in this study. We rely mainly on the documents related to the YSB's Qingdao (Tsingtao) and Tianjin (Tientsin) Branches, including inter-office memoranda and communications from the regulatory authorities, to gain an understanding of how the system operated in practice.[2]

Another obstacle to understanding how the system operated is the paucity of data, especially the prices at which the right to import was traded (known as the linked rate) and the exchange rate between North and Central China (known as the *Hui Shen* rate). We are not aware of any single source that provides unbroken and consistent timeseries of these variables on any frequency covering the period 1939–43. Part of this is understandable, given the frequent wartime disruptions to market activity. We consult multiple sources to compile monthly timeseries of various continuous lengths, including by fetching scattered numbers from various sources. For some months, it was necessary to create monthly data by averaging daily numbers sporadically mentioned by market commentary in business periodicals published in Tianjin. The Second Sino-Japanese War remains a politically sensitive topic. Even so, the passage of over 80 years since the demise of the system, aided by newly uncovered information, should allow the dispassionate investigation of an economic institution whose unique features invite a scholarly enquiry.

This paper, going beyond an elucidation of the wartime institution, seeks to contribute more broadly to the literature on the economics of fixed exchange rates. Political resistance to devaluation has been a widely observed tendency when a country faces an overvaluation of its fixed exchange rate, as devaluation is often perceived as a 'public admission of national failure'.[3] During the Bretton Woods period, for example, devaluation in developing countries was seen roughly to double the probability of a change in government, and nearly 60 per cent of the finance ministers who devalued their currencies lost their jobs within a year.[4] The political costs of devaluation must have been much higher for Japan's wartime decision-makers than for those of most peacetime governments. Japan was building a yen bloc by incorporating newly occupied areas into its monetary sphere.[5] A fixed exchange rate between the Japanese yen and the currency of a newly incorporated area was something that needed to be preserved no matter the cost. What follows is an analysis

[1] For example: Kuwano, *Senji tsūka*, pp. 40–2; Iwatake, *Kindai Chūgoku*, pp. 340–2; Shibata, *Senryōchi tsūka*, pp. 204–6.

[2] The YSB was liquidated during the postwar Allied occupation of Japan. The YSB's internal documents from its 65-year history are archived on microfilm at the University of Tokyo Library as the Yokohama Shōkin Ginkō Collection (YSGC). Documents are referred to by identifying the reel upon which they are found (for example, YSGC: R0847).

[3] Gray, 'Costs of overvaluation', p. 295.

[4] Cooper, 'Currency devaluation', pp. 28–9.

[5] Nakamura, 'Yen bloc'; Schiltz, *Money doctors*.

FIGURE 1 Illustrated boundaries of Japanese-occupied China, 1938–45. *Note*: Central China includes pieces of South China, not all of which are shown in this illustration.
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of how the Japanese authorities, faced with an increasing overvaluation of the occupation money in North China, incentivized exports by linking them to imports. The system mimicked a flexible exchange rate whilst preserving the façade of a fixed exchange rate.

The rest of this paper is organized as follows. Section I provides the historical context in which Japan introduced occupation currencies in North and Central China. Section II outlines the origin, evolution, and demise of the system of linked trade as operated in North China from March 1939 to October 1943. The subsequent two sections reconstruct analytically how linked trade operated under the United States (US) dollar-based system (section III) and the special yen-based system (section IV), respectively. Finally, section V presents a conclusion. A separate data supplement, available on the journal's website, provides the data used for this study, along with an explanation of their sources.

I | HISTORICAL BACKGROUND

Japan divided occupied China into four realms and administered them separately (figure 1): (i) Manchuria; (ii) the Inner Mongolia border region, for which it invented the name Mengkiang (Mengjiang); (iii) North China; and (iv) Central and South China. The policy to administer occupied China as four separate realms was primarily motivated by a desire to prevent China from completing the process of national unification, which had begun in 1928. Japan's control of Manchuria and Mengkiang was nearly complete. The rest of China, however, remained militarily

contested. Its control of South China, limited to a few coastal areas, was particularly weak. Of the four realms, this paper focuses on North China, including how it traded with Central China as the war progressed .

Japan used occupation money to impose the burden of financing the local costs of military operations on the local populations. To do so, it established a note-issuing bank for each area. In Manchuria, which it had occupied since 1931, it established the Central Bank of Manchuria in June 1932.[6] In Mengkiang, it established the Bank of Mengkiang in November 1937. In North and Central China, however, Japan used yen-denominated notes for some time before establishing note-issuing banks. For North China, it was the United Reserve Bank of China,[7] which opened for business on 10 March 1938. The United Reserve yuan (URY) was set at par with the Japanese yen (JP¥). For Central and South China, the Central Reserve Bank of China was established in December 1940, more than three years into the full-scale war. Its Nanjing head office opened for business on 6 January 1941, followed by the Shanghai Branch on 20 January. During the period of our focus, the Central Reserve yuan (CRY) was fixed to the Japanese yen at CRY100 = JP¥18.

By establishing these banks, Japan sought to disrupt China's currency unification, lest it should further promote the unification of the country. Historically, China did not have a unified currency, with silver coins of several varieties circulating under two competing denominations. Nationalist China, in the currency reform of 1933, defined the standard silver yuan and abolished the tael. This was followed by the reform of 1935, which terminated the silver standard, pegged the yuan to the pound at 1 shilling 2½ pence sterling (abbreviated as 14½d), and designated national yuan notes issued by three government banks (the Central Bank of China, the Bank of China, and the Bank of Communications) as legal tender known as the *fa-pi* (*fa-bi*).[8] A competition thus emerged between the Japanese occupation currencies and the *fa-pi* in the militarily contested areas of China (table 1).

Despite the turbulence that followed the outbreak of an all-out armed conflict in July 1937, the Nationalists soon regained control of Shanghai's large foreign exchange market by defending the *fa-pi*'s official exchange rate (figure 2).[9] The opening of the United Reserve Bank (URB) in North China, however, led to a large influx of *fa-pi* notes into Central China. On 14 March 1938, the Nationalists ceased to intervene in the market, in part to prevent the Japanese military from using the *fa-pi* notes brought from North China to obtain foreign currencies at the official rate.[10] From 18 March, they rationed foreign exchange at the official rate, and from 26 March, restricted the withdrawal of *fa-pi* deposits to pre-empt capital flight.[11] The share of foreign exchange allocated

[6] Yasutomi, *Manshūkoku*, pp. 84–9.

[7] The bank's English name that appeared in the first printing of banknotes (printed from March 1938 to January 1939) was the 'Federal' Reserve Bank of China. URB, *5-nen shi*, p. 23. The English word federal is a mistranslation of the Chinese word *lianhe*, which can only mean union or alliance. There was nothing federal about the bank's constitution or sponsoring political entity. The 18 January 1939 issue of the Shanghai-based *Finance & Commerce* ridiculed the mistranslation as 'symbolical of the rather slap-dash way in which' the bank was established (p. 46). The negative reaction from the foreign community may explain why the English name was removed from the second printing of banknotes. To not perpetuate the error, we follow Nakamura in using the word 'united' as a more appropriate English name of the bank, as in the United Kingdom (*Lianhe Wangguo*) or the United Nations (*Lianhe Guo*). Nakamura, 'Yen bloc', p. 179.

[8] Seki, 'Hai-ryō kai-gen', p. 164; Ji, *Modern Shanghai banking*, p. 193; Young, *Wartime finance*, p. 133. The Farmers' Bank was added to the list of authorized note-issuing in January 1936. From this time, they were known collectively as the 'four government banks'.

[9] King, 'Chinese currency'.

[10] Young, *Wartime finance*, p. 199; King, *Asian policy*, p. 91.

[11] Saito, *Daitōa Kyōeiken*, p. 182; Young, *Wartime finance*, pp. 199–200; King, *Asian policy*, p. 91; Iwatake, *Kindai Chūgoku*, p. 429.

TABLE 1 Competing currencies in the militarily contested areas of China, March 1938–August 1945.

Area (principal market)	Free China	Occupied China
North China (Tianjin)	*Fa-pi*, issued by the Central Bank of China, Bank of China, Bank of Communications, and Farmers' Bank of China	United Reserve yuan (URY), issued by the United Reserve Bank of China, officially set at par with the Japanese yen, URY100 = JP¥100
Central China (Shanghai)		Military notes, gradually replaced by Central Reserve yuan (CRY), issued by the Central Reserve Bank of China, officially fixed to the Japanese yen at CRY100 = JP¥18 from March 1942

Source: Information provided in the text.

FIGURE 2 The monthly average exchange rate of the *fa-pi* against the British pound in Shanghai, January 1937–August 1941.
Note: Shanghai's free market closed on 7 September 1941.
Source: Data supplement.

at the official rate, initially about 60 per cent, declined drastically after May 1938. The share was about 2 per cent in late July and a mere 1 per cent by October.[12] The *fa-pi*'s official rate virtually ceased to exist.

At this time, Japan's occupation authorities allowed the UR yuan to fall with the *fa-pi* against the pound, to which the Japanese yen was officially pegged at 14d. This created a divergence between the UR yuan's official exchange rate, which was fixed to the Japanese yen, and its free-market rate, which was moving in parallel with the *fa-pi*. Even though the UR yuan was declared legal tender in North China, *fa-pi* notes continued to circulate widely in its vast rural areas, and where UR notes also circulated, they (UR notes) traded at a discount. The discount remained until July 1941, when the Anglo-American freezing of Chinese assets caused the *fa-pi* to collapse.[13] An obstacle to the wider circulation of UR yuan was the presence of foreign concessions in Tianjin, where foreign nationals enjoyed extraterritorial privileges and over which the Japanese military

[12] MOF, *Hōhei seido*.

[13] This was done at China's request to control foreign exchange transactions more effectively, Young, *Wartime finance*, pp. 247–9.

had no control. Even so, the UR yuan solidified its position in North China with the passage of time. By early 1940, foreign banks in Tianjin may have held approximately 70 per cent of their commercial accounts in UR yuan. By the spring of 1941, the UR yuan had become the principal currency of North China.[14]

In Central China, Shanghai's large International Settlement posed a similar challenge to Japan's ability to circulate occupation currency freely. The International Settlement, like the foreign concessions in Tianjin, was a protected area where foreign nationals enjoyed extraterritorial privileges and the *fa-pi* held a virtual monopoly. The Japanese military's grip was also much weaker in Central China than in North China. The Japanese military had little choice but to use military notes, which they exchanged for *fa-pi* before purchasing goods in the interior. Even after the Central Reserve Bank was established, CR yuan notes were used for some time only in areas where military notes were not circulating. Neither was the CR yuan used for trade with Japan, Manchuria, or North China, as the military yen was used for this purpose. No exchange rate was established between the CR yuan and the Japanese yen or the UR yuan until after the start of the Pacific War.[15]

For the holders of UR notes in North China, Tianjin's *Hui Shen* market offered a vehicle through which funds could be transferred to Central China. *Hui Shen*, which literally means 'Shanghai exchange', referred to a market where exchange bills payable in Shanghai were traded.[16] After the UR yuan was introduced, the *Hui Shen* rate was formed for the exchange rate (i) between the *fa-pi* in Tianjin ('Northern Notes') and the *fa-pi* in Shanghai ('Southern Notes') or (ii) between the UR yuan in Tianjin and the *fa-pi* in Shanghai. Each *fa-pi* note had an inscription indicating the branch of issue, a practice carried over from the silver-standard era when banks limited the issuance of their banknotes to the amount of silver available in each area.[17] Legal-tender notes stamped Qingdao, Tianjin, or Shandong were designated as Northern Notes, and all others were Southern Notes.

In response to the Anglo-American freezing of Japanese and Chinese assets in late July 1941, on 11 August, Japan's occupation authorities in North China issued an exchange control order to unify the *Hui Shen* market on the basis of the UR yuan, but Western banks refused to cooperate. Unification needed to wait until after the start of the Pacific War in December, when the Japanese military seized foreign bank assets in Tianjin. Following a brief closure, Tianjin's *Hui Shen* market reopened in January 1942 to provide Chinese nationals with a means of making legitimate financial transactions with Central China.[18] Trading began under heavy supervision on 5 January.[19] The official rate was set at URY30 (per 100 *fa-pi*), but the black-market rate was URY34–39,[20] suggesting that the official rate overvalued the UR yuan. With the substantial withdrawal of *fa-pi* from North China, the *Hui Shen* rate exclusively became, for a time, the exchange rate of the UR yuan in Tianjin against the *fa-pi* in Shanghai.

In Central China, the outbreak of the Pacific War allowed the Japanese military to take over Shanghai's International Settlement. This created the room for CR notes to circulate more widely, as *fa-pi*, having lost foreign patronage, retreated into the interior. From March to May 1942, the

[14] Ibid., p. 172.

[15] BOT, *Yokohama Shōkin Ginkō*, 4, p. 654.

[16] Iwatake, *Kindai Chūgoku*, pp. 612–3.

[17] Young, *Wartime finance*, p. 166.

[18] YSGC: R0860, YSB Tianjin Branch, 24 December 1941.

[19] YSGC: R0860, YSB Tianjin Branch, 31 December 1941.

[20] YSGC: R0860, YSB Tianjin Branch, 12 January 1942.

Japanese military took a series of measures to elevate the status of the CR yuan, including by making its use compulsory and progressively limiting the use of *fa-pi* notes. On 7 March, the CR yuan was delinked from the *fa-pi*, to which it had previously been pegged at par, and was re-pegged to the military yen (ML¥) initially at ML¥20 = CRY100. Just two weeks later, on 22 March, the new rate was set at ML¥18.[21] On 27 May, it was announced that the circulation of *fa-pi* notes would be restricted, and currency unification on the basis of the CR yuan would proceed, in stages. The process took until early 1943 to complete in some parts of occupied South China.[22]

In Tianjin's *Hui Shen* market, the *fa-pi*'s official rate was devalued effective 10 April 1942,[23] with the new rate of URY20 per 100 *fa-pi*. Because the CR yuan's rate against the UR yuan remained at URY30 per 100 CR yuan, this meant that the CR yuan was officially priced 50 per cent above the *fa-pi*. From 28 April, the *Hui Shen* rate was no longer quoted against the *fa-pi*, which was entirely replaced by the CR yuan. At this time, the *Hui Shen* rate became exclusively the exchange rate between the UR yuan in Tianjin and the CR yuan in Shanghai. This rate remained in effect until 8 March 1943, when a new official rate was set at URY18 to align with the UR yuan's official parity with the Japanese yen, namely, CRY100 = JP¥18 = URY18. On 1 April 1943, the circulation of military notes was terminated, making the CR yuan the sole occupation currency in Japanese-occupied Central China.

II | OUTLINE OF THE SYSTEM OF LINKED TRADE

North China was confronted with the trade implications of rapid inflation, which reached about 30 and 50 per cent, year-on-year, in 1938 and 1939, respectively, in terms of wholesale prices. The higher prices meant merchants had a diminished incentive to export goods at the official exchange rate, which was pegged to the yen and hence, indirectly, to the pound and the dollar. Whereas Chinese and Western merchants operating out of Tianjin's foreign concessions could export goods at a more depreciated exchange rate for the *fa-pi*, those operating out of occupied North China could only sell their export earnings at the official rate for the UR yuan, even though the UR yuan's free-market rate was as depreciated as the *fa-pi* (figure 3). This meant that a substantial portion of trade finance was diverted to the Chinese and Western banks in Tianjin. In March 1939, the occupation authorities responded to this situation by establishing an export incentive scheme whose origin could be traced to the system of linked trade introduced earlier on 7 August 1938.

The new scheme superimposed the existing system of linked trade (with some modifications) on the Centralized Foreign Exchange System, established on 11 March 1939.[24] The centralized system required exporters to surrender to the URB (through their foreign exchange banks) sterling- and dollar-denominated export bills covering 12 export items that accounted for approximately 40 per cent of North China's exports. Trade with Japan and Manchuria was also covered under the system, but the Japanese yen was the currency of denomination.[25] Even though the occupation authorities did not control foreign banks in Tianjin, the Japanese military had full control

[21] The separate selling and buying rates were set at ML¥18 and ML¥18⅛, respectively. These were unified at ML¥18 in June.

[22] BOT, *Yokohama Shōkin Ginkō*, 5-1, pp. 178–9.

[23] YSGC: R0860, YSB Tianjin Branch, 10 April 1942.

[24] YSGC: R0845, YSB Qingdao Branch, 2 August 1939.

[25] YSGC: R0843, YSB Foreign Exchange Department, 18 June 1939.

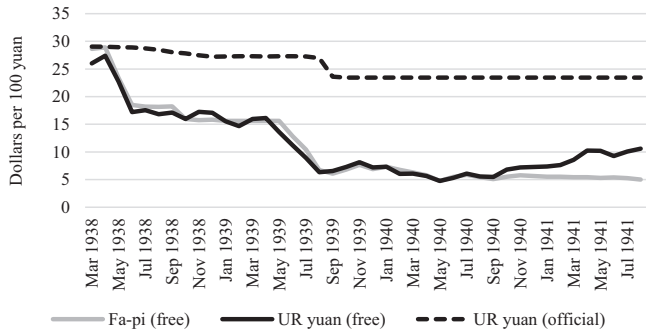

FIGURE 3 Monthly average US dollar exchange rates against the UR yuan and the *fa-pi*, March 1938–August 1941.

Source: Data supplement.

over the customs house. For these goods, customs could refuse export clearance unless proof of the surrender of export bills was presented. On 17 July 1939, the system was made applicable to all exports except for perishables (such as fish and fresh vegetables and fruits) and, until January 1940, transactions not exceeding URY100.[26]

The scheme removed the disincentive to export by allowing the exporter to import goods at the overvalued exchange rate. The exporter, after surrendering the foreign exchange at the official rate, obtained the right to import valued at 90 per cent of the surrendered amount. The loss incurred by exporting goods at the official rate could thus be offset by the profits from selling goods imported at the official rate. The 10 per cent withholding rule was introduced on 17 July 1939 when the coverage was expanded to all exports. The rule was waived for six items of critical importance, such as flour and petroleum,[27] as well as yen-intermediated trade with Japan and Manchuria.[28] It was meant to help the URB build up foreign exchange reserves (mainly to finance the payment for invisibles),[29] whilst also discouraging imports by raising the price of imported goods (to be explained below).

The system began with the pound sterling as the reference currency at the rate of 14d per UR yuan. In practice, pounds and dollars were equally used as a currency of invoice. After the dollar transferability of the pound was restricted following the outbreak of war in Europe, on 25 October 1939, the US dollar became the reference currency at the rate of US23^{7}/_{16}$ per URY100. The right to import took the form of a certificate of foreign exchange sale written on yellow paper. Unlike the previous linked system (introduced in August 1938) it replaced,[30] the new system permitted the exporter to transfer the right to anyone, thus a secondary market spontaneously developed in which 'yellow paper (*ierō pēpā*)' was traded. There was no import control as such, but a preferential list of 95 items was announced when the system was expanded to all exports, and more items, including foodstuffs, construction material, and other essential commodities, were subsequently added to the list.[31]

[26] YSGC: R0845, Asia Development Board, North China Liaison Office, 28 June 1939. URB, 'Kikō oyobi seisaku', pp. 20–1.

[27] Ozawa, 'Kaisetsu'.

[28] YSGC: R0845, Asia Development Board, North China Liaison Office, 28 June 1939.

[29] Ibid.

[30] Iwatake, *Kindai Chūgoku*, p. 340.

[31] YSGC: R0845, YSB Tianjin Branch, 11 March 1940.

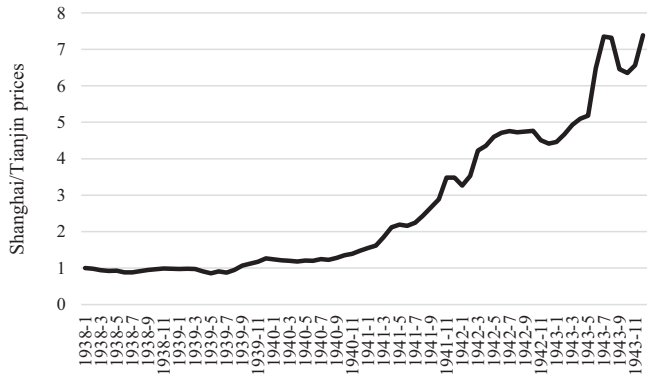

FIGURE 4 Wholesale prices in Shanghai relative to Tianjin, January 1938–December 1941 (January 1938 = 1).

Source: Data supplement.

Following the Anglo-American freezing of Japanese and Chinese assets some 10 days earlier, on 31 July 1941, the special yen replaced the US dollar, and the 10 per cent withholding rule was removed. As foreign currencies could no longer be used to import goods, the URB had no reason to build up foreign exchange reserves. The special yen (SP¥) was an accounting unit set equal to the value of the yen. The YSB maintained special-yen accounts with yen-bloc note-issuing banks, through which bilateral trade was cleared. For this reason, the system was renamed the Special-Yen Centralized Foreign Exchange System. At this time, the system also became applicable to North China's trade with French Indochina and Thailand, though actual trade did not begin until after the start of the Pacific War.[32] The volume of trade remained small, and exports and imports, typically conducted by the same few designated firms, were internally matched, limiting the development of a secondary market for yellow paper for imports from these areas.[33]

The outbreak of the Pacific War terminated the *fa-pi*'s exchange rate against the dollar in Shanghai and the free *Hui Shen* rate in Tianjin. The pegging of the CR yuan to the military yen in March 1942 further changed the way the special yen system operated in an environment of accelerating inflation in Central China relative to North China (figure 4). Previously, the overriding concern was the real exchange rate of the UR yuan against the pound or the dollar. With the Anglo-American freezing of Japanese and Chinese assets, North China could only trade within the yen bloc, but trade with Japan and Manchuria was placed under an alternative trade facilitation scheme known as the system of 'retained money' introduced in 1940 (which operated by taxing exports to a high-inflation area and using the 'retained' tax to subsidize imports).[34] Now that Central China was virtually the only trading partner, inflation in Central China directly affected North China's trade.

Given the timeline of these developments, the operations of the system of linked trade had two distinct phases. In the first phase, which ended with the Anglo-American freezing of Japanese and Chinese assets in July 1941, the scheme was based on British pounds or US dollars and applied to trade with all non-yen-bloc trading partners. In the second phase, which began in March 1942,

[32] YSGC: R0861, URB Foreign Exchange Department, Tianjin Branch, 18 March 1943.

[33] BOJ, 'Tokubetsu en'.

[34] BOJ, *Manshū Jihen*, p. 391.

TABLE 2 North China's linked trade: an illustration.

Transaction	Exporter **Sells merchandise costing URY142,857.14 in North China for US$10,000 in the US**	Importer **Sells merchandise costing US$9,000 in the US for URY138,590.48 in North China**
Trading partner	United States	United States
Reference currency	US dollar	US dollar
1. Official foreign exchange market	Receives URY42,666.66 by selling US$10,000 at the official rate of US23^{7}/_{16}$ per URY100	Pays URY38,400 to obtain US$9,000 at the official rate of US23^{7}/_{16}$ per URY100
	The difference of US$1,000 (= 10,000 – 9,000) is retained by the United Reserve Bank.	
2. Secondary market in yellow paper	Receives URY100,190.48 by selling the right to US$9,000 (= 10,000 × 90%)	Pays URY100,190.48 to obtain the right to US$9,000
1+2. Combined receipts or payments	Receives URY142,857.14, equivalent to the cost of the merchandise	Pays URY138,590.48, equivalent to the price of the merchandise
Implicit exchange rate	US$7.00 per URY100	US$6.49 per URY100

Source: BOJ (1943).

it was based on the special yen and applied almost exclusively to trade with Central China. The intervening period, late July 1941–early March 1942, was one of fluidity when normal trade was disrupted and an interim system operated (see section IV below). In late 1943, the North China special yen system died a natural death when Central China's accelerating inflation eliminated the disincentive to export in North China.

III | THE OPERATION OF THE US-DOLLAR-BASED SYSTEM

To understand the logic of how the system worked in practice, think of the following well-crafted example presented in an internal document of the central bank (table 2),[35] whilst ignoring any transactions costs. Without loss of generality, we use, as the reference currency, the US dollar, which was designated as such for 21 out of the 28 months of the first phase of the linked system. Suppose that an exporter in North China sells merchandise costing URY142,857.14 for $10,000 in the US. This exporter sells the export bill of $10,000 to a foreign exchange bank to obtain the UR yuan equivalent at the official exchange rate of 23^{7}/_{16}$ (per URY100), that is, URY42,666.66. The exporter incurs a loss of URY100,190.48. Assume that the 10 per cent withholding rule is in place. Then, in order to offset the loss, the exporter must sell the right to foreign exchange worth $9,000 (or sell imported merchandise valued at $9,000) for at least URY100,190.48. Ultimately, the exporter obtains URY142,857.14 for $10,000, at the implicit exchange rate of $7.00. This breakeven exchange rate was called the linked rate (*rinku rēto*).

Suppose that there is an importer willing to pay URY100,190.48 to obtain the right to import merchandise valued at $9,000. To actually obtain $9,000 in foreign exchange, the importer must

[35] BOJ, 'Tokubetsu en'.

additionally pay the foreign exchange bank the UR yuan equivalent of $9,000 converted at the official exchange rate, that is, URY38,400. This means that the importer must sell imported merchandise costing $9,000 for at least URY138,590.48 (= 100,190.48 + 38,400.00). The breakeven rate for this importer is therefore $6.49. The importer's linked rate is more depreciated than the exporter's, by virtue of the 10 per cent withholding rule, which had the effect of discouraging imports by raising the prices of imported goods. Without the 10 per cent withholding rule, the linked rate would be identical for the exporter and the importer, provided that there was no spread between the selling and the buying rates.

In general, the (exporter's) linked rate (L), defined for ease of mathematical exposition as units of UR yuan per dollar, can be expressed algebraically as:

$$L = P/P^* = \left(\bar{E}P^* + Y\right)/P^* = \bar{E} + (Y/P^*) \tag{1}$$

where $\bar{E}$ is the official (fixed) exchange rate, expressed as units of UR yuan per US dollar, P is the domestic price, P* is the foreign price, and Y is the price of yellow paper. Equation (1) states that the UR yuan's linked rate appreciates (i.e. L goes down) as the foreign price rises and that it depreciates (i.e. L goes up) as the price of yellow paper rises. Once the linked rate is given, it is straightforward to derive the price of yellow paper for any value of P*. To see this, we obtain from equation (1) the price of yellow paper as:

$$Y = \left(L - \bar{E}\right) P^* \tag{2}$$

This explains why yellow paper with variable face values could be priced uniformly and conveniently in terms of the linked rate. The linked rate provided a scale-independent means of setting the price of yellow paper with any face value.

If we set $Y = P - \bar{E}P^*$, that is, if yellow paper is priced exactly to cover the loss from exporting the merchandise at the official exchange rate, equation (1) becomes:

$$L = \bar{E} + \left(P - \bar{E}P^*\right)/P^* \tag{3}$$

Equation (3) states that the linked rate converges to the official rate as the domestic and foreign price levels become equalized in terms of a common currency, that is, if purchasing power parity ($P - \bar{E}P^* = 0$) holds. This example suggests that relative price developments were an important factor influencing the pricing of the linked rate. By convention, the market linked rate (L^m) was quoted as units of the reference currency per URY100, that is:

$$L^m = (1/L) \times 100 \tag{4}$$

Unless otherwise noted, this is the convention we follow to express the UR yuan's linked rate throughout the rest of this paper.

The system of linked trade was not the only mechanism of conducting trade in North China. Its vast territory accommodated a large volume of informal trade to occur overland and along the coast. Even formal trade, recorded in customs data, shows that much trade occurred outside the system of linked trade. The considerable trade deficit North China recorded every year from 1939 to 1941 (Table 3) suggests that, because the linked trade portion was, by design, broadly balanced, North China financed a large volume of imports outside the system. Much of this was done through the *Hui Shen* market. For example, it is estimated that 25 per cent of petroleum imports

TABLE 3 North China's balance of trade, 1933–41 (in millions of Chinese national yuan)[a].

	North China's total trade			Of which, North China's trade with yen-bloc areas			Of which, North China's trade with third countries		
	Exports	Imports	Trade balance	Exports	Imports	Trade balance	Exports	Imports	Trade balance
1933	152.3	202.7	−50.4	53.9	83.5	−29.6	98.4	119.2	−20.8
1934	135.8	161.8	−26.0	47.4	75.5	−28.1	88.4	86.3	2.1
1935	159.6	150.1	9.5	47.4	76.9	−29.5	112.2	73.3	39.0
1936	191.1	140.9	50.2	67.6	68.1	−0.5	123.5	72.8	50.7
1937	215.7	145.8	70.0	60.7	62.2	−1.5	155.0	83.6	71.4
1938	254.5	320.0	−65.5	145.4	206.2	−60.8	109.1	113.8	−4.6
1939	200.9	574.5	−373.7	83.4	354.8	−271.4	117.4	219.8	−102.3
1940	327.5	985.0	−657.6	142.6	503.9	−361.2	184.9	481.2	−296.3
1941[b]	237.0	558.7	−321.7	106.2	239.6	−133.5	130.8	319.1	−188.2

Note: [a] On the basis of customs data, almost entirely intermediated through the ports of Longkou, Qingdao, Qinhuangdao, Tianjin, Wei-hai-wei, and Zhifu. [b] Through the end of June.
Sources: Author's estimates based on SMR, *Hokushi keizai*; and YSGC: R0847, Qingdao Branch, Yokohama Specie Bank, October 1941.

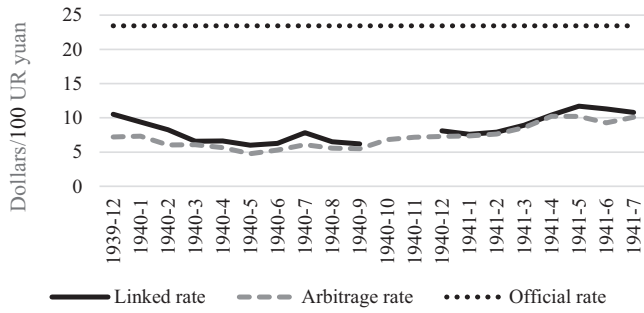

FIGURE 5 The monthly average linked and arbitrage rates, December 1939–July 1941 (US dollars per 100 UR yuan).
Notes: An increase indicates an appreciation of the UR yuan; October and November 1940 numbers are missing for the linked rate; and the arbitrage rate is derived from the *Hui Shen* rate in Tianjin between the UR yuan and Shanghai's *Hui Hua* yuan and the market exchange rate between the *fa-pi* and the US dollar in Shanghai.
Sources: Data supplement; author's estimates.

in 1939 was financed through the linked system and the remaining 75 per cent through the *Hui Shen* market.[36] Because the linked system and the *Hui Shen* market were alternative means of financing imports, arbitrage operated between the linked rate and the 'arbitrage' rate obtainable from the *Hui Shen* rate and the Shanghai's market rate between the *fa-pi* and the dollar.

Indeed, from December 1939 to July 1941, the monthly average linked rate moved broadly in parallel with the monthly average arbitrage rate (figure 5). Moreover, the linked rate was somewhat less depreciated than the arbitrage rate. The deviation was on average 1.15 dollars per URY100 or

[36] YSGC: R0845, YSB Tianjin Branch, 11 March 1940.

TABLE 4 The monthly average deviations of the linked rate from the arbitrage rate under the system of linked trade in occupied North China.

Period	Reference currency	The linked rate minus the arbitrage rate	
		Average difference per 100 UR yuan	Average % of the arbitrage rate
(1) Dec. 1939–July 1941	US dollar	1.15	17.01%
(2) Dec. 1942–Nov. 1943	Special yen	−7.88	−9.80%

Note: For the first period, the arbitrage rate is derived from the *Hui Shen* rate (between the UR yuan and the *fa-pi*) in Tianjin and the market rate between the *fa-pi* and the US dollar in Shanghai, and for the second period, it is derived from the *Hui Shen* rate (between the UR yuan and the CR yuan) and the official rate of CRY100 = SP¥18.
Sources: Data supplement; author's calculation.

17 per cent in favour of the linked rate (table 4, row 1). The spread in favour of the linked rate, especially during the early months, is consistent with the URB's supposed practice, at least in Tianjin, of setting an official linked rate 10 per cent above the arbitrage rate.[37] For instance, if the *Hui Shen* rate was URY90 (per CNY100) and the market rate in Shanghai was $6.00, the arbitrage rate would have been $6.67. In this case, the URB presumably set the official linked rate at $7.33.

Setting an official rate may have simplified the discovery process for other prices and facilitated the negotiation of the terms of a trade contract. Unless the official rate was updated frequently to reflect the evolving economic reality, however, it could become overvalued quickly in the presence of accelerating inflation. The YSB's Qingdao Branch in August 1939 observed that, in Tianjin, the URB was enforcing the official linked rate of 8¼d per UR yuan.[38] When the reference currency was switched from the pound to the dollar on 25 October 1939, the official linked rate was quoted as $13⅞ per URY100, which was a straightforward transformation of the previous pound-referenced official rate.[39] In February 1940, the YSB's Tianjin Branch noted that the URB, in enforcing the official linked rate, was not allowing exports to be linked with imports, by refusing to issue a certificate of foreign exchange sale to the exporter or to provide foreign exchange to the importer, unless the official rate was observed.[40]

The practice of setting an official linked rate created difficulty in the late spring of 1940. In May 1940, the YSB's Tianjin Branch informed the head office in Japan that the overvalued linked rate was diverting trade from Tianjin to Qingdao or Zhifu (Chefoo) where no official linked rate was set.[41] The Japanese navy, recognizing that enforcing the overvalued linked rate was choking off exports, condoned, if not approved, black-market trading in yellow paper.[42] With hardly anyone observing the official rate, by early May 1940, the URB was forced to change course. On 11 May, the URB, in a meeting of branch managers, decided, without prior consultation with the Asia Development Board in Tokyo, to abolish the official linked rate 'quietly' by not scrutinizing the documents before issuing certificates of foreign exchange sale.[43]

[37] BOJ, Manshū Jihen, p. 638.

[38] YSGC: R0845, YSB Qingdao Branch, 2 August 1939.

[39] YSGC: R0845, YSB Tianjin Branch, 26 February; YSB Foreign Exchange Department, 28 February 1940.

[40] YSGC: R0845, YSB Tianjin Branch, 16 February 1940.

[41] YSGC: R0845, YSB Tianjin Branch, 15 May 1940.

[42] YSGC: R0845, YSB Tianjin Branch, 11 March 1940.

[43] YSGC: R0844, R0845, YSB Tianjin Branch, 15 May 1940.

From the way the official linked rate was quietly shelved, we may surmise that the secondary trading of yellow paper at market prices was not part of the initial design of the system. In the original linked system of August 1938, exports and imports needed to be internally matched. Allowing yellow paper to be sold to a third party was in response to the criticism of the original system that it favoured larger trading firms over smaller ones.[44] Allowing the transfer of yellow paper to a third party was likely the extent of the official innovation introduced in March 1939. It is possible that the authorities' initial intention was to allow yellow paper to be transferred by the exporter to another party at the official linked rate, which might be adjusted from time to time. Secondary trading at market rates may have originated in Qingdao, Zhifu, or some other port city where the URB's official presence was weak.

Left to market forces, the pricing of the linked rate reflected both the relative price levels and arbitrage pressure from the *Hui Shen* market, as noted. Additionally, it was also influenced by forces specific to the yellow paper market. In an environment of trade and exchange restrictions, obtaining the right to foreign exchange did not guarantee that it could be used to import desired goods in desired quantities. In early 1941, the linked rate appreciated (see figure 5) because exporters, fearful of an impending asset freeze by enemy nations, hurriedly disposed of yellow paper whilst the shortage of merchant ships made it difficult to import, reducing the demand for yellow paper.[45] The price of yellow paper was therefore evidently influenced by export volume (which determined the supply of yellow paper) and trade controls (which determined the demand for yellow paper), in addition to the forces of price and market arbitrage.

IV | THE SPECIAL-YEN CENTRALIZED FOREIGN EXCHANGE SYSTEM

Following the Anglo-American freezing of Japanese and Chinese assets, as an interim measure, the official linked rate was set equal to the arbitrage rate, derived from the exchange rate of the *fa-pi* against the dollar quoted by the Hongkong and Shanghai Banking Corporation (HSBC), the Japanese yen's official rate against the dollar ($\$23^{7}/_{16}$ per ¥100), and the *Hui Shen* rate.[46] For example, if the HSBC quoted $5.40 and the *Hui Shen* rate was URY60 (per CNY100), the UR yuan's linked rate, which was, by convention, expressed now as units of the new reference currency (special yen) per URY100, was SP¥38.40 ($= ¥38.40 = [9/23^{7}/_{16}] \times 100$). In this example, the arbitrage rate between the *fa-pi* and the special yen was SP¥23.04 ($=38.4 \times [60/100]$) per CNY100. Thus, an exporter in North China of merchandise costing URY100 to Central China would have received SP¥38.40 in 'foreign exchange' whilst the importer in Central China would have had to pay CNY166.67 ($100 \times [38.40/23.04]$), given that the parity of the CR yuan and the *fa-pi* was still maintained at this time.

The outbreak of the Pacific War caused the free *Hui Shen* market temporarily to close and, in March 1942, the CR yuan was pegged to the military yen at ML¥18 (per CRY100). Consider an exporter in North China who sells merchandise costing URY10,000 in Central China for SP¥5,000.[47] Given the official rate of CRY100 = ML¥18 = SP¥18, the importer in Central China

[44] Iwatake, *Kindai Chūgoku*, p. 340.

[45] Matsuzaki, *Kita Shina keizai*, p. 25.

[46] BOJ, *Manshū Jihen*, p. 639.

[47] This example also comes from BOJ, 'Tokubetsu en'.

pays CRY27,777.78 (=100 × [5,000/18]). Given the official parity of URY1 = ¥1= SP¥1, the exporter in North China receives URY5,000 plus yellow paper with the face value of SP¥5,000 (with the 10 per cent withholding rule having been removed). To break even, the exporter needs to sell the yellow paper for URY5,000, and the linked rate becomes SP¥50. The implicit exchange rate for this transaction is given by URY36.00 (=18 × [100/50]) per CRY100, compared with the official rate of URY30.00. The linked rate thus reduces the overvaluation of the UR yuan, which is why trade is promoted.

The intensification of wartime control changed the scope and purpose of linked trade in occupied North China. First, as noted, Central China became virtually the only trading partner. Second, a substantial portion of trade in key commodities with occupied Central China was made subject to an annual bilateral agreement. After the disruption of trade that followed the outbreak of the Pacific War, in March 1942, officials from both sides met to agree that commodities should be classified into special goods—those critical for subsistence and industrial needs—and general goods. The agreed quantities for special goods *must* be supplied to each other, whereas the quantities specified for general goods were indicative.[48]

Trade in special goods was placed on barter, such that the exports and imports of designated commodities were in principle matched in value. The payment for this portion of bilateral trade was made by military yen, whereas the payment for general goods was made by special yen, with the *Hui Shen* market playing a supplementary role. When the 1942 agreement was revised in March 1943, it was agreed that the payment for special goods would be made by special yen or direct clearing between UR and CR yuan (now that military notes would be withdrawn from April), whilst the payment for general goods would be made by special yen or through the *Hui Shen* market.[49] The special yen system thus became one of several mechanisms of settling trade between North and Central China.

The most important alternative to the linked system was the *Hui Shen* market, through which UR yuan could directly be exchanged for CR yuan. Arbitrage thus operated between the market linked rate (L^m) and the free *Hui Shen* rate (H), with the no-profit condition:

$$L^m = (S/H) \times 100 \tag{5}$$

where H is expressed as units of UR yuan and S is the official special yen rate expressed as units of special yen per CRY100. Equation (5) suggests an inverse relationship between the market linked rate and the free *Hui Shen* rate. This is what we indeed observe from December 1942 to October 1943 (figure 6), suggesting that arbitrage was in operation. As further evidence of arbitrage, the market *Hui Shen* rate and the arbitrage (implied) rate moved broadly in parallel with each other (figure 7). Even so, arbitrage was far from perfect, given the wartime restrictions on what could be traded and by whom. The monthly average deviation was 7.9 special yen per URY100 or 9.8 per cent in favour of the arbitrage rate (table 4, row 2).

The Special-Yen Centralized Foreign Exchange System had a reason to exist as long as the official exchange rate overvalued the UR yuan relative to the *Hui Shen* rate. The *Hui Shen* rate needed not to be a free-market rate. If the official rate of URY30 had been strictly enforced, the market linked rate would have been fixed at SP¥60 ([18/30] × 100). In March 1943, the authorities considered that the official *Hui Shen* rate broadly reflected the price differential between North and

[48] YSGC: R0864, Asia Development Board, North and Central China Liaison Offices, 28 March 1942.

[49] YSGC: R0864, Japanese Embassy in Nanjing, 28 March 1943.

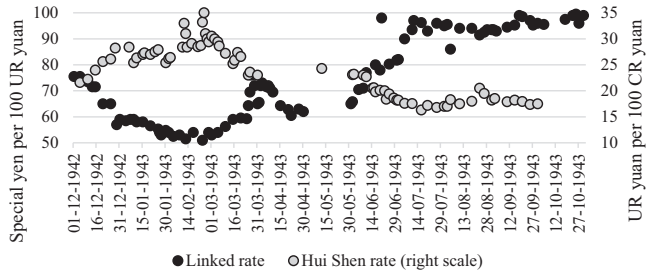

FIGURE 6 Reported daily linked and *Hui Shen* rates in Tianjin, 1 December 1942–31 October 1943.
Note: All available daily rates from all sources are plotted.
Source: Data supplement.

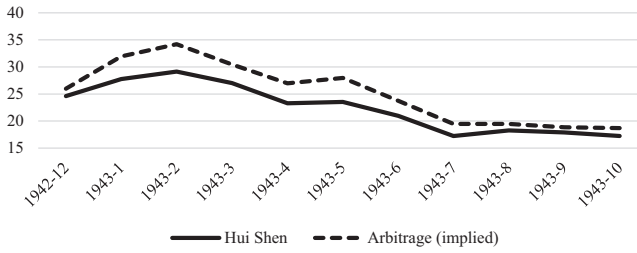

FIGURE 7 The market *Hui Shen* and arbitrage (implied) rates, December 1942–October 1943 (monthly averages; UR yuan per 100 CR yuan).
Note: The arbitrage rate means the exchange rate of the UR yuan against the CR yuan implied by the linked rate, given the fixed exchange rate of CRY100 = SP¥18.
Source: Data supplement; author's estimates.

Central China,[50] implying that the equilibrium linked rate was approximately SP¥60. Around the same time, a separate market report estimated the equilibrium rate to be approximately SP¥75.[51] Assuming that these were both well-informed opinions, we would expect the market linked rate to have been in the neighbourhood of 60–75, depending on other factors affecting the pricing of yellow paper. Indeed, we broadly observe that the market linked rate fluctuated between 60 and 75 in the spring of 1943 (see figure 6).

The steadily higher rate of inflation in Central China (see figure 4), coupled with Central China's increasing inability to supply goods, spelled the end of North China's special yen system. On 8 March 1943, the authorities devalued the CR yuan by setting the official *Hui Shen* rate at URY18. In July, the market *Hui Shen* rate approached the official rate, thereby pushing the market linked rate towards SP¥100 (see figure 6). The official rate no longer overvalued the UR yuan, and yellow paper, having no value, had no takers. From 1 August, foreign exchange banks ceased issuing yellow paper. On 15 September, it was formally announced that all existing yellow paper would cease to be valid at the end of October.[52] For trade with Indochina and Thailand, no

[50] Ozawa, 'Kaisetsu'.

[51] URB, 'Gaikai geppo', February.

[52] Ibid., September.

- Under the US dollar–based system:

Direct: UR yuan → [linked rate] → US dollar

Indirect: UR yuan → [*Hui Shen*] → CNY (Shanghai) → US dollar

- Under the special yen–based system:

Direct: UR yuan→ [*Hui Shen*] → CR yuan

Indirect: UR yuan → [linked rate] → Special yen → CR yuan

FIGURE 8 Channels of arbitrage.

Source: Author creation.

new yellow paper was issued from 1 October. The secondary market for yellow paper disappeared entirely from November 1943.

V | CONCLUSIONS

We have explored the obscure but innovative exchange rate system of Japanese-occupied North China during the Second Sino-Japanese War by utilizing the classified wartime documents of the Yokohama Specie Bank and the monthly data fetched from multiple sources. The system came into being in March 1939 when the existing system of linked trade (introduced in August 1938) was superimposed on the newly created Centralized Foreign Exchange System, which required exporters to surrender export bills to the United Reserve Bank. As an innovation of the system, the right to import could be exercised by exporters themselves, as in the past, or sold to willing importers, thus a secondary market in 'yellow paper' spontaneously developed. To the extent that there was competition amongst potential importers, this aspect of the system likely promoted efficient pricing of the right to import.

North China's system of linked trade had two distinct phases. In the first phase (March 1939–July 1941), the scheme was based on British pounds or US dollars and applied to trade with all trading partners. In the second phase (March 1942–October 1943), it was based on the special yen and applied almost exclusively to trade with Central China. Our analysis has shown that the UR yuan's linked rate mimicked a hypothetical flexible exchange rate that responded predominantly to relative price level developments, as well as to factors influencing the demand for and supply of yellow paper. Because there was an alternative mechanism of financing trade under both systems, there was arbitrage between the linked rate and the alternative rate (figure 8). Arbitrage was far from perfect, given the wartime restrictions on what could be traded and by whom. Monthly data show that these rates broadly moved in parallel, but the monthly average deviation was 17 per cent under the dollar system and 10 per cent under the special yen system.

Given the purpose of facilitating trade when the official exchange rate was fixed, North China's system of linked trade had a reason to exist as long as the official rate was overvalued. The system achieved at least three objectives. First, the centralized aspect of the system, with surrender requirements, gave a degree of convertibility to the UR yuan by securing foreign exchange with which imports could be made. Second, it removed the export disincentive of an overvalued exchange rate by essentially mimicking a flexible exchange rate system. Third, perhaps most importantly, it was successful in preserving the façade of a Potemkin world in

which occupation currencies were irrevocably fixed to the Japanese yen. The layer of complexity, of course, was unnecessary if the occupation currencies could be devalued, but this was not politically acceptable.

North China's linked trade system died a natural death when escalating inflation in Central China eliminated the UR yuan's overvaluation relative to the CR yuan. Thereafter, North and Central China were both incorporated into the Japanese empire's system of retained money as an alternative scheme of trade facilitation. This ended the 4 years of experimenting with linked trade as a way of overcoming the adverse effect of an overvalued exchange rate. The Japanese system of linked trade in occupied North China should be remembered, not merely as a wartime institution, but also as an exchange rate system unique in the history of the international monetary system.

CONFLICT OF INTEREST STATEMENT

The author declares none.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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