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HISTORY AND ANALYSIS OF THE MONETARY SYSTEM OF THAILAND, 1902 - 1942

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Johns Hopkins Institute for Applied Economics,
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About the Series

The *Studies in Applied Economics* series is under the general direction of Prof. Steve H. Hanke, Founder and Co-Director of the Johns Hopkins Institute for Applied Economics, Global Health and the Study of Business Enterprise (hanke@jhu.edu). This working paper is one in a series on currency boards. The currency board working papers fill gaps in the history, statistics, and scholarship of the subject and provide proponents of the system useful historical case studies. The authors are mainly students at the Johns Hopkins University in Baltimore.

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Abstract

Thailand (the Kingdom of Siam) started issuing currency notes in 1902 through a division of the ministry of finance, continuing until 1942, when the country established a central bank. We discuss Thailand's financial system during the period, examining the legislation and relevant events in the country that shaped it during those years. We also gather data and test whether the system operated like a currency board in any part of the period.

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Keywords: Siam, Thailand, central bank, currency board, Thai Notes Bureau, currency, notes
JEL codes: E58, N15

I. Introduction

Thailand's monetary system from 1902 to 1942 has been little discussed in English. Economic publications widely read at the time, such as Edwin W. Kemmerer's *Modern Currency Reforms* (1916), discussed monetary systems similar to Thailand's but overlooked the Thai monetary system itself.

This paper aims to examine Thailand's monetary system after the issuance of notes started in 1902 until 1942, and also analyze whether, at any time during this period, the Thai financial system operated as a currency board. The period from 1902 to 1942, during which the Thai Ministry of Finance issued notes, has not been studied as a whole, at least not in English, and the monetary data of the period have previously not been available in machine-readable form. This paper is based in part on the work of Ian Brown (1972, 1975, 1978, 1979), whose studies are the only detailed account of the Thai system in English (and perhaps in any language), but which only cover its early years. The paper draws historical data from the *Statistical Yearbooks of Thailand* to describe characteristics of the note issue to test whether, during its lifetime, it ever worked like a currency board. The chronology on the next page contains a summary of key statistics, legislation, and relevant events.

A remark on the political system is in order here. Thailand, or the Kingdom of Siam, was an absolute monarchy until June 24, 1932. A group of Siamese officials, motivated mainly by the difference between the backwardness in Siam and the advances that could be seen in Western Europe, staged a revolution that overthrew the old system. The revolution allowed the king to keep his throne provided that he acted according to the will of a constitutional government (Stowe 1991: 19). Siam then became a constitutional monarchy, at least on paper. A military coup the next year began a pattern that persists to the present of alternating periods of military and civilian rule.

For a brief time, the monetary system this paper discusses extended outside the present-day borders of Thailand. After France was conquered by German military forces in 1940 during World War II, Thailand attacked French Indochina and regained territory in Cambodia and Laos that it had previously ceded to France. Japan, which had invaded Vietnam, the other colony of French Indochina, mediated a settlement between Thailand and France. The Kingdom of Siam (Thailand) was occupied by the Japanese in December 1941, once World War II erupted in Southeast Asia; however, in comparison with other countries, Siam's occupation was less severe, since the Thai government retained, to a certain level, capacity for independent action. After the war, Thailand returned to Laos and Cambodia the territory it had gained in 1940.

II. Chronology

Time	Legislation	Relevant events
1850 - 1902		Silver standard - International Value of baht coins depended on the silver they contained - In 1902, the government decides to untie the currency to silver
1902 - 1928	- Paper Currency Act (24 June 1902): notes backed 75% by coin, 25% by investment in securities - Paper Currency Amendment Act, 9 October 1906: coin reserve = securities reserve = 50% - Gold Standard Act, 11 November 1908: 1 Siamese tical (Thai baht) = 0.558 grams gold; silver tical of 13.5 grams silver = gold tical	- In 1902, Treasury buys and sells sterling at fixed rates (Statistical Yearbook of Thailand 1939-1944) - Notes issue begins (19 September 1902) - Paper Currency Department opened (23 September 1902) - 1907: a special Paper Currency Reserve is set; it is backed by the Gold Standard Reserve
1928 - 1941	- Currency Act (15 April 1928): the Paper Currency Act, the Gold Standard Act, and the Coinage Act are repealed. 1 baht = 0.66567 grams of fine gold, or 11 baht = £1 sterling. Exchange controls are removed - Emergency Currency Act (December 1941): enacted after the Japanese Invasion. Allows the finance ministry to issue pertinent regulations and amendments related to the currency. 1 baht = 0.32639 grams of gold (nominally)	- Gold exchange period - Strong trade surplus - Currency in circulation increased - Strong gold and foreign reserve - 21 September 1931: England leaves the gold standard - 1932 sterling-baht link re-established - 1939: U.S. dollars and dollar securities are added to the components of the Currency Reserve
1942	- Exchange Control Act, 1942 - Bank of Thailand Act, 1942	- January: convertibility of the baht into sterling is suspended, its gold value is pegged at 0.32639 grams of fine gold (nominally), and the currency authority is authorized to issue notes against gold - June: Japanese yen becomes legal component of the currency reserve - 11 December: Central bank, the Bank of Thailand, opens

III. The Silver Standard (1850-1902)

From 1850 to 1902, Thailand maintained a silver standard, in which the international value of the Thai baht (called in the West at the time the Siamese tical) depended on the silver it contained. The baht weighed approximately 15.292 grams, of which approximately 90.625 percent was silver (U.S. Bureau of the Mint annual report 1900: 512-513). As trade expanded, Thailand experienced a net influx of silver, given that exports exceeded imports. The silver was then sold to the mint and baht coins were paid out in exchange, adding to domestic circulation. Additionally, King Mongkut, advised by the British consul, allowed foreign coins to circulate for trading purposes in Thailand according to the "Proclamation Concerning the Use of Foreign Coins" in 1857. The government issued notes in the 1850s, 1860s, and 1874, but they did not achieve wide circulation, and by the end of the century they had long disappeared from circulation.

The monetary system consisted of the silver standard and baht coins. The government had no sophisticated capacity to regulate the money supply. The Treasury was simply a middleman for silver exchange: when trade brought in silver, banks sold it to the Treasury for baht coins, while the opposite occurred when traders needed silver to pay for imports.

After 1870, silver began to depreciate against gold in world markets. Depreciation added to the cost of imports while stimulating exports. The government's concern about the cost of essential imports servicing foreign loans denominated in sterling, a gold-standard currency, contributed to sentiment to abandon the silver standard. Finally, in 1902, the government decided to untie the currency from silver.

Thailand got its first modern bank when the Hong Kong and Shanghai Bank (today HSBC) opened in Bangkok in 1888 and introduced the first notes (paper money) the following year. The notes were for 1 to 100 baht. Later, the London-based Chartered Bank of India, Australia and China (today Standard Chartered) and the Paris-based Banque de l'Indochine opened and also issued notes. The notes circulated mainly in Bangkok (King 1988: 129-132). The first locally owned bank, the Siam Commercial Bank, did not open until in 1906, and even then, its management was initially German (Sithi-Amnuai 1964: 33, 49).

It is worth mentioning that in the late 19th century, Thailand underwent a series of reforms to promote efficient administration. This was regarded as essential given that Thailand wanted to maintain its political independence, especially since other countries in Southeast Asia had fallen under European rule. These reforms included the employment of European technical experts of different nationalities. Some worked as advisors to government departments. The advisors to the Ministry of Finance were British (Brown 1978: 194), and their power was considerable (Ingram 1971: 152). Alfred Mitchell-Iness was assigned as Thailand's first British financial advisor in 1896 (Brown 1978: 194) and was succeeded by Charles James Rivett-Carnac in 1899 and afterward by Walter Williamson in 1904. Financial advisors would remain in Thailand until 1950 (Ingram 1971: 152).

IV. Establishment of the Gold Standard; Government Paper Money (1902-1928)

In June 1902, the cabinet passed the Paper Currency Act, stripping the banks of the right to issue notes and making it a government monopoly. (See Appendix A for a list of the legislation this paper mentions.) The act required that around 75 percent of the value of notes in circulation be backed by coin and the rest be backed by investments in securities. Thailand had no local gold coinage, so the coin reserve consisted of silver baht. The act left open whether the securities to be held were foreign or domestic. The act also established the Paper Currency Department as a division of the Ministry of Finance. The department administered the exchange of notes and coins and maintained the Paper Currency Reserve. By August 1902, the paper currency scheme was inaugurated, as a sufficient amount of notes had been received from the printers (Brown 1972: 30).

The Paper Currency Department officially opened on September 23, 1902. The notes consisted of four denominations: 5, 10, 20, and 100 baht; later, a 1,000-baht was issued (Brown 1972: 30). The government mint, also under the supervision of the Treasury, continued to issue coins. Coins were not subject to any reserve requirement. Initially, Thailand remained on the silver standard, with the baht equal to approximately 13.85 grams of pure silver, or three-fifths of a silver dollar of the Straits Settlements, a British colony comprising Singapore, Penang, Malacca, and Dinding. On November 27, 1902, prompted by an increase in the price of silver relative to gold, the Thai Treasury established an official exchange rate of 17 baht per pound sterling. This rate was not realistic in light of the market exchange rate at the time, so on December 17 the Treasury established a more realistic rate of 19.75 baht per pound sterling. Silver continued to appreciate against gold, so the Treasury periodically appreciated the baht's exchange rate with sterling accordingly to prevent baht coins from becoming worth more as metal than as coins, which would have led to them being withdrawn from circulation and melted down, creating deflation.

The pound sterling became the new anchor since it was the leading currency of the time, given the large scale of the British economy and the fact that London was the world's biggest financial market, especially for governments that wanted to borrow more than they could from domestic investors. Borrowers borrowed funds in sterling rather than in their own currencies because lenders trusted it most, given Britain's record of maintaining the gold standard uninterrupted for decades.

Siam, starting during this period, pursued many financial orthodoxies that mirrored those of neighboring countries at the time. For example, Thailand pursued a policy of maintaining high reserve levels, and so did the Straits Settlements, which had established a currency board in 1899, initially fixed to silver but switching to sterling in 1906. Malaya, Thailand's neighbor to the south, did not issue its own currency, so the circulating currency was the Straits Settlement currency. Malaya benefited from the Straits dollar's exchange stability (Brown 1978: 212). The Straits dollar was also widely used in southern Thailand in the early years of the 20th century. Thailand's mirroring of standard monetary orthodoxies at the time may also have a relationship with the aforementioned British advisors working for the Ministry of Finance. British India operated under a quasi currency board system for many from 1870 until 1916 (Weintraub and Schuler 2013: 14). Thailand's British advisors working in the Ministry of Finance were aware of these monetary systems, which may explain why, according to Ian Brown, Thailand considered it a priority to maintain the exchange value of the baht in terms of sterling and gold.

IV.a. Treasury Selling Rate for the Baht (December 1902-February 1904)

In 1906, the Paper Currency Amendment Act was passed to allow up to 50 percent of the Paper Currency Reserve to be invested to earn interest. After finance minister Praya Suriyanuvat (Kert Boonak) laid his proposal to issue gold coins before the Council of Ministers on June 25, 1906, the exchange rate was revalued to 15 baht per pound 1 with the King's approval. In December 1907, the Treasury again revalued the selling rate, to 13 baht per pound. The table details exchange rate changes during this period can be found in Appendix B.

IV.b. Change in Treasury Selling Rate for Baht against Sterling (1908-1928)

On 11 November 1908, the Gold Standard Act was passed, dictated a fixed exchange rate of 0.558 grams of pure gold per baht and promised the government's capability of maintaining parity. In fact, a de facto gold-exchange standard had been existing since November 1902: the government maintained a reserve of foreign currencies that could be converted into gold, and the Ministry of Finance sold and bought against gold-based currencies at set rates. In May 1909, the Paper Currency Department ceased to be a separate division within the Ministry of Finance, as it was transferred to the Comptroller-General's office. Even though matters related to the Department would be dealt with by the Comptroller-General, the Minister of Finance would still have ultimate responsibility for the Department's operations (Brown 1972: 40).

Until World War I broke out in 1914, the Treasury managed to maintain the exchange rate around 13 baht per pound with relative ease. At the start of the war, Britain suspended the gold standard. Silver eventually rose in price against gold and sterling, again threatening a drain of silver baht coins from circulation. As a counter-measure, the government forbade the export of silver on 21 June 1917 (Siam, proclamation of 21 June 1917, cited in U.S. Bureau of the Mint annual report, 1928: 187). In 1919, at the end of World War I, Thailand experienced a financial and economic crisis, boosted by two main factors: the unprecedented demand for rice in Bangkok, resulting from a crop failure, and the rising price of silver (Ingram 1971: 156).

The rising price of silver motivated melting of baht for export. The government had to choose between protecting the foreign reserve and silver currency, and it chose the latter. An option that it apparently felt was not politically feasible would have been to reduce the silver content of baht coins or even to convert them into token coins with no silver content.

The United Kingdom returned to the gold standard in 1925 at the prewar exchange rate.

V. The Currency Act (1928-1941)

On April 15, 1928, the government passed the Currency Act. This act repealed the Paper Currency Act (1902), the Gold Standard Act (1908), and the Coinage Act (1903). It also repealed exchange controls. The exchange rate remained at 11 baht per pound sterling, and the baht was equivalent to 0.66567 grams of gold. Only a year and a half later, the U.S. stock market crash of October 1929 began a worldwide depression. Gold-standard currencies suffered deflationary pressure and came under attack by currency speculators. In September 1931, Britain abandoned the gold standard, and the pound sterling depreciated against gold. Thailand responded by linking to gold as the unequivocal anchor (Shenoy 1950: 289). However, in May 1932, the association with sterling was re-established, and the possibility of converting baht into gold or gold exchange was no longer comprehended within currency laws (Shenoy 1950: 289). Sterling's depreciation against gold enabled Britain to reverse much of the deflation and depression that it had suffered. When Britain went off the gold standard, it took the whole British Empire with it. Because of Thailand's trade and investment links with Britain and the British colonies of India, Malaya, and Singapore, it made sense for Thailand to return to sterling as its anchor currency. The Currency Reserve continued to be invested in gold or gold currencies until May of 1933, when the holdings of gold were converted into sterling (Bureau of General Statistics, *S.Y.T., 1939-1944*: 426).

During this period, the issue of currency and volume of money in circulation increased due to increased demand for money that resulted from the expansion of production and trade in Siam. An export surplus also enabled the accumulation of reserves (Shenoy 1950: 289).

In August 1939, the United States dollar was added as a component of the Currency Reserve (Bureau of General Statistics, *Statistical Yearbook of Thailand, 1939-1944*: 426). We suspect the reason was that the Thai government knew that war in Europe was imminent or was at least a strong possibility. Holding dollar assets gave the Currency Reserve a way to reduce the political risks from holding sterling as the only foreign currency. World War II began in Europe the next month.

There had already been a war in progress between Japan and China since 1937. In October 1940, Japanese military forces had invaded and quickly conquered neighboring French Indochina. World War II in the Pacific began on December 7-8, 1941 with Japanese attacks against Hawaii, the Philippines, Hong Kong, Malaya, Singapore — and Thailand. Later that month, the government passed the Emergency Currency Act. It allowed the Ministry of Finance to issue regulations and provide appropriate amendments related to the currency (Bureau of General Statistics, *Statistical Yearbook of Thailand, 1939-1944*: 426). The main principles of the Currency Act of 1928 still applied, but they could now be superseded by any amendments made under the Emergency Act (Bureau of General Statistics, *Statistical Yearbook of Thailand, 1939-1944*: 426). After the Japanese conquest, Thailand was officially an ally of Japan, which enabled it to retain its own government under close watch by the Japanese, rather than being directly government by Japanese military officials as Malaya was.

VI. The Yen Standard and the Bank of Thailand (1942)

In January 1942, the convertibility of the baht into sterling was suspended due to the spread of World War II to Southeast Asia. The gold value of the baht was then fixed at 0.32639 grams of fine gold (Shenoy 1950: 290), and government securities became eligible to be held in currency reserve (Ingram 1971: 163). This set of decisions was made because the sterling portion of the currency reserve, which was held in London, was lost with the outbreak of the war in 1941, leaving the currency notes lacking adequate cover (Ingram 1971: 163). In April, the gold value of the baht was further reduced to 0.25974 grams of gold (Shenoy 1950: 290). In practice, the gold value of the baht was only nominal; people could not actually exchange baht notes and coins for gold. In June of the same year, the baht switched to a yen standard of 1 baht = 1 yen. This rate, desired by the Japanese occupiers, represented a 36 percent devaluation of the baht relative to the prewar exchange rate of 1 baht to 1.5570 yen. Moreover, convertibility into yen was conditional on being needed for bona fide business purposes as determined by the exchange control authorities. The link between the baht and the yen would last until May 1, 1946, following the end of the State of War with the Allied nations on January 1 of the same year (Shenoy 1950: 290).

The idea of establishing a central bank in Thailand was born in 1932 after the revolution of that year established a constitutional rule in Siam. However, the idea was shelved and revived on numerous occasions until December 1938, when Lieutenant General Luang Pibulsonggram and Pridi Banomyong were appointed as prime minister and minister of finance, respectively. Banomyong revived, once again, the idea of establishing a central bank in Siam. With the help of foreign advisers, a central banking act was drafted according to the need and intentions of the government (Bank of Thailand). Following this, Thailand established a National Banking Bureau to manage government debt and lay the groundwork for central banking. The Thai National Banking Bureau started operations on May 11, 1940. After the Japanese invasion of December 1941, the occupying Japanese authorities demanded the establishment of a central bank with Japanese advisors and department heads. The Thai Government rejected this idea; instead, it changed the Thai National Banking Bureau into a central bank (Bank of Thailand 1992). Doing so enabled it to have greater independence than In the Japanese proposal.

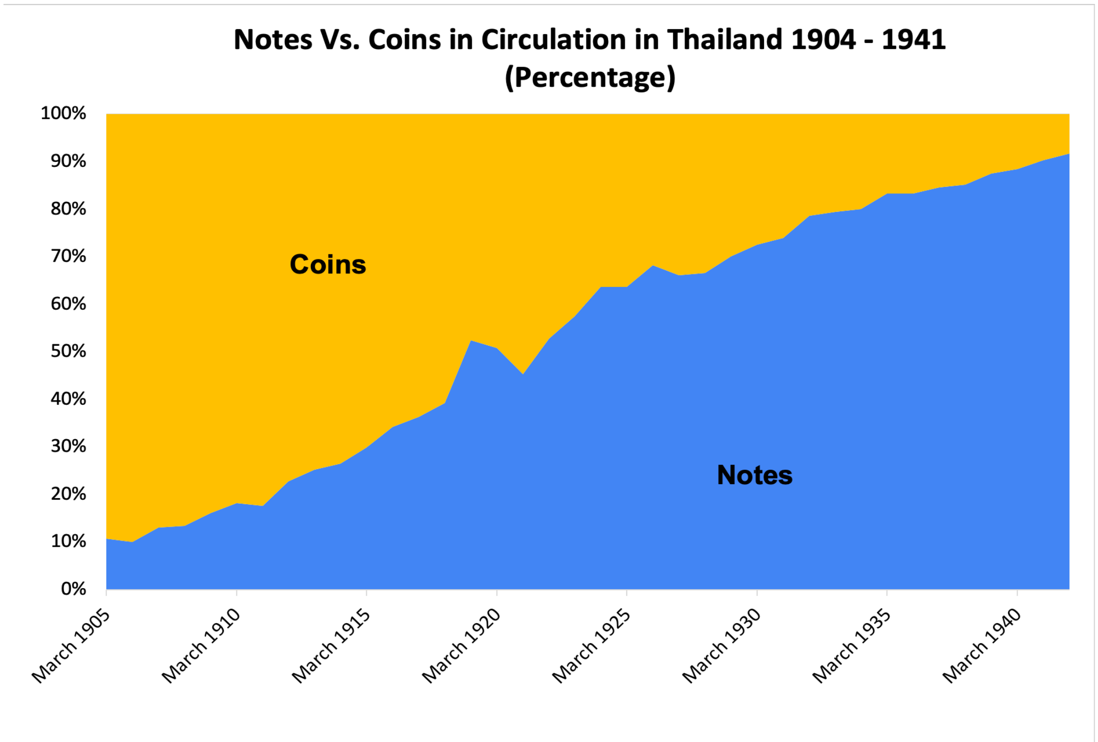
On December 10, 1942, the Bank of Thailand Act officially established a central bank: the Bank of Thailand. The management of the note issue, previously a responsibility of the Ministry of Finance, was transferred to the central bank's Issue Department (Shenoy 1950: 290). After its establishment, the Bank of Thailand became the country's central monetary authority (Bureau of General Statistics, *Statistical Yearbook of Thailand, 1939-1944*, page 426).

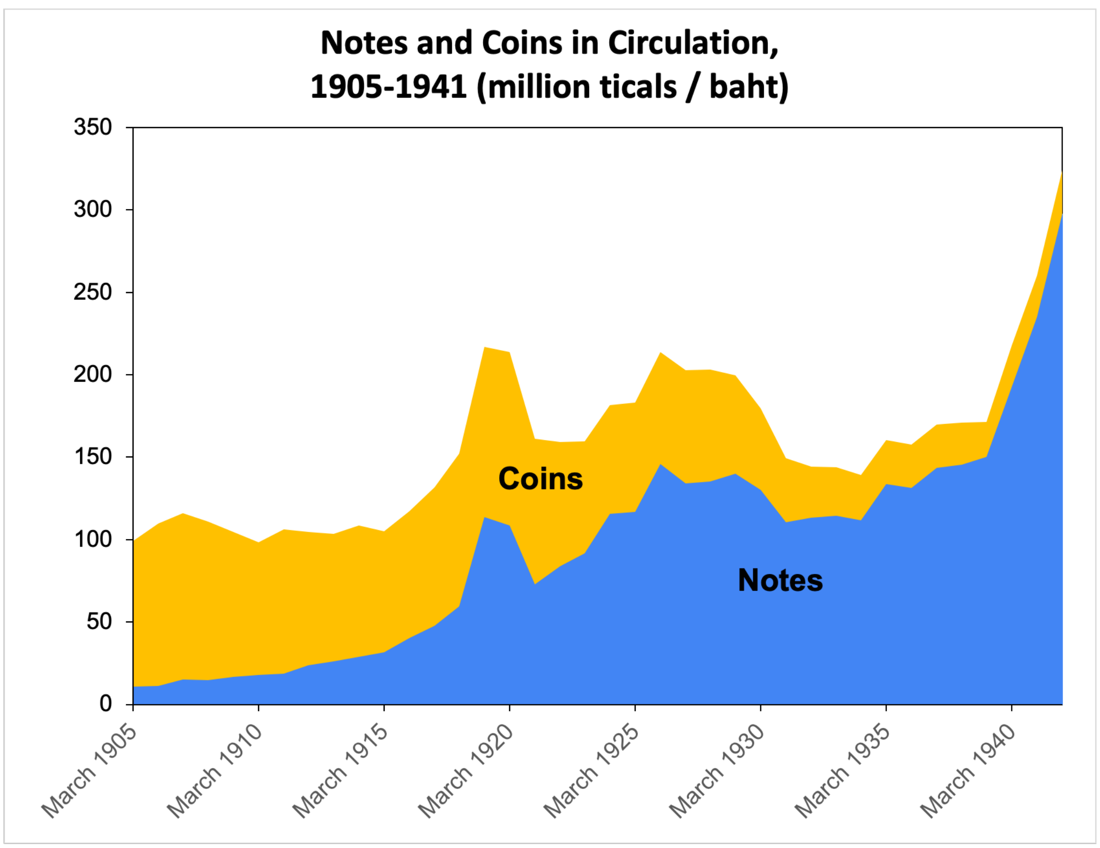
VII. Overview of Thailand’s Monetary System from 1902 until 1942

We believe it is of interest to analyze how Thailand’s financial system changed during the 40 years on which this paper focuses.

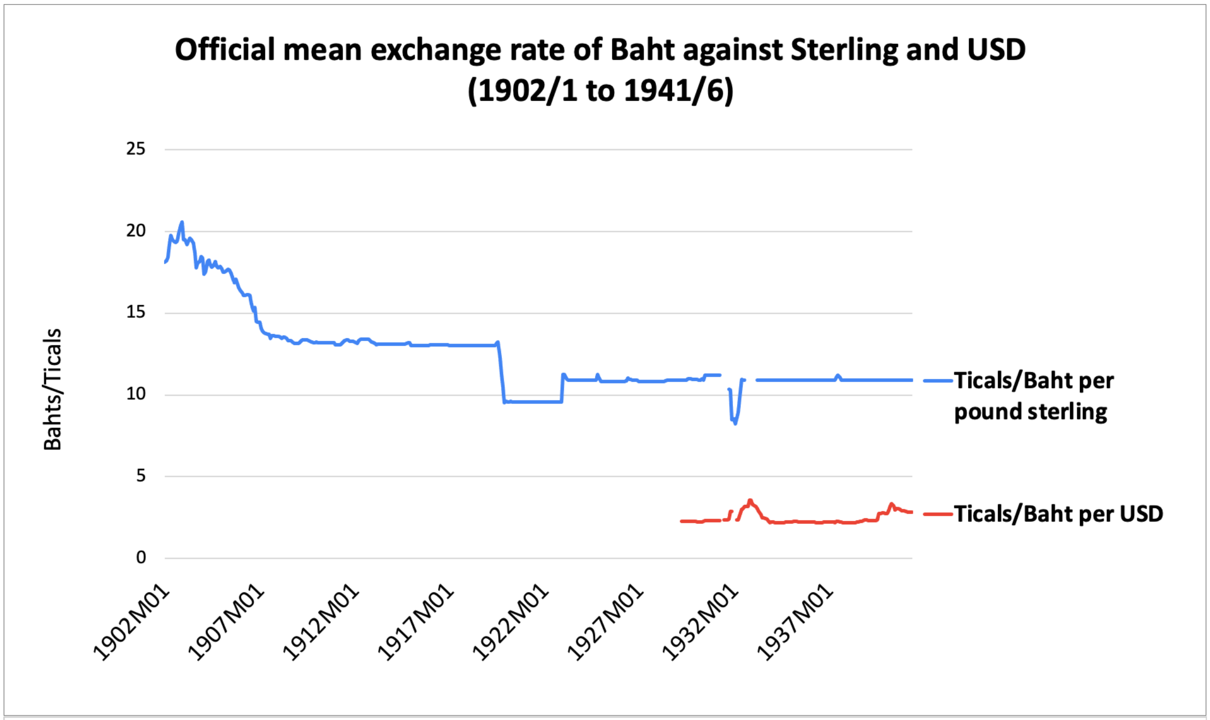
One key aspect is the change in the predominance of the coins in circulation in Siam during the given time period. In March 1905, coins in circulation made up approximately 90 percent of the value of the currency in circulation. By December 1941, currency notes made up for approximately 90 percent of the currency in circulation. The increasing usage of notes relative to coins is one indication of financial development. Two graphs below show the relationship between notes and coins in circulation in Thailand by percentage and by value.

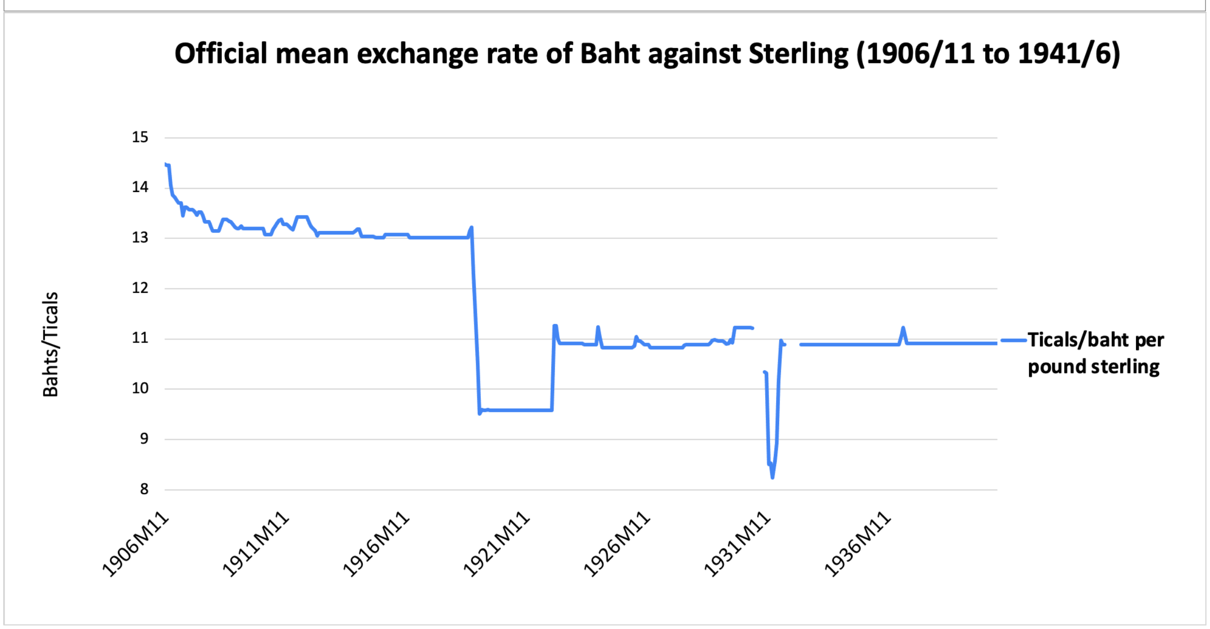
As seen on the chart, starting in 1923 until December 1941, there were many fluctuations in currency circulation. Total currency circulation experienced little overall growth until World War I, but the circulation of paper money increased rapidly after 1902 (Ingram 1971: 154). As a result of the demand for baht given the strong demand for Thailand's export products during the war, total currency circulation experienced a sharp increase (Ingram 1971: 156). The Treasury was able to supply baht only by issuing paper money. Emergency measures were taken to address the increasing demand for baht, including releasing the last of silver coins in reserve and overprinting one-baht notes as 50-baht notes. Due to the postwar depression, the total currency circulation fell as there was a heavy purchase of sterling from the Treasury to cover unfavorable turn in the balance of payments (Ingram 1971: 158). Around 1923 to 1924, as exports improved, sterling drain stopped, and £2 million were sold to the Treasury, total currency circulation began to recover (Ingram 1971: 159). From 1932 to 1941, notes in private circulation rose from 77 million to 287 million baht and silver coins in circulation dropped from 68 million baht to 26 million, resulting in an overall increase in currency in circulation (Ingram 1971: 162). As World War II began, currency in circulation was sharply inflated by an export surplus financed by issuing baht notes against yen credits, budget deficits financed by turning over noninterest-bearing Treasury bonds, and expenditure made by Japanese occupation forces (Ingram 1971: 163).


Notes Vs. Coins in Circulation in Thailand 1904 - 1941
(Percentage)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Coins
Notes
March 1905
March 1910
March 1915
March 1920
March 1925
March 1930
March 1935
March 1940

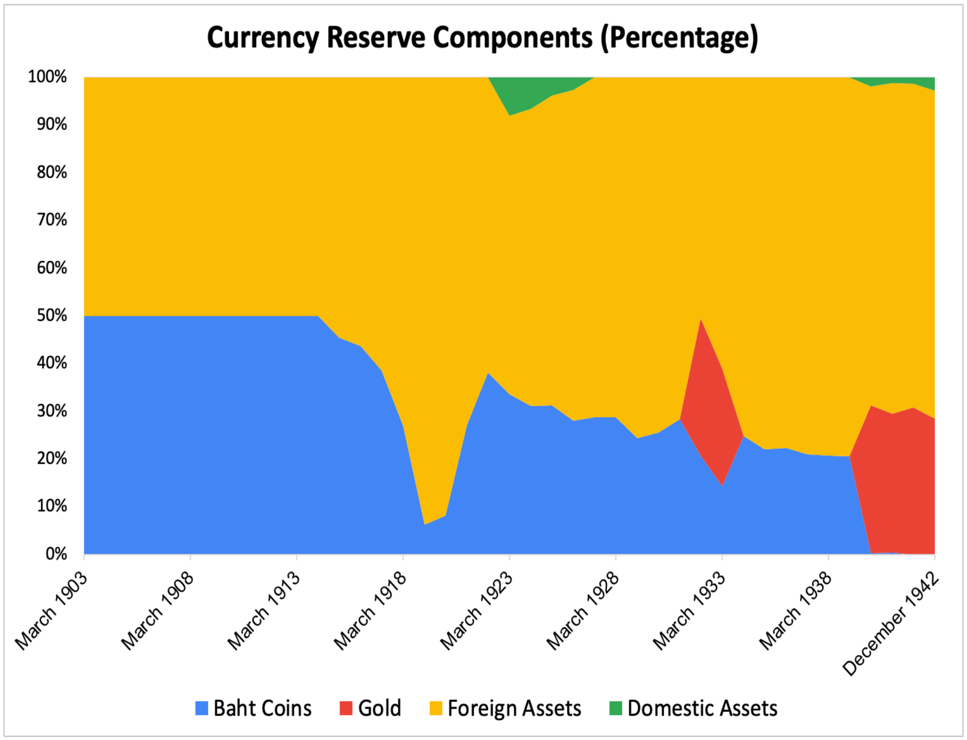

Notes and Coins in Circulation,
1905-1941 (million ticals / baht)
350
300
250
200
150
100
50
0
Coins
Notes
March 1905
March 1910
March 1915
March 1920
March 1925
March 1930
March 1935
March 1940

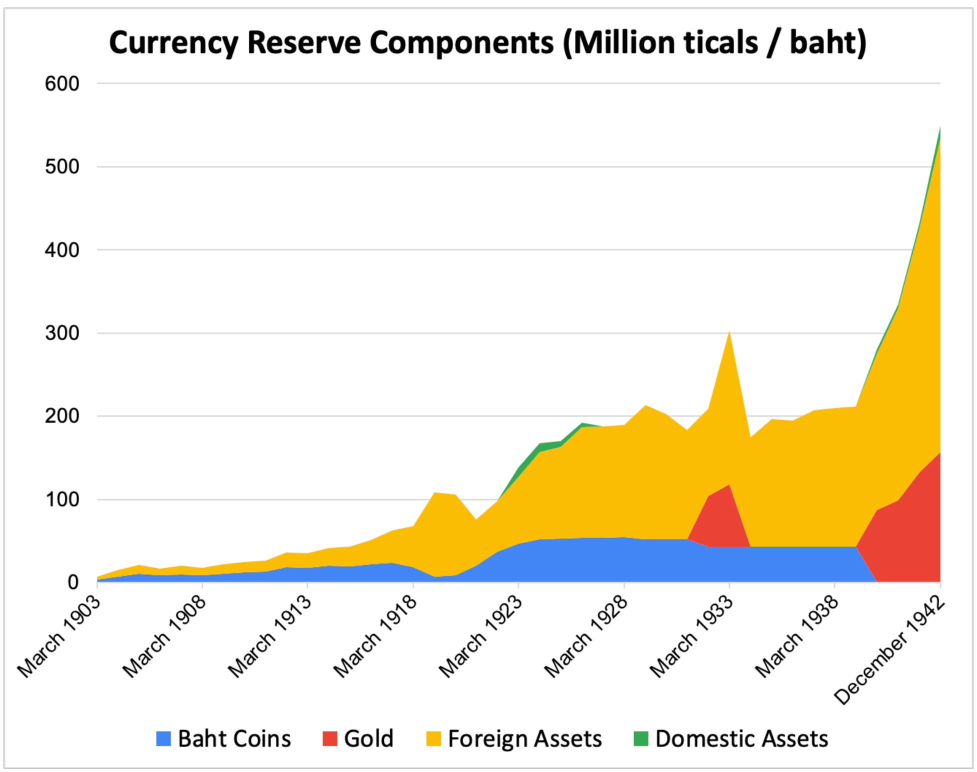
Another aspect of interest is the change in the baht-sterling exchange rate and also in the baht-U.S. dollar exchange rate during the period. Below is a chart that shows the fluctuations in both exchange rates.





Finally, another aspect we find relevant is the change in the currency reserve components. Below are two charts showing the shifts in the relationship between the components, both by value and by percentage. The graphs show a predominance of foreign assets over all other components of the Currency Reserve. In 1903, baht coins consisted of 50% of the Currency Reserve; by 1940, it represented less than 5%. We can see that domestic assets were a minor component of the reserve, only reaching a maximum value of approximately 10% of the reserve's value in 1923. Finally, one can see that gold took an increasingly relevant role as a component of the reserve. By 1942, gold composed approximately 30% of the value of the Currency Reserve.





VII. Spreadsheet Data

For carrying out the set of analyses comprehended in this working paper, we retrieved data from the *Statistical Yearbooks of Thailand* (Kingdom of Siam) from 1916 to 1944. The yearbooks were found through archival websites and at the Library of Congress in Washington, D.C. The Excel workbook accompanying this working paper will be of use for other researchers who wish to investigate Thailand's financial system in the 1902-1942 period in the future.

Only annual data is available for most of the early years of the period. Before March 1907, data related to the exchange rates were the only monthly data available. We also performed calculations to ensure that the components listed on the yearbooks equaled their sums. We also made minor corrections to the raw data as necessary.

VIII. Tests of Currency Board Orthodoxy

The facts we have offered about Thailand's financial system in the 1902-1942 period raise the possibility that the system was close to a currency board for at least part of the period.

Three main characteristics define an orthodox currency board: a fixed exchange rate, no exchange controls with the anchor currency, and 100% foreign reserves against the monetary base (Hanke and Schuler 2015: 2-7). We have decided to carry out three main tests, comparing ratios of (1) foreign assets to total assets (in an annual and monthly basis), (2) net foreign reserves to the monetary base (also in an annual and monthly basis), and (3) reserve pass-through (only in an annual basis). The analysis tests chosen were similar to those applied by Charlie Wang (2017) in his working paper in this series, on Ireland's currency board and central bank.

Even though we performed tests for the whole period in which data is available, Thailand's monetary system could have possibly been a currency board only during periods in which the baht had a fixed exchange rate with the pound sterling and full convertibility. Two periods fit these criteria. The first period goes from April 1928 (when the Currency Act, which repealed exchange controls, was established) to September 1931 (when the United Kingdom abandoned the gold standard and the U.S. dollar became the currency of reference). The second period goes from May 1932 (when Thailand returned to using the sterling as an anchor currency) to January 1942 (when Thailand re-established exchange controls during World War II).

We believe it is relevant, for a better understanding of the tests performed, to define which items constitute foreign assets. For both the monthly and the annual tests, we defined foreign assets as including the cash in baht coins, the cash on current account and fixed deposits (cash abroad, mainly in London), the silver bullion held at the Royal Mint or Treasury, the gold that was in Thailand and abroad at the time, and also any other type of investment or securities abroad. The rationale for counting baht coins as foreign assets is that they were mostly silver, which the government could have melted down and sold if necessary. Had the coins consisted of little or no silver we would have counted them as domestic assets.

VIII. a. Foreign Assets to Total Assets

An orthodox currency board holds few or no domestic assets. Hence, the first test we carried out for testing orthodoxy was determining the ratio of foreign assets as a share of total assets. In an orthodox currency board, the ratio should be around 1 (meaning that 100 percent of the assets are foreign).

The graphs below plot the ratio of foreign to total assets in Thailand on both a monthly and an annual basis. The thick blue line represents the ratio, and we included a dotted line to represent where the ratio should be. Since there is only data available on a monthly basis starting from the year 1922, the monthly graph covers the 1922-1942 period. The annual graph covers until 1942 starting in 1902, the year in which currency notes started to be issued in Thailand.

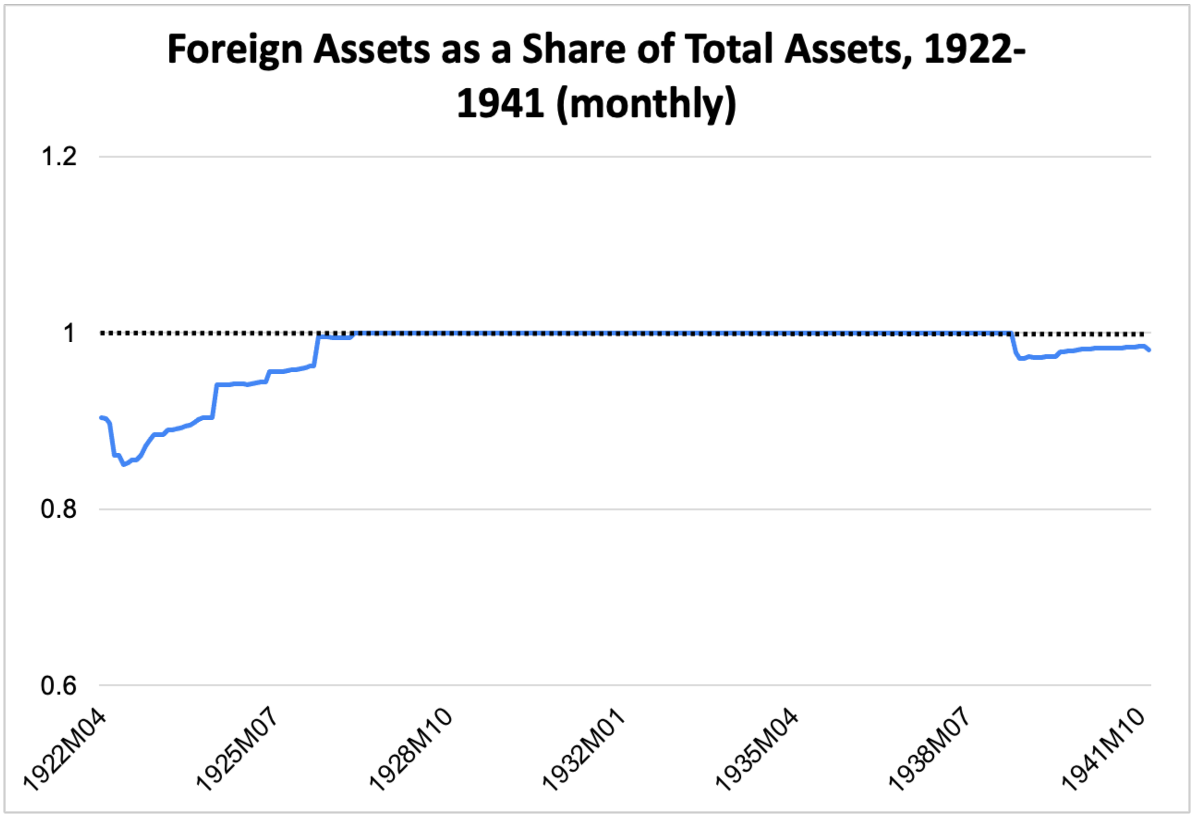
As seen in the charts on the next page, for most years between 1922 and 1941, the ratio of foreign assets as a share of total assets stuck close to 1 or 100%. Thailand's monetary system conformed to an orthodox currency board, then, during this period, if analyzed from the point of view of Thailand having all, or almost all of its assets held abroad.

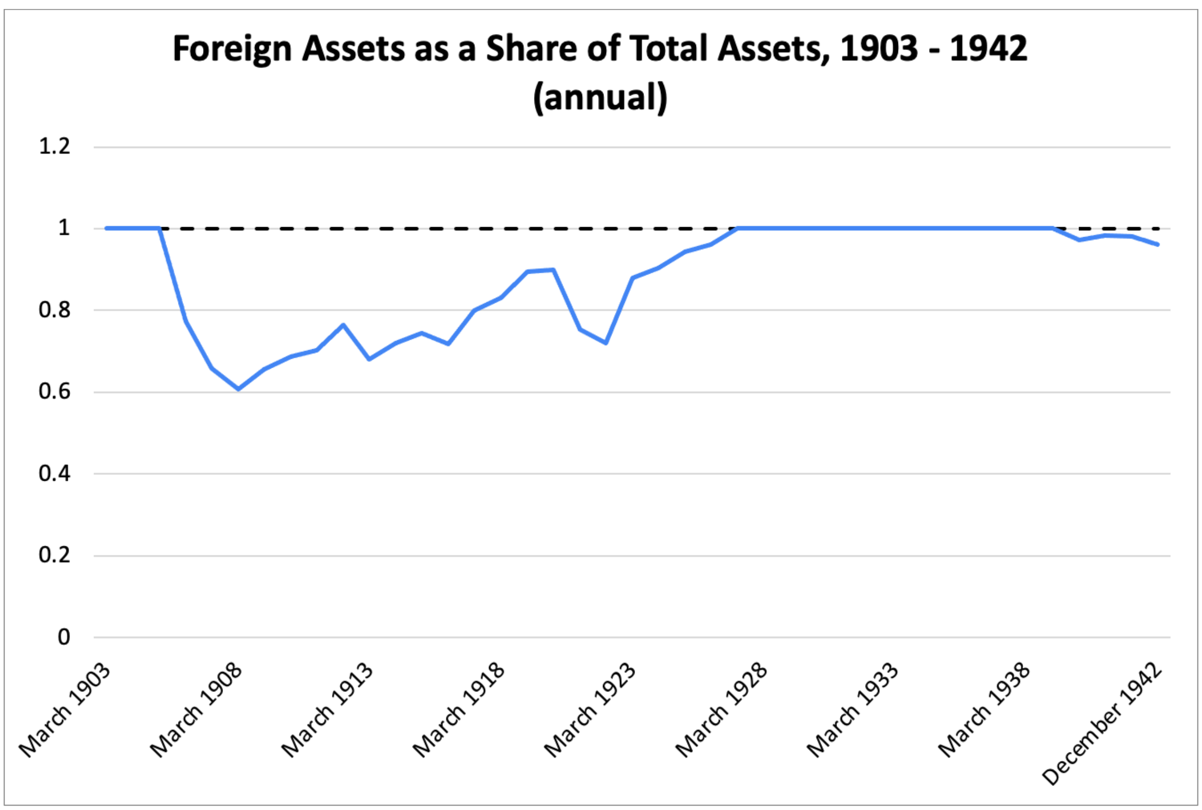
VIII. b. Net Foreign Reserves to Monetary Base

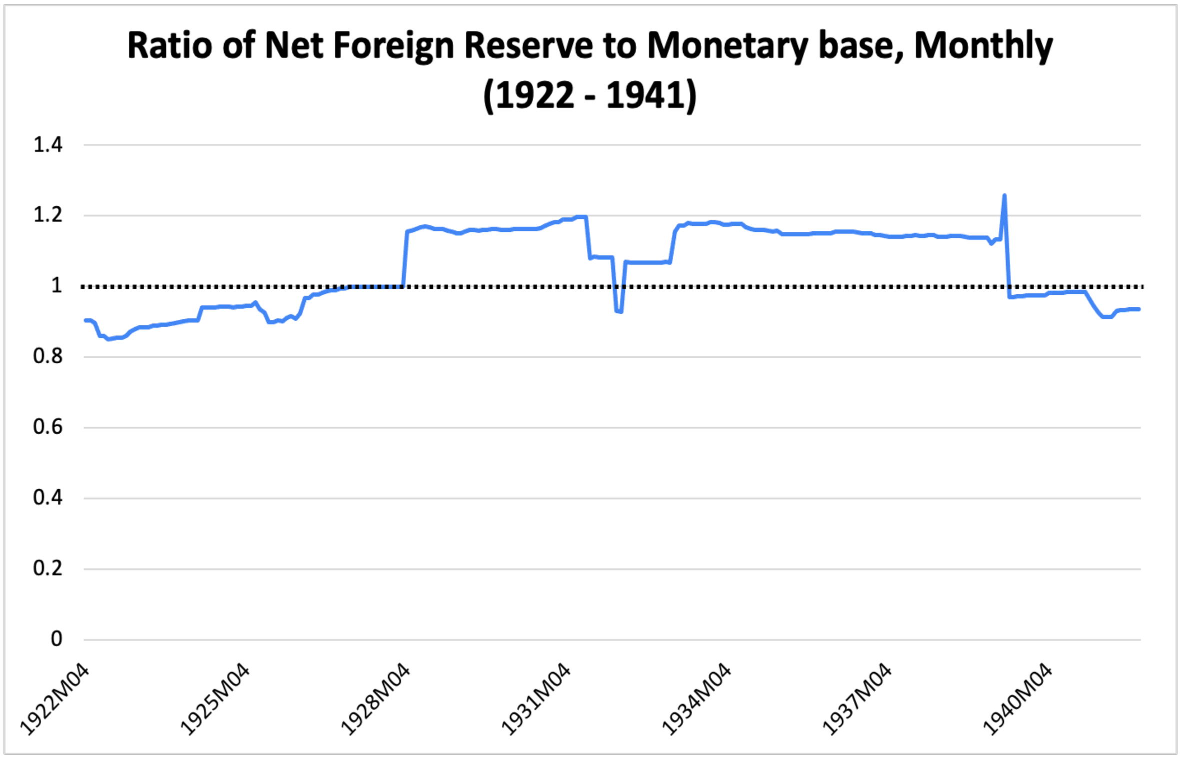
Taking as currency notes and coins in circulation as Thailand's monetary base and as net foreign assets the assets that the Kingdom of Siam held abroad during the examined time period, we have performed a second test of currency board orthodoxy based on the net foreign reserves to monetary base ratio.

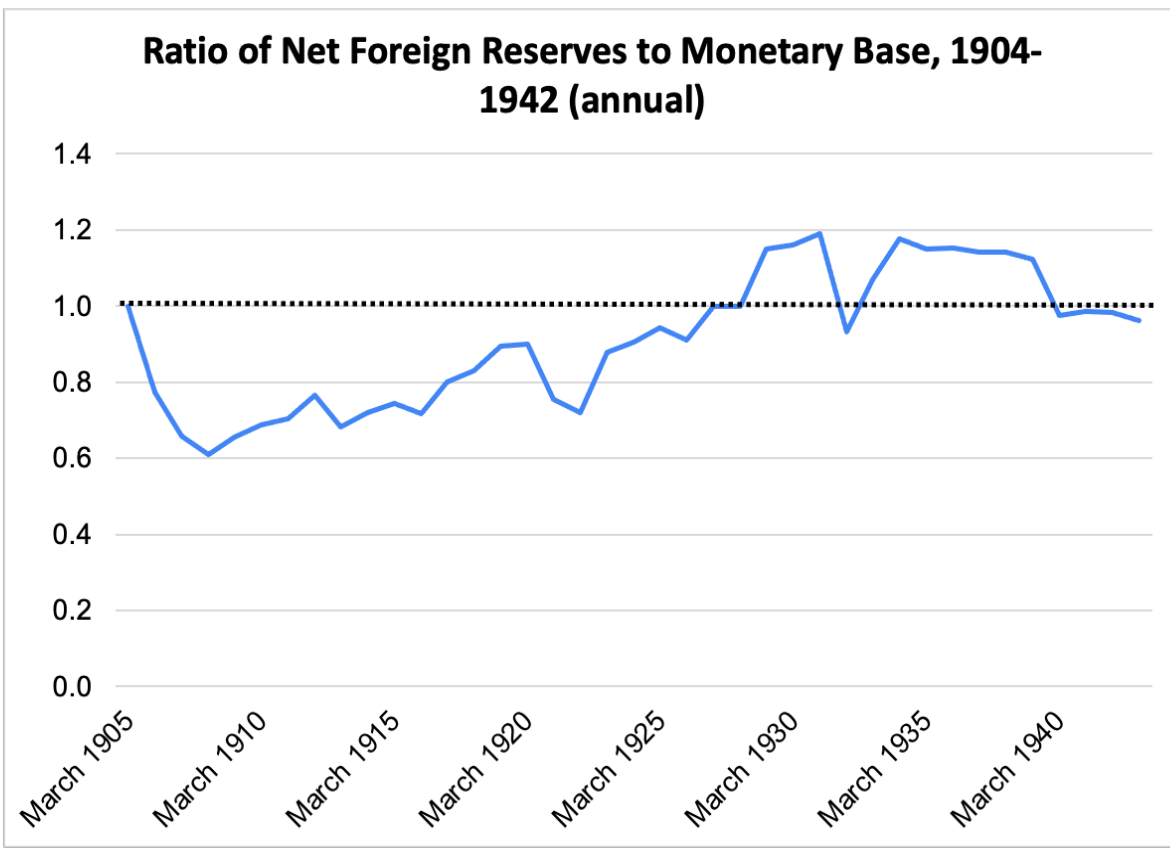
In an orthodox currency board, the ratio should be very close to 1, accepting 0.2 as a margin of error due to changes in market valuation of assets or other factors (Wang 2017: 14). A ratio below or above the aforementioned margin of error can be a sign of unorthodoxy.

As shown on the charts two pages below, in all months between April 1922 and December 1941, Thailand's monetary system conformed to an orthodox currency board, as the net foreign assets to monetary base ratio was close to one within the aforementioned margin of error, with a slight exception in the month of June 1939, when the ratio was approximately 1.25.


Foreign Assets as a Share of Total Assets, 1922-1941 (monthly)
1.2
1
0.8
0.6
1922M04
1925M07
1928M10
1932M01
1935M04
1938M07
1941M10

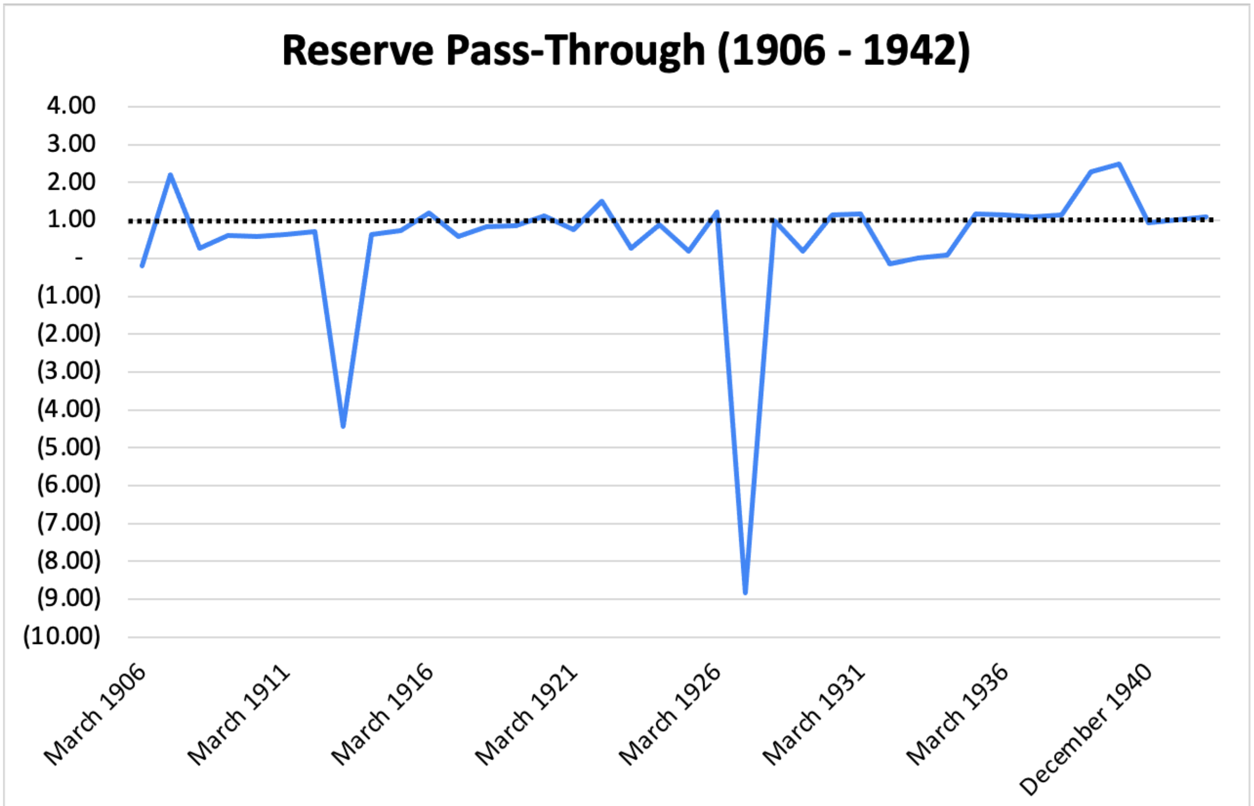

Foreign Assets as a Share of Total Assets, 1903 - 1942 (annual)
1.2
1
0.8
0.6
0.4
0.2
0
March 1903
March 1908
March 1913
March 1918
March 1923
March 1928
March 1933
March 1938
December 1942


Ratio of Net Foreign Reserve to Monetary base, Monthly (1922 - 1941)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1922M04
1925M04
1928M04
1931M04
1934M04
1937M04
1940M04


Ratio of Net Foreign Reserves to Monetary Base, 1904-1942 (annual)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
March 1905
March 1910
March 1915
March 1920
March 1925
March 1930
March 1935
March 1940

VIII. c. Reserve Pass-Through

The third and last test that we will use to measure currency board orthodoxy will be the Reserve Pass-Through ratio. This is the ratio of the total change in net foreign reserves to the total change in the monetary base. This test will be done on an annual basis, which is preferred in order to reduce the effect of seasonal and idiosyncratic factors (Wang 2017: 15).



Even though several fluctuations can be seen in the graph above, after a significant deviation from orthodoxy in 1927 (when the reserve pass-through was -8.83), the ratio obtained between 1928-1942 stayed at around 1, with smaller fluctuations. Thailand's financial system conformed the most to an orthodox currency board, according to the reserve pass-through test, during that period.

IX. Conclusion

Thailand's monetary system functioned in a way highly similar to an orthodox currency board between two periods; the first was from April 1928 to September 1931, and the second was from May 1932 until January 1942. The gap between the periods was marked by the time in which the United Kingdom abandoned the gold standard, in which the sterling was not Thailand's anchor currency, and the re-establishment of exchange controls marked the end of the second period, once World War II spread to Thailand. We reach this conclusion by analyzing the data gathered from government statistical yearbooks and the results from the tests performed in this paper.

Thailand's monetary system underwent, between 1902 and 1942, a series of changes that we find of interest, the main one being the transition from coins to currency notes as the primary form of currency since the latter were first issued in 1902. Overall, Thailand's monetary system showed important stability during the period examined, with an exception at the end of World War I, which can be considered typical if compared with the economies of other countries at the time. This stable monetary system worked satisfactorily until the end of the period in 1942, when the Thai government established the Central Bank of Thailand as a measure to prevent the Japanese, who had invaded the country as part of their strategy during World War II, from having greater control over Thailand's monetary system.

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Appendix A: Relevant legislation, 1902-1942

- **Paper Currency Act, 24 June 1902, translated in U.S. Bureau of the Mint annual report (1903: 263-264):** Allowed the government to issue notes at least 75% backed by coin and up to 25% backed by investments in securities at the discretion of the minister of finance.
- **Notification of the Minister of Finance Relative to the Issue of Government Paper Currency, 7 September 1902, translated in U.S. Bureau of the Mint annual report (1903: 264-266):** Authorized government note issue from 23 September 1902.
- **Monetary Law, 1903, cited in U.S. Bureau of the Mint annual report (1904: 331):** Defined the baht (tical) as a silver coin of 15 grams, 90 percent fine, therefore containing 13.5 grams of pure silver.
- **Paper Currency Amendment Act, 9 October 1906:** Reduced the maximum required coin reserve from 75% to 50% and correspondingly increased the maximum permitted securities reserve from 25% to 50% (Siam, Bureau of General Statistics 1916: 108).
- In 1907 the government raised a loan in London, Paris, and Berlin, using half of the £3 million in proceeds to create an exchange reserve fund. The fund was written into law by the Gold Standard Act of 1908 referred to below (Brown 1978: 206). The exchange reserve fund was separate from the paper currency reserve and was like the two-reserve system that India had at the time.
- **Gold Standard Act, 11 November 1908, translated in U.S. Bureau of the Mint annual report (1909: 273-277):** Established an exchange rate of 1 Siamese tical (Thai baht) = 0.558 grams gold. The silver tical of 13.5 grams silver (reduced from the previous value of 13.85 grams silver) was also set equal to the gold tical. The system was a gold standard rather than a bimetallic standard in intent. The silver tical coin had unlimited legal tender but the act forbade the government from issuing silver ticals in exchange for gold when their value exceeded the gold value of the baht. The exchange reserve fund was fixed at 12 million Siamese ticals.
- **Notification Suspending the Operation of Certain Sections of the Gold Standard Act, 11 November 1908, translated in U.S. Bureau of the Mint annual report (1909: 277-278):** Suspended the requirement for a gold Thai coinage and provided that instead that government would issue note for gold or at 13 baht = £1 sterling.
- **Gold Standard Act (No. II), 4 September 1919, translated in U.S. Bureau of the Mint annual report (1920: 266):** Revalued to 12 baht = £1 sterling to reflect the weakened condition of the pound sterling during the World War I and the high price of silver. This act contained a theoretical gold parity of 1 Thai tical (baht) = 0.61 grams gold = 13.5 grams silver, but it was inoperative in practice.
- **Gold Standard Act (No. III), 4 October 1919, translated in in U.S. Bureau of the Mint annual report (1920: 267):** Again revalued, to 10.88 baht baht = £1 sterling.
- **Notification of 3 January 1923:** Established an exchange rate of 11 baht = £1 sterling.
- **Currency Act, 15 April 1928, translated in U.S. Bureau of the Mint annual report (1928: 187-188):** Repealed the Paper Currency Act, the Gold Standard Act, and the Coinage Act. Defined the currency, the baht, as 0.66567 grams of fine gold. In terms of sterling, the rate remained unchanged at 11 baht = £1 sterling. The act in effect repealed exchange controls. If the system ever was a currency board, it was so only starting from this date.

- **Announcement of 21 September 1931:** Established an exchange rate of 1 baht = 0.66567 grams gold, equivalent to 2.260279 bhat = US$1. After the United Kingdom abandoned the gold standard on 21 September 1931, Siam initially remained on the gold standard. The US dollar was the intervention currency, and the exchange rate stated in terms of the dollar was that implied by the gold parities of the baht and the dollar. (See Bank of Thailand 1992: 32.)
- **Act Amending the Currency Act, 11 May 1932, cited in Bank of Thailand (1992: 28):** Returned to the pound sterling as the anchor currency at 11 baht = £1 sterling, the rate prevailing before the United Kingdom abandoned the gold standard, because of the importance of the United Kingdom in international trade and finance.
- **Emergency Currency Act (December 1941):**
  Chapter 1, Currency and Units of Currency, Section 8: The prescription of the par value of the baht shall be made by a Royal Decree.
  Chapter 2, Maintenance of the Value of the Baht, Section 23: For the purpose of maintaining the value of the baht, the Bank of Thailand or the Exchange Equalization Fund shall effect a spot transaction of the foreign currencies prescribed in the Ministrial Regulation as may be requested by any commercial bank in the Kingdom, provided that the amount of each transaction shall not be less than the amount prescribed by the Minister.
- **Foreign Exchange Control Act, 27 January 1942, cited in Bank of Thailand (1992: 210):** Re-established exchange control during World War II. Controls became effective on 1 February 1942.
- **Bank of Thailand Act, 16 April 1942:** Established a central bank during World War II after a recommendation by the occupying Japanese military forces to do so, although there had been proposals along these lines for many years previously. The Japanese proposed that the central bank have a Japanese adviser and Japanese department heads. The Thai government established a central bank, but on its own terms and without Japanese staff.

Appendix B: Variations in the official exchange rate, 1902-1942

Date	Baht (Siamese Tical) Exchange Rate (typically the government selling rate)
19 September 1902	1 baht = approximately 13.85 grams pure silver = Straits $0.60
27 November 1902	17 baht (ticals) = £1 sterling; switched to the pound sterling as the anchor, but this initial official rate was not realistic, in view of the previous market rate of 21.70 baht per pound sterling
17 December 1902	19.75 baht = £1 sterling; henceforth the official rate for sterling more closely tracked the market rate
30 December 1902	19.50 baht = £1 sterling
2 March 1903	19.25 baht = £1 sterling
5 March 1903	19.00 baht = £1 sterling
11 March 1903	18.75 baht = £1 sterling
22 July 1903	18.25 baht = £1 sterling
5 August 1903	18.00 baht = £1 sterling
15 August 1903	17.75 baht = £1 sterling
22 August 1903	17.50 baht = £1 sterling
27 August 1903	17.25 baht = £1 sterling
25 September 1903	17.00 baht = £1 sterling
6 February 1904	16.67 baht = £1 sterling
17 November 1905	16.00 baht = £1 sterling
14 August 1906	15.00 baht = £1 sterling
2 November 1906	13.33-1/3 baht = £1 sterling
1 December 1907	13.00 baht = £1 sterling
11 November? 1908	13.00 baht = 0.588 grams gold = 13.5 grams silver = £1 sterling; in practice, a gold exchange standard with the pound sterling
27 January 1919	13.00 baht = £1 sterling; suspended the gold parity

4 September 1919	12.00 baht = £1 sterling
4? October 1919	10.88 baht = £1 sterling
November 1919	9.90 baht = £1 sterling
November 1919	9.54 baht = £1 sterling
3 January 1923	11 baht = £1 sterling
15 April 1928	11 baht = £1 sterling = 0.66567 grams gold; re-established a parity with gold long after Britain, which had done so in 1925
20 September 1931	11 baht = 0.66567 grams of gold; preserved the gold parity when Britain abandoned the gold standard
11 May 1932	11 baht = £1 sterling; re-established sterling as the anchor and ended the gold parity
31 January 1942	1 baht = 1.557 Japanese yen = 0.32639 grams gold (nominally); switched anchor to Japanese yen after Japanese invasion of Thailand during World War II; the war and exchange controls made the gold parity merely nominal
22 April 1942	1 baht = 1 Japanese yen = 0.32639 grams gold (nominally)
15 June 1942	1 baht = 1 Japanese yen = 0.25974 grams gold (nominally); this rate lasted through the end of World War II

Sources: Bank of Thailand (1992), Brown (1975), Ingram (1971), Spalding (1920).