SAE./No.266/June 2024

Studies in Applied Economics

CURRENCY, BANK NOTE ISSUE, AND FREE BANKING IN THAILAND, 1800-1995

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Johns Hopkins Institute for Applied Economics,
Global Health, and the Study of Business Enterprise

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By Elvis Han

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).

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Abstract

As Western imperialism spread across Asia in the mid-19th century, Thailand (then Siam) embarked on a distinct monetary experiment. Due to the rising immigration of Chinese laborers seeking better working conditions as well as the advent of the Bowring "unequal" treaty that opened up Thailand to foreign trade, Thailand's economy experienced stirrings of globalization. Yet, the country's feudalist "Sakdi Na" system, tax farming infrastructure, and monarchal state stifled free trade, the growth of private markets, foreign exchange, and the demand for cash and transactions. This paper reviews the historical context and evolution behind Thailand's modern monetary and banking system. Additionally, this paper seeks to quantify early measures of the money supply in the 19th century.

Acknowledgements

I thank Dr. Kurt Schuler for assistance in processing and retrieving research materials from the Library of Congress and for advice on structuring this paper. I also thank Professor Steve H. Hanke and the Institute for Applied Economics, Global Heath, and the Study of the Business Enterprise for the opportunity to write and publish this paper.

Keywords: baht, coinage, Thailand, banking, currency notes, taxation
JEL codes: N15, N25

I. Introduction

Unlike many other Asian countries in the late 1800s, Thailand, then called Siam, was never colonized by foreign powers. While foreign banks established offices and certain trading privileges were allotted to Western powers including Britain, Denmark, and France, Thailand's government remained independent from the expatriate "helpers" sent by European imperialists. It accepted foreign experts but was never bound by their advice, unlike for instance the neighboring Malay sultanates that hosted British "resident advisers." While much research has been conducted on Thai government finance during the period, including analyses of the tax farming system (notably Ian G. Brown), literature on Thailand's monetary policy during the period has remained scarce, in English and apparently also in Thai. This paper aims to reduce that gap by briefly summarizing some aspects of Thailand's monetary history from the Ayutthayan period to the first decade of the 20th century, when formal laws on coinage and the gold standard were established. This paper is accompanied by an Excel workbook that gathers key import and export data from British government commercial reports from consuls in China and Siam to help determine main measures of the money supply.

II. Historical Development of Thailand's Economy Before the Bowring Treaty (1800-55)

A. Sakdi Na: The Consequences of Thailand's Social Hierarchy

The Sakdi Na system was a feudalistic social hierarchy that originated in the early days of the Ayutthaya period (which began in 1350) and was abolished in 1905 under the reign of King Rama V. The system governed Thailand's agrarian frontier in such a way as to centralize the monarch's authority: aristocrats appointed by the monarch would govern an allotment of land that was worked on by the commoners. [1] The monarch acted as a dictator who served as the sole proprietor of all land, labor, and economic resources in the nation. Additionally, the monarch monopolized profits from all internal and international trade, fixing prices of main exports and imports to siphon profit solely to the aristocracy.[2]

Authority and influence correlated directly with the size of the aristocrats' property. Commoners, known as "Prai," were categorized into three work tiers. "Prai Som" were field laborers and farmers, who were considered the property and cattle of each aristocrat. "Prai Luang" were a tier above, with loyalties to ministries and departments in government that dealt primarily with

[1] Traisorat, Tull. (2000). *Thailand: Financial Sector Reform and the East Asian Crises*. Kluwer Law International: International Banking, Finance, and Economic Law Series, UK, p. 47-51. See also S. Prasartset. 1982. *Evolution of Thai Economic System During Last 200 Years,* p. 30 and S. Prasartset. "A Study of Production and Trade of Thailand, 18551940." Ph.D. thesis, University of Sydney.

[2] S. Prasartset (1982), p. 30.

construction and infrastructure projects. Finally, "Prai Saui" were commoners who lived on the outskirts of major cities, tasked with delivering commodity tributes directly to the monarch.[3] While exact figures are not provided for this time period, an "overwhelming majority" of the

economically active population was engaged in rural occupations up until World War II, and in 1975, 85% of the population remained in rural areas, suggesting that 19th century Siam maintained even higher levels of agrarianism.[4] Prai were required to work for their aristocrats for a total of six months in a year on a one-month-on and one-month-off basis; further, the onemonth interval period was not conducive to engaging in private enterprise, trade, or any form of long-term saving. Given that farming profits were seasonal, a lack of mobility exacerbated the Prai's dilemma concerning personal profit:[5]

> The economic surplus of the society was concentrated in the aristocracy. The needs and condition of the Prais were largely ignored. They had to work very hard without meaningful compensation. …Prais had to live in poverty and had no savings to start up any serious farming or commerce. If they had happened to have some personal funds to do farming or commerce the proceeds from these ventures would be taxed at an exuberant rate.[6]

B. Tax Farming and Chinese Immigration Before the Bowring Treaty

Beyond Sakdi Na, Siam's tax farming system and the aristocrats' patronage of Chinese immigrants continued to discourage the development of a middle class focused on long-term financial security, making the establishment of an advanced financial system unnecessary for the early half of the 19th century. Additionally, since commoners engaged in bartering or lived from hand to mouth, there was no demand from them for a government or privately issued currency to serve as a medium of exchange, unit of account, or store of value.

The sub-system of tax-farming involved a right of taxation that was granted to the highest bidders among aristocrats, promising the highest returns for the government. Taxes on any products or service could be recommended by bidders; this expansive tax portfolio exposed gaps in regulation that could be capitalized upon and pocketed by independent tax farmers.[7] In the first mid 19th century, immigrants from China arrived en masse in search of foreign opportunities and asylum from the Opium Wars. As enclaves of Chinese immigrants settled around the northern coast of

[3] S. Sakkriengkrai (1984). *Thai Economic System During Ayuthaya Period,* in C. Nartsupa and S. Manarungsan. (1984). *The Economic History of Thailand Until 1931*. Bangkok: Chulalongkorn Press, p. 32.
[4] Mabry, B. D. (1979). The development of labor institutions in Thailand (Data Paper No. 112). Southeast Asia Program, Department of Asian Studies, Cornell University, Ithaca, New York, p. 1.
[5] Brown, I. G. (1988). The Elite and the Economy in Siam, c. 1890-1920. Oxford University Press, p. 171.
[6] Traisorat (2000), p. 52.
[7] Nartsupa, et al. (1981). *The Political Economy of Siam 1910-1932.* National Archives of the Ministry of Finance. Document 25, pp. 349-375.

Thailand, Thai rulers after King Taksin and Rama I sought to revive the economy. The Burmese sack of the old capital of Ayutthaya in 1767 had created an economic and political shock. Later monarchs aimed to repair infrastructure and shipyards that were left dilapidated and depopulated.[8] Given that the Thai monarchy maintained close relationships with Chinese traders throughout this period and the Chinese were not subject to the feudal system, the Chinese were able to "capitalize fully on their excellent trading skill and they ultimately came to exert a certain level of dominance over Thai commerce." Furthermore, tax farming was a government revenue scheme that has been utilized by dynastic rule throughout China; accordingly, these traders quickly and efficiently fulfilled a unique niche that provided handsome revenues to the monarchy. [9] Their operations were cloaked in legitimacy provided by aristocratic titles and apparent government sanction, which reinforced their social standing and wealth. Using these connections, many Chinese were also able to (1) secure positions of power and (2) perpetuate their control over the tax farms by outcompeting and intimidating other bidders.

The continued exploitation of the Prai served as another barrier to the privatization and commercial evolution of the Thai economy. The impact was twofold. At their discretion, tax farm legislators proposed many commodity and service taxes that resulted in double and triple taxation, significantly increasing the tax burden and out-of-pocket expenditure of every Prai. This obstacle drained an already measly income, increasing the demand for cash and tributes but further eliminating the incentive to save, and in turn, the creation of a middle class that regularly exchanged goods, services, and currency in a free market economy.[10]

C. Observations

The legacy of Thailand's Sakdi Na system hindered Thailand's economic progress until the signing of the Bowring Treaty of 1855 due to the government's priority of centralizing wealth in the upper class. Actions such as implementing the tax farming system and providing excessive patronage to Chinese immigrants not only exacerbated civil tensions but also disincentivized savings, social mobility, and private enterprise and entrepreneurship.

An imperialistic blessing in design, the Bowring Treaty was a pivotal treaty between Britain and Thailand in which the British demanded concessions such as trading, banking, and authoritative privileges that set the precedent for foreign powers to establish certain spheres of influence in Thailand. Those spheres of influenced stopped short of control of the Thai government, though.

III. Cashflow and Currency Before the Bowring Treaty (1800-1855): Overview

[8] Warren, James A. (2000). *Gambling, the State and Society in Thailand c. 1800-1945,* p. 3.
[9] Traisorat (2000), pp. 45-55.
[10] Traisorat (2000), p. 58.

While the oppressive fiscal system of Siam forced the Prai, who made up the majority of the population, to live on a paycheck-to-paycheck basis, Siam still possessed a currency system of cowry shells that allowed simple transactions to take place between vendors and consumers.

A. A Brief Design History of Thailand's Coins

The evolution of the shape of Thai coins has a fascinating history that underscores the country's rich numismatic tradition. Initially, from 1630 to 1861, Siamese silver money was typically shaped as oblong ingots, known colloquially as "bullet money."[11] This unique form, characterized by its oblong ingot shape with ends pounded together to create a somewhat spherical appearance, remains a distinctive feature in the annals of world coinage. The origins of this shape are not definitively known, but it is speculated that the cowry shell, used as money in many parts of Asia, might have inspired its form. Bullet-shaped coins were consistently produced in Ayuthia until the city fell to Burmese forces in 1767, after which minting moved to Bangkok.[12] The silver used for the coins primarily came from Dutch crowns (rijksdaalders) and Mexican or Spanish dollars (pesos), highlighting an early form of international trade influence on the Siamese monetary system.

As time progressed, the transition from the traditional bullet shape to more conventional flat coins began with King Mongkut (Rama IV) in 1861. This shift in Siamese coinage reflected broader cultural and economic shifts within the kingdom. Under King Mongkut's reign, new coins were minted in Birmingham, introducing denominations that featured the king's crown and other royal symbols, moving away from the spherical silver tokens of the past. The transition met with resistance: the populace was accustomed to the bullet-shaped coins, viewing the new flat coins with suspicion. Even so, the flat coins gradually gained acceptance, facilitated by their ease of use and storage, marking a new era in the coinage of Siam that aligned more closely with international standards and practices. The change in coinage not only reflects the evolution of monetary forms but also symbolizes a period of significant modernization and Western influence in Siam's economic policies.

More information about the anthropological history of Siamese coins, its design, and its various denominations that changed throughout Reign I-V is contained in R.S. Le May's meticulous research on Siamese numismatics.[13]

[11] Wood, H. (1904). The coinage of Siam and Its dependencies. *American Journal of Numismatics,* 38(3), 71-77. Retrieved from https://www.jstor.org/stable/43587862, p. 72.
[12] Wood (1904). p. 73
[13] Le May, R. S. (1924). The coinage of Siam. Journal of the Siam Society, 18(3). Presented at the ordinary general meeting of the Siam Society on May 20, 1924, p. 153-220.

B. The Silver and Gold Standard of Siam 1850 – 1902

During the period from 1850 to 1902, the Kingdom of Siam adhered to a silver standard. The value of the Siamese baht, also known as the Siamese tical in the West, was predominantly determined by its silver content. Each baht weighed about 15.292 grams, of which approximately 90.625% was pure silver.[14] This significant silver composition enhanced its value for both domestic transactions and international trade, making the baht a reliable and stable currency in the eyes of international merchants and local traders alike.[15]

The silver exchange mechanism was initially straightforward, with merchants bringing silver, often in the form of Mexican dollars, directly to the Treasury to exchange for baht coins. This practice evolved with the arrival and establishment of European banks in Bangkok in the late 1880s, which began facilitating these transactions. It introduced a more structured and formalized financial system into Siam's economic environment, bringing it closer to the financial operations of the Western world.[15]

From 1857, the baht-Mexican dollar exchange rate was fixed at 5 baht per 3 dollars, based on the silver content of the respective coins. However, as the global price of silver began to decline, the baht depreciated against gold-standard currencies like the British sterling. The depreciation saw the baht-sterling rate decline from 8 baht per pound sterling in the 1850s and 1860s to a significantly lower rate of 17.1 baht by 1899.[16] By 1900, the baht had temporarily appreciated against sterling, only to plummet to 21 baht per sterling by November 1902 as silver prices continued their downward trajectory.[17]

The economic vulnerabilities exposed by these fluctuations in silver prices compelled Charles Rivett-Carnac, the government's British financial adviser, to advocate for a shift to a gold standard in 1902. Highlighting the economic risks of persisting with the silver standard, Rivett-Carnac argued that the depreciating baht jeopardized essential public works and the government's ability to effectively manage foreign loans. Despite initial resistance from figures like Prince Devawongse, the minister of foreign affairs, who feared potential conflicts with European banks, the reform was ultimately enacted after strong advocacy from Rivett-Carnac and Prince Mahit, the minister of finance.[18]

[14] Ma, Z., & Saade, N. (2022). History and Analysis of the Monetary System of Thailand 1902-1942. Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. SAE/No.213/August 2022, p. 4
[15] United States. Bureau of the Mint. Various years. *Annual Report of the Director of the Mint: For the Fiscal Year Ended June 30, …*. Washington: Government Printing Office, p. 512-13.
[15] Brown, Ian (1979). Siam and the gold standard, 1902-1908. *Journal of Southeast Asian Studies,* 10(2), 381-399, p. 382
[16] Brown (1979), p. 383.
[17] Brown (1979), p. 385.
[18] Brown (1979), pp. 385-90.

On 25 November 1902, Siam decisively abandoned the silver standard, embarking on a complex transition to a gold standard.[19] This transition was marked by initial resistance from European banks, which faced significant exchange rate losses. The initial rate of 17 baht per sterling set on 25 November was later adjusted to 20 baht per sterling on 19 December 1902 after rigorous negotiations. This new rate was to be maintained for at least three months, with future adjustments contingent on international silver prices.[21]

The revaluation effort and the subsequent negotiations highlighted Siam's transition towards a more globally integrated financial policy. The policy shift not only aimed to stabilize the baht but also to align Siam's monetary practices with global economic standards, setting the stage for future financial reforms and ensuring economic stability in the region.

The establishment of the Paper Currency Department within the Ministry of Finance in 1902, which was later transferred to the Comptroller-General's office in 1909, marked a significant step in centralizing and strengthening the financial administration in Siam. This department played a crucial role in managing the complexities of the new monetary system, maintaining currency stability, and facilitating the broader economic reforms that were essential for Siam's modernization and integration into the global economy.

IV. Free Banking in Thailand During the 19th Century and Its Consequences

A. Development of the Ministry of Finance

The historical development of Thailand's Ministry of Finance is a testament to its pivotal role in the country's journey towards economic modernization. Initially established in the late 1880s and officially instituted in 1892, the ministry was a crucial part of King Chulalongkorn's broader government reform aimed at centralizing administrative functions and professionalizing the kingdom's financial management.[20] This reform was necessitated by the threats of British and French imperialism in the late 19th century, prompting Siam to strengthen its fiscal policies and infrastructure to maintain sovereignty and facilitate economic growth.[21] The Ministry of Finance, under the guidance of influential ministers like Prince Mahit, was instrumental in introducing significant financial reforms, including the abolition of the tax farm system and the introduction

[19] Ma and Saade (2022), pp. 4-6.
[21] Brown (1979), p. 385.
[20] Brown, Ian. (1975). The Ministry of Finance and the early development of modern financial administration in Siam, 1885 – 1910. Ph.D. dissertation, University of London, p. 3.
[21] Brown (1975), p. 3.

of direct taxation, which marked a substantial progression from the traditional revenue collection methods that had prevailed for centuries.[22]

The necessity for a modern financial system became increasingly clear following the disruptions in trade and finance due to the colonial pressures post-1855, particularly after the Bowring Treaty opened Siam to free trade.[23] Fluctuating silver prices due to discovery of silver in Mexico and Nevada and the resultant volatility in the baht's value against gold-backed currencies such as the pound sterling underscored the need for more robust financial control and led to the adoption of a gold-exchange standard between 1902 and 1908.[24]

However, as the Ministry of Finance grew and sought to capitalize upon exchange rate profits, the administration competed directly with European traders and banks.

B. Early Banks in 19th Century Thailand: Overview

Three foreign banks dominated Thailand's banking scene in the late 19th century: the Chartered Bank of India, Australia and China (London), established in Bangkok in 1894; the Hongkong and Shanghai Banking Corporation (Hong Kong), established in 1888; and the Banque de l'Indochine (Paris), established in 1897. [25]

All three of the foreign banks issued their own bank notes in Thailand. Competitive issue of notes (free banking) was common in many places in the late 19th and early 20th centuries, including China, Hong Kong, Singapore, and Australia. The Chartered Bank and the Hongkong Bank issued notes competitively in other places where they had offices. The Banque de l'Indochine was a monopolist in the French colonies where it issued notes. It established a Bangkok office at the request of the French government even though Thai trade with France was small compared to Thai trade with Britain and its colonies. The office became profitable but existed more as a sign of France's great-power rivalry with Britain than as a business necessity.[26]

C. Early Commercial Banking Activities: Case Studies

Foreign banks were initially responsible for meeting significant market demands for baht by importing silver dollars and presenting them to the Treasury for re-coining. However, after

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[22] Brown (1975), p. 4.
[23] Brown (1975), p. 3.
[24] Brown (1975), p. 20.
[25] Brown (1975), pp. 105-6.
[26] Meuleau, Marc (1990). *Des pionniers en Extrême-Orient: histoire de la Banque de l'Indochine, 1875-1975.* Paris: Fayard, pp. 155-156, 173-174.

November 1902, legislation shifted this responsibility primarily to the Ministry of Finance, which had to ensure an adequate supply of baht through careful management of silver bullion purchases and mint operations.[27] Banking activities were especially lucrative during periods of high demand for the baht, such as the rice-export season,[28] primarily through facilitating foreign exchange and its derivatives (forward and futures contracts) for commodities and currencies. The 1902 legislation marked a significant change in monetary policy, placing more control in the hands of the Ministry, albeit challenging its capacity to maintain stable and sufficient currency supply. The government viewed then change as especially necessary, however, as currency volatility plagued a Siam whose currency fluctuated according to international silver prices.

Another example came in the early 1900s: when global silver prices were particularly unstable, the Hongkong and Shanghai Banking Corporation and the Banque de l'Indochine offered hedging services to rubber and rice exporters.[29] These services typically involved forward contracts, where the exporter could lock in an exchange rate for a future date, thus securing a stable exchange rate for its outbound shipments regardless of market fluctuations. A notable case was in 1903, when Siam's rubber producers faced a significant downturn in silver prices, which threatened to reduce their revenues when converted from foreign currencies into the depreciating baht. By locking in more favorable rates before the decline, businesses could maintain stable earnings.[30] Additionally, the volume of transactions handled by these banks increased significantly. They profited from each transaction by charging fees for currency exchanges, and due to the volatile nature of the baht against the backdrop of fluctuating silver prices, they also benefited from speculative activities. The banks' expertise in predicting currency movements allowed them to buy low and sell high, further enhancing their profitability.

Furthermore, the Chartered Bank of India, Australia and China introduced innovative commoditylinked hedging products around 1905, which were tailored not just to currency risks but also to the prices of the commodities themselves. This dual-layer hedging strategy was particularly advantageous for industries like teak and rice, where price volatility could be driven by factors independent of currency issues, such as weather conditions or political instability. The hedging options provided a comprehensive safety net for exporters, ensuring that both the price they received for their commodities and the currency rates they exchanged them at were stable, effectively insulating them from some of the inherent risks of international trade.

Beyond foreign exchange, the banks also offered business development loans that serviced domestic infrastructure projects. For instance, in 1897, the Banque de l'Indochine facilitated a large syndicated loan for railway expansion in Siam. The bank not only earned from the interest

[27] Brown (1975), p. 217.
[28] Brown (1975), p. 213.
[29] Brown (1975), p. 233.
[30] Brown (1975), p. 234.

on the loan but also profited from converting the loan amounts disbursed in foreign currencies into the local baht currency. Each conversion carried transaction fees and potential gains from favorable exchange rate fluctuations, contributing significantly to the bank's profits. Given that fiscal revenue was little directed toward the development of Thailand, the banks played a pivotal role in large-scale infrastructure financing, such as railway projects, which required substantial foreign capital investment.

V. Currencies in 19th Century Thailand

A. Issues in Measuring the Money Supply

No formal measure of money supply would exist in Thailand until the mid 20th century. Accordingly, the attempted measurement of the money supply in the 19th century poses a formidable challenge due to the plethora of currency forms used throughout the period. From the traditional bullet money to the introduction of flat coinages under Western influence, the Siamese monetary system comprised a myriad of coins including ticals, salungs, and their various subdivisions.[31] Additionally, the usage of precious metal currencies reserved for royal purposes, coupled with the brief experiments with nickel, lead, and copper coinages further complicates the fiscal landscape.[32] The prevalence of cowries, porcelain tokens, and privately issued tokens—necessitated by the absence of sufficient small change—reflects an era of substantial monetary diversity and complexity.[33]

B. Rationale: Measuring Money Supply through Fiscal Revenue and Net Export Data

However, I propose we study government revenue to held roughly estimate early money supply. The first method tracks net import and export data as a primary measure of the money supply. The rationale is twofold:

> Furthermore, the monarch (via the noblemen) monopolized all the internal and international trade. Although trivial trading, most of which was founded on barter, within and among villages existed, the use of money as a medium of payment was by no means commonplace. The movement of goods during the period was the movement of tributes from Prais to the monarchy government.[34]

Additionally, with the power of the King to control the revenues and expenditure of Thailand dispensed throughout his administration, each noble family could use its bureaucratic positions

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[31] Wood, H. (1904). The coinage of Siam and its dependencies. *American Journal of Numismatics, 38* (3), p. 71.

[32] Wood (1904), p. 72.

[33] Wood (1904), p. 76.

[34] Traisorat, p. 53 from Sakkriengkrai, p. 46.

to increase its own wealth. Public tax revenue would contribute towards “private income,” in which “[their] trading interests involved direct negotiation with the Chinese trading community which promoted a strong alliance and which opened the way to the Chinese becoming an important factor in the Thai economy and a participant in the management of the Thai state.”[35] This finding not only reaffirms the deep roots of Chinese immigration that left Siam poorly prepared to adapt to and capitalize upon globalization but also highlights the extreme nature of wealth inequality that concentrated spending in the upper class.

Furthermore, while the tax farming system was extremely complex, fiscal revenue would rarely be redirected into other domestic development programs:

> The taxes collected almost never came back to benefit taxpayers. Rather, taxes often would be spent to enable aristocrats to afford and to enjoy a luxurious life. Luxurious products such as China, crystals, gold wine, beer, silver, etc. were imported. Even irrigation systems, indispensable for agriculture, or much needed transportation roads were not provided.[36]

C. Methodology: Trade and Exchange Data as Money Supply

The source of the following figures come from the Institut d’Asie Orientale (Lyon Institute of East Asian Studies). Its database includes an index of “Commercial Reports from Her Majesty’s Consuls in China, Japan, and Siam.” Each year, the report includes a combination of the three countries’ trade data but always accounts for Siam. In each British consular report, data on the trade volume, vessels, and value of the goods being imported and exported from the port of Bangkok are reported. I collected four series:

A. “Invoice Value of Cargo – Entered” under “Return of British Shipping at the Port of Bangkok During the Year 18XX”
B. “Invoice Value of Cargo – Cleared” under “Return of British Shipping at the Port of Bangkok During the Year 18XX”
C. “Total Value” under “Return of Imports, as declared at the Customs, from 1st January to 3rd December, 18XX”
D. “Total Value” under “Return of Exports, as declared at the Customs, from 1st January to 3rd December, 18XX”

[35] Wilson, C.M. (1971). State and society in the reign of Mongkut, 1851-1868: Thailand on the eve of modernization. Ph. D. dissertation Cornell University, p. 607.
[36] Traisorat, p. 53 from Rama V. National Archives of Thailand. Ministry of Agriculture, p. 426-428.

The total invoice value of the cargo collected under each "export" and "import" series should report the same value, but differences in data can be attributed to a variety of errors including human error, smuggling, etc. For when both values are available for each year, I take the average of the series to normalize the values. I perform the following calculations.

$$Net\ Imports = \frac{(Series\ A + Series\ C)}{2}\text{; } otherwise, Net\ Imports = Series\ C$$

$$Net\ Exports = \frac{(Series\ B + Series\ D)}{}\text{;}otherwise,Net\ Exports = \text{Series D 2}$$

$$Trade\ Surplus = Net\ Exports - Net\ Imports$$

D. Currency Conversion: Mexican Dollars and Pounds Sterling

The commercial reports of the British Consul at Siam as well as the British customs reports were inconsistent in the currency that the "invoice value" of goods were reported in. The reported data alternated between Mexican dollars and pounds sterling. The choice of the former was likely due to the high prevalence of silver in the Mexican dollar in East Asia and its synergy with Thailand's foreign exchange practice of melting down coins into its silver components to be exchanged on the global market.

Given that the government did not publish an official exchange between the baht or the Mexican dollar and the pound sterling before 1902, we can manually calculate the exchange rate between pound sterling and Mexican dollar via the world market ratio between silver and gold, as well as the individual quantities of pure silver and gold respectively within the dollar and the sterling respectively.

The Mexican dollar contained 24.44 grams of pure silver. The pound sterling contained 7.32 grams of pure gold. The Annual Report of the Director of the U.S. Mint in 1949 reports the world market ratio of gold to silver. So, to calculate the number of Mexican dollars per pound sterling, I use the following format.

$$sterling/dollar = \frac{24.44g\ (silver/dollar)}{[7.32g\ (gold\ /\ pound\ sterling)\ x\ (silver\ to\ gold\ ratio)]}$$

Table 1: Average Commercial Ratio of Silver to Gold, 1864-1902

Year	Silver to Gold Ratio	Pounds Sterling per Baht (Implied)

1864	15.37	0.217228225
1865	15.44	0.216243382
1866	15.43	0.216383527
1867	15.57	0.214437881
1868	15.59	0.214162785
1869	15.6	0.214025501
1870	15.57	0.214437881
1871	15.59	0.214162785
1872	15.6	0.214025501
1873	15.57	0.214437881
1874	16.16	0.206608776
1875	16.64	0.200648907
1876	17.75	0.188101285
1877	17.2	0.194116152
1878	17.92	0.186316842
1879	18.39	0.181555074
1880	18.05	0.184974948
1881	18.25	0.182947825
1882	18.2	0.183450429
1883	18.64	0.179120054
1884	18.61	0.179408802
1885	19.41	0.172014313
1893	26.49	0.126039933
1900	33.33	0.100173952
1901	34.68	0.096274447
1902	39.15	0.085282192
Unit: Units Source: United States Bureau of the Mint (1902).[37] Calculations by Elvis Han		

E. Data: Net Imports and Net Exports (as Money Supply)

Below are the calculated values of the Net Imports and Net Exports coming in and out of Bangkok in this time period. Notably, 1874 data, as well as data between 1875-1899 are missing. As such, they are excluded from the calculation below.

[37] United States Bureau of the Mint. (1902). Annual report of the director of the mint; Volume 1902. Washington, D.C.: Government Printing Office, p. 72

Table 2: Thailand's Foreign Trade, 1864-1902

Year	Net Imports (Sterling)	Net Exports (Sterling)	Trade Balance	Total Money Supply
1863				116,335
1864	1,167,697	943,211	-224,486	-108,151
1865	519,795	529,276	9,481	-98,670
1866	789,645	926,514	136,869	38,199
1867	793,314	1,014,893	221,579	259,778
1868	388,397	629,048	240,651	500,429
1869	438,530	776,111	337,581	838,010
1870	2,583,908	3,274,865	690,957	1,528,967
1871	464,786	846,010	381,223	1,910,190
1872	522,717	1,409,699	886,983	2,797,172
1873	438,591	1,153,192	714,601	3,511,773
1875	1,305,320	1,723,331	418,011	3,929,785
1876	1,282,706	1,735,596	452,890	4,382,675
1877	1,151,210	1,153,607	2,397	4,385,072
1878	1,150,239	1,750,706	600,467	4,985,539
1879	712,204	1,082,707	370,504	5,356,043
1880	1,011,138	1,344,122	332,985	5,689,027
1881	1,144,624	955,356	-189,269	5,499,759
1882	1,303,298	1,779,979	476,681	5,976,439
1883	918,297	1,586,789	668,492	6,644,932
1884	1,102,926	2,018,005	915,079	7,560,010
1885	1,174,861	1,623,253	448,392	8,008,402
1900	2,576,540	3,087,819	511,279	8,519,681
1901	2,805,386	4,336,967	1,531,581	10,051,262

Unit: Pounds sterling.
Source: United States Bureau of the Mint (1902).
Calculations by Elvis Han

Note: The 1867 Report Details the amount of imported silver into Bangkok in 1863, which, in a time where Thailand did not mint their own silver, could be assumed to make up the value of the coinage they would produce in the coming years. This will serve as Year 0 of our calculations.

Additionally, total money supply was calculated by treating the trade surplus as the "change in money supply" and adding that value to the previous year's "total money supply," beginning with 1863. We can use the following equation to calculate.

$$\Delta Money\ Supply = Trade\ Balance\ Total\ Money\ Supply_{t0} = 1863\ Imported\ Silver\ (Sterling) = 116{,}335\ Total\ Money\ Supply_{t+1} = Total\ Money\ Supply_{\,t} + \Delta Money\ Supply$$

Below I include two graphs, a scatter plot of points to also account for years with missing data points as well as a continuous line graph to accurately describe the flow of money.

Figure 1. Net Import and Exports out of the Port of Bangkok (1864-1901) – Line

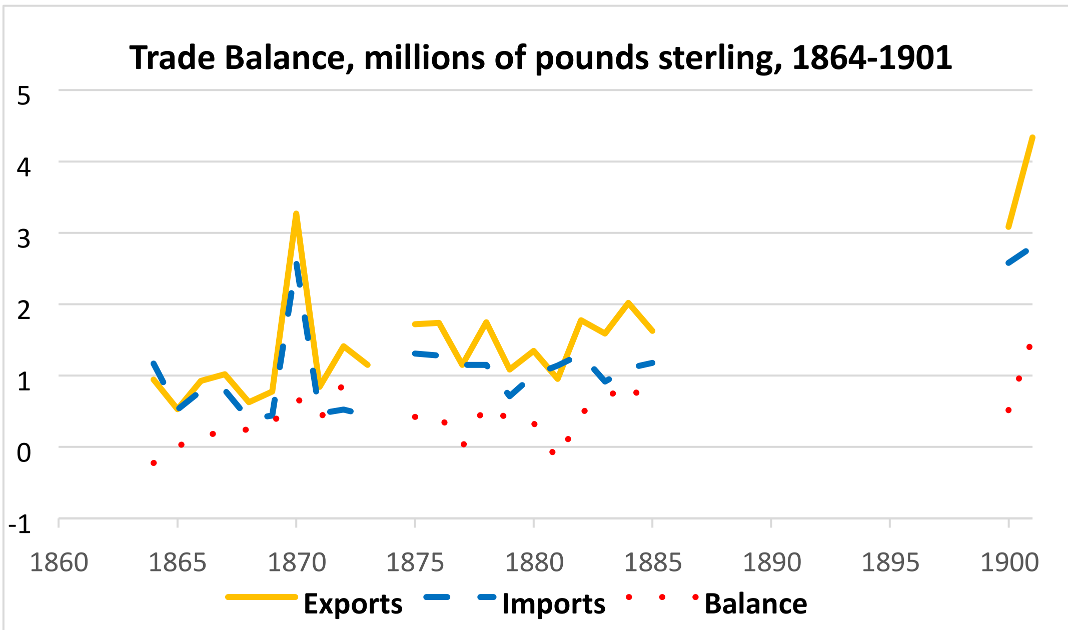


Figure 2. Net Import and Export Data out of the Port of Bangkok (1864-1901) – Scatter

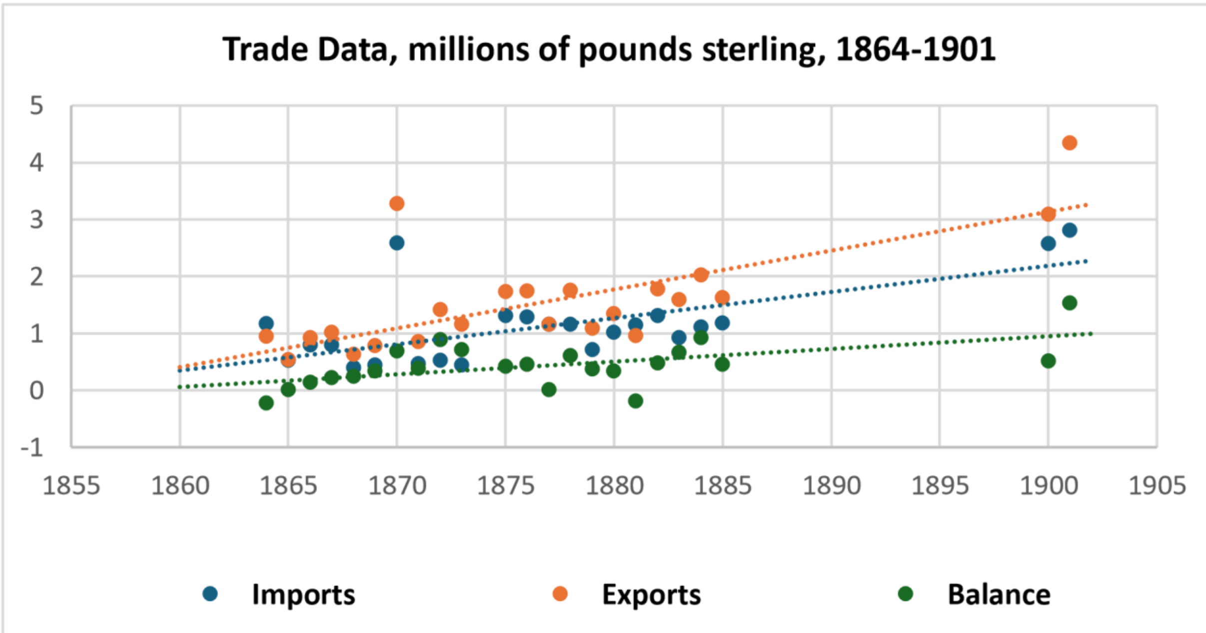


Figure 3. Total Money Supply Data (1864-1901) – Line

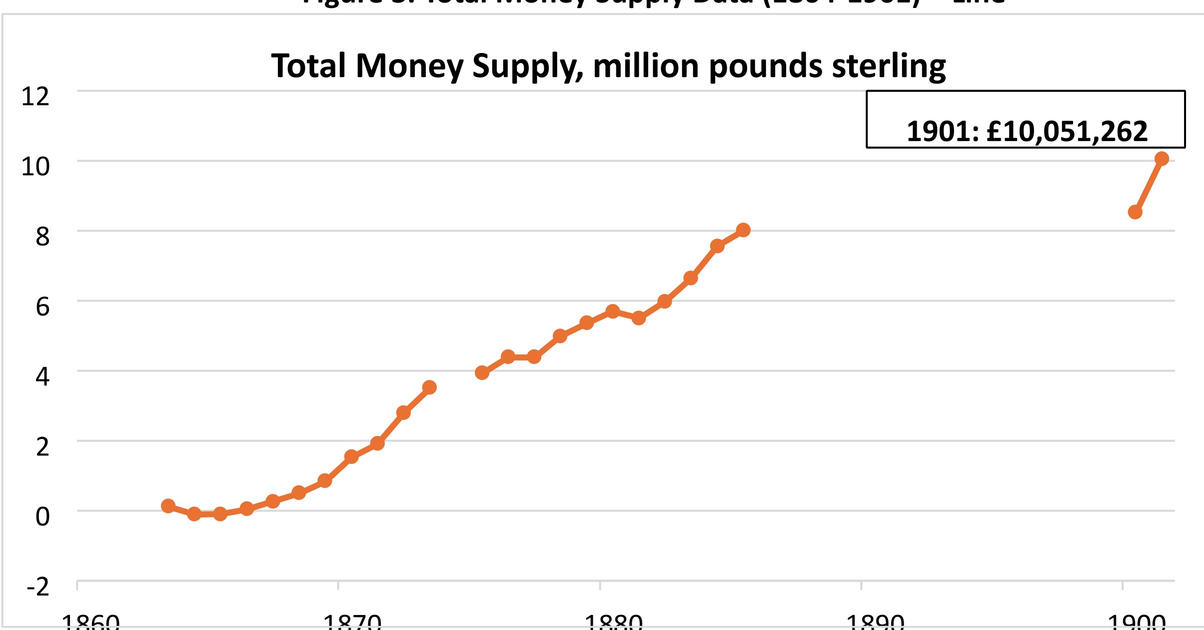
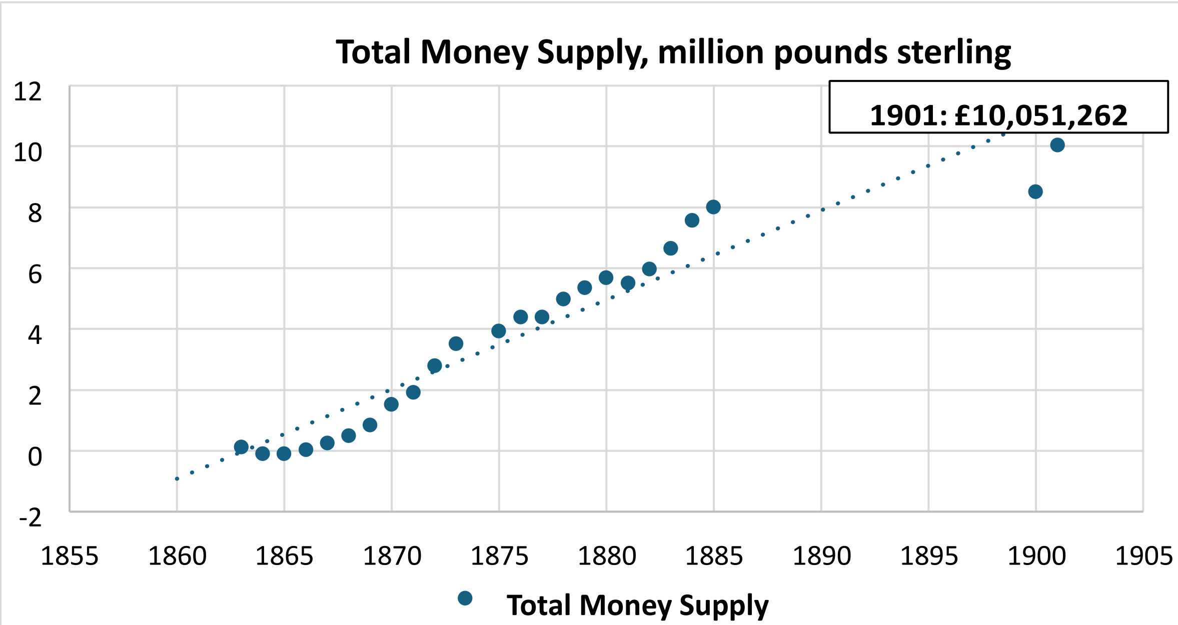


Figure 4. Total Money Supply Data (1864-1901) – Scatter



Source: Commercial Reports of the British Consul to Her Majesty[38] Calculations conducted by Elvis Han

Note: The 1901 reported value of 10,051,262 is relatively close to the value of silver coinage that was withdrawn in 1904 of roughly 14,000,000.[39]

VI. A Note on Gambling and the Money Supply

James A. Warren's book *Gambling, Society, and the State of Thailand (1800*-1945) is one of few to evaluate the anthropological history of Chinese immigration and the impact of gambling on the development of an early Siam. This section provides an overview of Warren's main arguments and presents an interesting perspective on measuring money supply when standardized currency is unavailable. Notably, gambling dens served as dens and "ghost banks" through which goods and services could be exchanged, and the various forms of counters introduced at each gambling den would be utilized as an informal means of exchange that served as a substitute for cash.

[38] Great Britain. Foreign Office. Commercial Reports by Her Majesty's Minister Resident and Consul-General, Siam, for the Years 1864-1901. Presented to both Houses of Parliament by Command of Her Majesty, various years, Harrison and Sons, London.
[39] Le May, R. S. (1924), p. 178.

The rise of gambling was a pivotal component in the monetization of Siam's early economy. The historiography of nineteenth-century Siam reveals a significant gap in our understanding of its cash economy, which is challenging to quantify accurately.[40] Despite this, it is evident that the cash economy did not expand at the same pace as the market economy. Given the limited availability of currency in circulation during the early Bangkok period, the high taxes that pressured citizens to hoard onto cash, the inefficient, slow manufacturing process of the early bullet coin, the unstable quantity of cowries that served as the foundation of the early baht, the presence of counterfeits, and Thailand's backward banking system and monetary system significantly constrained the growth of the market economy and impeded the development of capitalist structures.[41]

Beginning with Rama III and ending with Rama V, all Thai monarchs in the latter half of the 19th century supported policies involving gambling, arguably to keep cash circulating within the economy rather than hoarded at home.[42] In the second and third of the quarter, gambling houses provided counters as substitutes to facilitate cash to play, with gamblers using them to buy food or beverages in stalls outside the gambling houses where they could easily be exchanged for cash by the stallholder.[43]

> Given the scarcity of coinage of reliable value, they became a common means of exchange and by the 1860s they were certainly in use in Bangkok and the major towns of the North. … "[Counters] were accepted by almost everybody with too many difficulties,' while, the actual money of Siam was seen very infrequently. … During the first decade or so of Chulalongkorn's reign, counters were used as the defacto currency."[44]

By the 1860s, counters received official sanction from the government and became a common means of exchange in major towns such as Bangkok; notably, counters were more popular than coins due to exchange rate insecurity and previously mentioned fluctuations in silver that destroyed the reliability of the baht. Tax farmers that oversaw each house possessed the authority to recall and introduce new sets of counters upon counterfeit inspection, with "the gambling houses now effectively the central banks of their district."[45]

One could arguably count the amount of specie and counters that circulated within Thai gambling dens given the incidence of bent or dented coins. Bamboo rakes that den managers used to push and manage transactions during the games would be used to punch or bend counters for

[40] Warren (2000), p. 26.
[41] Warren (2000), p. 32.
[42] Warren (2000), p. 40.
[43] Warren (2000), p. 40.
[44] Warren (2000), p. 48.
[45] Warren (2000), p. 43.

convenience sakes: “Estimates of the number of such deformed coins in circulation range from 2/3 of the total to almost all.[46]

Gambling houses not only offered easy access to cash but also served as lending institutions for locals. In his 1902 rural farming report, W. A. Graham, the Director of the Land Registration Department, criticized these establishments, likened to rural banks, for exploiting the populace's gambling tendencies and charging exorbitant interest rates, often between 30 to 50 percent and sometimes as high as 80 percent.[47] Despite this, in the face of scarce hard currency during the nineteenth century, many had no choice but to seek loans from these tax farmers. Graham acknowledged their essential role in local economies, noting they functioned as the primary financial entities, even creating their own money, until the early 20th century when formal banks emerged.[48]

VII. Conclusion

This paper looked into how Thailand's unique approach to monetary policy, influenced by the Sakdi Na system and foreign trade treaties that shaped its economic trajectory before the establishment of a central banking system. The paper provides a quantitative analysis of the money supply in the 19th century via net import and export data, manual calculations of the early exchange rate, and emphasizing the impact that Chinese foreign immigration and gambling placed upon the monetization of the early modern Thai economy.

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[46] Warren (2000), p. 48.
[47] Warren (2000), p. 49.
[48] Warren (2000), p. 50.