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THE TONGAN BOARD OF COMMISSIONERS OF CURRENCY (1935-1989): NOT AN ORTHODOX CURRENCY BOARD

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Global Health, and Study of Business Enterprise

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The Studies in Applied Economics series is under the general direction of Professor Steve H. Hanke, Co-Director of the Institute for Applied Economics, Global Health and Study of Business Enterprise (hanke@jhu.edu).

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About the Author

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Abstract

This paper provides a historical summary, legislative history, and the first spreadsheet data series of the Tonga Board of Commissioners of Currency (1935-1989) and uses statistical tests to examine to what extent it operated as an orthodox currency board.

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Introduction

Before establishing its modern-day National Reserve Bank, Tonga had a Board of Commissioners of Currency from 1935 to 1989 and, in addition, a Board of Commissioners of Coinage from 1962 to 1989. There are few works concerning Tonga's exchange rate regime or monetary policy during this time; thus, the analysis here will rely mostly upon British colonial reports and Tongan government gazettes published during the aforementioned years. This paper analyzes Tonga's currency board system based on statistical tests and examination of laws. The primary analysis uses data from the Commissioners of Currency/Coinage balance sheet, found in the colonial annual reports and gazettes.

The Tongan government first issued notes during 1919 (Tonga annual report 1931: 20), but the statistical analysis in this paper will only start with 1933 because earlier data were unavailable. In addition, data are unavailable from 1941-1946, because of problems connected with World War II. The holistic analysis will technically begin in 1919, despite the Board of Commissioners of Currency not being officially established until 1935.

The focus of this paper is to investigate the extent of the orthodoxy of the Tongan Board of Commissioners of Currency through statistical analysis and testing. The paper will touch on other aspects of the Tongan monetary system for purposes of reference rather than analysis. In addition, other researchers may find useful the data on the Tongan monetary system available in the accompanying spreadsheet workbook.

Origins

The Kingdom of Tonga is the southernmost archipelago among a group of islands in Polynesia. The kingdom is comprised of the primary islands of Tongatabu, Vavua, and Haabai, along with smaller islands. The first European to discover the primary islands was Dutch navigator Abel Tasman in 1643. Then, 130 years later, the kingdom was visited by Captain James Cook, who deemed the archipelago "the Friendly Islands" due to the kind demeanor of the local people. In 1900, Tonga became a British protectorate. At the time, the great powers were carving out spheres of influence in the Pacific islands that they did not already own. Accepting British protection was likely the course that preserved the greatest local autonomy for Tonga. Britain took control of all subjects connected to the foreign relations of Tonga and exercised considerable though informal influence in local affairs. A British Agent and Consul were appointed to advise the Tongan government on financial matters.

As previously mentioned, the Tongan government first issued bank notes during 1919. I have not found the text of the act, but based on acts concerning note issuance in other British colonies and protectorates at the time, I suspect that the Tongan act left many points to administrative discretion and was less specific than the successor 1935 act discussed below. The reason for initially issuing Tongan notes is presently unknown, but it could have arisen both from a desire to capture seigniorage for the Tongan government and to provide an alternative to silver coins.

A jump in the world market price of silver made the metallic value of some silver coins greater than their face value, leading to the public withdrawing them from circulation and melting them. After first issuing notes, the Tongan government backed its notes with British and Australian denominated assets. Using British and Australian assets made sense, because the aforesaid countries' respective currencies had been recognized as legal tender in Tonga since 1906 (Tonga annual report 1931: 20). When the notes were issued during 1919, the going exchange rates were Tongan £1 = £1 sterling = £1 Australian. In addition to having one-to-one exchange rates, Tonga used the same pounds-shilling-pence structure that Great Britain and Australia had, in which £1 = 20 shillings = 240 pence (Krus and Schuler 2014: 233). Notes were issued for as little as 4 shillings, a denomination perhaps chosen because the value was close to 1 U.S. dollar and to the Spanish silver dollar from which the U.S. dollar had originated. Since the 1600s the Spanish silver dollar had been widely used in and around the Pacific.

During January 1926, the Government Savings Bank of Tonga was established (Tonga annual report 1926: 4). The Government Savings Bank was the first bank in Tonga. It stored deposits and facilitated withdrawals for the Tongan people (Tonga annual report 1927: 4). By the end of 1931, there were 403 Tongan depositors and 160 depositors from abroad, as well as £26,459 in credit of depositors (Tonga annual report 1931: 19). The Tongan Government Savings Bank continued to grow, and by 1963, it had 9,413 total depositors with a total deposits of £248,467 (Tonga annual report 1963). The first commercial bank established in Tonga was the Bank of Tonga, which was headquartered in Nuku'alofa, Tongatapu. This bank was founded during 1974 and was still the only commercial bank in Tonga by 1989, when the National Reserve Bank of Tonga replaced the Commissioners of Currency (Krus and Schuler 2014: 234).

During 1935, the Treasury Notes Act was passed. The act officially established the Board of Commissioners of Currency (henceforth known as "the Board" or "Commissioners of Currency") (Treasury Notes Act 1936). According to the Treasury Notes Act, the Commissioners of Currency would be comprised of the Premier, Treasurer, and one other individual nominated by the Privy Council. Furthermore, the Board was to have an office in the capital city of Nuku'alofa, Tongatapu, like the Government Savings Bank. The office of the Commissioners of Currency was permitted to hire various officers, agents, and other workers as needed, pending the approval of the Privy Council.

The Treasury Notes Act gave the Commissioners of Currency the right to adjust the Tongan exchange rate system. Utilizing this ability, the Commissioners of Currency decided to fix the Tongan pound to the Australian pound (Tongan annual report 1935: 22). The rationale for the act seems to have been that Tonga's economic ties to Australia were stronger than its ties to Britain. By this time, the Australian pound had been devalued against the pound sterling as a result of the strains of the Great Depression. It took 1.25 Australian pounds to buy a pound sterling. It is possible that from the time the Australian pound began to depreciate against the pound sterling in 1929, the Tongan pound in practice followed the Australian pound.

In accordance with the powers granted to them under the Treasury Notes Act, the Commissioners of Currency fixed the minimum sum of currency it would exchange at £2,000.

Funds could be left with the Bank of New Zealand, a commercial bank in that country, or the Bank of Sydney, an Australian bank. The Commissioners also set their commission rate for exchanging currency at 1.5 percent, so somebody exchanging Australian £2,000 would receive Tongan £1,970 in notes from the Commissioners (Tongan government gazette, February 2, 1936: 5).

During the Second World War, the British government did not publish colonial annual reports, and we presently lack records from 1941-1946. Although we do not have much access to local financial information during this time, there are readily available accounts of Tonga's role in the War. In proportion to its size, Tonga contributed much to the British government and the Allied powers. Tonga donated three Spitfire Supermarine aircraft and 2,700 soldiers from the Tonga Defense Force to aid the Allies (Rutherford 1977: 201). Furthermore, Tonga accommodated 10,000 United States troops during 1942. Another interesting contribution came from the Tongan public servants, as all government officials donated 10 percent of their salary to the British government's war efforts. Tonga played a small but respectable role in the Allies' victory of the Second World War. It was sufficiently far from Japan that it was not invaded by Japanese forces.

Tonga maintained a fairly limited amount of notes in circulation during the Commissioners of Currency's first twenty years. At the end of 1939, there were only £20,073 worth of notes in circulation compared to the £20,000 in circulation during 1924 (Tonga annual report 1924: 3). By 1946, the value of notes in circulation had made a substantial increase to £85,690; however, the biggest increases were yet to come. By the end of 1959, the value of notes in circulation was £280,747.90. That means that in 20 years, the value of notes in circulation increased almost fourteen-fold. The substantial increase in value can be attributed to rising prices and increased production of Tonga's main export, copra, which is essentially dried coconut that is rich in coconut oil (Tonga annual report 1959: 16). It also may be the case that sectors of the economy where monetary exchange was initially limited became fully monetized during the period.

Near the end of 1957, the Tongan government began to consider the establishment of a Tongan coinage and movement to a decimal currency (Tonga annual report 1957: 15). The impetus for creating a Tongan coin arose from the heterogeneity of foreign coinage. Australian and British coinage had been legal tender in Tonga since 1906; during the Second World War, coins from Fiji and New Zealand had also filtered into the general circulation (Tonga annual report 1957: 15). During 1962, the Legislative Assembly passed the Tonga Coinage Act, which allowed the issuance of gold coins (Tonga annual report 1963: 42). On April 22, 1963, under the authority established by the Coinage Act of 1962, a series of gold coins memorializing the centenary of emancipation (the end of serfdom as a legal institution) were issued by the Tongan Commissioners of Coinage (Tonga, Minister of Finance report 1963: 5). The gold coins were the first ever issued by Tonga and in fact the first issued within Polynesia. There were three types of gold coins: the Koula (twenty units), the Half Koula (ten units), and the Quarter Koula (five units). The coins were minted in both a regular circulation series and a proof series, consisting of 10,800 coins and 1,050 coins, respectively. By December 1963, the value of gold coins in circulation was £102,180; furthermore, the Coinage Security Fund, which held the assets that backed up the coins in circulation, was valued at £108,217. The circulation of gold coins was unusual for the time; almost everywhere else, gold coins had gone out of circulation by the Second World War.

Shortly after the establishment of the Tongan Commissioners of Coinage, the Tongan government moved forward with its plans to establish a decimal currency system. During 1965, the government reached an agreement that the decimalization would be effective for Tonga; thus, a change-over date was recognized for 1966 (Tonga minister of finance report 1965: 7). In February 1966, the Assistant Treasurer of Tonga met with members of decimal currency committees from New Zealand and the United Kingdom to oversee the Australian transition to a decimal currency system (Tonga minister of finance report 1966: 7). Tonga then decimalized on the same day as Australia – February 14, 1966.

Tonga's decimalization led the way to a new currency, the Pa'anga. The call for a new currency was a direct result of an Australian change in currency and switch to decimalization. Both currencies shifted from the pounds-shillings-pence system to the decimalized system and consequently created the Tongan Pa'anga and Australian dollar. The Pa'anga could be divided into 100 parts, which in the simplest form was a Seniti (Tonga, Minister of Finance report 1966: 7), similar to a U.S. penny. The denominations of the Pa'anga in notes were ten, five, two, one, and one-half Pa'anga, and in coins, one Pa'anga and 50, 20, 10, 5, 2, and 1 Seniti. Accompanying these new currencies and denominations were new exchange rates. After both countries decimalized, the exchange rate was 1 Tongan Pa'anga = 1 Australian dollar (Krus and Schuler 2014: 233). Furthermore, since the old currency was still in circulation, the exchange rate of new to old Tongan currency was 2 Tongan Pa'anga = Tongan £1. It was reported though that by the end of 1967, 93.23 percent of the Tongan pounds outstanding had been exchanged through the nation's treasury (Tonga, Minister of Finance report 1967: 7).

During 1988, the Tongan Legislative Assembly passed the National Reserve Bank of Tonga Act. This legislation replaced the Board of Commissioners of Currency/Coinage with a central bank, the National Reserve Bank of Tonga (Krus and Schuler 2014: 233). The system change was made so that Tonga could have more freedom with its monetary policy.

A central banking authority and floating exchange rate offers monetary autonomy that an orthodox currency board does not. For example, a central bank is a lender to financial institutions. To control the money supply, a central bank changes the interest rate that it charges to financial institutions that borrow from it. A central bank's ability to change the money supply gives it economic influence through monetary policy, which allows the bank to either stimulate or contract the economy. An orthodox currency board, unlike a central bank, does not lend to financial institutions or the government and therefore has no borrowing rate to affect the money supply. This is the crux of a currency board's effectiveness in maintaining a fixed rate with its anchor currency, for the government can not rely on the central bank to print more money. A currency board fosters government monetary responsibility and thus aids in controlling inflation.

To What Extent Was the Board of Commissioners of Currency an Orthodox Currency Board?

To evaluate whether or not the Tongan Board of Commissioners of Currency acted as an orthodox currency board, we must specify the qualities and functions of an orthodox currency board. The fundamental features include: issuing notes and coins that can be converted without restriction into a foreign anchor currency at a fixed exchange rate and a monetary base (liabilities) backed 100 percent or slightly more by foreign assets, such as low-risk bonds in the anchor currency or gold (Hanke 2002: 88). The main purpose of a currency board is to stabilize a country's currency by limiting the scope for discretionary monetary policy. So, to what extent did Commissioners of Currency act as a currency board?

One characteristic of a currency board is that the domestic currency maintains a fixed exchange rate against an anchor currency. As previously stated, Tongan currency kept a fixed exchange rate against Australian currency for the entire lifetime of the Commissioners of Currency. Tonga even decimalized its currency on the same day that Australia abandoned the pounds-shilling-pence system. Thus, the Tongan Commissioners of Currency satisfied this requirement of currency board orthodoxy.

To determine whether the Tongan Commissioners of Currency met other standards of orthodoxy, we will develop statistical tests. We have compiled and digitized data by way of Tongan government gazettes and Tongan colonial annual reports. Our tests utilize balance sheet analysis of both the Commissioners of Currency and later the Commissioners of Coinage once it was established. The data go back to 1933, with one major gap between 1941 and 1949 and scattered other missing years. Until 1936, statements were issued quarterly. Semiannual reports were then made until 1954 and finally annual statements until the Commissioners of Currency ceased. The data used for these tests are available in the accompanying spreadsheet workbook.

Many of the balance sheets for the Tonga Commissioners of Currency published in the Tongan government gazettes and annual reports did not have assets equal to liabilities. After the Commissioners of Coinage were created, there were two separate balance sheets, one for notes and one for coins. These separate balance sheets both still did not balance. The reason may have been that the balance sheets would have balanced without requiring a net worth term had securities been valued at cost, but the securities were carried on the balance sheet at market value without any corresponding net worth term. To address this issue, we have added a net worth term to balance the otherwise unbalanced balance sheet. When there are more liabilities than assets, there is a negative net worth, and when assets exceed liabilities, there is a positive net worth. Substantial negative net worth, exceeding say 5 percent of total assets, means that the monetary authority is not a truly orthodox currency board, because foreign assets are not close to 100 percent of the monetary base.

Test One: Foreign Assets, Domestic Assets, and Monetary Base

The first statistical test in this analysis is net foreign assets as a percentage of the monetary base (liabilities), shown in Figure 1. As previously stated, an orthodox currency board will back its monetary base with 100 percent or slightly more net foreign assets. However, a clause from the Treasury Notes Act established that foreign reserves only had to back 75 percent of the monetary base (Skully, 1987: 163), although the Commissioners of Currency were free to hold a higher ratio. The next statistical test in this analysis is net domestic assets as a percentage of the monetary base (liabilities), shown in Figure 2. An orthodox currency board will hold zero net domestic assets or a number relatively close to zero. In the event that a meaningful amount of domestic assets back up the monetary base, a faltering domestic economy can substantially reduce their value, harming the currency board's ability to facilitate immediate liquidity of currency exchange between the domestic and anchor currency. Backing the monetary base with foreign assets allows the currency board to prevent liquidity issues when its country's economy or assets are faltering.

Figure 1 shows a continuous chart (closing gaps between missing years of data) of the Tongan Commissioners of Currency's foreign assets as a percentage of its monetary base. The Commissioners of Currency initially operated in orthodox currency board fashion for all but a couple of years from 1933 to 1966, maintaining an average foreign asset ratio exceeding 99 percent during that period. However, after 1966 the percentage dropped and stayed below 80 percent, and at times below 60 percent, for the remainder of the existence of the Commissioners of Currency. The sharp turn away from currency board orthodoxy came after Tonga and Australia decimalized and created new currencies, though there was no necessary connection between decimalization and the change in monetary policy. The only time that the percentage exceeded 100 percent was in 1979, when silver bullion appreciated sharply. This first test provides evidence that Tonga's Commissioners of Currency may have operated as an orthodox currency board until 1966; however, the case for currency board orthodoxy after 1966 is practically eliminated, because of how low the percentage drops and remains.

Figure 2 shows a continuous chart of the Commissioners of Currency's domestic assets as a percentage of the monetary base. Figure 2 mostly supports the conclusion derived from Figure 1. The Commissioners of Currency held domestic assets for most of their existence. As previously stated, an orthodox currency board will hold zero or very little in domestic assets. Our test shows that the Commissioners of Currency held zero domestic assets during the early 1930s but saw an increase in domestic assets by the time of the Second World War. It is possible that conditions after Japan started the war in the Pacific made the acquisition of foreign assets more difficult, leading to a bump up in domestic assets. Domestic assets then stayed at around 5-10 percent of the monetary base for the 20 following years, though, suggesting a fairly but not completely orthodox currency board. Figure 2 again shows a major deviation from orthodoxy after the Tongan currency system decimalized in 1966. Domestic assets as a percentage of the monetary base soared to over 40 percent and stayed between 30-40 percent for most of the remaining life of the Commissioners of Currency. Once again, the argument for an orthodox currency board after 1966 is practically dead on arrival.

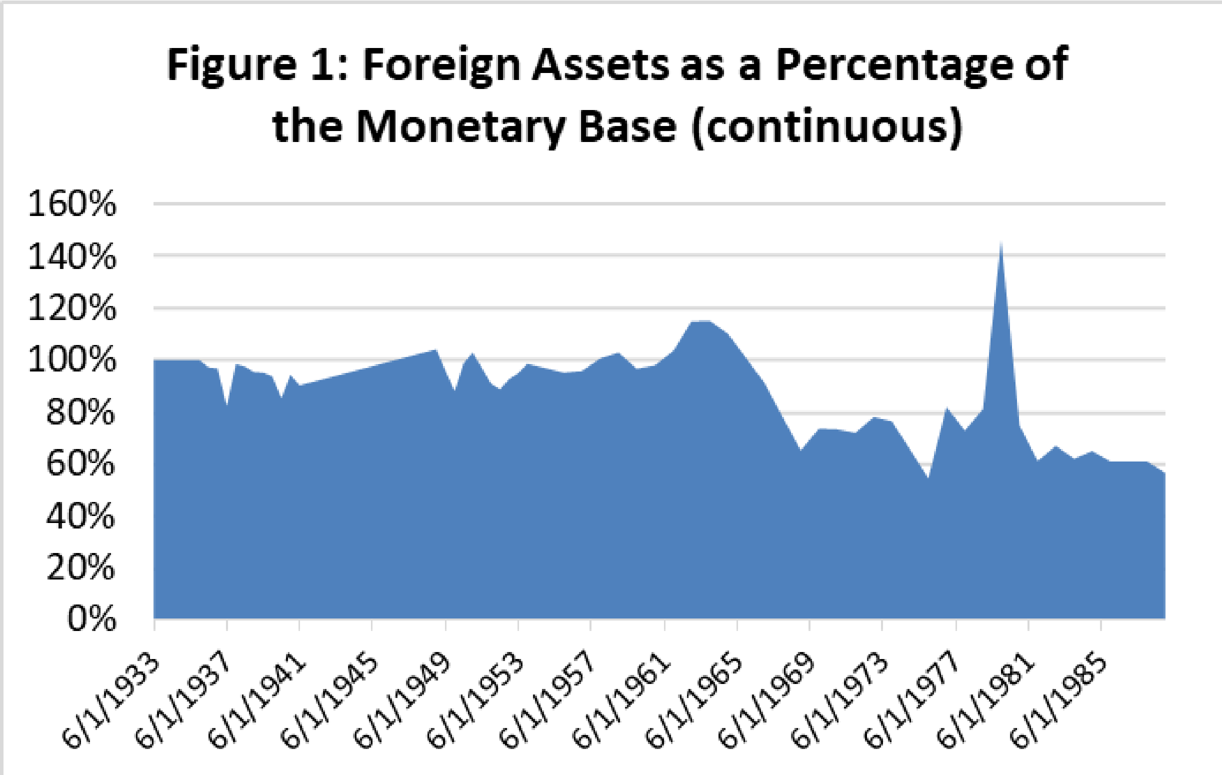


Figure 1: Foreign Assets as a Percentage of the Monetary Base (continuous)
160%
140%
120%
100%
80%
60%
40%
20%
0%
6/1/1933
6/1/1937
6/1/1941
6/1/1945
6/1/1949
6/1/1953
6/1/1957
6/1/1961
6/1/1965
6/1/1969
6/1/1973
6/1/1977
6/1/1981
6/1/1985

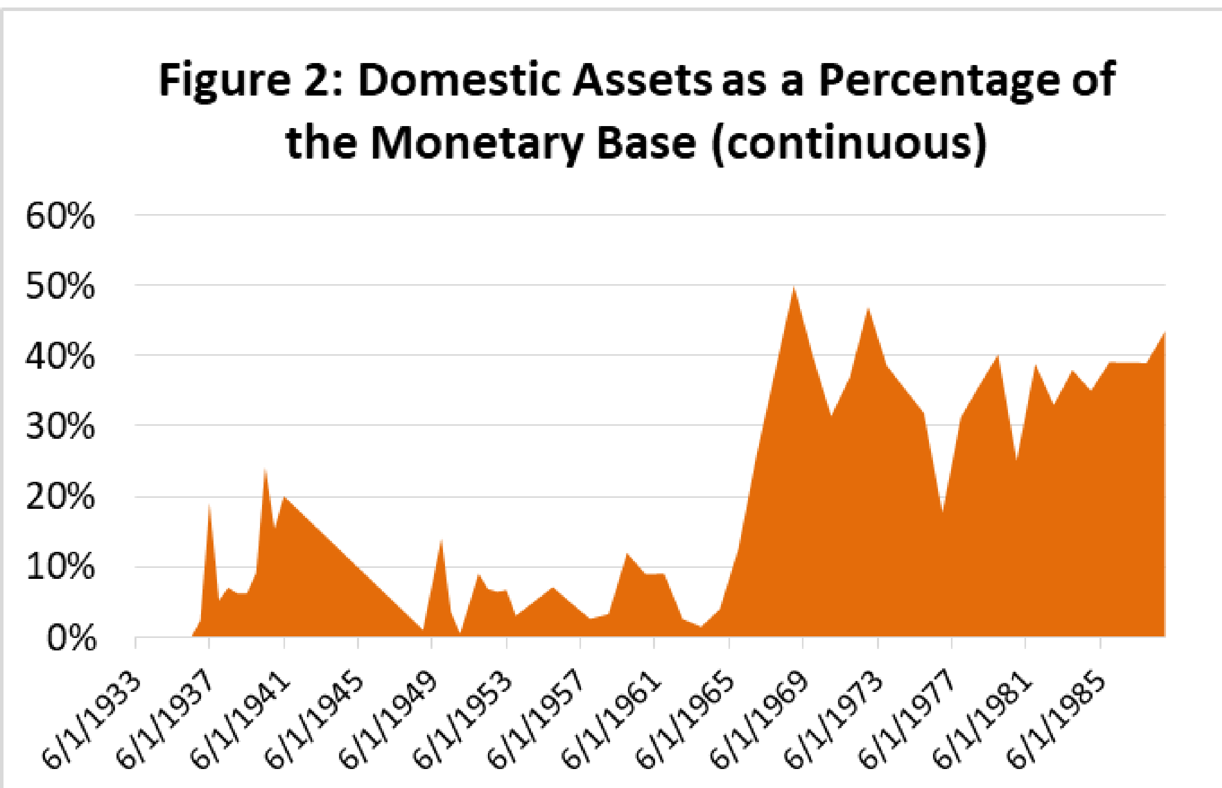
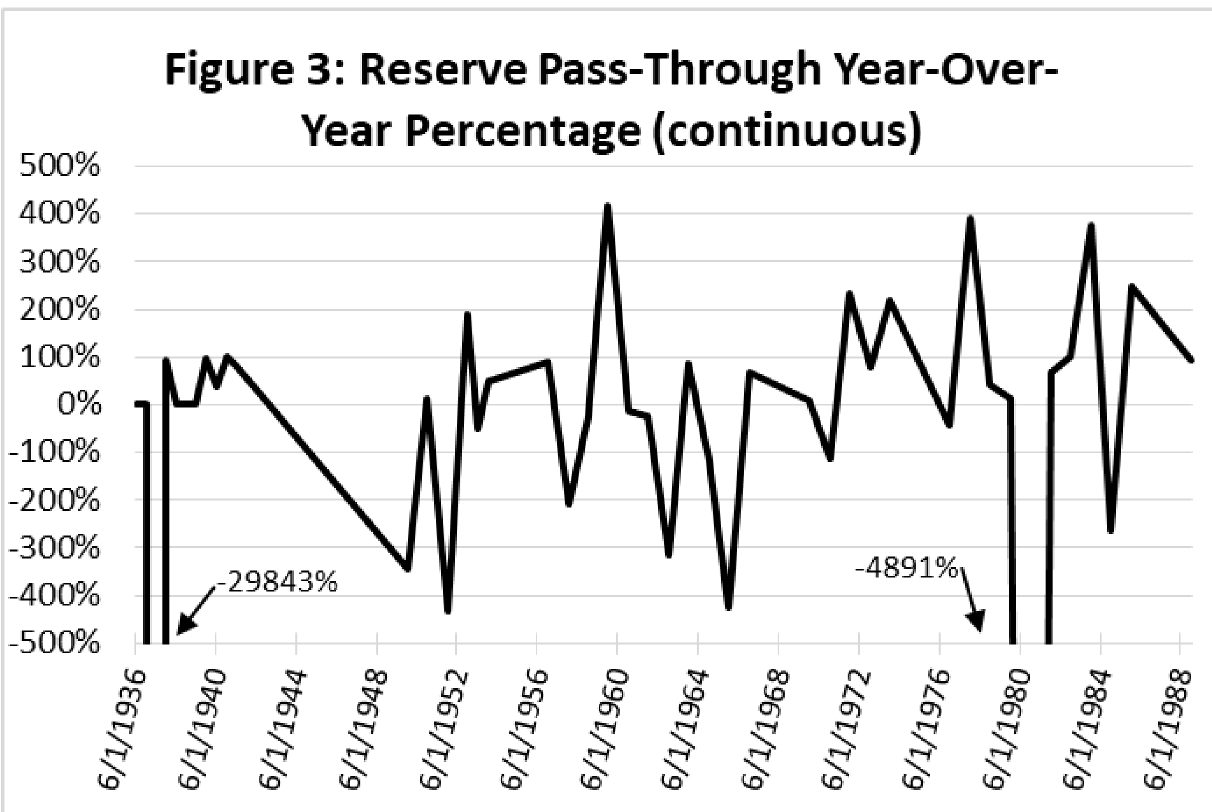


Figure 2: Domestic Assets as a Percentage of the Monetary Base (continuous)
60%
50%
40%
30%
20%
10%
0%
6/1/1933
6/1/1937
6/1/1941
6/1/1945
6/1/1949
6/1/1953
6/1/1957
6/1/1961
6/1/1965
6/1/1969
6/1/1973
6/1/1977
6/1/1981
6/1/1985

Test Two: Reserve Pass-Through

Our second test analyzes the reserve pass-through of the Tongan Commissioners of Currency. Reserve pass-through is the year-over-year change in monetary base divided by the year-over-year change in net foreign assets. In an orthodox currency board, reserve pass-through should theoretically be 100 percent, but given certain difficulties in measurement, more realistically a range of 80-120 percent seems reasonable (Hanke, 2008: 280). The percentage should be near 100 percent because changes in monetary base should be directly related to the public's purchases and sales of foreign currency in exchange for domestic currency.

Figure 3 displays a continuous chart of the Tongan Commissioners of Currency's reserve pass-through ratio. The ratio was highly volatile from start to finish. It generally remained between -400 percent and +400 percent and never stayed at or around 100 percent for more than a year or two. This, once again, is a deviation from currency board orthodoxy. When considering the results of Test One, the volatility of the reserve pass-through ratio makes sense. Because the monetary base was not backed in an orthodox currency board manner, the reserve pass-through ratio did not adhere to orthodox currency board standards. Furthermore, the large percentage of domestic assets likely threw off the reserve pass-through ratio. As the monetary base changed, both domestic and foreign assets changed, whereas with an orthodox board, basically only foreign assets should have mimicked the changes in the monetary base.



Test Three: Changes in Monetary Base and Foreign Assets

Our third test analyzes the year over year changes of the Tongan Commissioners of Currency's monetary base and net foreign assets. In an orthodox currency board, changes in foreign assets and changes in the monetary base should go hand in hand (Hanke, 2008). For example, if foreign assets rise by £10,000, then the monetary base should also increase by approximately £10,000. (In practice, the timing of interest earnings, commission fees, and expenses usually adds some noise to the data, but not enough to undermine the usefulness of the test.) Observing the changes in monetary base and foreign assets can also help us have a better understanding of the reserve pass-through ratio, because they represent the specific changes from which the reserve pass-through ratio is derived.

Figures 4A and 4B show the year-over-year changes in both the monetary base and net foreign assets for the Tongan Commissioners of Currency. Figure 4B shows data from 1934 to 1966, whereas Figure 4A only shows data from 1966 to 1986. We have created two charts to magnify the monetary base and foreign asset changes of earlier years; moreover, the two charts allow a comparison between the earlier and later years of the Commissioners of Currency. The charts only consider data capable of being measured in a year over year fashion and is constructed in a continuous manner. The charts' "discrete" versions, showing all the gaps in data, are available in the accompanying spreadsheet workbook.

Figure 4B gives a look at the changes in monetary base and foreign assets from 1934 to 1966. In many years, the monetary base and foreign assets changed in line with one another or close to it. Furthermore, in many cases of deviation, changes in foreign assets outpaced the changes in monetary base, which signals that the foreign assets are increasing at a faster rate relative to the monetary base that they are backing up. Between 1934 and 1966 the changes are reasonably correlated, at 0.86. Because of the somewhat close correlation between the changes, the reserve pass-through test's implications can be slightly mitigated. However, there are still notable deviations between the changes in monetary base and changes in foreign assets, leading to a questionable claim of orthodoxy for the Commissioners of Currency when analyzing only Figure 4B.

Figure 4A, on the other hand, calls for vetting the changes in monetary base compared with the changes in foreign assets. Figure 4A covers the changes from 1966 to 1986, ending near the close of the existence of the Commissioners of Currency. The correlation plunges to 0.34. This indicates a major deviation from orthodoxy as the changes are not moving in line with one another. One caveat to this is again the appreciation of silver bullion during 1979, which created major changes in both the monetary base and foreign assets. Regardless of this specific event, the accounts' changes relative to one another are not characteristic of an orthodox currency board. In conclusion, there is a possible case for orthodoxy from the beginning until around the time of decimalization; however, monetary base and foreign asset changes began to diverge distinctly soon after. For the most part, Test Three supports the findings in Test Two, because the change divergences warrant unorthodox reserve pass-through observations.

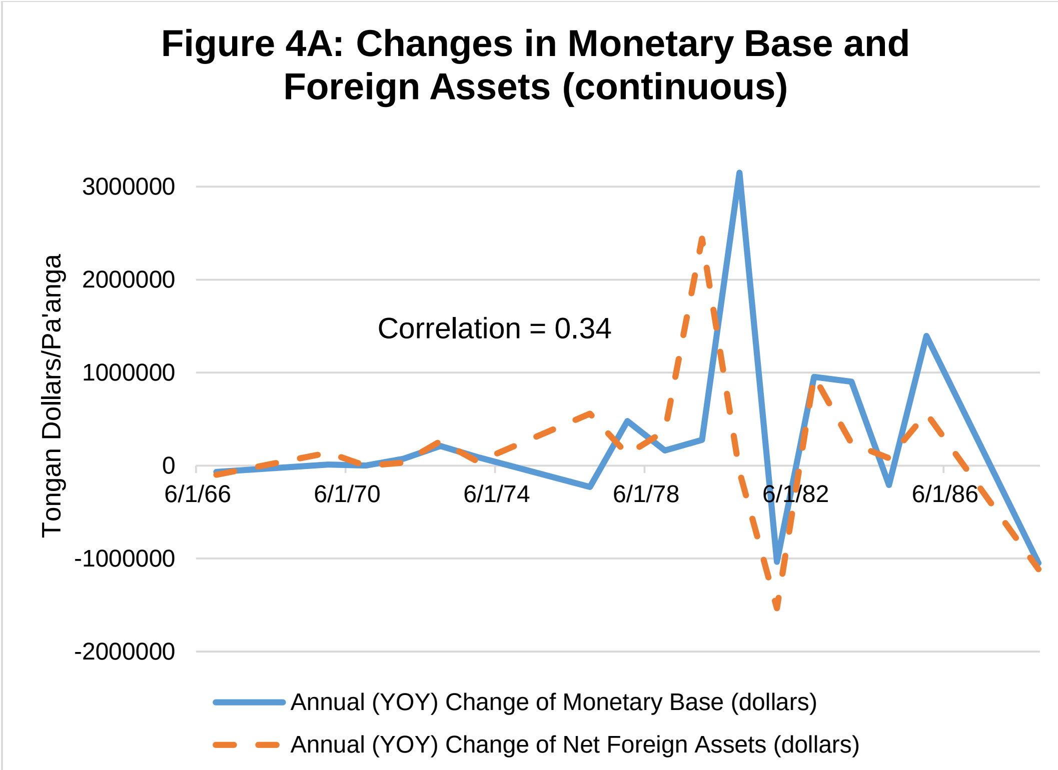


Figure 4A: Changes in Monetary Base and Foreign Assets (continuous)
Correlation = 0.34
3000000
2000000
1000000
0
-1000000
-2000000
Tongan Dollars/Pa'anga
6/1/66
6/1/70
6/1/74
6/1/78
6/1/82
6/1/86
Annual (YOY) Change of Monetary Base (dollars)
Annual (YOY) Change of Net Foreign Assets (dollars)

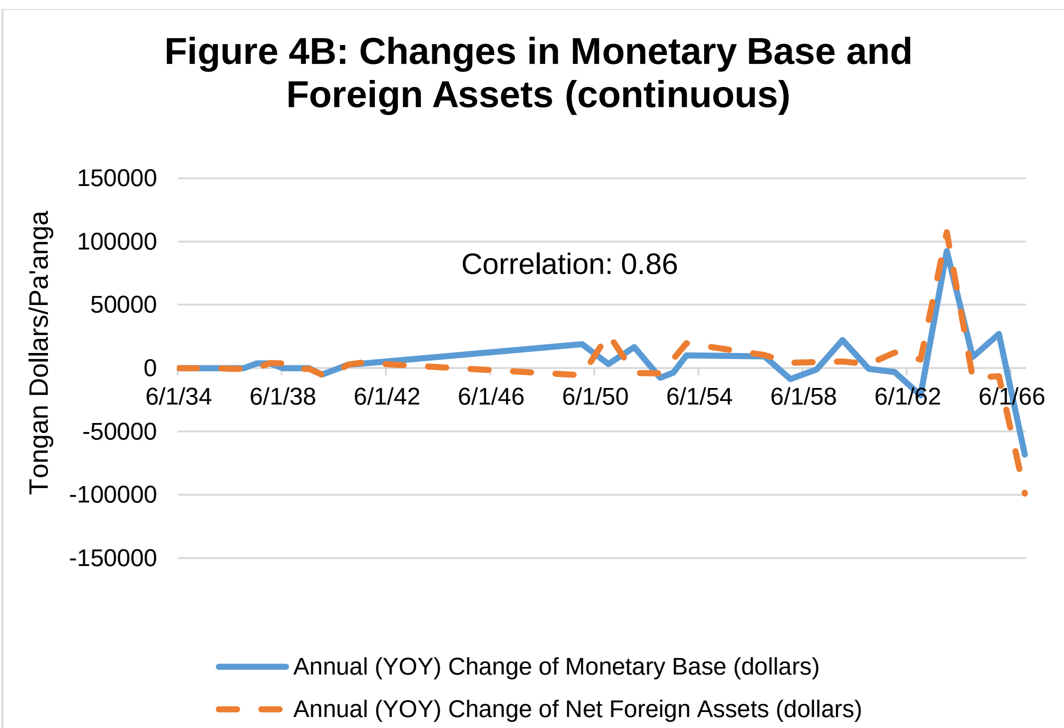
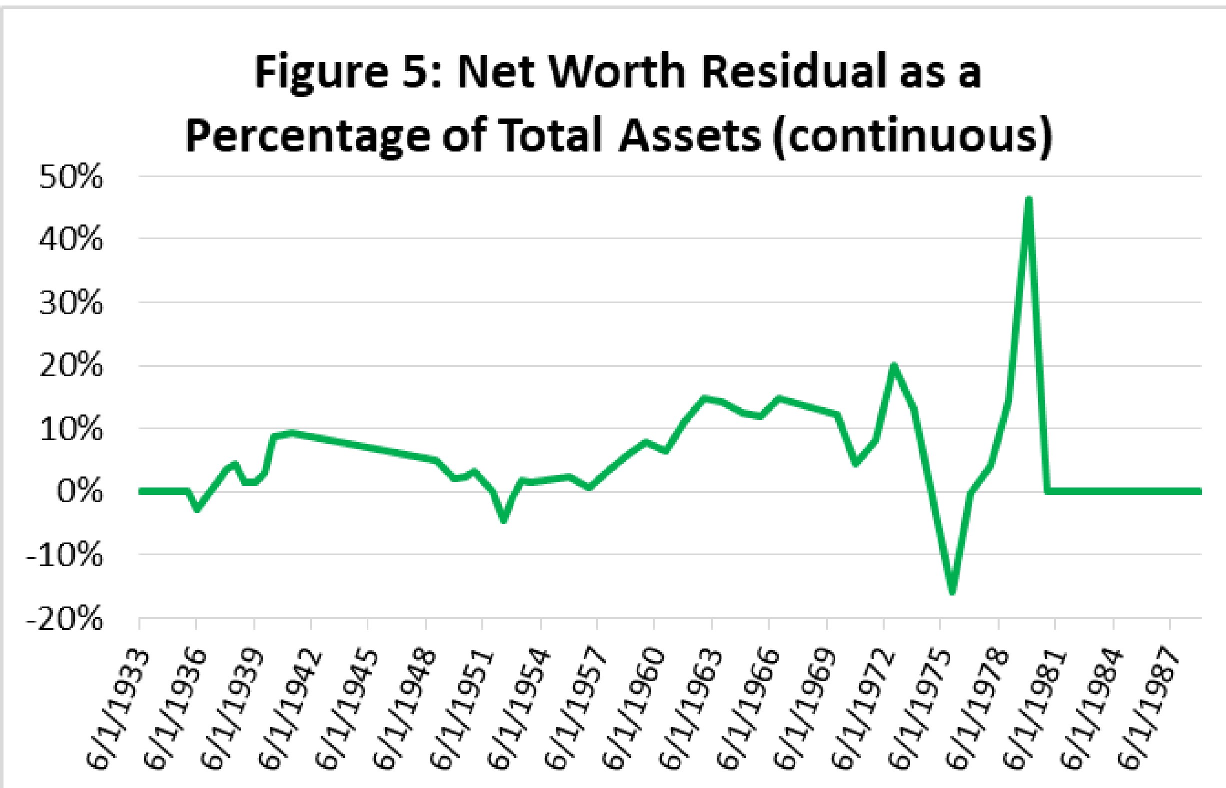


Figure 4B: Changes in Monetary Base and Foreign Assets (continuous)
Correlation: 0.86
150000
100000
50000
0
-50000
-100000
-150000
Tongan Dollars/Pa'anga
6/1/34
6/1/38
6/1/42
6/1/46
6/1/50
6/1/54
6/1/58
6/1/62
6/1/66
Annual (YOY) Change of Monetary Base (dollars)
Annual (YOY) Change of Net Foreign Assets (dollars)

Test Four: Net Worth Residual as a Percentage of Total Assets

Figure 5 offers a continuous look at the net worth residual as a percentage of total assets. In an orthodox currency board, the percentage should be from zero to no more than roughly 15 percent. When this condition holds, assets equal or slightly exceed liabilities. As previously mentioned, for an orthodox currency boards, the assets should be foreign rather than domestic.

Figure 5 show several signs that the Tongan Board of Commissioners of Currency went against orthodox currency board standards. The net worth residual as a percentage of total assets dropped below zero three times from 1933 to 1987. Minor slipups came during 1936 and 1952, while a major drop occurred in 1975 and 1976. If we refer to Figure 1, we see that foreign reserves as a percentage of the monetary base was below 100 percent for each of the aforementioned years; moreover, when referencing Figure 4A, we can see a major divergence between the year over year changes in monetary base and net foreign assets.



Beginning around 1956, we see a swift change from a net worth residual of 5 percent or less of total assets to a volatile residual, generally exceeding 5 percent. Passing 5 percent or 10 percent net worth residual as a percentage of total assets is unorthodox for Tonga specifically, because Tonga did not have 100 percent foreign assets as a percentage of the monetary base for almost the entire duration of the Commissioners of Currency after 1966. Some currency boards have consistently held foreign reserves up to 110 percent of monetary liabilities, in which case a 10 percent net worth residual is excusable; however, Tonga did not consistently hold foreign reserves above even 100 percent of the monetary base. In this case, any presence of excess net worth (when foreign assets are less than 100 percent of monetary assets) must come from domestic assets, which is a characteristic of unorthodoxy.

Conclusion

In consideration of our statistical tests and the legislative changes enacted by the Tongan government, it is logical to split our final consideration into two eras, pre-decimalization and post-decimalization. These two periods, 1919-1966 and 1966-1989, offer differing degrees of currency board orthodoxy and it is important to distinguish between them, as well as to consider the changes that caused these differences. An important constant throughout the lifetime of the Commissioners of Currency was the fixed exchange rate with the Australian currency. The Tongan currency adjusted to the ebbs and flows of the Australian monetary system from 1919-1989, which leaves an important variable constant in our analysis. This indicates a strong commitment to a fixed exchange rate; however, an orthodox currency board requires more than a fixed exchange rate.

Despite our lack of data from 1919-1933 and 1941-1947, there is a reasonable argument for currency board orthodoxy at least for 1934-1966 and probably for the whole period 1919-1966. Beginning with our first test, net foreign assets as a percentage of the monetary base were close to orthodox standards, with an average percentage was 99.3 percent. Although the average was almost 100 percent during this time, the percentage was below 100 for 14 of the 26 years for which we have data. These metrics suggest that there was not complete orthodoxy, but something close to it. Furthermore, if we look at domestic assets as a percentage of the monetary base, which should be zero, the yearly average is 6.4 percent during the period. Once again, this is not fully orthodox, but it is close to the acceptable range. As alluded to earlier, reserve pass-through can be slightly misleading, especially if working with smaller numbers; thus, for practical reasons, we will use Test Three's findings. While there are obvious deviations displayed in Figure 4B, the changes in monetary base and foreign assets are fairly close (0.86 correlation from 1934-1966), given the obscurity of the reserve pass-through volatility. With these considerations, it is valid to say that the Tongan Board of Commissioners of Currency was not fully orthodox, but acted fairly close to it before decimalization.

Comparing the metrics pre- and post-decimalization, the difference is dramatic, indicating that the system was no longer close to an orthodox currency board. Beginning with Test One, we see that there is a steep drop-off. For example, the foreign assets as a percentage of monetary base metric average drops to 73.8 percent for the period 1966-1989. Although the Treasury Notes Act established that foreign reserves had to be equal to 75 percent or more of the monetary base, the Commissioners of Currency on average did not even meet this threshold after 1966. Moreover, the domestic assets as a percentage of the monetary base rose to 35.9 percent during the same period. Both of these movements are massive shifts in the unorthodox direction. We will shift our focus to Test Three once more and see another deviation from orthodoxy. The correlation between changes in the monetary base and foreign assets during the post-decimalization era is only 36.6 percent. All of these figures suggest that the Tongan Commissioners of Currency did not operate as an orthodox currency board or even close to it after 1966.

The Board of Commissioners of Currency’s change in policy seems to have been related to the creation of the Commissioners of Coinage. There was no necessity that decimalization or the Commissioners of Coinage should have pushed the monetary authority in an unorthodox direction. Rather, it seems that they were coincidental with elements of a more discretionary monetary policy. Eventually, the Friendly Islands deemed that there was a need for more room for discretionary monetary policy and to abandon a system that was not working in an orthodox manner. In 1989, Tonga granted itself more monetary autonomy by creating a central banking authority, the National Reserve Bank of Tonga, which still exists today.

Appendix. Tonga Currency and Legislation, 1906-1989

This is a compact, chronological representation of important events, legislation, and developments that affected the Tongan currency and the Board of Commissioners of Currency (see also Krus and Schuler 2014: 233-235).

- **1906 -** British and Australian currency made legal tender in Tonga
- **1919 -** Board of Commissioners of Currency established and first notes issued
- **1926 -** Government Savings Bank created
- **1935 -** Treasury Notes Act passed, fixed the Tongan currency to Australian currency
- **1962 -** Tonga Coinage Act passed to allow issuance of gold coins
- **1966 -** Tonga decimalizes on the same day as Australia
- **1988 -** National Reserve Bank of Tonga Act passed, establishing central banking

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