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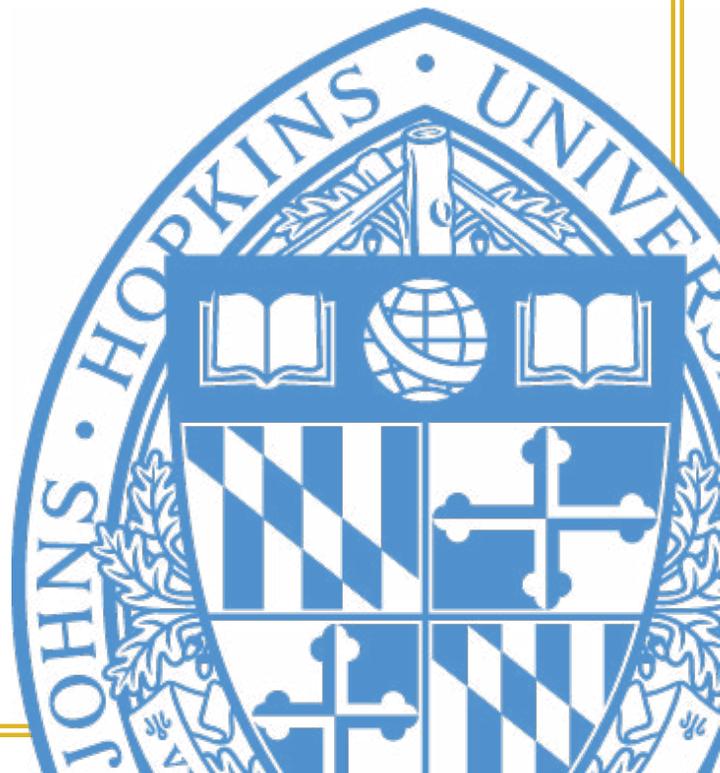
**JAMAICA'S CURRENCY BOARD, 1920-1961, AND A
COMPARISON WITH ITS CENTRAL BANK**

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



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About the Series

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

This working paper is one in a series on currency boards for the Currency Board Project. The currency board working papers will fill gaps in history, statistics, and scholarship of the subject. The authors are mainly students at The Johns Hopkins University in Baltimore who have conducted their work at the Institute as undergraduate researchers.

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Abstract

We describe the history of Jamaica's currency board system, which existed from 1920 to 1961; test how orthodox the currency board was; and compare some features of the currency board and the Jamaican economy during the currency board period to the Bank of Jamaica and to the Jamaican economy under central banking.

Acknowledgements

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JEL codes: E52, N16

Jamaican “Pre-Currency Board” Monetary Regimes

Jamaica struggled through several attempts at a unified monetary regime prior to the law establishing the Commissioners of Currency in 1904. In the country’s early colonial history, Jamaicans used Spanish and Portuguese coins due to the absence of an established Jamaican currency. The Spanish and Portuguese coins, especially the Spanish silver real (also called the piece of eight or dollar) were widely used in the Caribbean and across the world. This period had a fixed exchange rate for the coins, although it resulted in the Jamaican government lacking full authority over monetary policy. It can be seen as an early example of what is now referred to as dollarization, when a country enacts the complete use of another economy’s currency as its own (Hanke 2002). This led to problems in Jamaica with shortages of coins in circulation, in part because of attempts to set exchange rates among coins at legal rates different from market rates. (For more information on the pre-currency board currencies of Jamaica, see Chalmers 1893: 97-113.)

Due to the lack of coins in circulation and large amounts of outstanding debt, Jamaica began to seek alternative payment methods. In the early to mid 1800s, the Jamaican government began to issue “island checks.” These island checks were essentially IOUs to pay off government debts with an issuance of deferred liabilities (Callender 1965: 2-5). The problem arose that the government did not back these deferred liabilities with any form of reserves and in many cases did not pay their holders with gold or silver when demanded. The exact date at which these defaults were occurring was not listed in the sources we consulted – although Callender remarked that it was leading up to the Jamaican Act of 1839 (see below). This caused a panic for all island check-holders when the government officially neglected payment due to lack of funds on hand. At this point, the Jamaican government experienced an event similar to a bank run and effectively went bankrupt. The island Treasurer eventually decided that the government would pay off all outstanding liabilities that it could with the coins it had on hand, and the remaining island checks rest would be converted into debt in the form of long-term callable bonds. These debt-issuances were given no specific maturity, but the government promised they would be paid off. To make matters worse, there was financial distress and recession in both the United States and United Kingdom in 1837 (Roose 1948). These events led the Jamaican government to reform the currency. In the midst of the financial chaos in 1838, Jamaica emancipated slaves, causing an increase in demand for small-denomination currency notes and coins. This ultimately led to the decision by the Jamaican government in 1839 that as of 31 December 1840, only British coinage would be legal tender on the island (Jamaica Act of 1839). This law demonetized all Spanish and Portuguese currencies except for the Spanish gold doubloon, which had a fixed exchange rate at that time of £3. Jamaica henceforth used British coins until establishing a central bank and had no local coinage except for coins of one penny (1/240th of a pound) and below issued starting in 1869.

At this point, to counteract the loss of notes in circulation for the economy, the Jamaican government began allowing the emerging commercial banks to issue their own notes (i.e., “free banking”). The main authority in commercial banking was the locally owned Bank of Jamaica, which had no connection to the central bank established in 1961. The Bank of Jamaica was

allowed to issue notes backed by island checks, gold, or silver, but denominations had to be no smaller than £1. This was significant because £1 was more than an average Jamaican worker would receive in wages in more than one month's work (Callender 1965: 4-9). The Bank of Jamaica continued to issue these notes until it was acquired by the London-based Colonial Bank in 1865, at which point the Colonial Bank essentially gained monopoly power. The Colonial Bank reigned supreme over Jamaica until Canadian banks began to open branches in Jamaica in the late 1800's. This period of "free banking" appears to have been one of monetary stability, as was the case with many free banking systems elsewhere, although not enough research on it exists to reach definitive conclusions. Bank-issued notes were denominated in pounds, equivalent to pounds sterling, whereas in most other British West Indian colonies commerce was conducted in West Indies dollars (West Indies \$4.80 = £1 sterling).

The Jamaican currency remained strong due to a fixed exchange rate to the pound sterling amidst a system where multiple currency brands were accepted. In the early 1900's the Jamaican government, led by the island Treasurer, began to consider the possibility of establishing a currency board. The Jamaican government decided that it was time to call for Jamaican government currency to become the main currency on the island. There were no motives mentioned in the works we consulted for why the Jamaican government wanted a currency board. It shall be noted however, that in British Honduras in 1894, a currency board had been established. This could have led the Jamaican government to the idea of creating its own currency board. Government officials may have reasoned that the strong backing that a currency board offered would enable government currency to supplant notes issued by the commercial banks. This did not end the free banking period right away, but eventually is created a dominant government-issued Jamaican note issue.

History of the Jamaican Currency Board

The Jamaica Commissioners of Currency existed from 15 March 1920 to 30 April 1961, when the organization was succeeded by the Bank of Jamaica, the central bank that continues in existence today. The currency board used the pounds-shilling-pence system identical to that of the United Kingdom, with Jamaican £1 = £1 sterling = 20 shillings (s.) = 240 pence (d.) (Bank of Jamaica, 2010). The currency board was intended to prevent depreciation of the Jamaican currency. However, as with any currency board, monetary policy was in effect transferred to the anchor currency, the pound sterling, which became an issue when Jamaica began to consider complete independence in the mid 1900's. This led to the demise of the currency board for Jamaica, a step whose wisdom has since been questioned.

The earliest written documentation calling for the necessity of a currency board in Jamaica dates back to 1904. On 22 September 1904, Jamaica published the Currency Notes Law, establishing a currency board to issue 10-shilling notes (Laws of Jamaica, Currency Notes Law, No. 27 of 1904). Although the board was not actually initiated for several years, the law created a three-man Commissioners of Currency. No documentation has been found for this paper on who were to be the commissioners, how they were chosen, and how long they would be active on the board. The three commissioners were allowed to issue and redeem notes in a combination of both gold and

silver coin. The initial regulation called for a full reserve (100% percent) against the notes, of which two-thirds would be held in (gold or silver) coin and the rest in securities of the British Empire other than Jamaica. This reserve was referred to as the Note Security Fund. The Governor of Jamaica, with the approval of the British Colonial Office, could change the reserve of the Note Security Fund from the two-thirds coin and one-third securities to an even split of one-half of each (Bank of Jamaica, 2010). This change could happen by decree and needed no new law. The law also called for the government to accumulate a new reserve equal to at least 10 percent of assets, accumulated from interest on securities held. This was referred to as the Depreciation Fund because that even if some securities lost value, foreign reserves would still be at least 100 percent with the additional 10 percent asset buffer. The Depreciation Fund made it extremely unlikely that the currency board would ever lack full backing against the value of its notes.

The Commissioners of Currency remained inactive for a number of years. On 19 September 1918 the Currency Notes Amendment Law provided that notes of any denomination could be issued, as well as reducing the minimum coin reserve from two-thirds to one-half (Laws of Jamaica, Currency Notes Law No. 17). This marked the true beginning of the currency board, and the Commissioners of Currency began to draw plans to print shilling notes. During the beginning of the issuance of securities, the Commissioners started hinting at the idea of dropping a significant coin reserve which paid no interest, to holding more securities that paid interest. This would yield the Commissioners of Currency greater return, albeit with some increase in risk.

On 9 January 1920, the Currency Amendment Law was passed (Laws of Jamaica, Currency Notes Law No. 2). This allowed the Commissioners of Currency to accept and pay out British Treasury £1 and 10-shilling notes for the first time as if they were British coins. These notes, nicknamed “Bradburys” after the British Treasury official who signed them, were first issued in 1914 as a World War I emergency measure to provide lower-denomination paper currency than could be offered by the Bank of England, which was not allowed to issue notes under £5. The Commissioners of Currency officially issued their first notes under the aforementioned second amendment to the Currency Notes Law on 15 March 1920. Each of the three denominations bore a portrait of King George V, the ruling monarch of the United Kingdom from 1910 until his death in 1936. The notes also included a signature from C.C. Anderson, who was the Treasurer of Jamaica during the issuance of the notes and presumably one of the Commissioner of Currency.

The Colonial Bank, which held a de facto monopoly of commercial banking between 1865 and 1889 (Callender 1965: 2-3), was issuing £1 and £5 notes. It was this, as well as a scarcity of silver around the world at the time, that caused the Commissioners of Currency to choose to issue smaller denominations: 2/6 (2 shillings 6 pence, equal to £0.125), 5 shillings (equal to £0.25), and 10 shillings (equal to £0.50). The 5- and 10-shilling notes were issued throughout the currency board period. Undocumented stories exist that the 2/6 notes were only supposed to be issued for a few years, but no official documentation of such a plan can be found. The denomination was withdrawn from circulation in 1922, just two years after it was issued.

The Commissioners continued with only the 5- and 10-shilling notes from 1922 into the late 1930s. The Currency Notes Law of 1937 gave that the Board of Commissioners power to issue £1

and £5 notes. The issuance of the larger denominations officially began in 1940, by which time the British Empire had entered World War II and demand for currency was rising strongly. The reserves and the redemption procedures of the currency board were revised to conform to those of other British colonial currency boards of the time (Currency Notes Law, Nos. 9 and 27 of 1937). Previously, notes had been redeemable in coins, which made sense because the denominations issued were mainly used as coin substitutes. However, once the board was allowed to issue notes of a larger denomination the Commissioners decided to change the medium of redemption from coins to sterling drafts on London. This law also made a commission fee legal. The board could charge a fee for commission on transactions while also being allowed to set minimum transaction sizes. The board initially established a 1.75 percent transaction fee on all transactions, which had to be at least J£5,000. The board could at this point issue both coins and notes, and the government Treasury officially stopped issuing coin in the 1940's, which meant the board was responsible for all government issued currency for Jamaica.

From 1939 until the end of the currency board period, the Jamaican pound remained fully convertible into the pound sterling but was not fully convertible into many third currencies. Restrictions on convertibility began during World War II to prevent trading with the enemy and continued afterwards to prop up the value of sterling (Hanke and Schuler 1995). Many countries within the British Commonwealth agreed to full convertibility within the sterling area but were restricted convertibility outside the area, notably with the U.S. dollar, to attempt to support the value of sterling.

The currency board became the leading issuer of currency for the first time at the end of 1941, when the total value of its notes in circulation exceeded the value of commercial bank notes for the first time. It marked the transition from a free banking monetary system into a nation run on a currency board.

In 1954, a new Currency Notes Law established that no commercial banks other than the successor to the Colonial Bank — Barclays Bank (Dominion, Colonial and Overseas) — could issue new notes (Currency Notes Law, No. 9 of 1954). This prohibited two major commercial banks, the Royal Bank of Canada and Bank of Nova Scotia, from issuing notes, which redistributed significant market share to the Commissioners of Currency. The law also included the Exchange Control Act of 1954 which imposed strict regulations on trading in currencies outside the sterling area (Currency Notes Law, No. 50 of 1954). The intent was to support sterling, and due to the currency board's link to sterling, the Jamaican pound. In September 1954, the favorable economic conditions due to high earnings from the post-Korean boom allowed for expansion in both public and private investment. These were stated as the reason for the increase in currency issues. There was belief that the expansion of the colonial economies would need more currency circulation and reserves.

Due to the post-World War II weakness of the pound sterling, the reserve laws were soon reconsidered. Up to that point, as mentioned above, the board had to hold 100 percent reserves in foreign assets with a 10 percent additional buffer to protect against depreciation of the securities the board held. (See the Jamaica Gazette tab in the accompanying Excel workbook.)

However, the Commissioners believed that the foreign reserve ratio was unnecessarily high (Hanke and Schuler 1995: 21). The Currency Notes Law of 1956 allowed the board to hold Jamaican government securities worth up to J£1 million, which was nearly one-fifth of total notes and coin in circulation (Currency Notes Law of 1956, Law 1). The government made further amendments to the foreign reserve ratios in 1958, raising the limit on domestic securities to J£3 million (Currency Notes Law of 1958, Law 1). This raised the total domestic securities the board could hold to about 35 percent of note and coin in circulation. At this point, the board's foreign reserve ratio fell to 65 percent of total notes and coin in circulation, deviating from currency board orthodoxy (Callender 1965: 93-4).

Previously, the currency board had held a modest amount of domestic assets, apparently to be able to pay local expenses. The acquisition of substantial domestic assets was an early stage in the transition from the currency board to a central bank. The move away from currency board orthodoxy was intentional. Total liabilities outweighed total foreign assets for the first time in 1959 (see Figure 1 below). Before this, as seen in the coinciding data provided with the paper, it is evident that the total foreign assets usually accounted for 100-110 percent of total liabilities. The difference can be considered a "net worth" plug" in the accounting, something common in British Caribbean colonies (Krus and Schuler 2014: 2).

There was another important change in 1958. The Currency Notes Law of 1958 (mentioned above) stopped Barclays Bank from issuing notes. This officially left the board the sole issuer of local currency in Jamaica. In the absence of entities issuing competing currencies on the island, the Commissioners of Currency began to act similar to a central bank for the first time. With a monopoly over the issuance of notes and coin in circulation, the Commissioners held all monetary control possible at that time, albeit scarce. The currency board had no potential powers of monetary management other than to vary its holdings of Jamaican government securities within the legal limits, but it always held the maximum allowed, so it did not exercise that potential power (Hanke and Schuler 2017: 21).

In the 1950s, the American economist John Exter and the Austrian-British economist John Mars critiqued the colonial currency board in their works *Report on the Establishment of a Central Bank for Ceylon* and *The Monetary and Banking System and Loan Market of Nigeria*. They claimed that the automatic exchange for Jamaican pounds for sterling would mean that there is an intrinsic relationship between changes in money supply and balance of payments. A surplus in the balance of payments would mean that the sterling would be deposited with the currency board in exchange for local currency. This would increase the stock of currency and generate price increases. If there was a deficit in the balance of payments, people would give up local currency and the stock of currency would be spent on the same number of goods, so prices would decrease.

However, this was not completely accurate, because the policy of commercial banks also plays a role in the change in money supply. If a surplus in the balance of payments is deposited in the banks, they can hold onto it, use it to increase loans and advances domestically, or invest in short-

term assets abroad. The first option would not allow for any increase in income and the second and third would lead to an increase in the money supply.

Another criticism of the currency board system was that it requires a 100 percent foreign reserve backing. Holding domestic assets instead of foreign assets is not just a pure benefit, though. Domestic assets are less liquid and riskier than the foreign assets that currency boards typically hold, so the higher return that they may offer comes at a price. The price is the much higher frequency of devaluations under central banks than under currency boards.

The Jamaican Economy during the Currency Board Period

During the currency board era, the Jamaican pound was fully convertible to the pound sterling. From 1953 until 1960, real GDP per capita grew by nearly 7 percent. However, in the central banking, real GDP per capita fell in the 1970s and grew by a rate of roughly 2 percent for the remainder of the period. This can also be attributed to a sharp increase in the Jamaican population.

Over the same period from 1950 through 1961, gross capital formation had a strong growth from 1950 until 1957, but slowed down from 1958 through 1961. The increase in capital formation caused savings mobilization and the transfer of savings to investors in capital goods. The old financial institutions mobilized savings and transferred them to various parts of the economy, but new institutions were required to meet the needs of a changing economy. It was this change that spurred a slowing gross capital formation in Jamaica at the end of the period being analyzed (Callender 1965: 75).

The tourist industry developed into a large portion of the Jamaican economy during the currency board period. In 1950, the total number of tourists was almost 75,000 and 1961 it exceeded 224,000. Tourism was even more important as a source of earnings in dollars (unlike the pound sterling, a fully convertible currency) than as a share of GDP.

Analysis of Orthodoxy of Jamaican Currency Board

Tests on the currency board for Jamaica were done primarily by use of the *Jamaica Gazettes* and colonial annual reports. First, Krus and Schuler (2014) provided annual balance sheet data from Jamaica for 1921-1959 from the annual reports of the Commissioners of Currency and the colonial annual reports. They found annual data except for 1930 and 1940 (no data at all), and 1941-44 (note circulation data only). Due to the missing years, certain periods are left out of the tests and graphs below. For each of the figures below, there is no data input for 1930 and 1940-1944. These dates are disregarded. Years are labeled on every graph so this will be evident simply by looking at them.

The first test we did was the main orthodoxy test for a currency board. A currency board is supposed to back all notes in circulation with foreign assets to a specific reserve ratio. In the case of the Jamaican currency board — as mentioned earlier in the paper — the board was managed

in a very specific way. Up until the later years around 1956, the board was supposed to hold a full reserve of 100 percent of foreign assets, and in most cases, an additional buffer around 10 percent. This would cause the total value of the assets in reserve to never fall below the face value of the notes outstanding. This would signify an extremely orthodox currency board. After 1956, anticipating the dissolution of the currency board, the commissioners were allowed to transfer some of the foreign assets into domestic assets. This led to the first deviation from orthodoxy around 1959 (as apparent in Figure 1). This shows that starting at the inception, the Jamaican currency board never deviated from orthodoxy and the 10 percent interest buffer was not only smart but critical as the value did depreciate in some years. The only period that the board was unorthodox fell in the period where they began planning to remove the currency board. This shows a perfectly orthodox currency board run by the Commissioners of Currency in Jamaica; slightly uncharacteristic of the similar Commonwealth colonies in the Caribbean.

The second test provided below determines the percentages of assets held in each asset class. The original legislation drafted for the commissioners of currency called for a specific breakdown of assets held in securities versus alternative means (i.e. Coin [silver]). As mentioned above, the initial regulation called for a full reserve (100 percent) where two-thirds would be held in coin and the rest in securities of the British Empire, outside of Jamaica. This reserve was referred to as the Note Security Fund. It was the Governor of Jamaica, with the approval of the British Colonial Office, that changed the reserve of the Note Security Fund from the two-thirds coin and one-third securities to an even split of one-half of each (Bank of Jamaica, 2010). Test 2, determines the exact breakdown, by year, of the asset classes as percentages of total assets. Determining from Test 1 that the currency board was orthodox by means of reserve ratios, it will now be determined the level of orthodoxy by asset classes held. The coinciding graph labeled Figure 2 shows exact values compiled from data from Dr. Kurt Schuler and Nick Krus in the Colonial Annual Reports, and checked by the Jamaican Gazettes in our digitization tabs.

The next test performed is a reserve pass-through test. This test shows the extent to which the change in net foreign assets are reflected in the change to the monetary base. Furthermore, a reserve pass-through equal to 100 percent states that when net foreign assets rise 100 million, the Jamaican Commissioners of Currency Note's monetary base should also rise by 100 million. There should exist a margin of error, however, so deviations of 20 percent, above or below, are considered orthodox. To calculate the reserve pass-through, the change in the monetary base is divided by the change in net foreign assets. The absolute value of that outcome will yield the reserve pass-through. This test will be the hardest to view on the graph, but does back up the claims for the two previous tests. This test is important because it shows how the change in net foreign assets are influencing the monetary base. In a perfectly orthodox currency board, it would translate that each addition 'x' into the net foreign assets would result in an addition 'x' into the monetary base.

The final test performed involving looking at domestic assets. In order for a currency board to be orthodox, domestic assets should be at or around zero percent of total assets. Many currency boards hold small amounts of domestic assets to pay salaries or expenses. In fact, from nearly the beginning of their existence, the Commissioners of Currency held some amounts of deposits

with the Government Savings Bank or the Jamaican Treasury in order to pay these types of expenses. These deposits were not a large deviation from orthodoxy because the currency board did not seem to intend to maintain large, permanent domestic assets on the balance sheet. However, starting in 1959, the Commissioners began to invest in Jamaican government securities. These changes showed a departure from orthodoxy since they were intended to be permanent holdings of domestic assets.

Test 1: Orthodoxy of the Jamaican Currency Board

The first test is checking the orthodoxy of the currency board of Jamaica in the period of 1921-1959. All years were accounted for with proper data except 1930 and 1940-1944. The data used was from the annual balance sheet data provided by Krus and Schuler (2014), as well as the data from the Jamaica Gazette.

The first test was determining whether the face value of all the notes outstanding each year were accounted for (in the 100-110 percent range) in the assets held by the Commissioners of currency. This was done in the excel supplement to the paper. The first two years, 1921-1922, were different than the others so they will be described first. For the first two years the calculations for assets accounted for the following: Coin [coins and British Currency Notes] and Note Guarantee [Security] Fund Investments. The sum of the two aforementioned sections was divided by the total notes in circulation by the currency board to determine if the reserve ratio was above 100 percent of the notes in circulation. It was, of course, above the requirement. For the years following (1923-1959) the following categories of assets were used in calculations: Coin [Silver coin], British Currency Notes, Note Guarantee [Security] Fund Investments, Joint Colonial Fund, and Treasurer [for investment or on deposit]. The sum of those sections were divided by the total notes in circulation for each year to determine the orthodoxy. The following data illustrates the results from Test 1: Orthodoxy of the Jamaican Currency Board:

Deviations from Orthodoxy:

1923 - Foreign Assets / Currency Notes Outstanding = 99.94 percent

This was the only ratio less than 100 percent and it was only 0.06 percent off of the mark. The reason that this year may have deviated from the year before was due to a 45.77 percent decrease in Coin [Silver coin] + British Currency Notes from the previous year. The reason for this is unknown after extensive research, however, in 1924 the Coin [Silver coin] + British Currency Notes increased by 9.54 percent as well as an increase from J£0 to J£6,798.13 in Treasurer [for investment or on deposit]. This change in 1924 yielded a 35.62 percent increase in foreign assets held which rebounded the reserve ratio from 99.94 percent to 100 percent. After 1923 there was not another value below 100 percent until 1959.

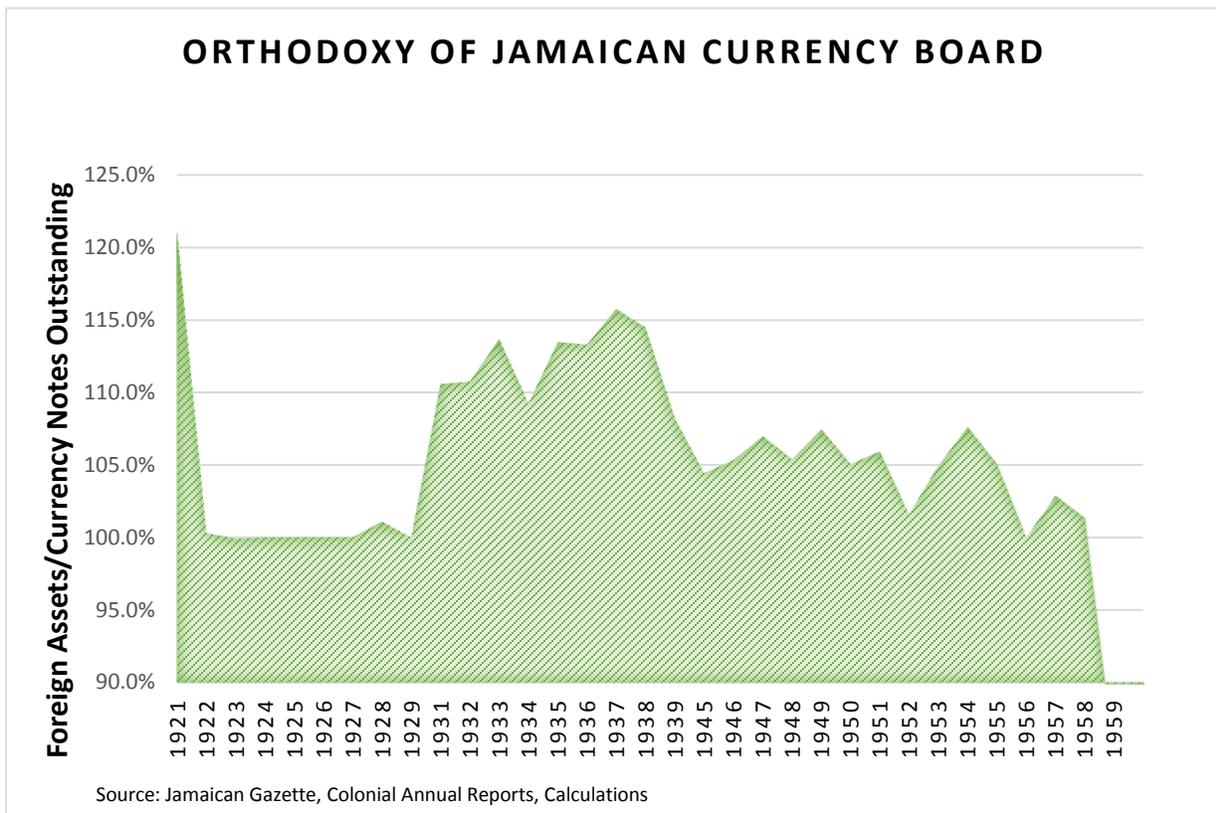
1959 - Foreign Assets / Currency Notes Outstanding = 84.8 percent

As mentioned above, this case was done by shifting some foreign assets into domestic assets which diluted the Foreign Assets / Currency Notes Outstanding. 1959 was the first year on the annual balance sheet where both Jamaican Government Securities and Jamaica Treasury Bills were accounted for. If the reserve ratio was changed to Foreign &

Domestic Assets / Currency Notes Outstanding, accounting for the Jamaican Government Securities and Jamaica Treasury Bills, it would be 105.75 percent, which still would fall above the orthodoxy ratio.

Therefore, from the data provided above, as well as the graph below derived from the supplementary excel worksheet, we can see that the only true deviation from orthodoxy occurred in 1923. It should be noted that this was the first year that Coin [Silver coin] and British Currency Notes were listed separately. This could have caused a slight difference in the accounting. Even without an error, it was only 0.06 percent less than orthodox which can be seen as an extremely insignificant difference. Hence, Test 1: Orthodoxy of the Jamaican Currency Board proves that the Jamaican Currency Board was run almost flawlessly in terms of reserve ratios remaining in the required range.

[Figure 1] Test 1: Orthodoxy of Jamaican Currency Board



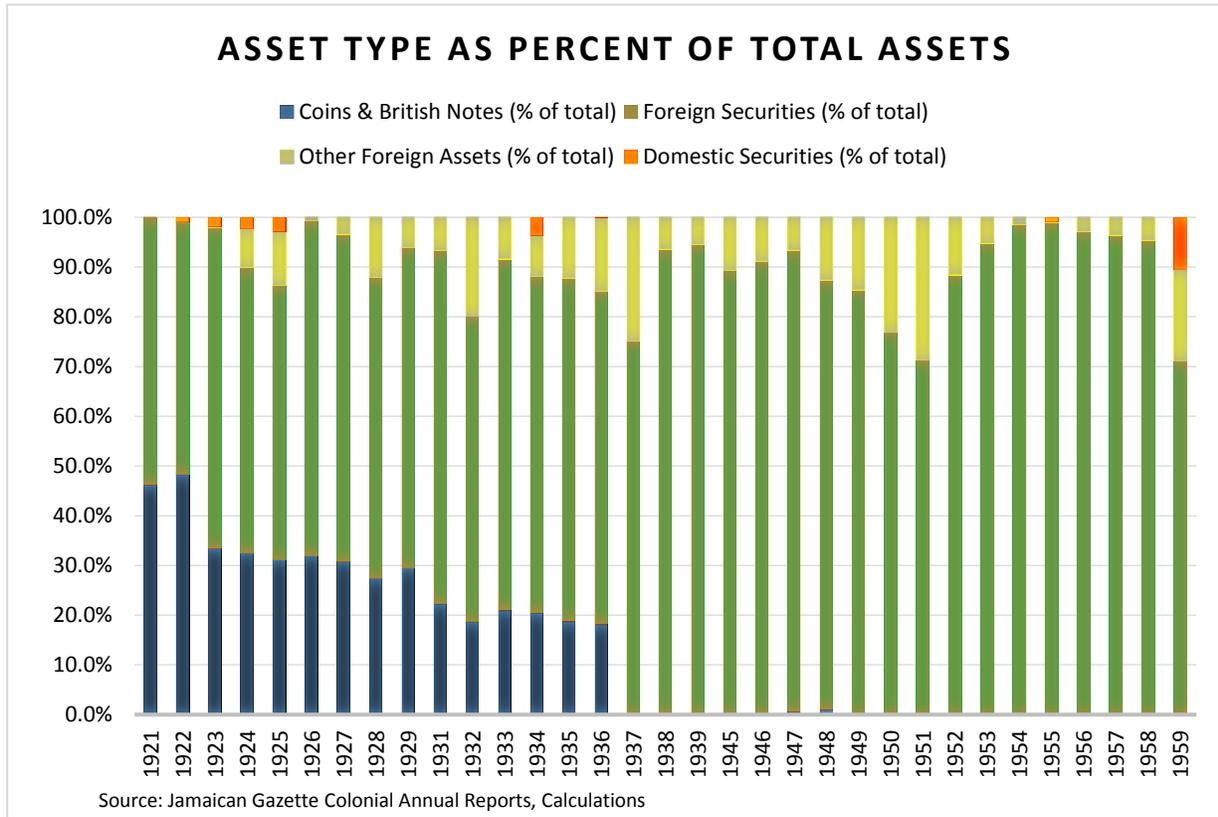
Test 2: Reserve Ratio by Asset Type (as percent of total assets)

The second test is checking the orthodoxy of the currency board of Jamaica in the period of 1921-1959 specifically by seeing the asset classes (as a percentage of total assets). All years were accounted for with proper data except 1930, 1941-1944, and those years were interpolated from previous year's data. The data used was from the compiled annual balance sheet data provided by Krus and Schuler, as well as data from the *Jamaica Gazette*.

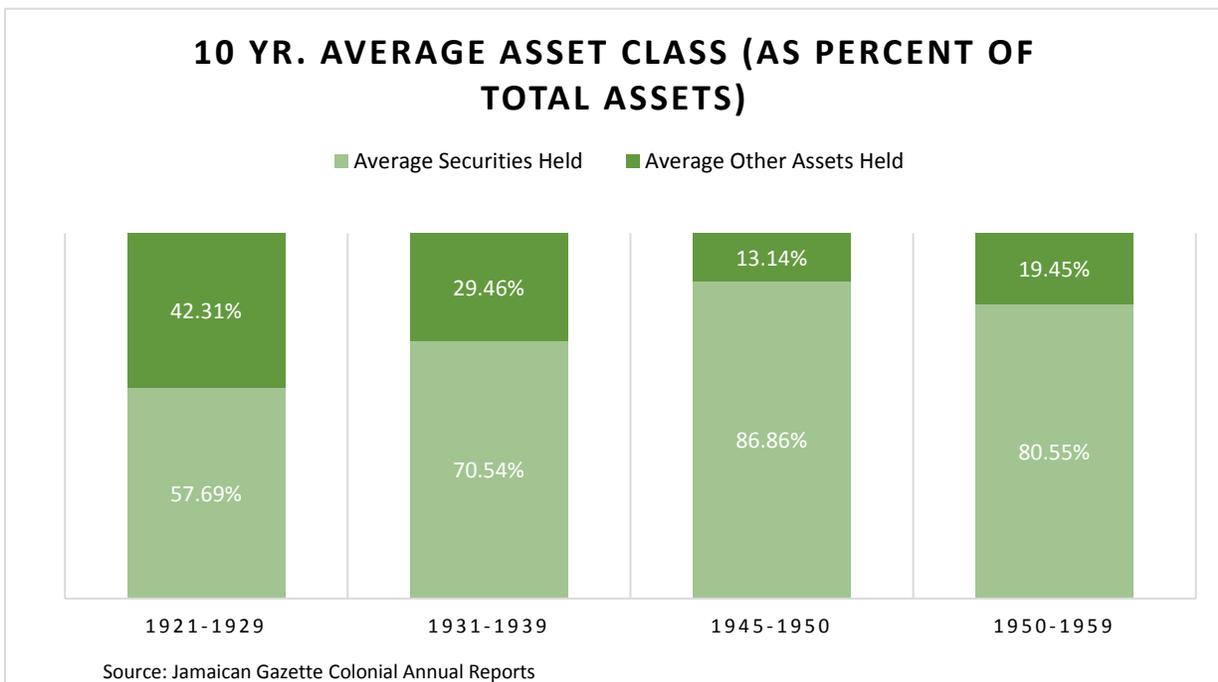
The reason the test is important was because the original legislation calls for specific ratios of asset classes to be held in reserves. It is evident, based on results in Test 1, that the currency board was orthodox in terms of the required reserve ratios. However, Test 2 seems to show unorthodoxy in the percentage of each asset classes held, deviating from what the Commissioners originally called for. The initial law created called for only one-third of total assets in reserve to be securities, though after revision it was changed to one-half. Based on Figure 2 and Figure 3 above, 1921-1936 followed suit relatively well and was orthodox given a small margin of error. However, it is evident that after 1936 the percent of securities held out of total assets would significantly outweigh the other assets held. Figure 3 broke down the years into roughly 10-year averages to collectively show the transition away from the original law the commissioners called for. From 1938-1959 the percent of assets held in securities increased to a range of 70-90 percent and did not leave that range more than once.

The possible implications linked with how the Commissioners were supposed to break the assets down as percentages of total assets, and how they actually did, could come from a few things. First, as mentioned above, within the amendment to the initial reserve law, it called for the government to accumulate a new reserve that would have at least 10 percent interest from securities held. This was referred to as "The Depreciation Fund" because it claimed that even if some securities lost value, the offsetting balance of the foreign currencies reserve would still be at least 100 percent with the additional 10 percent interest buffer (Laws of Jamaica, Currency Notes Law). Due to this buffer - it is possible that the Commissioners realized they could hold more securities increasing the Depreciation Fund, but also increasing returns which in turn made the reserve backing stronger. This can be seen as a true possibility in the supplementary data as the Depreciation Fund raised dramatically, however it raised less than the increase in face value of securities held. The Commissioners could have realized that, as long as the increase in depreciation was less than investment in new securities, they would still remain above orthodox levels of reserves backing the currency notes in circulation.

[Figure 2] Test 2: Reserve Ratio by Asset Type (as percent of total assets)



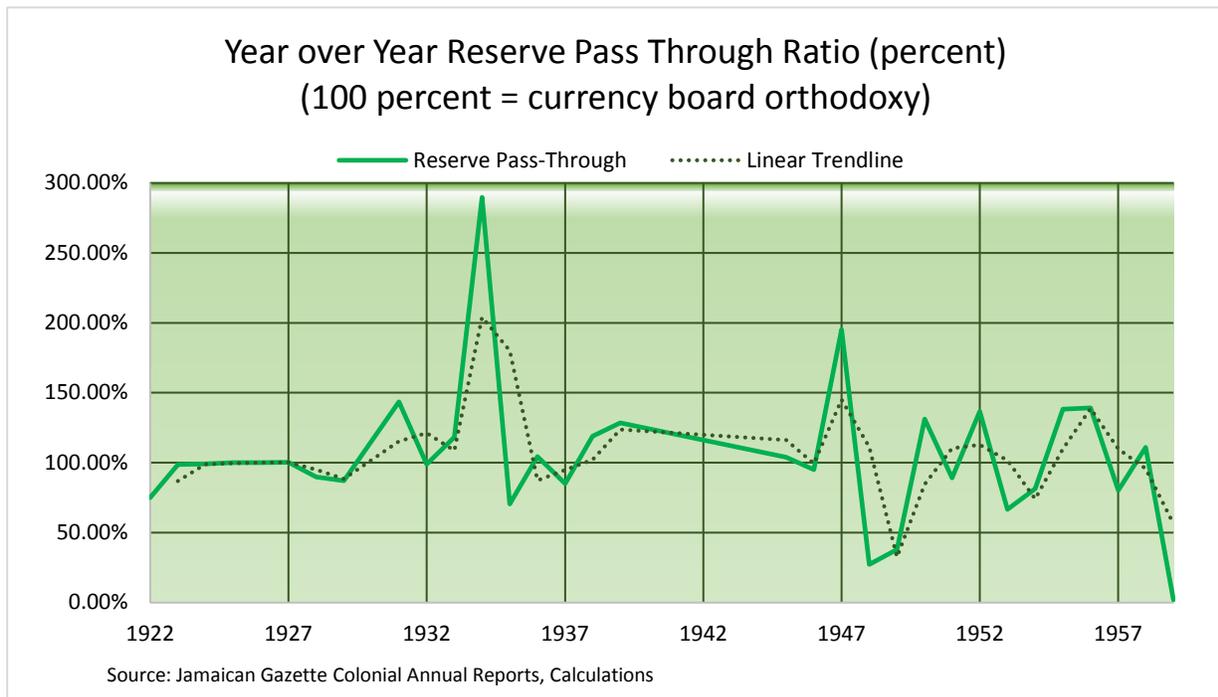
[Figure 3] Test 2: Reserve Ratio by Asset Type (as percent of total assets)



Test 3: Reserve Pass-Through Ratio

For a currency board to be orthodox, the reserve pass-through ratio should typically fall between 80-120 percent. (Reserve pass-through is the ratio of the change in the currency board's monetary liabilities to the change in its reserves.) In the case of the Jamaican Currency board, this seems to be the case for the most part. There are, however, instances where the ratio deviates from the orthodox constraints. The first significant instance is a jump near 300 percent in 1934. This jump, which exceeds the acceptable orthodoxy constraint, means that though the net foreign assets and the monetary base moved in the same direction, the monetary base increased much more. This point on the graph must be disregarded because the numbers are somewhat misleading. In the actual data, this year had one of the smallest changes: the change in the monetary base was around 6 percent and change in net foreign assets was closer to 2 percent. Therefore, this was not that significant. The same thing occurred in 1947 as well and was corrected in 1948 just like the data in 1937 was corrected in 1935. These corrections simply fell below 100 percent, meaning that the change in net foreign assets was growing faster than the change in the monetary base. In some currency boards, the reserve pass-through can fall below 0 percent indicating that the change in net foreign assets is moving in the opposite direction of the change in the monetary supply which show an unorthodox currency board. This never occurred in Jamaica. The dotted line in Figure 4 shows a linear trend line that indicates the moving average of the reserve pass-through ratio. This line shows the true orthodoxy of the currency board as it stays within the constraints for the majority of the time and average out near the 100 percent goal of orthodoxy.

[Figure 4] Test 3: Reserve Pass-Through Ratio (percent)

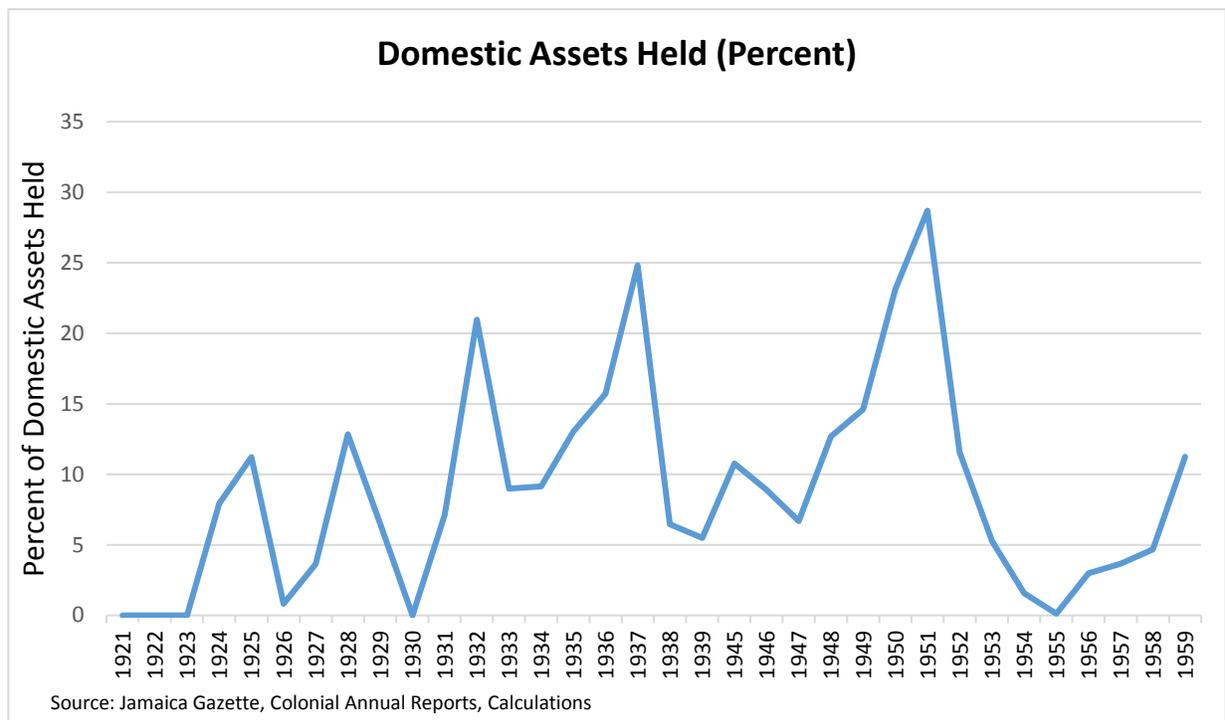


Test 4: Domestic Assets

Domestic assets should be 0 percent of total assets or close to it in order for a currency board to be orthodox. Jamaica enjoyed a fluctuation in the percentage of domestic assets the currency board held. From 1921 through 1923, domestic assets were 0 percent of total assets. However, after that, domestic assets ranged from between 0.82 percent and 28.69 percent of total assets. This indicates a deviation in orthodoxy when looking at this test, but the other tests (namely the foreign assets and the reserve pass-through) indicate the currency board was orthodox at times. Even though there was a fluctuation in the amount of domestic assets held, many currency boards hold domestic assets to pay salaries and expenses. Furthermore, for most of the period from 1921 to 1959, the Jamaican currency board held many domestic assets in the form of silver coins. At this time, the exchange rate between the Jamaican pound and sterling was rigid, so at some point, local prices rose above foreign prices. As a result, people would exchange the Jamaican pound for foreign currency or buy cheaper goods from abroad. Then, the monetary authority would be likely to either devalue the Jamaican pound or shrink the monetary base.

This was in fact the case. Based on the reserve pass-through test, the change in the net foreign assets should match that of the monetary base. Deviations of 20 percent or below were considered orthodox when this test was performed. In looking at the reserve pass-through graph, it can be noted that the monetary base contracted at numerous times in twentieth century Jamaica. The most notable examples are between 1932 and 1937 as well as 1947 and 1950. During these years, the change in net foreign assets was negative as well.

[Figure 5] Test 4: Domestic Assets Held (percent)



Timeline of Central Banking Developments in Jamaica

1950s: The Jamaican government starts to focus on the financial structure of the island and operations of institutions. The committee is established.

1957: Inter-Departmental Committee on the Establishment of a National Development Bank in Jamaica is constituted.

1959: Steps are taken to draft legislation for the establishment of the Bank of Jamaica.

1960: The Bank of Jamaica is established as the Jamaican central bank.

1961 and 1962: Inflow of short-term money from abroad causes an increase in bank liquidity.

1966: The automatic link with the pound sterling is removed and the power for the central bank to declare an independent par value for the Jamaican pound is established.

1972: The Jamaican dollar (which was floating with the sterling) is devalued on January 17, 1972 by 6.5% against all other currencies to correct the imbalance of the external sector.

1973: The system collapses with the floating of exchange rates. Monetary measures are introduced to ease pressure on the balance of payments.

1974: Further controls are implemented to stem the outflow of capital.

1976: The Bank of Jamaica Law is amended to allow the bank to provide credit to the central government to the extent of 30 percent of government revenue in a financial year.

1977: The external reserves of Bank of Jamaica fall by US\$3.4 million.

1978: The government devalues the current exchange rate to strengthen the balance of payments.

1981: Jamaica starts a new three year Extended Fund Facility (E.F.F.) agreement with the IMF.

1983: The balance of payments falls and an improvement of US\$528 million is targeted. The parallel market is instituted, attempting to stabilize the Jamaican dollar.

1984: The Jamaican dollar is allowed to trade freely based on supply and demand.

1990: Bank of Jamaica sets inflation targets.

Central Banking Comes to Jamaica

As Jamaica moved toward independence, more economists and politicians called for greater local discretionary control in monetary policy. They saw central banks as a way of mobilizing funds for governments to use productively (Hanke and Schuler 1995: 22). A local central bank would supposedly promote faster growth because it could make its policy in the best interest of Jamaica alone, rather than being constrained by monetary policy determined in London. The Jamaican government began seeking outside advice on what to do about the future of the Currency Board. Although a report by the World Bank in 1952 saw no need for changing the currency board system, Jamaica seemed determined to establish a central bank (World Bank 1952: 279). It did so despite further cautionary advice. Advisors to both the Bank of England and Bank of Canada sent notes to the Jamaican Minister of Finance discussing negative implications associated with a Jamaican central bank. The advisor to the Bank of Canada, Graham F. Towers, actually provided extensive plans for Jamaica to continue their currency board. These plans would allow for economic growth and progress, however would eliminate the need for a central bank. This plan, outlined by Towers, was fueled by government expenditure (Towers 1956: 18-19). After more reports and additional discussion during 1958-1959, Jamaica established a committee to review all alternatives and conclude what would be done. That Jamaican committee recommended a central bank for Jamaica. The goal was to help eliminate the deficiencies that the currency board caused leading to supposedly subpar economic growth (Jamaica, Inter-Departmental Committee 1958: 1; Hanke 1995: 22). The committee proposed a central bank in 1959 and the government began regulations shortly after leading to the establishment of their central bank.

Passing the Law of 1954 that permitted Jamaican government securities to be held was the first step away from the currency board system towards a central bank for the island. In 1959, the initial laws and regulations were drawn up for the establishment of a Jamaican central bank. The laws passed in 1960 as the Bank of Jamaica Law (Laws 31 and 32 of 1960). The Bank of Jamaica opened on 1 May 1961. This date marked the official end of the currency board in Jamaica and the beginning of the central banking period, which continues today. In slightly more than a century Jamaica moved from a kind of dollarization to free banking, then to an orthodox currency board, then to an unorthodox currency board as a clearly transitional phase, and finally to a central bank. The transitions between monetary arrangements were smooth, as was the case in most other British Caribbean colonies but often not in the independent countries of the region. The currency board successfully maintained a fixed exchange rate for Jamaican notes into sterling. It deviated from orthodoxy towards the end of its life, but in a clearly planned manner intended to provide a kind of transition to central banking.

Through The Bank of Jamaica, the Jamaican government continued to maintain the parity of the Jamaican pound with the UK pound even though the legal backing was reduced from 110 percent to 50 percent sterling. The Jamaican pound was freely convertible into sterling (though still not into third currencies such as the U.S. dollar), meaning that the interest rate set by the Bank of Jamaica could not decrease too far below the UK rate without causing capital flight.

During the central banking period of the late 1960s, the central bank devalued the Jamaican sterling, and then the Jamaican pound. The exchange rate fell from US\$2.80 per Jamaican pound in 1961 to US\$2.40 by the end of the decade. This was accompanied by a sharp increase in the current account deficit, from J£3 million in 1961 to J£45.1 million in 1969.

Monetary Policy under Central Banking

The price of oil, a major import, increased by a factor of four from 1973 to 1974, hurting the economy. The government borrowed from the International Monetary Fund (IMF) for the first time. Now, the government raided the Bank of Jamaica's foreign-currency reserves, creating inflation. The bank's net foreign-currency reserves fell from J\$113 million in 1970 to -J\$545 million in 1980. The government was allowed to borrow up to 30 percent of estimated yearly revenue from the bank, up from an earlier limit of 15 percent. In fact, the amount of currency in circulation went up from J\$18 million to J\$32 million from 1962 to 1968 and from J\$37 million to J\$102 million in 1974 (during the central banking period, the Jamaican pound was set to two dollars, representing an accounting change).

In the 1980s, the government set interest rate ceilings for savers and the currency was heavily managed. The economy shrank and inflation increased along with government budget deficits. In January 1983, the Bank of Jamaica eased foreign-exchange control by instating a dual exchange rate until May 1978. The M1 money supply increased from J\$717 million in 1980 to J\$4,016 million in 1990. M2 increased from J\$1,712 million to J\$12,891.

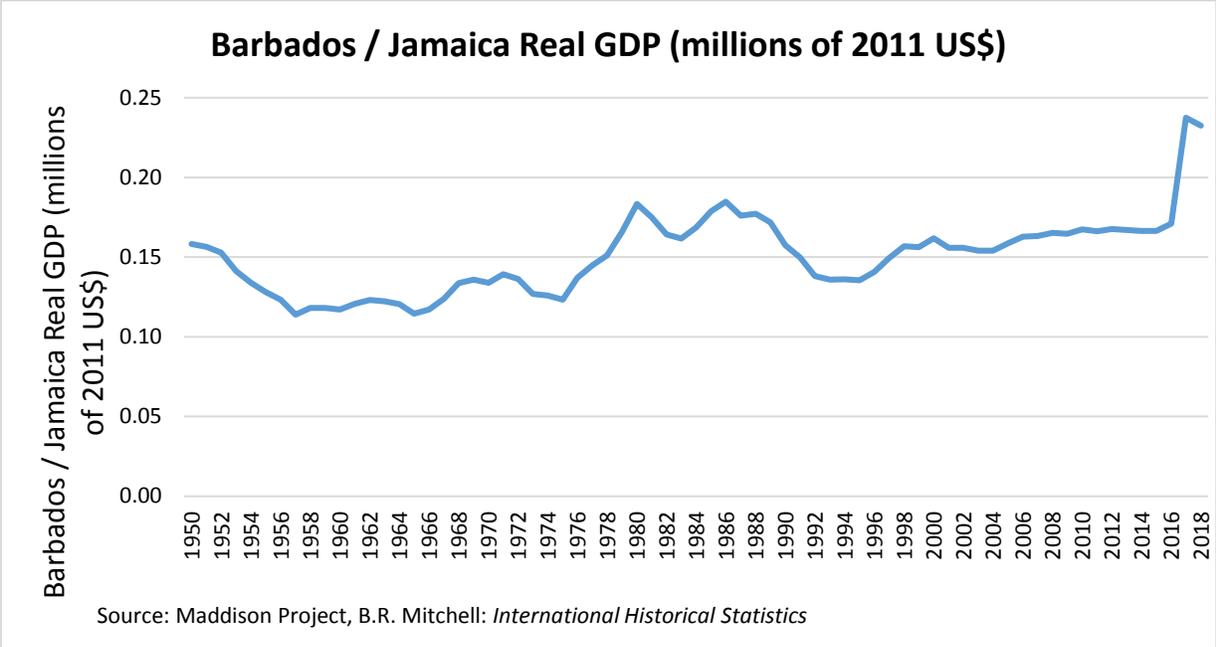
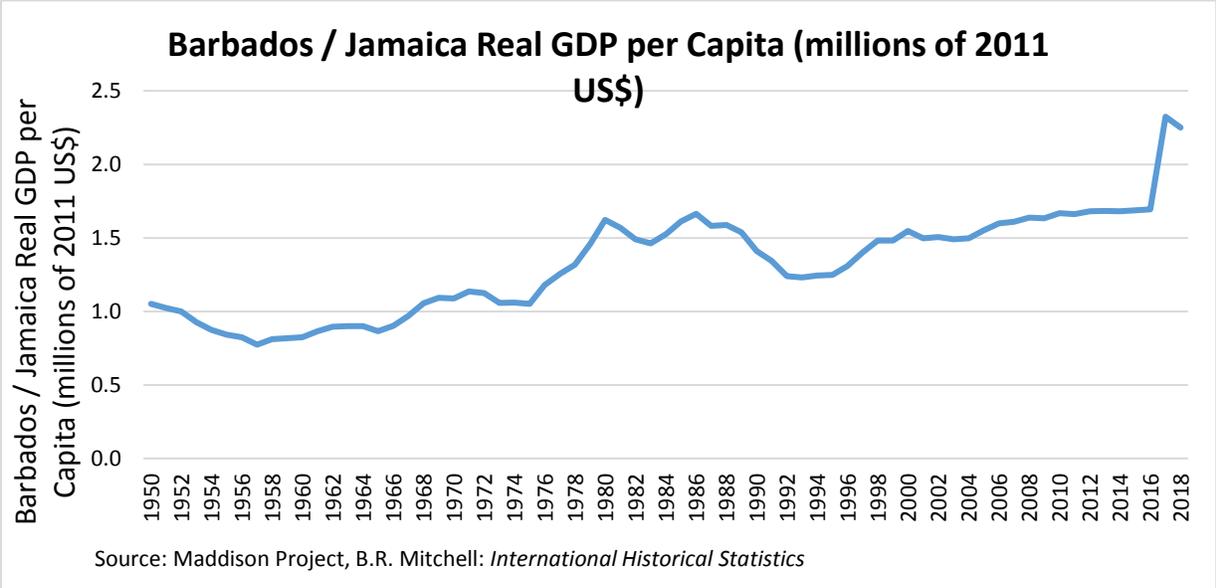
In the Bank of Jamaica in the 1990s was fairly successful. In 1990 and 1991, it loosened foreign-exchange controls and the Jamaican dollar was largely convertible for the first time since 1970. Jamaica started to experience an inflow of foreign currency for the first time. Inflation increased from 8.4 percent in 1987 to 80.2 percent in 1991 due to large government budget deficits. The M1 money supply increased from 4,016 million dollars to in 1990 to 45,042 million dollars in 1999. M2 increased from 12,891 million dollars to 131,096 million dollars. The Bank of Jamaica adopted inflation targeting in the 1990, with an initial target of 12 percent. Currently (2019), the target is a band of 4-6 percent.

Comparing the Currency Board and Central Banking Periods

Now let us compare some aspects of Jamaica's monetary and economic performance in the currency board era and the central banking era.

The first factor to analyze is real GDP per capita using millions of 2011 U.S. dollars. GDP per capita grew by an annualized growth rate of 8.0 percent from 1953 to 1963 (towards the end of the currency board period), but slowed in growth when central banking was implemented. In the period from 1963 to 1973, real GDP per capita grew at an annualized rate of 2.9 percent. Real GDP per capita growth slowed during more recent years, as can be seen in the graph below. Real GDP measured in millions of 2011 US dollars saw promising growth towards the end of the currency board period, but decreased throughout the central banking period and rebounded.

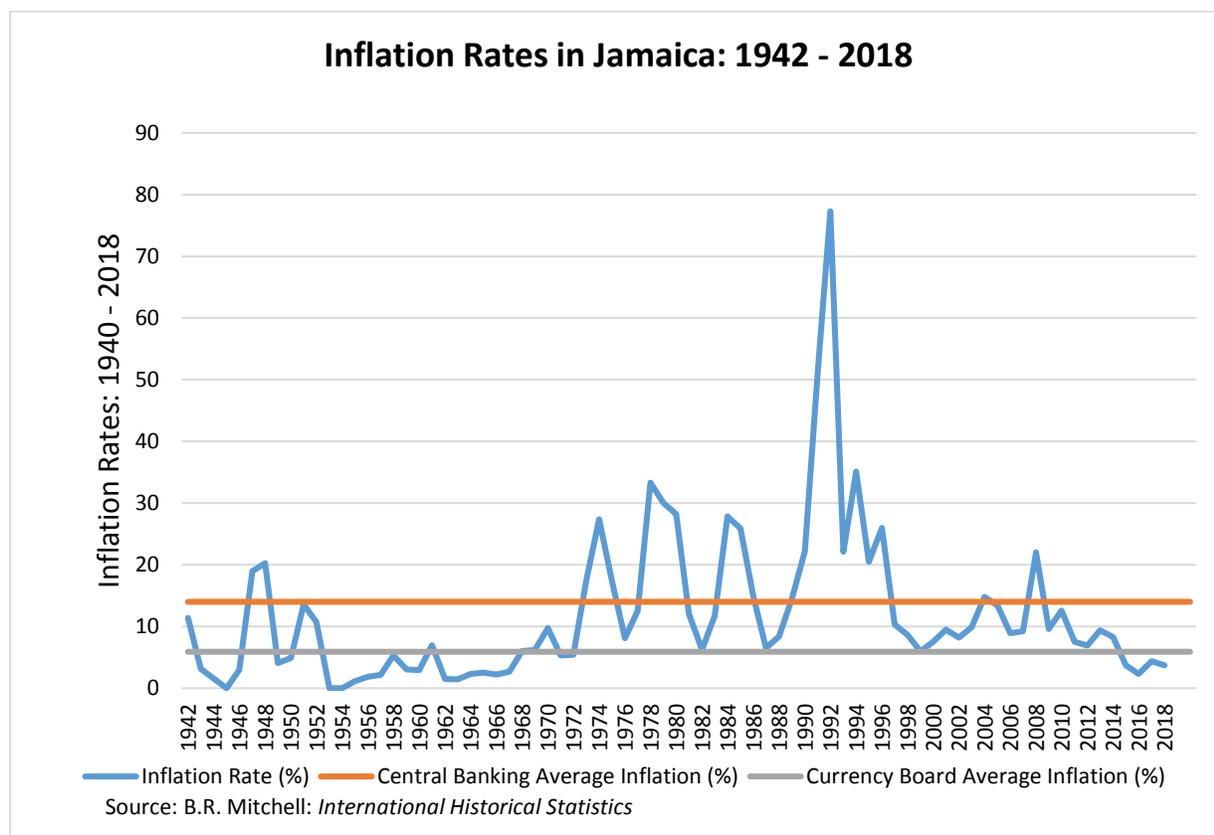
Therefore, through analyzing real GDP, Jamaica’s economy seems to have performed better while operating under a currency board.



In the graph above, Jamaica’s real GDP per capita is compared to Barbados, which like Jamaica is a Caribbean island that was a longtime British colony until achieving independence in the 1960s. Barbados had similar output per capita to Jamaica in 1950, during Jamaica’s currency board period. During the mid-1970s and 1980s, Barbados’ real GDP per capita grew faster than Jamaica’s. However, when observing real GDP with millions of 2011 US dollars, Barbados had a

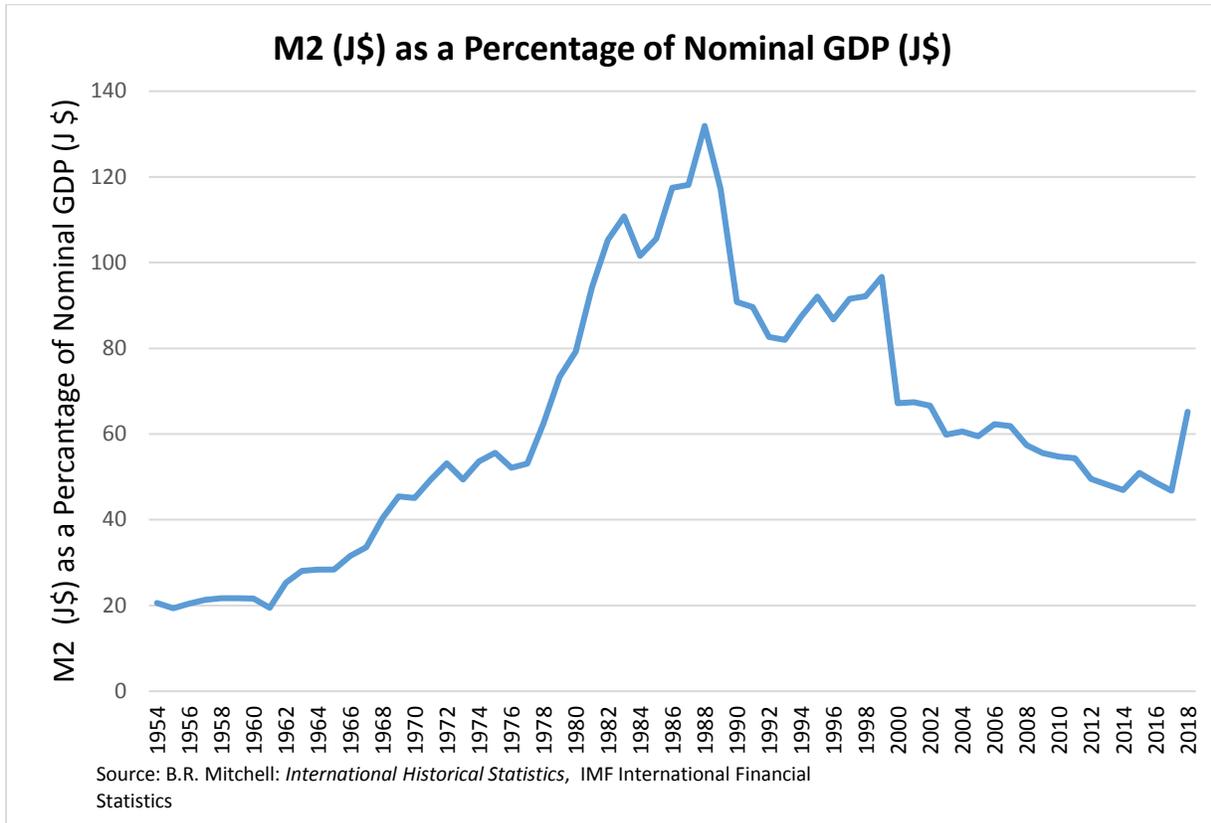
significantly smaller output when compared to Jamaica both in 1950 and 2016. However, real GDP per capita is a better measure of quality of life.

The next criterion to analyze is inflation during the currency board period compared to inflation in the central banking era. The highest inflation rate from 1941 through 1961 was 20.2 percent in 1948, with an average rate of 5.9 percent. Meanwhile, during the central banking period (from 1962 through 2000), the average inflation rates was 16.3 percent. The highest inflation rate was 50.9 percent in 1991. Once again, we see that although inflation was not particularly steady during the currency board period, it was comparatively more stable when looking at the central banking period. Below, in the graph, it can be seen that there was a stark difference between the average inflation rates during the currency board period and central banking era. However, inflation in Jamaica was under control in the late 1990s and in recent years, has been stable. Despite a flare-up in the mid-2000s, the central bank has been fairly effective.

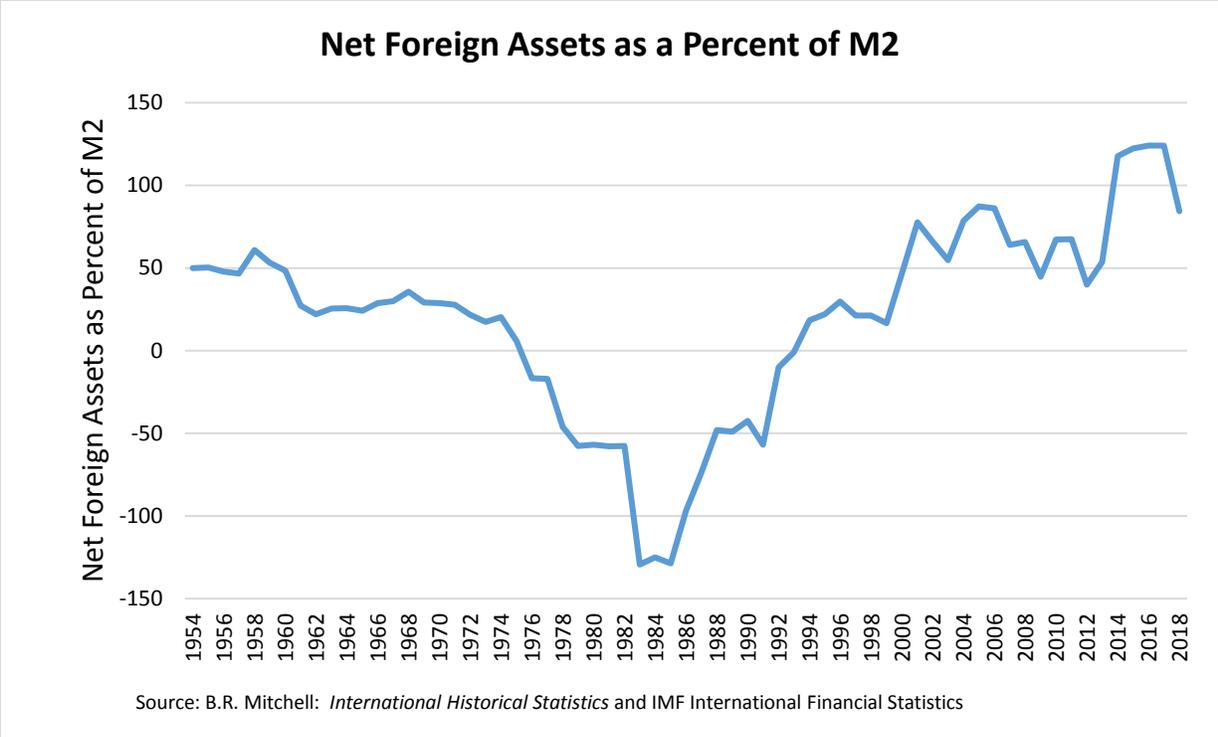


The term “financial deepening” is used to describe increasing provision of financial services to people in an economy. Those who are unbanked or underbanked in a society are provided with increasing access to ways to finance themselves. Typically, financial deepening can increase the ratio of money supply to nominal GDP, allowing for liquidity increases and for people to have access to investment. Like many developing economies, Jamaica saw increases in financial deepening in both the currency board period and central banking era. From 1953 to 1961, the end of the currency board era, M2 as a percentage of nominal GDP was relatively stagnant at

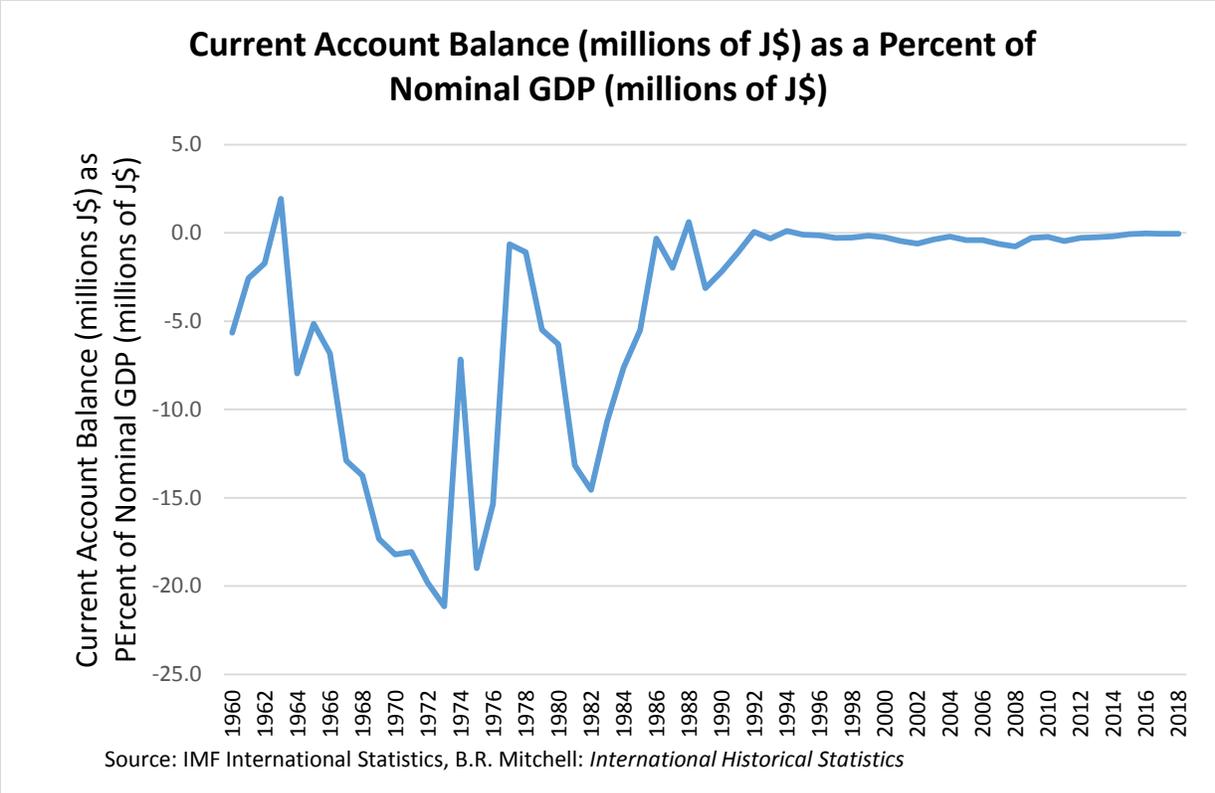
around 20 percent. However, with the implementation of central banking, M2 as a percentage of nominal GDP grew increasingly rapidly in the 1980s, but slowed down soon after. Today, M2 is around 50% of nominal GDP.



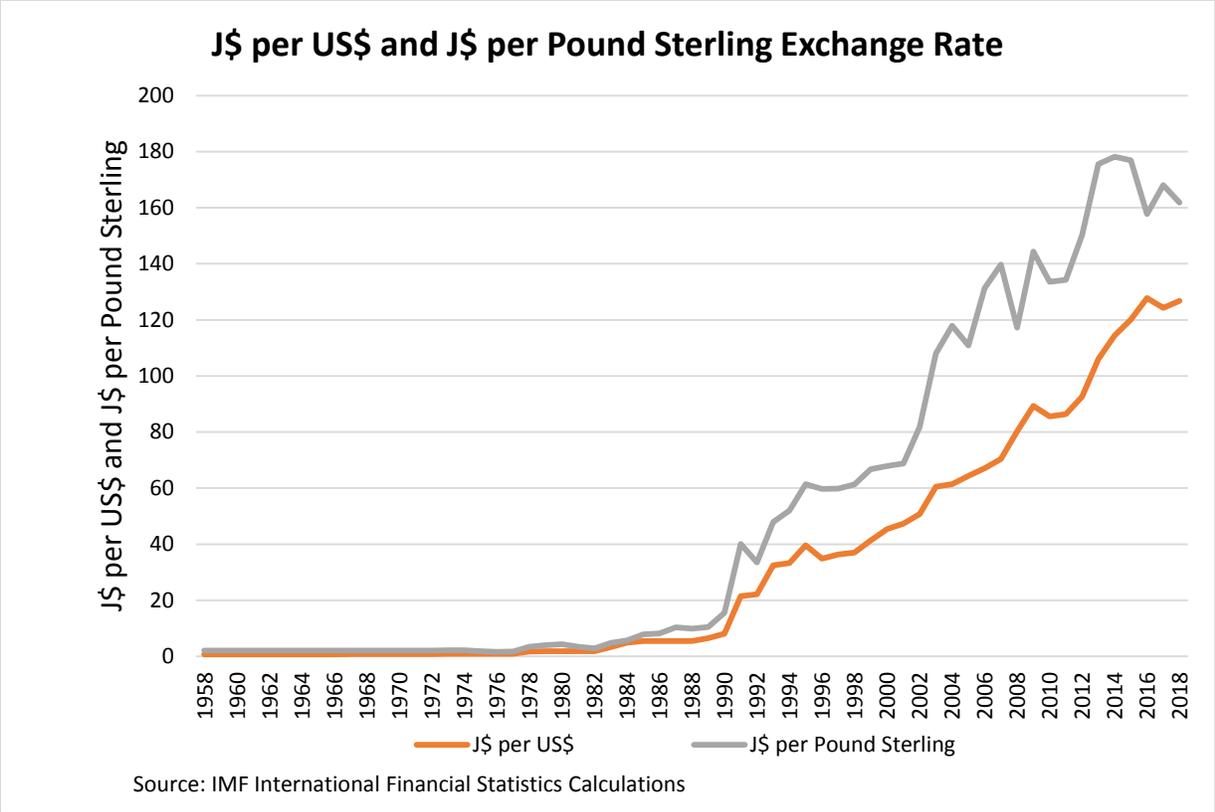
Another measure we can analyze is net foreign assets of the financial system (not just the currency board or central bank) as a percentage of the broader money supply. Here, M2 (currency in circulation plus demand and time deposits at banks) was used. As can be seen in the graph below, net foreign assets as a percentage of M2 was positive from 1953 up until 1975, starting at roughly 50 percent in 1953. This includes the last eight years of the currency board era as well as into the central banking period. Then, the ratio became negative, indicating that there were fewer foreign assets than foreign liabilities, meaning that Jamaica shifted from a net lender to a net borrower.



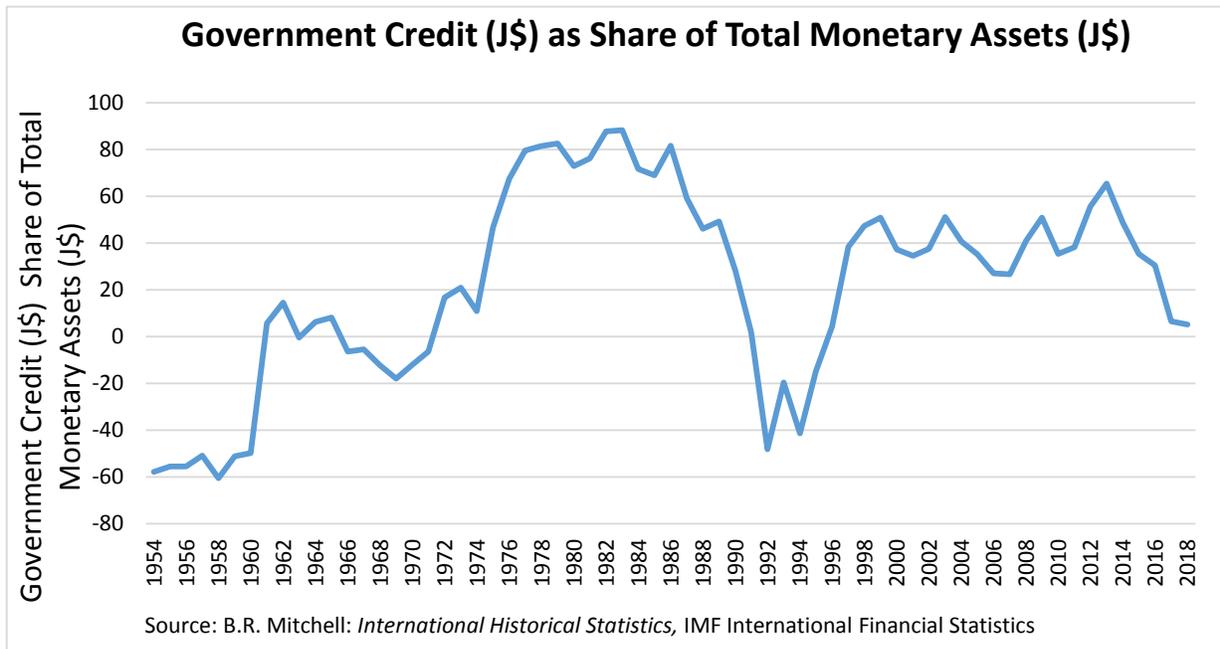
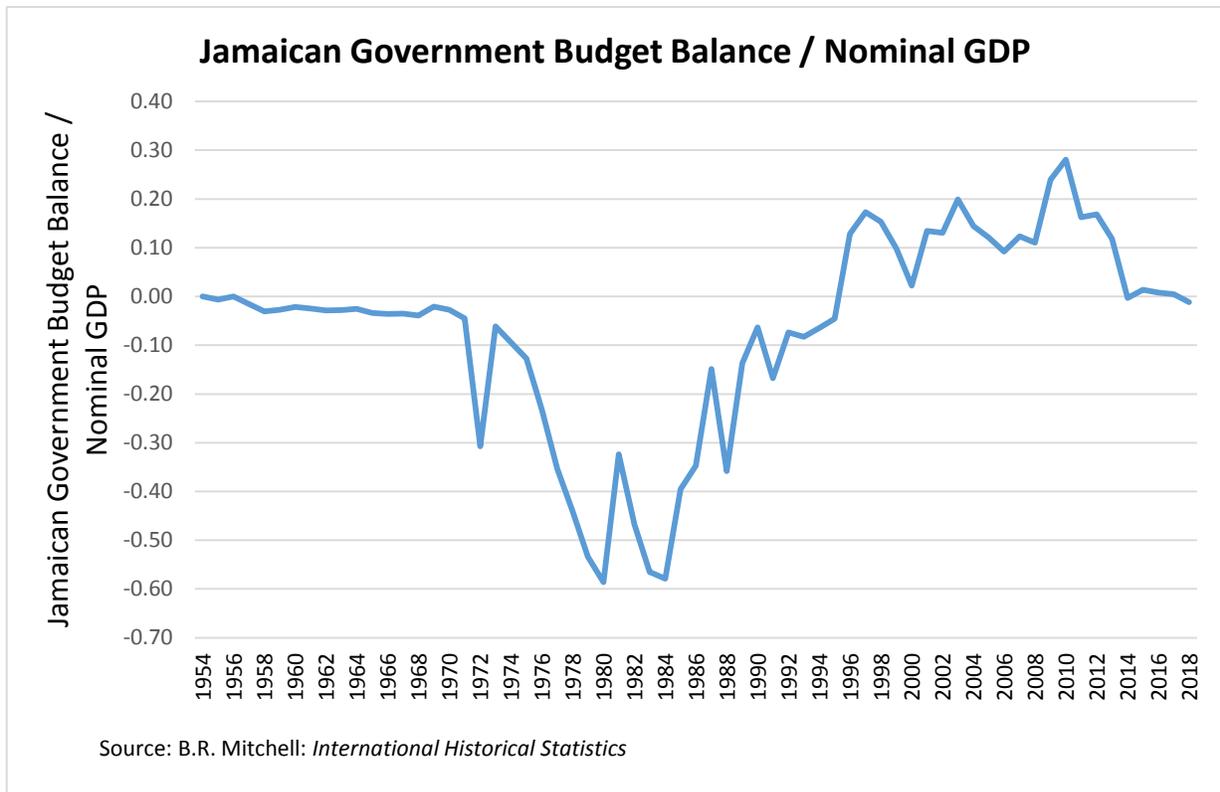
A country's current account balance is made up of the balance of trade, net primary income, and net cash transfers. A current account surplus means that exports exceed imports, while a deficit means that exports were less than imports. Towards the end of Jamaica's currency board period, in the early 1960s, Jamaica had a stable current account balance, slightly negative. However, as central banking era progressed, Jamaica had an increasingly negative current account balance (see figure below) for a long period. In numerous years in the 2000s, the current account balance was almost as much as US\$3 billion in deficit. Typically, during strong economic expansions, imports surge, so the current account deficit widens. The currency exchange rate also affects the trade balance, and thus the current account. An overvalued currency makes imports cheaper and exports more expensive, widening the current account deficit. In Jamaica's case, the current account deficit increased not due to economic expansion (as real GDP per capita was actually shrinking in the mid-2000s), but because of an overvalued currency.



Another aspect in which it is worthwhile to compare the performance of the currency board and central banking periods is exchange rates. The Jamaican dollar depreciated substantially against the U.S. dollar since the end of the currency board period. Jamaica’s currency used the pound sterling as the anchor until 1973, when it switched to the U.S. dollar. The U.S. dollar has since been either the official anchor or the unofficial gauge for judging currency depreciation. As can be seen in the graph below. In 1957, 0.7 Jamaican dollars were worth one U.S. dollar, but in 1978, the Jamaican dollar depreciated to being worth less than a U.S. dollar. As of 2018 the exchange rate was nearly 127 Jamaican dollars per U.S. dollar. Depreciation of the Jamaican dollar was related to increased central bank financing of the government. A similar trend can be observed from the graph depicting the exchange rate between the Jamaican dollar and the pound sterling. During the currency board period, the Jamaican pound was equal to the pound sterling. When the Jamaican dollar replaced the Jamaican pound at 2 dollars per pound, the exchange rate changed to 2 Jamaican dollars per pound sterling. This was purely an accounting change, a redenomination rather than a devaluation. However, the Jamaican dollar clearly depreciated massively compared to the pound sterling as the central banking era progressed, specifically in the 1980s.



The main reason for the rapid inflation in the Jamaican dollar was the increase in the Jamaican government budget balance as a fraction of nominal GDP (both were measured in Jamaican dollars). During the last decade of the currency board period, the government budget balance was either zero, or close to it. As a result, the government budget balance as a percentage of nominal GDP was stable. However, as the central banking period continued, this number became increasingly negative. In the 1980s, the Jamaican government budget balance as a fraction of nominal GDP grew unstable. The government used many accounting tricks, making these budgetary increases difficult to track (Hanke 1995: 24). These spikes in government spending allowed for inflation and foreign debt to grow rapidly (see prior graphs). The currency board enforces a state of independence, where the central government cannot borrow money, allowing for inflation to be lower and stable when compared to under an economy using central banking. The net credit to the government as a share of total assets to monetary authorities was low and negative for years during the currency board period, but increased in the 1970s and 1980s, as central banking came to Jamaica. This goes with the pattern that the government borrowed increasing amounts of money, causing inflation to rise as well.



Note on Differences between Annual Balance Sheet Data versus Gazette Monthly Data

It should be noted that there exist significant differences between the annual balance sheet data for Jamaica and the monthly/semi-annual data in the *Jamaica Gazette*. The most important difference is that the *Gazette* omits the Depreciation Fund, which is included on the annual

balance sheet. Because the *Gazette* data are only partial, although we have transcribed them, where possible we rely on the annual data in the analysis that follows.

Conclusion

Jamaica struggled through several attempts at a unified monetary regime prior to the arrival of the Commissioners of Currency in 1904. In the country's early colonial history, Jamaicans used Spanish and Portuguese coins due to the absence of an established Jamaican currency. However, after the emancipation of slaves there was an excess demand for currency. To counteract the loss of notes in circulation for the economy, the Jamaican government began allowing the emerging commercial banks to issue their own notes. The Jamaican currency remained strong due to a fixed exchange rate to the pound sterling amidst a system where multiple currency brands were accepted. In the early 1900's the Jamaican government, led by the island Treasurer, began to consider the possibility of establishing a currency board. After many years of preparation, the currency board period began. On 22 September 1904, Jamaica published the Currency Notes Law, establishing a currency board to issue 10-shilling notes. Although, the Commissioners of Currency remained inactive during this period. On 9 January 1920, the Currency Amendment Law was passed this allowing the Commissioners of Currency to accept and pay out British Treasury £1 and 10-shilling notes for the first time as if they were British coins. From 1939 until the end of the currency board period, the Jamaican pound remained fully convertible into the pound sterling but was not fully convertible into many third currencies. The Currency Notes Law of 1958 stopped Barclays Bank from issuing notes. This officially left the board the sole issuer of local currency in Jamaica. In the absence of entities issuing competing currencies on the island, the Commissioners of Currency began to act similar to a central bank for the first time. The Jamaica Commissioners of Currency officially existed from 15 March 1920 to 30 April 1961. After which, it was succeeded by the Bank of Jamaica, the central bank that continues in existence today. It was due to the laws passed in 1960 as the Bank of Jamaica Law creating the Bank of Jamaica, which opened on 1 May 1961. This date marked the official end of the currency board in Jamaica and the beginning of the central banking period, which continues today.

Altogether, the Commissioners never deviated (more than 0.6 percent) from orthodoxy up to the point that note issue by commercial banks ceased and they became the sole issuers of currency for the island. This is when they started acting like a central bank and they amended the laws making the reserve requirements less harsh. The currency board acted as a perfect transition from a system in which multiple currencies were accepted into a central bank regime. It took many years but can be seen as a very effective way to implement a dramatic change. Jamaica's currency board can certainly be referred to as one of the most successful regimes of any Caribbean Colony of that time.

During the analysis comparing the various aspects of the Jamaican economy between the currency board and central banking periods, it was seen that the economy fared better during the currency board era. Jamaica saw a lower average inflation rate during the currency board period, more consistent financial deepening, a smaller current account deficit, and better real

GDP per capita growth. However, in recent years, Jamaica's economy has performed better as the central bank has chosen to target a certain inflation rate.

Note only published data and statistics were examined, as a lot of data is unavailable for use. Some data, such as years, may have been missing and were not included in this paper. Utilizing that yearly data, if available elsewhere, might provide a more accurate detailing of the Jamaican currency board. The most important aspect of this paper was to test overall orthodoxy and provide a background of the history. Our data should be useful to any later researchers, as well as the history to the monetary regimes.

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