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A COMPREHENSIVE OVERVIEW OF PAST CURRENCY BOARD CONSTITUTIONS

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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, Founder and Co-Director of the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise (hanke@jhu.edu).

This working paper is one in a series on currency boards for the Currency Board Project. The currency board working papers 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 for Applied Economics as undergraduate researchers.

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Abstract

Information collected from all reachable founding laws (constitutions) of past currency boards—more than 50 in all—is used to better observe changes in features and characteristics implemented in currency boards over time. The founding laws of many currency boards have been highly general, allowing, in principle, for discretionary monetary policy even though, in practice, many currency boards did not implement it. Only a minority of currency boards had founding laws that clearly specified the most important features of currency board orthodoxy: (1) a fixed exchange rate with an anchor currency, (2) full, two-way convertibility into and out of the anchor currency, (3) a ratio of 100% net foreign reserves to monetary liabilities, (4) the board cannot be a lender of last resort to the domestic financial system, and (5) the board must generate its own profits via seigniorage.

Additionally, the authors identified five other properties that, although not necessary for a functioning currency board, proved to be beneficial and thus became widely adopted. They are: (1) transparency measures, (2) an upper limit on net foreign reserves, (3) policies for liabilities exceeding assets, (4) escape clauses, and (5) minimum limits on currency exchanges. Comparing constitutions shows that these systems have been adaptable in many different political and economic environments, thus explaining their longstanding success in multiple countries over the last 170 years.

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Link to digitized data: tinyurl.com/Currency-Board-Constitutions

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Introduction

A currency board is a monetary authority that fixes a local currency to a foreign "anchor" currency, typically a strong, internationally traded currency such as the dollar. Under this system, the local currency becomes a clone of the anchor. More than 70 countries have had currency boards since the first ones were established in the mid 1800s. Currency boards have often had great success maintaining stable currencies, though the record is not perfect (Naness 2019: 21-22).

An orthodox currency board has no discretionary powers of monetary management, instead operating according to a rule-bound policy centered on a fixed exchange rate. The fundamental function of a currency board is to maintain on-demand convertibility between the local and the anchor currencies at the fixed rate. Countries with currency boards have typically delivered lower inflation rates, smaller fiscal deficits, lower debt levels relative to the GDP, fewer banking crises, and higher real growth rates than comparable countries with central banks.[1]

In this paper, the authors consolidate and analyze the founding laws (constitutions) of most currency boards that have ever existed. By analyzing these constitutions in a chronological manner and sorting their properties, we were able to determine trends regarding the development of currency boards. The authors present both general and property-specific trends we discovered in our analysis.

We derived five key properties of an orthodox currency board from Prof. Dr. Steve Hanke's definition in *The SAGE Encyclopedia of Business Ethics and Society.* Then, we used these to identify a list of orthodox currency boards by evaluating their constitutions.

In addition, we have also identified properties that, although not necessary, are common amongst currency boards. These five additional properties were derived from historical trends found in constitutions.

Our main contribution is the data set that we have built: a comprehensive compilation of more than 50 historical and current instances of currency boards with a breakdown of the properties found in each currency board. In this paper, the authors do not intend to evaluate the effectiveness of currency boards in practice, nor analyze how the constitutions were implemented; rather, we simply categorize currency boards based on properties found in their constitutions.

In this paper, the authors continue a conversation about comparing currency board constitutions whose major previous contributors were Camilleri Gilson (2004), Ho (2003), Tsang (1999), and Tsoi (2014).

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[1] S. Hanke (2018). Currency boards. In R. Kolb (Ed.), *The SAGE encyclopedia of business ethics and society* (Vol. 1, pp. 803-804). Thousand Oaks,, CA: SAGE Publications, Inc. doi: 10.4135/9781483381503.n284

A Brief History of Currency Boards

The origin of currency boards dates back to the 19th century British Empire. The expanding empire needed a stable, well-structured, integrated financial system. The currency board idea sprang from British monetary debates that recognized the importance of stable exchange rates, ample backing of a currency with reserves, and an autonomous currency system separate from a government that could abuse monetary power.

The first currency board was installed in the British Indian Ocean colony of Mauritius in 1849. By the 1930s, currency boards were widespread among the British colonies in Africa, Asia, Caribbean, and Pacific Islands. Currency boards almost vanished with the decline of the British Empire in the 1950s, as many newly established nations adopted central banking systems instead. Currency boards' demise was a result of three factors. Many influential economists touted central banking's flexibility and fine-tuning capacities. At the same time, many newly independent countries were seeking ways to break ties with their former imperial powers. Additionally, the International Monetary Fund (IMF) and the World Bank propelled central banking forward by lending their weight and money to the new establishments.[2]

The resurgence of currency boards, an alternative to central banking and a solution to high inflation, came in the 1990s. The revival of currency boards stemmed from disenchantment with central banks' use of monetary discretion. Many new central banks became easily pressured by their governments to finance excessive deficits, resulting in high inflation. As a solution, currency boards effectively take away all discretionary monetary power and allow the monetary system to run passively and automatically. For example, in February 1997, inflation was raging at a rate of 243% per month, yet after Bulgaria adopted a currency board, inflation was crushed immediately.

Modern-day currency boards have witnessed several changes compared to their historical counterparts in the British Empire. Ho (2002) lists two reasons why she thinks modern currency boards cannot be literal replicas of their historical counterparts. First, the function of currency boards has broadened. The British used currency boards as a tool to ensure convertibility of colonial currencies into the pound sterling. Nowadays, however, currency boards serve as an alternative approach to conducting discretionary monetary policy. Second, political and economic landscapes have changed. Modern-day currency board systems in independent countries cannot fall back on a parent country and its monetary authority. They must take responsibility for their own monetary affairs.

[2] S. Hanke (2020, July). In love with the lev. Retrieved August 23, 2020, from https://www.cato.org/sites/cato.org/files/2020-07/OMFIF-Bulletin-July-2020.pdf

Methodology

To create a comprehensive review and analysis of currency board constitutions, all currency boards were listed in a data set. Of those currency boards, 62 constitutions were found via online archival searches as well as the Library of Congress in Washington D.C. Although most currency boards are analyzed here, a truly exhaustive survey of currency board constitutions remains an open research opportunity.

Although many constitutions were later amended, often in ways that widened the discretionary powers of the currency boards, in this paper, the focus of the authors is on the original constitutions. This focus is sufficient for illustrating the range of legal provisions under which currency boards have operated.

After compiling the constitutions, each text was reviewed and analyzed against commonly known characteristics in order to examine any commonalities as well as contrasts between them. Each constitution was evaluated against defined properties. Depending whether the constitution incorporated said properties, a "Yes", "No," or "Unclear" was assigned with supporting evidence from the constitutions.

Five properties, enumerated below, were used to identify and compile a list of constitutions that established orthodox currency boards. We identified five other properties from historical comparisons between constitutions that are useful to consider.

In this paper, the authors only assess currency boards based on their constitutions and do not consider how they behaved in operation. For a closer look at how currency boards have behaved in operation, see many other working papers in this series, most recently, numbers 163,[3] 162,[4] and 140.[5]

After reviewing currency board constitutions, certain commonalities exist. Below, the benefits of these properties are analyzed.

[3] Strezewski, J. (2020). "On Currency Boards – An Updated Bibliography of Scholarly Writings (2020)." Working paper No.SAE/No.163/August 2020. Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2020/08/On-Currency-Boards-%E2%80%93-An-Updated-Bibliography-of-Scholarly-Writings.pdf

[4] Bennett, B. (2020). "The Currency Board of Brunei Darussalam." Working paper No. SAE/No.162/August 2020. Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2020/08/Currency-Board-of-Brunei-Darussalam.pdf

[5] Hanke, S. & Todor, T. (2019). "On Extending the Currency Board Principle in Bulgaria: Long Live the Currency Board." Working paper No. SAE/No.140/November 2019. Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2019/11/On-Extending-the-Currency-Board-Principle-in-Bulgaria-Long-Live-the-Currency-Board.pdf

What is an Orthodox Currency Board?

Dr. Steve Hanke in *The SAGE Encyclopedia of Business Ethics and Society* defines an orthodox currency board as follows:

> An orthodox currency board issues notes and coins convertible on demand into a foreign anchor currency at a fixed rate of exchange. As reserves, it holds low-risk, interest-bearing bonds denominated in the anchor currency and typically some gold. The reserve levels (both floors and ceilings) are set by law and are equal to 100%, or slightly more, of its monetary liabilities (notes, coins, and, if permitted, deposits). A currency board's convertibility and foreign reserve cover requirements do not extend to deposits at commercial banks or to any other financial assets. A currency board generates profits (seigniorage) from the difference between the interest it earns on its reserve assets and the expense of maintaining its liabilities. [6]

From Dr. Hanke's definition, we deduce five essential properties for an orthodox currency board:

- A fixed exchange rate with an anchor currency;
- Full two-way convertibility in and out of the anchor currency;
- A ratio of 100% or slightly greater net foreign reserves to monetary liabilities;
- The board cannot be a lender of last resort to the domestic financial system;
- The board must generate its own profits via seigniorage.

Using these five properties, we have compiled a list of orthodox currency boards.
Below, we delve into each of the five properties and explain their purpose, present general trends, and identify some interesting cases.

Property 1: a fixed exchange rate with an anchor currency

All currency boards are required to issue legal tender at a fixed exchange rate, convertible on demand to an anchor currency. This is the core concept of any currency board. A fixed exchange rate to an anchor currency fosters monetary stability, thereby creating confidence in the local currency. By establishing credibility, confidence, and stability in the local currency, the state can engage in viable economic growth and investment.

Anchor currencies are stable foreign currencies or mediums of value that have a large reach, credible institutional backing, and accessible supply. In the past, typical anchor currencies included the pound sterling, gold, and silver. Nowadays, the most common anchors include the

[6] S. Hanke (2018). Currency boards. In R. Kolb (Ed.), *The SAGE encyclopedia of business ethics and society* (Vol. 1, pp. 803-804). Thousand Oaks,, CA: SAGE Publications, Inc. doi: 10.4135/9781483381503.n284

U.S. dollar, the euro, and sterling. An orthodox currency board has only *one* anchor currency at a time; with this, the local currency becomes a clone of the anchor currency via the fixed exchange rate.

In the 1800s and early 1900s, the most common anchor was the pound sterling. Given London's credibility and economic reach as the world's financial center, and the fact that most currency boards at the time were in British colonies, sterling was the logical choice.

There are some interesting exceptions, however. A few British colonial currency boards choose an anchor currency based on economic zones. Ceylon and the British East Africa Protectorate (Kenya), both British colonies, surprisingly used the Indian silver rupee instead of the pound sterling as the anchor currency. In this case, Ceylon and Kenya belonged to India's economic zone. The Indian rupee itself was fixed to silver. Therefore, the Ceylon rupee and Kenyan rupee themselves were anchored to silver.

In most cases, the anchor currency is established either with the constitution or via an amendment and remains the same for the duration of the currency board. Lithuania is one of the exceptions. Lithuania's currency board was established in 1994, and, at the time of its inception, an exchange rate of 4 litas to 1 U.S. dollar was announced as the official pegged exchange rate. In 2002 however, following the release of euro coins and banknotes to be used within the Eurozone, Lithuania officially announced a change to the euro as its anchor currency with the following statement:

> As from 2 Febr. 2002 the anchor currency shall be the euro (EUR) and the official exchange rate of the litas shall be the exchange rate of the litas fixed according to the euro and the U.S. dollar (USD) exchange rate fixed in the currency market on 1 Febr. 2002.
>
> Amendment, Resolution of the Board of the Bank of Lithuania, 2002

This unusual action for a currency board is understandable given the shifting economic and political climate in the world at the time. With widespread adoption of the euro amongst many of Lithuania's top trading partner countries, the switch to the euro made sense as a way of reducing the effect of currency fluctuations on trade and investment.[7] Other countries that switched anchor currencies include Bermuda, Bahamas, Cayman Islands, and Hong Kong. All were British colonies in the late 1960s and early 1970s, and all switched from the pound sterling to the U.S. dollar as their anchor during a period when sterling was losing the last elements of its status as an international reserve currency (Naness 2017: 21-22). It is noteworthy that the British government allowed the switch rather than insisting that sterling remained the anchor.

[7] World Trade Integrated Solution. (n.d.). Lithuania Trade Summary 2002. Retrieved August 23, 2020, from https://wits.worldbank.org/CountryProfile/en/Country/LTU/Year/2002/Summarytext

Property 2: Full convertibility with the anchor currency

An integral function of a currency board is providing exchange between the local currency and its foreign anchor currency. To do this, there must be "full convertibility:" the ability to convert into and out of the anchor currency via the currency board currency at any given moment. Full convertibility ensures security and trust in the regional currency as the currency board guarantees on-demand exchanges between the local and anchor currency. Without full convertibility, the market exchange rate of the currency may deviate from the official rate, creating uncertainty in the local currency and defeating the purpose of the currency board.

Currency board constitutions have implemented the convertibility requirement mostly in two ways: either ensuring that the monetary authority holds a certain amount of liquid assets (such as currency or coins), or by explicitly stating in the constitution that the currency board is mandated to ensure full convertibility between the anchor and local currencies. For example, the Cyprus Currency Notes Order in Council 1928 states,

> The Commissioner shall issue on demand to any person desiring to receive currency notes in Cyprus currency notes to the equivalent value (at the rate of one pound for one pound sterling) of sums in sterling lodged with the Crown Agents in London… and shall pay on demand through the Crown Agents to any person desiring to receive sterling in London the equivalent value calculated as aforesaid of currency notes…
>
> Article 6, Cyprus Currency Notes Order in Council 1928, 1928

A majority of constitutions, however, never explicitly define nor use the term "full convertibility." Instead, full convertibility is implied by ensuring the exchange of two currencies. For example, in Jamaica's currency board laws:

> the Commissioners may make payment in British Treasury Notes to the holders of Currency Notes may pay in Currency Notes and the amount not exceeding ten shillings.
>
> Amendment, The Currency Note Law 1904, 1920

Although these articles never guarantee "on demand exchange" between the foreign and anchor currency, it is implied by ensuring the function of the currency board to exchange the two.

Full convertibility is also used when implementing currency boards in regions with multiple currencies in order to facilitate the full adoption of a new currency. In Jordan for example, the dinar was the most common currency which was to be anchored by the pound sterling. However, the preceding currency, the Palestinian pound was still in circulation. This translated into several articles in the constitution which ensured the proper transition of currencies, such as the following:

> All monetary transaction carries out before the 1st of January 1950 which involves agreement to pay, in the Hashemite Kingdom of Jordan, a sum in Palestine currency...shall be deemed to have been carried out in accordance with the unit of currency fixed...and exchange will take place at the following rate:
>
> - Jordanian Dinar = 1 Palestine Pound
> - Jordanian Fils = 1 Palestine Mil
>
> Article 4, Temporary Law for Jordan Currency, 1949

Every holder of Palestinian currency notes was ensured the right to exchange their notes for Jordanian currency within a period of two months from the implementation of this law. In doing so, this currency board effectively consolidated monetary usage within the region to one currency, creating a more streamlined and efficient financial system. This also occurred in Kuwait and Libya with the Indian rupee and the Libyan Military Authority Lire, respectively.

Property 3: 100% reserve to liabilities ratio

The monetary authority should be able to ensure that all convertible monetary liabilities (local notes and coins in circulation) are fully backed by foreign reserves to meet any demand for exchange. Foreign reserves typically include cash, gold, or short-term foreign government securities denominated in the anchor currency. In other words, the net liquidation value of the assets must be equal to the nominal value of the liabilities the currency board undertakes. The net liquidation value is the value after subtracting any foreign liabilities.

Earlier constitutions from the British Empire in New Zealand, India, Ceylon, and the Straits Settlements specified a ratio of how much of the fund should remain liquid. The minimum ratio was typically 50% of total notes and coins in circulation, because everyday exchange between local and reserve would not come close to exceeding this amount under normal circumstances. Ceylon's currency board constitution contained this provision:

> The commissioners shall retain a reserve in silver coin or in gold coin, of one-half at least the amount of currency notes in circulation.
>
> Article 12, The Ceylon Paper Currency Ordinance 1884

In addition to the liquid portion, Ceylon also included a provision for holding the remaining half of the fund to securities:

> The Governor [...] shall also cause a sum, not exceeding the value of one-half of the currency notes in circulation to be invested in Indian Government securities.
>
> Article 13, The Ceylon Paper Currency Ordinance 1884

Later currency boards in the British Empire had more flexible policies that gave the Governor or Secretary of State discretionary powers to fix the minimum ratio of liquid funds (The British Secretary of State for the Colonies was the top colonial official in London.) The transition towards more flexibility meant that the Governor and Secretary of State were trusted to make proper decisions, which allowed the currency board and government to be more adaptable to changing economic conditions. They could raise the minimum ratio if individuals were exchanging higher values or lower the minimum when securities became riskier and yielded greater returns. Moreover, as notes increasingly replaced gold and silver coins in commerce, the British government or colonial governments allowed currency boards to replace gold and silver with highly liquid financial assets such as bank deposits in London and short-term British Treasury securities.

Interestingly, British colonies and other countries that cited seigniorage as a reason to establish currency boards had low minimum ratios of liquid funds.[8] Since a lower ratio of reserves would allow a currency board to invest in riskier assets with higher returns, it would increase the currency board's income and subsequently increase the government's revenue as well. For example, under Act No. XIX of 1861, India's currency board was created for seigniorage. Given this, India stated no minimum ratio of liquid funds, implying a large investment in securities, and used a "fixed fiduciary" system rather than maintaining a 100% backing in reserves.[9]

Many of the currency boards formed specifically to prevent governments from having monetary power made sure to specify a 100% backing rule. For instance, when the Bulgarian lev collapsed due to the failures of the Bulgarian Socialist Party to institute viable economic reform, the newly adopted currency board made sure to require that the lev be fully backed by Deutsche Mark reserves.

In fact, few currency boards stipulate a minimum reserve ratio greater than 100%. The Falkland Islands Currency Notes Ordinance 1930 for example demanded a 110% reserve ratio to liabilities, while Hong Kong, under the Exchange Fund Ordinance, must maintain 105% in reserve backing. The rationale of ratios slightly above 100% is to provide that even if some assets depreciate, the currency board will have a cushion such that it could convert all local currency into the anchor currency.

In contrast, constitutions that do not stipulate full backing often have other provisions that also allow for greater government discretionary powers, such as holding of domestic assets.

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[8] K. Schuler & N. Krus (2014, December). *Currency Board Financial Statements* (Working paper No. SAE./No.22/December 2014). Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2017/04/Krus-Schuler_Currency_Board_Financial_Statements_2014.12.21.pdf

[9] S. Hanke & K. Schuler (2015). *Currency Boards for Developing Countries: A Handbook (Revised Edition, 2015)*. Retrieved August 23, 2020, from ICS Press website: https://sites.krieger.jhu.edu/iae/files/2017/06/Currency_Boards_for_Developing_Countries-1.pdf

Property 4: Not a lender of last resort

An orthodox currency board cannot lend to the domestic financial system, especially the government. Without this provision, a currency board may be pressured into printing money to fund government debt by buying government securities; governments with weak credit often turn to their monetary authorities. Abuse of this power can lead to a situation of moral hazard for government spending, causing high inflation: as the money supply grows, the currency depreciates, and cost of living rises. Meanwhile, the growing government debt increases the risk of default. So, the exchange rate cannot be maintained by a currency board with bad assets and huge monetary liabilities.

Typically, the most common way to limit this scenario is by prohibiting a currency board from purchasing domestic assets such as government securities. Currency boards are allowed to invest their funds/reserves in different securities, usually those denominated in the anchor currency, to maintain their foreign reserves. By explicitly prohibiting the board from buying domestic government securities, the constitution creates a hard fiscal restraint on the government.

However, only a few constitutions - namely from the British Empire - explicitly prohibit the currency board from purchasing domestic assets. For example, Cyprus's law states,

> The Note Security Fund shall be held by the Crown Agents and may be invested in securities issued or guaranteed by any Government of the British Empire (except by the Government of Cyprus)...
>
> Article 7, Cyprus Currency Notes Order in Council 1928

Many governments felt there was little need to address the issue of domestic government securities; the risk of the local colonial governments abusing the power was low, especially since the British imperial government kept stringent oversight with records of transactions.

Some economists have claimed that under a currency board the financial system is more susceptible to panics. However, governments can still act as a kind of lender of last resort, even when no central bank exists. For instance, the Hong Kong government several times paid depositors of insolvent banks from its accumulated budget surpluses.

Moreover, the largest and costliest bank runs have occurred under central banking. Since the first currency board in 1849, financial panics in currency board systems have been infrequent. There have been no cases in which commercial banks in currency board systems relied on the anchor-currency central bank as a lender of last resort. British overseas commercial banks have never relied on the Bank of England.[10]

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[10] M. Madan & A. Maki (2016). *The Currency Board Monetary System - A Survey of Financial Crises. Retrieved August 27, 2020, from ICS Press website:* https://sites.krieger.jhu.edu/iae/files/2017/04/Maki_and_Madan_A_Survey_of_Financial_Crises.pdf

That being said, more modern currency boards began developing provisions to allow for domestic lending. For example, Eesti Pank (the Bank of Estonia) was explicitly prohibited from

> granting credits to the state budget or budgets of local authorities, and from buying securities issued by Government executive bodies.
>
> Article 16, Law on the Central Bank of the Republic of Estonia, 1993

Eesti Pank, however, was allowed to grant loans to credit institutions and banks. (Estonia joined the euro area in 2011, so Eesti Pank became a constituent member of the European Central Bank and ceased to issue a separate currency.)

The Gibraltar Currency Notes Act 2011 does not prohibit domestic assets, but limits them:

> the total amount of the moneys in the Fund which are invested in securities of or guaranteed by the Government of Gibraltar shall at no time exceed 30 per cent of the value of the Fund…
>
> Article 8, Currency Notes Act 2011, 2011

Argentina (whose unorthodox currency board existed from 1991-2002), Hong Kong, and Bulgaria have provisions that explicitly allow collateralized last resort lending, up to the amount of excess foreign reserves available. On the other hand, Bosnia and Herzegovina has provisions that explicitly rule out last resort lending by the central bank in the first six years.

In Argentina, although Article 19 of the central bank law prohibited it from acting as a general lender of last resort, Article 17 provided some leniency that allowed granting rediscounts and overdrafts to financial institutions on account of a temporary lack of liquidity. The Bulgarian National Bank cannot extend credit to banks except when the emergence of a liquidity risk may affect the stability of the system. Similarly, the Bank of Lithuania (a currency board from 1994-2014) was authorized to buy and sell debt instruments issued by their own government and to "perform rediscount operations."

In Hong Kong, the Exchange Fund Ordinance stipulates the use of the assets of the Exchange Fund for defending the exchange rate of the Hong Kong dollar and for the maintenance of the stability and integrity of the local monetary and financial system. But also, in Article 4 the ordinance stipulates that the Financial Secretary may employ the funds "for the reduction of the amount of the indebtedness of the Government."

The existence of a lender of last resort option does not necessarily mean that it will be abused or used. Having more scope for discretion does not automatically equal a less disciplined or less well-run system; it simply means it is not an orthodox currency board. Ultimately, beyond the provisions listed in the constitutions, good judgement and execution still matter. This strict provision against lending is a response and solution to past instances of abuse, and a reflection of deep-rooted mistrust.

A few old constitutions allowed currency boards to invest in domestic assets for the sole purpose of funding the government during extreme emergencies. For example, the Fiji Currency Notes Ordinance of 1933 allowed the currency board to invest in the Fiji War Loan of 1916, while the Ceylon currency board allowed similar investments by the War Ordinance of 1941. Since World War I and World War II were demanding and dangerous times for Britain, large amounts of capital were needed to sustain the war effort; without it, the empire would have collapsed. Therefore, out of urgency, currency boards were granted leniency to help fund war loans.

Financial panics however can be limited in a currency board system. As Steve Hanke and Kurt Schuler express in *Currency Boards for Developing Countries: A Handbook* (revised edition, 2015), two sources of financial stability for commercial banks under a currency board are interbank lending markets and international branch networks.[11] As a country's financial system grows, naturally a large interbank lending market develops, as illiquid commercial banks will borrow from liquid ones. This system of borrowing can be internationally scaled, too. By having a reserve anchor currency, a currency board builds a system in which commercial banks can borrow in foreign financial markets with low risk. International borrowing systems minimize the effects of local economic shocks. Furthermore, using private, voluntary deposit insurance instead of government deposit insurance can reduce financial panics; this creates an incentive among customers to avoid badly managed banks. Finally, Hanke and Schuler recommend for commercial banks to issue a "notice of withdrawal clause" in their contracts to discourage bank runs. Such clauses formerly were common among, for example, U.S. savings banks, where they were printed on old-style passbooks.

Property 5: Seigniorage

In addition to keeping liquid assets to meet exchange demand, currency boards also hold assets that pay interest. While central banks earn seigniorage (income from currency issue) from interest and inflation, currency boards earn seigniorage only from interest. Since currency boards earn interest from holding securities while simultaneously paying no interest on its notes and coins issued, its main assets earn interest income while its liabilities don't incur interest costs. The main costs currency boards face is the maintenance and production of coin and currency. Thus, a currency board's income can be defined as the difference between the interest it earns on reserve assets and the expense of maintaining its liabilities, which would be the coins and notes issues. Currency boards use their income and pay for expenses: wages for staff members, rent for branch locations, and cost for printing and minting new notes and coins. The amount that remains is profit, or net seigniorage. On top of this, many currency boards are also permitted to earn commission fees. It is important for currency boards to

[11] Hanke, S. & Schuler, K. (2015). *Currency Boards for Developing Countries: A Handbook* (revised edition). Retrieved August 23, 2020, from ICS Press website: https://sites.krieger.jhu.edu/iae/files/2017/06/Currency_Boards_for_Developing_Countries-1.pdf

generate seigniorage in order to be self-sustainable and operate in a relatively passive and automatic manner.

Since governments share the risk of upholding the currency, it follows that they should be able to share the profits. Thus, it is standard practice for a currency board to pay its surplus to the local government as part of general revenue. In Gibraltar's Currency Note Ordinance 1927, it states,

> All dividends interest or other revenue derived from such investments shall be paid into said Crown Agents for the Colonies, and the said dividends interest or revenue shall form part of the ordinary revenues of the Colony...
>
> Article 3, Currency Note Ordinance 1927, 1927

Over time, the changes to distributional procedures show how sophisticated currency boards became. In addition to becoming more risk averse, constitutions began standardizing the distribution of profits. Prior to 1938, most constitutions did not provide details as to how profits would be transferred; rather, they simply stated that the transfer would occur when the conditions were met. Later, an income fund was created to store all profits before they were distributed. Now, many modern currency boards also have similar accounts that make it easier to manage and keep track of the profits.

Table 1 shows the currency boards identified as most orthodox.

Table 1. List of Orthodox Currency Boards

Currency Board	**Start Date**	**Fixed exchange rate with anchor currency**	**Full convertibility with anchor currency**	**100% reserve ratio to liabilities**	**Not a lender of last resort**	**Seigniorage**
Ceylon	1884	Unclear	Unclear	Yes	Yes	Yes
Trinidad and Tobago	1904	Unclear	Yes	Yes	Yes	Yes
Bermuda	1915	Yes	Yes	Yes	Yes	Yes
Cyprus	1928	Yes	Yes	Yes	Yes	Yes
Falkland Islands	1930	Yes	Yes	Yes	Yes	Yes
Fiji (paper)	1933	Yes	Yes	Yes	Yes	Yes
Fiji (coinage)	1934	Unclear	Unclear	Yes	Yes	Yes
Bahamas	1936	Yes	Yes	Yes	Yes	Yes
British Honduras	1937	Yes	Yes	Unclear	Yes	Yes
Malta	1949	Yes	Yes	Yes	Yes	Yes
Jordan	1951	Yes	Yes	Yes	Yes	Yes
Kuwait	1960	Yes	Yes	Yes	Yes	Yes
Abu Dhabi/Bahrain	1964	Yes	Yes	Yes	Yes	Yes
Qatar/Dubai	1966	Yes	Unclear	Yes	Yes	Yes

Note A: Each start date represents a new currency board constitution, despite the repeating locations.
Note B: Each property was answered with a Yes/No/Unclear.

Further analysis: Other common provisions

We have also identified properties that, although not necessary, are common amongst currency boards. These five additional properties were derived from historical trends found between constitutions.

Transparency provisions

Almost all constitutions have a transparency provision to provide a system of checks and balances. These provisions serve to prevent mismanagement of funds and inefficiencies within the currency boards. Allowing full transparency ensures accountability, and consequently, stability for the monetary system. These often appear as articles stating that the currency board ought to publish their work in some form of public announcement, such as the local gazette or newspaper. A sample provision from the constitution of Kenya's currency board in 1905 states:

> An abstract of such accounts shall be forthwith, after such audit, published in the Gazette.
>
> Article 20, East Africa and Uganda (Currency) Order in Council, 1905

Additionally, some form of external auditing was also a frequent requirement. Having a third party periodically audit the work of a currency board ensured sound management and stability within the organization:

> The accounts of all transactions of the Currency Board under this Order shall be audited in every year by such persons and in accordance with such regulation as a Secretary of State directs.
>
> Article 20, East Africa and Uganda (Currency) Order in Council, 1905

Upper limit on net foreign reserves

Some currency boards that are allowed to hold assets exceeding 100% of their monetary liabilities have an upper limit on the amount of surplus they can hold. Currency boards have surpluses to guarantee that reserves are fully backed (100% reserve ratio against liabilities) by providing a cushion against the depreciation in the assets that it holds, whether from securities defaulting or metals losing value. A limit on the surplus enforces restraint on currency boards. It prevents the currency board from using the surplus in a discretionary manner. As a result, all profits beyond the specified surplus goes to the government. An example of this mechanism is exhibited in Kuwait's Currency Board Constitution (1961):

> At the end of any financial year and after provisions for exceptional expenditure and for staff, any excess of assets held by the Board in accordance with paras one and two of Article (11), over the value of currency in circulation, shall be credited to a special account to be operated by and at the disposal of the Board. The value of this account

> shall be allowed to accumulate to the extent of 10% of the value of the currency in circulation. Any excess over this limit, at the end of any financial year, shall be paid into the general revenues of the Government, on authority of a written report of the Board's auditors, as soon as this becomes possible.
>
> Article 12, Kuwait Currency Board Constitution, 1961

Since the Cayman Islands currency board was established in 1972, no currency board system examined has had a maximum reserve ratio. Instead, currency boards have been allowed to accumulate reserves indefinitely to their profits. They can also use their surplus reserves in a discretionary manner to act as lenders of last resort to commercial banks. In some cases, they also use their main reserves in the same manner. The Bulgarian National Bank is explicitly allowed by law to act as a lender of last resort in case of a crisis affecting the banking system as a whole.

Policies for liabilities exceeding assets

Since currency boards hold assets that are at risk of losing value, it is important for all currency board systems, orthodox or not, to include a policy specifying what happens if the value of liabilities exceeds the value of assets. Examining the trend in these policies provides insight as to how lawmakers adopted precautionary measures.

For most British colonies, the colonial governments were ultimately responsible for upholding the currency, with the exception of West Africa, East Africa, Gibraltar, and North Russia. For example, the Cayman Islands constitution (1971) explicitly states:

> If at any time the total assets of the Board is less than total liabilities, such deficiency shall be a liability of the government for so long as the deficiency shall continue.
>
> Article 9, Cayman Islands Currency Law, 1971

In layman's terms, the local government is charged if the currency board does not have the ability to exchange notes and coins for the anchor currency at the specified exchange rate. This can occur if the assets lose value. Thus, the government itself faces the risk of bonds defaulting or metals (gold or silver) depreciating.

With these risks in mind, it is surprising that a few British colonies had no policy preparing for this event. The absence of this provision proved to be problematic for East Africa. British East Africa's currency board around 1920 accepted silver coins for conversion into local currency at a rate that was too high, which quickly depleted the reserves.[12] Although the East African

[12] B. Tsoi (2014, October). *The Constitutions (Founding Laws) and Comparable Features of Select Currency Boards in the Former British Empire* (Working paper No. SAE./No.20/October 2014). Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2017/04/Benjamin-Tsoi-Working-Paper.pdf

government pledged in 1933 to lend up to £1.5 million to replenish the board's foreign reserves if they ever became exhausted, they failed to deliver. The currency board only managed to fill the gaping hole in its balance sheets 13 years later with its retained profits.[13]

New Zealand, India, British West African Colonies, North Russia, British East Africa, Danzig, Iraq, Hong Kong, British Solomon Islands, Jordan, Cook Islands, and Lithuania are the only countries that do not include a policy preparing for when liabilities exceed assets. Otherwise, provisions for insolvency generally became more sophisticated over time. The Ceylon Paper Currency Ordinance 1884 was the first to require that the currency board maintain a "depreciation fund" to protect against potential losses. Generally, 1% of profits from seigniorage and investments was placed into a depreciation fund every year. Constitutions for British Guiana, Seychelles, the Straits Settlements, Kuwait, Kenya, Iraq, Jamaica, the Falkland Islands (1899), Fiji (1913), and Ceylon (1884) all set aside surplus reserves for a depreciation fund. More modern currency boards such as Brunei and Bulgaria, though, do not have a "depreciation fund" but do account for possible depreciation in their budgets.

Escape clauses

Although currency boards establish monetary restraint and discipline, some constitutions have granted leniency to be adaptable to political and economic instability. The most common escape clause deals with the fixed exchange rate. For example, Estonia's Law on the Central Bank 1993 states the following:

> Eesti Pank determines the exchange rate of the Estonian kroon against foreign currencies.
>
> Article 15, Law on the Central Bank of the Republic of Estonia, 1993

Similarly, the exchange rate of the Hong Kong dollar to its anchor, the US dollar, is determined by Hong Kong's Financial Secretary according to the Exchange Fund Ordinance 1935, which does not specify a particular exchange rate. Since Hong Kong re-established a currency board system in 1983 the rate has been maintained at 7.80 Hong Kong dollars per U.S. dollar.[14] The ability to change the exchange rate allows the state to handle situations like liquidity crises and changes in access to foreign reserves.

[13] B. Tsoi (2014, October). *The Constitutions (Founding Laws) and Comparable Features of Select Currency Boards in the Former British Empire* (Working paper No. SAE./No.20/October 2014). Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2017/04/Benjamin-Tsoi-Working-Paper.pdf

[14] S. Tsang (1999, August). *Legal Frameworks of Currency Board Regimes* (Rep.). Retrieved August 23, 2020, from Hong Kong Monetary Authority website: https://www.hkma.gov.hk/media/eng/publication-and-research/quarterly-bulletin/qb9908/fa03.pdf

That being said, clauses like those in Hong Kong and Estonia may pose a potential threat to monetary stability (note that Estonia ceased to be a currency board system in 2011 when it joined the euro area.) Currency boards that choose to have an escape clause must have a system that prevents it from being abused. After all, a successful currency board is meant to maintain monetary discipline in developing states.

Examples of checks on an escape clause may include a two-thirds supermajority vote by the governing body of the currency board or the parliament, a restriction on the amount of domestic assets held, or provisions that limit how much of a reserve may be invested. The Hong Kong fixed exchange rate is only maintained by a norm.

Some constitutions also have built in freedom regarding the assets which they hold in order to ensure adaptability to asset price changes. Kuwait's currency board constitution says,

> ... the Board may, when it deems necessary, substitute some kinds of the assets for others provided that the assets of the Currency Reserve Fund shall in no case fall below the value of the currency in circulation.
>
> Article 11, Kuwait Currency Board, 1960

This provision allowed for the currency board to adjust their holdings of prime commercial bills, sterling, British Treasury bills, and Indian rupees, depending on their needs.

Minimum limits on currency exchanges

To reduce their handling costs, many currency boards imposed minimum exchange amounts. Small British colonial currency boards such as Barbados generally required a minimum of £1,000. Larger ones, like the West African Currency Board, required a minimum of £10,000. These amounts would be roughly the equivalent of $100,000 or $1 million today. Often, as with the Fiji Currency Notes Ordinance 1933, the boards had flexibility to set their own minimums subject to the approval of the Secretary of State, who usually made no objection:

> Provided that - no person shall be entitled to lodge with the Crown Agents or Commissioners as the case may be less than such minimum sum as may be fixed from time to time by the Secretary of State…
>
> Article 6, Fiji Currency Notes Ordinance 1933

Ideally, a currency board should have no minimum to strengthen confidence. However, having a minimum does not mean there is a limit on currency convertibility. While individuals do not usually make large transactions, banks quite frequently do. Therefore, banks act as middlemen between the public and the currency board, aggregating many individual transactions into one big transaction with the currency board for a modest fee.

It is important to note, however, that a currency board should not have any upper limit with currency exchanges for this would hinder the full convertibility of the currency, thus defeating the purpose of a currency board. To date, Bermuda is the only currency board that has ever had an upper limit for exchanges.

Conclusion

Currency board constitutions from many countries were examined to show numerous trends in the development of currency board systems throughout history. Orthodox currency boards have the following characteristics: (1) a fixed exchange rate with an anchor currency, (2) full two-way convertibility with anchor currency, (3) a ratio of 100% net foreign reserves to monetary liabilities, (4) the board cannot be a lender of last resort to domestic financial systems, and (5) the board must generate profit via seigniorage. A number of countries, shown in Table 1, had currency board constitutions that addressed all of these points in an orthodox manner.

Additionally, we observed five other characteristics that many currency board constitutions contained. (6) Transparency provisions ensure the proper and sound functioning of currency boards. (7) Upper limits on net foreign reserves prevent currency boards from spending surplus reserves at their discretion. (8) Policies providing for liabilities to exceed assets modestly provide a cushion against possible financial tumult. (9) Escape clauses give currency board constitutions and monetary systems flexibility as economic and political climates change. (10) Minimum limits on currency exchange reduce handling costs.

Many institutions require both a study of how they are supposed to behave on paper and how they have behaved in practice. We have provided a much broader survey than previously existed of currency board constitutions. Our survey includes old and new currency boards, from colonies and independent countries, inside and outside the British Empire. It is therefore a representative, though not exhaustive, survey. Some other working papers in this series, such as numbers 125,[15] 89,[16] and 70,[17] provide balance sheet data and calculations of the extent to which various currency boards have been orthodox in practice. Krus and Schuler (2014) provide much underlying data, while a number of country studies provide further data and show methods of analysis.

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[15] Naparst, N. (2018). "Was the Cassa per la Circolazione Monetaria della Somalia an Orthodox Currency Board?." Working paper No. SAE/No.125/September 2018. Retrieved August 23, 2020, from Johns Hopkins Institute for Applied Economics, Global Health, and Study of Business Enterprise website: https://sites.krieger.jhu.edu/iae/files/2020/01/Was-the-Cassa-per-la-Circolazione-Monetaria-della-Somalia-an-Orthodox-Currency-Board_.pdf

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Appendix

Appendix. Master Data Set of All Constitutions											
Currency Board	**Start Date**	**Fixed exchange rate with anchor currency**	**Full convertibility with anchor currency**	**100% reserve ratio to liabilities**	**Lender of last resort**	**Seigniorage**	**Transparency provision**	**Upper limit on reserves**	**Policies for liabilities exceeding assets**	**Escape clause**	**Minimum limits on currency exchanges**
Abu Dhabi/Bahrain	1964	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Argentina #1	1890/1899	Yes	Yes	Yes	No	No	Yes	No	No	No	No
Argentina #2	1991	Yes	Yes	No	No	No	No	No	No	No	No
Bahamas	1919	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Barbados	1937	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Belize	1977	Yes	No	No	No	Yes	Yes	No	Yes	Yes	Yes
Bermuda	1915	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Bosnia and Herzegovina	1997	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No
British Caribbean colonies	1950	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
British Central African colonies	1954	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No
British East Africa (Kenya only)	1905	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No
British East Africa (Kenya, Tanganyika, Uganda)	1920	Yes	Yes	No	No	Yes	Yes	No	No	No	No
British Guiana	1915	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
British Honduras	1937	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	No	Yes
British Solomon Islands	1937	Yes	No	No	No	No	No	No	No	No	No
British West African colonies	1912	Yes	No	No	No	Yes	Yes	No	No	No	Yes

Brunei	1967	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes
Bulgaria	1997	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Burma (Myanmar)	1946	No	Yes	Unclear	Yes	Yes	Yes	Unclear	Yes	No	No
Cayman Islands	1971	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Ceylon (Sri Lanka)	1884	Unclear	Unclear	Yes	Yes	Yes	Yes	No	Yes	No	No
Ceylon (Sri Lanka)	1941	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Unclear
Cook Islands	1987	Yes	Yes	Yes	No	No	Unclear	No	No	Unclear	No
Cyprus	1928	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Danzig	1923	Yes	Unclear	No	No	No	Yes	No	No	No	No
Djibouti	1949	Yes	Yes	No	Unclear	No	No	No	No	No	No
Estonia	1992	Unclear	No	Yes	Unclear	Yes	Yes	No	Yes	Unclear	No
Falkland Islands	1899	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Falkland Islands	1930	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	No	Unclear
Faroe Islands	1940	Yes	No	Unclear	No	Unclear	No	No	No	No	No
Fiji	1913	Unclear	Unclear	Yes	No	Yes	Yes	No	Yes	Yes	No
Fiji (coinage)	1934	Unclear	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Fiji (paper)	1933	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Unclear
Gibraltar	1927	Unclear	Unclear	Yes	No	Yes	Unclear	No	Unclear	No	Yes
Gibraltar	2011	Yes	Yes	Yes	No	Yes	Yes	Unclear	Yes	No	Unclear
Hong Kong	1935	No	No	Yes	No	Unclear	Unclear	No	No	Yes	No
India	1861	Yes	Unclear	No	No	Yes	Yes	No	No	Yes	No
Iraq	1931	Yes	Yes	Yes	No	Yes	Yes	Unclear	No	No	No
Ireland	1927	Yes	Yes	Unclear	No	Yes	Yes	Unclear	Yes	Yes	No
Isle of Man	1993	Yes	Yes	No	No	Yes	No	No	No	Yes	No
Italian Somaliland	1950	Yes	Unclear	Yes	Unclear	No	No	No	Yes	No	No
Jamaica	1904	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Jordan	1949	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Kuwait	1961	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Libya	1951	Yes	Yes	Yes	No	Yes	Yes	Unclear	Yes	No	No
Lithuania	1994	Yes	Yes	Yes	No	Yes	Yes	Unclear	No	Yes	No
Macau	1999	No	Yes	Yes	Yes	Unclear	Yes	No	Yes	Yes	No
Malaya	1938	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	No
Malta	1949	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Mauritius	1849/1864	Yes	No	Unclear	No	Yes	Yes	No	Yes	No	No
New Zealand	1847	Yes	Yes	No	No	Yes	Yes	Unclear	No	No	Yes
North Russia	1918	Yes	Yes	Yes	No	No	Yes	Yes	No	No	No
Palestine	1928	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes
Qatar/Dubai	1966	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Seychelles	1924	No	Yes	No	No	Yes	Yes	No	Yes	Yes	No
Singapore	1967	No	No	Yes	Unclear	Yes	No	Unclear	Yes	Unclear	No
South Arabian Currency Board (Aden)	1964	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes
Southern Rhodesia	1938	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No
St. Helena	1976	Yes	Yes	Yes	No	Yes	No	Unclear	Yes	No	Yes
Straits Settlements (Singapore)	1899	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Sudan	1957	Yes	Unclear	No	No	Yes	Yes	No	Yes	No	No
Trinidad and Tobago	1904	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Western Samoa	1921	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Zanzibar	1908	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No

Note A: Each start date represents a new currency board constitution, despite the repeating locations.

Note B: Each property was answered with a Yes/No/Unclear.

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