

# Colonial Currency Boards: The Seigniorage Issue<sup>1</sup>

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*Abstract:* Compared with using a foreign currency as the medium of exchange, a currency board enables a country to capture seigniorage that would otherwise have accrued abroad. The seigniorage takes the form of income on the foreign reserves that provide a 100 per cent backing for the currency board's issue of domestic currency. But, given circumstances where a fixed exchange rate is optimal, can convertibility be sustained with a lower reserve percentage and, if so, is there a further national gain to be had from putting the released resources to some other use? This paper explores the attempts made to address these questions in the late 1940s and 1950s within the context of a debate about the colonial currency board system. At that time, most critics of the system saw it as handicapping development because it locked up excess foreign reserves that could be used to finance domestic investment. Some saw the system as also handicapping income stabilisation because lack of access to excess reserves hindered sterilisation of the monetary effects of external imbalances. Estimates of excess reserves that could be gainfully used for these purposes while preserving convertibility varied considerably, with some recognition that in principle very open economies might have none at all. Rough calculations in the present paper suggest that this was possibly the case for at least one currency board economy, and that for another with apparently large excess reserves, the gain from using them for domestic investment would have been very small.

## 1 Introduction

.... assume there are no costs of exchanging domestic for foreign money in international transactions. Then a rational self-controlled government would not use a foreign money. Such a government would decide, on the basis of an analysis familiar from the optimum currency area .... and optimal exchange-rate regime literatures, whether it should have a fixed or floating exchange rate. If the floating-rate regime is optimal, the country will perforce use its own money. If it is optimal to have a fixed exchange rate, it should still use its own money to avoid paying seigniorage to the foreign country. (Fischer 1982, p. 296)

In expounding his well-known case for a national money, Fischer identified two factors that 'could overturn this basic argument'. One was, of course, the existence of transactions costs in exchanging domestic for foreign currency. These would be especially onerous for small open economies. The other factor was the superior discipline to which domestic policy-makers would be subject as a result of using foreign money. Fischer, nevertheless, argued that commitment to a fixed exchange rate would provide some discipline, more than that under a flexible exchange rate. Further, while admitting a risk of the government not sticking to the 'rules of the game', he suggested that a fixed exchange rate could be maintained by holding foreign exchange reserves equal to at least 100 per cent of the domestic currency (Fischer 1982, pp. 299-300).

An issue that Fischer did not fully address in the fixed exchange rate version of his 'basic argument' is how much seigniorage can a country capture without imperilling its fixed exchange rate regime. Implicit in the 100 per cent reserve rule is the assumption that, measured in flow terms, seigniorage will be confined to income earned on the assets that make up foreign exchange reserves (less the expenses of issuing and maintaining the domestic currency in circulation). But are 100 per cent reserves strictly necessary? Can convertibility at the fixed exchange rate be sustained with a lower percentage and, if so, is there a national gain to be achieved by investing the released resources in domestic assets or putting them to some other use? The aim of this paper is to explore the attempts that were made to address these questions in the late 1940s and 1950s, long before Fischer's contribution, within a debate about the advantages and disadvantages of the colonial currency board system.

## 2 The Colonial Currency Board System

A traditional or orthodox currency board is a form of monetary authority that issues and redeems domestic currency on demand against a specified foreign currency at a fixed exchange rate, while holding foreign reserves amounting to at least 100 per cent of its issue of domestic currency. An orthodox currency board is not permitted to trade in domestic assets such as government securities. Hence changes in the monetary base are solely a reflection of changes in the currency board's foreign reserves. In other words, changes in the monetary base arise only from imbalances between international receipts and payments.

Currency boards were essentially 'an invention of the British Empire' (Williamson 1995, p. 5). During the first half of the twentieth century they operated in many colonies, particularly British dependencies, and also in a few, mainly small, independent countries. Numbers reached about fifty in the late 1940s, before they were largely replaced by central banks in the decolonisation era. At the end of the 1980s, less than fifteen currency board or currency board-like systems were in operation. Then came a minor resurgence of interest in the 1990s when Argentina introduced a form of currency board, followed by several of the smaller emerging market economies of Eastern Europe, namely Estonia, Lithuania, Bosnia-Herzegovina and Bulgaria. The resurgence now seems to have weakened, with the effective abandonment of the Argentine board in early 2002 and the aspirations of some of the European currency board countries to adopt the euro (Hawkins 2003, p. 2).

The specific reasons for the establishment of colonial currency boards varied with time and place (see Schuler 1992), but there was a general underlying acceptance of the desirability of providing colonies with stable and convertible currencies. In this context, access to seigniorage was (at least for colonial administrations) an influential argument favouring a currency board over the obvious alternative of using sterling (or some other appropriate foreign currency) as the domestic medium of exchange.<sup>2</sup>

The amount of seigniorage captured by a currency board depends on its total currency issue, the composition of the portfolio of assets backing the currency issue, the rates of return on these assets, and the costs of providing notes and coins. The assets of an orthodox British colonial currency board consisted of a mix of cash (sterling), short-dated British government securities, and longer-term sterling securities that normally paid higher interest rates but were subject to greater risk of

capital loss. The cash and short-dated securities formed liquid reserves. Their magnitude was determined by the board's estimate of the net amount of its currency issue it might be required to redeem over the next few months, taking into account seasonal and other influences on international receipts and payments.<sup>3</sup> The remaining, longer-term securities were backing for what was perceived to be essentially 'the hard core of currency permanently in circulation' (Clauson 1944, pp. 8-9). Commonly, total foreign assets amounted to not just 100 per cent, but 105 to 110 per cent of the currency board's domestic monetary liabilities, the aim being to provide an extra margin of protection in case of capital loss on the longer-term securities. Subject to maintaining this margin, the profits the currency board obtained from the income on its foreign assets and the small commissions it charged on currency conversions less its operating expenses were distributed to the colonial government as public revenue. It is sometimes convenient to treat this distribution as having been a measure of the annual flow of seigniorage. Strictly speaking, however, it understated a colony's net seigniorage income to the extent that some of the currency board's profits were retained to accumulate additional reserves. And, on the other hand, it overstated net seigniorage income to the extent that the profits came partly from currency commissions and/or from holding more than 100 per cent reserves.

For the most part, the colonial currency boards appear to have been profitable, at least in the long term. In the case of the Malayan currency board, for example, over the twenty years 1946-1965 annual investment earnings averaged 3.3 per cent of total assets, while expenses averaged only 0.2 per cent. Thus, ignoring the small flows of revenue from commissions, the average net annual return on assets was 3.1 per cent.<sup>4</sup> Currency boards were not, however, major sources of revenue for colonial governments. Schuler (1992, p. 73) has estimated that the WA£19.3 million that the West African Currency Board paid in seigniorage to the governments of Nigeria, the Gold Coast (Ghana) and Sierra Leone from 1919 to 1959 amounted to only 1.12 per cent of their total revenue for this period. For supporters of the currency board system, this sort of record was readily defensible on the grounds that '[t]he purpose of the currency board system is not to maximize seigniorage, but to capture seigniorage subject to the condition that local notes and coins always be convertible into the reserve currency' at a fixed exchange rate (Schuler 1992, p. 73). By and large, the colonial currency boards achieved this purpose, but for the critics who emerged at the end of the colonial era it was nevertheless a case of 'could do better'.

### **3 Perceptions of 'The Seigniorage Problem'**

The debate that began soon after World War II about the pros and cons of currency boards largely took for granted that countries would choose to issue their own currencies. The focus had by then shifted to the advantages and disadvantages of currency boards in comparison with central banks. The debate reflected several factors: an awareness of opportunities that newly independent countries would have to change their monetary arrangements; the spread of Keynesian ideas about short-term stabilisation policies; and a growing interest in the promotion of economic development in low-income countries. Discussion was at its most intense in the 1950s. In the 1960s it petered out, as most former colonies opted for central banks.

The debate canvassed a range of arguments for and against currency boards. The advantages claimed for currency boards included the guaranteed

convertibility of the domestic currency at a fixed exchange rate, the provision of an automatic balance-of-payments adjustment mechanism, and protection against sustained inflation of domestic origin. The claimed disadvantages included loss of income from locking up resources in foreign reserves when they could be invested in higher-yielding domestic assets, the greater costs of balance-of-payments adjustment under a fixed exchange rate, and the inability to engage in activist monetary policy, both for counter-cyclical purposes and to counter the threat of deflationary bias in a growing economy.

Our concern here is mainly with the first of these disadvantages, the loss of income from locking up resources in foreign reserves, or what Williamson (1995, pp. 18-19) was much later to term 'the seigniorage problem'.<sup>5</sup> Mars (1948), writing on Nigeria, and Grove and Exter (1948), writing on the Philippines, were among the first to raise this issue. Mars argued that since part of the West African currency, essentially Clauson's (1944) 'hard core of currency permanently in circulation', would never be presented for redemption in sterling, the West African currency board tied up excessive resources in foreign exchange reserves. These resources, he suggested, should be released via a fiduciary issue, and used to promote local economic development or for counter-cyclical purposes, while still retaining 100 per cent cover on currency issued over and above the fiduciary issue. (Mars 1948, pp. 188, 204-7).

Although they did not elaborate on possible alternative uses, Grove and Exter shared Mars's basic concern about excessive resources tied up in foreign exchange reserves. Commenting on the Philippine currency board arrangement, which was soon to be replaced by a central bank, they claimed that:

.... the 100 per cent reserve system has tended to immobilize needlessly a part of the international reserves of the country. Dollar reserves have had to be maintained even against the hard core of notes that was always needed to finance domestic transactions and that would never be presented for conversion into dollars to finance remittances or payments abroad. (Grove and Exter 1948, p. 938)

Their claim, in fact, echoed a slightly earlier criticism of the Philippine currency board arrangement made by the Joint Philippine-American Finance Commission (1947, p. 47), of which Exter was a member; and in 1949 he was to make the same criticism of the currency board in Ceylon:

The system .... tends to freeze needlessly a rather large portion of the international reserve. A reserve has to be maintained against even that hard core of notes which is always needed to finance domestic transactions, however adverse the balance of payments conditions. (Ceylon 1949, p. 4)

The basic idea rapidly gained popularity, finding its way into a couple of United Nations reports concerned with development problems. *Methods of Financing Economic Development in Under-Developed Countries* observed that 'available foreign exchange assets for the financing of economic development may be created by under-developed countries by a reduction in excessive foreign currency reserves....' (United Nations 1949, p. 21). Then, in an examination of dishoarding as a possible source of finance for a higher rate of domestic capital formation, *Measures for the Economic Development of Under-Developed Countries* noted more explicitly:

Some hoarding is .... done by governments of under-developed countries, for example in those cases where the law requires that the

local currency .... must be backed as to 100 per cent by foreign exchange. This high percentage unnecessarily sterilizes foreign exchange to the extent of that part of the money supply which the government will never be required to redeem in foreign exchange. However, the sums involved here .... are not large. (United Nations 1951, p. 36)

Given the concern at that time with mobilising funds for development, it is perhaps surprising that apologists for currency boards made little or no attempt to claim that maintaining 100 per cent foreign reserves helped encourage private capital inflow. To the extent that a one-off domestic investment of excess foreign reserves might be viewed by money markets as 'unsound', there was an obvious (but not necessarily realistic) argument that it might frighten off far larger capital inflows capable of generating far larger gains in national income.

A related argument, which also seems to have been overlooked, concerns the possibility that less than 100 per cent backing of foreign reserves would cause a loss of confidence in the domestic currency, leading to capital outflow and a contraction in the size of the currency issue. As a result, the total seigniorage contribution to national income might turn out to be less than under an orthodox currency board, despite a higher weighted average rate of return on the remaining foreign reserves and the new assets acquired through domestic investment of the original excess reserves.<sup>6</sup>

The first significant defence against the charge that the colonial currency boards were handicapping development by locking up excessive resources came from Sir Sydney Caine (using the pseudonym of 'Special Correspondent'). After reminding the critics that, apart from 'a minimum of liquid cash', the reserves of colonial currency boards were normally invested in interest-bearing securities, Caine argued that:

[t]he income from such securities goes to strengthen the general financial position of the Government concerned. By doing so it helps that Government to raise other loan moneys. In theory, a colonial government might deliberately devote the whole of the income it draws from currency investments to paying interest on an equal amount of other borrowing, and so might place itself substantially in the same position as if it had borrowed the currency funds direct, i.e. had created a fiduciary issue. (Special Correspondent 1949, p. 96)

Thus, conceivably, a colonial government could use foreign borrowing to avoid the seigniorage problem, but still retain 100 per cent backing of the currency with its various perceived advantages, or as Arthur Lewis later put it:

The surplus currency backing [of colonial currency boards] is invested in gilt edged securities, which yield the long term rate of interest, and if these colonies needed money they would have no difficulty in borrowing in London at similar rates. In so far as this is true, the 100 per cent backing does not handicap development. (Lewis 1955, pp. 246-7)

Of course, to the extent that a colony paid a higher interest rate on its borrowing than it earned on its surplus foreign exchange reserves, there would still be a seigniorage problem. In proposing the establishment of a currency board for Libya, Blowers and McLeod (1952) refined Caine's argument to allow (realistically) for this possibility:

The difference between the 100 per cent reserve system and a partial reserve system .... is that the former requires that any additional savings the community chooses to hold in the form of currency must be invested in foreign exchange reserves, whereas the latter permits them to be invested in productive physical capital (or, indeed, permits them to be squandered on increased consumption). Even this difference becomes insignificant if the country has access to adequate sources of foreign capital on reasonable terms .... In such a case, the gross foreign borrowing under a 100 per cent reserve system will be greater by the amount that could otherwise have been obtained from the use of the currency reserves. The currency reserves themselves, however, can be invested in foreign securities, and the net borrowing will be the same. The net cost of the system, then, will be the difference, if any, between the interest paid on foreign borrowings and the interest received on the currency reserve investments. For what will be at worst a modest cost, Libya will retain her exchange reserves intact for use at some future date when increased financial maturity reduces the risks inherent in a less-than-100 per cent reserve system and when foreign capital may be less readily obtainable. (Blowers and McLeod 1952, pp. 458-9)

Blowers and McLeod's description of the net cost as 'modest' was critically dependent on the assumption of access to adequate sources of foreign capital on reasonable terms. The wider applicability of this assumption was a matter of dispute. King (1955, p. 720) was supportive, claiming that at least in British East Asia 'no government project has yet suffered from inability to use currency-fund sterling assets', but Hazelwood (1954, p. 313) had already anticipated future difficulties:

It would be a mistake to assume that, because the London market has satisfied the needs of the colonies in the past .... it will continue to do so in the future. Not only are conditions in the United Kingdom very different today, but the expenditure plans of the colonies are far more ambitious. The situation for many colonies is more likely to be one in which funds for economic development are not easy to come by on favourable terms. ... If it were otherwise, there would be no problem in financing development plans.

Indeed, within two years of King's claim, Birnbaum (1957, p. 481) questioned its contemporary relevance, suggesting that it 'appears to overstate the ease of borrowing, especially under conditions of monetary stringency in London, .... and it neglects the interest cost'.

#### **4 Alternative Uses of Excess Reserves**

Notwithstanding rising world interest rates, the postwar debate about the seigniorage problem largely took for granted that returns on domestic investment in the colonial currency board economies were higher on average than the interest rates earned on foreign reserves or paid on foreign borrowing. This position reflected the 'common assumption' of the time that 'the progress of underdeveloped countries is retarded by a scarcity of capital' (Hazelwood 1954, p. 312), with its connotations of low capital-labour ratios and thus high marginal products of capital.

There were, however, exceptions to the conventional wisdom. Birnbaum (1957, p. 481), for example, reported some questioning of the capacity of underdeveloped areas with currency boards to absorb the additional resources provided by the release of excess foreign reserves. To the extent that there were limits on the efficient absorption of new capital goods, they would lower returns on domestic investment and thus lower the net cost of unnecessarily locking up resources in foreign reserves.<sup>7</sup>

Moreover, even where there was no dissent from the proposition that returns on domestic investment were likely on average to be higher than foreign interest rates, there was inevitably concern about their riskiness. It was, after all, widely accepted that risk was a central factor in the practice of many colonial commercial banks (usually branches of international banks) investing most of their deposits abroad. To what extent did risk weaken the case for releasing excess currency reserves to finance local development? Hazelwood offered the following answer:

It is understandable that colonial governments should see an advantage in having an assured income from sterling securities instead of the promise of local development, which might turn out to be another 'ground-nuts scheme'. But while such an attitude is understandable, it is not necessarily correct. The situation could, perhaps, be interpreted as one where a divergence exists between the 'private' and 'social' benefits of economic development, and in which governments are motivated by 'private' criteria. If, in fact, no such divergence exists, and it is in the 'social' interest of a colony to invest its surplus funds in sterling, it surely follows that the colony is not in need of capital from abroad. (Hazelwood 1954, p. 312)<sup>8</sup>

Up to this stage of the debate, discussion of the benefits, if any, from freeing unnecessary currency reserves had focused almost exclusively on using the resources they embodied to pursue long-term growth in income per head through additional domestic investment. But Newlyn and Rowan (1954, pp. 193-4, 201-4) directed attention back to an alternative policy use that had been neglected since fleetingly raised by Mars in 1948, namely short-term stabilisation of economic activity.

In their study of money and banking in British colonial Africa, Newlyn and Rowan identified instability of export earnings and instability of foreign-financed private domestic investment as the main sources of fluctuations in income. They pointed out that in these circumstances a necessary condition for stabilisation of income through Keynesian demand management policies was that a colonial government had access to 'free reserves', in other words foreign reserves that were not required as backing for the currency. Consider, for example, a cyclical fall in exports that disturbs a balance-of-payments equilibrium. An expansionary demand policy that maintained income at its existing level would also maintain the balance of payments in deficit. A stock of free reserves meant that the deficit could be financed, if only temporarily, without a reduction in the monetary base that would negate the impact of the expansionary demand policy. The loss of free reserves could be recovered later during an export boom when a contractionary policy was appropriate, without an expansion in the monetary base that would negate the impact of the contractionary policy.<sup>9</sup>

To Newlyn and Rowan (1954, p. 204), therefore, the seigniorage problem caused by surplus currency reserves was not so much the loss of income from

locking up resources that could be invested in higher-yielding domestic assets as ‘the fact that such reserves are *not* free reserves and are *not* available for income stabilization’. In other words, for Newlyn and Rowan the seigniorage problem was at least in part a dimension of another disadvantage of orthodox currency boards, the inability to engage in activist monetary policy. They were supported in this view by the report of a World Bank mission to Malaya:

The stability and security of the currency board system does not depend on 100% sterling backing for the currency; it depends on sufficient sterling being available to redeem that part of the currency in respect of which claims for redemption might conceivably arise. This fact provides a margin within which a central bank may effectively operate without losing any of the practical advantages of the existing system. Essentially, then, we are suggesting that provision be made for a fiduciary issue within a ‘currency board’ framework. While some part of the margin of exchange reserves so provided might then be used for local investment, we would envisage the primary purpose of the margin, not for a once-and-for-all expenditure of sterling on local investment, but rather as a sort of central bank stabilization fund to provide some scope for easing domestic financial adjustments to external fluctuations. (International Bank for Reconstruction and Development 1955, pp. 650-1)

## 5 The Amount of Excess Reserves

One element in the early postwar literature still to be considered is the question of the actual size of the excess foreign reserves held by currency boards. By how much did a currency board’s reserves exceed those necessary for preserving convertibility at the existing fixed exchange rate? In other words, assuming 100 per cent foreign reserve backing of the currency, how much of the domestic currency could be transformed into a fiduciary issue, while preserving convertibility?<sup>10</sup>

Mars (1948, pp. 205-6) opened discussion of the question by listing factors that needed to be taken into account in estimating ‘localised currency’ in the West African colonies, that is, the amount of domestic currency that would never be offered for redemption in sterling, and therefore did not require reserve backing. Abstracting from details, the crux of his position was that the minimum amount of localised currency, and thus the minimum fiduciary issue of currency, should be based on the demand for cash balances during the trough of the last major depression, with adjustment for subsequent trend increases in that demand. Currency issued over and above the fiduciary issue should continue to require 100 per cent sterling cover, a principle that Williamson (1995, p. 4) later termed the ‘marginal currency board rule’. Mars (1948, p. 207) did not rule out the possibility that ‘circumstances might occasionally justify a change in the exchange rate’ (perhaps because of a change in the value of sterling in terms of other major currencies). He seemed to envisage, however, that the operation of the marginal currency board rule would continue to provide an automatic balance-of-payments adjustment mechanism that ensured convertibility at the current fixed exchange.

An anonymous author, writing on ‘Currency and banking in Jamaica’ advocated a more cautious approach that bypassed the issues of estimating and capturing existing excess foreign reserves:

It is fairly certain that at no time will all the currency be required to be redeemed in sterling. It is not suggested, however, that the present currency reserves be raided but rather that they should be kept intact and perhaps be available to form the nucleus of a foreign exchange reserve and, further, that the sterling reserve be made 50 per cent in respect of all notes issued over and above the notes in circulation at present. ('Analyst' 1953, p. 51)

This proposal for a marginal proportional reserve was a variant of another monetary principle, which Williamson (1995, p. 5) later called the 'gold standard rule'. Like the marginal currency board rule, it provided an automatically stabilising monetary response to external imbalances, but it differed from the marginal currency board rule because the monetary impact of changes in foreign reserves would be augmented by the impact of matching changes in the monetary authorities' domestic assets.

Although the proposal would not have initially yielded any free reserves, in the long run it might well have brought greater seigniorage gains than the marginal currency board rule. On the other hand, Nevin (1961, p. 15n) suggested that '[t]he use of a percentage regulation would involve the monetary authorities in embarrassing and unnecessary sales of local assets whenever the total currency issue fell, however temporarily'. In any case, in most colonies the lack of developed financial markets would have impeded such sales.

Newlyn and Rowan, broadly following Mars's line of argument, used the experience of the East and West African currency boards to construct an estimate of the percentage of existing foreign reserves that could be regarded as excessive:

The maximum extent of the cyclical contraction in the currency on issue in East and West Africa, in the inter-war period, amounted to 36 per cent and 40 per cent respectively. If the long-term trend of currency outstanding continues upwards (a not unreasonable assumption), then an estimation of reserve requirements based simply on cyclical variations will be on the safe side. Moreover, the depression of the thirties was exceptionally severe, and it seems unlikely that changes of the same proportional magnitude will occur in the currency supply in the future. ... As a consequence it is not unreasonable to argue that as much as 50 per cent of the existing currency issue could be made fiduciary. (Newlyn and Rowan 1954, p. 202)

Newlyn and Rowan also put forward two alternative proposals for monetary reform in British colonial Africa, both of which allowed for sterling reserves freed by the introduction of a fiduciary issue to be used to stabilise incomes in some future recession or finance development expenditure. One proposal was for the establishment of fully-fledged central banks. With a couple of exceptions, however, Newlyn and Rowan did not believe that the economic characteristics of the colonies they examined were such that there would be sufficient gains in terms of fostering stabilisation or development to warrant the extra costs of central banks.<sup>11</sup>

The other, less radical proposal was for a modified currency board system. The modifications included (*à la* Mars) a 'fixed' fiduciary element and an obligation to adhere to the marginal currency board rule. Thus '[t]he ratio between increments (decrements) in currency and increments (decrements) in reserves would continue to be 100 per cent', although it 'would, of course, be necessary to revise the amount of the fiduciary issue from time to time to take account of trend

increases in the permanently localised currency' (Newlyn and Rowan 1954, p. 260).

Irrespective of the relative merits of the two proposals, Newlyn and Rowan's (1954, p. 259) conclusion that a reserve equal to 50 per cent of outstanding currency would be 'perfectly adequate for the maintenance of convertibility' provided a clear and defensible benchmark, at least for British colonial Africa. It had, moreover, the appeal that it was seemingly not inconsistent with the traditional practice of British colonial currency boards of holding liquid reserves amounting to only 30 to 50 per cent of their currency issues.<sup>12</sup> Nevertheless, there was questioning of the proposition that, in general, foreign reserves could be reduced to only half the currency issue. Greaves (1954, p. 14), a strong defender of the colonial currency board system, asserted that:

[t]o reduce the sterling counterpart funds by anything like 50 percent would be to take a great risk in circumstances so largely dependent on the course of international affairs, economic and political, beyond the control of the colonial authorities. Probably around one third of the present total is as much as could safely be released from the funds of the older currency authorities; the percentage would certainly be smaller from those of the newer ones.

Birnbaum, who used the term 'automatic currency countries' to cover both currency board economies and those where a foreign currency was the 'circulating medium', provided some support for Greaves. In a study of 'relatively underdeveloped' countries with discretionary monetary systems (that is, central banks), he found that:

.... of the 20 countries examined, most of those with the more adequate reserves (as indicated by their comparative freedom from stringent restrictions and frequent devaluations) have held foreign assets equal, on the average, to about 70 per cent or more of their currency issue during the period 1948-55. This suggests that automatic currency countries which are similar in essential respects to these countries could expect, by adopting an independent system, safely to reduce their foreign asset holdings by an amount equal to no more than about 30 per cent of the assets now immobilized as currency cover or circulating medium. (Birnbaum 1957, pp. 489-90)

Assuming that the level of foreign reserves needed to maintain convertibility varied with the value of imports, Birnbaum conceded that a greater reduction in reserves might be feasible for currency board economies with a relatively low propensity to import or a relatively high ratio of currency to national income. Further, since the currency/income ratio equals the proportion of the money supply held as currency divided by the income velocity of money, this argument implied that, other things being equal, scope for reducing the reserve backing of the currency would be greater the larger was the proportion of the money supply held as currency or the lower was velocity.<sup>13</sup>

On the other hand, Birnbaum also suggested that some currency board countries might have no excess reserves at all:

[e]ven after the adoption of a discretionary currency system, countries with a high propensity to import which now operate under an automatic currency system might find it impossible to release any of their holdings of foreign assets now immobilized as currency cover. (Birnbaum 1957, p. 488)

Birnbaum seems to have been the only participant in the debate about the seigniorage problem to make use of the ratio of reserves to imports as a measure of reserve adequacy. Yet by 1960, despite its widely recognised shortcomings, this ratio was to become the standard approach to quantifying reserve adequacy in the growing literature on international liquidity (Williamson 1973, p. 689).<sup>14</sup> More specifically, there emerged a general rule of thumb that, on average, 'a country wishing to maintain a fixed exchange rate needs to maintain reserves equal to three to four months' worth of imports' (Williamson 1995, p. 32).

Application of this rule to two early postwar currency board economies for which data can be located provides counterfactual illustrations of the exceptions or qualifications that Birnbaum made to his general conclusion about the scale of excess reserves. In the case of the very open economy of Malaya, data from the report of the World Bank mission quoted above indicate that in 1953 merchandise imports (admittedly inclusive of imports for re-export) were equivalent to as much as 56.0 per cent of GDP. In the same year, currency board reserves amounted to 14.7 per cent of GDP.<sup>15</sup> If, however, Malaya had abandoned its currency board at that time but still wished to maintain its existing fixed exchange rate, a three-and-a-half months version of the rule of thumb suggests that it would have needed reserves equal to 16.3 per cent of GDP. Clearly, in these circumstances there would have been no excess reserves, and the existing currency board would not have imposed a seigniorage problem.

A very different story emerges for the much less open economy of the Philippines. In 1947, imports of goods and services were 28.0 per cent of GDP, while official foreign exchange holdings were proportionately the same as for Malaya in 1953, 14.7 per cent of GDP.<sup>16</sup> Had the Philippines abandoned its currency board arrangement in 1947 but kept its fixed exchange rate, the three-and-a-half months version of the rule of thumb suggests that it would have needed reserves of only 8.2 per cent of GDP, leaving excess reserves of 6.5 per cent. In other words, the rule suggests that 44 per cent of the existing reserves were unnecessarily immobilised in support of the currency.<sup>17</sup>

In view of the criticisms of the reserves-imports ratio as a measure of reserve adequacy,<sup>18</sup> it is likely that little significance can be attached to these calculations. Nevertheless, the estimated magnitude of the Philippines' excess reserves does raise the question of how much net benefit might have been gained from putting such resources to other uses, say by adding to the domestic physical capital stock. Thanks partly to Lampman's (1967) pioneering research nearly forty years ago on the sources of early postwar Philippine growth, it is possible to attempt a very rough answer.

In perhaps the first growth accounting study of a developing country, Lampman sought to identify how much of the economic growth of the Philippines was the result of increases in factor inputs (labour, land and reproducible capital) and how much was the result of increases in total factor productivity. The task involved the preparation of estimates of factor shares in total income and rates of change of factor inputs, which Lampman (1967, p. 177) freely conceded were 'based upon incomplete data of unknown accuracy and required the use of some truly heroic assumptions'. Nevertheless, combining elements of his database with later national accounts information, it is possible to derive an approximate figure of 1.7 for the net capital-output ratio in 1947. When this figure is divided into an estimated 21 per cent share of net domestic product (income) accruing to capital,<sup>19</sup> the result is an average rate of return to capital of 12 per cent. If one is prepared to

make the usual competitive assumptions, it follows that the marginal product of capital in the Philippines in 1947 was also 12 per cent. This is a relatively high estimate, but it is not implausible, given the substantial reduction that had occurred in the country's physical capital stock as a result of damage and destruction during World War II.<sup>20</sup>

To calculate the seigniorage gains from transforming the apparent excess foreign reserves of the Philippines into domestic capital, it is also necessary to estimate the foreign rate of return earned on these reserves. The Philippine currency reserves consisted primarily of US dollar deposits, but even if the excess component of the reserves had been held in medium and long-term US government bonds, it would have earned an average return in 1947 of only about 2 per cent per annum.<sup>21</sup> Using this figure, the net rate of return from repatriating excess reserves to finance additional domestic investment would have been 10 per cent (12 per cent on the additional investment less 2 per cent on the forgone reserves). Given that excess reserves were estimated to be equal to 6.5 per cent of GDP in 1947, it follows that their repatriation would have resulted in a one-off net social gain equivalent to only 0.65 per cent of GDP in that year.<sup>22</sup>

Of course, it can be argued that, on top of this one-off gain, there would have been an opportunity for additional social gains from the Philippines abandoning its currency board arrangement. Such gains might have emerged if economic growth induced an increasing demand for currency that could be met by increases in the currency issue without matching increases in foreign reserves. But the size of these gains would have been limited by the extent to which additional reserves were needed to support a fixed exchange rate in the face of a growing volume of international transactions. Assume a 5 per cent rate of growth of GDP, a continuing 15 per cent currency/GDP ratio, the previously used 8.2 per cent ratio of required foreign reserves to GDP, and a rate of return on investing resources at home 10 percentage points greater than that on foreign reserves. In these circumstances, the additional annual net social gain would have been just 0.03 per cent of GDP.

## 6 Conclusion

If the preceding estimates have any 'ballpark' plausibility at all, one may well wonder, along with Williamson (1995, p. 20), 'whether too much was not made of the seigniorage issue in the arguments in favour of replacing currency boards by central banks in the literature of the 1950s'. Certainly, Ida Greaves thought so. After suggesting as early as 1954 that possibly 'the most satisfying reflection for the critics of the "idle" balances locked up in the Currency Funds is that the colonies with the largest amounts will perhaps soon have central banks and independent currencies', she pointedly added: '[t]hey will then find the funds very useful as reserves' (Greaves 1954, p. 14).

Underlying Greaves's comment was recognition that events, specifically the political processes of decolonisation, were rapidly overtaking scholarly debate. Irrespective of economic reality, political leaders in newly independent countries and in colonies moving towards self-government largely took for granted that political independence would permit the achievement of monetary and financial independence. For them, a central bank was a desirable symbol of this achievement. Possession of a central bank 'was as much a question of prestige and status as

operating a national airline, constructing a parliamentary building and establishing an embassy' (Basu 1967, p. 52).

By the 1960s, in response to this pressure, central banks had replaced many currency boards. In addition, dating from changes introduced in principle as far back as December 1954, there had been opportunities for the remaining British colonial currency boards to hold limited proportions of their currency backing in local assets. The result was that discussion of the seigniorage problem largely retreated from academic journals and official reports to a few scholarly monographs and an apparently solitary evaluation in one of the many textbooks then emerging to meet the teaching demands of the new sub-discipline of development economics:

When the central bank first took over the reserves from the currency board, the release of funds .... was sometimes quite substantial, but it was a once-for-all transfer. How far the central bank can release funds for domestic investment on a continuing basis depends on how seriously it takes its duty of maintaining the external value of the currency. If, for instance, it wishes to achieve the same degree of stability of the external value of the currency as under the old system, it cannot hope to economize its reserves very much to release funds for other purposes. One of the hard facts of life is that the external world tends to have more confidence, other things being equal, in a national currency which is freely convertible into a well-established international currency than in one which is not convertible. (Myint 1964, pp. 82-3)

This evaluation does not canvass all the issues involved in the seigniorage problem. It provides, nevertheless, a useful concluding summary of the conventional wisdom that had evolved from the often-spirited exchanges of the late 1940s and 1950s.

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## Notes

1 The author is grateful for the comments of two anonymous referees. An earlier version of the paper was presented at the 17<sup>th</sup> Conference of the History of Economic Thought Society of Australia, held at the University of Western Australia, July 2004.

2 In the 1890s, the Imperial Treasury rejected compromise proposals to allow the British West Indian and British West African colonies to share in the seigniorage profits arising from their use of British coin (Rowan 1954, pp. 423-5).

3 In some cases, boards were required to hold a statutory minimum percentage of total assets in liquid form.

4 Estimates derived from data found in Drake (1969, pp. 31-3).

5 Williamson might perhaps more appropriately have called it 'the new seigniorage problem', given the early resistance by the British Treasury to colonies sharing in the seigniorage profits arising from their use of British coin. See note 2.

6 Hazelwood (1954, p. 313) and Newlyn and Rowan (1954, p. 260) recognised the possibility of loss of confidence in the currency, but did not explore the above argument, which seems to have achieved some prominence only in the last decade. See Williamson (1995, p. 20) and Hawkins (2003, p. 6).

7 Absorptive capacity is presumably determined in part by the availability of factors of production that are complementary to physical capital, for example, technical and managerial skills. It may also be dependent on the size of domestic markets and, in particular, opportunities to exploit economies of scale. Writing outside the time frame of the present paper but addressing the same issue, Drake (1983, p. 14) raised the possibility that 'the smaller the economy the less likely in general that the net rate of return on home investment would exceed the rate available from overseas investment'. In other words, the smaller the economy the less likely is the prospect of a currency board giving rise to the seigniorage problem.

8 Some much more recent contributors to the currency board literature have sought to play down the costs of the seigniorage problem by suggesting that, after adjusting for risk, differences in rates of return on domestic and foreign investments have not been significant. See, for example, Hanke and Schuler (1995, pp. 93-4). Hazelwood's comment suggests that their analysis may be less than complete.

9 In other words, free reserves would allow sterilisation of the monetary effects of balance-of-payments disequilibrium.

10 Excess reserves could exceed the maximum fiduciary issue consistent with convertibility when total reserves were greater than 100 per cent of currency issue.

11 The exceptions were Nigeria and Southern Rhodesia. Nevertheless, because of the imminent formation of a Central African Federation covering Southern Rhodesia, Northern Rhodesia and Nyasaland, and the importance of Southern Rhodesia within the Federation, Newlyn and Rowan (1954, p. 282) were prepared to countenance a central bank for the Federation as a whole.

12 See Schuler (1992).

13 Hazelwood (1954, p. 309) had already noted the significance of the proportion of the money supply held as currency, when he argued that the gain in terms of freeing excess reserves could be expected 'to be smallest in territories where banking is well developed, and where currency forms a relatively small part of the money supply. In territories where the great majority of internal transactions are carried out with currency, the gain from releasing a part of the currency backing is likely to be substantial.'

14 The shortcomings of the reserves-imports ratio include the fact that reserves finance deficits, not trade; deficits arise from capital flows as well as trade flows; neglect of reserve-borrowing facilities; and failure to allow for the extent to which monetary authorities seek to eliminate rather than finance deficits. See, for example, Williamson (1973) and Bird and Rajan (2003).

15 This percentage slightly exaggerates the size of Malaya's reserves because the Malayan currency board covered British North Borneo as well as Malaya (that is, as well as the Federation of Malaya and the Colony of Singapore).

16 These estimates are derived from data in Central Bank of the Philippines (1966) and Office of Statistical Coordination and Standards (1969).

17 If the rule is applied in terms of only merchandise imports, the figure rises to 51 per cent, which is close to the estimate made by Newlyn and Rowan for the African currency boards, using a very different method.

18 See note 14.

19 The 21 per cent share of net domestic product accruing to capital is derived from Lampman's estimate of a 20 per cent share of national income accruing to capital, with adjustments for factor income payable abroad. (Lampman's estimates of factor shares were derived from 1961 data, but were assumed to apply for all years of his study, 1947-1965.)

20 See Treadgold (2003, p. 68).

21 In 1947, 7- to 9-year US government bonds had an average yield of 1.59 per cent and 15-year or more bonds had an average yield of 2.25 per cent (*Federal Reserve Bulletin* June 1950, p. 710).

22 A social gain equivalent to 1.0 per cent of GDP would have required a net rate of return from repatriation of reserves of over 15 per cent.

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