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The Philippine currency board arrangement, 1945–48: a case of deflationary bias?[1]

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A currency board is a monetary authority that issues and redeems domestic currency on demand against a specified foreign currency at a fixed rate of exchange, while holding foreign currency reserves equal to at least 100 per cent of its issue of domestic currency. Unlike a central bank, a currency board is not permitted to buy or sell domestic assets, such as government bonds, so that, in effect, changes in the monetary base are solely the result of (and equal to) imbalances between the country's international receipts and payments.

Common in colonial territories during the first half of the twentieth century, currency boards were largely replaced by central banks in the postwar era of decolonisation. Over the 1990s, however, new currency boards emerged, first, in Argentina and, then, in some smaller eastern Europe economies. Their appearance has prompted renewed discussion of currency boards' advantages and disadvantages.[2]

One unresolved issue from earlier debates about colonial currency boards is the claim that such a monetary arrangement imparts a deflationary bias to a growing economy. This is based upon the argument that, while economic growth increases the demand for money balances, the behaviour of the monetary base and, hence, the expansion of the nominal supply of money under a currency board system are constrained by the state of the country's balance of payments. To the extent that this constraint results in monetary tightness, there is a tendency for the aggregate demand for goods and services to lag behind the growth of productive capacity, leading to a falling domestic price level and/or output dropping below capacity levels. As summarised by Drake:

The argument can be expounded in terms of the familiar tautology $MV \equiv PT$; where M is

[1] The author wishes to acknowledge the helpful comments of Peter Drake, the late Heinz Arndt and an anonymous referee.

[2] J. Williamson, *What Role for Currency Boards?* (Washington, DC, 1995) provides perhaps the most balanced discussion. Other contributions include: A. J. Schwartz, *Do Currency Boards have a Future?,* Institute of Economic Affairs Occasional Paper 88 (London, 1992); K. Osband and D. Villanueva, 'Independent currency authorities: an analytic primer', *IMF Staff Papers*, 40 (1993); and S. H. Hanke and K. Schuler, *Currency Boards for Developing Countries: A Handbook* (San Francisco, 1994).

the quantity of money, V the income velocity of circulation, P an index of all prices and T real domestic product. The deflationary bias argument is that, if real output T grows without a corresponding surplus in the balance of payments so that M cannot be increased (once the banks are 'fully loaned'), then if V is constant, P must fall. Alternatively, with V constant and if P is inflexible downwards, the growth of T will be restrained because M cannot grow without a continuing surplus in the balance of payments.[3]

The first aim here is to review the origins, development and criticisms of the deflationary bias hypothesis. The second is to investigate whether the Philippine currency board arrangement during the years immediately following the Second World War provided an example of deflationary bias.

I

The earliest published claims that a currency board exerts a deflationary influence on an expanding economy seem to have been made in 1948 by Mars writing on Nigeria, and by Grove and Exter writing on the Philippines.[4] According to Mars, the Nigerian economy appeared subject to 'a steady deflationary drag on prices of home-produced and home-consumed commodities and services'.[5] He attributed this to the 100 per cent sterling-exchange standard (the form of currency board then operating in Nigeria) because it left 'the volume of localised currency ... determined ... by the balance of payments between Nigeria and the rest of the world, regardless of the colony's internal currency needs'.[6] In particular, actual increases in currency in circulation failed to match increases in demand for currency driven by

> such factors as the growth of population, ... the continuing encroachment of the monetary exchange sector upon the barter sector of the economy, the increasing specialisation which gives rise to production for a market instead of for self-consumption, and the emergence of a financial circulation due to sales of land, town property and capital goods.[7]

Grove and Exter were economists on the staff of the Board of Governors of the

[3] P. J. Drake, *Money, Finance and Development* (Oxford, 1980), p. 95.

[4] J. Mars, 'The monetary and banking system and the loan market of Nigeria', in M. Perham (ed.), *Mining, Commerce, and Finance in Nigeria* (London, 1948); and D. L. Grove and J. Exter, 'The Philippine Central Bank Act', *Federal Reserve Bulletin*, 34 (1948). In the same year, Sir Sydney Caine, writing under the pseudonym 'Special Correspondent', also noted very briefly that the currency board system 'is alleged to be deflationary', but did not explain the basis of the allegation or who made it ['Monetary systems of the colonies', *The Banker*, 87 (Jul. 1948), p. 24]. It is possible that Caine had early knowledge of the work of either Mars or Grove and Exter. There is, however, some evidence to indicate that, in fact, he had Keynes in mind as the source of the allegation. According to Professor John M. Letiche, University of California at Berkeley, Caine later informed him that Keynes had written to the UK Treasury some time during the Second World War, criticising the currency board system as a mechanism that operated in a restrictive manner (J. M. Letiche, personal communication, Mar. 2002).

[5] Mars, 'The monetary and banking system and the loan market of Nigeria', p. 195.

[6] ibid., p. 200.

[7] ibid.

United States Federal Reserve System. They had been made available to the Philippine authorities to assist with legislation for a central bank to replace the Philippine currency board arrangement. Apparently independently of Mars's work on Nigeria, they wrote:

> When a system requiring a 100 per cent reserve against the note issue is applied to a growing economy, it may logically be expected to impart to it a consistent deflationary bias. In order to create the larger money supply required for an increasing population and an ever-expanding domestic trade, it would be necessary for the country to have a persistently active balance of payments, which in itself would be a costly luxury for an under-developed economy.[8]

Later in 1948 the Federal Reserve Board System also lent Exter's services to the Government of Ceylon to advise upon establishing a central bank. In his 1949 report to the Ceylonese Minister of Finance, he again identified the currency board system as possessing a deflationary bias. In terms slightly more detailed but essentially identical to the Grove and Exter article, he observed

> such a system may be expected to impart a consistently deflationary bias to a growing economy. As Ceylon's population increases and its domestic trade expands, it will naturally require an ever-increasing money supply. In the absence of a highly developed banking system, under which a significant expansion of bank credit would be possible, an increased money supply can be achieved only through a persistently active balance of payments on current account, or by borrowing abroad without using the proceeds to import goods. An active balance of payments is a costly luxury for an under-developed country, and as for borrowing abroad, it neither makes economic sense to incur foreign indebtedness in order to finance domestic expenditures in a country's own currency, nor is such practice on any significant scale likely to be possible in the present-day world.[9]

Subsequent writers developed several qualifications to the deflationary bias argument. First, 'Analyst', although supportive of the argument, raised the possibility that the deflationary effect exerted by a money supply that is inelastic in the face of an expansion of output may be offset by an increase in the velocity of circulation.[10] Such an increase may be a product of the financial development that normally accompanies economic growth. In particular, Drake noted that 'as the spread and refinement of banking and credit habits generate greater transactions efficiency and give rise eventually to a widening range of liquid assets, the velocity of circulation of narrow money may increase'.[11]

Second, irrespective of the possible cost, or inappropriateness, of overall surpluses in the balance of payments of an underdeveloped country, it was recognised that

[8] Grove and Exter, 'The Philippine Central Bank Act', p. 939.

[9] Ceylon, *Report on the Establishment of a Central Bank for Ceylon*, Sessional Paper XIV, 1949 (Colombo), p. 5.

[10] 'Analyst', 'Currency and banking in Jamaica', *Social and Economic Studies*, 1 (Aug. 1953), p. 47.

[11] Drake, *Money, Finance and Development,* p. 95. See also idem, *Financial Development in Malaya and Singapore* (Canberra, 1969), p. 61.

the process of colonial economic growth might itself give rise to such surpluses. In their analysis of the possibility of '[i]nadequate secular elasticity of the money supply' under the currency board systems of British colonial Africa, Newlyn and Rowan identified several ways by which growth of real income per capita was likely to occur. Four of their six 'most obvious possibilities' (a progressive improvement in the terms of trade; an increase in productivity in export industries; an increase in productivity in import-competing industries; and a continuous process of externally-financed net investment) would exert directly positive influences on the balance of payments.[12] Provided these influences yielded continuing balance-of-payments surpluses large enough to permit money supply increases that matched growth-induced increases in the demand for money, deflationary pressures could be avoided.

A third qualification focused on the deposit-creation process, as summarised in the money multiplier relationship between the monetary base and the money supply. Declines in the reserve-to-deposit ratios of banks, and/or in the proportion of the money supply that the public seeks to hold as currency rather than deposits, lead to a greater money supply for a given level of the monetary base. Walters referred to both these domestic sources of increase in the money supply but argued that, in the long run, declines in the currency-deposit ratio were the more important. In particular, he claimed that '[t]he stability and confidence generated by the currency board system undoubtedly much encouraged the use of deposits'. Indeed, he went so far as to suggest that this nullified the argument that the currency board system provides 'a stultifying monetary constraint'.[13]

Fourth, quite early in the deflationary-bias debate, it was pointed out that, because commercial banks operating under colonial currency board systems were usually branches of international banks, they were not dependent on the resources they were able to mobilise within the colonies.[14] More specifically, their ability to borrow from their (overseas) head offices meant that local reserves did not constrain their ability to expand credit and hence the money supply. Thus, if the demand for money increased because of economic growth, resulting deflationary pressures could be counteracted by induced capital inflow from head offices generating balance-of-payments surpluses and increases in the monetary base.

More generally, it was later argued that, where there was internationally mobile capital, the upward pressure on interest rates caused by a growth-induced increase in the demand for money would attract an influx of foreign capital that would add

[12] W. T. Newlyn and D. C. Rowan, *Money and Banking in British Colonial Africa: A Study of the Monetary and Banking Systems of Eight British African Territories* (Oxford, 1954), p. 196.

[13] A. Walters, 'Currency boards', in J. Eatwell, M. Milgate and P. Newman (eds), *The New Palgrave: A Dictionary of Economics* (New York, 1987), p. 741.

[14] A. Hazelwood, 'The economics of colonial monetary arrangements', *Social and Economic Studies*, 3 (Dec. 1954), p. 305. See also the passages from I. Greaves, *Colonial Monetary Conditions* (London, 1953) cited by Hazelwood.

to foreign-exchange reserves and, thus, the monetary base.[15] Indeed, in a situation of perfect international capital mobility, there would be no possibility of deflationary bias. Any increase in the demand for money would automatically induce a matching increase in the supply of money.

Early exponents of the deflationary-bias hypothesis focused more on the conditions under which such a bias would emerge than on its consequences. By and large, they seem to have subscribed to the view that the monetary tightness or credit scarcity associated with the bias would exert a negative feedback effect on economic growth, but they did not explore in any detail the nature of this effect. There does, however, appear to have been some recognition that, for small dependent economies in which the domestic prices of tradeables were essentially determined by given world prices and the fixed exchange rate, the impact would be felt largely in the non-tradeable sector. As already noted, Mars referred to the 'deflationary drag on prices of home-produced and home-consumed commodities and services'. Subsequently, he explicitly identified 'a depressing effect on native production for home consumption'.[16] 'Analyst' couched his example of deflationary bias in terms of the effects of a larger quantity of local output, 'which is not production in substitution of imports', coming on to the home market.[17] And Newlyn and Rowan stated that 'a secular monetary stringency may exert a deflationary effect, particularly in the domestic sector, and inhibit development by discouraging the spread of the market in that sector of the economy'.[18]

Although he did not use the term deflationary bias, Corden made perhaps the first attempt to analyse its labour market implications. In discussing the balance-of-payments prospects of newly independent Malaya under a currency board arrangement, he wrote

> Suppose export income stays constant over the next ten years or so. Leaving aside the various qualifications ... the monetary system will then ensure that imports stay approximately constant. This will be achieved by maintaining approximately constant the level of total expenditure. Monetary demand will not be expanded to purchase the potential increase in output due to growth in population and capital. There would tend to be growing unemployment of a Keynesian nature ... This situation may be modified by an element of flexibility in money wage and profit rates so that Malaya may to some extent adapt itself to a fall in the ratio of money supply to potential output.[19]

Corden's analysis suggests that, under conditions of downward inflexibility of prices and/or money wages, a deflationary bias might more aptly be called a contractionary

[15] Drake, *Financial Development in Malaya and Singapore*, p. 60n. See also idem, *Money, Finance and Development*, p. 96.
[16] Mars, 'The monetary and banking system and the loan market of Nigeria', p. 200.
[17] 'Analyst', 'Currency and banking in Jamaica', p. 47.
[18] Newlyn and Rowan, *Money and Banking in British Colonial Africa*, p. 196.
[19] W. M. Corden, 'The Malayan balance of payments problem', in T. H. Silcock and E. K. Fisk (eds), *The Political Economy of Independent Malaya: A Case-Study in Development* (Canberra, 1963), p. 127.

bias as, indeed, it has been so termed by some later authors.[20] His analysis, however, also points to at least the possibility of what may be called a pure deflationary bias. Flexible prices and money wages ensure that an inelastic nominal money supply results in a falling price level without adverse real effects on the growth of output and employment. In this case, price deflation causes the stock of real money balances to increase to meet the growth-induced increase in demand for these balances. The real money supply expands partly because price deflation directly augments the real purchasing power of the existing nominal money supply and partly because it also indirectly increases the nominal money supply by improving international competitiveness and thus the balance of payments situation.

Of course, in the extreme case of a dependent economy in which all output is tradeable and in which all domestic prices are therefore determined (subject to transport costs, tariffs and the like), by given world prices and the exchange rate, a growth-induced increase in the demand for money would affect neither output nor the price level. In other words, there could be neither a contractionary bias nor a pure deflationary bias. The adjustments in absorption and net borrowing resulting from monetary tightness would bring about an overall balance-of-payments surplus sufficient to generate an expansion in the nominal money supply equal to the increase in the demand for money, without forcing either contraction or deflation upon the economy. This proposition is a well-known feature of the so-called monetary approach to the balance of payments that emerged during the 1970s.[21] Despite reservations about the empirical relevance of some of the assumptions from which it was derived, the proposition attracted considerable attention in open economy macroeconomics. Taken in conjunction with the very large reduction that had occurred in the number of currency boards by the 1970s, it served to discourage further attempts to refine and develop the theory underlying the deflationary bias hypothesis.[22]

II

Attempts to explore whether currency boards did actually impart deflationary biases during the colonial era have been limited, fragmentary and largely impressionistic.

Mars found a downward trend in the prices of domestic consumer goods in

[20] A. Hossain and A. Chowdhury, *Monetary and Financial Policies in Developing Countries* (London, 1996), p. 192; and idem, *Open-Economy Macroeconomics for Developing Countries* (Cheltenham, 1998), p. 210.

[21] See, for example, R. Levacic and A. Rebmann, *Macroeconomics: An Introduction to Keynesian-Neoclassical Controversies* (London and Basingstoke, 2nd ed., 1982), ch. 11.

[22] The number of countries (mainly dependent territories) that were subject to currency board arrangements declined from over 50 in the late 1940s to about 15 at the end of the 1970s. [Estimates derived from data found in K. A. Schuler, Currency boards, Ph.D. dissertation (George Mason University, Fairfax, Virginia, 1992), pp. 78–81 (available http://users.erols.com/kurrency/webdiss1.htm, accessed 9 Oct. 2002.]

Nigeria between 1927 and 1938.[23] This evidence is, however, far from sufficient to demonstrate deflationary bias, given a lack of information on Nigerian economic growth and that for much of the period the international economy was in depression. Grove and Exter followed their exposition of the deflationary bias hypothesis by the admission that it 'would be difficult to demonstrate conclusively' that the operation of the currency board system in the Philippines before the Second World War 'was a major deterrent to the full development of the country's economic potentialities'. They could suggest only that 'some of the more serious depressing effects of the system were undoubtedly obscured' by various favourable exogenous factors in the Philippine balance of payments.[24] Exter, writing on Ceylon, also failed to offer any empirical analysis to support his assertion that a currency board system 'can do nothing to make more credit available to meet the growing needs of an expanding economy'.[25] This left him exposed to Greaves's riposte that 'Ceylon has had an expanding economy for the past ten, fifty and even hundred years, and has certainly not been entirely without credit all this time.'[26]

'Analyst' presented data for Jamaica that showed a rising income velocity of circulation during the immediate postwar period. Ignoring the possibility that the income-elasticity of demand for money was less than one, he argued that 'if the figures are correct, it would be proper to say that the supply of money did not keep pace with the requirements of the economy'.[27] He did not, however, provide evidence of the downward pressure on output or the price level that could have been expected in such circumstances.

The only study to adopt a quantitative modelling approach to the question of the empirical relevance of the deflationary bias hypothesis during the colonial era seems to have been that of Peera.[28] Using data for five British colonies in the 1950s, he sought to establish whether the currency board system imparted a deflationary bias under the particularly stringent condition of export-led economic growth. His method amounted, in effect, to a comparison of the estimated increase in demand for money per dollar of export-led growth in income with the corresponding estimated increase in supply. In three cases (Malaya, Nigeria and Ghana), the increase in demand appeared greater, suggesting a likelihood of deflationary bias. But the parameter estimates were unavoidably crude and, again, no direct evidence was provided on output or price-level responses.

Finally, Letiche made use of estimates of currency in circulation in East Africa that he had compiled for a period extending from before the First World War until

[23] Mars, 'The monetary and banking system and the loan market of Nigeria', p. 198.
[24] Grove and Exter, 'The Philippine Central Bank Act', p. 939.
[25] Ceylon, *Report on the Establishment of a Central Bank for Ceylon*, p. 4.
[26] Greaves, *Colonial Monetary Conditions*, p. 64.
[27] 'Analyst', 'Currency and banking in Jamaica', p. 50.
[28] N. Peera, 'The colonial monetary system and export-led growth', unpublished typescript (University of Salford, no date). This paper is cited in Drake, *Money, Finance and Development*, p. 96. The assistance of Professor Drake in providing a copy of the paper is gratefully acknowledged.

the 1960s to argue that, although the volume of currency displayed great short-run fluctuations, '[i]n the long run ... the East African Currency Board system did not operate in a restrictive manner. From 1913 to 1961, the annual rate of increase of the total *currency* in circulation was 8.5%, and from 1946 to 1961 it was 6.3%.'[29]

Taken as a whole, these studies of colonial currency boards clearly failed to offer much empirical support for the deflationary-bias hypothesis. The result has been that critics have dismissed the hypothesis as a mere theoretical possibility, built upon assumptions that 'rarely or never apply to actual currency board systems'.[30] Indeed, it has been claimed that:

> [t]he countries that have retained their currency board arrangements, Hong Kong and Singapore, have been the highest growth economies in the oil-importing Third World. Their money supply has expanded partly through current balance surpluses and capital imports, but mainly through the increased use of deposits associated with the financial stability of the currency board system.[31]

This claim needs to be qualified. Hong Kong effectively abandoned its currency board system from 1972 to 1983, and Singapore has not had a fixed exchange rate since 1973, although it has retained foreign exchange backing of 100 per cent or more against the monetary base. Nevertheless, the growth performances of Hong Kong and Singapore during their orthodox currency board periods do appear to contradict the deflationary bias hypothesis in its contractionary sense. Moreover, no indication of a deflationary bias in the contractionary sense emerges from a recent study of modern currency boards by Ghosh, Gulde and Wolf. Using annual data for varying periods from the 1970s to the 1990s, they found that:

> countries with currency boards actually grew faster than the average of all countries with pegged exchange rate regimes. While one might hesitate to ascribe the better growth performance to the exchange rate regime, the argument that the adoption of currency boards invariably entails lower growth (perhaps through real overvaluation or a general 'straitjacketing' of credit policy) receives no real support from the data.[32]

Of course, this finding does not rule out the possibility of a pure deflationary bias that shows up in price level behaviour without adverse real effects on economic growth. In this respect, it is noteworthy that Ghosh, Gulde and Wolf also found the annual inflation rate for currency board countries to have been, on average, about four percentage points below that for countries with other pegged exchange rate

[29] J. M. Letiche, 'Dependent monetary systems and economic development: the case of Sterling East Africa', in W. Sellekaerts (ed.), *Economic Development and Planning: Essays in Honour of Jan Tinbergen* (London, 1974), p. 193.

[30] Hanke and Schuler, *Currency Boards for Developing Countries: A Handbook*, p. 91. See also Schwartz, *Do Currency Boards have a Future?*, p. 14.

[31] A. Walters and S. H. Hanke, 'Currency boards', in P. Newman, M. Milgate and J. Eatwell (eds), *The New Palgrave: A Dictionary of Money and Finance* (New York, 1992), p. 561.

[32] A. R. Ghosh, A.-M. Gulde and H. C. Wolf, 'Currency boards: the ultimate fix?', *Working Paper of the International Monetary Fund*, WP/98/8 (Jan. 1998), p. 7.

regimes. Their econometric results imply, however, that the traditional deflationary bias mechanism based on the interaction of growth-induced increases in the demand for money and a money supply constrained by the balance of payments could not have accounted for more than 0.5 percentage points of this inflation differential. They attributed most of the differential to the greater confidence that a currency board engenders in the domestic currency: '[t]his confidence effect raises money demand, and results in lower inflation for a given growth rate of the money supply' (and for a given growth rate of real income).[33]

Despite the evidence that modern currency boards have not been subject to deflationary bias in the contractionary sense and have experienced only a very small pure deflationary bias, their existence, or non-existence, still remains an open question for at least the earlier currency board systems. The rest of this article seeks to throw a little light on this issue by examining the experience of the Philippines in the final years of its currency board arrangement.

III

For much of its life, the Philippine version of the currency board system was described as a gold-exchange standard because it was originally intended to serve as a form of gold standard that did not require domestic circulation of gold coins or the maintenance of gold reserves in the Philippines.[34] When the Philippine gold-exchange standard was established in 1903, five years after the colony was ceded to the United States at the end of the Spanish-American War, a silver peso coin became the basic unit of domestic currency. This represented a theoretical gold peso that was assigned a gold content of exactly half that of the United States dollar. (At that time, the metal content of the silver peso was worth about three-quarters of its face value.) Other currency comprised subsidiary coins and official peso notes (silver certificates) issued against a 100 per cent backing of silver pesos held in a Silver Certificate Reserve. Exchange parity between the silver peso and the United States dollar and, thus, between the silver peso and the theoretical gold peso, was maintained by a Gold Standard Fund. Composed of silver pesos held in the Treasury in Manila and dollar deposits with American banks, it exchanged pesos and dollars on demand at the fixed rate of two pesos per one dollar plus commission. Hence, the quantity of pesos in circulation varied as a result of these exchanges and, thus, provided an automatic balance of payments adjustment mechanism.

Schuler has observed that

> The Philippine system was not quite an orthodox currency board. Depending on the market value of silver, the Gold Standard Fund plus the silver coins could be far more or less than 100 percent of the face value of coins and silver certificates in circulation. The original

[33] ibid., p. 3.

[34] The following description of the early years of the Philippine gold-exchange standard is based on G. F. Luthringer, *The Gold-Exchange Standard in the Philippines* (Princeton, NJ, 1934).

intent behind the system was to provide nearly 100 percent reserves, though, and peso-dollar exchange worked just as sterling exchange worked for British colonial currency boards.[35]

At least the system worked until 1919, when it broke down in the aftermath of the 1918 merger of the Gold Standard Fund and the Silver Certificate Reserve into a single Currency Reserve Fund. The collapse resulted specifically from the deposit of almost all the dollar assets of the Currency Reserve Fund with the New York branch of the newly established Philippine National Bank. In response to a balance-of-payments deficit and excess demand for foreign currency, the bank sold dollars in exchange for pesos. But, instead of withdrawing these pesos from circulation, it violated currency board principles by promptly proceeding to disburse them in domestic loans and advances. As a consequence, the money supply failed to contract and nearly 80 per cent of the dollar reserves drained away.

Obviously, the currency board system was no longer operating. In 1922, however, foreign currency reserves were rebuilt through proceeds from the sale of Philippine Government bonds in the United States, and new legislation restored the automatic balance-of-payments adjustment mechanism along currency board lines. The Currency Reserve Fund was divided back into two separate entities: a Treasury Certificate Fund and a Gold Standard Fund. The Treasury Certificate Fund, like the old Silver Certificate Reserve, provided a 100 per cent backing of the government note issue (Treasury Certificates), only now the backing was mainly in the form of dollar deposits in the United States rather than silver pesos. In addition, the new Gold Standard Fund contained a further reserve of United States dollar deposits, United States dollar currency and silver coins equal to at least 15 per cent of Philippine currency in, or available for, circulation. Quite apart from the silver content of coins, the outcome was that in 1923 United States dollar bank deposits and currency holdings provided a backing of over 80 per cent for official currency in circulation. By the end of the 1920s, this backing had risen to well in excess of 100 per cent.

The reformed currency board system operated for nearly 20 years until the outbreak of war in the Pacific. During this period, with the increased use of notes in preference to coins, the dominant role in regulating the currency issue and stabilising the exchange rate passed to the Treasury Certificate Fund. The only other significant change occurred as a result of the devaluation of the dollar against gold in 1934. Instead of maintaining parity with the theoretical gold peso, the parity of two pesos to the dollar was retained. This meant that, technically, the Philippines was now on a dollar-exchange standard rather than a gold-exchange standard. In due course it led to the Gold Standard Fund being renamed the Exchange Standard Fund.

The currency board arrangement was suspended when Japan invaded and occupied the Philippines in 1941–42. During the occupation, which lasted until the liberation of the country by United States forces in 1944–45, the Japanese issued

[35] Schuler, 'Currency boards', p. 18.

over 11,100m. pesos of fiat currency notes in payment for goods and services. (By comparison, in mid-1941 the outstanding currency issue had been only 197m. pesos, and the total money supply, measured in M1 terms, had amounted to only 295m. pesos.) The result was an inflation that became particularly severe just prior to the liberation. By January 1945, the Japanese-issued peso had a purchasing power of only one hundred-and-twentieth of the prewar peso.[36]

Liberation brought repudiation of the Japanese-issued currency and the restoration of the prewar currency board system, with the same exchange rate of two pesos to the dollar. In principle, the restoration was a relatively straightforward task because the foreign exchange reserves that had provided prewar backing for the peso had been preserved intact in the United States during the Japanese occupation. In practice, there was an immediate shortage of legal tender, resulting in a virtually instantaneous fall in prices. By prewar standards, however, they remained very high. In March 1945, the cost-of-living index for a wage-earner's family in Manila was still 5.6 times its 1941 level. Furthermore, during the next four months it was to rise again by about a third. The new bout of inflation reflected heavy United States government military and civilian expenditures, an associated rapid expansion of the legal money supply, the very limited productive capacity of a war-devastated economy, and shipping shortages that delayed the arrival of imports of consumer goods. It was only towards the end of 1945, when supplies of goods and services began to catch up with effective demand, that inflationary pressure disappeared.

The restored currency board system was simplified in late 1946, a few months after the Philippines achieved full independence from the United States. The Philippine Congress amended the currency laws to abolish the minimum 15 per cent reserve requirement of the Exchange Standard Fund. In addition, the government appropriated the excess reserves that had emerged in the Treasury Certificate Fund as a result of currency lost or destroyed during the war. While these measures made major contributions to financing early postwar budget deficits, they did not violate basic currency board principles as they left in place a system that still required a 100 per cent reserve against the note issue. The system remained in operation until the Central Bank of the Philippines opened on 3 January 1949 in accordance with Republic Act No. 265 of the previous year. This act formally severed the automatic link between the balance of payments and the money supply by placing responsibility for control of the latter in the hands of the central bank.

IV

In the late 1930s the Philippines had a small, open, low-income colonial economy. A population of 16 million in 1938 relied mainly on agriculture for a livelihood. Over two-thirds of the labour force were employed in that sector; and more than half the GNP of 1,163m. pesos originated in agricultural production and processing,

[36] A. V. H. Hartendorp, *History of Industry and Trade of the Philippines* (Manila, 1958), p. 164.

livestock production, forestry and fishing.[37] International trade was of considerable importance. Exports, consisting mainly of tropical agricultural produce, minerals and timber, amounted to 20 per cent of GNP (or 26 per cent if gold production is included); while imports, which were dominated by textiles, metal manufactures, foodstuffs and fuels, totalled 23 per cent of GNP. The Philippines' main trading partner was the United States, which in 1937–40 took 78 per cent of Philippine exports and supplied 69 per cent of Philippine imports. This high degree of concentration in international trade reflected many years of preferential trading relations between the two economies.

The Second World War brought not only financial disruption to the Philippines, there was also heavy loss of life and widespread physical damage and destruction. The United States War Damage Corporation found that the loss of private, public and church property amounted to US$799m., or about 1,600m. pesos, an estimate apparently constructed in terms of a mix of 1939 and 1941 values.[38] Given that the price level does not appear to have changed substantially over the period 1938–41, a comparison of this estimate with the 1938 GNP of 1,163m. pesos gives some indication of the scale of the wartime reduction in the country's physical capital stock.

Golay has observed that '[c]ompletion of the liberation of the Philippines in 1945 found domestic production paralyzed'.[39] While there was a substantial improvement the following year as the effects of reconstruction and relief activity were felt, production was still very low by prewar standards. For 1946, the index of the combined physical volume of production in agriculture, manufacturing and mining was only 39 per cent of its 1937 base-year level. At the same time, despite war casualties, the population was 19 per cent greater. The result was living standards well below prewar levels. In Manila, for example, the real wages of skilled and unskilled industrial workers were, respectively, 44 and 30 per cent below 1941 levels.[40]

Recovery was, nevertheless, under way and it continued at a very rapid pace. Official national accounts estimates reveal that GDP at constant prices grew by as much as 42 per cent between 1946 and 1947, and by 18 per cent between 1947 and 1948. There are no official constant-price data for the prewar period but unofficial estimates compiled by Goodstein indicate that, by 1948, real GDP exceeded its 1938 level by nearly 11 per cent.[41] In an aggregative sense, therefore, economic activity

[37] *Report and Recommendations of the Joint Philippine-American Finance Commission* (Manila, 1947), p. 10.

[38] *Survey of War Damages in the Philippines*, Report of the Special Investigating Mission sent to the Philippines in June 1945 by the War Damage Corporation and completed in September 1945 (Washington, DC, 1945).

[39] F. H. Golay, *The Philippines: Public Policy and National Development* (Ithaca, NY, 1961), p. 67.

[40] *The Bell Report: U.S. Economic Survey Mission's Report* (Manila, 1950), p. 20.

[41] M. Goodstein, *The Pace and Pattern of Philippine Economic Growth: 1938, 1948 and 1956*, Data Paper No. 48, Cornell University Southeast Asia Program (Ithaca, NY, 1962), p. 8.

Table 1. *Price index numbers for the Philippines: percentage changes from previous year*

	1946 %	*1947* %	*1948* %	*Average annual rate of change* %
Cost of living index	-23.7	-25.8	-5.5	-18.8
Retail price index	-42.1	-39.7	-4.4	-30.6
Wholesale price index	n.a.	-38.9	-1.5	-22.4
GDP implicit price deflator	n.a.	-14.3	-12.1	-13.2

Notes: All indexes except the GDP implicit price deflator relate to Manila. The wholesale price index is an unofficial construction, derived as a weighted average of an official wholesale price index for domestic goods produced for home consumption, an official wholesale price index for export goods and an index of unit values of imports. (The last serves as a substitute for a wholesale price index for imported goods, in the absence of such an index for the period under examination.) The weights were taken from a later wholesale price index developed by the Central Bank of the Philippines.

Sources: Central Bank of the Philippines, *Fourth Annual Report*, *1952*; United Nations, *Statistical Yearbook, 1949–50*; United Nations, *Yearbook of International Trade Statistics, 1958*, vol. 1; Central Bank of the Philippines, *Statistical Bulletin*, XVIII (Sep. 1966); Office of Statistical Coordination and Standards, *Statistical Reporter*, XIII (Apr.–Jun. 1969).

was back to prewar levels, although because of population growth, the recovery of real GDP per head was still a year or two away.

The extremely rapid growth of real domestic product that the Philippine economy experienced under a currency board system during its postwar reconstruction phase provides the conditions for an empirical examination of the deflationary-bias hypothesis. The conditions are unusual in that they relate to a period of only a few years and to a growth process involving a return of economic activity to a previously attained level. Traditional expositions of the deflationary-bias hypothesis have tended, at least implicitly, to focus on what may be termed 'new' growth over a secular or at least long-run time horizon. The economic reasoning underlying the hypothesis, however, does not depend in any critical way on this particular set of circumstances. Economic growth, whether it involves restoring a previous level of real income within several years or achieving a new level over several decades, can be expected to increase the demand for money. In either case, subject to the behaviour of the money multiplier, the money supply will be constrained by the state of the balance of payments.

Granted this argument, the postwar reconstruction phase offers some striking *prima facie* support for the deflationary-bias hypothesis. In particular, as shown in Table 1, a range of price indices provide clear evidence of a continuously falling

Table 2. *Components of the equation of exchange, 1946–48*

	1946	*1947*	*1948*
M, money supply (million pesos)	1,030.0	977.5	1,104.5
V, income velocity of circulation	4.23	5.43	5.00
P, GDP implicit price deflator (1955 = 1.000)	1.474	1.263	1.110
T, GDP at 1955 prices (million pesos)	2,953	4,201	4,978
$MV \equiv PT$, GDP at current prices (million pesos)	4,354	5,306	5,525

Sources: Central Bank of the Philippines, *Statistical Bulletin*, XVIII (Sep. 1966); Office of Statistical Coordination and Standards, *Statistical Reporter*, XIII (Apr.–Jun. 1969).

price level during this period of economic growth. Between 1945 and 1948 the cost-of-living index for a wage-earner's family in Manila and the retail price index for Manila (which excluded services) fell at average annual (compound) rates of 18.8 and 30.6 per cent, respectively. In addition, between 1946 and 1948 the Manila wholesale price index and the GDP implicit price deflator for the whole Philippines fell at average annual (compound) rates of 22.4 and 13.2 per cent, respectively. (The latter two indexes do not include data for 1945.) Significantly, all indexes show a slower rate of decline between 1947 and 1948 than between 1946 and 1947, a phenomenon that is consistent with the contemporaneous slowing in the rate of growth of real GDP.

To the extent that the falling price level was indicative of a deflationary bias in the currency board arrangement, it was almost certainly of the pure deflationary type and not the contractionary type. There appears to have been 'no serious unemployment' during the postwar reconstruction phase.[42] Although a falling price level was contributing to rising real wages, indications of high corporate profits and the large volume of investment financed from retained profits suggest buoyant labour markets, as does the fact that upward movements in money wages were also contributing to the increase in real wages.[43] Admittedly, the rate of growth of real GDP decelerated in 1948 but at 18 per cent it was still extraordinarily high and in no way a reflection of an economy in recession. Much more plausibly, the deceleration can be viewed as the expected consequence of an economy approaching the completion of its reconstruction from the devastation of the Second World War.

Table 2 shows the annual macroeconomic performance of the Philippine economy from 1946 to 1948 (data for 1945 are not available) in terms of the income version of the equation of exchange identity, $MV \equiv PT$, where MV and PT are alternative ways of viewing GDP at current prices. Specifically, M is the average value of the M1 measure of money supply (calculated as the mean of successive end-of-year estimates); V is the income velocity of circulation (calculated by

[42] *The Bell Report: U.S. Economic Survey Mission's Report*, p. 21.

[43] By 1948 the real wage rates of unskilled industrial workers in Manila had risen to slightly above their 1941 level (*The Bell Report: U.S. Economic Survey Mission's Report*, p. 20).

dividing GDP at current prices by *M*); *P* is the GDP implicit price deflator on a base of 1955 = 1.000 (calculated by dividing GDP at current prices by GDP at 1955 prices); and *T* is GDP at 1955 prices.

Comparison of the first and fourth rows of Table 2 highlights the inelasticity of the nominal money supply in the face of the growth in real output that occurred during the postwar currency board arrangement. Over the two years 1946–48, when real GDP grew by 69 per cent, the nominal money supply increased by only a net seven per cent and, indeed, between 1946 and 1947, it actually fell. Thus, it was left to the decline in the price level to bring about a rate of increase of the *real* money supply much more commensurate with the rate of expansion of real output (and, by implication, with the rate of increase in demand for real money balances). Deflation of the nominal money supply by the GDP deflator yields an estimate of real money supply growth of 42 per cent between 1946 and 1948.[44]

The second row of Table 2 tracks the *ex post* behaviour of velocity, which, after rising sharply in 1947, fell back slightly in 1948, to achieve a net increase of 18 per cent between 1946 and 1948. To some extent, the net increase may have reflected monetary tightness induced by the rapid growth of output. To some extent, it may have reflected the emergence of expectations of decelerating deflation that, in a similar fashion to accelerating inflation, tend to reduce the demand for money relative to income. And to some extent, it may have reflected the impact on the demand for money of the widening range of substitutes for narrow money that were becoming available as a result of the postwar reconstruction and recovery of the financial sector. In any event, as a matter of arithmetic, the net increase in velocity was much too small to counter the apparently deflationary effect of the slow growth in nominal money supply relative to real output.[45]

What accounted for the inelasticity of the nominal money supply? The short answer is an adverse balance of payments leading to a loss of foreign-exchange reserves. Given the prevailing currency board arrangement, it brought an unavoidable reduction in the monetary base that almost offset the positive effect of an increase in the money multiplier on the total money supply. At the end of 1945 the note issue, which was in effect the monetary base, amounted to 1,035m. pesos, about five times its prewar level. The shortage of legal tender that had emerged with the repudiation of the Japanese-issued occupation currency had been speedily overcome by the issue of new currency bought by the United States Government in exchange for dollars. It was used to meet the local expenses of its armed forces and civilian agencies.[46] In other words, with shipping shortages delaying imports and negligible exports, the United States' expenditures had created an immediate

[44] Deflation of the nominal money supply by the Manila cost of living index yields an alternative estimate of 53 per cent.

[45] If the definition of money supply is broadened to include not just M1 (currency in circulation plus demand deposits), but also savings deposits held by commercial banks, the increase in the average nominal money supply between 1946 and 1948 was still only 15 per cent.

[46] *The Bell Report: U.S. Economic Survey Mission's Report*, p. 28.

post-liberation balance-of-payments surplus and matching increase in the monetary base.

This situation, however, was not sustained in 1946. Prices in the Philippines were still five to eight times higher than prewar levels, whereas in the United States they were only 30 to 40 per cent higher. United States military expenditures had declined dramatically. And there was an extraordinary demand for imports driven by reconstruction needs and a backlog of consumer demand. Clearly, adherence to the prewar exchange rate meant that the peso was grossly overvalued. The result was a huge overall balance-of-payments deficit in 1946. Equivalent to more than 10 per cent of GDP, it resulted in foreign-exchange reserves falling by US$254m. Admittedly, the overall deficit was suppressed during the next two years as capital inflows and United States grants helped finance continuing large trade deficits. Indeed, foreign-exchange reserves recovered by US$66m. Nevertheless, the balance of payments outcome over the three years 1946–48 as a whole ensured that the monetary base at the end of 1948 was a net 15 per cent below its level at the end of 1945.

Had the money multiplier remained unchanged, the end-of-year money supply would also have fallen by 15 per cent. As it was, the money multiplier (measured as the ratio of the money supply to the currency issue) increased from 1.08 to 1.36, so that the money supply also increased, if only by a very modest seven per cent. The increase in the money multiplier (which still left it short of its 1940 level of 1.45) reflected declines in the proportion of the money supply held as currency rather than demand deposits and in the proportion of deposits that banks held as reserves. Between the end of 1945 and the end of 1948, the currency share of the money supply fell from 79 to 48 per cent, and the commercial banks' cash reserves, expressed as a proportion of demand deposits, fell from 64 per cent to 49 per cent. Both declines were part of the reconstruction of a deposit-creation mechanism that had been virtually destroyed by the enforced liquidation of many banks during the occupation, wartime destruction of records, equipment and premises, and post-liberation uncertainties about the legal status of debt incurred or settled during the occupation.[47]

V

In a small economy where the domestic prices of tradeable goods are determined by given world prices and a fixed exchange rate, the impact of deflationary bias on

[47] When the money multiplier is defined in terms of a broader money supply concept that includes savings deposits (see footnote 45), it grew in net terms from 1.20 at the end of 1945 to 1.65 at the end of 1948. The growth reflected a decline from 71 to 40 per cent in the currency share of the broad money supply and a net decline from 43 to 35 per cent in the ratio of commercial banks' cash reserves to the sum of demand and savings deposits. Over the same period, the excess reserves of the commercial banking system fell from 85 to 59 per cent of total available reserves (Central Bank of the Philippines, *Statistical Bulletin*, XVIII (Sep. 1966), p. 37).

Table 3. *Components of the wholesale price index for Manila, 1946–48 (1937 = 100)*

	1946	*1947*	*1948*
Domestic goods for home consumption	935	534	517
Export goods	278	321	389
Imported goods	209	226	228
All items	771	471	464

Sources: United Nations, *Statistical Yearbook, 1949–50*; United Nations, *Yearbook of International Trade Statistics, 1958*, vol. 1; Central Bank of the Philippines, *Statistical Bulletin*, XVIII (Sep. 1966).

prices will be confined to the non-tradeable sector. More particularly, if such an economy experiences a pure deflationary bias, it is only the prices of non-tradeable products that will decline since it is only these prices that are determined by domestic demand and supply conditions. Given that it is a reasonable approximation to treat the early postwar Philippine economy as a price-taker in world markets, the final step in this exploration of the relevance of the deflationary-bias hypothesis to the Philippines is an examination of its pattern of sectoral price movements.

The examination is made in terms of the components of the wholesale price index for Manila over the period 1946–48. As explained in the notes to Table 1, this unofficial index is a weighted average of three components: an official wholesale price index for domestic goods produced for home consumption; an official wholesale price index of export goods; and an index of unit values of imports, the last serving as a proxy for an index of the wholesale prices of imported goods. Table 3 shows the component and overall index numbers.

It can be seen that the 40 per cent fall in the overall wholesale price index between 1946 and 1948 occurred despite increases in both its export and import components. These (which provide a guide to the behaviour of the domestic prices of tradeable commodities) were primarily the result of the postwar inflation experienced by the Philippines' main trading partner, the United States. The sharp rise in export prices is specifically attributable to the abolition of United States price controls.[48]

The increases in the export and import components of the wholesale price index mean that the 40 per cent fall in the overall index was entirely a reflection of the 45 per cent decline recorded by the index of wholesale prices of domestic goods produced for home consumption. This evidence suggests that the fall in the overall price level was the result of a decrease in the prices of non-tradeables. Admittedly, the index of wholesale prices of domestic goods produced for home consumption is likely to have covered prices of import-substitute goods as well as prices of non-tradeable goods. Nevertheless, because import-substitute prices would have been determined by the prices of competing imports, and because there was a tendency

[48] *The Bell Report: U.S. Economic Survey Mission's Report*, p. 17.

for import prices to rise, it seems safe to attribute the fall in this component of the overall index to a drop in the wholesale prices of non-tradeable goods.

It follows that the sectoral pattern of wholesale price movements supports the deflationary bias hypothesis. Equally significantly, the pattern rules out external forces as an alternative explanation for the fall in the domestic price level. In principle, a small economy with a fixed exchange rate could experience a falling price level, irrespective of whether it had a currency board and irrespective of its economic growth, if world prices for its exports and/or imports were declining, perhaps as a result of an international recession. In this case, the deflationary impact would be felt first on the domestic prices of tradeables and then, through induced demand and resource reallocation effects, on the prices of non-tradeables. The increases in the prices of export and imported goods shown in Table 3 demonstrate, however, that such an explanation is not relevant to the Philippines in the period 1946 to 1948.[49]

VI

After reviewing previous work on the deflationary-bias hypothesis, this article has examined whether the Philippines' currency board arrangement was responsible for imparting a deflationary bias to that country's economic recovery from the devastation of the Second World War. Although the circumstances of this study are unusual, the evidence that has been assembled and analysed seems consistent with the basic theory of pure deflationary bias. Deflationary pressures appear to have emerged in the manner predicted by the theory, without being offset or negated by any of factors that have been offered as qualifications or criticisms of the theory. The currency board arrangement tied the behaviour of the monetary base to the balance of payments, and the upshot was that the price level fell as monetary growth lagged behind economic growth.

[49] It may have some later relevance. The Philippines continued to experience mild price deflation in 1949 after the currency board arrangement (but not the fixed exchange rate) was abandoned at the beginning of that year. In contrast to preceding years, both the export and import components of the wholesale price index fell sharply, apparently reflecting declines in world commodity prices.