

International Monetary Fund

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June 20, 2015

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Available at: https://works.bepress.com/warren_coats/33/

The Real SDR: Indirect Redeemability and Adjustment

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June 20, 2015

Updated June 15, 2019

The International Monetary Fund's (IMF) reserve currency, the Special Drawing Right or SDR, was created in 1969 to augment the supply of official international reserves—gold and the U.S. dollar exchangeable for gold. With the temporary closing of the gold window by the United States in 1971 and the permanent abandonment of the gold exchange standard in 1974, the emergence of floating exchange rates seemed to eliminate the need for SDRs and their use remained very limited. Yet the system of nationally supplied reserve currencies, predominantly the U.S. dollar, has not produced a stable and efficient system of international prices and settlements.

Two changes to the SDR that could elevate it into the role originally intended for it are to replace its valuation by a basket of five currencies, with a valuation basket of real goods and to replace the allocation mechanism for supplying them with a market driven process of issuing them under currency board rules with “indirect” redeemability.² These have been discussed in detail in earlier papers ([Real SDR Currency Board](#), and [Implementing a Real SDR Currency Board](#)). Historical objections to proposals for commodity baskets focused on the cost and impracticality of transacting in and storing the commodities in the basket and the distortions introduced to their market prices. These objections are swept away by indirect redeemability by which SDRs would be issued and/or redeemed in exchange for financial assets of equivalent market value to the goods in the basket. This article explores the complication for indirect redeemability introduced by the lag in the adjustment of prices to changes in the money supply as well as in the adjustment of the balance of payments between countries using the same currency with and without capital mobility.

Money supplied by a central bank under currency board rules grows in response to and apace with the growth in the market's demand for money. As economic agents demand additional money balances as their incomes grow, they buy it from the central bank at its official price. In a pure gold standard where the value of money is stated in ounces of gold, the additional money would be purchased with the equivalent amount of gold. With indirect redeemability it would be purchased with the equivalent amount of the redemption asset, say treasury bills. But how would

¹ The author retired from the International Monetary Fund in 2003 and was chief of the SDR division of the IMF's Finance Department from 1982-8. He is grateful for comments on an earlier draft from Leland Yeager.

² Greenfield and Yeager, "A Laissez Faire Approach to Monetary Stability." *Journal of Money, Credit, and Banking* 15 (August 1983), 302-15.

the supply of money adjust to a shock to its demand or to increases or decreases in its supply as the result of balance of payments surpluses or deficits with the rest of the world?

Redeemability for gold standard like monetary systems keeps the market value of the currency the same as its official value through price arbitrage. If the official value of one dollar is $1/35^{\text{th}}$ of an ounce of gold and the market price is \$36 an ounce, it would be profitable to buy gold from the central bank at \$35 an ounce and sell it in the market for \$36. Doing so, however, would reduce the money supply and increase the supply of gold in the market until the market price matches the official price of \$35 an ounce. Such a story assumes that there are competing market (jewelry, etc.) and monetary (fort Knox) demands for gold and thus a ready market stock to arbitrage.³

Indirect redeemability substitutes a financial asset, such as a treasury bill, for gold in the above arbitrage scenario. The supply of such a redemption assets would be very elastic compared with the exogenously determined stock of something like gold and would enjoy a zero storage cost for the currency issuer. Arbitrage would function in the same way to keep the market value of the currency close to its official value. In the case of a valuation basket of goods as proposed for my Real SDR,⁴ the official value of one SDR would be defined as the specific quantities of the goods in the valuation basket. But these goods have ever changing market values, which might add up to more or less than one SDR (this is identical to the existing procedure for valuing the current SDR based on a basket of currencies). If the market value differs from the official value by more than a trivial amount there is an arbitrage gain from either selling SDRs to the IMF at the official price or buying them from the IMF at the official price.

In the gold example above, a market price of \$36 an ounce of gold would induce the redemption of currency (\$35 dollars worth) for treasury bills of equivalent market value to an ounce of gold, i.e., \$36 worth. Indirect redeemability reduces the “excess” supply of money just as effectively as would direct redeemability for gold. There is an important difference, however, that needs to be address if indirect redeemability is to regulate the supply of money such that the market and official values of the currency are kept the same. Indirect redeemability would not change the market supply of the anchor goods (in this example, gold) and thus would not change the relative market price of the anchor good.

³ The gold standard mechanism is more often described in terms of the balance of payments between countries and a fixed stock of gold, or one exogenously supplied by the cost of mining and or new gold discoveries or the lack there of, used exclusively for monetary purposes. If goods are cheaper abroad, for example, such that a country imports more than it exports, its currency flows abroad on net (reducing its domestic money supply) and is redeemed by foreigners for gold. The domestic deflation restores the balance of trade.

⁴ Warren Coats, "Real SDR Currency Board", *Central Banking Journal* XXII.2 (2011).

Reducing the supply of money will eventually reduce the price level (thus preserving the real quantity of money at the level demanded by the public), but with a lag. The channels through which changes in the money supply effect prices are diverse and take time to operate. This poses a dilemma for the market's regulation of the money supply at the heart of my real SDR currency board proposal. If, in the example of gold, the market price of a dollar is more than the official price, arbitrage will reduce the money supply. But if the price difference persists for some time because of lags in price adjustments, so will the opportunity for arbitrage profits, leading to overshooting (an excessive contraction of the money supply).

Monetary policy regimes that target inflation deal with this problem by targeting the inflation forecast one or two years in the future (Inflation Forecast Targeting—IFT), which means setting policy instruments (e.g., the policy interest rate, or the quantity of base money) now to produce a forecasted value of inflation in one to two years that matches the target.

Milton Friedman suggested an approach to this problem almost 35 years ago: “The goal of a monetary system that provides assurance against fluctuations in purchasing power is ancient. One frequently suggested and repeatedly rediscovered proposal is to attain that result by linking the currency unit to a price index. That device was proposed in the nineteenth century by W. Stanley Jevons and by Alfred Marshall, who named it a tabular standard. It has been repeatedly rediscovered. In Marshall's version it required no governmental action except the issuance of a price index number, something which has of course become widely prevalent. ... Despite the theoretical attractiveness of this idea and the absence of any effective hindrance to its adoption, it has never become popular. ... The recent explosion in financial futures markets offers a very different possible road to the achievement of the equivalent of a tabular standard through private market actions. This possibility is highly speculative little more than a gleam in one economist's eye.”⁵

Addressing the same challenge for nominal GDP targeting, Scott Sumner and William Woolsey⁶ propose targeting nominal GDP one to two years in the future via the use of futures contracts. This idea can be adapted to the real SDR currency board. The intuition is that banks and other market participants would buy or sell their currency at the central bank at its official price whenever they thought its price in say 18 months would be better (lower) than the current market price. While such purchases or sales, i.e. such adjustments in the current money supply, would not restore current market prices to the official price, the arbitrage incentive for additional transactions would disappear when the forecast for the market price

⁵ Milton Friedman, “Financial Futures Markets and Tabular Standards”, *The Journal of Political Economy* 92 (1) 1984: pp165-166

⁶ Scott Sumner, “A Market-Driven Nominal GDP Targeting Regime,” Mercatus Center, July 24, 2013, and William Woolsey, “Index Futures Targeting and Monetary Disequilibrium” (unpublished paper, January 2013).

matched the official price. This requires determining what adjustment in the current money supply is required to restore the market price of the basket to its official price in one to two years.

If the central bank has the responsibility for actively managing the money supply consistent with money's official price, it should follow the IFT approach of setting the current money supply to the level that produces a forecast of the desired official value of the currency in a year or two. However, if we want to rely on the market to regulate the supply of money, as I do, we need to design the market's purchases and redemptions of money so that they adjust the current supply to a level that results in the expectation that its market value will match its official value in a year or two. Specifically, the system must make it profitable for banks (the public's agent in these transactions) to redeem (or buy) currency when its market value is above (or below) its official value up to the point that the current supply is expected to align the market with the official price in, say, 18 months.

To illustrate with the example of a market price for a Real SDR valuation basket of SDR 1.1 (the official price is SDR 1), allowing banks to redeem unlimited amounts of currency at the price of SDR 1 for SDR 1.1 worth of Treasury bills would result in an excessive contraction of the money supply before the price differential was eliminated. However, if the currency were redeemed for Treasury bills at their market value in 18 months, banks would stop redeeming currency now when they expected the market value of an SDR to fall to SDR 1 in 18 months. Such contracts could be structured in a variety of ways. For example, currency could be redeemed now for one SDR's worth of treasury bills per SDR plus a mandatory adjustment in 18 months for any change in the market price at that time from its price today. Whenever, and as long as, banks expected the market value of SDRs to exceed their official value in 18 months, they would expect to profit from redeeming currency today (buying a t-bill for one SDR and selling it in the market for something more).⁷

In the more normal course of events, as the economy grows and the demand for money increases, interest rates would raise and prices fall in the absence of an increase in money supply. Under currency board rules the money supply would only grow as a result of banks (or others) buying additional currency with the redemption asset (t-bills). Such normal purchases of currency in response to the growth in its demand are not motivated by arbitrage. Over and above these, a bank

⁷ The current market value of the t-bills would be delivered now (SDR 1.1 worth of t-bills for each SDR redeemed—one t-bill costs SDR 1.1 in the market but costs only one SDR at the issuers), and at the maturity of the contract in 18 months any excess of t-bill prices over the current price (of SDR 1.1) would be paid out as well and any shortfall deducted from a modest margin account deposit. Thus a (marginal) bank redeeming currency now when the market value of SDRs returns to their official price in 18 month would have to return the profit made at the front end of the contract for zero net gain. Appropriate interest would need to be paid on the margin account deposit.

that expected deflation (a market price for the SDR of less than 1) in 18 months would expect to profit from buying SDRs now at the rate of one SDR's worth of t-bills per SDR along with the bonus in 18 months if and to the extent the market value of an SDR fell below 1 at that time. [Such an expectation is most likely to result from an actual or expected balance of payments deficit that reduces the money supply à la the Hume Specie-Flow mechanism.]

Consider the following examples of national currencies fixed to the real SDR and supplied under currency board rules and of a single global currency. The simplest case to explain is that of a single global real SDR. Consider a balance of trade surplus in country A (e.g., Germany or China), which increases the national money supply above its demand. Understanding the process by which payments are made, whether individually or globally, is both interesting and important to understanding the adjustment process. A country with a balance of payment surplus is selling more abroad than it is buying from abroad so the outflow of currency is smaller than the inflow and its money balances grow. But what is the actual process by which that happens?

Unlike the mythical days of a pure gold standard, when gold bars were packed up and shipped in order to settle payments, payments through the banking system involve a series of debts and credits. Starting with an individual household, payments cannot exceed income once the deposit balance at the bank reaches zero. At or before that point expenditures (payments) must be reduced or income increased. For a while, borrowing can augment income. Payments between banks (i.e. between customers of one bank and customers of other banks) must adhere to the same constraint. While banks can keep deposits with each other for clearing and settling payments between them, such payments are generally cleared through their central bank if the banks and their customers are in the same country. Interbank payments take the form of debits and credits to their accounts with the central bank. If my bank is paying more to other banks (on behalf of its depositors) than it receives, its balance with the central bank will decline. Before it reaches zero, it must borrow from other banks or the central bank to continue processing payments (check clearing or wire transfers). Alternatively, my bank can sell some of its assets in order to replenish its central bank balances if its mismatch of inflows and outflows is temporary. If my bank continues to pay out more than it receives, its net assets will shrink as those of other banks increase. Eventually it will need to adjust its activities so as to bring its long run inflows and outflows into balance.⁸

If we extend this exposition to cross border payments in a world with a single currency (or national currencies firmly fixed to a single international reserve currency such as a real SDR issued by the IMF), a payment from an American

⁸ This process is dramatically illustrated by the negative clearings of Greek banks through the ECB in my paper presented at the Emergency Economic Summit for Greece in Athens on May 19, 2015: *Greece's Banking Sector Options* http://works.bepress.com/warren_coats/32/

resident to a German resident might be settled in the same way payments within the Euro zone are settled via TARGET2. My bank's balance with its Federal Reserve Bank is debited and your German bank's account with the ECB⁹ is credited with the amount of the payment (all in SDRs). But how is that done? One approach would be for the IMF or BIS as the global central bank with which balances of real SDRs issued by the IMF are kept (see the earlier papers on the Real SDR to see how that would be done) to function as the central bank on whose balance sheet debits and credits are made to move SDRs from one national central bank to another. Thus bookkeeping transfers of ownership of SDRs replaces the physical shipment of gold or whatever. As with the household that was spending more than its income, the central banks of countries whose residents are spending more abroad than they earn abroad will lose SDR balances at the IMF/BIS and must eventually buy or borrow the shortfall or adjust. If the deficit bank purchases the balances it needs at the IMF/BIS from the IMF/BIS with the redemption asset (t-bills in my examples), the global supply of SDRs will be increased. If the net outflow persists, the banks/country will need to adjust. The adjustment that is needed, however, is not of the banks and central banks, which are just conduits for their customers, but of the aggregate spending of households and firms.

This is a system (single currency) in which an exchange rate between one national currency and another cannot change as a way of changing the relative prices of tradable goods in one country with the other. It resembles the situation when Californians buy more from the rest of the United States than they sell (or otherwise earn income from outside California). Without adjustment, the flow of net payments described above from (balance of payments) deficit countries to surplus countries would increase the supply of money in the surplus country and reduce it in the deficit country. In the surplus countries the increase in the money supply would be invested in loans to those in deficit or in purchases of the assets liquidated by those in deficit. So how does adjustment occur?

The balance of payments adjustment between countries and between regions is an outcome of the adjustments of the households and firms giving rise to the imbalances in the first place. As the real SDR valuation basket would contain only tradables, a single price for those goods would prevail throughout the world (adjusted for transportation costs, etc.) and thus the market value of the currency would be about the same everywhere. Adjustment in this environment can come through several sources in deficit countries (and the reverse in surplus countries): a) relative price adjustments (internal devaluation in deficit countries – a reduction in wage costs – and internal appreciation in surplus countries), b) reduced spending as the result of a negative wealth effect (the sell off of assets to finance deficits), and

⁹ This example simplifies from the fact that there are twelve Federal Reserve Banks in the U.S. system and twenty three national central banks clearing through the European Central Bank that currently make up the European System of Central Banks.

c) an increase in interest cost of financing the deficit in the deficit country (and the reverse in the surplus country).

The system would work in essentially the same way with individual national currencies firmly fixed to the international SDR. The central bank of a deficit country would need to buy or borrow the SDRs needed to cover the net shortfall, thus resembling the outflow of gold under the gold standard. If the deficit country is playing by currency board rules, this out flow will reduce its domestic money supply bringing about the needed price adjustment. If not, we would be back in the gold exchange standard world with its risk of period devaluations in country's that did not manage their money supplies consistent with the needs of a fix exchange rate.

In a gold standard like world of national currency exchange rates fixed to the real SDR, or a single, one-world currency, the balance of payments between households and firms would occur in the same way they do now within existing currency areas. As economies grew and the public desired more liquidity, banks would buy it from their central bank for the agreed redemption assets at the fixed real SDR price. The elimination of exchange rate risks and reliance on the currencies of one or two countries for international payments would be an enormous boost to world trade and financial stability and would eliminate the need for a substantial share of the financial services now devoted to managing currency exchanges and hedging exchange rate risks.

References

Coats, Warren. "In Search of a Monetary Anchor: Commodity Standards Reexamined," in *Framework for Monetary Stability*, ed. by T. J. Baliño and C. Cottarelli, (Washington: International Monetary Fund, 1994).

_____ "Real SDR Currency Board", *Central Banking Journal* XXII.2 (2011), also available at http://works.bepress.com/warren_coats/25.

_____ "Implementing a Real SDR Currency Board", 2014
http://works.bepress.com/warren_coats/30/.

Friedman, Milton. "Financial Futures Markets and Tabular Standards", *The Journal of Political Economy* 92 (1) 1984.

Greenfield, Robert L. and Leland B. Yeager, "A Laissez-Faire Approach to Monetary Stability," *J. Money, Credit, Banking*, Aug. 1983, 15(3).

Sumner, Scott. "A Market-Driven Nominal GDP Targeting Regime," Mercatus Center, July 24, 2013,

Woolsey, William. "Index Futures Targeting and Monetary Disequilibrium"
(unpublished paper, January 2013).