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**Toward a New International Monetary Order:
How A Synthetic Unit of Account Can Lead to an Inclusive International Payment
Regime**

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Abstract:

Robert Shiller, in his *The New Financial Order: Risk in the 21st Century*, spent a number of pages on the concept of Indexed Unit of Account. He realized that there does not exist anything naturally that has the most important quality to serve as a monetary anchor. The challenge then is to design a synthetic unit of account that represents a unit of stable global purchasing power. Trade, contracts, as well as commodity trading and bond issuance can then be denominated in this unit. A unit of account, however, is not money. Settlement will need to be carried out in a currency. The use of an international unit of account complemented with currencies that are in the same footing once and for all settles the Triffin Paradox. Robert Triffin notes that the supply of liquid USD-denominated assets which the world's central banks use as reserves, depends on the US running current account deficits, but growing external debt undermines confidence in the USD. Today no other currency can challenge the supremacy of the USD because no other country has such massive external debt. A synthetic indexed unit of account is key to building a fairer, inclusive, and sustainable international monetary system.

Introduction

The USD has prevailed as the world's premier reserve international currency since the Bretton Woods Agreement in 1944. The USD then officially replaced the British Pound as the leading international currency (Chitu, L, B Eichengreen and A Mehl (2012)). The world entered a regime called Gold Exchange Standard, under which the dollar was tied to gold, while other currencies are tied to the USD. The dollar's supremacy has remained unchanged even after the United States announced to end the convertibility of the dollar to gold in 1971. It is notable that the weight of the USD in the SDR basket actually rose from 42% in 1981-1985 to 44% today (2022-2027). This is notwithstanding the inclusion of the RMB into the SDR basket in 2016, after which the weight of the Euro, that of the British Pound, and that of the Japanese Yen all fell noticeably.

Notwithstanding a growing tendency for "de-dollarization" among some countries today, many commentators agree that the status of the USD as the world's prime international currency is unlikely to change. There is just no other currency that can replace the USD. In particular, the depth and width of the market for US Treasury bonds is unparalleled. Central banks all over the world continue to take US Treasuries as the most liquid and favored reserve asset. Even though the yield may be low, they still offer some yield, and on this account, are considered superior to directly holding USD. There is no worry about short term capital loss when bond prices decline, because central banks can hold to maturity without fear of withdrawal of deposits.

The US economy has been doing quite well among western countries, and the USD will continue to be one of the world's most popular currencies. But the current international monetary regime is not sustainable, because it is crises-prone and unfair. The US enjoys huge benefits through seigniorage, and it breeds fiscal irresponsibility. Under the Triffin effect, as confidence wanes, the US will eventually have to pay higher interest on its national debt. As the volume of debt grows, interest payments will crowd out other expenditures, and the primary deficit has to be squeezed. Under fiscal stress, the bill that allows the Federal Government to raise the debt ceiling in order to avoid default caps non-defense spending in fiscal 2024, then increases it by 1% in 2025. The US population is aging; the infrastructure is

aging; the Green transformation is calling. But the government ignores these needs for federal spending and instead only allows defense budget to rise.

This paper will propose an international monetary architecture that fosters fiscal responsibility and that is sustainable. The world does not need another super currency. The world just needs a monetary system that is fair and will reduce financial crises and promote peaceful cooperation.

The Needed Qualities of Today's International Monetary System

Humanity in the 21st Century needs to have an inclusive and fair international monetary system that does not confer exorbitant seigniorage benefits on any country. A trusted international currency that promotes international cooperation and human flourishing is clearly an important global public good. Since public goods need resources to provide, if the seigniorage is used only to support the running of this system it is still fair and acceptable. A system that ensures the world has sufficient liquidity by allowing a country to run huge deficits and to borrow at unreasonably low interest rates on the other hand is unfair and unacceptable and unsustainable. In September 2022 the Federal Reserve US federal debt still held \$6.1 trillion of total debt, which had grown to \$31.4 trillion in early 2023. That is the legacy of quantitative easing. Foreign holdings of federal debt stood at \$7.3 trillion (**Table 5**). As the international debt of the US mounts trust in the USD will decline, and the US will have to borrow at higher interest rates. The same problem applies to any other currency that might challenge the USD.

An inclusive and sustainable monetary regime cannot depend on there being a super currency. This can only be built with the introduction of an international unit of account and allowing stakeholders to settle in any currency they prefer.

This unit of account needs to represent a unit of stable global purchasing power. As Shiller (2003) notes:

The habitual use of currencies as units of account, which are not indexed to inflation, is especially frustrating when our purpose is to move to more sophisticated financial

institutions. If we must define quantities for the general public in currency units, then we will forever be fighting the inconstancy that these units introduce. In the absence of the indexed units of account, we may well decide not to try to move to fundamentally different institutions. We may try to make little patches here and there in our economic institutions, fearful that any fundamental change runs the risk of new problems because of the changing units of measurement. (Shiller, p.213-214)

Ho (2018) provided statistical evidence that, with commodities being quoted in the USD, a depreciation of the USD will lead to a rise in the real value of commodities. This goes counter to the classical dichotomy, which holds that real values in markets are determined by real demand and real supply, both of which are free from monetary illusion. If the USD depreciates this will ignite fears about inflation. A rush to inflation hedges like commodities and real property will push prices up. Even spot commodity prices are affected because producers seeing a rise in prices in the futures markets will reduce supply to the spot market. The reason is simple: by holding off to the future they can sell at higher prices. A decline in supply will push up spot prices.

All this is highly disruptive of economic activities and risks creating asset or commodity bubbles, which may further disrupt financial markets and cause more stress in the real economy.

Several qualities are essential for an international unit of account to be credible and functional. It needs to be easily understood, transparent, and readily updated. A unit of account that can only be understood by a small circle of “experts” will simply be ignored. If the unit of account cannot be updated readily, again, it will create risks for users because settlement will need to be made any minute. The unit of account should represent a unit of stable global purchasing power and should be run under an authoritative international body.

The World Currency Unit

Ho (2000) first proposed a unit based on a “basket of the real GDPs of major economies”. This was subsequently changed to “a basket of GDP-weighted exchange rates each of which is indexed against inflation. With the help of a former graduate student, a

website that offers daily updated quotations of the World Currency Unit (WCU) has been running since 2008.

The WCU website at Lingnan University¹ offers both a daily quotation (in USD) of the unindexed basket of currencies, which is called the Benchmark Currency Basket or the Standard Currency Basket, and the quotations of the inflation-indexed currency basket (called the WCU) in various currencies.

In order to weight the currencies properly, all currencies must be first normalized to equal one USD in the base year. This normalization takes out the bias that would result from the different sizes of the official currency in terms of purchasing power. For example, the official unit of the Japanese currency is Yen, and it is very tiny. One Yen is worth less than one US cent or 1/100 of the USD. Normalization is done by dividing the time series of exchange rates by the exchange rate against the USD in the base year. In this way, in the base year the normalized exchange rates of all currencies in the basket are equal to one USD.

It is understood that GDP figures are subject to revision, and the figures could still be revised years after the initial announcement. In order to be operative, we propose that we will use the GDP data two year ago as available from official sources in January of each year. The GDP data that is used to compute weights will not be affected by any later revisions.

The exchange rates used in the Lingnan University website are updated once every day. But the website is for demonstration only. If the WCU is taken up as a serious international initiative exchange rates should be updated in real time. The latest exchange rate data just feed through the computer system to yield the quotations with a minimal lag.

The inflation data is based on the Consumer Price Index. In principle the GDP deflator is conceptually preferred, but unlike GDP deflators, the CPI is updated every month and rarely revised. This information is manually updated on a designated day every month. We use arithmetic weights and not geometric weights because after testing we discover that the differences are small and arithmetic weights are easier to understand and thus more transparent.

¹ <http://wcu.ln.edu.hk/en/index.php>

$$\sum_i \frac{GDP_i(T-2) \cdot e_i(T-2)}{\sum_j GDP_j(T-2) \cdot e_j(T-2)} \cdot \frac{e_{it} P_{it}}{e_{i0} P_{i0}}$$

The base year should be updated at least every 10 years. Quotations of commodities and contracts denominated in the WCU must specify the base year clearly.

Linking Currencies to the WCU is Not Advisable

Given that the WCU is easy to operate, the question arises as to whether currencies should use the WCU as an anchor. I had recommended this in my 2000 paper but soon I discover this is not advisable, especially if one currency only adopts the WCU as the anchor. This is because a currency that is the lone currency tied to the WCU will find its exchange rate against other currencies appreciating most of the time, thus eroding its international competitiveness. Instead, one may find pegging a currency to the unindexed benchmark currency basket quite desirable. Ho (2012) has demonstrated that pegging a currency to the benchmark currency basket is like pegging the effective exchange rate.

Table 1 shows the quotations of the WCU2015 on Lingnan University's World Currency Unit website on May 30 2023. Seven currencies are in the currency basket: the US Dollar, the Euro, the Pound Sterling, the Japanese Yen, the Canadian Dollar, the Australian Dollar, and the Chinese RMB. The spot exchange rates are first normalized by dividing with the respective exchange rates against the USD in the base year 2015. The Standard Currency Basket or Benchmark Currency Basket is the 2021 GDP-weighted average of the normalized exchange rates, and quoted in USD in bold in Column 2 row k. The inflation indexed WCU is quoted in bold in USD in Column 4 row k. The relative exchange rate in Column 5 shows the normalized exchange rate of a currency divided by the value of the Standard Currency Basket. For example, 1.0643 in row (a) means the USD has appreciated 6.43% against the currency basket since 2015.

Because the Standard Currency Basket or Benchmark Currency Basket is quoted just like any currency, its market value in USD is available, and pegging a currency to the BCB works much like pegging to any currency.

Tuesday May,30,2023

Table 1: Quotation Page from the WCU Website

Currency	Spot Exchange Rate (USD / unit of currency) (1)	Normalized Exchange Rate (Column 1 divided by US\$ price of currency in base year 2015) (2)	WCU2015 per unit of currency (3)	How much a unit of WCU2015 is worth in each currency (4)	Relative Exchange Rate (currency relative to Benchmark Basket) (5)
U.S.dollar (a)	1.00	1.00	0.8805	1.1357	1.0643
Euro (b)	1.07145	0.96606	0.9434	1.0600	1.0282
Pound Sterling (c)	1.23620	0.80916	1.0885	0.9187	0.8612
Japanese Yen (d)	0.00713	0.86285	0.0063	159.3253	0.9184
Canadian \$ (e)	0.73608	0.94152	0.6481	1.5430	1.0021
Australian Dollar\$ (f)	0.65413	0.87071	0.5760	1.7362	0.9267
Renminbi (g)	0.14141	0.88856	0.1245	8.0316	0.9457
Hong Kong Dollars (h)	0.12774	0.99349	0.1125	8.8909	1.0574
Swiss Franc (i)	1.10666	1.37884	0.9744	1.0263	1.4675
Russia Rubles (j)	0.01244	0.35173	0.0109	91.3302	0.37435
Quotation in other currencies					
Standard Currency Basket (2021 GDP-weighted average of Column 2 from a to g) (k)		0.939562	0.8273	1.208788	1

It is possible, moreover, to seamlessly transition from a USD peg to a currency basket peg smoothly. If it is deemed desirable to, for example, peg the HKD to the benchmark basket, we can choose a fraction α such that $HK\$ = \alpha BCB = US\$ 1/7.8$, where BCB is the value of the benchmark basket against the USD.

For example BCB on May 30 2023 is worth US\$0.939562.

Today, $HK\$ 1 = US\$ \alpha BCB$ (May 30) = US\$ 1/7.8

We calculate $\alpha = 1/(0.939562*7.8)$

Once α has been fixed, if the exchange rate of BCB against the USD continues to be 0.939562, HK\$ 1 will stay at US\$ 1/7.8 and the world will not notice any change in the HKD exchange rate against the USD. Tomorrow, if suppose BCB rises implying USD weakness against the BCB, since α is fixed, HK\$ will appreciate against the USD. If USD is strong, BCB falls, HKD will fall against the USD tomorrow.

Application of Comparative Advantage in a Multiproduct, Multicountry framework

The Theory of Comparative Advantage is well-known but traditionally the exposition is always in a two-by-two model: two goods and two countries. In a world with many products, and many countries, the role of exchange rate in mediating trade is apparent, and it is very important to see why fixed exchange rates are untenable. The world needs flexibility, but managing this flexibility through the crawling peg or flexibility bands is also untenable.

Let us consider first a world with two countries and 5 products. Country A enjoys absolute advantage over country B in all 7 products, requiring less physical input to produce all the five products.

Table 2: Inputs required per unit of output

	Product 1	Product 2	Product 3	Product 4	Product 5
A	1	2	3	4	5
B	6	7	8	9	10

Table 3: Cost in dollars per unit of output at \$1 = 6 pesos

	Product 1	Product 2	Product 3	Product 4	Product 5
A	6	12	18	24	30
B	6	7	8	9	10

Suppose A uses the dollar, and B uses pesos. Initially, suppose the exchange rate is 6 pesos in exchange for \$1, and we assume each unit of input costs one unit of the local currency. We can see that all products produced by A are more costly than those produced by B. A would like to buy from B, but B will not buy from A. Trade is just one way, and there will be no demand for A's currency but a lot of demand for B's currency. B's currency rises and A's currency depreciates under the law of supply and demand. Suppose now \$1 can buy only 3 pesos. Trade becomes more balanced:

Table 4: Cost in dollars per unit of output at \$1 = 3 pesos

	Product	Product	Product	Product	Product
	1	2	3	4	5
A	3	6	9	12	15
B	6	7	8	9	10

We can see that the exchange rate will determine the dividing line between exports and imports and which goods enjoy comparative advantage. In the absence of capital flows, floating exchange rates serves as an important mechanism to put comparative advantage into action, and trade will balance out. But comparative advantage is not entirely determined by technology. It is also affected by consumer preferences.

In a multi-country world but still ignoring capital flows, it is possible that a country may run deficits with one country and surplus with another country. The bilateral demand and supply of currencies may not balance out, but global demand and supply of each currency will balance out.

A country may therefore through trade accumulate a currency that is more than needed to import from that country. The surplus currency will be sold in order to acquire other currencies for the purchase of products and services from other countries.

Managed Float versus Managed Fixed Exchange Rate

In the real world of course there are capital flows, and there has also been a perceived need to avert the disruptions of foreign exchange rate adjustments caused by international capital flows. James Tobin had proposed a small tax on foreign exchange transactions in order to provide some ammunition to forex market intervention as well as a disincentive for speculative forex trades.

Given the reality of massive capital flows, there are times when the exchange rate is driven by speculative forces away from levels that are consistent with macroeconomic stability. Under such circumstances, allowing a “band” to float or allowing the peg to “crawl” does not

really make much sense. Ho (2002) argues that exchange rates must not be allowed to drift to levels that are economically painful and are unsustainable. Thus exchange rates should basically be fixed at levels that are consistent with its economic fundamentals required for external and internal equilibrium.(Fundamentally Equilibrium Exchange Rates or FEER) If and only if there is evidence that the economic fundamentals have changed, exchange rates should remain fixed. But they should be allowed to move to a more appropriate level if there is evidence that the current exchange rate has deviated from FEER.

While in the past most leading economists including Henry C. Simons (1935), Milton Friedman (1953), Anthony Lanywe (1969), Peter Kenen (2000) spoke for the clean float, more and more economists now realize that market-determined exchange rates may not be the ideal equilibrium exchange rates that they were taken to be. In particular, a big literature on behavioural equilibrium exchange rates (BEER) and fundamental equilibrium exchange rates (FEER) have emerged. (Clark and MacDonnald, 1998). An implication of this literature is that market-determined exchange rates may NOT be the equilibrium exchange rates consistent with economic fundamentals. Williamson (1994) defined fundamental equilibrium exchange rate as the exchange rate that is consistent with internal and external balance, i.e., compatible with full employment, low inflation, and sustainable current account. Clark and Dias (2007) states that the BEER approach “offers a way of exploiting a theoretical exchange rate model in order to obtain a measure of the equilibrium exchange rate and therefore, by implication, exchange rate misalignment.”(p.4) Predating these developments, in a BIS paper in 1982 Mayer wrote: “unnecessary exchange rate instability, i.e., movements in real exchange rates that do not contribute to the adjustment process and are not in the interests of longer-term equilibrium, entails very real economic costs and should therefore be regarded as undesirable.”(Mayer, 1982, p.4)

Compared to pegging to the US dollar or to any other currency, pegging to a basket of currencies such as the proposed benchmark currency basket implicitly allows more flexibility. This is because a single currency is inevitably more volatile. As far as the macro economy is concerned, stability of the effective exchange rate is far more important than the stability of the exchange rate against the US dollar. Thus pegging to the proposed currency basket is a better “management” of fixed exchange rates.

To maintain the peg with the BCB, it is possible to use the USD as the instrument or vehicle for open market operations. Maintaining the peg with the BCB will always imply that the exchange rate of the domestic currency against the USD will be worth α times the exchange rate of the BCB against the USD. Dollars can be bought or sold in the open market to keep the exchange rate against the USD at the level implied by the BCB peg.

It should be noted that pegging with the BCB will stabilize the effective exchange rate of a currency. If inflation at home is equal to inflation in the rest of the world, the real effective exchange rate will also be stabilized. If domestic inflation is higher, then the real effective exchange rate will appreciate.

All countries that peg their currencies with the BCB will effectively become a currency bloc in the sense that mutual exchange rates for currencies within the bloc will be stable. This means all the benefits of a currency bloc that Andrew Rose *et.al.*(2000) has alluded to be associated with a currency bloc will be realized.

The combined GDP of the seven currencies represent roughly 63.5% of the world's GDP. Based on the Gravity Theory of International Trade, the economic mass represented by a country's GDP will attract trade with other countries, which may be direct trade or indirect trade but which nevertheless will drive exports to those countries. Our proposal to weight the currency basket according to the GDP instead of trade weights not only makes the computation of the basket easier and enables updating in a more timely fashion, but potentially is superior to trade weighted currency baskets, and offers the potential for producing an informal currency bloc when multiple countries tie their currencies to a common anchor.

Conclusions

Bordo and McCauley (2017) believe that Triffin was wrong in predicting the demise of the US dollar. Triffin had predicted that the world might face that under the Bretton Woods system with the USD backed by gold, sooner or later the world would run out of gold and fall into deflation. The US ended the convertibility of USD into gold, and the world is not short of liquidity as central banks hold a lot of USD assets. Triffin's view that claims on the US would eventually surpass the US gold stock is actually not wrong. It is just that Nixon ended

USD convertibility to gold altogether and continues to supply the world with USD. At the end of their paper, Bordo and McCauley noted that “Issues arising from one country’s supplying most of the world’s reserve currency are not going away.”

Bordo and McCauley are not worried about US ability to honor its obligations. In particular, they observed that “the US economy is still earning net investment income from the rest of the world despite its net international liabilities. The BEA estimates US net international investment income in 2015 was \$193 billion, a credit. In other words, the official data show the US economy earning a net 1.1% of GDP based on a -41% of GDP position!” But America’s ability to generate net international investment income cannot be taken for granted indefinitely. It is predicated on the USD’s unique position as representing liquidity and the preferred safe asset during crises. No other country in the world that had in the first place engendered the subprime crisis and then the Lehman Brothers collapse could borrow at zero interest from the rest of the world. But today the world is seriously worried about the USD’s status as a safe asset. (See Table for America’s Public Debt by Ownership) This will translate into higher interest payments and will erode America’s ability to continue to generate a surplus in the international incomes account.

Cognizant of the need for fiscal prudence in the US, the bipartisan deal to lift the Federal debt ceiling includes capping non-military spending. Non-defense spending would remain relatively flat in fiscal 2024 and increase by 1% in fiscal 2025. But unbridled increases in military spending will still create much fiscal stress. The US\$31.4 trillion debt is set to continue to grow. Thanks to aggressive quantitative easing, the Federal Reserve still held \$6.1 trillion of government debt in September 2022. To combat inflation, which in part is due to the quantitative easing and in part due to supply chain bottlenecks arising from geopolitical developments, the Fed has raised interest rates aggressively. But the interest rate increases already have indirectly resulted in the demise of the Silicon Valley Bank and other banks.

Historically the USD has been extremely resilient. There have been so many crises that the world had gone through, but the purchasing power of the USD has been quite stable compared to most other currencies. There have been episodes of strength and of weakness, and while its purchasing power has been falling secularly due to inflation, against a basket of currencies, the USD has risen over 6% since 2015. Given this record, the relative strength of

its economy compared to other G7 countries, the USD will continue to be a leading international currency. It is unlikely that any other currency will replace it.

A world with a single currency enjoying the exorbitant advantage of seigniorage is prone to crises and unfair. From this perspective, it is logical to use the proposed indexed unit of account as the preferred unit of account. Since settlement can be in any preferred currency, all currencies will be on equal footing, even though the USD will continue to be one of the world's most preferred currencies.

Table 5: Distribution of Holdings of US Public Debt through September 2022

Domestic	US\$ billion	%	Foreign US\$ billion	%	
Fed	6097	35.26	Japan	1116	15.39
Mutual Funds	2606	15.07	China	902	12.44
Depository Institutions	1740	10.06	UK	665	9.17
State & Local Govt	1537	8.89	Belgium	325	4.48
Pension Funds	1116	6.45	Cayman Is.	302	4.16
Insurance Companies	372	2.15	Switzerland	273	3.76
Other domestic	3825	22.12	Luxembourg	300	4.14
			Other		
			countries	3369	46.46
Total	17293	100	Total	7252	100
Grand Total				24545	

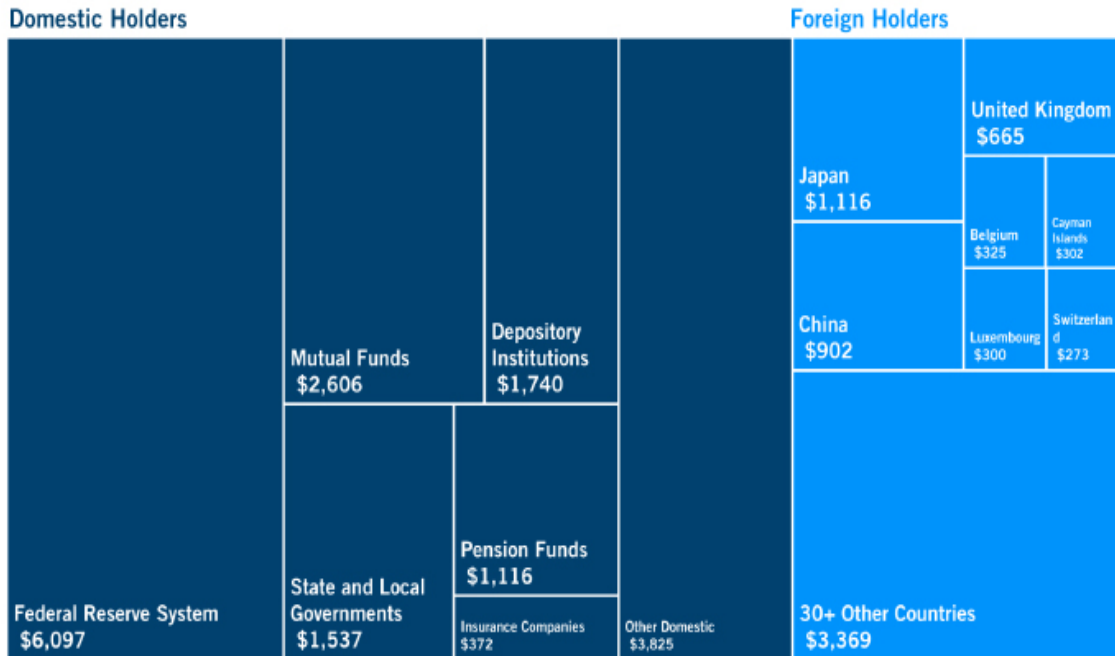
Source: US Department of the Treasury, Treasury Bulletin March 2023

Notes: other Domestic includes owners of savings bonds. Data is through September 2022

Compiled by Peter G Peterson Foundation

Two-thirds of public debt is held by domestic holders

Composition of Debt Held by the Public (Billions of Dollars)



SOURCE: U.S. Department of the Treasury, *Treasury Bulletin*, March 2023.

NOTES: Other Domestic includes owners of savings bonds. Data is through September 2022.

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