Metamorphoses of money: From coffers to codes

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Prolegomenon

The concept of money continues to be the axle of theorizing in micro and macroeconomics. While transitioning from the *homo economicus* of orthodox theories to the *materialistic man* in the era of neoliberalism, money is the marker, if not an absolute measure, for income, wealth, growth, and development of nations, firms as well as individuals (Snooks 2000). Though we continue to reinvent its transactional form over the past five centuries, economic theories are being tested and extended through a lens bound by an obsolete and rather rigid definition of money. Have the distinct theoretical standpoints factored in the dynamism of the concept of money, or will certain theories falter while transcending the traditional form of currency? This article explores the metamorphoses of money through classical, neoclassical, Keynesian, monetarist, and modern monetary theory while trying to understand the recent emergence of the digital asset class.

Hubristic Gold

In his magnum opus, *The Wealth of Nations*, Adam Smith asserts that markets preceded the state in the order of existence and so did the concept of money before the inception of currencies. Coexisting with the ancient barter system, one of the earliest forms of standardized international exchange rate arrangements, can be traced back to bimetallism and monometallism, i.e. use of the fixed price of silver and/or gold to derive a unit of currency originally. Numismatists opine that the exchange of goods or services in lieu of a gold or silver coin was secured by the underlying value of the precious metals extracted in the "*mints*", which were difficult to counterfeit while ensuring liquidity. In bimetallism, a mint ratio was further derived to convert the value of silver currency into gold and vice versa. But in the year 1717, before the era of producing coins of high quality by standard minting units, the "*gold standard*" emerged in England by the then "*master of the mint*" Sir Issac Newton. In the year 1816, the "*gold standard*" became *de jure* for the United Kingdom followed by the Gold Standard Act in the year 1900 in the United States of America. Though it constrained the formulation of federal policy, as a monetary system it is extensively researched for the macroeconomic stability it induced. Except during periods of hostilities including wars, the price of gold remained fixed at £3.85 per ounce from the year 1717 to the year 1931. Similarly, for the United States, the price of gold was fixed at $20.67 per ounce from the year 1834 to 1933. Hence, the "*par-exchange rate*" of the US Dollar was $4.867 per Pound. France, Italy, and other major countries also joined the "*gold standard*" and it became an international exchange rate

standard by the year 1880. The period which followed is also known as the "*classic gold standard*" era, till World War I in the year 1914. Till the fragilities of war, the "*gold standard*" emerged as the earliest example of a fixed exchange rate regime allowing co-movement of prices and balance of payment adjustment across the globe, with a potential role of federal banks in managing interest rate and money supply. Conceptually, the gold standard corroborated with the commodity theory of money also referred to as the "*metallist*" theory by Schumpeter and Goodhart. As per the commodity theory in classical economics, money can be stocked and all transactions of money are the results of commodity exchanges or a form of barter. (Dornbusch and Frenkel 1984)

Dollarized Myopia

One of the fundamental shortcomings of the gold standard, governed by the commodity theory, was the unviability of the concepts of *credit*, balance-of-payment imbalance, and crises. In the wake of World War-I and widespread inflation, the "*classic gold standard*" collapsed, and the "*gold exchange standard*" was adopted wherein the United Kingdom and the United States of America held their reserves only in gold while all other countries held their foreign exchange reserves in US Dollar or Pounds or gold. This further required that the value of the total money in circulation across the world could not exceed the total value of gold and silver mined and minted. Lack of cooperation amongst nations, skewed geopolitical influences, and ultimately the *Great Depression* in the year 1929 led to the collapse of gold-pegged exchange rates. What followed was the Bretton-Woods System unfolding into dollar-dominance of international exchange rates. (U.S. Department of State 2017; Dooley, Michael P. Folkerts-Landau, David Garber 2003)

To adjust the "*holy trinity*" of confidence, liquidity, and adjustment, the Bretton-Woods Agreement was signed in the year 1944 by 44 member countries. This established a fixed-exchange rates system where the value of the currencies of the member countries was pegged to the US dollar and the US dollar was pegged to the value of gold, set at $35 per ounce (Federal Reserve History 1944). The aim was to have a mechanism in place which prevents the devaluation of currencies. As part of the agreement, the International Monetary Fund (IMF) and the World Bank were established with a vision of exchange rate stability, circulation of a new international currency, and necessary interventions to mitigate financial crises. By the year 1958, the United States maintained the supply of dollars in tandem with the fixed price of gold and all other currencies were convertible to US dollars (Bordo and Eichengreen 1993). Theoretically, the intervention of the United States during the Bretton Woods era exhibits the Keynesian school of thought, impressing government intervention to improve the operation and performance of the economy (Dornbusch and Fischer 1994).

Since market forces were not in play freely, the US dollar experienced considerable pressure as it became over-valued with the volume of dollars being in surplus without enough gold to match. By the early 1970s, United State was finding it difficult to maintain gold reserves to match the amount of dollars in circulation.

Ultimately, in the year 1971, the Bretton Woods agreement formally ended with the suspension of the convertibility of dollars to gold; this marked the end of the fixed exchange rate of the dollar-pegged to gold. Post the collapse of the Bretton Woods system and a short-lived Smithsonian agreement, industrialized nations of the global economy chose to "*float*" against the dollar, ending fixed-exchange-rate regimes (U.S. Department of State 2017). But, along with the World Bank, the IMF continues to function in line with the objectives set during the Bretton-Woods agreement. Ratified by 190 member countries, IMF states the following purpose amongst its other objectives: article. I(iii) *"To promote exchange stability, to maintain orderly exchange arrangements among members, and to avoid competitive exchange depreciation"* and article I(iv) *"To assist in the establishment of a multilateral system of payments in respect of current transactions between members and in the elimination of foreign exchange restrictions which hamper the growth of world trade."* Under Article VIII outlining "*General obligations of Members*", IMF enforces convertibility of balance held in foreign currencies, without any discriminatory practices, and promotes collaborative initiatives towards maintaining foreign exchange reserves by member countries (IMF 2020). As per the exchange rate arrangements recognized by the IMF in its annual report on "*Exchange Arrangements and Exchange Restrictions*" for the year 2020, the United States, European Economic and Monetary Union (EMU) follow *"free-floating"* regime, and the monetary policy is based on various indicators without a *"stated explicit nominal anchor*". Japan and the United Kingdom also follow a free-floating exchange rate arrangement, but with an inflation-targeting monetary framework. The Indian rupee is declared as a "*floating*" currency instead of "*free-floating*", within an inflation-targeting framework; IMF states that interventions in the form of monetary actions are what distinguishes a free-floating currency regime from a floating currency regime, otherwise driven by quantitative and qualitative measures of market forces (Habermeier et al. 2009).

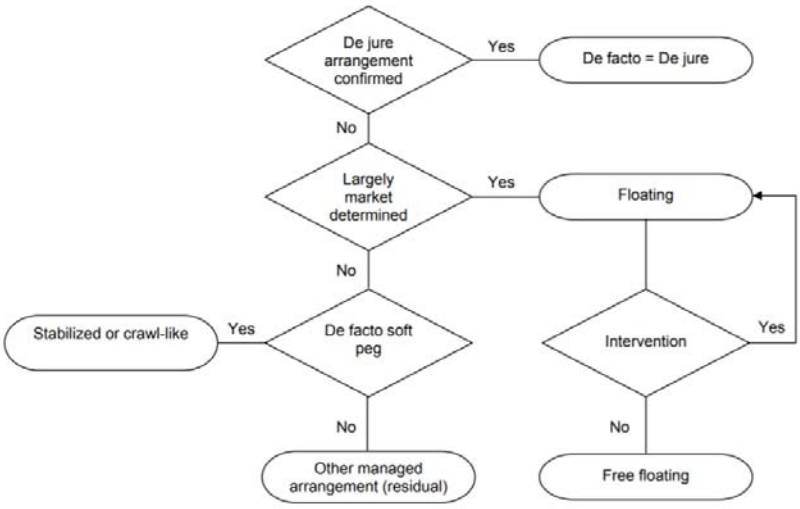

Figure 1. A stylized representation of key decisions of exchange rate classification by IMF, Source: IMF (Habermeier et al. 2009)

Theoretically, the end of the Bretton-Woods system marked a shift from the commodity theory of money to the "*purchasing power*" of money. Proposed by Gustav Cassel in 1922, the concept of purchasing power parity (PPP) stated "*Our valuation of a foreign currency in terms of our own, therefore, mainly depends on the relative purchasing power of the two currencies in their respective countries.*" Based on the purchasing power of a basket of goods, it implied that nominal exchange rates (NER), i.e. units of domestic currency in foreign currency, adjust itself to price levels of real exchange rates (RER). Hence, RER = $\frac{EP^*_T}{P_N}$, where E is NER, P^*_T are foreign price levels and P_N are domestic price levels. PPP or the "*law of one price*" is represented as $P_i = EP_i^*$, where, for a good *i*, P is the price in domestic currency, P^* is the price in foreign currency and E is the nominal exchange rate. (Taylor and Taylor 2004; Kenneth Rogoff 1996; Edwards 1987). PPP faced criticism due to short-run volatilities deviating from parity conditions, including Dornbusch's overshooting hypothesis and the J-curve in trade. Though in the longer run, especially for developed nations, parity conditions have been proven to hold, empirical research is dominated by dollarized perspectives. Emerging market currencies, mostly within inflation-targeting frameworks, constitute a substantial proportion of non-dollar trade and continue to be ignored due to fixation over hard currencies.

Real Rates

While parity conditions did not hold in the short run, PPP theory has been one of the earliest proponents of *real* exchange rates. Theoretically and empirically it substantiated the possibility of a differential in the value of the same currency between the exchange-traded NER and price-level factored RER. From viewing money as a commodity and currency as a federal token, the perspective transformed into what money can buy. Further, while Keynesian economics failed short of policy interventions to control inflation, monetarism gained momentum.

Propelled by the quantity theory of money, monetarism focused on the velocity of money, i.e. the rate at which money changes hands; it clearly distinguished between nominal and real quantity of money. Determined by the conditions of demand, *real* money was devoid of embedded inflation and other expectations (Friedman 1983). The velocity of money continued to fuel growth till the 1970s it became highly unstable. We argue that the unpredictability in the velocity is what led to changes in the banking system. Credit was now being extended outside traditional lending institutions. Money multiplied not just in banks but also in capital markets, mutual funds, and investments in other asset classes. But these higher rates of return also induced volatility.

The 1980s and 1990s were characterized by swings in the exchange rates. These decades were witness to currency crises inducing ripple effects across the global economy. Transitioning from the quantity theory of money, purchasing power of currencies was eroded overnight. While currency crises continue to be

researched, we need to look beyond dollarized debt to gather insights on potential monetary unions through regional trade cooperation.

Public Money and Cryptic Exonumia

During global economic crises in the past two decades, including the COVID-19 pandemic, fragilities were exposed in the financial markets which otherwise propositioned a high rate of returns. One such fragility was the steep decline in currencies, leading to denuding reserves of central banks, especially of emerging and low-income economies. The outcome was higher fiscal deficits, resulting in the curbing of government spending across the globe. But theoretically, the modern monetary theory (MMT) contradicts federal austerity. Distinguishing between the budget of the state with the budget of a firm or an individual, MMT states that money is a legal tender well within the right of the state and hence can be printed as well as supplied much to the requirement of the state. One of the proponents of MMT, Stephanie Kelton (2020) states deficits as a *myth* in the context of welfare schemes and state-funded initiatives. While the discretionary and non-discretionary powers of the state to build an economy continues to be argued, MMT perhaps finds its nemesis in the *digital asset class* of the twenty-first century.

Redefining money as we know it, digital assets can represent equity, bonds, real estate, exchange-traded funds, art, non-fungible tokens (NFT), cryptocurrencies, and every other asset subject to valuation. Not only has it led to liquidity but it has led to higher adaptability across markets with zero friction. Counterintuitive to MMT, which urges the state to print more money, digital assets are being generated, valued, and transacted with minimal or no intervention from federal agencies. There are frameworks, but no consensus across economies, to govern NFT and cryptocurrencies. While digital assets are being prophesied to become mainstream, it is nebulous to understand who and how will their purchase power as well as parity conditions be decided.

A sovereign foray into regularized digital assets is the digital bank note termed *Central Bank Digital Currency* (CBDC). In line with IMF's critical mission of furthering international monetary cooperation, the apex body has stated that 100 out of 190 of its member countries are exploring CBDC, wherein best practices and challenges are being documented. But for each of the countries, the operating norms and technology of the CBDC are different concerning the idiosyncrasies of the challenges faced by the economy. Hence, IMF agrees that there's no concept of "*one size fits all*", though the central objective remains to issue money in its safest form with the fundamental purpose being served, i.e. a claim on the central bank (Georgieva 2022). In India, the digital Rupee, denoted as e₹, is being introduced in a form closest to paper currency. A wholesale CBDC is set to settle trades, with minimal or no disruption to the financial system (RBI 2022). For China, the digital Renminbi, denoted as e-CNY, is being adopted both as a retail and a wholesale CBDC, with more than a hundred million individual users via Alipay & WeChat mobile phone apps (Georgieva 2022). The Bank of International Settlements (2021) in its Innovation Hub for CBDC explains that while banks are experimenting

with technology, deployment and prototypes of CBDC, key design choices vary with the model of issuance. Further, implications of anti-money laundering, and countering the terrorism of financing (AML/CFT), taxation, repatriation, legitimacy of transactions, and plausible degree of anonymity of not just CBDC but the digital asset class as a whole add to the ambiguity and morphing of good old money as we know it.

Conclusion

The recent popularity of the digital asset class is perhaps an indication that through different schools of thought, we are back to the *natural propensity of barter* as described by Adam Smith. The metamorphoses of money have thus completed a full circle though certain tenets have been distorted. Firstly, as opposed to tendering transactions in gold, the underlying value of a transaction is losing sacrosanctity. Digitized currency or even traditional banking systems are subject to sudden depreciation and enormous fraud. Secondly, as opposed to theoretical parity conditions, there is a widening gap between the purchasing power of currencies of developed, emerging, and lower-income countries. This may lead to the contextualization of existing macroeconomic theories. Finally, there is a need for a Copernican shift in our policy focus and Herculean efforts in improving the safety nets of financial markets to leverage digital assets. This can be perceived as an opportunity to test seminal theories and create new knowledge beyond the horizon of the traditional concept of money.

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