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BOOK REVIEW

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Can we rediscover Better Money?

Podemos redescobrir uma moeda melhor?

¿Podemos redescubrir un dinero mejor?

Book Review

White, Lawrence H. (2023). Better Money: Gold, Fiat, or Bitcoin? (1st ed.). Cambridge University Press.

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They say money doesn't buy happiness. Fair enough, but I would add that happiness is not the goal of any technology, but to support human life. In this regard, money is extremely successful as it allows us to coordinate in space and time and to thrive through trading and savings. We believe the "first coins were introduced as a method of payment around the 6th or 5th century BCE" (van der Crabben, 2011), but it's hard to account for when humans first developed money (Fauvelle, 2024).

All technologies have two essential components: a conceptual framework which provides meaning and (potentially many) concrete implementations through which we materialize the concept. Money is like the government, a technology so old we now take for granted that it always existed and will always exist. Contrary to the naive understanding, the prevalence of money through history doesn't mean it was always implemented in the same way. Just like the modern government inner workings would probably shock long deceased political leaders, money fundamentals changed dramatically over time. In Better Money: Gold, Fiat, or Bitcoin, Lawrence White ponders about the past (the gold standard), the present (the fiat standard), and the future (a potential Bitcoin standard) implementations of money (White, 2023).

I'm tempted to say that White (2023) would promptly agree with Vitalik Buterin's account that most money users are "decently served by the modern banking system (if in the 1st world)"[2]. Yet, his goal with Better Money is not to praise or justify one standard over the other but to equip people with reason for a change in the monetary system in the event the current money implementation becomes more of a burden than an empowering technology.

> Perhaps the main reason to critically evaluate alternative monies is prudential. It will help to understand their advantages and disadvantages in the event, however unlikely, that inflation gets out of hand in more than just a few fiat currencies. Should the unfortunate day arrive when we find that the status quo is failing, we will need to choose which monetary regime is the best option going forward (p. 4).

MONEY EMERGES FROM MARKETS

Better Money is divided into six chapters. Chapter 1, Markets and Governments in the History of Money, summarizes the monetary history, from barter to commodity money to the classical international gold standard, finally to the contemporary national fiat standard. With this chapter, White (2023) aims to disprove the "state theory of money" (chartalism), the notion that money is created by the state and can only exist because of a power authority mandate.

> It doesn't make sense for governments to use bits of gold or silver as the material for their pay tokens, however, rather than something cheaper, say bits of iron or copper or even paper impressed with sovereign emblems. Use as 'government pay tokens' therefore doesn't provide an economically logical account for the emergence of silver and gold coins. In the Mengerian market-evolutionary account, preciousness is an advantage in a medium of

[2] https://imgur.com/kIYAy5F

> exchange because it lowers the costs of transporting any given sum of purchasing power. In a Chartalist pay-token account, preciousness is a disadvantage – it raises the costs of the material used to pay the troops – and so is not a sensible choice. Remember that the value of the tokens is supposed to come from the sovereign imprint, not from the material that is imprinted. Issuing tokens made of something cheaper would accomplish the same purpose at lower cost to the sovereign (pp. 15-16).

Quite the opposite, White (2023) supports the logical argument against the chartalist notion by presenting broad historical evidence that market institutions gave rise to money and have successfully provided it in different forms through history.

In chapter 2, How a Gold Standard Works, White (2023) first defines what he will call a gold standard.

> Following common usage by monetary historians, 'a gold standard' here means any monetary system – whatever the details of its banking system – in which a defined mass of gold coin or bullion is the unit of account in which prices are posted and accounts kept, and gold coins or bullion are the medium of redemption that ordinary currency and bank accounts promise to pay (p. 39).

Defining the gold standard in this abstract way accounts for the many different implementations that took place in space and time. It does not require the existence of a banking system that emits gold certificate bills (paper money). Under the gold standard, gold is the basic and definitive money. When paper bills do exist, be they emitted from private banks or from a central bank, money is still defined to be a standard mass of gold. Thus, the paper bills are just representation tokens that draw value from the possibility of redeeming the underlying asset from the bill issuer.

Later in the chapter, White (2023) employs supply-and-demand diagrams to analyze the operation of the gold standard. Supply-and-demand diagrams are the standard tools in introductory economics manuals and support a (simplified) qualitative discussion about the relationship between economic goods. The author argues that the market acts as a stabilizing feedback loop for the purchase power of gold in response to changes in the demand for money (e.g. financing a war, which increases demand for money) or in the supply of money (e.g. the California gold rush or the extraction of gold in the European colonies).

The logical mechanism is to compare how gold money stock relates to gold money flows. Figure 1 shows the supply-and-demand diagrams for the global economy. The left diagram (Figure 1a) relates the monetary gold stock, G_M, expressed in units of ounces of gold, with the purchase power of gold, ppg, expressed in units of bundles per ounce, that is, how many standard baskets of goods can be traded for an ounce of gold (similar to how modern econometrics measure inflation, by tracking the price of a standard basket of goods). Purchasing power is related to a notion of inflation:

> The inflation rate means the rate of increase of a general level of prices, or equivalently the rate at which the purchasing power of the monetary unit shrinks. A higher average inflation rate imposes a higher tax, or more negative return, on holding currency (p. 49).

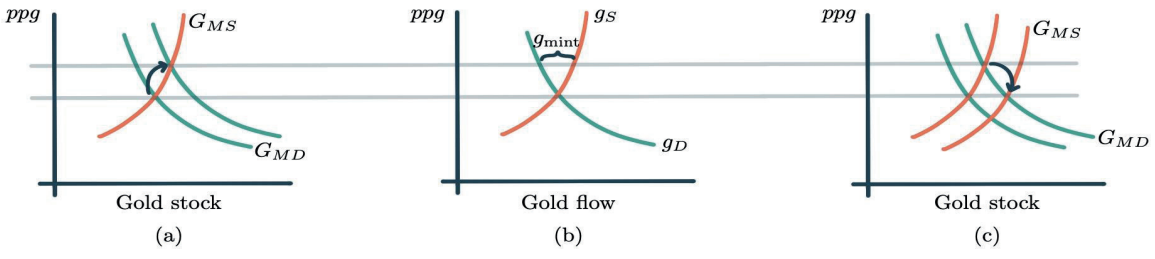
The stock of available above-ground gold is constituted by gold coins and bullion (monetary gold) and jewelry and industrial inventories (non-monetary gold). White argues that the demand curve for monetary gold, G_{MD}, "illustrates the proposition that at a lower purchasing power per ounce of gold, households and firms would want to hold more ounces to accomplish the same transactions.". On the other hand, the supply curve for monetary gold, G_{MS}, "illustrates the proposition that at a higher purchasing power of gold, because non-monetary gold objects are more expensive, some existing jewelry and candlesticks are melted down and coined into money."

The center diagram (Figure 1b) relates the money flow into the economy, g_M, in units of ounces of gold per year, with the purchasing power of gold. The flow of gold is constituted essentially by mining production and industrial uptake. The flow supply curve for gold, g_S, "illustrates the proposition that a higher relative price of gold brings forth a greater flow quantity from mining firms as it pays them to exploit sources with higher extraction costs." On the other hand, the demand curve of the flow market, g_D, "illustrates the proposition that industrial users will buy a smaller volume per year, because some will switch to substitutes, at a higher price of gold."

Economic growth is essentially deflationary, in the sense that there are more goods seeking for the same amount of units of money, bringing the purchasing power of gold up. White shows historical evidence that gold flows work in tandem to balance price levels and keep historical inflation rates low. We refer again to Figure 1 to see how the stock-flow mechanics work. Under economic growth, the monetary gold demand curve shifts outward in the stock diagram (Figure 1a). To see why, imagine a constant money stock situation (vertical curve). If money supply is to stay constant, an increase in purchase power has to reflect moving the demand curve outward.

Figure 1

Supply-and-demand curves in a global gold standard. (a) Increase in the purchasing power of gold (ppg) caused by changes in the demand for gold. (b) Effect of changes in the purchase power of gold on the gold flow market. (c) Regulating effect of the reaction in the gold flow market back in the gold stock.



Adapted from (White, 2023)

The increased purchase power is perceived by the flow market (Figure 1b). The flow supply curve indicates mining activity will be incentivized while the flow demand curve indicates a push back in industrial use of gold. The difference, g_{mint}, argues White, constitutes an additional flow of gold that will go into the mints. With time, the minting of new coins expands the monetary gold stock, pushing rightward the supply curve of monetary gold stock (Figure 1c), effectively bringing the purchase power of gold back down. The same mechanism works the other way around to increase the purchasing power in the case of economic shrinkage. White employs the same methodology to analyze the impact of unexpected changes on flows of gold in the economy and how banking saves on the costs of keeping gold.

Even though classical Austrian economists would refrain from such equilibrium arguments, this analysis put light over the automatic adjusting mechanism of the money as supplied by the market. White's methodology in this chapter is key to his ultimate goal of comparing the three monetary systems. He will later use the same supply-and-demand methodology to compare the gold standard to both fiat and bitcoin standards. In Chapter 3, Common Misconceptions About the Gold Standard, the author builds upon both the historical evidence from Chapter 1 and the mechanism explained in Chapter 2 to expose popular and academic misconceptions about the gold standard, both by its critics and by its defenders.

UNDERSTANDING THE FIAT STANDARD

Chapter 4, How a Fiat Standard Works, starts by defining what a fiat standard is:

> In a fiat standard the monetary unit established by fiat (government decree) is merely one unit of itself. It is not defined in terms of, or redeemable for, any commodity that has non-monetary uses. (…) Checking account balances that the public holds at commercial banks are claims to fiat money, not themselves basic fiat money. Fiat money has thus been aptly described as "money consisting of mere tokens which can neither be employed for any industrial purpose nor convey a claim against anybody" (White, 2023, pp. 121-122).

White (2023) teaches that "fiat money was historically established by government intervention into the monetary system", typically by a three step process:

1. the government invest a single institution the legal monopoly of note-issuance, which in consequence becomes the central bank;
2. the liabilities of the central bank become widely accepted to the point of displacing species as reserves for the other banks;
3. the government suspends the redemption of central bank liabilities, thereby turning central bank notes and deposits into fiat money.

This process often goes unnoticed by the general population. Although the unit of account has been divorced from its underlying value asset, it continues to use its traditional name in a suspicious form of happy coincidence. This process has been used even for the introduction of new fiat monies as was the case of the Brazilian Real.

White (2023) argues that fiat money is an artificial government creation in its essence.

> In no known historical case has an irredeemable money standard resulted from a free-market-driven evolution of bank reserves from a positive fraction of liabilities down to zero, contrary to a scenario envisioned by the economist Kevin Dowd. (…) When money-users prefer par acceptance, and we have seen historically that most do, a switch to fiat money must be involuntary. Legally, only a bank that the government protects from ordinary contract enforcement has the immunity to unilaterally end its contractual obligation to "pay the bearer on demand" in basic money (p. 124).

By contrast, Bitcoin has been privately issued and irredeemable from the start, and its use is entirely voluntary. Also, the supply-and-demand mechanics of fiat and Bitcoin are fundamentally different. For this reason, the author does not see Bitcoin as a form of fiat money.

Most importantly for White's characterization of monetary systems, fiat money supply is regulated by governmental act, not by the automatic market feedback system that characterizes the gold standard. White (2023) details the banking mechanisms involved.

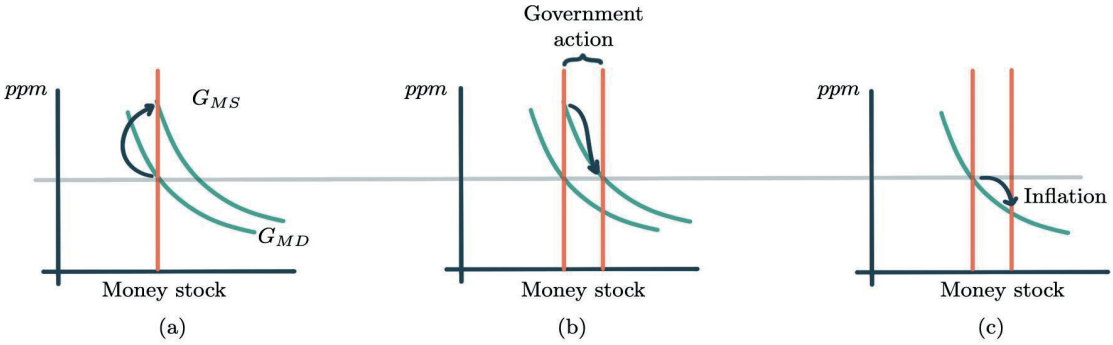
> Fiat money does not have a market-governed supply, or a standard upward-sloping supply curve indicating increasing marginal cost of production, since the supply is exclusive to government (apart from counterfeiting) and the marginal cost of production for nominal units is negligible. On the demand side, because fiat money units are neither composed of nor redeemable claims to any useful commodity, there is not any non-monetary demand. Monetary theorists accordingly say that a fiat money is "intrinsically useless" for non-monetary purposes (pp. 122-123).

Control over the money stock in the economy at wish may sound like an improvement over the automatic regulating effect we identified in the gold standard. After all, in a scenario of increasing demand for money, that regulating effect depends on the action of miners to increase ground exploitation and of industrial companies to refrain from employing gold in non-monetary applications. In summary, the self-regulating market mechanism has a (very) physical cost.

Consider again the deflationary effect of economic growth we analyzed in the previous section, shown in Figure 2a. The money demand curve logic is the same, but the money supply curve is now vertical to indicate that the amount of money in the economy is not sensitive to changes in its purchasing power, but to government decree. Observing an increase in the purchasing power because of an outward shift in the demand curve, the central bank can act by expanding the stock of money to regulate the purchasing power back to its original level (Figure 2b). It can be argued that this regulating mechanism can be done faster, more reliably and cheaper than counting on the decisions of thousands of market agents. White discusses the banking mechanisms involved in such a movement.

Figure 2

Supply-and-demand dynamics on a fiat standard. (a) Increase in the purchasing power of money (ppm) caused by changes in the demand for money. (b) Effect of the government action of increasing the money stock via the central bank, potentially regulating the ppm. (c) Inflationary effect caused by government action.



Adapted from (White, 2023)

However, White (2023) presents historical evidence that governments have been lousy wardens of the economy, effectively delivering inflation rates persistently higher than those observed under the gold standard periods.

> Over the fifty years after August 1971, the Consumer Price Index for All Urban Consumers (CPI-U) rose a cumulative 569 percent, for an average annual inflation rate of 3.9 percent. The average annual US CPI inflation rate during the period of the classical gold standard (1879-1913), by contrast, was 0.13 percent (p. 137).

The implication of this analysis, since the central bank is able to control the stock and flow of money, is that under the fiat standard the price level is a government policy instead of an emergent market phenomenon. In fact, there's no effective mechanism to tie the political nature and incentives of governmental action to the economic need to regulate the purchase power of money. White explains the seigniorage mechanism with which the government profits from an inflationary policy. White details the slow inflation and deflation movements that historically happened during the classical gold standard period, revealing another explanation for the consistent higher inflation rates of fiat: contrary to the seigniorage profits from the inflation periods, there's a cost (both economical, but also political) over the government to sustain deflationary policies necessary to regulate the purchasing power of money over a long period (Figure 2c).

This is a problematic situation since money has to reflect the scarcity of the economic goods it somehow represents. In practice, fiat presents no scarcity, that's why it is a flawed money when compared to gold. And since it is created by the government, we should expect it to be operated for the benefit of the government, not the general public. In the words of von Mises:

> As money can never be neutral and stable in purchasing power, a government's plans concerning the determination of the quantity of money can never be impartial and fair to all members of society. Whatever a government does in the pursuit of aims to influence the height of purchasing power depends necessarily upon the rulers' personal value judgments. It always furthers the interests of some groups of people at the expense of other groups. It never serves what is called the commonweal or the public welfare. In the field of monetary policies too there is no such thing as a scientific thought (Mises, 1949/1998, p. 419).

It remains the question of why fiat money is valued if it can't build upon an underlying asset. White presents the case of the Somali shilling to argue that the historical developments of money habituate people to keep accepting money when it can't be redeemed anymore so long as it works, "and it works so long as others follow the same strategy."

> Sheer momentum thus appears to be enough to keep a fiat currency circulating once it has been successfully launched. Sovereign power might be necessary to launch a fiat money, but it is not necessary to keep it circulating at a positive value (p. 128).

White doesn't agree that money is a "shared illusion", though: "Fiat has real properties and its history matters." This self-reinforcing expectation of acceptance is a fragile situation, a negative shared expectation is self-reinforcing too. Since Bitcoin and other cryptocurrencies lack history compared to fiat money, this argument will be later used by the author as part of his skepticism about a potential Bitcoin standard.

UNDERSTANDING THE BITCOIN STANDARD

Chapter 5, How a Bitcoin Standard Works, examines the operation of Bitcoin as a hypothetical monetary system. A monetary system based on private non-commodity money was considered decades before technology would provide an implementation, e.g., Hayek considered a market-driven stable purchasing power scenario of private monies (Hayek, 1990). Bitcoin's launch in 2009 brought us a practical implementation of a private irredeemable non-commodity money would-be. In the first part of the chapter, the author reviews the history of Bitcoin, including the cypherpunk context in which ideas were bred.

Bitcoin's supply is programmed to follow a fixed diminishing issuance schedule. This is a third configuration when compared to gold and fiat, another reason to White's distinction as a potentially new monetary system. The monetary policy of Bitcoin defined an initial minting rate of 50 BTC (5.000.000.000 satoshi, the monetary unit in the system) every ten minutes on average. Every 210.000 blocks (approximately 4 years), the issuance rate is cut in half. Because of technical implementation details, this halving policy will happen 32 times, finishing the issuance of new coins around the year 2140, for a total stock of little less than 21 million BTC.

At the time of writing this paper (September, 2024), four halving events have happened:

1. November 28, 2012, to 25 BTC;
2. July 9, 2016, to 12.5 BTC;
3. May 11, 2020, to 6.25 BTC;
4. and April 19, 2024, to 3.125 BTC.

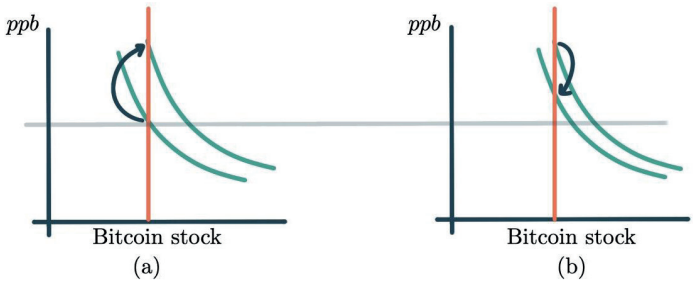
To this date, around 19.75 million BTC were already minted, 94% of the total supply. Considering these figures, the current inflation rate of the bitcoin supply is 0.85% per month.

Since most of the Bitcoin stock was already minted, White (2023) considers it to be fixed in the supply-and-demand analysis, shown in Figure 3a. Because the supply curve is vertical as in the case for the fiat standard and the minting rate is pre-programmed, the impact of demand shifts is entirely reflected on price and there's no regulating mechanism, be it automatic as in the gold standard, or political as in the fiat standard (Figure 3b).

> Purchasing-power volatility is baked into Bitcoin's vertical supply curve. If Bitcoin were only demanded as a medium of exchange and not at all as a speculative investment, then the volatility of the demand curve, and thus of purchasing power, would be lower than it is today. But because increased investment holding and not medium-of-exchange holding has been primarily responsible for the increase of Bitcoin's market capitalization over the last decade, it is not surprising that (contrary to predictions of a few years ago) no reduction in the volatility of Bitcoin's purchasing power has been seen with growth in its market cap (pp. 183-184).

Figure 3

Supply-and-demand dynamics on a bitcoin standard. (a) Increase in the purchasing power of bitcoin (ppb) caused by changes in the demand for money. (b) The lack of self-regulating action implies all changes in the demand for bitcoin will affect the ppb.



Adapted from (White, 2023)

It follows the puzzling question of how Bitcoin acquired any market price (and thus value). White (2023) argues that enthusiasts are "willing to pay because they placed some positive probability on Bitcoin becoming useful as a medium of exchange and/or trading at a

higher price at some future date." Under this perspective, if market monetization of Bitcoin indeed comes to light, it will be founded on the entrepreneurial action of early adopters. It's hard not to imagine something similar happened to gold (even though White doesn't explore this line of speculation). Indeed, there's no established theory to explain how a non--commodity asset can be monetized.

> There is no established theory of a bootstrapping process by which a potential asset switches from a zero to a positive value in anticipation of its use as a medium of exchange, or in anticipation of a future positive value (however grounded). (…) The historical-component hypothesis helps to explain why all governments that have successfully launched new fiat monies have in similar fashion first given them a fixed redemption value in terms of a commodity or an established fiat money. But while all irredeemable government currencies that have successfully launched have first had a fixed redemption value, Bitcoin has never been redeemable at a contractually fixed rate for another money or commodity (pp. 165-167).

Yet, since Bitcoin has been able to attract an increasing user base, it must hold some perceived utility. I don't contend that a significant amount of people come to Bitcoin as a speculative asset looking for "greater fools" in an investment betting game, hoping to surf the appreciation caused by its potential monetization movement. Others see Bitcoin as a value-preserving asset and some "see Bitcoin as having a fundamental value rooted in future payment network use", to know, privacy-preserving, oppression-fighting, and self-governing.

COMPARING THE PAST, THE PRESENT, AND THE FUTURE

In chapter 6, Comparing and Contrasting Gold and Bitcoin Standards, White (2023) summarizes his findings.

> A Bitcoin standard has the advantage that the Bitcoin supply curve does not shift, but the disadvantage that the supply curve is vertical in both the short run and the long run, implying unstable purchasing power in the face of money demand variations. A gold standard has the advantage that the global stock supply curve for monetary gold is non-vertical in the short run and nearly horizontal in the long run, providing responses in the quantity that stabilize the purchasing power of gold, but the disadvantage that the supply curve can occasionally shift. A fiat standard has the potential advantage that its supply can be deliberately managed to stabilize the price level both in the short run and in the long run, but the disadvantage that has seldom been managed that way in practice, due to the incentives that accompany government control over the quantity of money (pp. 195-196).

Risking to put words in his mouth, the author seems to have no option but to accept the gold standard as a historical relic, a kind of lost jewel that can't be put forth anymore. White (2023) sounds critical about the current fiat standard, yet, skeptical about the adoption of a Bitcoin standard.

> My prediction is that BTC is unlikely to become a commonly used medium of exchange for the same reason, namely that its purchasing-power risk and transaction costs make it unattractive to use as a medium of exchange (pp. 202-203).

This view seems to agree with Hayek's (Hayek, 1990) and von Mises (Mises, 1998) analysis that money-holders would care about a combination of stable purchasing power and the convenience of exchange. This is where my main criticism of White's position holds: we don't live in the same conditions in which the gold standard developed, to know, a period in which the institution of private property developed and flourished. Since the eighteenth century, the concept of private property has been under attack. During the twentieth-century, profound social and political changes weakened the institution of private property, culminating in the current welfare states and the growing government authoritarianism in Western democracies.

> The modern world has witnessed restrictions not only of property rights but also of liberties historically associated with them. Exploiting the social turmoil caused by two world wars and the intervening Great Depression, demagogues in many parts of the world, but especially in Europe, have resorted to socialist slogans to justify the expropriation or subordination of private property to the state. Where they have succeeded, the population became to a high degree dependent for economic survival on the goodwill of its rulers. (…) The well-intentioned measures of democratic social welfare have also encroached on both property and freedom – more elusively, and certainly less violently, but in the long run perhaps no less dangerously (Pipes, 1999, p. 203).

For those like me that came to the book because of the Bitcoin side of it, White is skeptical about the probability of a Bitcoin Standard. Network effect, the strong tendency to stay with the most common currency, protects fiat monies. Yet, as White points out, inflation and privacy implications can erode the present equilibrium in favor of other systems, Bitcoin being the most recent contender. Nevertheless, it is probably the most conscientious analysis of Bitcoin as a monetary phenomenon I've encountered so far. This book makes me believe that even if Bitcoin never becomes a commonly accepted medium of exchange (i.e., becomes true money), it already made money better by forcing us to improve our understanding about how currencies work.

The fiat standard was imposed by politics, not because of economic necessity of efficiency. White chooses to stray outside the sphere of economic analysis in the case of Bitcoin, though, but if we came to adopt a Bitcoin standard in the future, it will probably happen because of political and social reasons. Every monetary system has a cost, as White analyzes in his book. The gold standard had the cost of gold production, but it produced great purchasing power stability. He cites the deliberate control of money supply as an advantage of the fiat standard, but society incurs the cost of increased inflation. I would not discard the possibility of people grin and bear the higher volatility of Bitcoin's purchasing power in return for a monetary system that is not controlled by the whims of political rulers.

Better Money is worth reading. White's arguments are well-founded and certainly contribute to the understanding of the different implementations that the technology of money has experienced throughout history. Above all, the author advocates for freedom of decision-making based on the market. I hope his arguments help people reinvent and rediscover a better money.

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