

THE FIAT STANDARD

*The Debt Slavery Alternative
to Human Civilization*

Saifedean Ammous



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To my mother, sister, brother, and grandparents

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About the Author

Saifedean Ammous is a world-renowned economist and author of *The Bitcoin Standard: The Decentralized Alternative to Central Banking*, the definitive and best-selling book on bitcoin, translated to 25 languages. He is also the author of the forthcoming textbook *Principles of Economics*. Saifedean teaches courses on the economics of bitcoin, and economics in the Austrian school tradition, on his online learning platform *Saifedean.com*, and also hosts *The Bitcoin Standard Podcast*.

Foreword

by Ross Stevens

Founder and Executive Chairman, NYDIG

Immediately upon its publication, Saifedean Ammous's *The Bitcoin Standard* became an instant classic—required reading for anyone seriously interested in understanding the importance and power of bitcoin. First taking the reader on a captivating journey through the history of money, *The Bitcoin Standard* then proceeds to comprehensively lay out the first principles of bitcoin's comparative appeal. Indeed, amidst a selection of outstanding bitcoin literature, *The Bitcoin Standard* sits atop the “if you only read one book about bitcoin, read this book” mantle from the bitcoin community.

Almost four years later, *The Bitcoin Standard* has aged well. Bitcoin is relevant to the lives of over one hundred million people worldwide today, strongly confirming the validity of Saifedean's central insights. Given that bitcoin, unlike fiat, is voluntarily adopted by its users in every instance, it's appropriate to be astonished that, despite bitcoin's short life, it has become a significant global monetary institution, providing a nonstate and non-bank means of wealth storage, as well as an apolitical and neutral transactional medium.

Overall bitcoin adoption figures are compelling, but per capita penetration rates tell an even more interesting story. Bitcoin's greatest per capita penetration is in sub-Saharan Africa, Latin America, Eastern Europe, and Southeast Asia. That citizens of these neighborhoods are among the most fervent early adopters makes sense. Whether the symptoms are advanced inflationary episodes or suffocating capital controls, citizens in the highest per capita adoption countries are attracted to bitcoin due to the failure of their local institutions, spanning weaknesses in government integrity, property rights, and monetary freedom.

Perhaps as intuitively as explicitly, the attraction hinges on bitcoin's free-market, predetermined issuance model, which ensures that the privileged elite cannot emerge with sole access to the monetary spigot. Bitcoin's proof of work—whereby bitcoin miners surrender electricity and computational resources to acquire new tokens—establishes a real-world cost for the resource, requiring miners to “buy in” should they want to occupy the position of the mint.

This is where Saifedean brilliantly turns things upside down in *The Fiat Standard*. His penetrating insight is to explain the operation of fiat by analogy to the operation of bitcoin. In this context, we can think of fiat as a digital currency, like an altcoin, defining its qualities and characteristics and its strengths and weaknesses. Saifedean analogizes fiat mining as credit creation and fiat miners as any institutions with fractional reserve requirements. Like bitcoin miners, fiat miners are incentivized to maximize token issuance for themselves. However, unlike bitcoin miners, fiat miners are not constrained by the difficulty adjustment. Thus, fiat mining has no mechanism for controlling issuance, which powerfully explains the accelerating explosion in fiat tokens, country after country, decade after decade. Saifedean's framework further demonstrates that observed fiat collapses, like poorly designed bridges, represent nothing more than the inevitable, and inexorable, result of poor engineering.

Far from a one-sided attack on fiat, *The Fiat Standard* clearly illustrates and explains the advantages that made fiat's global adoption possible. Whereas *The Bitcoin Standard's* analytical framework centered around

assessing salability across time, and how it explains the monetary rise of gold and bitcoin, in *The Fiat Standard*, Saifedean uses the framework of salability across space to explain the rise of fiat and how it replaced gold. This framework further forms the basis for assessing bitcoin's rise in a fiat world, its security model, and chances of continued success.

Leveraging Saifedean's language of "fiat tokens," we also gain clarity on why modern central and commercial banking—combined—cause, not cure, severe economic downdrafts. By giving in to the populist clamor for ever more abundant, freely issued fiat tokens, fiat mining cripples the role of the wisest regulator, the market, by removing the most important mechanism for efficient, economy-wide allocation of capital: relative prices of sound (i.e., strictly limited) monetary tokens. Lacking restraint in fiat token issuance, sovereign defaults in 2020 were the highest they've been in more than twenty years, and the ratio of sovereign credit downgrades to upgrades was at an all-time high of ten to one.

With the flaws in fiat's engineering infrastructure firmly established, Saifedean then takes us on a wide and unexpected journey, a tour de force that demonstrates the implications of these flaws in various areas of our day-to-day life, spanning architecture, family, food, science, and energy, among others. This controversial section will leave certain readers angry, strongly disagreeing, or worse. However, many open-minded readers will emerge with a cannot-unsee collection of thought-provoking questions and insights regarding fiat's perniciousness. Saifedean's framing of fiat as a fundamental explanation represents an important and original contribution to the discussion of why a monetary system governed by rulers leads to vast inequities, imbalances, and unintended consequences.

I will spoil no surprises here. However, as a preview of what's to come, recall that while bitcoin requires its appropriately expensive proof-of-work process to create new tokens, fiat mining's process obliterates the concept of opportunity cost in creating its tokens. This contrast explains the mad dashes for, and desperate clinging to, power among fiat token creators—and therefore the utter lack of surprise that this crowd feels most threatened by bitcoin. Seeing no opportunity cost to minting fiat tokens with abandon, many fiat miners

act like they are getting something for nothing. Consider the wide-ranging societal implications of that perceived, of course not actual, reality.

Saifedean ends on a note of optimism mixed with practicality, exploring how fiat and bitcoin can coexist, including bitcoin potentially driving a gradual reduction in fiat debt via voluntary fiat liquidation. Accelerating bitcoin adoption, coupled with fiat's continued decline in real terms, can generate a glide path for humanity's step-by-step, voluntary transformation to sound money. Thus, the rise of bitcoin need not cause a catastrophic collapse of fiat, and a strong case can be made for bitcoin as a form of fiat-denominated wealth insurance, strengthening the case for a corresponding nonzero bitcoin allocation for everyone.

However, bitcoin is also a form of life insurance, though not in the traditional sense of a big payout if you die. Rather, bitcoin provides a big payout while you live, in the form—pricelessly—of personal sovereignty, freedom, and dignity. In a world replete with monetary unfairness, injustice, the institutionalization of moral hazard, and the State's increasing domestication of our individuality, bitcoin's incorruptible fairness, justice, truth, and beauty represent a beacon for all optimists who seek personal improvement and peace.

Perhaps just in time, each global citizen now has a choice. You can stay on the fiat standard, in which some people get to produce unlimited new units of money for free, most likely not you. Or opt in to the bitcoin standard, in which no one gets to do that, including you. With the option, now, of a monetary system governed by rules, not rulers, we can each be grateful for the opportunity, and personal responsibility, of making that choice.



PART I

Fiat Money

Chapter 1

Introduction

This year marks the fiftieth anniversary of the U.S. government closing the gold-exchange window and putting the world on a fiat monetary system. The vast majority of people alive today have never used anything but fiat money. This cannot be written off as an unexplained fluke, and economists should be able to explain how this system functions and survives, despite its many obvious flaws. Fiat's longevity makes it unreasonable to keep dismissing it as an irredeemable fraud on the brink of collapse, as many of its detractors have done for decades. There are, after all, plenty of markets around the world that are massively distorted by government interventions, but they nonetheless continue to survive. It is no endorsement of these interventions to attempt to explain how they persist.

In his 1929 book *The Thing*, G. K. Chesterton tells the story of a man who finds a fence that appears to serve no purpose and decides to remove it. Another man counters, "If you don't see the use of it, I certainly won't let you

clear it away. Go away and think. Then, when you can come back and tell me that you do see the use of it, I may allow you to destroy it.”¹ Fifty years after taking its final form, and more than a century after its genesis, with a new competitor threatening to potentially remove it, an assessment of the uses of the fiat system is now both possible and necessary.

While fiat has not won acceptance on the free market, and though its failings and limitations are many, there is no denying that many fiat systems have worked for large parts of the last century and facilitated an unfathomably large number of trades all around the world. Its continued operation makes understanding it useful, particularly as we still live in a world that runs on fiat. Just because you may be done with fiat does not mean that fiat is done with you! Understanding how the fiat standard works, and how it frequently fails, is essential knowledge for being able to navigate it.

It is also not appropriate to judge fiat systems based on the marketing material of their promoters and beneficiaries in government-financed academia and the popular press. While the global fiat system has so far avoided the complete collapse its detractors predicted, that cannot vindicate its promoters’ advertising of it as a free-lunch-maker with no opportunity cost or consequence. More than sixty episodes of hyperinflation have taken place in countries using fiat monetary systems in the past century.² Moreover, avoiding regular catastrophic collapse is hardly enough to make a case for it as a positive technological, economic, and social development.

Beyond the relentless propaganda of its enthusiasts and the rabid venom of its detractors, this book attempts to offer something new: an exploration of the fiat monetary system as a technology, from an engineering and functional perspective, outlining its purposes and common failure modes, and deriving the wider economic, political, and social implications of its use. Adopting this approach to writing *The Bitcoin Standard* contributed to making it the bestselling book on bitcoin to date, helping hundreds of thousands

1 Chesterton, G.K. *The Thing: Why I Am a Catholic*. New York: Dodd, Mead, & Co., 1929. Print.

2 Hanke, Steve. “Lebanon Hyperinflates.” Cato Institute. 23 Jul. 2020. Web.

of readers across more than twenty-five languages understand the significance and implications of bitcoin.

Perhaps counterintuitively, I believe that by first understanding the operation of bitcoin, you can then better understand the equivalent operations in fiat. It is easier to explain an abacus to a computer user than it is to explain a computer to an abacus user. A more advanced technology performs its functions more productively and efficiently, allowing a clear exposition of the mechanisms of the simpler technology and exposing its weaknesses. My aim is to explain the operation and engineering structure of the fiat monetary system and how it operates in reality, away from the romanticism of governments and banks that have benefited from this system for a century.

The first seven chapters of *The Bitcoin Standard* explained the history and function of money and its importance to the economic order. With that foundation laid, the final three chapters introduced bitcoin, explained its operation, and elaborated on how its operation relates to the economic questions discussed in the earlier chapters. My motivation as an author was to allow readers to understand how bitcoin operates and its monetary significance without requiring them to have a previous background in economics or digital currencies. Had bitcoin not been invented, the first seven chapters of *The Bitcoin Standard* could have served as an introduction to explaining the operation of the fiat monetary system. This book picks up where chapter 7 of *The Bitcoin Standard* left off. The first six chapters of this book are modeled on the last three chapters of *The Bitcoin Standard*, except applied to fiat money.

How does the fiat system actually function, in an operational sense? The success of bitcoin in operating as a bare-bones and standalone free-market monetary system helps elucidate the properties and functions necessary to make a monetary system work. Bitcoin was designed by a software engineer who boiled a monetary system down to its essentials. These choices were then validated by a free market of millions of people around the world who continue to use this system and currently entrust it to hold around \$800 billion of their wealth. The fiat monetary system, by contrast, has never been put on a free market for its users to pass the only judgment that matters.

The all-too-frequent systemic collapses of the fiat monetary system are arguably the true market judgment emerging after suppression by governments. With bitcoin showing us how an advanced monetary system can function entirely independently of government control, we can see clearly the properties required for a monetary system to operate on the free market, and in the process, we can better understand fiat's modes of operation and all-too-frequent modes of failure.

To begin, it is important to understand that the fiat system was not a carefully, consciously, or deliberately designed financial operating system like bitcoin; rather, it evolved through a complex process of compromise between political constraints and expedience in managing government default. The next chapter illustrates this by examining newly released historical documents on just how the fiat standard was born and how it replaced the gold standard, beginning in England in the early twentieth century and completing the transition in 1971 across the Atlantic. This is not a history book, however, and it will not attempt a full historical account of the development of the fiat standard over the past century, in the same way *The Bitcoin Standard* did not delve too deeply into the study of the historical development of the bitcoin software. The focus of the first part of the book will be on the operation and function of the fiat monetary system, by making an analogy to the operation of the bitcoin network, in what might be called a comparative study of the economics of different monetary engineering systems.

Chapter 3 examines the network topography and underlying technology behind the fiat standard. Contrary to what the name suggests, modern fiat money is not conjured out of thin air through government fiat. Government does not just print currency and hand it out to a society that accepts it as money. Modern fiat money is far more sophisticated and convoluted in its operation. The fundamental engineering feature of the fiat system is that it treats future promises of money as if they were as good as present money because the government guarantees these promises. Government coercion can maintain such a system for a very long time, even if it would not survive free-market competition.

Chapter 4 examines how the fiat network's native tokens come into existence. As fiat money is credit, credit creation in a fiat currency results in the creation of new money, which means that lending is fiat's antiquated and haphazard version of mining. Fiat miners are the financial institutions capable of generating fiat-based debt with guarantees from the government and/or central banks. Unlike with bitcoin's difficulty adjustment, fiat has no precise or engineered mechanisms for controlling issuance. Credit money, instead, causes constant cycles of expansion and contraction in the money supply, with devastating consequences.

Chapter 5 then analyzes balances on the fiat network, exploring how many, if not most, users have negative account balances—a unique feature of the fiat network. The ability to mine fiat by issuing debt means individuals, corporations, and governments all face a strong incentive to get into debt. The monetization and universalization of debt is also a war on savings, and one which governments have persecuted stealthily and quite successfully against their citizens over the last century.

Based on this analysis, Chapter 6 concludes the first section of the book by discussing the uses of fiat and the problems it solves. The two obvious uses of fiat are that it allows for government to easily finance itself, and it allows banks to engage in maturity-mismatching and fractional reserve banking while largely protecting themselves from the inevitable downside. But the third use of fiat is the one that has been the most important to its survival: salability across space.

I must confess, attempting to think of the fiat monetary system in engineering terms and trying to understand the problem it solves has given me an appreciation of its usefulness and a gentler assessment of the motives and circumstances that led to its emergence. Understanding the problem this fiat system solves makes a move from the gold standard to the fiat standard appear less outlandish and insane than it had appeared to me while writing *The Bitcoin Standard*, as a hard money believer who could see nothing good or reasonable about the move to an easier money.

Seeing that the analytical framework of *The Bitcoin Standard* was built around the concept of salability across time, and the ability of money to hold

its value into the future, and the implications of that to society, the fiat standard initially appears as a deliberate, nefarious conspiracy to destroy human civilization. But writing this book and thinking very hard about the operational reality of fiat has brought into sharper focus the property of salability across space, and, in the process, has made the rationale for the emergence of the fiat standard clearer and more comprehensible. For all its many failings, there is no escaping the conclusion that the fiat standard was indeed a solution to a real and debilitating problem with the gold standard, namely its low spatial salability.

Fiat's low temporal salability remained a problem, but a tolerable one, because of its advantages in transferring value across space. More importantly, fiat allowed governments worldwide tremendous leeway to bribe their current citizens at the expense of their future citizens by creating the easy fiat tokens that operate their payment networks. Fiat was convenient for users, but it was more convenient for the government officials who controlled the only full nodes. As we take stock of a whole century of operation for this monetary system, a sober and nuanced assessment can appreciate the significance of this solution for facilitating global trade, while also understanding how it has allowed the inflation that has benefited governments at the expense of their citizens, present and future. Fiat may have been a huge step backward in terms of its salability across time, but it was a substantial leap forward in terms of salability across space.

Having laid out the mechanics for the operation of fiat in the first section, the book's second section, *Fiat Life*, examines the economic, societal, and political implications of a society utilizing such a form of money with uncertain and usually poor intertemporal salability. Fiat increasingly divorces economic reward from economic productivity, and instead bases it on political allegiance. This attempted suspension of the concept of opportunity cost makes fiat a revolt against the natural order of the world, in which humans, and all other animals, have to struggle against scarcity every day of their lives. Nature provides humans with rewards only when their toil is successful, and similarly, markets only reward humans when they can produce something that others subjectively value. After a century of economic value

being assigned at gunpoint, these indisputable realities of life are unknown to, or denied by, huge swaths of the world's population who look to their governments for their salvation and sustenance.

The suspension of the normal workings of scarcity through government dictate has enormous implications on individual time preference and decision-making, with important consequences to many facets of life. In the second section of the book, we explore the impacts of fiat on family, food, education, science, health, fuels, and international governance and geopolitics. This section focuses on analyzing the implications of two causal economic mechanisms of fiat money: the utilization of debt as money and the ability of government to grant this debt at no cost. Part 2 concludes with a cost-benefit analysis of the fiat monetary system.

While the title of the book refers to fiat, this is still a book about bitcoin, and the first two sections build up the analytical foundation for the third part of the book, which examines the all-too-important question with which *The Bitcoin Standard* leaves the reader: what will the relationship between fiat and bitcoin be in the coming years? Chapter 13 examines the specific properties of bitcoin that make it a potential solution to the problems of fiat.

While *The Bitcoin Standard* focused on bitcoin's intertemporal salability, *The Fiat Standard* examines how bitcoin's salability across space is the mechanism that makes it a more serious threat to fiat than gold and other physical monies with low spatial salability. Bitcoin's high salability across space allows us to monetize this hard asset itself, and not credit claims on it, as was the case with the gold standard. At its most basic, bitcoin increases humanity's capacity for long-distance international settlement by around 500,000 transactions a day and completes that settlement in a few hours. This is an enormous upgrade over gold's capacity, making international settlement a far more open market and much harder to monopolize. This also helps us understand bitcoin's value proposition as not just harder money than gold, but also money that is far easier to transport. Bitcoin effectively combines gold's salability across time with fiat's salability across space in one apolitical, immutable, open-source package.

By being a hard asset, bitcoin is also debt free, and its creation does not incentivize debt issuance. By offering finality of settlement every ten minutes, bitcoin also makes the use of credit money very difficult. At each block interval, the ownership of all bitcoins is confirmed by tens of thousands of nodes all over the world. There can be no authority whose fiat can make good a broken promise to deliver a bitcoin by a certain block time. Financial institutions that engage in fractional reserve banking in a bitcoin economy will always be under the threat of a bank run as long as no institution exists that can conjure present bitcoin at significantly lower than the market rate, as governments can do with their fiat.

Chapter 14 discusses bitcoin scaling in detail and argues that it will likely happen through second-layer solutions, which will be optimized for speed, high volume, and low cost, and involve trade-offs in security and liquidity. Chapter 15 builds on this analysis to discuss what banking would look like under a bitcoin standard, while Chapter 16 studies bitcoin's consumption of electric power, how it is related to bitcoin's security, and how it can impact the market for energy worldwide. Chapter 17 then performs a cost-benefit analysis to upgrading from fiat to bitcoin.

The final chapter tackles the questions: How can bitcoin rise in the world of fiat, and what are the implications for these two monetary standards coexisting? Various threats to bitcoin are assessed from the economic perspective, and the economic incentive for bitcoin's continued survival is presented. Will bitcoin's rise necessitate a hyperinflationary collapse of fiat? Or will it be more like an orderly software upgrade? How will credit market dynamics and the rise of central bank digital currencies affect this relationship?

Chapter 2

The Never-Ending Bank Holiday

On August 6, 1915, His Majesty's Government issued this appeal:

In view of the importance of strengthening the gold reserves of the country for exchange purposes, the Treasury have instructed the Post Office and all public departments charged with the duty of making cash payments to use notes instead of gold coins whenever possible. The public generally are earnestly requested, in the national interest, to co-operate with the Treasury in this policy by (1) paying in gold to the Post Office and to the Banks; (2) asking for payment of cheques in notes rather than in gold; (3) using notes rather than gold for payment of wages and cash disbursements generally.³

3 Osborne, John. "Gold and Silver." *The Bank of England 1914–21 (Unpublished War History)*. Vol. 2. Bank of England Archive, 1926, p.148. Web. <https://www.bankofengland.co.uk/-/media/boe/files/archive/ww/boe-1914-1921-vol2-chapter5a.pdf>.

With this obscure and largely forgotten announcement, the Bank of England effectively began the global monetary system's move away from a gold standard, in which all government and bank obligations were redeemable in physical gold. At the time, gold coins and bars were still widely used worldwide, but they were of limited use for international trade, which necessitated resorting to the clearance mechanisms of international banks. Chief among all banks at the time, the Bank of England's network spanned the globe, and its pound sterling had, for centuries, acquired the reputation of being as good as gold.

Instead of the predictable and reliable stability naturally provided by gold, the new global monetary standard was built around government rules, hence its name. The Latin word *fiat* means "let it be done," and in English, the term has been adopted to mean a formal decree, authorization, or rule. It is an apt term for the current monetary standard, as what distinguishes it most is that it substitutes government dictates for the judgment of the market. Value on fiat's base layer is not based on a freely traded physical commodity but is instead dictated by authority, which can control its issuance, supply, clearance, and settlement, and even confiscate it at any time it sees fit.

With the move to fiat, peaceful exchange on the market no longer determined the value and choice of money. Instead, it was the victors of world wars and the gyrations of international geopolitics that would dictate the choice and value of the medium that constitutes one half of every market transaction. While the 1915 Bank of England announcement, and others like it at the time, were assumed to be temporary emergency measures necessary to fight the Great War, today, more than a century later, the Bank of England is yet to resume the promised redemption of its notes in gold. Temporary arrangements restricting note convertibility into gold turned into the permanent financial infrastructure of the fiat system that took off over the next century. Never again would the world's predominant monetary systems be based on currencies fully redeemable in gold.

The above decree might be considered the equivalent of Satoshi Nakamoto's email to the cryptography mailing list announcing bitcoin.⁴ However,

4 Nakamoto, Satoshi. "Bitcoin P2P E-Cash Paper." *The Cryptography Mailing List...*

unlike Nakamoto, His Majesty's Government provided no software, white paper, nor any kind of technical specification as to how such a monetary system could be made practical and workable. Unlike the cold precision of Satoshi's impersonal and dispassionate tone, His Majesty's Government relied on an appeal to authority and the emotional manipulation of its subjects' sense of patriotism. Whereas Satoshi was able to launch the bitcoin network in operational form a few months after its initial announcement, it took two world wars, dozens of monetary conferences, multiple financial crises, and three generations of governments, bankers, and economists to ultimately bring about a fully operable implementation of the fiat standard in 1971.

The Bank of England's troubles started at the dawn of the Great War. On July 31, 1914, large crowds stood outside the doors of its Threadneedle Street headquarters looking to convert their bank balances and banknotes into gold coins before the August bank holiday. The Austro-Hungarian Empire had just declared war against Serbia following the assassination of Archduke Franz Ferdinand and a month of escalating tensions across Europe. All over the continent, investors rushed to convert financial instruments into gold, as they worried governments would devalue currencies to finance war. That fateful July, English newspapers referred to the coming war as the August bank holiday war, expecting it to be a swift victory for the British military. Yet the lines of depositors outside the world's most important financial institution foretold a different story: the bank holiday that would never end.

Had the Bank of England maintained full cover for its notes and bank accounts in gold, as they would have had to under a strict gold standard, war would not have posed a liquidity problem. All depositors could have had their banknotes and bank accounts redeemed in full in physical gold, and there would have been no need to queue outside the bank. However, the Bank of England had become accustomed to not backing all its notes with gold. Depositors had good reason to hold money in the form of

...31 Oct. 2008. Web. <https://archive.is/20121228025845/http://article.gmane.org/gmane.comp.encryption.general/12588>.

banknotes and bank accounts rather than in physical gold. Compared to gold, banknotes were easier to carry and convert into either smaller or larger denominations, and an account at an English bank allowed the depositor to make payments by checkbook anywhere in the world far faster than sending physical gold. Global capital sought the bank's superior safety and clearance mechanisms, which provided the bank a solid cushion to diverge from a strict 100% gold standard.

At the time, the Bank of England was the center of the financial universe, and its pound sterling was recognized worldwide for being as good as gold. The creditworthiness of the British government, its powerful military, and its unrivaled global payments settlement network had given it the supreme position in the global financial order, with around half of global foreign exchange reserves held in sterling.

In the prewar period, the bank had also offered its own currency as a reserve for the central banks of its colonies, under what was known as the gold-exchange standard. Since the colonies used the bank to settle their international payments, they were expected to hold on to significant amounts of these reserves and not seek redemption in gold. This allowed the bank a certain inflationary margin, to the point that by 1913, the ratio of official reserves to liabilities to foreign monetary authorities was only 31%.⁵ The bank had exported its inflation to the colonies, financing its operations but placing itself in a precarious liquidity position. So long as most colonies, depositors, and paper holders did not ask to convert their bank accounts and notes to gold, liquidity would not be a problem.

For a generation of bankers reared on the peace and prosperity of the Victorian Era and the gold standard, there was little reason to worry about a liquidity crisis. There was also very little reason to worry about a world war, but both the war and the liquidity crisis materialized in the summer of 1914. While the Great War triggered the bank's liquidity troubles, the deeper causes were self-inflicted, and typical of the fiat century, government monopoly over the payments network encouraged abuse of the currency.

5 Officer, Lawrence. "Gold Standard." *EH.Net Encyclopedia*. 26 Mar. 2008, Web.

As trouble brewed on the continent, many foreign depositors sought to withdraw their assets from Britain, and many Englishmen preferred to hold gold over the bank's paper. In the last six working days of July, the bank paid out £12.3 million in gold coins from its £26.5 million total reserves.⁶ The previously unthinkable prospect of the bank of England defaulting on its promise to redeem its notes and accounts in gold suddenly appeared plausible. A devaluation of the pound at that stage would have allowed the bank sufficient reserves to back the currency but would have been unspeakably unpopular with the British public, permanently undermining their faith in the bank.

In November 1914, the British government issued the first war bond, aiming to raise £350 million from private investors at an interest rate of 4.1% and a maturity of ten years. Surprisingly, the bond issue was undersubscribed, and the British public purchased less than a third of the targeted sum. To avoid publicizing this failure, the Bank of England granted funds to its chief cashier and his deputy to purchase the bonds under their own names. The *Financial Times*, ever the bank's faithful mouthpiece, published an article proclaiming the loan was oversubscribed. John Maynard Keynes worked at the Treasury at the time, and in a secret memo to the bank, he praised them for what he called their "masterly manipulation." Keynes's fondness for surreptitious monetary arrangements would go on to inspire thousands of economic textbooks published worldwide. The Bank of England had set the tone for a century of central bank and government collusion behind the public's back. The *Financial Times* would only issue a correction 103 years later,⁷ when this matter was finally uncovered after some sleuthing in the bank's archives by some enterprising staff members and published on the bank's blog.⁸

6 "Gold, Banknotes and Money Supply in the First World War." *NatWest Group Remembers*. Web. 3 Oct. 2021.

7 McClean, Paul. "A Correction 103 Years Late: How the BoE Covered Up Failed War Bond Sale." *Financial Times*. 8 Aug. 2017. Web.

8 Anson, Michael, et al. "Your Country Needs Funds: The Extraordinary Story of Britain's Early Efforts to Finance the First World War." *Bank Underground*. 8 Aug. 2017. Web.

The Bank of England decided to continue on the gold standard; however, its dwindling stockpiles meant it had to figure out some way to stem the tide of redemptions. Its solution was to declare an unofficial war on gold. The fascinating details of this war can be found in *The Bank of England 1914–21 (Unpublished War History)*, an obscure but highly detailed study commissioned by Bank Governor Montagu Norman, authored by his personal secretary John Osborne, and completed in 1926. This study remained unpublished until the bank uploaded it to its website in September 2019.⁹

With the public not keen on lending for war, and the bank holding large amounts of government debt instead, the bank needed to shore up its liquidity with more gold. The Treasury issued the appeal quoted at the beginning of this chapter, asking the public to pay the post office and banks in gold, take payment in notes rather than in gold, and use notes for paying wages and cash disbursements. After this appeal, the Bank of England and the Treasury instructed banks to collect coins and hold them in reserve to be at the disposal of the Treasury throughout the war.

“In 1915, the sum of £20,823,000 was collected from the Bankers of the United Kingdom and, in order to furnish the Treasury with further credit, was exported to United States,” Osborne wrote. He added in a footnote, “The Bank kept £2,423,000 sovereigns because their stock was seriously depleted.” He continued, “In November 1915 it became necessary for the Government to appoint a Committee—London Exchange Committee—to advise on the subject of the Foreign Exchanges. In order to assist the Committee in their operations it was arranged that Bankers should cease to issue gold to their customers, whose requirements could of course be satisfied by Currency Notes.” The custom of committees determining monetary arrangements would become very common in the fiat century.

Osborne continues:

9 Osborne, John. “Gold and Silver.” *The Bank of England 1914–21 (Unpublished War History)*. Vol. 2. Bank of England Archive, 1926. Web. <https://www.bankofengland.co.uk/-/media/boe/files/archive/ww/boe-1914-1921-vol2-chapter5a.pdf>.

During the following year it became evident that as a result of the appeal referred to and the action of the Bankers the public were becoming more accustomed to the use of paper money and more reconciled to the absence of gold.

In order to meet an obligation of the London Exchange Committee in connection with the loan of \$50,000,000 made to them by a group of United States Bankers in November 1915, the Clearing Bankers in June 1917 paid to the account of the Treasury the sum of £10,000,000 in gold coin, which was "set aside" on behalf of the Federal Reserve Bank of New York.

A further appeal to the Banks was made in a letter dated the 25th July 1917 from the Chancellor of the Exchequer. Bankers were asked to hold their stocks of gold coin at the disposal of the Government, in view of the existing state of the American exchange. The Chancellor urged the Banks, in the interests of general credit, to hand over their gold by private arrangement and so obviate the necessity for a compulsory order which could be issued under the Defence of the Realm Regulations. As a result of this appeal Bankers throughout the country agreed to hold 90% of their gold at the disposal of the Treasury.

On the 1st April 1919 the export of gold coin was prohibited by Order in Council and on the same date, at a meeting of Bankers, it was agreed that all gold coin and bullion then held and thereafter acquired by them (excepting only such gold as might be imported by the Banks themselves) should be held at the absolute disposal of the Treasury, and that delivery of it should be made to the Bank of England and when required. Furthermore, they agreed that all gold already earmarked for foreign account should, if released, be paid in to the Bank of England at once. Details of all holdings of gold were to be furnished to the Bank once a month and the Bankers agreed to discourage by every means in their power withdrawals of gold from the Bank of England.

It was realised that it was absolutely essential both to Bankers generally and to the whole country that the available supplies of gold should be ready at hand, if necessary, for use centrally to meet any threatening

developments in foreign exchanges, and particularly in the American exchange. At the end of the year the Treasury requested the Bank to collect the entire stocks of gold coin held by Bankers throughout the Kingdom.¹⁰

The bank would periodically purchase gold coins from banks using banknotes. In December 1919, the Treasury requested the bank collect all the gold coins held by bankers in the United Kingdom. Private bankers surrendered £41,793,000 of gold coins by June of 1920, practically all of their gold holdings, in exchange for paper notes. The entire operation cost £5,516, at a rate of a little over £1 per £10,000 collected. The discipline of proof-of-work mining was conspicuously absent at fiat's genesis and throughout its century. Most of the gold was shipped to the United States in exchange for credit to fight the war.

From the beginning of August 1914 to the end of August 1921, the bank's net gain totaled £62,411,000 of gold. The British government confiscated 14,684,941 ounces of gold, or around 455.2 metric tons. Today, that gold would be worth around £20 billion, roughly 300 times what it was worth in 1914. At the time of writing in 2021, the Bank of England's gold reserves stand at only 310.3 metric tons of gold.

The war, which caused this demand for gold, necessitated suspending most aviation, relieving the bank from shipping gold to its foreign depositors. In April 1919, as the war ended and aviation resumed, the export of gold coins was prohibited. Economic historian Lawrence Officer summarized this period:

With the outbreak of war, a run on sterling led Britain to impose extreme exchange control—a postponement of both domestic and international payments—that made the international gold standard non-operational. Convertibility was not legally suspended; but moral suasion, legalistic

10 Osborne, John. "Gold and Silver." *The Bank of England 1914–21 (Unpublished War History)*. Vol. 2. Bank of England Archive, 1926, p.149–51. Web. <https://www.bankofengland.co.uk/-/media/boe/files/archive/ww/boe-1914-1921-vol2-chapter5a.pdf>.

action, and regulation had the same effect. Gold exports were restricted by extralegal means (and by Trading with the Enemy legislation), with the Bank of England commandeering all gold imports and applying moral suasion to bankers and bullion brokers.¹¹

With less gold in the hands of the people and more notes, the bank had succeeded in protecting the official gold-to-sterling exchange rate of £4.25 per troy ounce of gold, the same price set in 1717 by Master of the Royal Mint, Sir Isaac Newton. The Bank of England's reliable record in redeeming its notes at this rate for two centuries, interrupted only by the Napoleonic Wars, was a matter of national pride and global renown. It not only gave sterling its legendary reputation of being as good as gold, but also turned the phrase "gold standard" into the proverbial benchmark and paradigm for excellence, predictability, and reliability—a phrase that was never threatened with replacement by a century of the fiat standard.

By using the war to suspend redeemability abroad and discourage it at home, the bank had successfully used its fiat, regulations, and monopoly control over the most important financial infrastructure in the world to finance the war effort without officially coming off the gold standard, announcing a suspension of gold redemption, or devaluing the pound. Thus was born a new science of government-sponsored financial alchemy. By controlling banks and confiscating gold, central banks could create money by fiat. By making the pound as good as gold, the new paper alchemists succeeded where Newton and the old alchemists failed. Gold could be produced at will after all. The printing press and the checking account were the alchemists' long-sought philosopher's stone.

In the immediate aftermath of the war, there seemed to be no downside to the world's central bank and its currency diverging from the sound gold anchor. Over time, the costs of these monetary shenanigans became apparent, as governments would increasingly abuse these schemes, ultimately making them a permanent feature of the fiat century—surreptitiously

11 Officer, Lawrence. "Gold Standard." *EH.Net Encyclopedia*. 26 Mar. 2008, Web.

trading long-term prosperity for the illusion of short-term stability. The economic consequences of the inflation would weigh on the British economy for decades.

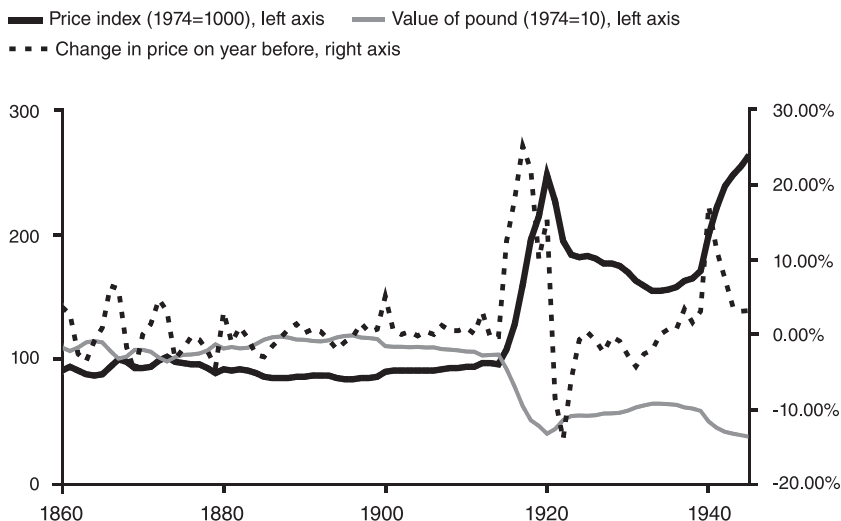


Figure 1. The impact of the war on sterling.

Source: Twigger, Robert. "Inflation: The Value of the Pound 1750–1998." *House of Commons Library Research Paper 99/20*. U.K. Parliament (23 Feb. 1999), pp. 9–22. Web.

By maintaining the pound sterling at the prewar gold rate, the Bank of England sowed the seeds of several problems that became common in later implementations of the fiat standard. The bank maintained the nominal exchange rate between notes and gold, but in reality, the prices of normal goods and services increased sharply. According to recent research by the Economic Policy and Statistics Section of the House of Commons Library, the annual change in prices from 1915–1920 were 12.5%, 18.1%, 25.2%, 22%, and 10.1%, a cumulative five-year rise of 124%. Price increases made life difficult for the average Englishman, spurring the rise of organized labor and popular demands for price and wage controls. Inevitably, rationing and shortages followed, as well as mass unemployment. The war's end brought millions of military servicemen home, but the price and wage controls made

it very difficult for the British economy to accommodate their return to the workforce. Revaluing the pound to accommodate the inflation would have meant devaluing the population's savings; however, prices of goods and labor would have readjusted on the market. By foregoing this revaluation, maintaining an overvalued exchange rate, and discouraging the redemption of paper into gold, the bank delayed the necessary economic adjustment and prolonged the dislocations brought about by inflation and price and wage controls. Pressure grew on the government to spend to support the unemployed and the poor. However, further spending and expansionary monetary policy caused even more price increases and put greater pressure on sterling in international markets. A populist clamor grew for the bank to bring gold coins back into circulation and return to the prewar gold standard.

Britain's problems were not just domestic. While all European countries effectively went off the gold standard in 1914, the U.S. had only done so in 1917, attracting large quantities of gold fleeing Europe. With the credit it provided to the Bank of England, the U.S. Federal Reserve also secured a large part of the British supply of gold. As goes gold, so goes power. The Bank of England was learning to readjust to a new global economic reality in which the United States and its Federal Reserve played a supremely important role. The alchemy of the U.K.'s fiat standard continued to become more expensive as the U.S. took on its global leadership role and sterling continued to face troubles throughout the coming century, losing three-quarters of its value against the U.S. dollar, and more than 90% of its value against gold.

All major European economies engaged in large-scale inflation to finance the war, after which their currencies were devalued against gold and were no longer redeemable at the prewar rate. At this point, the prudent step would have been to acknowledge that the fiat standard had served its purpose as a temporary war-financing measure and return to the gold standard. Governments had repeatedly promised this, and Europe's citizens had expected it. However, returning to the gold standard at the prewar parity would have meant an inevitable end to the inflationary boom started by the credit expansion that financed the war and, subsequently, a painful recession. The U.S. chose this path, resulting in a sharp but quick recession in 1920,

after which the U.S. economy began one of its longest expansions in history. U.S. gold redemption resumed in 1922 after a five-year suspension. Britain, on the other hand, tried to square the impossible circle of maintaining the Treasury's high spending, the union's high wage requirements, the gold peg at its prewar rate, and sterling's role as a global reserve currency. Having experienced the sweet taste of paper alchemy, the Bank of England thought it could manage its way out of overt default on its gold redemption obligations through financial and political engineering.

Rather than formalize the reality of inflation and devalue the pound to get back on the gold standard, the Bank of England and the Treasury chose to kick the can down the road and across the pond, where it would continue to be kicked into the next century. So began the habit of obtaining short-term relief at the expense of long-term solvency and stability.

As economist Murray Rothbard described it:

In short, Britain insisted on returning to gold at a valuation that was 10–20 percent higher than the going exchange rate, which reflected the results of war and postwar inflation. This meant that British prices would have had to decline by about 10 to 20 percent in order to remain competitive with foreign countries, and to maintain her all-important export business. But no such decline occurred, primarily because unions did not permit wage rates to be lowered. Real-wage rates rose, and chronic large-scale unemployment struck Great Britain. Credit was not allowed to contract, as was needed to bring about deflation, as unemployment would have grown even more menacing—an unemployment caused partly by the postwar establishment of government unemployment insurance (which permitted trade unions to hold out against any wage cuts). As a result, Great Britain tended to lose gold. Instead of repealing unemployment insurance, contracting credit, and/or going back to gold at a more realistic parity, Great Britain inflated her money supply to offset the loss of gold and turned to the United States for help. For if the United States government were to inflate American money, Great Britain would no longer lose gold to the United States. In short, the American public was

nominated to suffer the burdens of inflation and subsequent collapse in order to maintain the British government and the British trade union movement in the style to which they insisted on becoming accustomed.¹²

As Benjamin Strong, chairman of the New York Fed, writes in a letter quoted by Rothbard:

The burden of this readjustment must fall more largely upon us than upon them [Great Britain]. It will be difficult politically and socially for the British Government and the Bank of England to face a price liquidation in England...in face of the fact that their trade is poor and they have over a million unemployed people receiving government aid.¹³

Britain sought to ease the pressure on its pound by convincing the U.S. to engage in expansionary monetary policy under the pretext of providing global liquidity. By devaluing the dollar next to gold, the U.S. stopped the drain of gold from Britain to the U.S. and thus reduced the pressure on the pound. To further protect the pound, the Bank of England dumped some of its pound reserves on other countries that needed to use its clearance and settlement mechanisms. Britain and the U.S. arranged the Genoa Conference in 1922 to try to reestablish a global monetary order around their currencies and gold. The conference recommendations included the line, “Gold is the only common standard which all European countries could at present agree to adopt.”¹⁴

However, returning to the gold standard was very difficult when the Bank of England, still the center of the financial universe, had yet to resume the redemption of its notes into gold. Instead, the U.S. and the U.K. attempted to introduce a gold-exchange standard, modeled on the monetary

12 Rothbard, Murray. *America's Great Depression*. 5th ed. Auburn, AL: Ludwig von Mises Institute, 2000, p. 143.

13 Rothbard, Murray. *America's Great Depression*, p. 146.

14 Kemmerer, Edwin Walter. *Gold and the Gold Standard: The Story of Gold Money, Past, Present and Future*. New York: McGraw-Hill, 1944, pp. 163–64. Print.

arrangements that had prevailed in some Asian countries before the war, the abuse of which caused the Bank of England to have a gold shortage at the eve of the war. In essence, global central banks would deposit gold at the Bank of England and U.S. Federal Reserve and use their international settlement network to add salability across space to their gold. This gave the Bank of England and the Federal Reserve significant leeway to go off the gold standard, because other countries' reliance on these institutions' financial infrastructure for international trade settlement meant they would rarely attempt to take physical custody of the gold.

As American inflation devalued the U.S. dollar, the U.S. provided loans to Britain, and international central banks acquired large amounts of sterling reserves, it became feasible for the Bank of England to restore some form of gold redemption in 1925. It was not a return to the gold standard, but the introduction of a variation of it: the gold bullion standard. Under this standard, the Bank of England only offered redemption of standard 400-ounce "good delivery" gold bars. Banknotes were no longer redeemable in gold, and the Royal Mint denied the public the ability to purchase its gold. The bank had effectively gone off the gold standard for the majority of the population, and the value of the pound was less tethered to its supposed gold backing than before the war.

While people could no longer redeem their banknotes for gold, they could sell their gold abroad for more than they would have received from the Bank of England. Perversely, by devaluing gold, the bank had subsidized the precious metal's exit from British shores, as gold always goes where it is valued most. More inflation in the U.S. was needed to prevent more gold from leaving Britain, as detailed in Rothbard's *America's Great Depression*.

That inflation set in motion the familiar business cycle. As inflation subsided in late 1928, the stock market crashed in late 1929, and the boom of the 1920s gave way to the bust of the 1930s. This pattern of bubbles and collapses, the endless cycles of boom and bust, became a regular feature of the fiat standard worldwide, to the point that modern economic textbooks began to treat this phenomenon as if it is an inherent part of a normal market economy, something as normal and inevitable as the seasons.

The depression and the inflation to counter it made the pressure on the pound unbearable. The last pretense of maintaining the prewar gold parity was finally dropped in 1931 as the Bank of England devalued the pound by 25%. One wonders just how different history would have been had it performed this devaluation in 1920, allowing the return to solid gold footing and full gold redemption with stricter limits on inflation.

During the crisis of the 1930s, the U.S. government engaged in fiscal and monetary expansionism to ward off the collapse of its banking system and economy. These policies would not have been sustainable had the dollar continued to be redeemable for gold at \$20.67 per troy ounce. In 1934, President Franklin D. Roosevelt ordered the confiscation of Americans' gold, buying it from the public at \$35.00, effectively devaluing the dollar by 41%. Less than two decades after Britain had set the fiat standard by taking hard money from the hands of its citizens and giving them fiat tokens, the U.S. followed suit. Both events were sovereign defaults, though history books rarely call them that.

This was the fiat standard protocol installation, and the whole world copied it: run unsustainable deficits, default by confiscating and restricting the movement of gold, suspend redemption, increase the supply of paper notes, and if you can, try to get other countries to hold your currency as reserve. The U.S. did it best.

The suspension of gold redemption and endless amounts of government-held fiat combined to extend the Great Depression while also giving rise to a bureaucratic monster that lived endlessly off inflation. The flow of gold from Europe to the U.S. continued through the 1930s and 1940s. After the Second World War, the U.S. was in a monetary league of its own, with gold reserves that dwarfed other nations and the world's most important international payments network. The new monetary reality was enshrined into the architecture of the nascent global financial system in 1946 with the signing of the Bretton Woods Agreement. That agreement returned the world to a gold-exchange standard similar to the one Britain had deployed to its colonies; the same system Britain abused to leave itself in the precarious liquidity position that started this entire sordid history.

The new global monetary system was built around the U.S. dollar, which only other central banks could redeem for gold. The U.S. federal government still prohibited Americans from owning gold, and most other countries imposed restrictions on the metal's ownership and trade. With all its extra gold, and its ability to export dollars to the rest of the world, there was very little restraint on the capacity of the U.S. government to spend in the post-war years. The military-industrial complex President Dwight D. Eisenhower warned of in his farewell address secured itself a continuous trickle of global war with which to harvest profits from the fiat spigot. FDR's New Deal welfare programs grew in the 1950s and metastasized in the 1960s under Lyndon B. Johnson's so-called Great Society—a permanent welfare state that needed to be financed by fiat. The world still bought dollars because they needed them, and there was no reason for Americans to suspect a liquidity problem. But just like England in 1914, the late 1960s placed the U.S. in a gold crunch, as European central banks moved to redeem their increasingly devaluing hoard of U.S. dollars for hard gold.

On August 15, 1971, President Nixon delivered the 'Nixon shock,' a series of government edicts aimed at containing rising inflation and unemployment. Nixon said the following in a nationally televised broadcast:

The third indispensable element in building the new prosperity is closely related to creating new jobs and halting inflation. We must protect the position of the American dollar as a pillar of monetary stability around the world.

In the past seven years, there has been an average of one international monetary crisis every year. Now who gains from these crises? Not the workingman; not the investor; not the real producers of wealth. The gainers are the international money speculators. Because they thrive on crises, they help to create them.

In recent weeks, the speculators have been waging an all-out war on the American dollar. The strength of a nation's currency is based on the strength of that nation's economy—and the American economy is by far the strongest in the world. Accordingly, I have directed the Secretary of

the Treasury to take the action necessary to defend the dollar against the speculators.

I have directed Secretary Connally to suspend temporarily the convertibility of the dollar into gold or other reserve assets, except in amounts and conditions determined to be in the interest of monetary stability and in the best interests of the United States.

Now, what is this action—which is very technical—what does it mean for you?

Let me lay to rest the bugaboo of what is called devaluation.

If you want to buy a foreign car or take a trip abroad, market conditions may cause your dollar to buy slightly less. But if you are among the overwhelming majority of Americans who buy American-made products in America, your dollar will be worth just as much tomorrow as it is today.

The effect of this action, in other words, will be to stabilize the dollar.

Now, this action will not win us any friends among the international money traders. But our primary concern is with the American workers, and with fair competition around the world.¹⁵

Nixon's prognostications and guarantees were off the mark; prices skyrocketed over the coming decades. Instead of stabilizing, the dollar collapsed in value, and the new system of international partial barter, unhinged from its golden anchor, would turn money trading into a lucrative career and a gigantic industry. Even though the U.S. Treasury suspended gold redemption, it committed to maintaining the dollar peg to gold at a certain level. But that sound money mirage only lasted until 1973. It was at that point that the cost of living began to climb, and fast.

In summation, the Bank of England effectively went off the gold standard in 1914 and only returned in 1925 on a gold bullion standard, which it abandoned in 1931. The U.S. abandoned the gold standard in 1917 but restored it in 1922 and abandoned it again in 1934. Britain and the U.S. adopted a

15 Nixon, Richard. "Address to the Nation Outlining a New Economic Policy: 'The Challenge of Peace.'" *The American Presidency Project*. 15 Aug. 1971. Web.

gold-exchange standard in 1922 and abandoned it in 1971 to go on a fiat dollar standard. Since 1914, both currencies have lost more than 95% of their value relative to gold. The fiat standard installation process has been a long one, but it has had these hallmarks: gold confiscation, price increases, price controls, central planning, inflationary credit expansion, booms and busts, and the aspiration to export inflation by trying to dump fractionally backed currency on foreign regimes.

The fiat standard was not the design of an engineer. It was instead the central banks' desperate solution to their looming insolvency, the inevitable geopolitical outcome of a sixty-year-long marriage of politics and money. The history of fiat is the history of government-run financial institutions managing defaults. It was not a technology consciously designed to provide sound money or payment transfers. Central banks the world over would closely follow the prototype set by Britain and the U.S., as they too would default on gold and force the use of their fiat.

The process of implementing this standard, which started in 1914, had been practically completed by 1971. A century after its genesis and a half century after it took on its final operational form, it is now possible to pass judgment on this monetary standard.

Chapter 3

Fiat Technology

Between 1914 and 1971, the global monetary system gradually and haphazardly moved from the gold standard to the fiat standard. Governments effectively took over the banking sector everywhere, or depending on who you ask, the banking sector took over governments. Details of who wore the pants in this relationship are of no concern to this book, which focuses on its bastard spawn. Like *The Bitcoin Standard*, this book is focused on exploring the characteristics of its subject monetary system as demonstrated in practice, eschewing a detailed historical account of its development.

Fiat can be defined as a compulsory implementation of debt-based, centralized ledger technology monopolizing financial and monetary services worldwide. The fiat standard was born out of the need for governments to manage their de facto default on their gold obligations. It was not designed to optimize the user experience of currency, transactions, and banking. With this in mind, this chapter takes a closer look under the hood of the monetary technology powering most of the world's trade today. Contrary to what the

name suggests, modern fiat money is not conjured out of thin air through government fiat. Governments do not just print currencies and hand them out to societies that accept them as good money. Modern fiat money is far more sophisticated and convoluted in its operation. The fundamental engineering feature of the fiat system is that it treats future promises of payment of money as if they were as good as present money, so long as they are issued by the government, or an entity guaranteed a lending license by the government.

In the bitcoin network, only coins that have already been mined can settle transactions. In a gold-based economy, only existing gold coins or bars can be used to settle transactions and extinguish debt. In both cases it is possible for a seller or lender to hand over their present goods in exchange for a promise of future bitcoin or gold, but they take on risk personally, and if the buyer or borrower fails to provide the coins on time, they are lost to the lender, who would learn a valuable lesson about being more careful with lending. With fiat, government credit allows nonexistent tokens from the future to be brought to life to settle transactions in the present when a loan is made, allowing the borrower and lender to have a larger amount of fiat tokens between them than when they started, thus devaluing the rest of the network's tokens. The fiat network creates more tokens every time a government-licensed entity makes a loan in the local fiat token.

Having been born out of government default, the essential characteristic of the fiat standard is that it uses government decree as the token of value on its monetary and payment network. Since the government can decree value on the network, it effectively makes its own credit money. As the government backs the entire banking system, this makes all credit issued by the banking system effectively the government's credit, and so part of the money supply. In other words, the U.S. Congress and Federal Reserve are not the only institutions capable of conjuring money from thin air; any lending organization also has the capacity to increase the money supply through lending.

Blurring the line between money and credit makes measuring the money supply practically impossible. In a payment system like gold or bitcoin, only mature money (or money of full maturity, meaning money that does not have a future period of maturity at which it acquires its full liquid value) can

be used to settle payments and debts. Under a fiat system, money that has not matured, and will only do so in the future, can be accepted as payment, so long as it is guaranteed by a commercial entity with a lending license.

Unlike with a pure gold standard or with bitcoin, the supply is not a set objective number of units being traded between network members. The units are ephemeral, constantly being created and destroyed. Their quantity is dependent on a subjective choice of which imperfect definition of money one uses. This makes it virtually impossible to obtain an objective, agreed-upon measure of the supply of money, or to audit the supply, as is the case with bitcoin.

When a client takes out a \$1 million loan to buy a house, the lending bank does not take a preexisting mature \$1 million present in its cash reserves, or from a depositor's balance at the bank. It will simply issue the loan and create the dollars that are used to pay the seller of the house. These dollars did not exist before the loan was issued. Their existence is predicated on the borrower fulfilling their end of the bargain and making regular payments in the future.

No present goods are used in the home purchase; no saver had to set the tokens aside to give to the borrower to pay the house seller. The present good of the house is handed to the borrower without them having to offer a present good in exchange, and the house seller does not grant the credit to the borrower nor take on the risk of default. The bank grants the credit, and the credit risk is ultimately borne by the central bank guaranteeing the bank, the loan, and the currency. Had the house seller granted the credit, they would be taking on the risk of default and giving up their present good willingly, affecting no other parties. But by utilizing the fiat standard, the house seller receives their payment in full up front, and the buyer receives the house in full up front. Both parties walk away with present goods they can use in full, even though only one of these goods existed before the transaction took place. The new fiat tokens created to allow this transaction place the risk of the buyer defaulting on all holders of the currency.

All three parties involved in the house transaction are happy, but could such a system survive in a free market? It appears favorable to the buyer, who can buy a home without having to pay the full price up front. It appears favorable to the seller because it finances more potential buyers and bids up the

price of their home. It also appears favorable to the bank, which can mine new fiat tokens at roughly zero marginal cost every time a new lender wants to buy a house. However, the transaction only works by externalizing the risk to society at large, protecting the buyer, seller, and bank from default by having the government's currency holders effectively absorb the risk premium through the inflation of the money supply. The sacrifice of the present good that allows both to spend can only come at the expense of the currency being devalued.

Should a fiat system coexist with a hard money system in a free market, one would expect the rational investor to prefer to hold their wealth in the harder money, which cannot be debased to finance credit. However, even without the rational self-interest of the investor, inflation causes a currency to lose value over time next to the harder currency. This means that it is inevitable, in the long term, that most economic value will accrue to the harder currency. But by monopolizing the payment networks necessary for the modern division of labor, governments can make currency holders take that risk for significant periods.

To create an analogy with bitcoin's operation, we could say that the fiat network creates or destroys a number of new tokens with each block, equal to the amount of lending that has taken place minus the amount of credit repaid and defaulted on. Rather than a set new number of coins to be added with each block, as with bitcoin's protocol, the number of fiat tokens added in each fiat time period is the net result of debt creation, which can vary widely and can be positive or negative.

Network Topography

The fiat network comprises around 190 central bank members of the International Monetary Fund (IMF), as well as tens of thousands of private banks, with many physical branches. At the time of writing, the fiat network has achieved almost universal adoption, and almost everyone on earth is either dealing with a fiat node or handling fiat paper notes issued by these nodes. Joining the fiat network is not voluntary; it can be best likened to mandatory malware. With the exception of a few primitive and isolated

tribes yet to have fiat enforced upon them, every human on earth is assigned to a regional node where they must pay their taxes in their local “fiatcoin.” Failure to pay with the local fiatcoin can result in physical arrest, imprisonment, and even murder. These are powerful incentives for adoption that both bitcoin and gold lack.

The fiat network is based on a layered settlement system for payment clearance. Individual banks handle transfers between their clients on their own balance sheets. National central banks oversee clearance and settlement between banks in their jurisdictions. Central banks, and a few hundred international correspondence banks, oversee clearance across international borders on the SWIFT payments network. The fiat network utilizes a highly efficient centralized ledger technology with only one full node required to validate and decide the full record of transactions and balances. That entity is the United States Federal Reserve, under the influence and supervision of the United States government. “The Fed,” as it is known to fiat enthusiasts, is the focal and central point of the fiat network. It is the only entity that can invalidate any transaction and confiscate any balance from any other fiat node. The Fed rules unilaterally over the SWIFT payments network and can prevent entire nations from joining it and settling trades with other nations.

The fiat network’s base layer operates using a native token of debt denominated in U.S. dollars. While fiat enthusiasts portray the network as having a variety of tokens, each belonging to a different country or region, the reality is that every currency but the U.S. dollar is merely a second-layer token, a derivative of the dollar. The value of non-U.S. fiat money depends on its backing in the U.S. dollar and can best be approximated as the value of the dollar with a discount equivalent to the country risk. For a variety of historical, monetary, fiscal, and geopolitical reasons, these tokens have not appreciated significantly against the U.S. dollar over the long term. For all practical intents and purposes, national central banks managing their currencies can either maintain their exchange rates with the dollar or devalue them faster than the dollar.

Financial institutions mine the network’s native token—fiatcoin—through the arcane, centralized, manual, risky, and haphazard process of

lending. A complex web of government rules and regulations determines how an institution can obtain the lending license that allows it to issue loans. These rules and regulations are typically promulgated by central governments, central banks, the Bank for International Settlements, or the IMF. Unlike with bitcoin, there is no easily verifiable proof-of-work protocol and no algorithmic adjustment to ensure the fiatcoin supply remains within known and clearly auditable parameters.

As a centrally planned system, the fiat standard does not allow for the emergence of a free market in capital and money where supply and demand determine the interest rate, i.e., the price of capital. Lending ultimately determines the money supply, and lending levels are in turn shaped by the interest rate and Federal Reserve policy. The Federal Reserve's full fiat node holds periodic meetings for its central planning committee to decide the optimal interest rate to charge other nodes. The rate these unelected bureaucrats set is known as the federal funds rate, and all other interest rates are derived from this and rise as they get further away from the central node. The closer the borrower is to the Federal Reserve System, the lower the interest rate they can secure and the more likely they are to benefit from inflation of the money supply.

While a small percentage of fiatcoin is printed into paper bearer instruments with local insignia, the vast majority is digital, stored on the central node's ledger or the ledgers of the peripheral nodes. The digital fiat network offers limited possibility for final settlement, as all balances are tentative at all times, and partial nodes, or the full node itself, can revoke or confiscate any balance on any ledger at any time. Withdrawing fiat in paper notes is one way to increase the finality of settlement. But that is not final either because the notes can always be revoked by the central bank and can easily be devalued by local fiat nodes, or the Fed's full node.

The Underlying Technology

The core functionality of the fiat standard lies in the functions of the network's nodes. Under the fiat protocol, each central bank has four important functions:

1. A monopoly on providing the domestic fiatcoin and determining its supply and price
2. A monopoly on clearing international payments
3. A monopoly authority over licensing and regulating domestic banks, holding their reserves, and clearing payments between them
4. Lending to its respective national government by buying its bonds

To perform these functions, each central bank has a cash balance, commonly referred to as the international cash reserve account. This is the base-layer fiat token and has the highest spatial salability, as it can perform international settlement between central banks. In what is arguably the most catastrophic monetary engineering decision in all human history, this cash balance is used to perform four simultaneous functions. And the intermingling of these functions is the root of all financial and monetary crises of the past century. They comprise:

1. Backing the local currency
2. Settling international trade
3. Backing all bank deposits
4. Buying government bonds to finance government spending

Each of these tasks is discussed in more detail in the following sections, before the implications of their comingling are examined.

1. Backing the Local Currency

No form of money has ever emerged purely through government fiat. Statist economists like to speak of the state's ability to decree what money is, but the existence of central bank reserves illustrates the limits of that view. No government can decree its own debt or its own paper as money without holding other assets it cannot print in reserve, using them to make a market in its paper and debt obligations. Even if a government were to force its people to accept its paper at an artificial value, it could not force foreigners to do

so. If its citizens want to trade with the rest of the world, the government must create a market in its currency that is denominated in other currencies. Unless the government accepts foreign currencies in exchange for its own, its own currency would devalue very quickly, as happens to any fiat currency when its central bank stops offering dollars at the market price. Everyone will prepare to hold harder currencies with more salability across space.

Even through the century of fiat and supposed gold demonetization, central banks have massively increased their gold holdings, and they continue to add to them at an increasing pace. The fiat standard's main reserve currencies are used to settle trade between central banks. However, central banks evidently do not believe they have demonetized gold and do not trust their currencies' ability to hold value into the future, so they continue to include increasing quantities of gold in their reserves. All fiat currencies that exist today are issued by central banks that hold gold in reserve or by central banks that hold currencies in their reserves issued by central banks that hold gold. This not only illustrates the absurdity of the state theory of money, but it also illustrates the fundamentally unworkable nature of political money on an international level. If every government could issue its own money, how and at what value would they trade with one another?

All central banks back their currencies with international reserve currencies they cannot print. For most countries, this is the U.S. dollar, and for the U.S., it is gold. At the end of the third fiscal quarter of 2020, the dollar constituted around 51% of global reserves, the euro 18.3%, gold 13.7%, the Japanese yen 5.2%, the British pound 4.1%, and the Chinese yuan 1.9%. Other currencies had smaller shares. The dollar has the lion's share of the foreign exchange market, taking part in 88.3% of all the foreign exchange market's daily trades.¹⁶

The dollar is the base-layer token of the global fiat network, and national currencies are derivatives of it. There are 180 national currencies in the world today. Other than the dollar and euro, national currencies are mainly used domestically in the secondary national fiat banking layers.

16 "Triennial Central Bank Survey: Foreign Exchange Turnover in April 2019." *Bank for International Settlements*. 16 Sep. 2019, p. 10. Web.

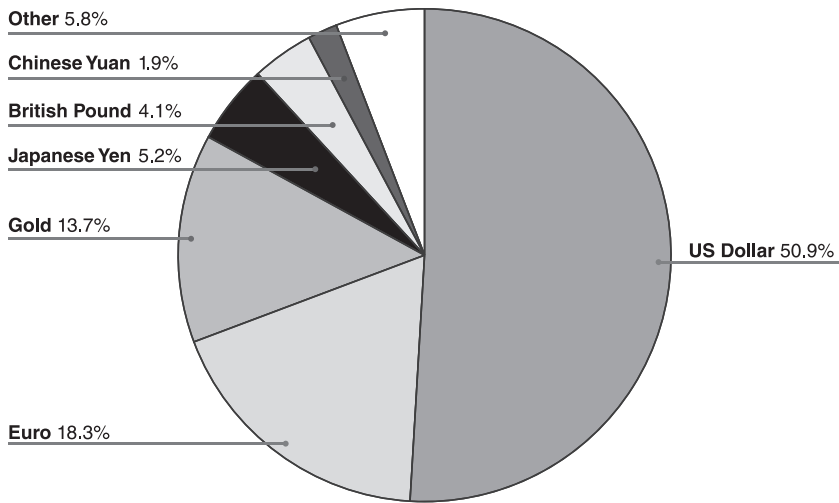


Figure 2. World Central Bank Reserves, 2020.

Source: "Currency Composition of Official Foreign Exchange Reserves (COFER)." *International Monetary Fund*. 30 Sep. 2021. Web.

2. *The International Cash Account*

Central bank reserves also settle the central bank's international current account (which includes international trade transactions) and its international capital account (which settles international movements of capital). All international payments to and from a country have to go through its central bank, allowing it a strong degree of control over all of its international trade and investment activities. Central bank reserves increase when foreign investment inflows or exports increase, but they fall when foreign investment outflows or imports increase. As individuals seek to transact with one another internationally, they must resort to a system of partial barter, as Hans-Hermann Hoppe termed it,¹⁷ wherein they need to buy a foreign currency before buying the foreign good. This has led to the enormous growth

17 Hoppe, Hans-Hermann. *Democracy: The God That Failed*. Rutgers, NJ: Transaction Publishers, 2001, pp. 16. Print.

of the foreign exchange industry, which only exists to profit from the arbitrage opportunities generated by the ever-shifting values of national currencies. This also effectively makes governments and their central banks third parties in every international transaction their citizens have with foreigners.

By also using national reserves for the settlement of international trade, a country's international trade is held hostage to the central bank's successful management of its currency. If the creation of debt were to increase quickly, the value of the national currency would decline against other currencies. The central bank would have to start depleting its international reserves if it needed to stabilize the value of its currency, compromising its ability to settle trade for its citizens.

3. Bank Reserves

Central bank reserves ultimately back the banking system's reserves. Central banks were intended to be the entities in which commercial banks would hold part of their reserves in order to settle with each other without having to move physical cash between their headquarters. Under a fractional reserve banking system, the central bank also uses its reserves to provide liquidity to individual banks facing liquidity problems. This means that the inevitable credit contractions that follow the banking system's credit-fueled booms are remedied by central banks using their reserves to support illiquid financial institutions, in effect increasing the money supply. Given that central banks make markets in their domestic currencies relative to foreign currencies, if credit expansion were to increase the supply of a domestic currency and a central bank's foreign reserves were to remain unchanged, the domestic currency would be expected to depreciate against foreign currencies.

4. Buying Government Bonds

The modern central bank and government song-and-dance routine adopted the world over involves the central bank using its reserves to purchase government bonds, thus financing the government. Central banks are the main

market makers in government bonds, and the extent of a central bank's purchase of government bonds is an important determinant of its national currency's value. As governments ultimately control central banks, despite their constant protestations to the contrary, they can lean on them to purchase their bonds to allow for more government spending. When a central bank buys larger quantities of its government's bonds, the value of its currency declines, since it funds these purchases by inflating the money supply. As monetary continence has continued to erode, central banks no longer just buy government bonds; they also engage in monetizing all kinds of assets from stocks to bonds to defaulted debt to housing, and much more.

The intermingling of these four functions in the hands of one monopoly entity protected from market competition is ultimately the root cause of most economic crises globally. It is easy to see how these four functions can conflict with one another, and how a monopolist will have the perverse incentive to protect their own interests at the expense of the long-term value of their currency and, thus, the wealth of their citizens.

Maintaining the value of a currency is arguably best served by using hard assets as reserves, gold in particular. However, the second function, settling payments abroad, is only doable with the U.S. dollar and a handful of other national currencies used for international settlements. The first conflict central banks face is between choosing a monetary standard for future needs or present needs. This dilemma would not, of course, exist in a globally homogeneous monetary system, such as a true gold standard, since gold would offer salability across time and space.

Not only are governments likely to pressure their central banks to buy their bonds, but they are also likely to lean on their central banks to engage in expansionary monetary policy to "stimulate" their economies. This has a similar effect of inflating a country's money supply and lowering the value of its currency against other currencies. By engaging in inflationary monetary policy, governments endanger their foreign reserves. Individuals start looking to sell the local currency for harder currencies, which creates more selling pressure on the local currency against other currencies. This forces the local central bank to sell some of its international reserves to attempt to stabilize

the exchange rate. These individuals will also seek to send their newly purchased international currencies abroad to be invested in other countries. This could lead the government to impose capital controls to stop that flow in order to maintain its foreign reserves.

Similarly, as these individuals expect the value of their national currency to decline, they are also more likely to purchase durable goods rather than hold on to cash balances. This can mean increasing imports of expensive foreign goods, which also depletes the central bank's foreign reserves. The government is then likely to retaliate with trade barriers, tariffs, and subsidies. Trade barriers are intended to discourage the local population from converting their local currency to international currency and sending it abroad. Tariffs are intended to reduce the flow of reserve currency abroad and to force importers to hand over reserve currency to the government as they import. And export subsidies are intended to encourage local exporters to increase their inflows of foreign reserves. This context helps us to understand how the collapse of the fiat system in 1929 ultimately gave rise to the protectionism of the 1930s, worsening the economic depression and fueling hostile nationalism.

The last two points are extremely important for the developing world because they have enormous implications for the three drivers of economic growth and transformation: capital accumulation, trade, and technological advancement. As governments restrict the ability of individuals to accumulate or move capital and goods, it becomes ever harder for individuals to accumulate capital, trade, specialize, and import advanced technologies. The global monetary system built around government-controlled central banks effectively puts local capital markets and all imports and exports under governmental control. They can dictate what can enter and exit their countries through their control of national banking sectors. The fact that governments can always squeeze imports, exports, and capital markets for foreign exchange revenue makes them very attractive borrowers for international lending institutions. Countries' entire private economies can now be used as collateral for governments to borrow from the global capital markets.

At its essence, the fiat standard destroys savings and the ability to plan for the future in order to operate a payments network. As a thought experiment, imagine what would happen to a country that adopted a fiat standard before accumulating significant industrial capital. This is the position the developing world finds itself in today, as will be discussed in more detail in Chapter 11.