

# **Gradually, Then Suddenly**

*A Framework for Understanding Bitcoin as Money*

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## INTRODUCTION

# Gradually, Then Suddenly

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### Perfect Timing

On March 12, 2008, CNBC reporter David Faber asked Bear Stearns CEO Alan Schwartz to respond to reports that Goldman Sachs “would not accept the counterparty risk of Bear Stearns.” Within a few days, the collapse of the Wall Street investment bank was complete. The Federal Reserve and US Treasury Department stepped in to engineer a bailout, which ultimately came through an acquisition by J.P. Morgan. Bear Stearns was the first major domino to fall in the 2008 financial crisis, but the entire financial system was on the verge of collapse. Six months later, on September 15, 2008, Lehman Brothers filed for bankruptcy. This time there was no bailout. The bank runs were on in full force across Wall Street. Within a few weeks, President George W. Bush passed the Emergency Economic Stabilization Act, signed into law on October 3, 2008, approving a \$700 billion package to bail out major US banks.

No one could have predicted what would happen next. On October 31, 2008, a shadowy super coder working under the pseudonym Satoshi Nakamoto sent an email to a cypherpunk mailing list, sharing a paper titled “Bitcoin: A Peer-to-Peer Electronic Cash System.” On January 3, 2009, bitcoin was officially launched, and the world would be changed forever. Satoshi mined the first bitcoin block inscribed with the text, “the Times 03/Jan/2009 Chancellor on brink of second bailout for banks,” the

front-page headline of the *Times of London* for that day—a timestamp with a message. Within less than a week, the code was publicly released. A day later, California software developer Hal Finney became the first known person to join the network, tweeting two simple words: “Running bitcoin.” The rest is actively becoming history.

Just as the financial system was on the brink of collapse, a new system was put forward that would fundamentally fix the root cause. At the time, I was working at Deutsche Bank, just down the road from the New York Fed, at 60 Wall Street. I had a front-row seat to the chaos that was the Global Financial Crisis. Admittedly, it was impossible to know what was really happening or why. Something was fundamentally broken, but beyond that, it was unclear what exactly had gone wrong. I had no knowledge of bitcoin’s release and would not become interested in it until 2016. During that time, I began to understand what had caused the financial crisis and what the implications would be going forward. In hindsight, it has become clear that bitcoin was purpose-built to fix what was broken—the money and the financial system built on top of it. The right place at precisely the right time.

The financial crisis was triggered by extreme levels of leverage, built up over decades. This leverage was both unnatural and unsustainable. It could not and would not have existed without the function of a central bank with the ability to create money. Moral hazard was everywhere, and everything broken in the financial system could be traced back to a central bank with the unilateral power to print money. The only logical solution to an economic system plagued by a form of money that can be easily printed is one built on a form of money that cannot. This is what bitcoin ultimately represents. A form of money that cannot be printed—at all or by anyone—and an entirely new economic system is being built on top of it. While the idea of a digital cash system had been around for decades, none had ever worked. A system built on trust was broken, and Satoshi put forward the idea of a system that eliminated centralized third parties from the issuance and settlement of money. Essentially, bitcoin could only work if it removed the need for trust entirely.

The root problem with conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve.

—Satoshi Nakamoto, February 2009<sup>1</sup>

Ever since its release, bitcoin has been hiding in plain sight for all to see, yet it remains difficult to see. The same is true of the issues stemming from the legacy system. Every day, more people figure it out, but the overwhelming majority of individuals remain in the dark. Skepticism is logically high. Bitcoin is a better form of money that will replace all other currencies, including the US dollar? The idea sounds outrageous. Warren Buffett has referred to bitcoin as rat poison—or more specifically, rat poison squared. Charlie Munger, Buffett's longtime partner at Berkshire Hathaway, has taken to the *Wall Street Journal* to deride bitcoin as an evil scourge, arguing it should be banned. Munger even praised the leader of the Chinese Communist Party for pursuing measures to make its use illegal. JP Morgan CEO Jamie Dimon has called bitcoin a fraud on multiple occasions. Many political leaders in the US, from sitting senators to congressmen, presidents, and cabinet members, have warned that bitcoin is a national security threat or otherwise dismissed it as nothing more than a pet rock.

Despite its critics, bitcoin exists and continues to operate fourteen years after its launch. Today, bitcoin has a purchasing power of approximately \$480 billion, ranking it somewhere around the twenty-second largest currency system in the world. People may think of bitcoin as new, niche, or nascent, which is not inaccurate, but bitcoin is significant at the same time. It may be small relative to the legacy financial system, but it is also material in size. It has been in the wild for over a decade, processing transactions

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1. Satoshi Nakamoto, "Bitcoin Open Source Implementation of P2P Currency," P2P Foundation, forum post, 11 February 2009.

without fail and without anyone in control. And adoption continues to grow. Individual after individual who intentionally and consciously evaluates bitcoin consistently arrives at the conclusion that bitcoin is a superior form of money.

The question to ask yourself is *why*? No matter how confusing bitcoin may seem, it is upon each individual to explain the reality that exists in front of them. It does not matter if most people in the world do not understand bitcoin. Even if 999 out of 1,000 people cannot fathom or explain how bitcoin could be money, what explains the emergence of a consensus among millions of people that runs counter? Truth and objectivity exist in the world, and the only way to explain how millions of people have arrived at the consistent endpoint that bitcoin is money is through reason and logic. Either everyone is collectively hallucinating, or an objective truth exists that allows each to come to the same answer. One or the other.

In the 1841 book *Extraordinary Popular Delusions and the Madness of Crowds*, Charles Mackay wrote about the Dutch tulip bubble, an episode in history to which bitcoin is often compared, as a hallmark example of mass delusion. Rare tulips traded at ever more extreme prices, reaching multiples of the average person's salary, followed by a crash back to reality as the speculative craze subsided. Speculative asset bubbles can and do exist. Markets can also persist in irrational states for extended periods. While the tulip bubble lasted only three years, bitcoin remains either a popular delusion or the output of rational thought. It cannot be both.

This book is intended to help readers establish a rational and logical framework from which to understand bitcoin as money—to see what is otherwise difficult to see. The only way for anyone to consistently arrive at the same conclusion about anything—let alone bitcoin—is through reason and logic. When evaluating bitcoin, this is also the best way to determine whether everyone else is crazy. If you cannot arrive at the conclusion that bitcoin is money through reason and logic, then it is more likely just a popular delusion. However, the reverse is also true.

## Bitcoin Is Money—My Journey, Reason, and Logic

Bitcoin is money. Or rather, bitcoin has become money to me. It was a slow process and one that required me to break through a number of mental blocks along the way. But it all began with asking the question: *what is money?* That is the beginning of the real rabbit hole. At the root level, it is an attempt to answer the question, *why is the dollar in my pocket money?* Why do hundreds of millions of people exchange their hard-earned, real-world value every day for a piece of paper (or digital deposit)? These are difficult questions to ask and even harder ones to answer. I realized that everyone has to approach it in their own way, on their own timeline, and guided by their own life experiences. But people must first be interested in that question—what is money—to begin to understand bitcoin.

For me, the path involved first understanding why gold had emerged as money over thousands of years. What properties made one form of money better or worse than another, and what differentiated money as a unique economic good when compared to all other economic goods? *The Bitcoin Standard* (2018) by Saifedean Ammous was a formative resource for me in exploring these questions. When I applied the core principles to my own life experiences and separately to my understanding of the legacy financial system, bitcoin started to become intuitive. As part of my process, I found it helpful to consider bitcoin relative to two tangible guideposts: gold and the dollar. Does Bitcoin share the properties of either gold or the dollar? Is bitcoin *better* than either or both? Because what makes something money is not absolute. Money is an A/B test. It is a choice between storing value in one medium rather than another, which always involves trade-offs. Without first understanding the flaws of the legacy financial system and the currencies native to it (be it the dollar, euro, yen, pound, bolivar, peso, lira, etc.), I could never have arrived at the idea of bitcoin being money in a vacuum.

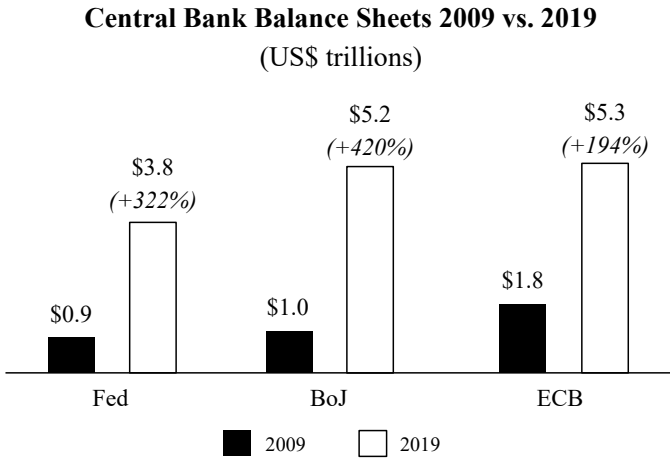


FIGURE 0.1

### Emerging Market Currencies vs. US\$ 2009–2019

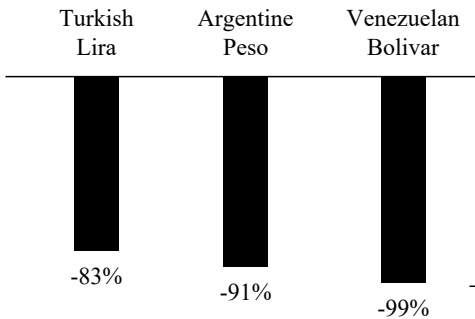


FIGURE 0.2

Source: Yahoo Finance

In 2016, the Federal Reserve had signaled plans to remove liquidity it had injected into the financial system in the years following the Great Financial Crisis—approximately \$3.6 trillion from 2009 to 2014, increasing the money supply fivefold. At the time, I was trying to understand the impact this would have on financial markets, and to do so, I needed a better understanding of why the Fed had taken these emergency measures in the first

place. My research led to the realization that, prior to the crisis, the financial system had been leveraged 150 to 1, the ratio of total debt in the US credit system to dollars available to banks. There was too much debt and too few dollars. The liquidity provided by the Fed, often referred to as quantitative easing (QE), was designed to prevent the collapse of the credit system. However, it became apparent that QE not only prevented deleveraging but also caused an unsustainable credit system to metastasize. I came to the conclusion that the Fed was always going to have to print more money, in massive quantities, functionally without end. QE led to more QE. I recognized that this was a problem because it would eventually lead to a complete failure of the currency.

On one hand, the Fed was going to have to print a lot more dollars, and on the other, I began to form a perspective as to why bitcoin had fundamental value, which was directly related to the problem of printing money. In the simplest terms, bitcoin derives value from the fact that it has a fixed supply. It represents a form of money that cannot be printed. There will only ever be 21 million bitcoin. As I developed a deeper knowledge of how bitcoin credibly enforced its fixed supply, I came to the principal conclusion that bitcoin was the solution to the dollar—and more generally, to the problem of printing money. My thought process followed simple logic: if bitcoin credibly enforces its fixed supply of 21 million, then it will emerge as the global reserve currency and will replace the dollar entirely. I also connected that the logic was binary. If bitcoin could not enforce its fixed supply, then it would not emerge as money. It would not be a global reserve currency, and it would not replace the dollar. Everything hinged on whether or not bitcoin could *credibly* enforce its fixed supply. Understanding how and why this is possible is the basis of understanding bitcoin as money.

There are two economic principles (or assumptions) that connect the dots between the importance of a fixed supply and global adoption of bitcoin as money, both of which will be explored in detail in the chapters to come. First, scarcity in supply is key to a currency's ability to store value over time, and second, economic systems converge on one form of money. If both



are true, the world will converge on the scarcest form of money for the reason that it will store value better than any other form of money. Economic systems converge on a single form of money due to the nature of trade—the intersubjective problem money helps to solve. At the most basic level, I must have the form of money you are willing to accept in order for us to trade or exchange value. It is not a coincidence that local economies overwhelmingly facilitate trade in one common currency because the identical problem extends out to every person in the economy. It is also not by random chance that one form of money emerges over another. There is rhyme and reason. The form of money that is hardest to produce wins, provided it is widely accessible and capable of facilitating exchange. Bitcoin is global, permissionless, and finitely scarce, and it can be transacted over a communication channel. It is outcompeting all other currencies, including the US dollar, based on the credibility of these properties in aggregate.

In the essays that follow, I lay out the logical case for readers to further connect these dots. Or rather, I will provide my logic and the framework that allowed me to consistently arrive at the most fundamental conclusions about bitcoin. Understanding why bitcoin's fixed supply is relevant is just as important as understanding how it is credibly enforced. By the end, you will have a framework with which to form your own conclusions about a number of key questions surrounding bitcoin. Is bitcoin money? If bitcoin can credibly enforce its fixed supply, will it emerge as the global reserve currency? Can bitcoin credibly enforce its fixed supply?

## Historical Context

This book is a collection of essays originally published from July 2019 to December 2020. I titled the series *Gradually, Then Suddenly*, which is a common adaptation of how Hemingway described the process of going bankrupt. It's also the way that government-backed currencies hyperinflate, and often how people come to understand bitcoin (gradually, then suddenly). I wrote the essays as standalone pieces, on a specific subject or concept, with the idea that

anyone could read a single essay without needing any prior knowledge of the others or bitcoin. I have packaged the essays in this book in a more linear order to create a roadmap for the reader, but I have also preserved the original idea of the series. Each essay is designed to be read as a standalone, and collectively, the essays provide a comprehensive framework for understanding bitcoin. In order to explain certain concepts, there is some built-in redundancy but only to the extent necessary to help the reader establish a grounding to think about a particular principle or question.

I have preserved the essays in as close a form and substance to the originals as possible for intentional reasons. While I have edited the essays for copy, readability and to better knit them together (or eliminate unnecessary redundancy), the historical context of when the pieces were written was and remains relevant. Historical narratives often shift to adapt to inconvenient facts, which turn out to be inconsistent with original arguments. I was sensitive to this and did not want the reader to be left wondering whether the narrative of a particular essay shifted based on a changing set of facts. For people who have read these essays and might want to pass the book along to family and friends, I also wanted to provide an assurance that the form of essays included herein are holistically consistent with, and substantively the same as, the originals.

When I was researching the issues related to the Federal Reserve and the US dollar system in 2016, I went back and read Fed meeting transcripts from the period during and following the Great Financial Crisis. Federal Reserve transcripts are released five years after the actual meetings take place and provide a verbatim record of the discussions that occurred. I found the exercise to be particularly valuable because it provided a unique historical context and objectivity for the reader. It was like reading a story where the main characters did not know the ending, but the reader did. People can debate the benefits or detriments of the Fed printing money, but the Fed meeting transcripts provide a historical account that is not editorialized or altered. When I read the transcripts, I had the benefit of knowing what actually happened with a minimum of five years having passed. The preservation

of a historical record provided a baseline to objectively evaluate how accurate the experts were and whether the experts were really experts at all. The passage of time was also critical to the evaluation.

This is the spirit with which I have packaged the *Gradually, Then Suddenly* series of essays here. To provide historical context to the reader, I have included the original publication dates. In substance, the essays have not changed, and the original form of each essay is also preserved online under the same titles as a source of truth and comparison. As such, anyone reading these essays for the first time has the benefit of time and more knowledge of world events than I had when originally writing. For example, the Fed began printing money once again in September 2019 and proceeded to print (or digitally create) nearly \$5 trillion new dollars from 2019 to 2021. In the months leading up and without the knowledge that this would occur, when it would occur, or the extent to which it would, I wrote essays in which I explained principles as to why the Fed would need to print more money. I also wrote several essays in the midst of the then-latest money-printing epoch, describing the consequences and contrast to bitcoin. In short, the historical context is relevant.

By preserving the historical record, I believe the reader will be in the best position to evaluate the arguments, through reason and logic, and to ultimately judge for themselves—in a way that would not be possible without the passage of time since original authorship. It is an exercise of using the past to inform and evaluate what is expected to occur in the future, with logical explanations as to why. Each essay is also principles-based and as such, is just as timely today as when first authored and published. Ultimately, there was nothing to lose and much to gain by preserving the historical record and substance of the original versions.