Commodity Markets and Decentralized Money

An Opportunities White Paper

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start something
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Commodities Markets and Decentralized Money

Summary

Money evolves. But technology and economic circumstance point to an evolutionary step that breaks pattern; a shift from centralized to decentralized money. Specifically, from a fiat U.S. treasury dollar standard to a Bitcoin Standard.

Bitcoin, the world's first decentralized digital currency, is touted by some observers as one of the great technical inventions of our time, comparable to epochal innovations like the wheel, the printing press, or electricity. This paper explores the thesis that bitcoin’s emergence as a form of digital commodity money will fundamentally transform commodity markets and finance.

> “Bitcoin gives us, for the first time, a way for one Internet user to transfer a unique piece of digital property to another... What the internet did for communications, Bitcoin is doing for money."
> Marc Andreessen (Andreessen Horowitz)
> Source: “Why Bitcoin Matters,” *New York Times*, 2014
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> "Bitcoin is the first engineered monetary asset in the history of the world... It's the most important technological advance I've seen in my lifetime."
> Michael Saylor (Executive Chairman, Strategy)
> Source: Source: Lex Fridman Podcast #242 (2022)

Many argue that relentless U.S. fiscal deficits and dollar debasement will drive a search for harder money, ultimately leading to bitcoin’s rise as the new monetary base. Bitcoin’s design—capped supply, decentralized verification, and resistance to debasement—positions it as sound money for the future, much as gold once was in past eras.

The implications for commodity producers and investors are significant. Historically, commodity-based businesses (like farming or mining) suffer when the currency they earn steadily loses purchasing power. By transacting in a currency that holds its value or even appreciates over time, commodity producers might escape the cost-price squeeze of the fiat era and unlock new peer-to-peer market structures.

This paper outlines the historical evolution of money, describes problems of the current fiat system for commodity markets, and highlights emerging opportunities in a bitcoin-standard world. It also describes six opportunities: 1) Being paid in a currency that holds its value, 2) arbitrage between bitcoin and fiat currencies, 3) peer-to-peer commerce, and 4) decentralized pricing and risk management, 5) decentralized capital formation and access, and 6) tokenization.

To summarize, the evolution to decentralized money heralds an era of new opportunity in commodity markets.

From Commodity Money to Fiat

A Brief History

People trade. Whether opinions, jokes, goods, or services, trade is deeply wired into human psychology and culture.

Anthropologists who study human history point to trade as complex systems deeply embedded in social, cultural, and historical contexts. Their research highlights how economic exchanges are not merely about transferring goods or services but also about shaping and reflecting human relationships, social structures, and cultural values.

Stories of trade are embedded culturally. One source of cultural stories, The Bible, for example, contains numerous examples of trade and transactions, reflecting the economic practices of ancient societies. During the famine in Egypt, people traded their livestock and land to Joseph in exchange for food (Genesis 47). King Solomon traded wheat and olive oil with Hiram, king of Tyre, in exchange for cedar wood for his building projects (1 Kings 5). Jesus tells a parable where a servant trades five talents (a quantity of gold) and doubles them, illustrating stewardship and responsibility in economic dealings (Matthew 25).

These examples often highlight themes of fairness, stewardship, and the moral implications of economic behavior. The trade between Kings Solomon and Hiram was good as it demonstrates principles of fairness, collaboration, and resource-sharing. The trade of Esau of his birthright for a bowl of stew (Genesis 25), alternatively, is a bad trade exhibiting impulsive decision-making at the price of long-term consequence.

Biblical narratives also highlight the role of commodities, a basic raw material that is interchangeable with other goods of the same type, regardless of the producer. Commodities are characterized by their uniform quality and widespread availability, so land, livestock, wheat, olive oil, silver, tin, lead, spices and precious stones are documented as tools of trade in the Old Testament while metallic coins of differing value are documented in the New Testament (Aereus gold coin in Matthew 10, Denarius silver coin in Matthew 20, Assarion copper coin in Matthew 10) as societies move up the technological scale in tools of trade.

Money is a technology of trade, a tool that aim to make trade easier and more efficient. Metal coins in the New Testament era were superior technologies than the raw commodities of the Old Testament Era.

Moving forward many centuries to early America, trade happened but often with technologies of trade closer to Biblical than twenty first century. Native American wampum (shell beads) was used as legal tender in Massachusetts from 1637 to 1661 but lost value due to counterfeiting and fragility.[1] Later in Massachusetts Bay Colony, corn and beaver skins were common mediums of exchange.[2] In the southern colonies, tobacco and rice served as standardized forms of money, with Virginia even legislating tobacco as a form of currency, lasting about one hundred years until its repeal in 1717.[3]

So, for lack of better alternatives commodities often were money in early America. But most often commodities were very imperfect money. If you think using a torn $20 dollar bill is a pain, try tucking tobacco leaf into your wallet!

Gold or silver coins were preferred, but often difficult to obtain. There weren't deposits of gold or silver in the early colonies. British mercantilist trade policies exacerbated the shortage by restricting the export of sterling coins to the colonies. This left colonists reliant on trade balances with other regions to acquire coins, which were often drained back to England through imports of manufactured goods.[4]

Consequently, early Americans experimented with next-stage money innovations of paper money. These efforts began in 1690 when the Massachusetts Bay Colony issued the first paper currency in the Western hemisphere, known as "bills of credit," to fund a military expedition during King William's War. Unlike coinage, these bills were not backed by gold or silver but were promises to pay at a future date, redeemable for tax payments.[5]

Other colonies followed Massachusetts' example, issuing their own paper money to address economic needs, particularly during military conflicts. However, this decentralized system led to inconsistencies, as each colony's currency had different values, complicating inter-colony trade.[6]

The British Parliament sought to control colonial paper money through Currency Acts (1751, 1764, and 1773). These acts restricted or prohibited the issuance of paper money as legal tender, creating tensions that contributed to the American Revolution.

The Massachusetts Land Bank of 1740 is a prime example of an experiment in colonial money. Indeed, it was an experiment in private money. It was created as a private institution to address the colony's chronic currency shortages, which resulted from the export of silver coins and the withdrawal of public bills of credit. The Land Bank issued paper money backed by land, allowing subscribers to borrow against their property. This initiative primarily attracted farmers and small landowners who sought relief from debt and tight credit conditions. However, it faced strong opposition from Boston merchants and political elites, who favored a rival "Silver Bank" backed by precious metals.[7]

Governor Jonathan Belcher and Parliament ultimately suppressed the bank in 1741, viewing it as a threat to economic stability and British control over colonial finances.[8] Investors in the

Land Bank were largely ruined financially, including Samuel Adams, Senior, a founder and director. When the Land Bank was outlawed, its directors were personally liable for all outstanding currency. This financial liability plunged Adams Sr. into severe debt, leading to long-standing lawsuits that persisted even after his death in 1748. These debts also deeply affected his son, Samuel Adams, Jr., who inherited both the family estate and its financial burdens. The experience of defending his family's property against government seizure profoundly shaped Samuel Adams's distrust of British authority and contributed to his later revolutionary fervor.[9] [10] The origins of the Boston Tea Party and subsequent revolutionary ferment are deeply intertwined with money issues. The Land Bank example is just one illustration of typical governmental hostility to private money.

The Revolutionary War (1775 to 1781) and the Treaty of Paris (1783) led to formal recognition by Great Britain of American Independence and a more independent pathway in money innovations. During the Revolutionary War, the Continental Congress issued paper money, known as "Continental dollars," to finance military efforts.[11] These notes were not backed by gold or silver but were structured as "zero-coupon bonds" with future redemption dates. However, hyperinflation and depreciation rendered them nearly worthless by war's end, giving rise to the phrase "not worth a Continental."[12]

Individual states also issued their own paper currencies during and after the war to address local economic needs. Most states experienced significant problems with inflation and loss of trust in paper money.[13]

The failures of Continental currency and state-issued paper money was an important motivation for the founders to call a constitutional convention in 1787 in Philadelphia to form a new federal government. The Constitution that emerged from that convention in September 1787 and would eventually be ratified by the states explicitly prohibited states from issuing "bills of credit" or making anything but gold and silver legal tender for debts. This reflected widespread distrust of paper money due to its inflationary history and aimed to establish a metal-backed monetary system.

Thus began the American Experiment.

Centralization versus Decentralization of Money

The Founders designed the Constitution with an aim to balance the centralized and decentralized, the great yin and yang of American political economy. More centralized authority for a federal government was needed than the Articles of Confederation afforded in the eyes of the founders, but that was to be balanced with powers held by state and local governments. And, unique in its time and even today, the Constitution put at the center of its aim the liberty of individual citizens.

The push and pull of centralization versus decentralization has played out in the United States through the lens of money.

Centralization – Money issues were significant in the first term of the first President, George Washington. Washington's first Secretary of Treasury was Alexander Hamilton played a central role in the creation of the First Bank of the United States, which was established in 1791, effectively the new nation's first (sort of) central bank. Hamilton proposed the bank as part of his broader plan to stabilize and strengthen the fledgling nation's economy. His vision was outlined in his Report on a National Bank, submitted to Congress in December 1790. The bank was modeled after the Bank of England and aimed to manage and repay Revolutionary War debt, issue a uniform national currency, facilitate government operations, and promote economic development and growth. The First Bank operated for 20 years, providing critical financial stability during its tenure and influencing future central banking systems in the United States.[14] [15] From the inception of the First Bank, opposition to the idea of centralized money and finance was present. Thomas Jefferson and James Madison, both of Virginia, argued that the bank was unconstitutional and favored Northern commercial interests over Southern agrarian ones. It took a wine-soaked dinner at Jefferson's in 1790 for he, Madison, and Hamilton to arrive at a trade where Hamilton got his bank, but Jefferson and Madison got a location for a new national capital that today we call Washington, D.C. The Hamilton-led Treasury began with a bimetallic standard in 1792, where the dollar was defined in terms of both gold and silver at a fixed ratio of 15:1. This meant both metals were legal tender, and their values were tied to specific weights of each metal. Due to global market differences (valuing gold at 15.5:1), much of the gold left the U.S., making silver the de facto standard. In 1834, the Coinage Act adjusted the gold-to-silver ratio to 16:1, encouraging gold circulation and effectively shifting the U.S. toward a gold standard, though silver coins remained in use. [16]

Decentralization – Ultimately, the First Bank would be dissolved in 1811 when Congress would not renew its charter. The Second Bank of the United States was created in 1816, also with a twenty-year charter. It too would dissolve when its charter expired in 1836 under fierce opposition from President Andrew Jackson. In what became known as the "Bank War" President Jackson and Second Bank president Nicholas Biddle waged a very public fight over rechartering the Bank. President Jackson thought it was unconstitutional and that it concentrated wealth in the hands of the privileged few.[17] Biddle had coordinated with allies like Senator Henry Clay to push for an early recharter in 1832, part of a challenge to President Jackson during his reelection bid. President Jackson did not kindly to this. Be careful when picking fights with a guy with a lifetime of fighting and dueling experience. Jackson essentially crippled the bank in 1832 and 1833 by vetoing its charter renewal and removing federal deposits.[18] But the end of the national bank didn't end or change the dollar, which remained backed by silver and gold.

This 1834 cartoon is a satire on the failure of the combined efforts of Henry Clay, Daniel Webster, John Calhoun, and Nicholas Biddle to thwart President Andrew Jackson's order to remove the federal deposits from the Bank of the United States. Source: Library of Congress.

Centralization – Greenbacks were a form of paper currency introduced by the United States government during the 1861 to 1865 Civil War to finance the Union's war effort. They were called "greenbacks" because of the green ink used on their reverse side. Unlike traditional currency backed by gold or silver, greenbacks were fiat money, meaning their value was not tied to physical reserves. Salmon P. Chase, as Secretary of the Treasury under President Abraham Lincoln, played a pivotal role in creating greenbacks. Facing a dire financial crisis in 1861–1862 due to the war and dwindling revenue from Southern trade, Chase supported the passage of the Legal Tender Act of 1862. This act authorized the issuance of the new fiat currency. Although Chase initially disapproved of issuing currency without specie backing due to its inflationary risks, he recognized its necessity during wartime.[19] Free markets still played a role in that their value relative to metal backed dollars would fluctuate based on the results of Civil War battles. Union victories led to higher greenback prices and Confederate victories lower. In an embodied historic example of American two-mindedness on monetary policy, Salmon Chase would later, as Chief Justice of the Supreme Court, declare some aspects of greenback issuance unconstitutional! [20]

Civil War Era "greenback" one dollar bill. Source: National Museum of American History. The portrait is Salmon Chase. A politician putting his own portrait on money!

Decentralization – President Ulysses Grant signed legislation in 1869 which guaranteed that all U.S. bonds would be repaid in gold rather than greenbacks. It was one of Grant's first actions as president and marked a commitment to returning to "sound money" principles.[21] In what seems particularly odd today, the Grant administration had an explicit and aggressive program to reduce federal government debt by selling Treasury gold and using the proceeds to buy back wartime bonds. Eventually, Grant would sign legislation that set 1879 as the year when the greenback dollars from the Civil War could be redeemed for gold at face value, setting the stage for a multi-decade gold-based dollar. But the end of decidedly decentralized money in the U.S. was in sight. The experts and the economists were coming.

Centralization – The creation of the Federal Reserve in 1913 arose was driven by ideas that recurring financial panics and instability in the U.S. banking system could be remedied. Specifically, the Panic of 1907, where the collapse of banks and evaporation of credit forced private financiers like J.P. Morgan to step in and stabilize the economy, provided impetus for ideas about a more structured and government-backed financial system.[22] Between 1908 and 1912, definitive Congressional action languished as political opposition to large banks remained. The political landscape shifted with the Democratic Party's victory in 1912, led by President Woodrow Wilson. The Democrats prioritized banking reform and sought a compromise between private banking interests and public oversight. Congressman Carter Glass and Senator Robert Owen spearheaded efforts to draft legislation that balanced these competing interests. Their proposal positioned the Federal Reserve System, with twelve regional banks overseen by a central Board of Governors, as more decentralized than prior national banks.[23] Decentralized in marketing. Centralized in practice.

Centralization – Barely into the Federal Reserve area, the strain of war time spending would once again impact. The Wilson administration in September 1917 embargoed gold exports, a means of depressing gold prices while borrowing significant sums for spending as World War I raged. By requiring government permission for gold exports—most of which were denied—the U.S. effectively suspended the free export of gold, partially departing from the gold standard until full gold export convertibility was restored in June 1919 after the war.[24] The move aligned with other countries, as many had already suspended free convertibility of gold to finance their military expenditures.[25]

Centralization – Gold convertibility lasted until 1933, when President Franklin D. Roosevelt ended domestic convertibility of dollars into gold in 1933 and confiscated privately held gold to stabilize monetary policy.[26] The federal government made it illegal to own gold via Executive Order Number 6102 (April 5, 1993), and noncompliance was punishable by a fine of up to $10,000 or ten years in prison, or both, if privately held gold weren't exchanged for $20.67 per ounce. The rationale was that hoarding gold was stalling economic recovery by preventing the Federal Reserve from expanding the money supply. The confiscated gold was used to back increased currency issuance and stabilize the banking system. Shortly afterward, the Gold Reserve Act of 1934 devalued the dollar by raising the official price of gold to $35 per ounce, effectively transferring wealth from private holders to the government. The prohibition on private gold ownership lasted for over four decades. It was not until 1974, under President Gerald Ford, that Americans were legally allowed to own gold again after Congress repealed the restrictions. Many Americans, of course, had owned gold during the period when it was illegal. They just had to be sneaky about it. And by that time, the era of fiat money had arrived.

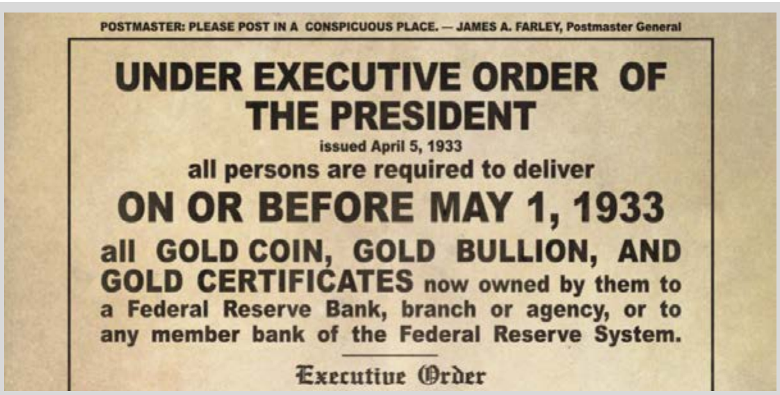


Image of poster hung in Post Offices in April 1933. Executive Order No. 6102.

<u>Centralization</u> – President Richard Nixon took the United States formally off the gold standard on August 15, 1971, in a move known as the Nixon Shock. This decision marked the end of the Bretton Woods system, which had tied the value of the U.S. dollar to gold at a fixed rate of $35 per ounce since the end of World War II. The U.S. faced a balance-of-payments crisis, with foreign governments redeeming dollars for gold at an unsustainable rate, depleting U.S. gold reserves. By 1971, there were four times as many dollars in circulation as there was gold to back them.[27] At the heart of the problem was federal government spending, domestic spending under the "Great Society" programs and spending on the Vietnam War had led to significant fiscal deficits and inflation, undermining confidence in the dollar.[28] The move effectively transitioned the global economy to a regime of floating fiat currencies by 1973. Central banks assumed greater control over monetary policy but struggled with currency volatility and inflationary pressures in subsequent years. In 1971, $35 got you an ounce of gold. In October 2025, it takes more than $4,000. President Nixon's "temporary" suspension of conversion of the dollar into gold had to blow out fifty-four candles last August on its birthday.

Thus, the evolution of money in the United States has been toward greater centralization. And as the dollar is the basis for much of international trade, the world has moved toward more centralized money in lockstep.

As one example, between 1984 and 2020 the number of banks in the U.S. decreased by approximately 70 percent.[29]

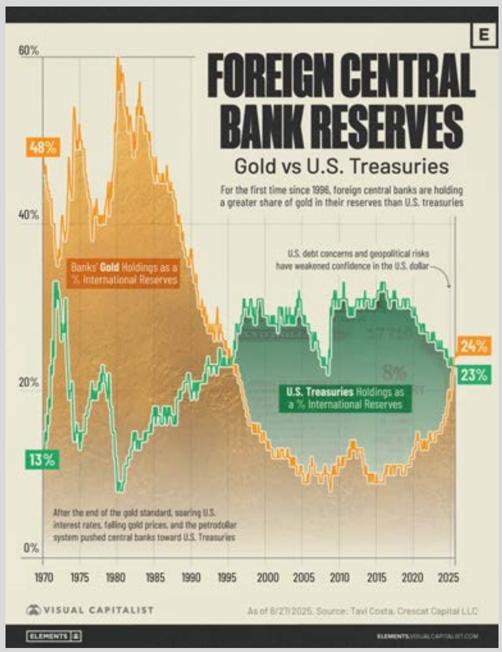
As another example, a Banque de France working paper shows that the current dominance of the U.S. dollar in the international monetary system is unprecedented in terms of longevity and magnitude.[30]

Economist Joshua R. Hendrickson argues that the latest global monetary standard, the Treasury Standard, is just the latest in a multi-century march toward central banking with a primary purpose of maintaining an ability to secure emergency financing.

> *In fact, the Treasury Standard is the latest stage of an evolutionary process aimed at financing large-scale, open-ended military conflict that arguably dates back to the Military Revolution.*[31]

But are economic circumstance and technology undercutting centralization and tilting the evolution toward more decentralized money? Are the foundations of the fiat treasury dollar standard starting to crack?

Trade wars, war wars, and unprecedented U.S. federal government deficits have introduced strains on the Treasury Standard. As one marker, foreign central bank reserves now hold a greater amount of gold than U.S. Treasuries for the first time since 1996.



Source: Visual Capitalist. https://www.visualcapitalist.com/central-banks-now-hold-more-gold-than-u-s-treasuries/

Investment strategist Lyn Alden observes that the U.S. is now effectively trapped in a cycle of permanent deficits, making significant spending cuts politically impossible.[32] Borrowing a line from the series *Breaking Bad*, she uses the phrase "nothing stops this train." Her thesis is that the U.S. deficit problem is unlikely to be resolved, running structurally hot with steady nominal growth and ongoing currency debasement. In her analysis, persistent deficits will inexorably erode the dollar's purchasing power, leading to ongoing inflation that acts as a hidden tax on holders of the currency. As a result, both investors and foreign governments are increasingly seeking harder assets as hedges—whether real estate, commodities like gold, or Bitcoin.

Alden writes about monetary technology, centralization, the opportunity for decentralization.

> Throughout history, most updates to monetary technology have been centralizing, and have consolidated power into a smaller number of hands in exchange for greater efficiency. Now, there's a real window of opportunity to decentralize some of that power and disperse it more broadly.[33]

Investor Lawrence Lepard argues that the world is headed toward what he calls "The Big Print."[34] Lepard notes that the debt levels across developed economies have become so high that central banks will eventually have no choice but to "run the printing press" in a massive way. In other words, when faced with either defaulting on debt or inflating it away, policymakers will choose inflation. Interest rates cannot be raised high enough to truly tame inflation or fix debt overhangs without causing a crisis, so Lepard foresees an inevitable monetization of debt ("big print") to keep the system going. This scenario implies a rapid debasement of fiat currencies. Lepard's prognosis is that currencies like the dollar will lose value at an accelerating pace, which is extremely bullish for scarce, non-printable assets.

Notably, Lepard himself is a former "gold bug" turned "Bitcoin maxi." As he quips, "I'm the gold guy who's trying to orange-pill gold bugs," emphasizing that many traditional sound-money advocates (long partial to gold) have been won over by Bitcoin's properties.[35] His personal intellectual journey from precious metals to Bitcoin exemplifies a broader shift in thinking: if gold was the sound money of the past, Bitcoin may be the sound money of the future.

It's notable that the economics profession has been largely skeptical if not outright opposed to alternative monetary ideas. For example, surveys show overwhelming opposition among trained economists to restoring a gold-backed monetary system. A poll in January 2012 by the University of Chicago's IGM Economic Experts Panel (comprised of about 40 leading economists from top U.S. universities) found near-unanimous rejection of a gold standard. In that survey, 93 percent of respondents disagreed or strongly disagreed with the statement that "if the U.S. replaced its discretionary monetary policy regime with a gold standard (defining the dollar as a fixed amount of gold), price stability and employment outcomes would be better for the average American."[36]

Likewise, during the 2016 U.S. presidential race – when several candidates (e.g. Ted Cruz, Donald Trump) floated proposals to "consider" a gold standard – economists reiterated their broad opposition. A 2016 review by the University of Maryland's Smith School reported that professional economists "overwhelmingly reject" tying the dollar to gold, citing the 2012 Chicago Booth survey which "failed to turn up a single [economist] who embraced the gold standard."[37]

Zoom forward from 2016 to more recent times for indications of change, at least among politicians if not economists. 2016 candidate Donald Trump spoke of the gold standard. 2024 candidate Donald Trump spoke of Bitcoin the June 2024 Bitcoin Conference in Nashville, Tennessee. And President Donald Trump signed an executive order titled "Establishment of the Strategic Bitcoin Reserve and United States Digital Asset Stockpile" on March 6, 2025.

Economists described as belonging to the Austrian school typically hold heterodox views on money, among other topics. These economists emphasize individual decision-making, market processes, and the limits of centralized economic planning. They stress subjective value, entrepreneurship, and the coordinating role of prices, often expressing skepticism toward mathematical modeling and government intervention.

Austrian school economists, past and present, have embraced concepts like free market currency, free banking, and today, Bitcoin. F.A. Hayek wrote extensively on free banking for the last twenty years of his career, with books such as *Denationalisation of Money: The Argument Refined* (1976; expanded edition 1978) and many articles. A leading example of a self-described Austrian school economist today is Dr. Saifedean Ammous, whose 2018 book, *The Bitcoin Standard: The Decentralized Alternative to Central Banking* has sold more than 1 million copies.

> "I don't believe we shall ever have a good money again before we take the thing out of the hands of government. That is, we can't take it violently out of the hands of government — all we can do is by some sly roundabout way introduce something that they can't stop."
>
> — Friedrich A. Hayek, 1984, interview with James U. Blanchard III

Fiat Treasury Dollar Standard Money Consequences

Squeeze on Commodity Producers

Commodity prices and profits (or losses) of commodity producers are inexorably tied to monetary issues. Definitionally commodities are not differentiated so the low-cost producers of commodities determine prices in the long term. Commodity production is closest to the perfect competition model you may (or may not!) remember from an introductory economics course. So, says the grumpy economist, long-term economic profits for commodity producers are a very round number. Zero.

As consumers, we can appreciate this law of economics. Every day, commodity producers struggle to compete and figure out how to be able to produce more efficiently. This leads to lower costs for buyers over the long-term.

But commodity producers are people too. It's easier to benefit from higher prices than working to increase efficiency and bring costs lower. So, through history we can see examples of preferences among commodity producers for monetary regimes with more inflationary bents, especially agricultural commodity producers, farmers, who usually have a voice in U.S. politics.

During the late nineteenth century, farmers and agricultural producers supported inflationary policies, particularly the free coinage of silver (the "Free Silver Movement"). This was part of the broader Populist movement, which sought to increase the money supply and raise prices for agricultural goods. Farmers believed that inflation would reduce their debt burdens and improve their purchasing power, as deflationary pressures were reducing crop prices and making debts harder to repay. They were given voice by Nebraska congressman William Jennings Bryan, four-time presidential candidate for the Democratic party. "You shall not crucify mankind upon a cross of gold." This line, delivered at the 1896 Democratic National Convention in Chicago, was a powerful metaphor criticizing the gold standard.

In the 1920s, agricultural producers advocated for the McNary–Haugen bill, which aimed to establish price supports for farm products by having the government purchase surpluses and sell them abroad. This was an attempt to restore agricultural prices to pre-World War I levels (1909–1914 averages). While not directly advocating for inflation, it reflected a desire for policies that would raise farm incomes by increasing prices.[38]

In the 1930s, during the Great Depression, agricultural producers supported New Deal policies that sought to stabilize and raise commodity prices. Programs like the Agricultural Adjustment Act (AAA) aimed to reduce crop production to boost prices.

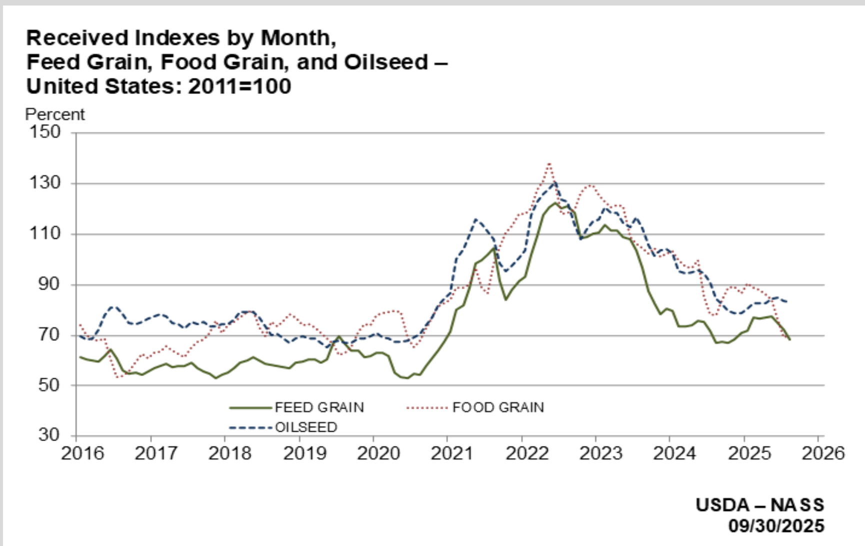
The high inflation of the 1970s following the Nixon Shock saw some commodity producers benefiting from rising prices. For example, oil and agricultural producers benefited for a time from during this period as prices received rose faster than prices paid for inputs. While commodity producers did not necessarily advocate for inflationary policies, they benefited. Until they didn't.

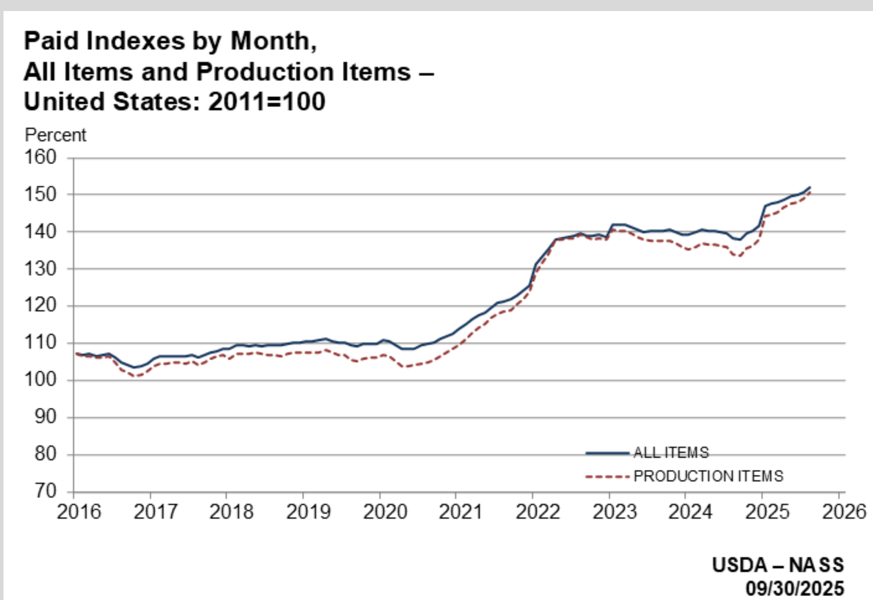
Inflation never ends well for commodity producers. It seems only a matter of what form the backside hangover will take. And hangovers hurt. Or worse.

The prosperity for some commodity producers of the inflationary 1970s gave way to the 1980s. For agricultural producers, inflated land prices gave way and debts borrowed against that land couldn't be easily serviced. Approximately 300,000 farms defaulted on loans in what came to be called the 1980s farm crisis, leading to widespread foreclosures and auctions as farmland values in parts of the Midwest dropped by as much as 60 percent.[39] Many rural banks collapsed, with more banks failing in 1985 than in any year since the Great Depression.

More recently, the expansion of the ethanol industry in the U.S. Midwest coincident with quantitative easing of the post-2008 financial crisis saw the price range of grain and oilseed commodities take an apparent permanent step up in nominal levels, with corn prices rising from typical cash prices of around $2.00 per bushel to $4.00 to $6.00 per bushel.

A feature, rather than a bug, of central-bank-driven inflation for commodity producers is that input costs (like fuel, fertilizer, equipment, labor) rise consistently, while the prices of outputs (grains, livestock, oil, metals, etc.) are subject to global competition and technological efficiency gains that can keep them relatively low or even push them down. The result is a cost-price squeeze: Over time, producers pay more for inputs but get less (in real terms) for their outputs.





Empirical data from U.S. agriculture bears this out. The United States Department of Agriculture's index of Prices Paid (for inputs) versus Prices Received (for farm outputs) shows that since the early 2010s, these two lines have diverged markedly.

Commodity prices can vary significantly depending upon supply and demand conditions, but data shows that in the last ten years input costs largely began outpacing commodity prices. By the mid-2010s, farm input costs were rising faster, and commodity prices were lagging; from 2014 onward, the gap widened into a chasm.

This trend has continued in recent years. In 2023–2024, for example, crop prices fell significantly while input costs only marginally eased for some products though still increasing in others. U.S. Department of Agriculture National Statistics Service data show that prices received by grain and oilseed producers are at 70 to 90 percent of 2011 values in 2025 while prices paid are at 150 percent of 2011 values. Squeeze indeed.

Such dynamics are not anomalies but rather recurring patterns in an inflationary fiat environment. There are periods (like 2021–2022 in grain markets) when high commodity prices temporarily outpace input costs, but these are often followed by mean reversion where commodity prices crash back down even as many input costs remain elevated

Land rents, machinery, and fertilizer seldom drop as fast as corn or wheat prices do in a glut year. Over decades, the overall effect is that commodity producers must run ever faster (increase efficiency, increase scale, leverage technology) just to stay in place financially. The purchasing power of their earnings steadily erodes when held in fiat currency, unless they continuously reinvest or speculate to beat inflation.

Beyond the numbers, this creates strategic disadvantages for commodity industries. Farmers, for instance, operate on slim margins and rely on debt financing for land and equipment. Inflation drives up interest rates and input costs, increasing working capital needs, while global competition keeps output prices in check. The description of farmers as "price takers" may seem political phraseology, but there are fundamental economic forces underneath the idea. Meanwhile, Federal Reserve policies to conduct its dual mandate of low inflation and unemployment can act a pincer movement on the economic prospects of producers.

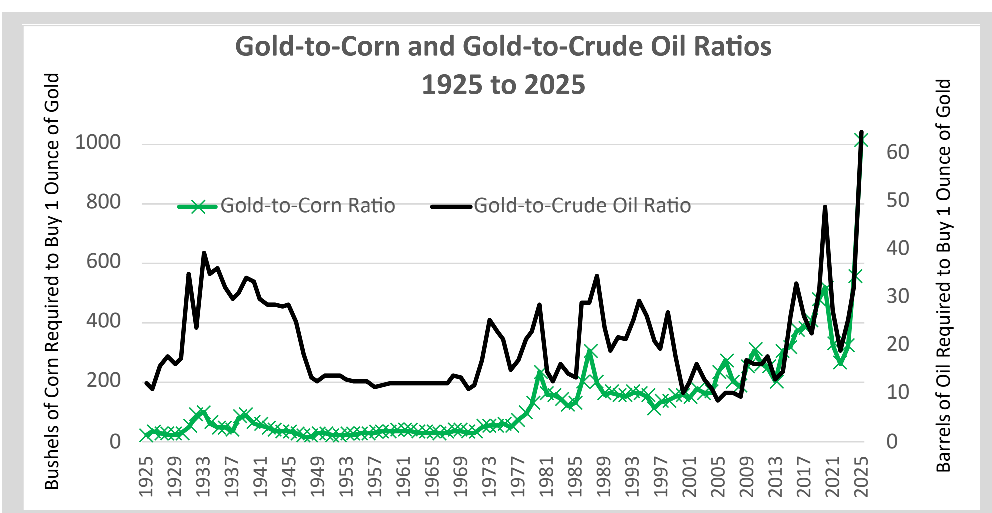
Lyn Alden's concept of fiscal dominance underscores why commodity producers can't expect relief under the current regime: government spending is likely to continue outpacing revenues, meaning more government debt and more money creation. And the likelihood that Farm Bill or other policy-based relief measures will have meaningful impact is remote. The answer to problems arising from federal government spending profligacy isn't more spending.

The real value of farm commodities sold for dollars will be eroded by the steady "inflation tax." Producers might find that even if nominal crop prices rise over time, they never keep up with the rising costs of equipment, seeds, or healthcare, nor with asset inflation in things like farmland values. In essence, fiat money is a leaky bucket for storing the value created by commodity producers.

Another means of looking at analyzing commodity prices is to denominate them in gold. The idea is that the purchasing-power of gold has been remarkably stable over thousands of years. In other words, an ounce of gold has tended to buy a broadly similar "basket" of goods or services (or represent a broadly similar amount of value) across centuries, which is at least part of the reason it was used as money and remains a store of value despite inflation, economic cycles and monetary regimes. Currencies come and go, including the dollar, but gold remains, even if not formally connected to currencies today.

The number of bushels of corn it took to buy one ounce of gold between 1925 and 1971 was largely between 20 and 40. Since the Nixon Shock of 1971, it's been increasing with the recent dramatic rise in gold prices taking the number to more than 1,000 bushels of corn to buy one ounce of gold.

If corn is a proxy for agricultural commodities, I include crude oil as a proxy for the energy complex for comparison. Oil denominated in gold settled into a relatively stable level of 10 barrels per ounce of gold between the end of World War II and the 1971 Nixon Shock. That shock along with unrest in the Middle East increased it significantly post 1971, but corn's change over time has been more significant. While oil's gold price has increased by 5.22 times between 1925 and 2025, corn's gold price has increased by 44.09 times. Yes, average corn yields have increased by about 6 times (approximately 30 bushels/acre in 1925 to 180 bushels/acre in 2025), but that pales in comparison to the relative decrease in corn prices.



Bitcoin

A Digital Commodity for a New Monetary Standard

Enter Bitcoin, invented in 2008–2009 by the pseudonymous Satoshi Nakamoto. Bitcoin can be described as a digital commodity that is scarce (capped at 21 million units) and secured by a decentralized network of computers (nodes and miners) around the world. While often called a cryptocurrency, Bitcoin exhibits many characteristics of a monetary commodity akin to gold, sometimes earning it the moniker “digital gold.” The proposition of this paper is that Bitcoin’s rise is not just a speculative trend but the beginning of a transition to a Bitcoin Standard in global finance.

Dr. Saifedean Ammous, author of *The Bitcoin Standard*, contends that Bitcoin’s design makes it an ideal foundation for a sound monetary system. Its fixed supply and resistance to debasement means it can serve the role gold once did, but even more effectively. At the Bitcoin 2025 conference, Ammous delivered a data-driven keynote warning that the U.S. dollar is on an inevitable decline and that Bitcoin is “the only rational hedge” for preserving value.[40] “Default, devaluation, or default by devaluation are inevitable” for the dollar, Ammous argued, and he predicted the end of the U.S. dollar era in a dramatic inversion: “The thing that goes up is going to overtake the thing that goes down.”

In other words, as the dollar spirals downward in value and Bitcoin continues to appreciate (in both price and adoption), there will come a crossover point where Bitcoin effectively becomes the unit of account for more people. Ammous even described a scenario where a major stablecoin issuer (Tether) could see its Bitcoin reserves outpace its dollar reserves, forcing its dollar peg to drift upward (i.e. the dollar weakening) and ultimately transitioning fully to a Bitcoin-backed token.

What makes Bitcoin significant? It’s the first man-made commodity engineered to function as money.

Gold became monetary technology through centuries of trial and error, not design. Gold took energy to find or mine, supply changes were typically small, and it doesn’t tarnish or degrade through time. The gold that was around 5,000 years ago is largely still with us today, as well as the approximately 1 to 2 percent annual additions to its supply that have been mined. But gold also has limitations as monetary technology. It weighs a lot. It costs a lot to store. It’s difficult to transport. And your relatives, thieves, and government might take it if you’re not watching.

Bitcoin, by contrast, was deliberately created to emulate gold’s key monetary properties while eliminating its weaknesses. Lawrence Lepard puts it succinctly: with Bitcoin’s invention, “we’ve created digital scarcity, verifiable, secure digital scarcity…a digital form of gold”

Bitcoin's ledger is maintained by thousands of nodes running open-source software, and no central authority can alter the supply. This immutable ledger of transactions (the blockchain) means that ownership of Bitcoin cannot be forged or censored if the network is secure. Bitcoin combines decentralization with cutting-edge computer science (cryptography and game theory) to ensure trustless operation.

But the breakthrough is precisely that value can be represented and transferred in purely digital form without needing a trusted intermediary. Bitcoin uses energy (via mining) to anchor its ledger in the physical world, giving it a cost of production and making it akin to a mined commodity (only the "mining" is computational work rather than digging rock). Saifedean Ammous and other economists in the Austrian tradition emphasize that Bitcoin's hardness (supply inelasticity) exceeds that of gold. Gold's supply grows approximately 2 percent per year from mining, whereas Bitcoin's supply growth is on a programmed decline (halving every 4 years, with under 1 percent growth by the 2030s). This makes Bitcoin the "hardest" money ever used at scale – its stock-to-flow ratio will surpass that of gold.

Furthermore, Bitcoin is the first commodity to exist in a truly global free market. It's easily transmissible across distances (you can send value globally at the speed of light, something impossible with physical gold coins or bars) and divisible to many decimal places (making it practical for small transactions or large). It functions as a base settlement layer but can be extended by second-layer networks (like the Lightning Network) for faster small payments. In sum, Bitcoin offers the monetary qualities of a commodity (no issuer, scarce, fungible) with the transactional qualities of a digital network (speed, global reach, programmable contracts). This unique combination has led some commentators to compare Bitcoin's impact to that of the printing press on knowledge: "The Bitcoin protocol is the modern-day printing press. It's democratizing access…" to economic value and exchange on a global scale.[41] Just as the printing press wrested control of information from medieval church authorities, Bitcoin threatens to wrest control of money from central banks and fiat authorities.

A transition to a Bitcoin Standard would mean that prices of goods (including commodities like corn, oil, metals) might eventually be quoted in satoshis (fractions of Bitcoin) rather than dollars, and that savings would be held in Bitcoin rather than in Treasuries or bank deposits.

Will such a profound change happen overnight? Most don't. Though Hemingway's lines from *The Sun Also Rises* about how someone goes bankrupt seems apt.

> "How did you go bankrupt?"
>
> "Two ways. Gradually, then suddenly."

The building blocks of an emergent monetary system are already visible. Nations with collapsing currencies (e.g. Venezuela, Lebanon) have seen significant Bitcoin adoption as an alternative store of value.

Leaving aside Bitcoin for a moment, stablecoins are another leading indicator of the evolution of money. U.S. dollar-pegged stablecoins will play a pivotal transitional role for the emerging monetary regime. These tokens, issued by private entities and backed by dollars or dollar-equivalents, serve as a bridge between traditional fiat monetary systems and the decentralized monetary paradigm of Bitcoin.

The earliest stablecoins launched in the mid-2010s. For example, Tether (USDt) was introduced in 2014 and aimed to maintain a 1:1 peg with the U.S. dollar. The growth of dollar stablecoins has been rapid: as of mid-2025 the global market cap exceeded US $230-250 billion (and is projected to grow further) with Tether and Circle as the two issuers dominating the space.

Stablecoins like USDt are already more pervasive in the trenches than Bitcoin—they're used for everyday transactions around the world. This is often difficult for someone in the U.S. to perceive, because the use case for dollar-based stablecoins isn't yet compelling. Americans can already use dollars. But for people in other countries with rapidly debauching currencies, the ability to hold and transact in permissionless dollars is very compelling.

The number of stablecoin users bears this out, as Tether's CEO earlier this year confirmed that "Tether USDt has (conservatively) more than 400 million users across the world. Soon 1 billion."[42] Tether alone has more people using its dollar stablecoins than there are Americans. Meanwhile, there are an estimated 54.6 million bitcoin wallet addresses.[43] As many individuals own more than one wallet, it's likely that there are fewer than 54.6 million people individually holding bitcoin. ETFs like BlackRock's IBIT and mutual funds have expanded the number of individuals having a form of bitcoin ownership, but it still likely seems less today than stablecoins.

The linkage is that stablecoins are a compelling transitional vehicle in the evolutionary shift from fiat to a decentralized money system. The fact that stablecoins dominate by number of users/addresses supports the thesis that we're moving toward digital representations of fiat (or commodity-money) even as Bitcoin marches on as the base layer. Search YouTube with prompts like "Bitcoin in Kenya" and you'll see numerous examples of people on the lower rungs of wealth using bitcoin.

In more stable and wealthy economies, institutional adoption is rising. Corporations are adding bitcoin to their treasuries, investment funds are allocating to Bitcoin as "digital gold," and major financial institutions are developing custody and trading services.

IBIT (iShares Bitcoin Trust) from BlackRock is widely reported to be the fastest-growing ETF in history by several growth-metrics, reaching $70 billion in assets under management in just 341 trading days after launch and now exceeding $100 billion.[44]

MicroStrategy (now Strategy) announced its initial purchase of bitcoin in August 2020, when it bought 21,454 BTC for approximately US$250 million, at an average price around $11,653 per bitcoin, becoming the first "bitcoin treasury" company and going on to acquire much more bitcoin over time. MicroStrategy's market cap was around $1.5 billion in 2022, and today it is about $80 billion, a dramatic change that has been copied by more than 150 publicly traded businesses in the U.S. and around the world.

All these trends point to Bitcoin moving from the fringes of finance to the core. If Saifedean Ammous and like-minded analysts are correct, Bitcoin is following gold's historical path (from collectible to store of value to widespread money) on an accelerated timeline. Bitcoin has moved beyond a fringe plaything of the cypherpunk and open-source software communities. It's going mainstream.

> Bitcoin that has been finally forfeited to the federal government will be the foundation of the Strategic Bitcoin Reserve that President Trump established in his March Executive Order.
>
> - Treasury Secretary Scott Bessent, August 14, 2025 X Post.
>
> "Bitcoin should be in every portfolio right now to hedge against inflation."
>
> - Paul Tudor Jones (hedge-fund manager), Coindesk interview, Jun 11, 2025

Why Bitcoin is Poised to Become the Global Monetary Standard

The Bitcoin Protocol Stack

But isn't Bitcoin just another crappy, scammy cryptocurrency?

People often looked to for investment or financial advice and guidance have certainly indicated opinions as such. "Bitcoin is probably rat poison squared" said Warren Buffett at the Berkshire Annual Meeting in 2018. Buffett's partner Charlie Munger didn't apparently think he'd went dirty enough on the metaphor adding "it's like trading turds."

The credentialed clerisy hasn't thought much of it either. Paul Krugman (Nobel Laureate Economist, New York Times Columnist, Dr. Credentials!) wrote in the Times in 2018 that "Bitcoin's value rests on the belief that there are greater fools out there." In 2021, on Twitter he posted "It's a bubble wrapped in techno-mysticism inside a cocoon of libertarian ideology."

Time will truly tell.

The debate centers on a fundamental question: What is money?

Taking a philosophical step back, Bitcoin and money have been compared to language, both by Bitcoin thinkers and broader monetary theorists. The analogy emphasizes that money, like language, is a social protocol that enables coordination, meaning making, and exchange. You don't have to be an English teacher to use the language, and you don't have to be an economics teacher to use money. But you can develop more detailed understandings of both language and money as well as nuanced ways to use them.

Friedrich Hayek and Ludwig von Mises of the Austrian school both described money as an emergent social phenomenon — not created by decree but through communication and coordination among people. Hayek argued that money's evolution mirrors that of language: both emerge spontaneously and gain utility from network effects rather than central planning.

Nick Szabo, a foundational thinker behind Bitcoin, commented in his 2002 essay *Shelling Out: The Origins of Money* that "money is a socially evolved communication system for conveying information about value, just as language conveys information about ideas."

The implication is that if money is language, then fiat currencies are centrally controlled dialects that are subject to censorship and inflation. If money is language, then Bitcoin is an open-source, universal language of value — accessible to anyone and resistant to manipulation. Like English became a lingua franca for global communication, Bitcoin can become a lingua franca for global trade.

Bitcoin is not merely an asset or payment system — it is a protocol stack for decentralized value exchange. Jeff Booth and others describe Bitcoin as a layered technology architecture, analogous to the way the Internet's TCP/IP stack enables the flow of information. Bitcoin enables the flow of value.

1. Energy Layer – Proof-of-Work and Thermodynamic Anchor
At the foundation of Bitcoin's architecture lies the energy layer. This is where physical energy meets digital trust. Through the proof-of-work process, miners expend electricity to discover valid blocks, converting real-world energy into digital scarcity. The difficulty adjustment — Bitcoin's self-correcting feedback mechanism — ensures that regardless of how many miners join or leave, new blocks are produced approximately every ten minutes. This layer binds Bitcoin to the laws of physics, giving it an unforgeable costliness that anchors its value in the real world.

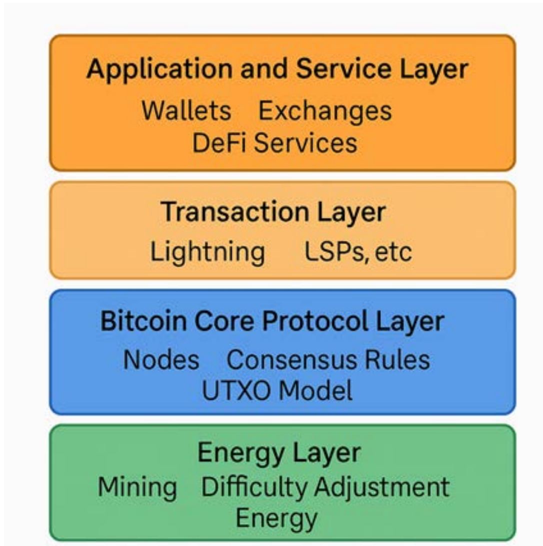
2. Bitcoin Core Protocol Layer – Rules Without Rulers
Above the energy foundation sits the Bitcoin Core Protocol, the consensus software maintained by thousands of nodes worldwide. These nodes enforce the immutable rules of the system: a 21-million supply cap, validation of every transaction, and the Unspent Transaction Output (UTXO) model that ensures transparent ownership. Unlike fiat monetary systems, these rules cannot be changed by decree; they can only evolve through broad voluntary consensus. Bitcoin's consensus mechanism transforms energy and mathematics into monetary governance — without trusted intermediaries or central authorities.

3. Transaction Layer – Lightning and Scaling
The next layer is the transaction layer, where innovation enables fast, inexpensive payments. The Lightning Network, a second-layer protocol built on top of Bitcoin, allows instant settlement through payment channels. Lightning Service Providers (LSPs) and routing nodes form an emerging decentralized financial backbone, capable of processing billions of microtransactions globally. This layer parallels how packet switching scaled the Internet: Bitcoin's base layer provides settlement finality, while Lightning enables transaction throughput.

4. Application and Service Layer – The Bitcoin Economy
The uppermost layer comprises wallets, exchanges, custodians, and decentralized finance (DeFi) applications. Here, entrepreneurs build tools that make Bitcoin usable for everyday people and institutions. From Strike and Cash App payments to decentralized lending protocols and emerging enterprise accounting systems denominated in satoshis, this layer represents the

interface between users and the monetary protocol beneath. As with the Internet, innovation at the edges is exponential once a reliable protocol stack exists.

Together, these four layers form a robust, antifragile, and self-reinforcing system. The deeper the base layer's security (energy), the more powerful the upper layers become. And as applications proliferate, they drive more demand back to the energy layer through mining — closing the feedback loop between computation, commerce, and capital.



Comparative Monetary Model

Economists have long described money by its three primary functions: store of value, medium of exchange, and unit of account. When comparing Bitcoin to gold, the U.S. dollar, and other cryptocurrencies, a pattern emerges — Bitcoin uniquely converges toward near-perfection across all three dimensions.

Function of Money	Gold	U.S. Dollar	Cryptocurrencies (general)	Bitcoin
Store of Value	Strong historically, but costly to store and transport; annual inflation ~2%	Weak — continuously debased through inflation and deficit spending	Volatile; most lack scarcity or credibility	Exceptional — fixed 21 million supply, incorruptible ledger
Medium of Exchange	Poor — physical and inefficient for payments	Strong domestically but fragile internationally	Good for digital transfer, but centralized or insecure	Excellent — global, censorship-resistant, scalable (Lightning)
Unit of Account	Historical; rarely used today	Dominant but eroding as inflation distorts measurement	Limited and unstable	Emerging — as adoption grows, prices in satoshis will normalize

Bitcoin thus represents a convergence point — a form of money that fulfills all three purposes simultaneously and efficiently, grounded both in physics and mathematics.

Investor Peter Dunworth uses a compelling metaphor: water's *triple point* — the exact temperature and pressure where it exists as solid, liquid, and vapor at once. In the realm of money, gold historically served as a store of value (solid), fiat currencies as a medium of exchange (liquid), and various units of account as the gaseous realm of credit and pricing. Bitcoin, by contrast, is the first form of money to exist stably in all three states simultaneously. It is a solid store of value, a liquid medium of exchange (via Lightning), and a gaseous, global unit of account emerging across digital markets.

Like the triple point of water, this equilibrium arises only under precise conditions — in Bitcoin's case, the intersection of energy, code, and consensus. This makes Bitcoin not just another asset class but a thermodynamic monetary discovery: a self-contained system where trust, scarcity, and transferability coexist perfectly.

Other cryptocurrencies have and will emerge but are far less likely to approach the point of becoming a monetary standard. U.S. dollar stablecoins, for example, promise to be a more efficient medium of exchange. Ethereum's Ether, as another example, seems likely to continue to be an important tool in decentralized finance infrastructure and applications.

And the dollar? Oh, the dollar! Will the dollar go the way of the Florentine florin, Venetian ducat, Spanish silver real, Dutch guilder, French livre, or British pound sterling?

The histories of these dominant currencies are that each emerged alongside new financial infrastructure and technologies. The florin with early merchant banking. The British pound with insurance, bills of exchange, and the global telegraph. And the U.S. dollar with the ashes of World War II and the Bretton Woods institutions the U.S. ~~forced~~ enticed the world to adopt.

Monetary dominance has also followed geopolitical and energy dominance. Dutch wind, shipbuilding and trade energy. British coal and steam power that fueled the industrial revolution. And American oil, agriculture, industrial, and military energy.

But every dominant monetary power eventually over-issued credit to finance empire, wars, or domestic consumption with debt growing beyond productive and serviceable capacity. Each monetary shift has also coincided with technology and communication disruptions. Better sailing ships and the compass gave rise to the florin and ducat. A global sea empire gave rise the Spanish real. Financial printing and the telegraph gave rise to the pound sterling. Industrial and military scale and global communication gave rise to the U.S. dollar. And digital networks and cryptography gave rise to bitcoin.

What's one future monetary scenario look like?

The U.S. dollar does survive but no longer enjoys the unilateral dominance of the past. It becomes one major player in a broader ecosystem of money. The global monetary system evolves around a commodity-tech protocol money — Bitcoin — which becomes the base layer for global value settlement. Fiat currencies (including USD) remain as more local/regional units of account and payment—but are increasingly "tied" to the global protocol layer (implicitly referenced or denominated in satoshis/bitcoin equivalents). Smaller fiat currencies may disappear or merge, especially in countries with weak monetary institutions; bigger ones (U.S. dollar, euro, yuan) linger but with diminished reserve/invoicing shares.

Whether a relatively smooth or epically violent, this transition is where opportunities in commodity markets will arise as commodity producers plug into the emerging Bitcoin protocol-money.

Game on.

Opportunities in Commodity Markets

In the Bitcoin Standard

What would a Bitcoin-centric monetary system mean for commodity producers, traders, and investors? Opportunities abound for those who will adapt. Especially for those who adapt early.

In a Bitcoin Standard, commodity market participants will encounter opportunity in at least six major ways:

1. Being Paid in a Currency that Holds Its Value – Under an emergent Bitcoin standard, producers can elect to take payment in bitcoin, a currency with appreciating long-term purchasing power. This is already appealing in countries with high inflation. For example, if an agricultural producer in the United States would have sold 10 percent of their crop in 2021 through 2024, they would have accumulated by today bitcoin value worth 2 to 4 times average annual crop value by today. In a future Bitcoin Standard, farms and businesses in commodity sectors could enjoy a virtuous cycle of falling input prices in BTC terms (because technology will drive efficiencies) while the unit of account (BTC) does not fall in value. This reverses the fiat-era squeeze. Selling corn for Bitcoin turns your corn into a form of money that might be worth more next year, rather than less.

2. Arbitrage Between Bitcoin and Dollars – During the transition period from fiat to the Bitcoin Standard, savvy market players can arbitrage between the two. Commodity producers will take advantage of Bitcoin's volatility and the differences between BTC and fiat markets. A real-world example is emerging in South America: soybean exporters have been strategically timing their Bitcoin conversions, selling their crops for local currency or dollars and then converting to Bitcoin (or vice versa) at opportune moments.[45] By doing this, they avoid the worst of local currency instability and can even profit from BTC price swings. Essentially, a farmer might hold Bitcoin when expecting it to rise, then switch to dollars to pay expenses when BTC is at a high, thereby increasing the amount of local currency they get. Or, if Bitcoin dips, they convert some revenue into BTC at an opportune rate. This requires financial savvy and risk management, but it represents a new way to enhance income, and it fits the skill set of many farmers who are natural traders and arbitrageurs through experience. In the U.S., one could envision grain cooperatives or trading firms arbitraging between futures prices in dollars and crypto markets. For instance, if a corn farmer expects a bumper crop and low prices, they might choose to hold a portion of their crop's value in Bitcoin, betting that Bitcoin's appreciation will offset the low corn price. This is not traditional hedging but rather a form of currency arbitrage that only becomes available when you have an alternative currency like Bitcoin in play. Additionally, Bitcoin-based lending markets could allow producers to borrow in one currency and repay in another if advantageous. The presence of a parallel Bitcoin financial system gives commodity businesses more options to optimize their finances, rather than being locked purely into the fiat banking and hedging system. Simulations of a farm in Nebraska that started selling 10 percent of its crop in bitcoin in 2021 show that by 2025 the farm would have the bitcoin equivalent of four years' worth of crop.

3. Peer-to-Peer Commerce – Given the peer-to-peer architecture of Bitcoin, opportunities will arise to connect directly with customers or end-users using Bitcoin and blockchain technology. Commodity supply chains are typically mutli-level, often necessarily so but with each level requiring margin. With Bitcoin, a farmer and a buyer or supplier anywhere can transact peer-to-peer with finality, and there are whispers of early experiments in this realm. An area of potential disintermediation is cross-border trade: Imagine Latin American coffee growers, for example, using blockchain platforms to document every step of their supply chain (proving origin, organic status, etc.) while using digital tokens to handle payments. Fair trade, indeed!

4. Decentralized Pricing and Risk Management – A Bitcoin-centric financial system unlocks new decentralized finance (DeFi) tools that commodity producers and investors can use for pricing, hedging, and risk management. Traditional commodity risk management involves futures exchanges, options, and often loans to maintain margin accounts. These are effective but often favor large players and come with credit requirements and fees. And then there's insurance. Imagine smart-contract-based crop insurance that automatically pays out in Bitcoin if, say, rainfall data or yield data (uploaded to a blockchain oracle) indicates a crop failure. This could be done without an insurance company—peers could contribute to liquidity pools that cover each other's risk, enforced by code. Additionally, decentralized prediction markets or futures platforms might allow farmers to lock in a future selling price in BTC terms with a counterparty anywhere in the world, without using a futures exchange.

5. Decentralized capital formation and access – In the web 3/crypto space, we're seeing the rise of peer-to-peer lending and creation of decentralized capital markets. A simple example is bitcoin holders being able to borrow dollars using their bitcoin as collateral. If commodity buyers and sellers begin accumulating bitcoin, a natural extension of this will be to use its value as collateral. For instance, farmers may be able to access loans by using Bitcoin as collateral on decentralized lending protocols, without a traditional bank's participation.

6. Tokenization – Tokenization means representing ownership or economic claim over a real-world asset (physical or financial) via a digital token on a blockchain. There are examples of tokenization today of money-market funds, real estate, arts, collectibles, invoices, and receivables. Stored commodities have market-verified value, so it's not difficult to envision tokenization of portions of this stored value. Platforms have tokenized real-estate assets — for example, fractional ownership of income-producing rental properties or commercial real estate being represented as digital tokens. It's not far from these examples to tokenization of farmland, feed yards, and other agricultural assets with predictable cash flows. The underlying idea is unlocking the value of illiquid assets and commodity markets that are replete with illiquid assets.

Tokenization

Opportunities in Commodity Markets

Investing in the Bitcoin Commodity Nexus

From an investment standpoint, the intersection of Bitcoin and commodity markets is full of intriguing possibilities. Commodities and Bitcoin share some investment characteristics: both are bound by energy, and both are seen as hedges against inflation and monetary instability. In an environment of persistent currency debasement, having exposure to hard assets is usually a good hedge.

Traditionally this meant gold, land, real estate, or commodities. Now Bitcoin joins that roster as a digital hard asset. Some forward-thinking investors are already blending the two themes: for example, holding Bitcoin in tandem with a portfolio of commodity equities (such as energy or mining stocks) to balance the risks of inflation versus deflation. Bitcoin's emergence allows for new portfolio strategies.

One could imagine a future with agricultural land tokens. Conversely, Bitcoin miners (who are effectively commodity producers, turning energy into digital gold) are increasingly investing in physical commodities or commodity infrastructure (like power generation) to vertically integrate and hedge their input costs. The lines between traditional commodity businesses and Bitcoin businesses may blur. Already we see oil and gas companies using excess gas to power Bitcoin mining rigs, converting stranded commodities into Bitcoin as a revenue stream. We're also seeing the combination of artificial intelligence data centers integrated with bitcoin mining. In agriculture, if Bitcoin becomes widely adopted, we might see grain companies accepting Bitcoin payments and even holding BTC reserves, effectively treating it as reserve inventory that gains value. This could strengthen balance sheets compared to holding only fiat cash, which loses value.

For individual investors and industry players, the key is positioning for the macro shift. Lawrence Lepard often says the only truly "wrong" allocation to Bitcoin is having zero. He, and others, expect both gold and Bitcoin to soar in value as the fiat endgame plays out. As this paper is published market are trading bitcoin for more than $100,000 per coin and gold for more than $4,000 per ounce. Two years ago, it would have been a struggle to find any forecaster predicting either one of those figures, very well both.

The broader point is that sound money assets are very likely to be repriced much higher in fiat terms once "the big print" arrives and confidence in paper money falters even further. Investors in commodity sectors should view Bitcoin as both insurance and opportunity: insurance against the collapse of the fiat monetary order, and an opportunity to participate in the growth of a new monetary ecosystem.

There are certainly risks and challenges to acknowledge. Bitcoin's past price volatility is likely a hurdle for day-to-day use for some. No farmer wants to sell a load of corn for 0.01 BTC today only to find that 0.01 BTC buys half the fertilizer it did a month ago (due to a price swing). In the short term, this volatility means many producers will prefer to immediately convert Bitcoin payments into a stable currency (or vice versa).

Over time, as Bitcoin's market cap grows, its volatility will likely dampen (as it becomes more liquid and widely held). Additionally, wider adoption of Bitcoin for commerce will give rise to financial products that stabilize purchasing power (for instance, Bitcoin-backed stablecoins that gradually appreciate, or contracts that adjust BTC amounts based on an index of commodity prices). During the transition, stablecoins pegged to fiat will play a role in helping commodity transactions, acting as a bridge.

In a mature Bitcoin standard, prices might be more stable in Bitcoin terms than we are used to in dollar terms, because Bitcoin's supply is fixed and the value of commodities would mainly reflect real supply and demand, not monetary inflation or deflation.

It's also worth noting that governments will likely resist a Bitcoin standard. A central bank oriented monetary system is designed, by and large, to meet the needs of government. You earn income and pay a tax. You own property and pay a tax. You buy something and pay a tax. You own something that appreciates and sell it for gain and pay a tax. You die and your heirs pay a tax. You do things to evade any of those events, and you go to jail.

Regulations, taxes, or even bans could be attempted. But as history showed with information technologies that are open, economic incentives tend to prevail, and technologies are moles that cannot be easily wacked by government. If adopting Bitcoin makes commerce more efficient and profitable, firms and nations will have a motive to do so. Some countries might proactively pivot to a Bitcoin-friendly stance to attract investment (we see hints of this in places like El Salvador, which adopted Bitcoin as legal tender, and in regions vying to become crypto hubs). Some states in the U.S. are passing legislation integrating Bitcoin into pension plans, among other initiatives. Over time, competition could force even initially hostile governments to accept Bitcoin's role.

Give federalism a chance.

From Commodities to Bitcoin

A New Harvest of Value

The evolution to decentralized money heralds an era of new opportunity in commodity markets. In practical terms, the shift to the Bitcoin Standard will realign the economic incentives in favor of producers and savers, rewarding efficiency and foresight rather than debt and consumption. The historical pattern is that superior monetary technologies eventually supplant weaker ones. Just as gold outcompeted less scarce commodities as money, and fiat paper (backed by legal mandate) supplanted gold as a better technology for transactions, now Bitcoin stands ready to challenge fiat with an even stronger value proposition: a perfectly scarce, incorruptible, globally accessible money. Bitcoin is bound by energy and traded in the first completely free global market.

For commodity industries, this will be transformative. Producers don't have to continue to see their productivity gains siphoned off by currency debasement. Instead, a good year in farming, energy production, or mining, if saved in Bitcoin, will retain its worth or even compound over time. The credit cycles that have so often plagued farmers (too much debt in good times, leading to bankruptcies in bad times) might stabilize when money itself is not an ever-moving target. International trade will become more straightforward as Bitcoin (or Bitcoin-denominated instruments) provides a neutral settlement layer that doesn't depend on any one country's policy. For U.S. commodity producers and farmers, they no longer sell in a currency that is relatively over-valued compared to competing currencies.

Of course, significant systemic transitions never happen without bumps and challenges. In the early stages, volatility and institutional inertia are real obstacles. It's likely that we will see a hybrid system for some time—what many envision as a coexisting of fiat and Bitcoin standards.

Commodities might be priced in dollars but with Bitcoin clauses, or traders might routinely convert between the two. Over the next decade, the imposition of fiscal dominance (endless deficits) will test the credibility of fiat systems to the breaking point

If (or when) a major inflation or debt crisis hits the dollar or euro, the rush into Bitcoin and hard assets could accelerate dramatically, forcing the hand of the financial system to integrate Bitcoin more fully. As investors and industry participants, the challenge is to be prepared ahead of that curve. Those who educate themselves and build Bitcoin strategies now – whether by allocating a portion of assets to BTC, developing crypto payment infrastructure, or experimenting with blockchain supply chains – stand to benefit enormously. Conversely, those who dismiss Bitcoin as a fad might find themselves uncompetitive in a world where counterparties and customers increasingly prefer the option value that Bitcoin provides.

The shift from a Treasury-dollar standard to a Bitcoin standard represents both a return to commodity money principles and a leap forward in monetary technology. Bitcoin the asset can be seen as the perfect commodity for money: it is finitely supplied, costly to produce (mined), and not tied to any nation. Bitcoin the network enables that commodity to be used with unprecedented speed and versatility. For commodity markets, this is akin to an "upgrade" of the monetary layer – one that could break the cycle of declining terms of trade that have hamstrung producers under fiat. By turning commodities into "Bitcommodities," commodity producers seem likely to gain stronger ground to stand on.

The wheel, the printing press, electricity – these transformed society by empowering individuals with mobility, knowledge, and energy. Bitcoin's promise is to empower individuals and businesses with monetary sovereignty and stability, which could unlock tremendous innovation and growth.

The fields of Iowa might soon yield not just bushels of corn, but a harvest of enduring value stored on the blockchain. Embracing this future could ensure that the hard work of commodity producers is rewarded in money that is as sound and resilient as the commodities themselves.

History rewards those who build before the world understands what they're building.

What's your Bitcoin strategy?

> "It might make sense just to get some in case it catches on."
> — *Satoshi Nakamoto, January 2009, Bitcoin White Paper*

End Notes

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