



Bernanke's Dilemma: Hyperinflation and the US Dollar

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March 9, 2010

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Ben Bernanke, Chairman of the US Federal Reserve, faces a Sisyphean task because US banks are experiencing debt deflation and, because lending is now at much lower levels, monetary deflation is encumbering the domestic US economy as existing debts continue to be serviced. Government deficit spending can only offset lower consumer spending to a degree, and the mushrooming debt of the US government raises the question of whether the US can repay or roll over its debt obligations, given that tax receipts are likely to fall. Despite deflationary pressure, the value of the US dollar is in a downtrend pointing to higher prices for imported goods and energy. Devaluing the US dollar will reduce the value of debts in real terms, thus it can make debt levels sustainable, but higher prices will exacerbate debt defaults, worsening the condition of US banks. Mr. Bernanke's dilemma is how to salvage the balance sheets of US banks without sparking high inflation or unleashing hyperinflation.

Where the US dollar is concerned, opinions on hyperinflation range from the view that hyperinflation of the world reserve currency is impossible in principle (because, for example, the values of other currencies are linked to that of the US dollar), to the view that hyperinflation of the US dollar has already happened and that all that remains are the consequences. The two most widely accepted theories of hyperinflation are the monetary model, where a positive feedback cycle is caused by a disproportionate increase in the velocity of money as a consequence of increasing the money supply too quickly, and the confidence model, where the monetary authority issuing a given currency is perceived to be insolvent or no longer legitimate.

The view that hyperinflation is the inevitable result of a central bank issuing too much money or of a government taking on too much debt, while correct, both states the obvious and presupposes that some previously known or predictable limit is reached. The ability to service debt is one such measure, but the value of a debt in real terms depends on the value of the currency. In practice, hyperinflation is recognized only after the inexorable death spiral of a currency has begun. Detecting it in advance is another matter entirely.

Mathematical models of hyperinflation, such as predicting years between redenomination based on inflation rates or applying the quantity theory of money, describe what is happening but not why. Using the monetary model alone makes it difficult to explain apparent counterexamples where high levels of sovereign debt compared to a nation's gross domestic product (GDP) or monetization did not result in hyperinflation.

The confidence model seems to suggest that hyperinflation can be explained by crowd psychology where hyperinflation is analogous to a market mania or is an example of mass hysteria. The idea that hyperinflation is only a crisis of confidence, i.e., that it is a psychological phenomenon, not only lacks predictive value but implies that hyperinflation can be prevented by manipulating public opinion regardless of mathematical realities.

When a nation's bond market collapses, so does its currency. The view that hyperinflation is fundamentally caused by failed bond issues suggests that what is of interest are the reasons why a nation's bond market breaks down, along with indications of developing bond market distress.

One fact that is clear in every historical example of hyperinflation is the rejection of the currency of a given country either by other countries or by its own citizens. The simplest explanation of hyperinflation is that when the credibility of a government, or of its central bank, breaks down, the recognition of this fact is expressed as a race to shed the currency and to divest of the government's bonds. One way to evaluate the possibility of hyperinflation is therefore to gauge the transparency, completeness and veracity of government and central bank statements regarding their balance sheets, budgets and bond issues. Incomplete or inaccurate information and propaganda contrary to empirical evidence are proverbial red flags signaling that credibility may be lacking and that confidence is therefore misplaced.

Between Scylla and Charybdis

Growth in the US monetary base has been cited as evidence of incipient hyperinflation but, while a distortion in the US financial system is apparent, the currency in question is not in circulation and the effect is that of re-inflation since US banks have suffered massive losses linked to the US mortgage market.

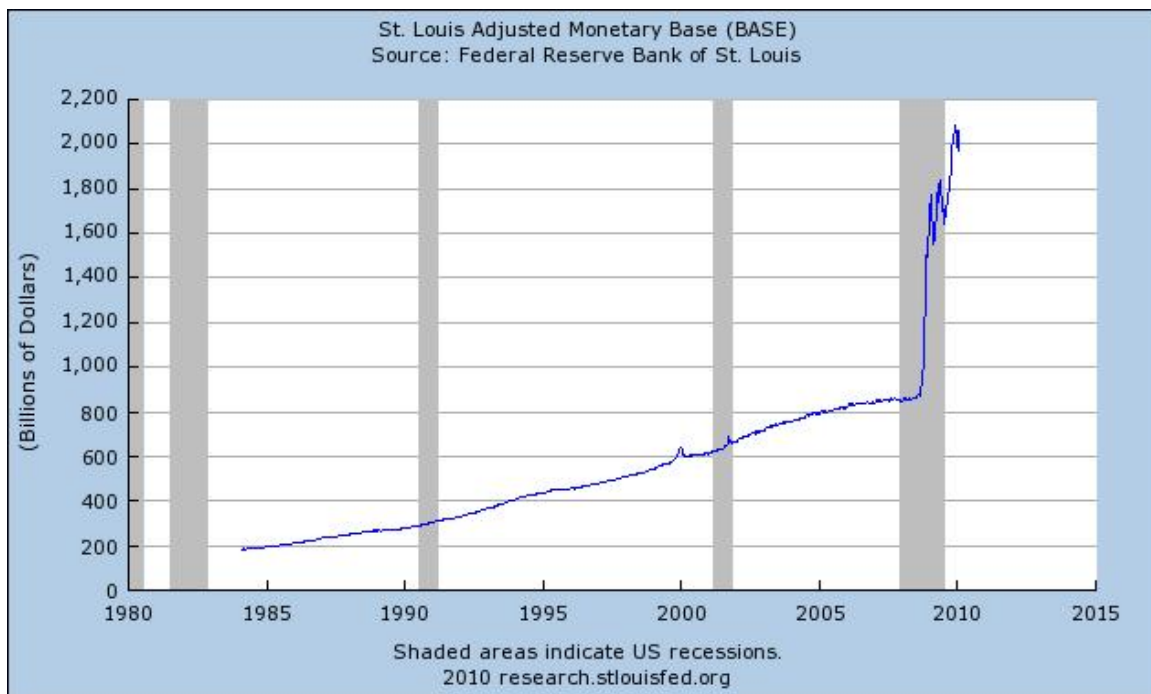


Chart courtesy of [Federal Reserve Bank of St. Louis](http://www.federalreservebankofstlouis.org)

The growth in the US monetary base by over \$1 trillion since 2008 represents currency held within the banking system on reserve, which increases the ability of US banks to absorb further losses.

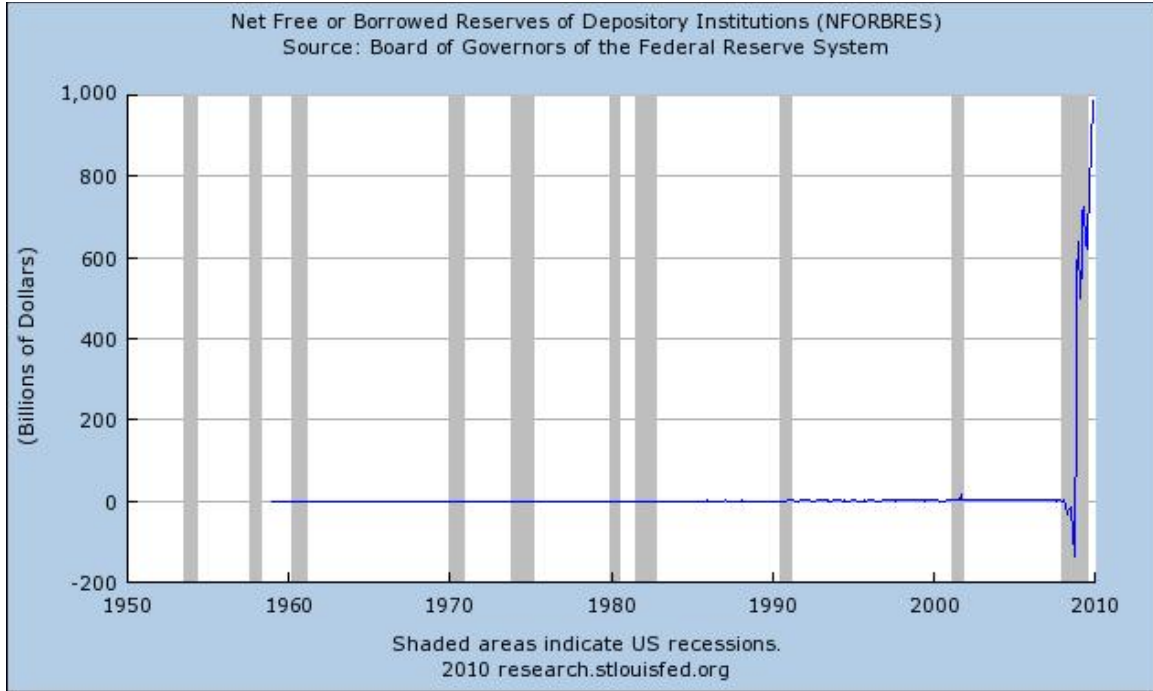


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While more than doubling the US dollar monetary base in less than 2 years is viewed by some as printing too much money, high inflation or hyperinflation have yet to strike. Although money has shifted out of the broad US economy and into the banking system, the excess liquidity exists in the form of bank reserves and, despite the fact that [inflation is always and everywhere a monetary phenomenon](#), if bank reserves are considered separately from interest rates and lending activity they have little direct impact on prices in the broad US economy. In fact, the widest measure of the US money supply is contracting and the broad US economy is in the grip of debt and monetary deflation.



Chart courtesy of [Shadow Government Statistics](#)

In terms of monetary policy, Mr. Bernanke faces an impossible choice. With interest rates near 0% and with unprecedented government debt and deficit spending beyond sustainable levels there is a clear risk of high inflation or hyperinflation if inflationary forces are not counterbalanced with a heavy hand. In theory, high inflation or hyperinflation could be prevented by restricting the flow of money and credit to consumers and businesses. Such a policy would exert deflationary pressure on the US dollar within the domestic US economy since principal and interest payments on existing debt would drain money from circulation. While preventing inflation temporarily, such a policy would not succeed in the long run because, in addition to offsetting inflation, deflation depresses economic activity and results in debt defaults. Concurrent government borrowing and central bank QE to recapitalize banks and sustain government deficit spending (in a Keynesian attempt to compensate for declining consumer and business borrowing), would cause the value of the US dollar to decline against other currencies thus the prices of imported goods would rise. The resulting combination of rising prices for imported goods (energy in particular) and a scarcity of money in the domestic US economy is a formula for business failures and debt defaults that would ultimately worsen the condition of the US economy and US banks regardless of lower prices for domestic goods and services.

Structural Decay

In a mathematically perfect world, growth in the money supply with a constant interest rate and level of lending is a simple exponential function. In theory, this is not problematic but in practice monetary expansion (and the associated debt) tends to grow faster than population or sustainable economic activity and even periodic deflationary episodes are insufficient to maintain a stable currency value.

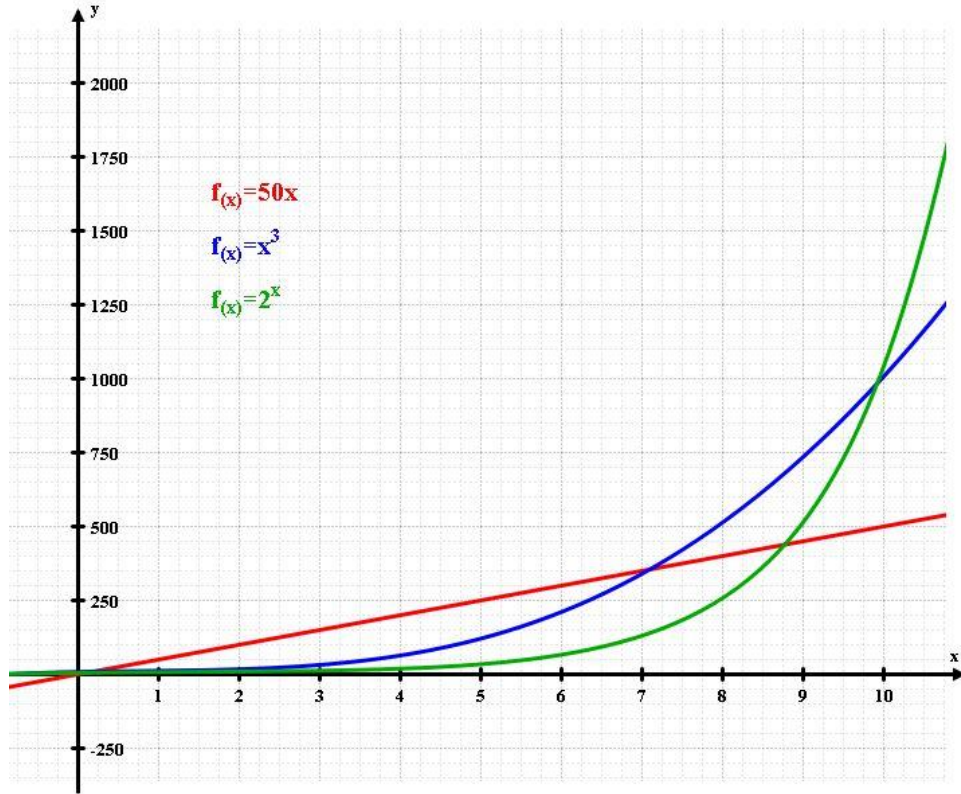


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The tendency to create currency in excess of what is required to support sustainable economic activity causes unsustainable booms where debt rises out of proportion to the ability to service or eventually repay, meaning that total debt in the economy grows faster than the GDP. The result is that for every boom artificially created by monetary expansion there is a corresponding episode of debt and monetary deflation. Nonetheless, the overall pattern of monetary expansion remains clear.

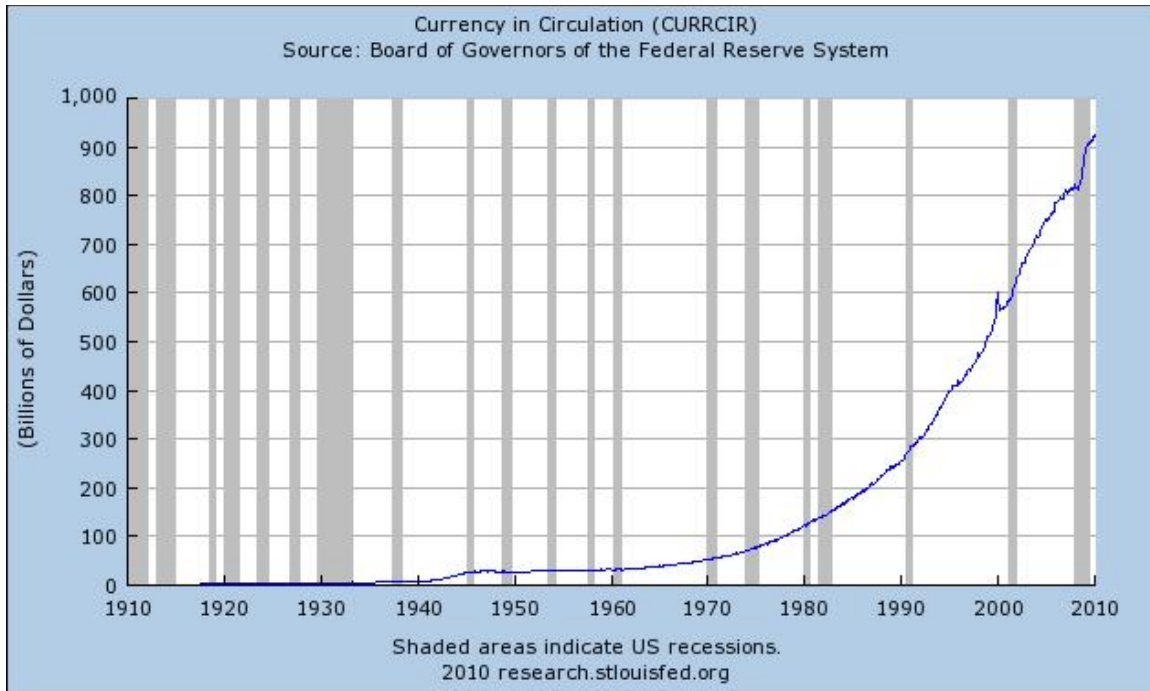


Chart courtesy of [Federal Reserve Bank of St. Louis](#)

From a policy standpoint, restraining debt issuance by private, profit-oriented banks to sustainable levels is impossible in practice because sustainable growth in GDP is an unknown when the interest rates and reserve ratios that moderate lending activity are set. In fact, the goals of the US Federal Reserve, “[to promote ... stable prices and moderate long-term interest rates](#)” require the money supply to expand faster than sustainable economic activity:

Sometimes, however, upward pressures on prices are developing as output and employment are softening—especially when an adverse supply shock, such as a spike in energy prices, has occurred. Then, an attempt to restrain inflation pressures would compound the weakness in the economy, or an attempt to reverse employment losses would aggravate inflation. In such circumstances, those responsible for monetary policy face a dilemma and must decide whether to focus on defusing price pressures or on cushioning the loss of employment and output. Adding to the difficulty is the possibility that an expectation of increasing inflation might get built into decisions about prices and wages, thereby adding to inflation inertia and making it more difficult to achieve price stability.

Deflation is anathema because debt defaults harm lenders and governments have no mechanism to tax gains in the value of currency, thus monetary policy always errs toward inflation and over time the result approximates an exponential function. Among the results is the long term devaluation of the currency, which can also be expressed as an exponential function, i.e., [exponential decay](#).

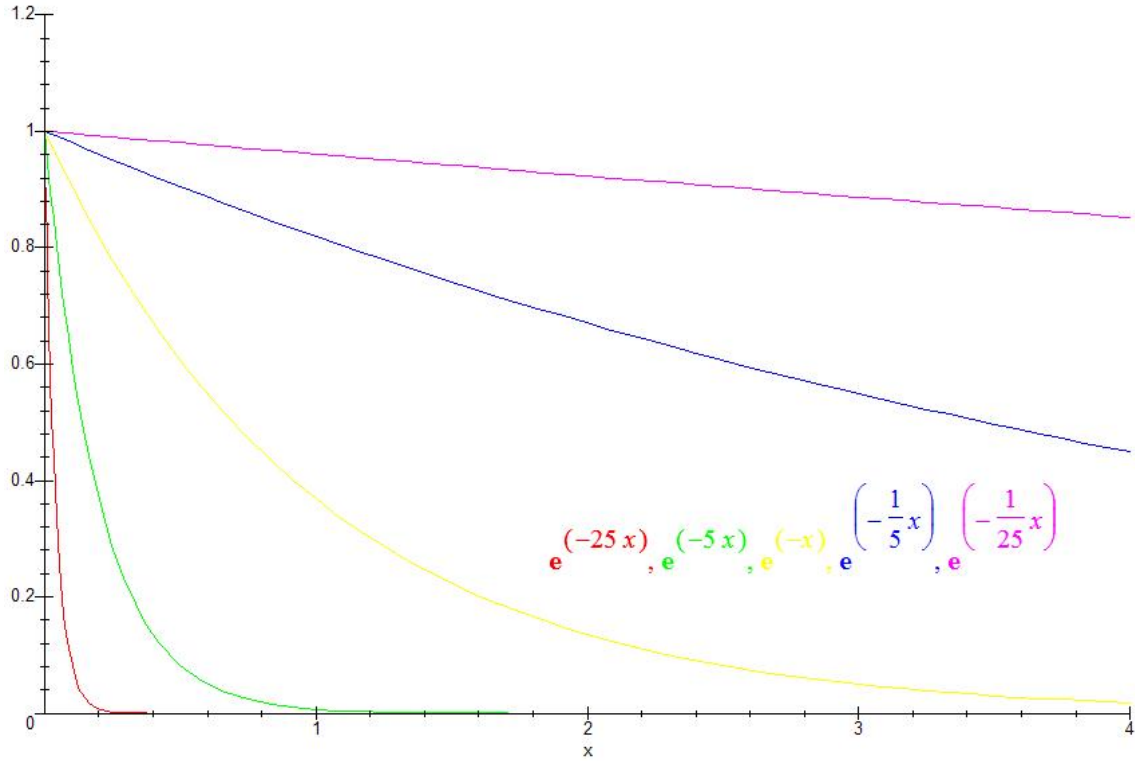


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Exponential decay occurs when a quantity, such as the value of a unit of currency, decreases at a rate proportional to its own value. The decay can be expressed as a differential equation where a quantity N decays at a constant rate (a positive number) λ (lambda) within a given interval of time t .

$$\frac{dN}{dt} = -\lambda N.$$

Central banks implicitly manage the exponential decay in value of their respective currencies while they focus on interest rates, reserve ratios and inflation targets. Although the exponential decay in the value of the US dollar since 1913 has been distorted by episodes of deflation and variations in monetary policy, the overall pattern continues to reflect the structural reality of exponential decay.

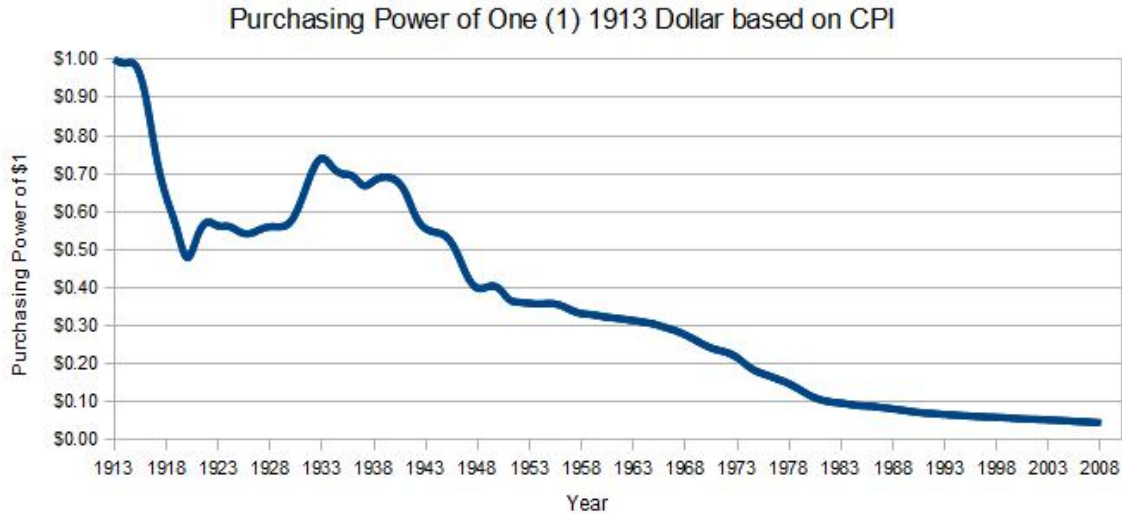


Chart courtesy of [Federal Reserve Bank of St. Louis](#)

The combination of fiat currency, where currency is created arbitrarily, and central banking, where money and credit are centrally controlled and where there is an inescapable inflationary bias, suggests that all such regimes have a limited lifespan, but this does not allow a hyperinflationary outcome to be predicted. For example, if US citizens had been asked in 1913, when the Federal Reserve was established, if they would use the Federal Reserve's legal tender knowing that \$1 would be roughly \$0.05 in less than 100 years they would certainly have responded in the negative, but Federal Reserve Notes have not been rejected by the American people. Similarly, there is no necessary or obvious point where the US dollar will be rejected as it continues to decline in value for the same structural reasons. The logical outcome is an eventual redenomination.

Patterns of Hyperinflation

From the perspective of sovereign debt, the commonly understood process of hyperinflation is that if a government responds to declining foreign appetite for its debt with monetization (or in a historical context direct currency debasement) rather than immediate budget cuts, its currency loses value, at first in proportion to the dilution of the money supply and then more quickly as foreign bond holders and the nation's own citizens seek shelter from inflation in other asset classes. The cost of the government's future obligations then tends to rise in nominal terms, creating an apparent need for larger bond issues while bond yields rise, i.e., the cost of borrowing increases since monetization signals greater risk to investors. Exacerbating the problem, tax receipts tend to lag behind as domestic price inflation sets in. Further monetization is the path of least resistance. Although officials certainly believe that monetization is only a temporary measure both confidence in and the credibility of the government fail. Insolvency is eventually recognized as a reality and the nation's currency then collapses entirely.

Economists assume that consumers and businesses respond predictably based on economic incentives and disincentives, but this presupposes that the value of money is stable (at least over the short term). If users of a currency find that it loses value such that savings and wages are perceptibly eroded before they can be utilized at fair value, the rational course of action is to shed the currency as quickly as possible. This sparks a competition to shed currency in favor of real goods and, once the process begins, the rational course of action is to participate in the proverbial rush to the exits. Interestingly, a panic is not required to explain this phenomenon.

In the context of a national economy, the cycle of hyperinflation is driven not precisely by the supply of money but by its velocity because the competition to shed currency concentrates purchasing activity in successively shorter time periods. Within a given interval, more consumers and businesses seek to buy a limited supply of available goods using all available currency, including savings, thus demand is pulled forward while the velocity of money accelerates. If monetary authorities respond by increasing the money supply, the process feeds on itself.

In terms of the [quantity theory of money](#), which is that the money supply has a direct, positive relationship to prices, the equilibrium of prices with the number of items purchased and the money supply with the velocity of money is maintained (where M is the money supply, V is the velocity of money, P is the average price level, and Q is the number of items purchased over a given interval).

$$M \cdot V = P \cdot Q$$

The relation holds true even as the value of a currency approaches zero while prices approach infinity. However, while there is no theoretical limit to the money supply, the supply of goods is limited in various ways and shortages of goods spur prices higher, exacerbating the problem.

The competition to shed currency first interacts with prices then with the availability of currency and with the supply of goods. Rising prices result in rising demand for larger amounts and denominations of currency producing a genuine shortage, but increasing the money supply only intensifies the competition to shed currency, like pouring gasoline on a fire.

Crisis of Credibility

A gradual decline in the value of a currency is generally accepted by consumers and businesses because it has little immediate impact and can have short-term benefits, such as making money more accessible and stimulating economic activity and growth. However, when debt increases disproportionately, a deflationary bust is inevitable and if it is postponed by further credit expansion systemic instability results.

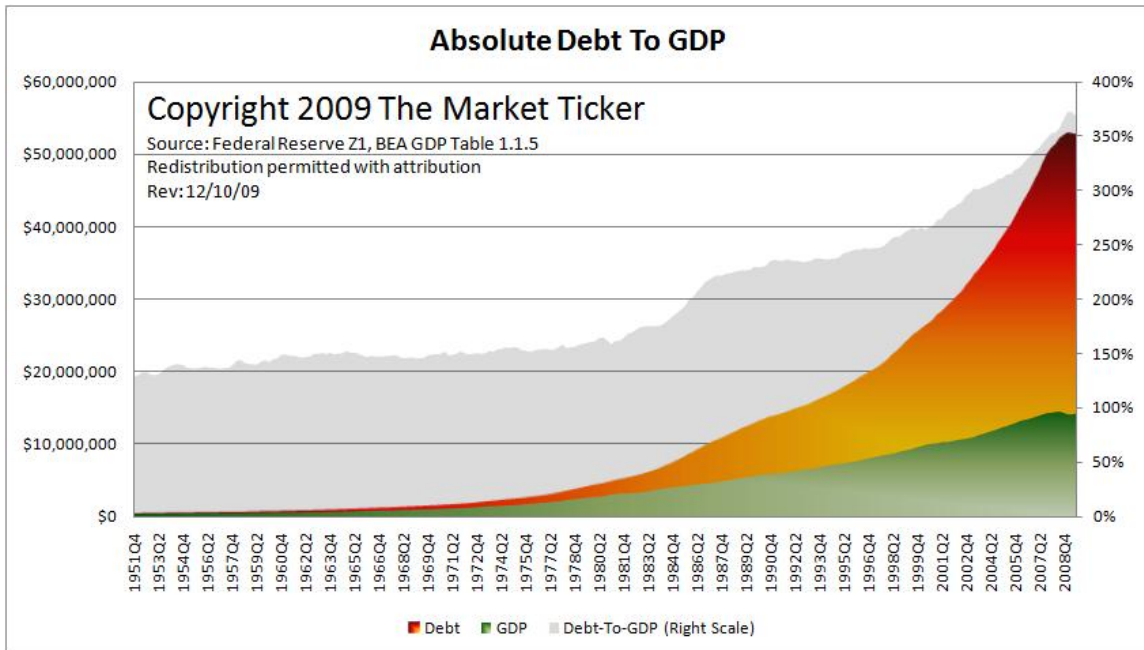


Chart courtesy of [Karl Denninger](#)

In 1949 Ludwig von Mises pointed out in [Human Action \(Chapter XX, section 8\)](#) that “there is no means of avoiding the final collapse of a boom brought about by credit expansion. The alternative is only whether the crisis should come sooner as the result of a voluntary abandonment of further credit expansion, or later as a final and total catastrophe of the currency system involved.”

Among other things, excessive monetary inflation means that the US dollar cannot function as a store of value. Mounting evidence points to systemic instability, a lower US dollar and ultimately to a hyperinflationary outcome:

- US [federal government debt](#) of \$12.3 trillion, [unfunded liabilities of \\$63 trillion](#), [deficit spending](#) of \$1.35 trillion for fiscal 2010, and the Obama administration’s [\\$3.83 trillion budget](#) all set new records, while federal income [tax revenues are expected to fall for a second consecutive year](#).
- It has been reported that to reduce the cost of borrowing, the maturity of [debt issued by the US Department of the Treasury has shifted from the long end of the spectrum toward short term debt](#). At the same time, episodic flights to the perceived safety of the US dollar by global investors favor short-term Treasuries. This situation creates an escalating risk that the US Treasury will be unable to roll over short term debt and that it will resort to monetization.
- [7 US states are worse off than the financially troubled European nations](#) of Greece, Ireland, Portugal and Spain resulting in warnings of a [US credit rating downgrade](#) possibly indicating an eventual sovereign default.
- [Unemployment](#) in the US, where more than 2/3 of GDP is consumer spending, should be viewed as [a leading, rather than a trailing indicator](#), thus the perception of recovery based on slowing unemployment is premature. Reported unemployment data seem to exhibit unusually [pronounced disparities between initial claims and later revisions and seasonally adjusted numbers](#).
- The widely reported recovery of the [US economy is anemic](#) at best since most of the reported fourth quarter 2009 GDP growth is not sustainable and preliminary government economic data remains subject to revision by the [US Bureau of Economic Analysis](#) (BEA).
- The imminent retirement of the so-called baby boomer generation comes with a combined [Social Security and Medicare price tag of more than \\$60 trillion](#).
- [US bank failures](#) and balance sheet deterioration together with the inability of banks to [mark assets to market](#) due to a [growing commercial real estate](#) problem and ongoing [residential mortgage loan problems](#) suggest that the financial crisis that began in 2008 is not over.
- The [suspension of the US Financial Accounting Standards Board’s mark to market rule](#) means that the value of mortgage loan portfolios and mortgage-backed securities (MBS) reported by banks are incorrect, which obfuscates leverage and risk while magnifying apparent profits.
- Toxic assets still cripple bank balance sheets since the US Department of the Treasury has been unable to successfully carry out its [Public-Private Investment Program](#) (PPIP) making taxpayer money available to select investors that can use the money to buy toxic mortgage-backed securities, retaining any profits while putting little of their own money at risk.
- The largest US Banks remain the largest holders of financial derivatives, e.g., credit default swaps (CDSs), which suggests that they may hold liabilities far in excess of

amounts that can be paid or that can be bailed out if significant losses occur. The CDS market, which is the single largest class of financial derivatives, represents over [\\$600 trillion dollars](#), a roughly 10x multiple of world GDP.

- The Federal Reserve's [plans to phase out some of its emergency programs](#), adding up to roughly \$2 trillion currently, leaves other emergency measures in place. The [Term Asset-backed Securities Loan Facility](#) (TALF) is [set to expire](#) on June 30, 2010 for loans backed by new-issue commercial mortgage-backed securities and on March 31 for loans backed by all other types of collateral but existing loans will not be retired for some time.
- Downward pressure on the US dollar caused by the Federal Reserve's near 0% interest rates and ongoing QE has caused a [US dollar carry trade](#) affecting asset prices in global markets. While the value of the US dollar has rallied in response to episodic flights to perceived safety in US Treasuries reflecting comparative weakness in the Euro and other currencies, the overall downtrend is persistent, thus the prices of imported goods can be expected to rise.

Rather than a crisis of confidence, hyperinflation results from a crisis of credibility. Hyperinflation results when the social, legal and political structures that create the value of paper money break down. When a government borrows excessively and its promises to repay are contradicted by mathematical realities, the value of its currency cannot be maintained. If a government so lacks credibility that it cannot issue bonds because there are no buyers other than its own central bank, the value of its currency declines faster than money is printed to cover its obligations. Perhaps the most important indicator of impending hyperinflation is whether the statements of a government or of its central bank, e.g., with respect to the government's budget or the central bank's balance sheet, are evidence based or ideological. If they are not evidence based, the credibility of the government or central bank, and its currency, will weaken and eventually fail.

Ordinarily, supply and demand factors govern the value of money and the prices of goods, but money has another, deeper level of value apart from its role as a medium of exchange and unit of account. When money is not redeemable, it is, in effect, a contract and, as such, it can instantly become more worthless than the paper it is printed on if the agreement that gives it value is null and void.

In 1999, referring to the sale of British gold reserves, Alan Greenspan, then Chairman of the US Federal Reserve, said that "Fiat money paper in extremis is accepted by nobody." The reason for this is that there are two fundamental kinds of value. *De jure value* exists because of, and is dependent upon, social, political and legal arrangements between human beings. In extremis, agreements are often broken and unenforceable. The value of fiat currency and of government bonds are examples of *de jure value*. Ultimately, *de jure value* actually exists only in the minds of human beings and does not exist in an absolute sense, in the real world, independent of human belief. *De facto value*, on the other hand, exists in reality, independent of human thought, e.g., lumber or farmland. The value of real, tangible things of value ultimately devolves to biological survival and to material standards of living. Possessing a physical asset that supports survival does not require human belief in order to have biological value.

When social, political and legal arrangements are strong, reliable and endure over generations *de jure value* may be preferable for any number of reasons. However, when social, political and legal arrangements prove to be unstable, or fail, *de facto value* trumps *de jure value* in every case.

When the balance sheets of US banks are maintained by suspending accounting rules and when banks hold financial derivatives liabilities greater than world GDP, both the stability and

credibility of the banks are questionable. When US economic data consistently seems to reflect a Pollyanna bias and the US federal budget contains unrealistic projections of GDP growth and tax revenues, while public debt and government liabilities (which now include unlimited bailouts for government sponsored entities Fannie Mae and Freddie Mac) are obviously unworkable and the US government's own central bank is already a major buyer of US Treasuries, the federal government's credibility is questionable. When private financial losses and toxic financial assets are transferred to taxpayers while profits and bonuses abound on Wall Street thanks to accounting rule changes in the midst of the worst economic contraction since the Great Depression, the credibility and competency of the US Treasury and Congress, with respect to the finances of the nation, are questionable. When the US Federal Reserve defies the US Congress, resists independent auditing, engages in ongoing QE and is the lender of last resort for banks that under normal conditions would be insolvent, its credibility is questionable. When the Chairman of the Federal Reserve, who failed to detect the largest asset price bubble in the history of the world and who has been consistently wrong in his assessment of the US economy is reappointed following the worst financial and economic disaster in generations, both his credibility and that of the Obama administration are questionable. The plethora of red flags spewing from Wall Street, from the Federal Reserve and from the federal government point to a breakdown of *de jure value* that is already in progress, thus to a hyperinflationary outcome for the US dollar.

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