

# Part 3: An Economic Case for Bitcoin

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## Research Note from ListedReserve

In parts 1 and 2 of this series, we covered the technical operations of Bitcoin. In particular, we discussed how it uses mathematics and cryptography to protect bitcoins and to protect the integrity of its money supply.

Now, we turn to the economic arguments for holding Bitcoin. Why is it valuable relative to other assets, and how does the macroeconomic environment over the medium-term play into the value proposition?

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## 1. Introduction

Having explained the mechanism through which Bitcoin operates, we now look at some economic arguments as to why Bitcoin might be an investable asset class.

## 2. Short Supply Assets

The essence of the value proposition is that Bitcoin's technology enforces short supply.

- There will only ever be 21 million bitcoins.
- Every millionaire in the world cannot own a single bitcoin—there are too few. The impact of this short supply should not be underestimated. The invention here is **scarcity**.

### Similarity to Gold and Silver

The technical method often applied to short-supply commodities is a metric known as the stock-to-flow ratio. This ratio is the total amount of a commodity divided by its annual supply. The stock of an asset relative to its new flow determines its value.

For most asset classes, supply can rise to very high percentages of current stock. Take wheat or cotton, for example; the supply will regularly exceed stock. These products are not durable, and they cannot store value.

Stock-to-Flow Ratio
Stock-to-flow is a scarcity measure
How much there is currently divided by the new annual supply
The scarcer the asset, the higher the stock-to-flow
Gold has the highest at 60, but Bitcoin will exceed this by 2024

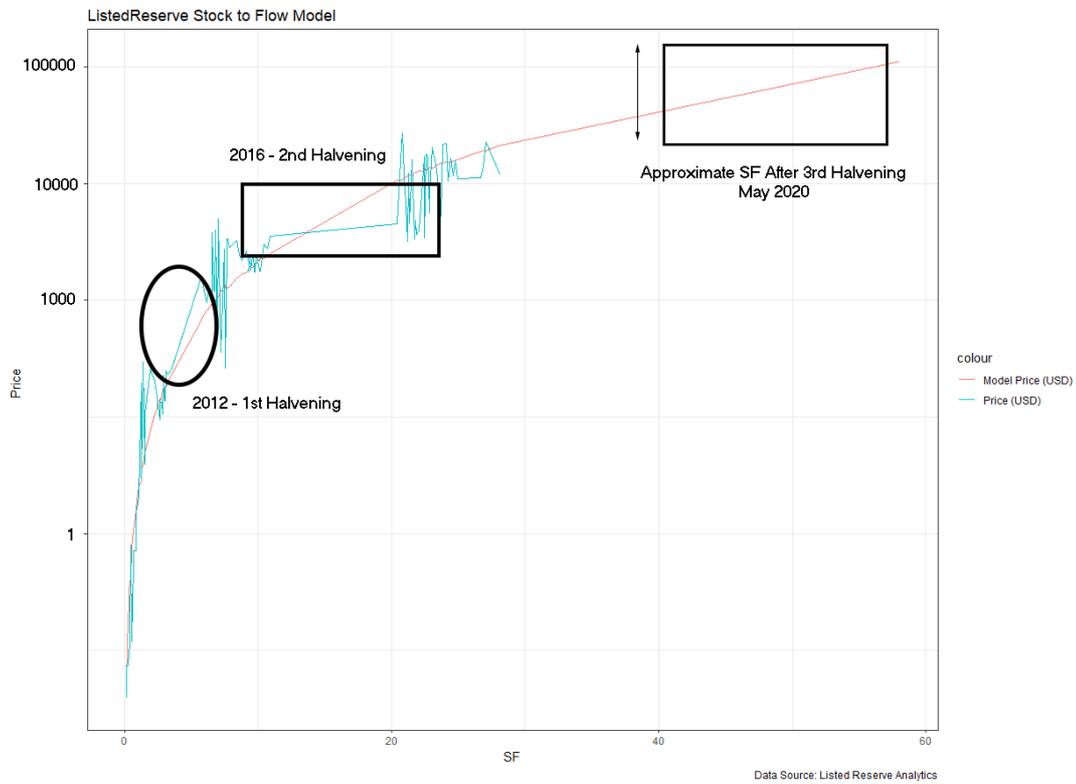
Some stock-to-flow ratios are presented in the table below.

Commodity	Stock	Flow	Stock-to-Flow Ratio
Gold	185,000 tonnes	3,000 tonnes	60
Silver	550,000 tonnes	25,000 tonnes	22
Bitcoin 2019	17,400,000 coins	630,720 coins	28
Bitcoin 2020 (supply halves May)	18,375,000 coins	341,640 coins	52
Bitcoin 2024	19,741,000 coins	170,820 coins	113

Gold's stock relative to its flow is so high that even if annual mining production jumped by 10%, its stock-to-flow would hardly change. That is how it derives its value, it is extremely hard to impact production meaningfully.

In the table, you can see that Bitcoin's stock-to-flow rises with time as new supply falls (the new supply of Bitcoin halves every four years). We have modelled this against the price since Bitcoin began in 2009 when its stock-to-flow was zero. As you can see in the chart on the next page, although the price is volatile, it follows the line of progression. This model implies a current price of a bitcoin at around US \$8,500; it also implies a price in the range of \$30,000 to \$70,000 after the next halving in May next year.

Until now, Bitcoin has lagged behind this indicator, so it takes time for the price to 'catch up' with the value implied by stock to flow.



You might consider the chart above wildly optimistic, and it should be treated with caution. Bitcoin approaching \$100,000 per coin seems ridiculous but, Bitcoin was once less than a \$1. At that point, imagining a \$100 bitcoin was ridiculous, and the same is true for a \$1,000 and \$10,000 bitcoin.

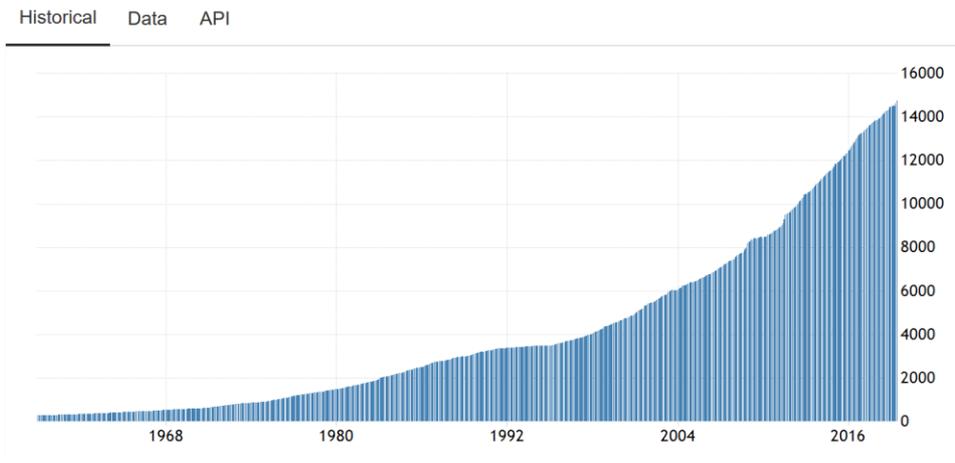
Furthermore, a \$100,000 bitcoin implies a market capitalisation of \$2 trillion. That market requires a lot of money to enter the ecosystem. Where might that money come from?

### 3. Central Banks since 2008

It is often said that Bitcoin is an experiment, and that is likely true. However, it is no more of an experiment than the current era of central banking. Since the 2008 crisis, banks around the world have vastly increased the supply of money in the financial system. Rather than let bankrupt banks go bust, they have been sustained through the liquidity windows provided by the ECB, Federal Reserve, Bank of England, and Bank of Japan in particular.

Ordinarily, such massive increases in the money supply would result in inflation, but this has not happened. The liquidity injection has been focused on bonds, equities, and property. Basically, those closest to the monetary well have been recycling the cash into liquid financial assets, which does not cascade in the same way as simply printing money and giving it away to the general population.

The chart below is the M2 Money Supply in the US, a narrow definition of money in bank accounts plus time deposits. It is a quickly increasing rate of monetary holdings against the backdrop of one of the slowest decades of growth in US history.



The impact of this growth on Bitcoin will potentially be profound. As we will see shortly, the usual safe-haven assets that people might consider have been severely weakened by central banks in the past ten years, American dollars are being printed at all-time high rates. Globally, bonds are at all-time high prices, many with negative yields. With the US now \$22 trillion in debt, there is an almost limitless supply of US bonds and a limitless supply of American money to repay them. The point is, those American dollars printed to repay bonds will be worth a lot less than scarce assets such as Bitcoin and gold.

#### 4. Budget Deficits

The extent of the global financial issues is enormous and likely grossly understated because no government includes their unfunded liabilities in their estimates of current debt (pensions to be paid to current civil servants, for example, are not included). Even so, the numbers are bad and worsening.

Country	Debt/GDP	Country	Debt/GDP
1. Japan	234.18%	9. Cape Verde	126.66%
2. Greece	181.78%	10. Portugal	117.54%
3. Sudan	176.02%	11. Mozambique	116.60%
4. Venezuela	172.08%	12. United States	109.45%
5. Lebanon	160.57%	13. Singapore	108.79%
6. Italy	127.51%	14. Gambia	105.17%
7. Eritrea	127.34%	15. Republic of the Congo	105.01%
8. Barbados	127.31%	16. Bahrain	102.01%

Once debt exceeds 100% of GDP, a country enters less than refined territory. Japan would be the best example of a major economy with enormous debt (however, it has the major benefit of domestically holding most of its debt).

Japan has seen 15 years of uninterrupted quantitative easing. Here is what happened:

- The central bank has relentlessly printed money and bought assets to stoke inflation.
- Japan's central bank now owns 77% of all the country's exchange-traded funds, spending 28 trillion yen or US \$250 billion.
- In 2020, the central bank will become the largest shareholder in Japan, outstripping the largest pension fund.
- The central bank is already the largest shareholder in 40% of listed companies.
- Interest rates remain negative.
- Inflation has not arrived.
- The third-largest economy in the world is being nationalised, and hardly anyone has noticed yet.

This exact scenario will happen in Europe next and then in the US. It is population-driven; the population ages, and the remaining workforce cannot fund the liabilities they inherit or the cost of financing the aged. The government has no option but to print.

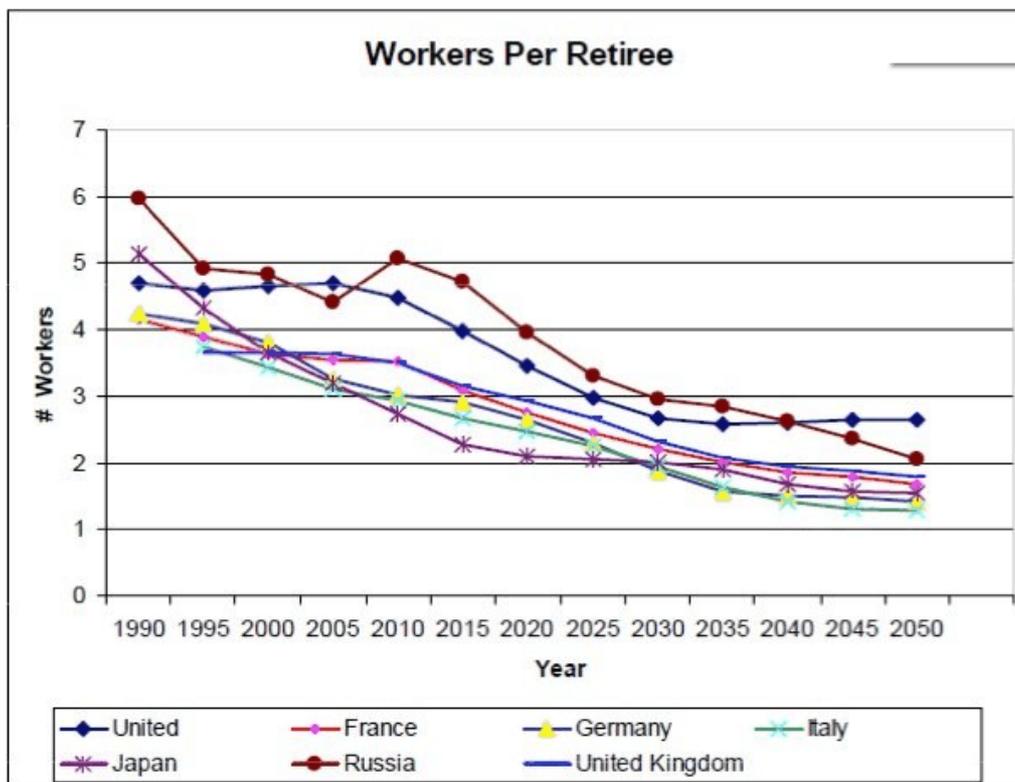
We can be emphatic on this point because economies cannot escape a shrinking population, it cannot easily be reversed.

## 5. Demographics

The demographic argument for Bitcoin is twofold.

### 1. Intergenerational Liabilities

One generation, the baby boomers, is retiring. This cohort is huge, and they are expecting that their pensions and health care will be funded by the much smaller cohort that succeeds them. On top of that are the other fiscal issues the latest generations of Western workers have inherited: huge government deficits driven by the bailouts of 2008.



By 2025 the US will have three workers per retiree, down from just under five a decade earlier. Deficits are already unsustainable with four workers per retiree, and we are about to see that drop by 25%. It is the same across the globe.

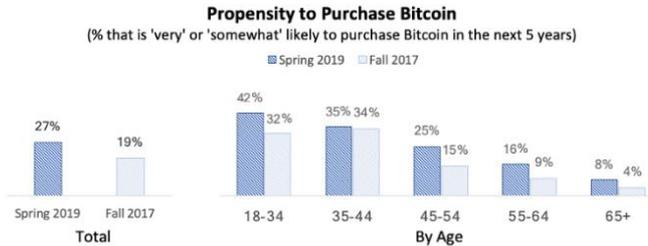
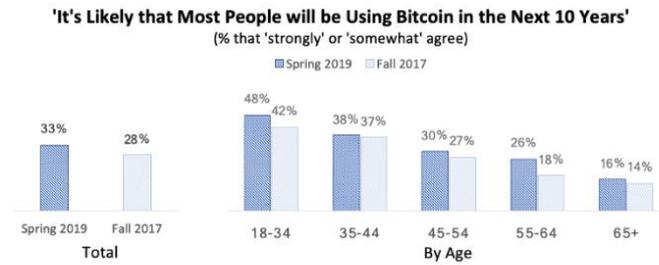
- Deficits will explode (see Japan).
- Bond markets will not be able to accommodate this explosion. Who will lend to the US government when it is 100% indebted, has not balanced a budget in 20 years, and pays with printed money?
- There are also unfunded liabilities at the company, state, and country levels that cannot be met because there are simply not enough workers to pay for them.

According to the US Office of Budget Management, the United States has had three budget surpluses since 1950: in 1960, 1999 and 2000. Those surpluses totalled \$88 billion, which equates to one day's spending for the US government. The US has entered a debt death spiral. According to its congressional committee, 'Interest is the fastest growing part of the federal budget. Interest spending will exceed Medicaid costs by 2020, defense by 2023, and all non-defense discretionary spending by 2025'. US bondholders will get repaid, but you can be almost certain it will be with printed money.

### 2. A Digital World

Younger cohorts are far more accepting of digital currency than their parents. The reality is that people under 35 have always lived in a digital world. They do not question the inherent value of digital currency. The 'it is backed by nothing' argument is simply met by 'fiat currency is backed by even less', and that is entirely true because fiat has an infinite supply, and governments around the world are busy proving it.

Bitcoin has a growing audience and a shrinking new supply. Bonds and fiat currency have the opposite dynamic.



## 6. Pension Liabilities

To illustrate the sheer scale of the pension crisis globally (and its likely impact on yet more money printing), we present an estimate by the American Legislative Exchange Council (ALEC) that puts the unfunded US pension deficit at about US \$6 trillion. Pension funds work their asset base on the assumption of around 6–8% returns annually, which is enormous in the current growth environment. The ALEC does not believe this growth will be achieved.

A great example of why this growth will not be achieved comes from Europe. European pension funds have specifically mandated amounts that must be put into government bonds, partly for 'safety' but also for liability matching so that long-dated pension liabilities will be met with long-dated bond purchases.

The issue in Europe now is that that bonds have negative yields, but pension funds are forced by their regulators to buy them. This situation then generates losses in the pension fund, making the liability gap larger, which forces the purchase of more bonds because the rules state that more long-dated 'safe' bonds must be purchased to reduce the risk in the fund. It sounds ridiculous, but it is true. The problem, of course, is that the rules were not written with the understanding that there could ever be a sustained period of negative interest rates. In short, there is a negative feedback loop happening as follows:

Investors chase 'safe' return knowing there is a bank buyer of last resort > Bond price goes up, and yield goes down > Banks prints money because it needs inflation > Banks buys bonds > Inflation does not come > Banks prints more money > Investors buy bonds because they know what is coming next > Bond price goes up, and yield goes negative > Pension funds are forced into more bond-buying > Interest rates fall further > Loop restarts

It is an economic death spiral. Scarce assets are valuable because all other assets are not—they are being printed in historically unprecedented amounts. Therefore, the solution to digital scarcity is incredibly valuable, and that is the essence of the argument for including Bitcoin in your portfolio.

## 7. Negative Interest Rates

Over the last few years, negative interest rates have been prevalent in not only Japan but also the best-funded European economies, such as Germany, Switzerland and Norway. Effectively, nations are getting paid to borrow money. How can this be possible?

Bond yields go negative when the price of a bond is so high that when including the interest components over its life, the return is less than the principal. It is highly unusual historically, but in the current environment, it makes sense. Why?

1. Most Central banks, such as the Fed, ECB, and Bank of Japan, have inflation targets of 2%. They need rising prices to finance their massive deficits; otherwise, debts grow much faster than GDP.
2. The banks can cut interest rates to generate inflation, but rates are already close to 0%. Going below zero will not work for the general public because it will be seen (correctly) as a savings tax.

3. So, the only option is to print money and then do something with it. Once done, that money must be spent on assets in order of increasing risk: bonds first, equities next and corporate bonds after that, exactly like Japan.
4. The market knows this option is the only one. Therefore, bonds are purchased, and buyers are safe in the knowledge they can be sold to central banks for a profit later because they can be certain there will still be buyers.

The issue, of course, is that in the end, for the longer-dated assets, the debasement of the money supply will mean that the only buyer of bonds will be the government with worthless paper money.

The global bond market has tripled in size in the last 15 years, and it is now worth US \$100 trillion. Let us assume that 1% of that money makes its way to Bitcoin as people experiment with a hedge. That would make Bitcoin worth about US \$50,000. Ignore what might flow from gold, equities, cash, and so on.

These are very early days in Bitcoin. It takes almost a rounding difference from traditional markets (which appear to us to be broken) to make a material difference to Bitcoin.

## 8. Asset Bubbles

Bitcoin is very often referred to as a bubble propped up by inflows from recent entrants. The issue with that argument is that Bitcoin is now ten years old. While the price action in 2017 where it reached US \$20,000 was undoubtedly far in advance of any reasonably modelled price for the asset, Bitcoin has proved resilient.

There exists a real possibility that the bubbles in the macro markets actually exist in bonds, equities, and the American dollar. The dollar relies on its reserve currency status for value, and it may well lose that status in the next 25 years at a very great cost to the holders of its bonds and currency.

Bitcoin is a long play. Money printing cannot continue without consequence. The debasement of money supplies is underway in all developed countries because of the sheer size of the unfunded pension and health liabilities from baby boomers entering retirement. These liabilities cannot possibly be sustained by a shrinking workforce; it simply does not work, and it is reflected in the apparent craziness of the bond markets (which is not craziness at all).

## 9. Summary

The argument for Bitcoin can be summarised as follows:

- Since 2008, central banks have printed money to generate inflation and recover from the financial crisis. Inflation has not come.
- Governments need inflation to help fund giant budget deficits that are being made worse by demographics.
- Governments have no choice but to print money.
- The largest market in the world is the US \$100 trillion global bond market. Yields in that market are going negative because the market knows money printing on a giant scale is here and is not going away.
- The argument is simple:
  - **Bitcoin is scarce, that is the invention.**
  - Fiat money is not.
  - Bonds are not.

## 10. References

For Stock to Flow Model: @woonomic; [www.woobull.com](http://www.woobull.com) the chart is based on the work of Willy Woo

For US budget deficits: <https://www.whitehouse.gov/omb/historical-tables/>

For US debt totals: <https://usdebtclock.org/>

For congress comments: <https://www.crfb.org/blogs/interest-spending-course-triple/>