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A Monetary Revolution? The Global Irruption of Bitcoin and its Adoption as Legal Tender in El Salvador

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1. Introduction

A main monetary revolution of the 21st century is the appearance of Bitcoin (BTC), a peer-to-peer money that needs no third-party validation from central banks, commercial banks, or credit card issuers to be used in daily transactions. It is a digital money supported by new developments in cartography, distributed ledgers and the blockchain. Bitcoin is the largest and most used cryptocurrency, a sort of “hard money”, in the sense that its maximum supply is set to reach 21 million units by mid 2022 with near 19 million already issued. This amount cannot be increased or manipulated. BTC presents a challenge to government-based fiat money issued by central banks along with private near money created by commercial banks and credit card companies. It introduces competition in the creation of money undermining the monopoly on currency. Bitcoin allows instantaneous cross-border transactions independent of the dominant SWIFT system managed by the traditional banking system and has the potential of financial inclusion for millions of international migrants and the world poor. The price of BTC since its inception has revalued spectacularly but at the same time it can fluctuate widely and sharply. This price volatility can hamper its massive adoption as a means of payments with stable coins and future and

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options markets serving as vehicles of price-stabilization. At the same time, BTC is facing attempts of regulation, taxation and assimilation by national governments and central banks. Some central banks started pilot programs to issue their own digital currencies, taking advantage of the superior blockchain technology of cryptocurrencies while trying to preserve their monopoly of money issuing and increase the scope for financial control over the population.

This article analyses this new global monetary trend and provides a guided tour of the still short experience of El Salvador with BTC adoption. Indeed, this is the first country in the world that passed, in September of 2021, a monetary law that made Bitcoin a *legal tender* along with the US dollar, the first foreign currency of adoption in 2001. Twenty years later the country adopted again a second “foreign” currency (this time, however, it is a currency not issued by a foreign government/central bank but by a community of computer programmers) whose ultimate effects remain to be seen.

A potential benefit of BTC as legal tender in El Salvador is to reduce the high commission fees charged to international migrants that want to send remittances denominated in US dollars to their home country. In the case of El Salvador, remittances are very important source of foreign exchange to the country: they represent between 20 percent and 25 percent of El Salvador’s Gross Domestic Product. In addition, the BTC can foster financial inclusion and monetary autonomy, attract foreign investment to blockchain, crypto-technologies activities and geothermic energy generation. The move also gives an international leadership to the country in monetary reform based on new digital currencies *not* issued by governments. Still there the monetary reform present challenges such as how to expand the use of BTC to wider segments of the population in urban centers and the countryside, avoid income and wealth redistributions originated by fluctuations in the

BTC/dollar exchange rate, avoid mismatches between fiscal revenues in one currency and public spending in other, ensure consumer protection and reduce the risk of anti-money laundering practices.

An interesting initiative following the adoption of BTC is the construction of a modern and up to date technological “Bitcoin City” feed with geothermic energy in the Fonseca Gulf. This is to be financed, in part, through the mobilization of the revenue associated with the issuance of a U\$ One billion “Volcano Bond” whose yields are tied to the evolution of Bitcoin price. The other half of the bond will be devoted to acquiring Bitcoin. Interestingly, this monetary reform of Bitcoin adoption by El Salvador is, so far, carried out in independent fashion by the authorities of the country *without* the technical and financial support of the World Bank and the International Monetary Fund, institutions that remain skeptic and/or critical of this currency experiment.

2. The Surge of Bitcoin and Monetary Systems: A Brief Overview

Money is essential to carry-out millions of transactions on which economic systems rest. Historically and at present we can identify three main forms of money, some competing among them.

- (i) Commodity-based money (gold and silver).
- (ii) Fiat-money.
- (iii) Cryptocurrencies/ Bitcoin.

Since the beginning of human civilisation, commodity money has been the primary form of currency. It was a good or object such as gold, silver, copper, salt, arrowheads, seashells, cocoa beans, cowrie that performed the function of money. A key aspect of *commodity money* is its intrinsic value particularly in the case of precious metals such as gold and silver (to a less extent copper). Part of that intrinsic value comes from the fact that precious

metals have alternative uses as in the production of jewellery and medical (dental) parts.

Commodity money can take the form of anything that people find has value and does not necessarily need a third-party validator to do so. ²

A system of *fiat money* is an unprecedented experiment in the long history of monetary systems. The world is under a purely fiat regime only since the 1970s. Fiat, derived from the Latin word which means “by decree” means that legal *tender* around the world has nominal value even though there is no underlying commodity or backing the legal tender currency. It lives based on the trust we have—or are forced to have—in the institutions that issue this currency. ³ The history of the current system goes back to 1971 when the USA ‘walked away from gold’ and before that when World War II was reaching its end, and the United States was the outright military and economic hegemon in the world. As such, it organised a summit in Bretton Woods, New Hampshire to discuss the future of the monetary world. Representatives from 44 nations arrived, including notable subjects such as John Maynard Keynes and others attended the meeting. The discussion revolved around several subjects including the gold standard—which had all but been abandoned by this

² The popular notion that commodity-based monetary systems made almost impossible the manipulation of the money supply by governments can be a bit of a myth. The historical record shows that monarchs and governments enjoying the monopoly of the mint (facilities for coining metallic currency) did indeed, at certain times, *debased* metallic money by reducing their fineness and weight (content of gold or silver). This did often occur at times of war when the survival of the state was at risk and the collection of more conventional taxes (land tax, excise taxes) was difficult, debasement was also oriented to collect seigniorage see Reddish, (1993).

³ Main issuers of currency are central banks. The Sverige Riksbank (Bank of Sweden) is the oldest central bank created in 1668 followed by the Bank of England founded in 1694. In the 1800s central banks were also established in France, Finland, the Netherland, Austria, Norway, Portugal, Denmark, Portugal, Belgium, Spain, Germany, Japan, and Italy. In the 19th century the First and Second Banks of the USA were somewhat like a central bank in the modern sense. In 1913 the Federal Reserve Bank was formally established and the Bank of Canada in 1934.³ In 1900 there were only 18 central banks in the world, but the number increased almost exponentially suggesting these institutions are a great convenience for governments: the numbers are in 1930, 34 in 1950: 59 in 1970: 108 and in 1990, Solimano (2022).

point. Keynes promoted the idea of the *Bancor*, a global unit of account managed by a handful of nations and institutions. The United States, backed by its immense military and important economic power leveraged these positions to establish the US Dollar as the reserve currency of the world. The system worked insofar as gold could be redeemed in unlimited amounts in exchange for dollars at the prevailing fixed exchange rate with other currencies of main European economies such as the French franc, Italian lira, the British Pound, the German mark pegged at a fixed rate of exchange with the US dollar.

For a two to three decades, the system worked reasonably well but in the 1960s as the United States invaded Vietnam and advanced with enormous social programs—Lyndon Johnson’s *Great Society*—the US run persistent fiscal deficits and countries began to question its monetary solvency and fiscal responsibility. Credibility on the gold reserves of the United States dimmed and led by France, nations around the world started to demand their dollars back, with the notable event of President Pompidou sending a battleship to New York to retrieve their gold in 1971. This was done in parallel to the United Kingdom requesting \$3 billion dollars’ worth of gold be prepared from Fort Knox to the New York Federal Reserve.

On August 15th, 1971, US President Richard Nixon surrounded by the prospect of higher inflation and a stagnant economy adopted price and wage controls and closed the window of convertibility between the US dollar and gold. Although the official statement was in a bid to save the world economy, there are widespread accounts that it was mainly done to keep the country’ gold stock in its vault. Known as the *Nixon shock*, this move led us into the current monetary and financial regime, one based on purely fiat money.

In the digital age, we have the irruption of new forms of money. Bitcoin is an electronic payment system that arose in the late 2000s from the development of new digital

technologies in the areas of cryptography, distributed ledgers, and mobile phones. Bitcoin is *not* issued by central banks and/or commercial banks but by a group of independent individuals following a predetermined protocol that mine new units and transact in the blockchain. Bitcoin as the most prominent *decentralized* digital currency although there are currently thousands of different crypto currencies.

The digital mechanism that underpins digital money was presented in a paper appearing in October 2008 written by a programmer (or group of programmers?) signing under the name of Satoshi Nakamoto entitled “Bitcoin: A Peer-to-Peer Electronic Cash System”

(Nakamoto, 2009). The protocol has three main properties: (a) decentralization in the validation of transactions, (no need of a central authority or external agency to verify exchanges), (b) encryption and proof-of-work property and (c) all transactions recorded in the ledger that can't be erased, altered, or undone. The system provides a *cryptographically secured* database that satisfies anonymity, irreversibility, and peer-to-peer properties. To quote Nakamoto: “The root problem with conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust”.

This new form of money can undermine the power of entrenched financial intermediaries that charge a commercial fee, producing handsome profits. In this sense is a form of *democratizing money* that also has the potential to contest the power of central banks to conduct monetary policy. For these, and other, reasons Bitcoin is relevant in discussions on economic democracy and personal autonomy in capitalism and other economic systems (Solimano, 2022). This new money supposes a complete reconfiguration of money to carry out transactions and supposes a radical transformation of governance, authority, and self-ownership. Bitcoin is favoured by both conservative and progressive libertarians. The

former group stresses the liberation from the monopoly of government- issued money and the power of the free market while the second group affirms self-ownership and autonomy from big corporations and the financial sector and the potential of Bitcoin in undermining the dollar as the international reserve currency as expression of hegemonic capitalism led by the United States.

Bitcoin has features of “token-based” monetary systems in which cash is exchanged for goods, services, assets. Like using bills and coins it entails anonymity in its use. This is different from “credit-based” money structured around an asset-liability structure lying behind individual accounts. Bitcoin shares peer-to peer features with fiat money (notes and coins) but it differs from demand deposits held in commercial banks in that, as mentioned, it does not require centralized verification (third party trust) for validating transactions as in the case of paychecks and credit-card payments. BTC shares a fixed supply feature with gold or silver and differs from fiat money in that its supply cannot be increased at will by monetary authorities or by a fractional reserve banking system.⁴ However, there is a difference between commodity-based money such as gold or silver and BTC that the latter has *not intrinsic value*: it is just a computer entry. In this sense is closer to a fiat money system but subject to a hard supply constraint. Thus, it is apparent that Bitcoin is somewhat an “eclectic currency” as it shares elements of both commodity-based (fixed supply) and fiat–money systems (not backed by a real asset, table 1) but it differentiates in other respects from them (seigniorage, for example, is internalized by private individuals rather than by the central bank).⁵

⁴ The supply of Bitcoin follows a pre-determined rate of growth that is *decreasing* over time to be consistent with the given maximum supply of 21 millions of BTC.

Table 1. Properties of Money/Monetary systems

	Bitcoin	Fiat Money	Commodity-based systems
Intrinsic value	no	no	yes
Limited Supply	yes	no	yes
Risk of deflation	yes	no	yes
Risk of inflation	not	yes	not
Flexibility to adjust	little	yes	little
Lender of last resort	limited	ample	limited
Cost of production	high (energy)	low	high
Seigniorage	private	public	private/public

Source: Solimano (2018) and Solimano (2022, chapter 6).

Analysts have noted that a monetary system based, eventually, on digital currencies *whose total supply is fixed* as in BTC may have an embedded tendency to *deflation* as it was the case with the gold standard. In contrast, under fiat-money systems in which the supply of money is not geared to metals such as gold, central banks can print money to increase aggregate demand for example to help the economy to pull-out of a recession or depression. The other side of the coin of this monetary flexibility is that fiat money systems are more prone to engender *inflation* that can be low, moderate, high, and explosive. In fact, high and extreme inflation can be very destructive.

An empirical feature of Bitcoin is the rapid rise in its price over the last decade or so.

Initially, in its initial years after inception one BTC was worth a few dollars but its value

started to increase and in mid 2016 it rose to around US 450 to climb, in late 2017, to near USD 20,000. A few years later it reached a peak of USD 65,000 (late 2021). However, its price does not follow a steady upward path; in fact, it often experiences very sharp ups and downs. Price variations can be in the range of 30 to 50 percent over relatively short time periods (see figure 1a). In other words, it is a highly *volatile* asset compared to another volatile financial asset such as stock, being far more volatile than gold (see figure 1b). This high variability in price can affect the ability of BTC to be preferred as a unit of account and means of exchange. On the other hand, Bitcoin can be a very profitable store of value if investors are willing to absorb substantial risks associated with fluctuations in its price.

Figure 1a) The Price of Bitcoin from 2015 to 2021 (USD per BTC)

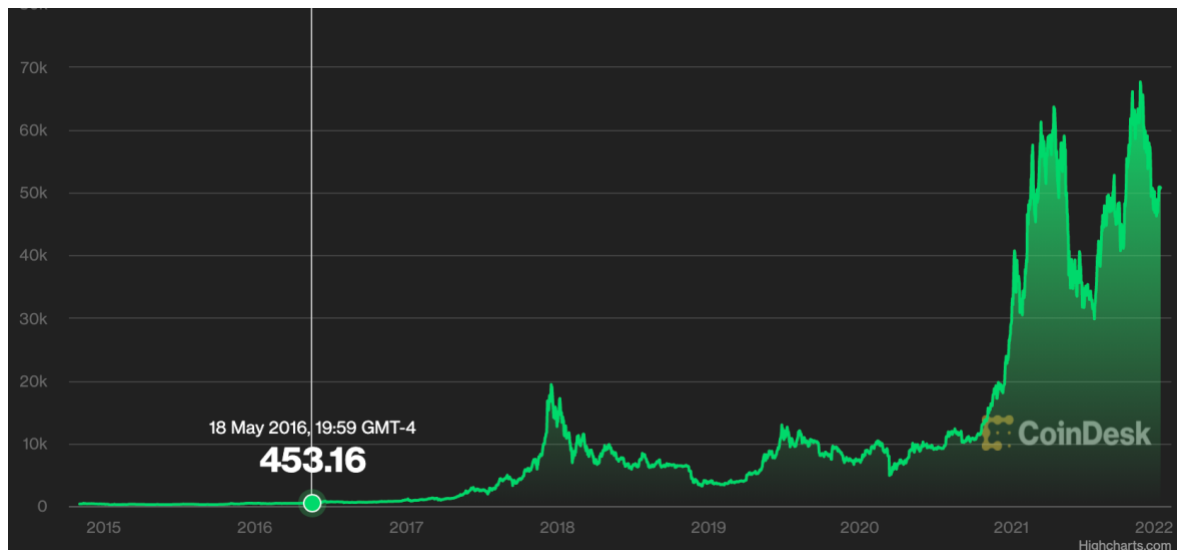
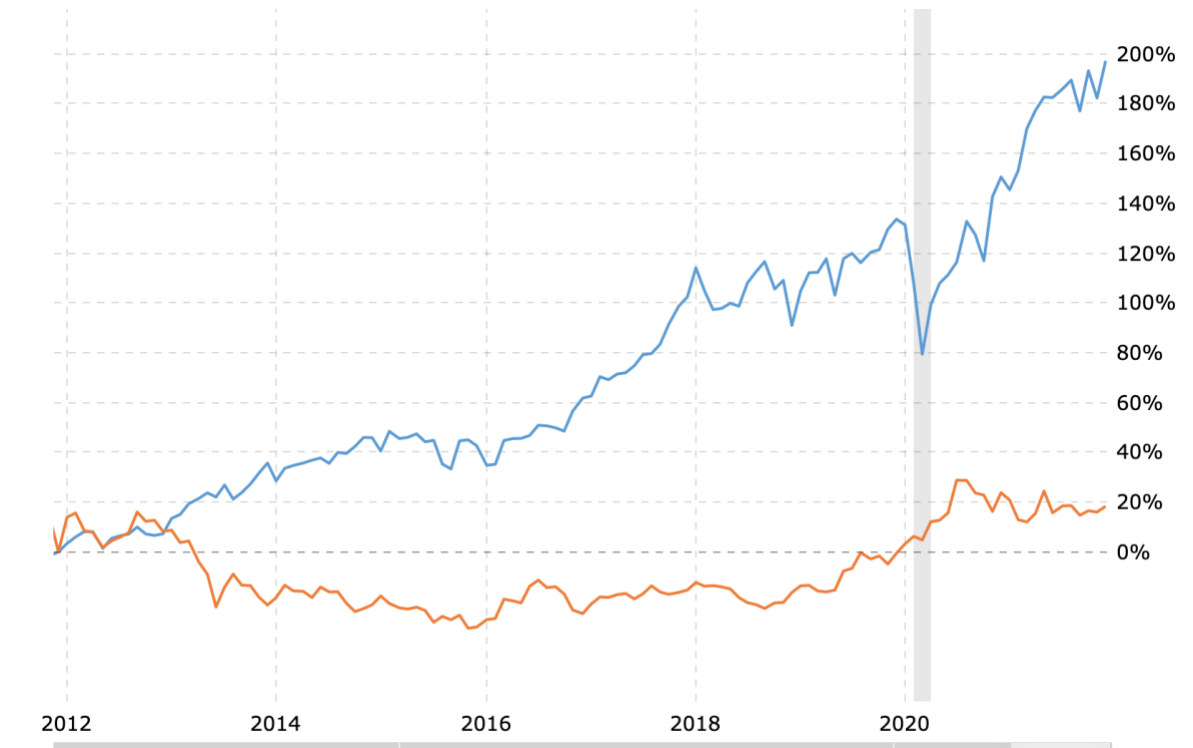


Figure 1b) Gold Prices (orange) and Stock Price (Dow Jones, blue), 2012-2021



An alternative to reduce the volatility of Bitcoin is to use *stablecoins* that are privately issued cryptocurrencies that are pegged 1:1 with a fiat currency such as the US Dollar or Euro. They have become increasingly popular within the nascent digital asset arena, providing for stable remittance services, and easy transfer of wealth. They are, however, liabilities on the issuers balance sheet, and come with its own set of risks, such as counterparty risk, insolvency, bad reserves, and more. In saying that, they do adhere to a cash-like equivalent for the digital realm. Other instrument to reduce the volatility of Bitcoin is the use of options (put s and calls) and future markets.

Some central banks are considering issuing their own digital currency (CBDCs). The most advanced case is China’s Digital Currency Electronic Payment System, (DECP) or “digital

yuan” by the People Bank of China that is expected to be partly in circulation in 2022 (Fanusie and Jin, 2021). Other initiatives include the case of the Bank of Canada (project Jasper), the Monetary Authority of Singapore (project Ubin), the Bank of England and others. Central banks do not want to be left outside from the wave of digital currencies and blockchain that offer clear advantages over more traditional technologies of electronic transfers. Another reason is that central banks have obviously noticed the decline in the demand for cash and its substitution for electronic transfer mechanisms.

Unlike the bitcoin, the CBDC will not be hard money in the sense of a fixed supply although, so it is vulnerable to inflation. Another concern is the increased surveillance power that CBs will be wielded if they will be endowed with the creation of millions of individual accounts deposited in central banks. In fact, a concern is the extent that Central Bank Digital Currencies will protect citizens personal financial information as people in the new scheme will have individual accounts in the central bank and their full history of transaction will be recorded.

Crypto currencies are often pointed-out as vehicles for conducting illicit transactions such as money laundering, payments for drugs, financing of terrorism and so on. However, the evidence presented in the *2021 Crypto Crime Report* (ChainAnalysis 2021) shows that in 2019 the share of global illicit transactions conducted through cryptocurrencies was 2.1 percent and declined to 0.34 percent in 2020, really a very small proportion.

3. El Salvador and the Adoption of Bitcoin as Legal Tender

El Salvador is a country of 6.5 million inhabitants located in the west coast of Central America holding borders to the north with Guatemala and to the East and South with

Honduras. It has a GDP per capita of near USD 9,000 in purchasing power parity (2021). The economy is supported by a steady flow of remittances send by international migrants (mostly residing in the United States), exports of agricultural goods, revenues from tourism, finance, and light manufacturing. In the 1980s the country experienced a civil war between the left-wing (*Frente Farabundo Marti de Liberacion Nacional*, Farabundo Marti National liberation Front) FMNL and the right-wing (*Alianza Republicana Nacionalista*, Nationalist Republican Alliance) ARENA supported by the United States. In the 1990s peace agreement were signed but gang violence, erratic growth and limited domestic employment conditions prompted the continuation of outward migration, mainly directed to the USA. Fiscal and external imbalances and continued emigration continued in the first two decades in 21st century. The party of the president Nayib Bukele, who launched BTC, is called *Nuevas Ideas* of a centrist bent.

On September 07, 2021, the parliament approved a law that made BTC a new official money accepted by the courts as a valid monetary instrument for the payment of taxes and the settlements of debts, salaries, and other liabilities. The legal tender doctrine and the official monopoly of fiat money rest on several arguments:⁶ (i) the need to ensure currency is universally accepted for transactions to promote trade and cooperation, (ii) the lower resource cost to produce money compared to a commodity-based systems based on gold and silver, (iii) the need to have an official stamp on currency so to avoid counterfeiting and fraud in the production of money. In addition, given the features of public good and network externalities implicit in setting a monetary standard an official monopoly on money is shown as necessary according to this doctrine.

⁶ Friedman and Schwarz (1986).

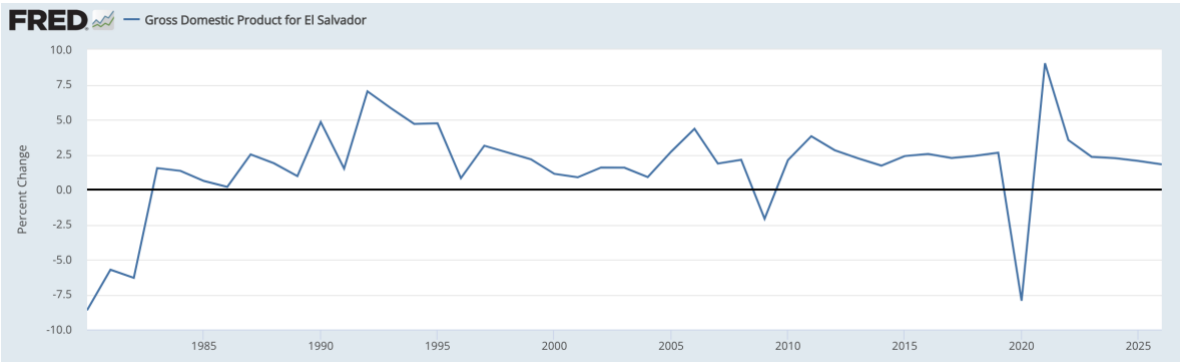
Other countries such as Panama and Ukraine have approved legislation allowing BTC to be used as a financial asset, but these two nations have not gone that far as adopting BTC as legal tender. To support the adoption of BTC the Salvadorean government distributed an e-wallet called *chivo*. This is a public wallet to enable citizens to buy, selling, and holding BTC. In turn, the wallet allows the use of *lightning*, a super-fast second layer (to the blockchain used by BTC) to conduct millions of micro-transactions. Technical problems affected the initial adoption of the Chivo wallet, but these problems seem to be receding. It is estimated that, as of December 2021, between 5 to 10 percent of the population has used BTC at least for one transaction. The road for further adoption seems wide open provided an adequate financial infrastructure is in place, the number of stores accepting it increases and confidence in the new digital currency is consolidated. It is worth stressing that El Salvador is, basically, “sailing alone” in the adoption of BTC as legal tender. The World Bank refused to provide technical assistance on the matter when requested in June/July 2021 and the IMF is *not* recommending its member countries adopting a cryptocurrency as a means of payment. In its last surveillance mission to El Salvador (Article 4 statement of November 22, 2021) it recommends *not* using BTC as a mean of exchange; this is even though BTC is already legal tender as approved in the September currency law.

3.1 Macro and Debt Conditions

The macroeconomic context under which Bitcoin is adopted is a relevant consideration. Economic growth between 2011 and 2019 has been in the range of 2.5 – 3.5 percent per year, perhaps not spectacular but still respectable. In turn, the economy of El Salvador experienced two episodes of decline in economic activity related to external shocks: in 2009 associated with the impact of the global financial crisis and in 2020 due to the Covid-

crisis. On both occasions the economy has resumed following V-type of recoveries (in 2010/11 and 2021, see Solimano, 2020).

Figure 1. El Salvador: GDP (annual percent change)

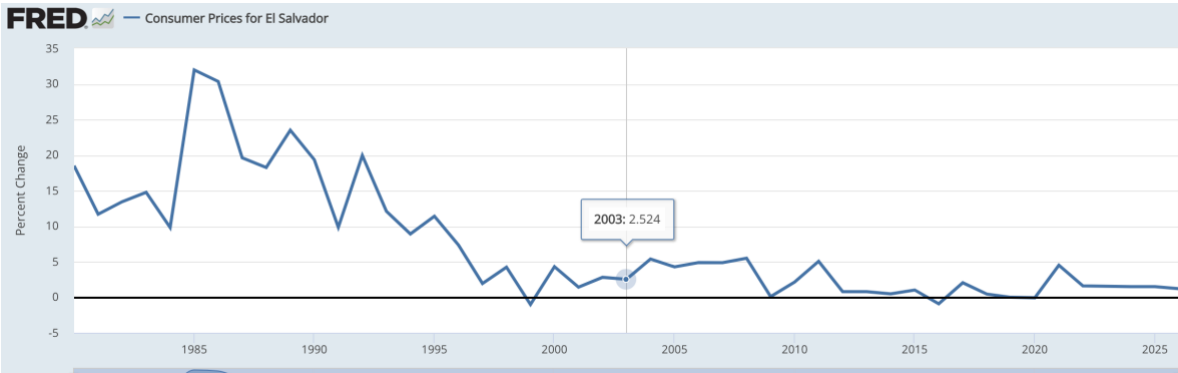


A motivation of the authorities behind the adoption of the US dollar as a legal tender in 2001 and Bitcoin in 2021 is keeping inflation low and stable. Between 1985 and 1995 annual inflation was in the range of 20 to 30 percent, declining to levels close to 5 percent per year in the 2000s and 2-3 percent per year in the 2010s.

In other countries attraction to cryptocurrencies has been motivated to escape from very high inflation. Venezuela, for example, introduced in 2018 the Petro a cryptocurrency backed by oil, natural gas, and hard metals, to provide a monetary alternative to the highly depreciated Bolivar after years of hyperinflation with annual inflation estimated in the several thousand percent. Another case is Iran, a country of chronic inflation of around 35 percent per year (lower than Venezuela) that has prompted the local authorities to explore the crypto market for a more stable medium of exchange. In addition, these two countries are affected by American economic sanctions, so adhering to a digital currency outside the

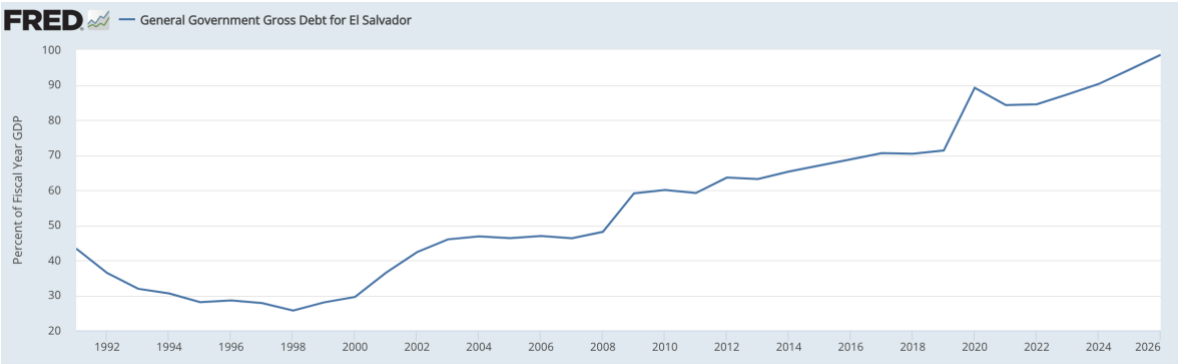
purview of the US dollar international financial circuit seems to be a bonus for these economies. However, at the time of this writing, neither of these two countries has formally passed laws adopting BTC as legal tender.

Figure 2. El Salvador, CPI Inflation (annual percent change)



El Salvador is an economy that has experienced persistent balance of payments and fiscal deficits in the last 10 to 20 years. Because of these twin deficits the general central government debt climbed from 59 percent of GDP in 2010 to near 90 percent in 2020 and that can approach to 100 percent of GDP in 2026. The level of public debt is a relevant issue in the discussion on BTC adoption in El Salvador as the government may have to rise tax revenues in BTC and use the proceeds to serve external debt in US dollars.

Figure 3. Central Government Debt of El Salvador (% of GDP).



3.2.Expected Benefits, Challenges and Risks of Adopting BTC in El Salvador.

We can identify the following potential benefits associated with adoption of BTC given the socio-economic realities of El Salvador:

- a) The reduction in the cost of sending cross-border remittances to El Salvador through BTC rather than Western Union, Money-Gram and other intermediaries that charge between 10 to 20 percent commissions for sending cross-borders remittances. International remittances represent, currently, around 6 billion dollars annually, so the savings-cost of reducing reliance on financial intermediaries in dollars are substantial. Of course, this benefit will be affected by the exchange rate between BTC and dollars as worker migrants in the United States earn their salaries in dollars.
- b) The attraction of foreign investment in activities related to the blockchain, exploration of geothermic energy to mine BTC and other related activities.
- c) More financial inclusion and broaden currency choice. Commercial bank enrollment is low for the poor in El Salvador. In addition, monetary choice is increased by introducing an alternative form of money to the US dollar in the domestic portfolios of the population of El Salvador.
- d) Greater monetary autonomy of El Salvador relative to international financial institutions, IFIs (IMF, World Bank, IDB, others) operating in the dollar area. To the extent El Salvador can trade and borrow internationally in BTC his increases the

potential financial autonomy of the country and avoid falling in external policy conditionality from IFIs.

Challenges in the adoption of BTC

Along with potential benefits there are also challenges and potential risks associated with the adoption of BTC:

- a) Price volatility of Bitcoin can hamper BTC adoption as a *medium of exchange* as people may be uncertain on the value of the digital currency and try to avoid its use.
- b) Insufficient financial infrastructure (e-wallets) and financial education of the population that delays the adoption of BCT for commercial, financial and daily transactions.
- c) Redistributions from debtors in BTC and creditors in USD at the time of fluctuations in the exchange rate BTC/USD.
- d) Potential mismatches between tax revenues in BTC and fiscal spending denominated in dollars.
- e) Slow speed of adoption of BTC by stores, financial intermediaries, and the state sector due to logistic problems.
- f) Vulnerability to money-laundering and illegal transactions. To be fair this risk is also relevant for the US dollar and the Euro the main currencies of denomination of illegal activities worldwide.

3.3 Bitcoin City and Volcano Bonds.

On November 20, 2021, President Bukele announced the creation of “Bitcoin city” in the city of La Union located in the Fonseca Gulf in the south of the country. Bitcoin city would be equipped with residential and commercial areas, up to date transportation systems

including a first- rate airport, a port and train. The city would entertain good restaurants and shops to attract visitors and investors. It would be a special economic zone with no income, wealth, and property taxes; the value added tax would be the only source of tax revenues. The main energy source for the city would be geothermic coming from the Conchagua Volcano. Another use of that energy is the mining of Bitcoin.⁷

To partly finance this endeavor and invest in BTC government of El Salvador announced the floating of a “Volcano Bond” in international capital markets, valued in one billion dollars. The bond is designed by Blockstream, the Canada-based blockchain technology provider, and the exchange Bitfinex oversees its commercialization. Main features of the bond are:

- (a) The bond has a 10-year maturity and pays an annual interest rate of 6.5 percent.

Currently, dollar denominated El Salvador sovereign bonds pay an annual interest rate around 12 -13 percent given the appreciation of country risk in global capital markets.

- (b) One-half of the bond proceeds (USD 500 million) would be used to buy BTC in the market and the other half (USD 500 million) to build mining infrastructure related to BTC city.

- (c) There is a dividend paid to bond holders after the 5th year of duration (lock-up period) of the bond related to the evolution of the price of Bitcoin and the selling of BTC acquired during the first five years. Blockstream estimates an annual yield of 146 percent for the Bond after the end of the 10th year. The projection assumes the

⁷ Engler and Reynolds (2021).

price of BTC could reach USD one million after five years. Alternative pricing-scenarios are, of course, possible.

(d) People holding USD 100,000 in Volcano bonds for at least five years would qualify for Salvadorean citizenship.

As of early November 2021, the Salvadorean Treasury had a stock of near 1,200 Bitcoin that formed part of a Trust Fund composed by USD and BTC. The Fund can spend the appreciation in value of BTC (capital gain) without affecting the value of the principal of the Fund.

The BTC-backed bond represents a new form of fiscal and balance of payments financing for El Salvador a country that faces increasing borrowing costs for its debt denominated in US dollars (close to junk-bond status) due to the high level of external debt of the country and risk levels as assessed by international rating agencies. The cost of borrowing in BTC (interest rate paid by the volcano bond) is roughly on-half the current cost of borrowing in dollars. In that sense it represents a savings in debt servicing for the government with an expected improvement in the fiscal budget.

The market is expected to accept a lower interest rate on account of an expected revaluation of the price of Bitcoin that will be internalized by investors through dividend payments after five years. What are the risks implicit in the BTC-backed bond? The main risk is that the price of BTC rather than increasing sharply in the next few years could decline turning a potentially profitable investment for the country and bond holders into a bad investment. Nonetheless, BTC predictions from the industry are generally quite upbeat (with average expected annual returns in a ten-year period of near 150 percent). Of course, no assurances exist that these optimistic expectations will materialize.

Concluding Remarks

The surge of Bitcoin in the last decade or so represents a challenge to established financial institutions and central banks. Bitcoin is issued by private agents according to a software protocol that cannot be modified and that set a maximum supply of this currency. It is a digital money supported by cartography, distributed ledgers and the blockchain although a shortcoming is its high price volatility although revaluations in price have been spectacular in recent years. Bitcoin is seen as fostering personal monetary autonomy, privacy protection, financial inclusion and facilitates cross-border transactions a very appealing feature for international migrants and globally mobile people. Detractors, however, point risks of money laundering and illicit activities carried through BTC though recent empirical studies tend not to support these concerns.

In September 2021, El Salvador became the first country in the world to adopt the Bitcoin as legal tender (along with the dollar adopted in 2001) backed by a monetary law approved by parliament. The government has distributed millions of public e-wallet, the *chivo*, to enable transactions with BTC and is promoting financial and institutional adaptation to the new currency in a dual monetary system. El Salvador has implemented this complex monetary reform without the technical and financial support of the World Bank and the International Monetary Fund that remain skeptic of this currency experiment. The BTC can reduce the high commission fees charged to international migrants sending remittances to their families in El Salvador, attract foreign investment to blockchain, crypto-technologies sectors and geothermic energy generation and give an international leadership to the country in monetary reform based on new digital currencies. There are also challenges that must be faced such the expansion of the use of BTC by the public and stores in urban and rural areas, the implications for the fiscal budget and the banking system, the completion

and effective operation of the financial infrastructure underpinning BTC (e-wallets), the avoidance of serious income and wealth redistributions originated by fluctuations in the BTC/dollar exchange rate, consumer protection and anti-money laundering. In sum, it is a novel and courageous monetary experiment, certainly not free of risks, and whose final fate remains to be seen.

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