

The Impact of Crypto-assets on State Currencies

What do advances in financial
technology mean for state currencies?



The Impact of Crypto-assets on State Currencies

March 2020

This report is part of a series from the Dubai Future Foundation focusing on trends that are important to UAE decision-makers. It explores emerging ideas on key subjects - from space technology to water policy - and does not represent the views of the Foundation. Here we explore how digital technology is disrupting money, how this disruption could alter the existing global monetary system, and how some governments are approaching the advancement of these financial technologies. The report argues that there are risks to moving away from a centralized system, specifically for building resilience to economic crises. However, this should not deter us from embracing technologies like blockchain, the decentralized nature of which bring badly needed efficiencies to global financial exchange.

The Impact of Crypto-assets on State Currencies

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Introduction

The Separation of Money and State

Ongoing digital transformation is fueling a global debate among policy-makers and financial experts who are asking if financial technologies could have broader implications – not only for money, but also for the institutions that uphold it. Financial technologies such as crypto-assets and distributed ledger technologies provide people with alternative ways to conduct transactions that are faster and cheaper than traditional money. The rapid advancement and adoption of such technologies could therefore lead to a wider ‘disruption’ of money itself. Such a disruption, should it occur, could change the status quo between governments, banks, and individuals, potentially breaking the link between currency and the state.

Alternatively, forward-looking governments and banks may also plausibly be able to absorb such a disruption, allowing them to lead the future innovation and development of advanced financial technologies.

This study explores how digital technology is currently disrupting money, how this disruption could alter the existing global monetary system, and how some governments are approaching this imminent disruption.

Key Questions

The study aims to answer the following questions:

How will advances in financial technology affect the role of central banks and the state? Will these advances weaken state authority over money, or even break the link between money and the state entirely?

How can central banks respond? How can they balance the advantages of crypto-assets and the advantages of fiat currencies?

Will the diminished role of traditional intermediaries eventually make banks and financial institutions obsolete?

What are governments doing to ensure national economies are safe and resilient to global crises?

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What Does It Mean to Disrupt Money?

1



It is difficult to imagine the disruption of money compared to other goods and services because we typically have a choice over the goods and services we purchase. Other markets are disrupted when radically improved goods or services replace existing ones and consumers gradually switch to the new option. However, since we do not view money as something over which we have a choice, it can be confusing to try to imagine what its disruption would look like.

We can describe money as a token that moves through a complex “network” of national and international institutions. This network binds states, enterprises, and individuals together in order to make trade, investment, and growth possible. Nevertheless, removed from this global system, money is essentially a commodity that can be “bought” and “sold” at market prices just like any other good. In some sense, it can also be argued that money is a service that governments provide to enable trade and transactions. It follows that if digital technology can disrupt many other goods and services, money could be wholly disrupted as well.

The full digital disruption of money would require the widespread adoption of financial technologies, which would lead to the transformation of the global money “market,” i.e. the global monetary system. On a fundamental level, however, it would involve a deeper shift in the way we think about money. It would demand that we view money as something over which we have a choice, as opposed to the existing paradigm in which we have little choice. If individuals and companies typically must use the national currency of the country where they are based and must use traditional financial institutions such as banks and central banks to conduct transactions.

It is important to note that such a disruption would not be unique. In fact, money has undergone a number of transformations over the 20th century. The first major shift

“Traditionally, money was almost always an expression of sovereignty... The distributed ledger, or blockchain, offers a way of being absolutely secure about a transaction without the need for a central authority or bank as an arbitrator... It holds out the possibility of a major transformation in which the link between money and the state is broken.”¹

Harold James

Professor of History and International Affairs
at Princeton University, Historian for the
International Monetary Fund

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was marked by the 1944 Bretton Woods Agreement, which bound global currencies to the US dollar that was represented by a set value of gold.

The second change occurred in 1971, when the market price of gold exceeded its initial set value in dollars and resulted in the collapse of the Bretton Woods Agreement. Since then, state currencies are no longer backed by gold, but by the US dollar as a global “reserve.” Therefore, another disruption of money would not be a historical exception.

In the present day, a country’s national currency – be it the British pound, the US dollar, or the Chinese yuan – is typically issued by its central bank. The central bank holds the country’s foreign reserves, against which the national currency is valued. The largest share of a country’s foreign reserves is typically held in US dollars, as this was established as the primary reserve currency after the Bretton Woods system collapsed. Although central banks are commonly independent from other parts of the government, they essentially implement monetary policy in line with the country’s economic goals. The two key tools they use to do this are issuing currency, thus controlling money supply, and setting interest rates, thus controlling money demand.²

Despite the widespread adoption of financial technologies around the world, it is too soon to see a visible disruption of traditional central banking. However, it is clear that governments need to identify the rapid changes money, financial markets, and payments systems are experiencing and the implications they have on central banks’ ability to carry out their key functions, such as managing inflation and financial uncertainty. It is also important to determine the broader consequences of these shifts given that they may trigger a whole disruption of money, which would have significant repercussions for international capital flows and exchange rates.

Two Tools Central Banks Use to Deliver Monetary Policy

ISSUING CURRENCY



Controlling Money Supply

SETTING INTEREST RATES



Controlling Money Demand

If central banks lose control of issuing currency, they cannot influence money supply. If they lose control of setting interest rates, they cannot influence money demand.





SPOTLIGHT ON

The US Dollar and Global Currencies

Some people contend that the US dollar's status as the dominant global reserve currency has allowed the US economy a significant advantage over others. France's Minister of Finance, Valéry Giscard d'Estaing, put forward that this advantage actually proved to be an "exorbitant privilege" in the global economy in the 1960s. Since then, various studies have attempted to gauge the extent to which the US economy benefits from the global reserve status of its currency. In 2009, McKinsey Global Institute estimated that the US economy's net financial benefits could be between \$40 billion and \$70 billion.³

Issuing the global reserve currency is believed to have allowed the US to generate interest-free loans through seigniorage – the profit the government makes by issuing currency to nonresidents who hold dollars. This offers the US an estimated net financial benefit of between \$10 billion and \$20 billion. Because foreign governments and their agencies purchase extremely large amounts of US treasury securities, the government, companies, and households in the US can raise capital more cheaply than their foreign counterparts. This provides a net benefit of approximately \$90 billion.

Although these advantages account for less than 1% of the US's GDP, some people believe they have allowed the US economy to dominate global trade. The stability of exchange will always be commanded by US domestic policy. The dollarization of credit markets means the Federal Reserve's actions in the US affect other countries as well. In an era when the US entered conflicts in the Middle East, Asia, and Central America, this system has arguably increased American influence over smaller countries in those regions, which rely on a stable dollar for trade.





History of the Debate


The debate around whether digital technologies could cause another transformation or disruption of the global financial system first arose in the late 1990s when the use of the internet was still relatively nascent in the financial sector. In 1999, Mervyn King, the then-deputy governor of Britain's central bank, the Bank of England, noted that if central banks are not "robust to changes in institutions and technology," real-time electronic transactions could make state currencies redundant. Eventually, this could reduce the efficiency of monetary policy and render it irrelevant.



“The key to a central bank’s ability to implement monetary policy is that it ‘remains, by law or regulation, the only entity which is allowed to corner the market for settlement balances’. Without such a role in settlements, central banks, in their present form, would no longer exist; nor would money... Central banks would [therefore] lose their ability to implement monetary policy. The successors to Bill Gates would have put the successors to Alan Greenspan out of business.”⁴

Mervyn King

Former Governor of the Bank of England



According to King, at that time the future of central banks was precarious because their ability to influence the economy and implement monetary policy results from being the monopoly supplier of base money – cash and bank reserves. Given that base money is the ultimate medium of exchange and final settlement, central banks have leverage over the value of transactions in the economy. However, their ability to implement monetary policy could realistically be challenged by technological advances that replace some of the uses of base money.

King argued that in principle there was no reason why the private sector could not use digital technologies to carry out its own final settlements without the need for clearing through the central bank. Of course, this was not practical at the time given that it would require much greater computing power than was available. However, it was asserted there was no “conceptual obstacle to the idea that two individuals engaged in a transaction could settle by a transfer of wealth from one electronic account to another in real time.”

A number of economists disagreed over the extent to which technology could impact central banks’ ability to implement monetary policy, and even if it could at all.

In 2002, Charles Goodhart, former member of the Bank of England’s Monetary Policy Committee and professor at London School of Economics, argued that it is unlikely that currency will be completely replaced. Even if it is, he contended, an IT revolution in banking would not weaken the influence of the central bank in conducting monetary policy because “it is the government’s bank and thus has the power to intervene in financial markets without concern for profitability, let alone profit maximization,” and can therefore force commercial banks to heed its recommendations.⁵



Similarly, according to Michael Woodford, macroeconomist and professor at Columbia University, “concerns about the consequences of the IT revolution for the role of central banks are exaggerated, not so much on the grounds that advances in computing are unlikely to fundamentally transform the payments mechanism, but on the grounds that even such radical changes as might someday develop are unlikely to interfere with the conduct of monetary policy,” which can be implemented through open-market operations and other tools the central bank holds.⁶

Although this debate remained largely theoretical into the early 2000s, it has been rekindled in more recent times due to the growing use of digital technology in the financial world. Arguably, the urgency for addressing this debate accelerated after the 2008 global financial crisis.



The debate has been rekindled in recent years due to the growing use of digital technology in the financial world



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The Rise of
Crypto-assets

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02

The 2008 global financial crisis generated skepticism in the international financial system and spurred the development of early digital currencies. Advancing technology allowed for the innovation of digital value exchange, which sought to alter “the paradigm of state-supported currencies and the dominant role of central banks and conventional institutions in the financial system.”⁷ The creation of Bitcoin in 2008 ushered in a new era of digital transaction technology, which offered a technical platform that could decouple state institutions, both monetary and political, from currency.

Since then, advancements in digital technologies have enabled the development of distributed ledger technologies and crypto-assets, which can perform various functions of money - arguably more effectively.

Distributed Ledger Technology

Distributed ledger technology (DLT), which underpins crypto-assets, is simply a digital record of events that have taken place, such as transactions recorded in a company's financial ledger. However, the design of blockchains and other digital ledgers have many advantages over their traditional counterparts. Primarily it allows the details of every transaction to be stored cryptographically as data available online, with copies stored in a distributed network of nodes. In the specific case of a blockchain, each transaction is a "block" on an unchangeable "chain" of linked data.

The shared copies of the record remove the need for a centralized authority, such as a bank or legal body. This characteristic of DLTs protects people from being exposed to a single central point of failure. Instead, the blockchain is open – publicly accessible if the participants allow it – and it is practically impossible to alter a record once the block representing the transaction has been added to the chain.

Digital ledgers have been widely adopted for non-financial records including logistics, supply chain, and property ownership records. Non-financial uses of DLT are often called utility tokens – tokens that enable access to a specific product or service but are not accepted as a means of payment for other products or services.

Crypto-assets

Crypto-assets are defined as private assets that depend on cryptography and DLT as part of their perceived or inherent value. According to the European Banking Authority, there are three types of crypto-assets. Alongside utility tokens, the other two types – exchange/currency tokens and investment tokens – relate to financial functions.⁸ Of course, crypto-assets can have features spanning more than one of the categories. For example, Ether is accepted by some people as a means of exchange for goods outside the Ethereum blockchain and as a utility in granting holders access to the computation power of the Ethereum Virtual Machine.

Crypto-assets do not necessarily have the core functions of money, which is expected to provide a unit of account, a store of value, and a means of payment. Opponents maintain that crypto-assets do not provide a practical substitute for fiat money because they are too volatile to offer a secure store of value, a useful unit of account, or a reliable medium of exchange. Advocates of crypto-assets, however, argue that money does not even fulfill all these functions perfectly.⁹

Advances in technology have made the movement of prices increasingly dynamic, causing them to respond to the market forces of supply and demand at an accelerated pace. Given that exchange rates and international commodities, such as oil prices, have been so visibly volatile over the past few years, it is difficult to assert that traditional money is still a completely reliable medium of exchange or a secure store of value.¹⁰ Therefore, digital transaction technologies can, in theory, provide an independent system that is driven by market fundamentals. Eventually this system would become immune to some levels of uncertainty and volatility given that a longer track record may reduce instability and drive further adoption.

Continued technological innovation would be able to address these weaknesses even faster. The mechanisms through which crypto-assets are issued are likely to improve by using algorithms to distribute new tokens in a way that responds to conditions in the currency's market. These algorithmic "stablecoins" could make a currency's valuation much more predictable. This is already happening to some extent. "Stable" crypto-assets that are pegged to existing fiat currencies are already being issued, as well as others that apply "algorithmic central banking" to mimic typical central bank functions like inflation targeting, such as SovereignWallet. Nevertheless, for the moment, huge gaps in regulatory oversight on behalf of crypto-asset consumers still remain.

Three Types of Crypto-assets



EXCHANGE/ CURRENCY TOKENS

Enables the buying or selling of a good or service for investment purposes or for the storage of value

Example

Cryptocurrency like Bitcoin

INVESTMENT TOKENS

Provides ownership rights or entitlements to dividends or similar assets

Example

An initial coin offering

UTILITY TOKENS

Facilitates access to a specific product or information

Example

Tracking the movement of goods

Gaps in the Regulation of Crypto-assets

Inadequate suitability checks (eg. the risk of a crypto-asset activity relative to a consumer's risk appetite)

Inadequate governance arrangements to ensure risks are appropriately managed and mitigated, for example in the context of operational resilience, including data security, potentially resulting in the risk that crypto-assets may be stolen

Absent compensation schemes, such as deposit guarantee schemes, investor protection schemes, or any other compensation schemes protecting the entity's customers

Lack of a legal framework determining the rights and obligations of each party, especially liabilities rules

Decentralized Finance

Several crypto-assets and DLTs have already been integrated into the wider financial technology sector as companies and governments seek to harness their main advantage – enabling faster, cheaper, and in certain cases, more transparent transactions.

Some crypto-assets and DLTs do not retain the original characteristics of a decentralized channel given that having a permission-less environment, where no central authority oversees the transactions, is still considered a high-risk model. Despite this, however, many private sector companies are continuing to develop a parallel model that offers decentralized finance channels because this particular characteristic of crypto-assets and DLTs offers the most critical advantage.

These decentralized finance technologies, or DeFi, follow the initial motivation that drove the development of financial technologies. They offer traditional financial instruments in a decentralized structure, thus providing channels that are outside the control of governments or companies.

Early crypto-assets such as Bitcoin and Ethereum are DeFi applications, given that they are controlled by large networks of computers and not central banks or authorities. However, newer crypto-assets are not all decentralized, strictly speaking. For example, “stablecoin” assets such as Dai provide digital tokens that can be used as a global currency and cannot be controlled by central banks, but their value is pegged to the US dollar. Although this allows stablecoins to drastically reduce their volatility compared to other crypto-assets, such as Bitcoin, their value can still theoretically be influenced by the performance of the US dollar, and therefore central bank decisions.

02



SPOTLIGHT ON Libra

Facebook recently launched the Libra Association, a new cryptocurrency expected to become operational in the second half of 2020, together with 28 founding member companies. Like other crypto-assets, Libra seeks to provide a faster, cheaper channel for transferring value. Unlike any other crypto-asset, however, Libra's value will be tied to a basket of bank deposits and short-term government securities, which will include typical "safe haven" currencies like the dollar, pound, euro, Swiss franc, and yen, making it a very reliable medium of exchange.

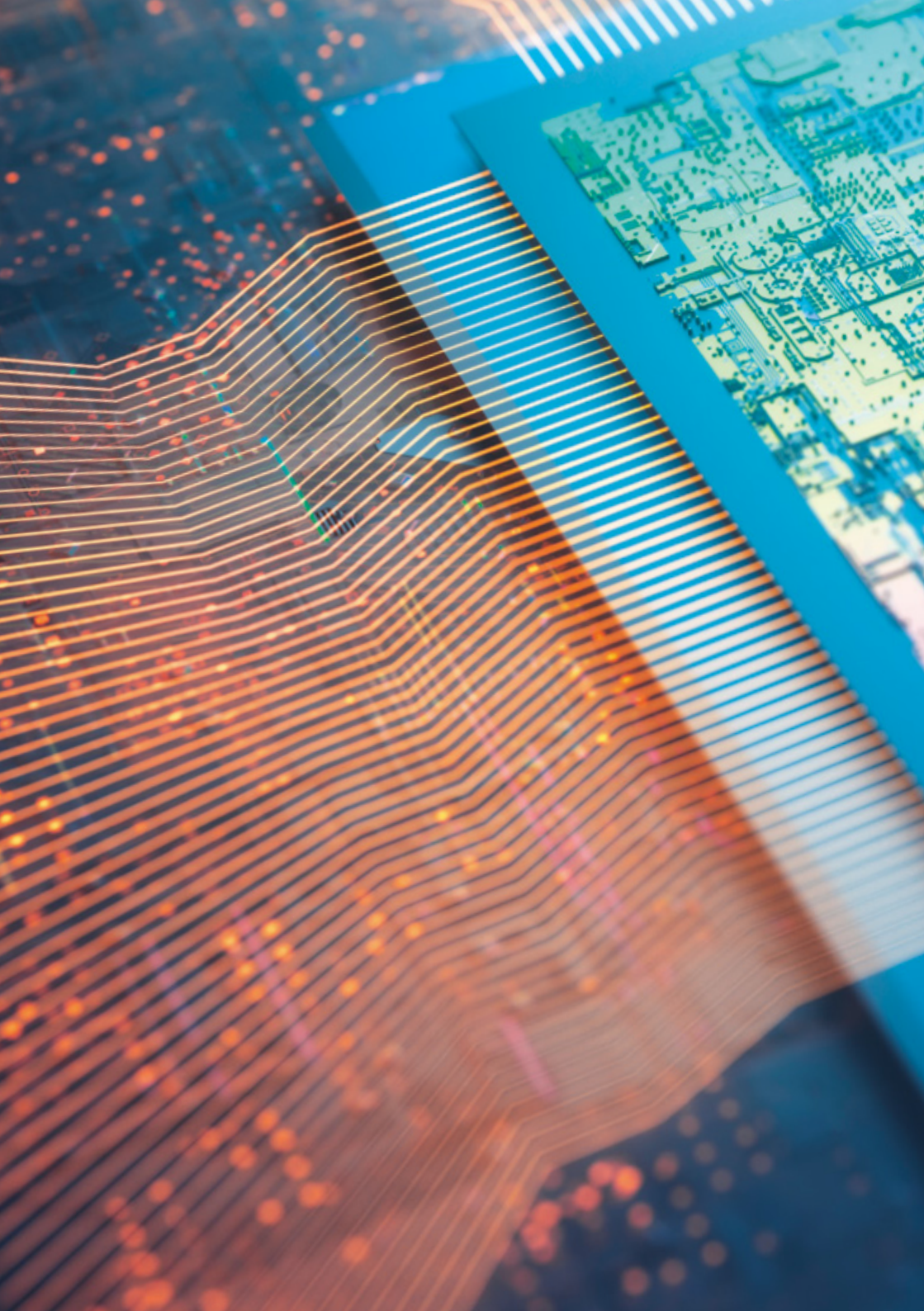
By definition, Libra will be decentralized. Eventually, at least 20% of votes in the Libra Association Council will come from node operators based on their total Libra holdings, rather than their status as a founding member. For the moment, however, the Libra blockchain is not yet decentralized. It is a "permissioned" environment where only entities that meet certain criteria are admitted into a special group that defines consensus and controls governance of the blockchain. Given that the members will form a single association, it is likely that their interests will be closely aligned. In this context, Libra is unlikely to be immune to the typical disadvantages of centralized financial exchange channels.

A Wider Purpose

Beyond this core function, the founders of Libra also seek to serve a wider purpose. According to Mark Zuckerberg, the financial infrastructure Libra is developing will empower billions of people by providing the world's large unbanked population access to financial services. Should it be achieved in its entirety, this ambition will have a number of implications for users, and potentially for central banks and the global economy as well.

At present, it is not clear whether Libra's wider purpose is a plausible goal. This is predominantly due to the various regulatory challenges it may face in countries hosting the largest share of the global population that does not have access to banking services, such as Bangladesh, China, India, Indonesia, Mexico, Nigeria, and Pakistan. Facebook has noted this as a key risk factor in its quarterly filing: "Government authorities in other countries may seek to restrict user access to our products if they consider us to be in violation of their laws or a threat to public safety or for other reasons, and certain of our products have been restricted by governments in other countries from time to time."

Given that the Libra Association will fulfill many of the functions of a central bank (i.e. minting currency and establishing its value), it offers an interesting development in the debate between entirely decentralized financial technologies and traditional government monetary authorities by providing an entirely new type of player that is not a state institution but is not strictly a decentralized system either.



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A New Currency
for a Stronger
Society



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03

Decentralized financial models seek to avoid some of the more troublesome interactions between politics and currency that are seen around the world. Such exchanges have supported the argument for separating money and politics and fueled the exploration of financial technologies over the past decade. Some argue that state-supported currencies can be too responsive to political outcomes, exposing them to significant volatility and uncertainty.

In the case of Venezuela, the 95% devaluation of the bolívar is believed to have partially been a result of government decisions. A less extreme example of the impact of political outcomes on currency volatility is the Brexit referendum, which had a visible impact on the value of the pound. Of course, in many cases central banks successfully safeguard their economies and businesses with money that has a more predictable value over the length of a typical contract. In the UAE, for example, the country's robust dollar-denominated capital means that its central bank is able to easily maintain a constant peg to the dollar, which allows businesses and households strong predictability and certainty in trade.

Proponents for de-coupling state institutions, both monetary and political, from currency are driving the exploration of crypto-assets. Conversely, others assert that technologies could erode any ability for supportive monetary policy. Given that such tools allow individuals and companies to exchange value outside of state currencies, they remove central banks' control over global monetary flows and diminish the impact that regulators currently have on monetary and economic policy. More radically, they would render state currencies obsolete.



03

A Better Kind of Money

In addition to providing companies and individuals a faster, cheaper, and more transparent way of exchanging value, which also potentially avoids political volatility and uncertainty, there are other arguments for using crypto-assets emerging from the technological disruption seen in other goods and services markets.

The rise of the sharing economy was also made possible through the advancement of digital technologies and has disrupted a number of markets including transport and hospitality. However, one of the key challenges that remains is that traditional payment mechanisms are not always suited for non-traditional marketplaces. For example, right now it is relatively easy to use traditional payment methods for services or products that are used for a day or an hour, but not necessarily for payments by minutes or seconds.

Crypto-assets allow transactions to be divided into smaller units compared to fiat currency, enabling the possibility of micropayments. Micropayments would be particularly relevant for sectors such as the sharing and service-based digital economy. Financial technologies to enable such payments already exist and are in use, but they have not yet been widely implemented. At the moment, platform operators collect profits, rather than those who are actually performing the services, such as lending their car, renting a room out in their house, or providing a freelance service.

The 2017 Venezuelan Currency Crisis

After the drop in oil prices between 2014 and 2016, Venezuela's money supply was increased, causing inflation to skyrocket.

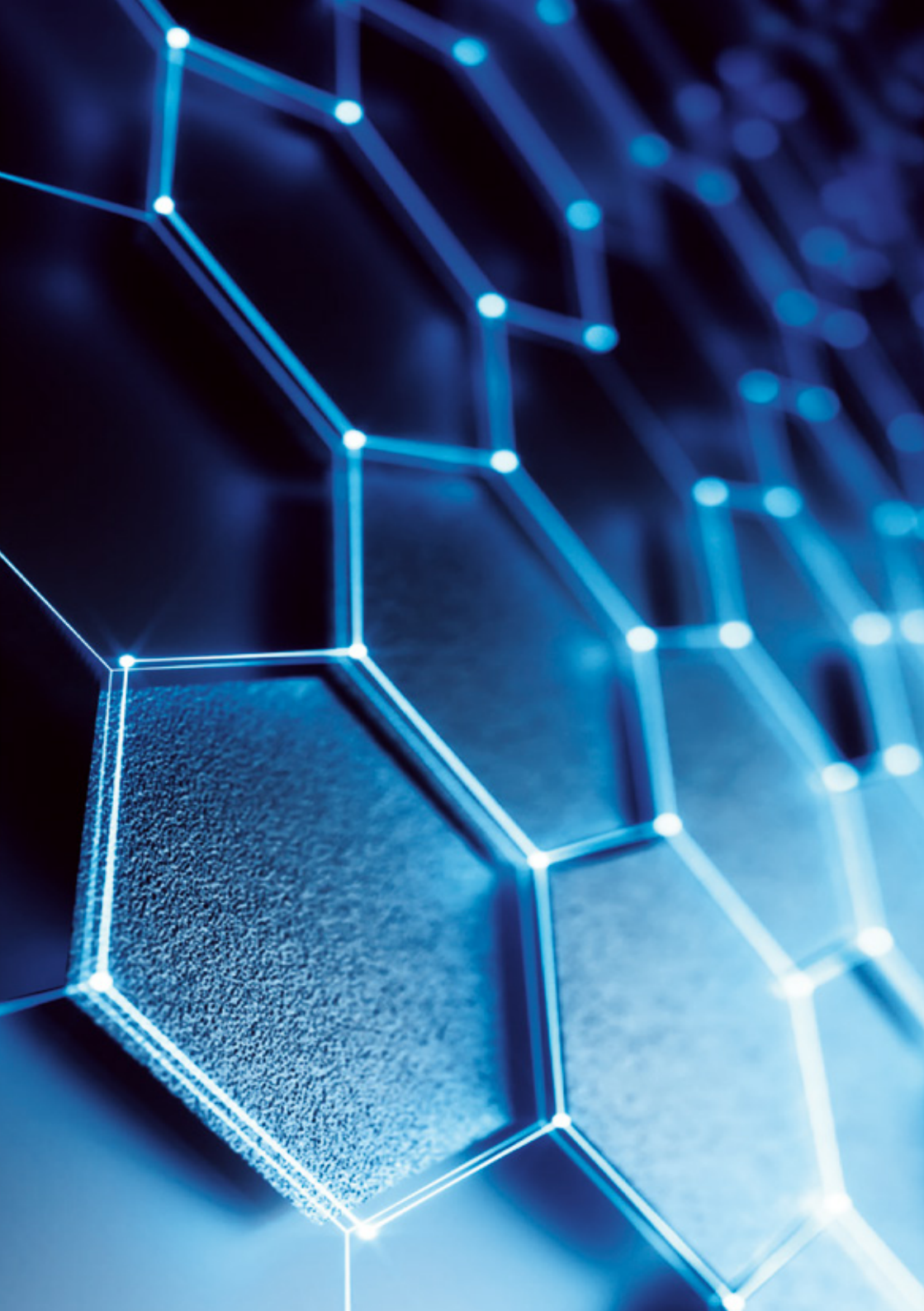
According to the International Monetary Fund (IMF), inflation in Venezuela reached 1,000,000% in 2018. Although crypto-assets could not immunize citizens against the economic recession, they did provide small numbers of people a tool to protect themselves from hyperinflation and send money to family members in other countries.



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Government
Responses

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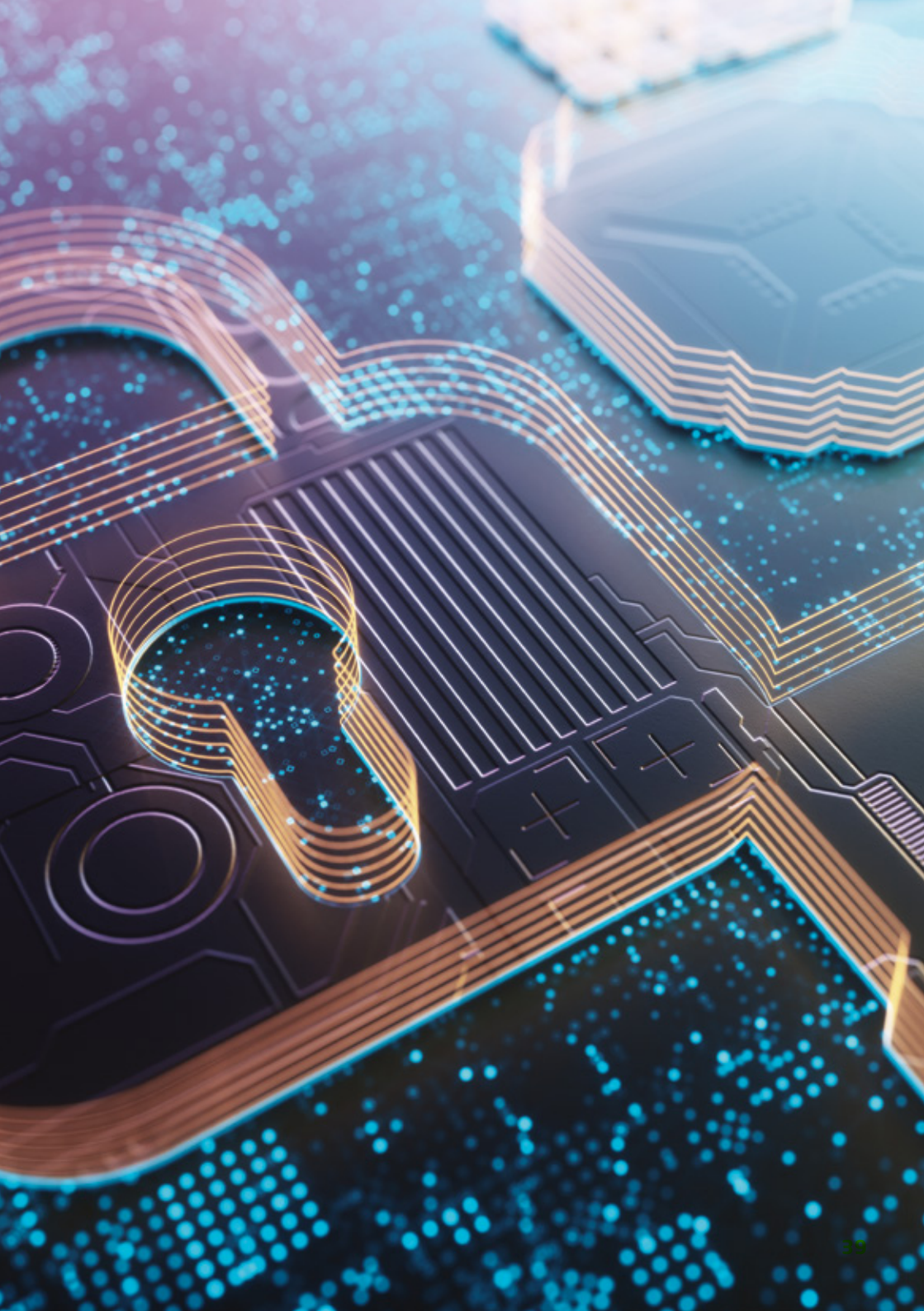


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Central Bank Digital Currencies

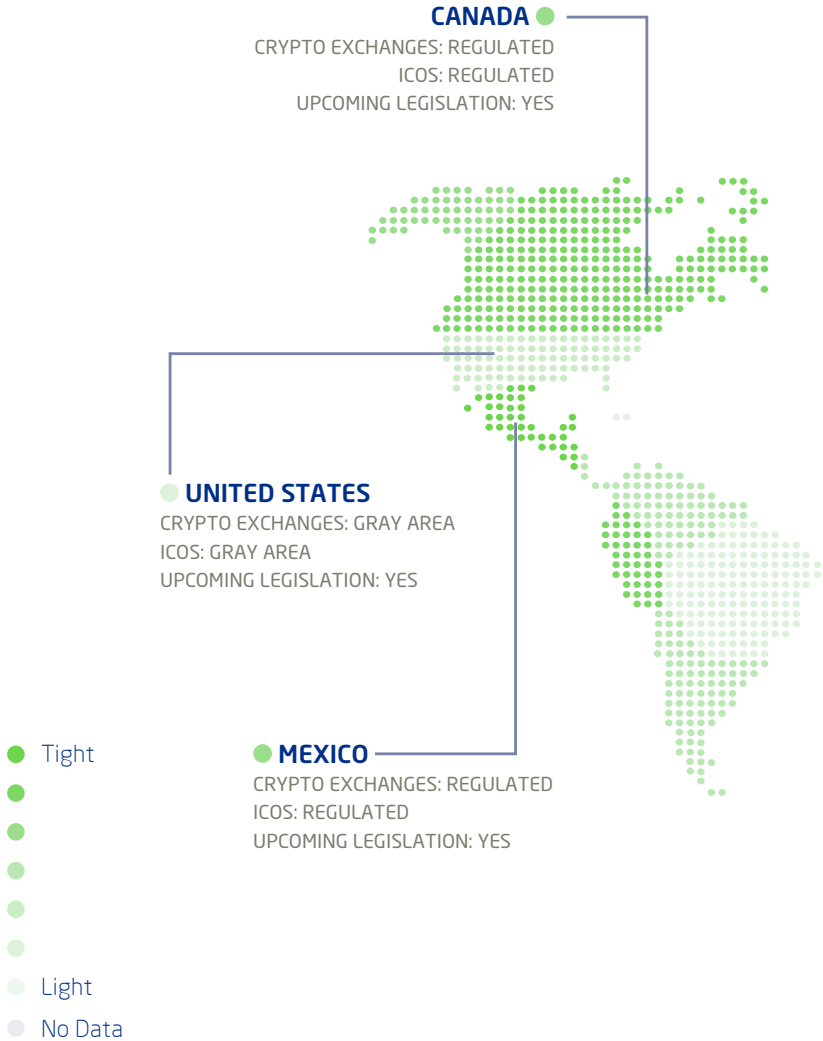
Although the cryptocurrencies Bitcoin, Ether, and Ripple are now featured alongside state currencies in some foreign exchange houses, they are not considered to be equivalent to state currencies by many governments. Some national regulators prohibit the use of Bitcoin altogether, like in Algeria and Bolivia; its use may be restricted to certain kinds of entities, like financial institutions in China; or it might be totally legal, with favorable tax laws to encourage the exchange and mining of currencies, like in Uzbekistan. Other regulators, such as in Hong Kong SAR, Abu Dhabi, and elsewhere, have established “sandboxes” where new financial technologies can be tested in a closely supervised environment.

Many forward-looking governments and monetary authorities that are exploring how the gains of financial technologies can be harnessed are also looking at the adoption of innovative financial technologies at the state level and testing the feasibility of launching their own central bank cryptocurrencies. Of course, the persistent skepticism surrounding digital currencies means many monetary authorities have confirmed they will not explore the potential of launching their own cryptocurrencies. For example, the European Central Bank has asserted that European Union member states will not issue digital currencies. However, if other large economies go forward and introduce their own cryptocurrencies, this could eventually encourage their smaller regional economic partners to follow suit.



04

Crypto Regulations by Country





UNITED KINGDOM

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

EUROPEAN UNION

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES
(FIFTH ANTI-MONEY LAUNDERING
DIRECTIVE, JAN 2020)

LITHUANIA

CRYPTO EXCHANGES: REGULATED
ICOS: REGULATED
UPCOMING LEGISLATION: YES

SWITZERLAND

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

RUSSIA

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

CHINA

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

SOUTH KOREA

CRYPTO EXCHANGES: GRAY AREA
ICOS: BANNED
UPCOMING LEGISLATION: YES

JAPAN

CRYPTO EXCHANGES: REGULATED
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

SINGAPORE

CRYPTO EXCHANGES: GRAY AREA
ICOS: GRAY AREA
UPCOMING LEGISLATION: YES

04

The United Arab Emirates

The central banks of the UAE and Saudi Arabia launched a pilot program to develop a shared digital currency for cross-border bank transactions in 2019. The aim is to drive the transformation of the remittance industry and build investor trust in cryptocurrencies. The proposed currency will rely on the use of a blockchain database between the two central banks – Saudi Monetary Authority and UAE Central Bank – and participating retail banks. It will strive to “safeguard customer interests, set technology standards and assess cybersecurity risks and determine the impact of a central currency on monetary policies.”¹¹

Singapore

Singapore's government and the Monetary Authority of Singapore (MAS) launched a pilot project in 2016 to explore state digital currencies. Project Ubin tested the use of DLTs as a means to make financial transactions and processes more transparent, resilient, and cost-efficient. The country's central bank issued a digital currency and worked in collaboration with the private sector, specifically for the clearing and settlement of payments and securities.

The pilot was completed successfully in 2018, demonstrating that the settlement of tokenized assets on blockchain platforms is possible while maintaining investor protection.

Although crypto-assets are not considered legal tender in Singapore, general regulations surrounding such financial technologies have been developed and implemented comprehensively. This suggests that crypto-assets may join mainstream payment methods in the future, given that the government aims to develop an ecosystem that is friendly to cryptocurrencies. The country has already been recognized for its large-scale support of crypto-related technologies and financial innovation.

Under the new Payment Services Act, the MAS has laid the foundation for incorporating blockchain into Singapore's securities framework and payment systems. This has fast-tracked blockchain-based partnerships, furthering the cause of the cryptocurrency asset class. Moreover, Singapore's central bank has also announced it is broadening its regulatory regime for payment providers to bring certain cryptocurrencies under its jurisdiction. Cryptocurrency service providers are expected to be licensed under the new regulatory framework.¹³ The adoption of cryptocurrencies as tender is expected to draw global crypto exchanges to Singapore, drive further innovation and growth in the fintech sector, and increase employment and the private sector's access to finance.

Canada and Singapore Digital Foreign Exchange

In order to demonstrate the strength of the system in the global context, the central bank of Canada and the Monetary Authority of Singapore successfully exchanged digital currencies using blockchain technology. This first such trial between two central banks concluded in May 2019. The Bank of Canada's experimental domestic payment network, Project Jasper, was linked to Singapore's Project Ubin network as part of the test. It was done in partnership with Accenture and JPMorgan Chase & Co. Both countries' central banks have also collaborated with the Bank of England on the use of central bank digital currencies to make the cross-border payments process cheaper, faster, and safer.



Sweden

Sweden's central bank, the Riksbank, is conducting a pilot project with Accenture to develop a proposal for a technical solution for an e-krona. The objective is to create, in an isolated test environment, a digital krona that is simple and user-friendly. The technical solution will be based on distributed ledger technology. The main aim of the pilot is for the Riksbank to increase its knowledge of central bank-issued digital krona. The pilot project runs until the end of February 2021, with the option to extend and further develop the technical solution.¹⁴

Although the e-krona will be entirely digital, it will be "administered, owned, and regulated by a state entity." This moves it closer to existing fiat currencies as opposed to other crypto-assets. The Riksbank argues that the e-krona would be much safer if issued through them as a central authority, like fiat currency. Their findings indicate that a shift toward an entirely cashless society would result in significant gains for the majority of households and companies by allowing them to make faster, cheaper transactions. However, it could also be detrimental to those who do not have easy access to digital banking, including elderly citizens and low-income households.

Additionally, the Riksbank noted that future digital currency could limit the key mechanisms they have to promote a safe and efficient financial sector. This would reduce their ability to influence the economy. If private entities gained too much responsibility for payments, this could lead to problems such as ensuring financial security in crisis situations.

A decorative border on the left side of the page, consisting of a repeating pattern of US dollar bills (one-dollar bills) arranged in a geometric, interlocking pattern. The bills are oriented vertically and slightly rotated, creating a textured, border-like effect.

Conclusion

It is clear that distributed ledger technologies and their function as crypto-assets improve many of the existing global monetary system's operations. Simultaneously, it is also clear that these technologies continue to pose major challenges for authorities in terms of regulation and financial stability.

Central bank digital currencies will allow authorities to provide payment mechanisms that ensure stability without necessarily limiting private financial technology innovations. However, it is argued that the biggest gains of these technologies will only be harnessed when they are used to enable completely decentralized currencies. Allowing companies to straddle decentralized finance and the traditional finance space may be one of the most impactful ways that governments can increase the pace of innovation while maintaining financial stability.¹⁵

Private sector financial institutions, particularly banks, will face more immediate challenges to their business models, as new technologies offer key advantages such as overcoming information asymmetries between banks and customers, potentially replacing many of the functions of financial institutions. Recognizing this threat, many large banks have already started developing their own financial technology platforms and services in order to maintain market power. Nevertheless, it is likely that they will find it difficult to continue collecting large economic rents. Further research still needs to be done to determine how the financial sector can evolve to remain relevant.

On the global scale, new ways of approaching the monetary system will be critical. The system currently tightly binds countries into one large global economy, which means that

A decorative border on the right side of the page, consisting of a repeating pattern of US dollar bills (one-dollar bills) arranged in a grid-like fashion, slightly offset from each other.

economic shocks are transmitted rapidly. The spread of financial uncertainty across the global economy is already very fast, as seen in the 2008 global financial crisis and the 1997 Asian financial crisis. Such crises could be amplified if governments do not work toward building an international approach to financial technologies.

Existing international efforts include the Financial Action Task Force, a global standard-setting body that is providing its members guidance on how they should address money laundering and terrorist-financing risks associated with crypto-assets. Similarly, the Financial Stability Board, which coordinates financial regulation for the G20, is studying ways to monitor the growth of crypto-assets in order to eventually identify emerging threats to stability. These bodies agree that though crypto-assets do not currently pose a threat to stability, they could at some point in the future and that addressing these threats will demand a global approach. Smaller countries and more open economies in particular will be more vulnerable to global financial risks and therefore need to ensure they are connected to the broader discussion around the regulation and development of financial technologies.

Conceptually, however, states and their citizens need to be aware that these technologies could prompt a deeper transformation, not only for their economy but also for their society. Although previous industrial revolutions left the institutions of society and government unchanged, the ongoing transformation could challenge the social contract between governments and individuals by reducing some layers of bureaucracy and limiting the market power of large commercial organizations. As argued by Sir Mark Walport, the UK government's chief scientific advisor from 2013 to 2017, governments themselves should use these technologies to reduce forms of centralized control.¹⁶ Walport emphasized that governments should work with new governance structures, not against them, enhancing their accountability and, in doing so, be the first to challenge the status quo.

Notes

1. International Monetary Fund, "Money, Transformed: The Future of Currency in a Digital World," 2017.
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