

# Central Bank Digital Currencies and International Crises: Toward an Authoritarian International Monetary Order?

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## Abstract

Central bank digital currencies (CBDCs) may be viewed as an adaptive response to a perceived threat from stablecoins, but international crises matter. Covid-19 induced a top-down digital transformation of the economy, a more state-led economy with contact-free payments, while Russia’s subsequent war in Ukraine and the Western sanctions against Russia have further increased the incentive to use blockchain technology and CBDCs as political enterprises to neutralize the effects of sanctions, and thereby as weapons in economic warfare. This article considers Covid-19 as a turning point, amplified by Russia’s war in Ukraine, and applies fiscal sociology to analyze the use of blockchain, cryptocurrencies, and CBDCs as policy tools to establish economic and political hegemony, where CBDCs may contribute to the emergence of an authoritarian international monetary order. A fragmented order, involving conflict between an autocratic society bloc and an open society bloc, would be feasible, but such a conflict may make open societies more authoritarian. In open societies, cryptocurrencies and stablecoins belong to the market square, while CBDCs belong to the public square, but CBDCs may blur the boundaries of those squares, submitting the market square to the public square. Payment systems may become public–private partnerships controlled by central banks, turning the squares into fortresses and transforming them from open access orders to limited access orders.

## Keywords

blockchain; digital currencies; Covid-19; cryptocurrencies; monetary system; Russia–Ukraine war; sanctions; stablecoins

## 1. Introduction

Central bank digital currencies (CBDCs) may be viewed as an adaptive response to a perceived threat from stablecoins—which are a kind of cryptocurrency, a token based on distributed ledger technology (DLT)—that are backed by asset reserves such as fiat currencies and precious metals. However, digital currencies challenge central banks' control of money, so-called monetary sovereignty. A CBDC may restore monetary sovereignty if global stablecoins become widely used (Ahnert et al., 2022). Cryptocurrencies, which are based on permissionless blockchain and use DLT, are hard to regulate; in contrast, stablecoins reduce the uncertainty around their underlying value by being linked to various assets, and the global ones spurred central banks to pursue government-backed digital currencies (Arner et al., 2020). Stablecoins offer several advantages that pose a challenge to central banks. For example, because they are less volatile than cryptocurrencies and they enable large tech companies (hereafter BigTechs) to create and generate data on transactions, stablecoins could become important in terms of scale within the ecosystem, while CBDCs could counterbalance this agglomeration of data of transactions by private corporations, but privacy remains an open issue (Bilotta, 2021). Arner et al. (2020) consider the Libra project, China's digital yuan (e-CNY), both of which were announced in 2019, and the Covid-19 pandemic in 2020–2022 as systemic catalysts.

The Libra project made central banks reconsider their hesitant attitude to sovereign digital currencies (SDCs), the e-CNY was a first-mover SDC that used a token-based centralized permissioned DLT, and Covid-19 made it necessary to efficiently channel financial support and incited the e-CNY, thus inducing other central banks to follow. Arner et al. (2020) use SDC to denote “any digital form of official currency issued by or on behalf of the state that is different from traditional central bank accounts.” They “treat CBDC merely as a subcategory of SDC that is issued by a central bank.” There are state-led digital currencies other than CBDCs, so CBDCs are SDCs, but not all SDCs are CBDCs. Didenko and Buckley (2018) consider Venezuela's oil-backed Petro cryptocurrency to be an SDC; it is issued by the state but not tied to central bank accounts. A CBDC is a liability of the central bank, involving central bank accounts and going beyond wholesale interbank and securities transaction services, thus establishing general-purpose or retail CBDCs. Even the general public may hold central bank accounts, unless third-party mediums are used, the Bahamas' Sand Dollar being a case in point (Bilotta & Botti, 2021), thus suggesting an evolutionary selection of CBDCs among SDCs.

The Covid-19 pandemic decreased human freedom, which fell significantly in 2020 and remained low in 2021, and this included significant declines in the rule of law, freedom of movement, expression, and association and assembly, and freedom to trade (Vásquez et al., 2023). Human freedom combines economic freedom and personal freedom with equal weight. This article considers Covid-19 as a turning point, amplified by Russia's war in Ukraine, and applies fiscal sociology to analyze the use of blockchain, cryptocurrencies, and CBDCs as policy tools to establish economic and political hegemony and argues that CBDCs may contribute to the emergence of an authoritarian international monetary order. A fragmented international monetary order, which involves conflict between an autocratic society bloc (low human freedom) and an open society bloc (high human freedom), would be feasible, but such a conflict may make open societies more authoritarian and more autocratic, thus making the international monetary order more authoritarian.

This article combines fiscal sociology, considering the state and the market as nested emergent orders based on a network of political and market enterprises in a conjunctive economy (Wagner, 2007); entangled political economy, considering the polity and economy as arenas and the economic system as a polycentric network

while applying an open-ended-evolutionary approach (Wagner, 2020); and evolutionary economic analysis of the market economy as an ecosystem of commodities and social products, economic development as evolution of human artifacts, and niche expansion (Boulding, 1981). It considers CBDCs as political enterprises in the conjunctive economy and cryptocurrencies, in particular stablecoins pegged to fiat currency, as market enterprises in an ecosystem of digital currencies. In a conjunctive economy, political and market enterprises operate within a network in which they are connected to each other. By “enterprise” we mean economic activity rather than a production organization or legal entity. This leads to the research question:

Are CBDCs, as political enterprises, likely to crowd out stablecoins, as market enterprises, from the ecosystem of digital currencies in a way that contributes to an authoritarian monetary order by giving the state total control over money?

The article is structured as follows. Section 2 presents the literature. Section 3 develops the theoretical framework to analyze stablecoins and CBDCs. Section 4 studies cryptocurrencies, especially stablecoins, as blockchain-based market enterprises. Section 5 studies CBDCs as political enterprises and their differences to stablecoins. Section 6 addresses the impact of Covid-19. Section 7 considers the impact of Russia’s war in Ukraine. Section 8 states the conclusion.

## 2. A Literature Review on Stablecoins and CBDCs

The literature presents stablecoins and CBDCs as the two major digital currency alternatives today. CBDCs are presented as a response to a perceived threat imposed by stablecoins on the monetary system, but this view is challenged. The assertion that BigTech stablecoins are responsible for the evolution of CBDCs is both supported and challenged, as foreign CBDCs may also contribute to their evolution. There is also a concern that CBDCs may contribute to digital authoritarianism.

Bilotta and Botti (2021) argue that stablecoins and CBDCs have the potential to obtain scale in the future, with CBDCs constituting a new form of central bank money that, in addition to cash and reserves, is held by financial institutions as a digital form of sovereign currency and, as a liability of the central bank, may replace cash. The literature considers stablecoins and CBDCs as substitutes, and they thus compete with one another.

According to Cesaratto and Febrero (2023), the issuance of stablecoins challenges the uniform currency of the monetary system because stablecoins involve different units of account. A shift from bank deposits to stablecoins could influence the way banks operate and the monetary transmission mechanism. While CBDCs are often presented as a potential response to this threat, Ahnert et al. (2022) make an even stronger claim that CBDCs are the only response to stablecoins—an explosive mix of BigTech and cryptocurrencies—which they consider to be subject to the same risk as banknotes under free banking or money-market mutual funds. In contrast, Cesaratto and Febrero (2023), who regard neither stablecoins nor CBDCs as beneficial to society, question whether CBDCs are a proper response since this could lead to a conversion of deposits to CBDCs, resulting in narrow banking similar to the Chicago Plan, which implies full reserve banking.

Arner et al. (2020), using the broader concept of SDCs, consider the evolution of CBDCs as a sequence of events in which the Libra project and China’s e-CNY, which were both announced in 2019, and the Covid-19 pandemic in 2020–2022 were systemic catalysts of SDCs, and thereby CBDCs. In their analysis, the Libra

project made central banks reconsider their hesitant attitude toward SDCs, while the e-CNY was a first-mover SDC that used a token-based centralized permissioned DLT. At the same time, Covid-19 made it necessary to efficiently channel financial support and incited the e-CNY, thus inducing other central banks to follow. They argue for causality from the combined effect of these three events. In contrast, Cesaratto and Febrero (2023) argue that widespread use of stablecoins would make them difficult for central banks to control, but the same also applies to foreign CBDCs. Stablecoins could function as narrow money under a synthetic CBDC regime where they are 100% backed by central bank reserves, thus making them unproblematic. However, the collapse of the Libra/Diem project (the Libra project later changed its name to Diem before it was abandoned) illustrates that issuers would rather give up than accept regulations. Cesaratto and Febrero (2023) provide two lessons: Firstly, BigTech stablecoins did not impose a durable big threat; and secondly, they could be neutralized by central banks by requiring them to be 100% backed by central bank reserves.

There is concern that CBDCs are tools for digital authoritarianism, referring especially to China. Bilotta (2021) argues that CBDCs could adversely foster an unprecedented centralization of information to the government; fully traceable financial transactions would facilitate political surveillance in domestic markets, particularly in authoritarian regimes. Harsono (2022) points out that cryptocurrencies were restricted in China because they were viewed as competitors to the e-CNY, and they were eventually banned in 2021. Meanwhile, non-fungible tokens (NFTs), i.e., blockchain-based tokens, were used for Covid-19 passports and supply-chain traceability, and the Blockchain-based Service Network that was announced in 2019 offered unparalleled surveillance capabilities of China's population, in addition to the Social Credit System. Laband (2022) finds the e-CNY to be a dangerous tool for authoritarian social control because e-CNY wallet users may have their accounts closed when using the Social Credit System. The e-CNY can also make sanctions ineffective as a foreign policy tool if it is interoperable with other CBDCs. However, Jossey (2022) points out that since CBDCs could give governments a powerful tool for economic and social control with unprecedented intrusion into the financial privacy of individuals, some authoritarian regimes and developing countries have already embraced them while banning or discouraging nongovernmental cryptocurrencies, which is inducing Western governments to follow, claiming benefits, in many cases due to stablecoins.

In summary, stablecoins and CBDCs are seen as the two major digital currency alternatives today, but there is disagreement about both whether CBDCs provide a proper and natural response to stablecoins and their advantages and disadvantages, and there is also concern about CBDCs being used as authoritarian tools. This article aligns with the CBDC-critical strand, arguing that CBDCs are neither a proper nor a natural response to stablecoins and that CBDCs serve as an authoritarian tool. The article's contribution is to analyze the evolution of stablecoins as market enterprises and the evolution of CBDCs as political enterprises, both of which are competing to fill the same niche. CBDCs could crowd out stablecoins and establish monetary hegemony for the state, giving it full control over money and thereby making society more authoritarian.

### 3. A Theoretical Framework on Stablecoins and CBDCs

The theoretical framework combines fiscal sociology and the closely related entangled political economy with evolutionary economic analysis.

Fiscal sociology, following Wagner (2007), considers the state and the market as emergent orders or arenas of social interaction, calling them the public square and the market square, respectively. They are nested

together through a network of political and market enterprises in a conjunctive economy, implying that the state is an emergent order that is endogenous, like the market, and an institutional process that involves fiscal entrepreneurship. The state and the market interact with each other as spontaneous (emergent) orders rather than the state taking on the role of an organization that intervenes in the market. The public square (the state) and the market square (the market) are interdependent because they are nested through a network of political and market enterprises that are linked to each other. Wagner sees fiscal phenomena, such as the state budget, as emergent orders, and he stresses the coevolution of public and market squares. This article analyzes CBDCs as political enterprises and stablecoins as market enterprises in the digital currency ecosystem.

Fiscal sociology anticipated entangled political economy, and they are consistent. As Wagner (2020) argues, entangled political economy considers polity and economy as arenas and the economic system as a polycentric network, while economies evolve as creative and volitional systems. This implies an open-ended and evolutionary approach in contrast to the orthodox separated political economy. Along these lines, Wagner (2012) points out that macrophenomena, including holistic items such as institutions, projections of the future, and beliefs and presumptions, emerge from or supervene on micro-level actions such as the productive activities of agents, while the ecology of plans is living through entry of new plans, revision of old plans, or plan exits. This corresponds to Boulding's (1981) view of the market economy as an ecosystem in which commodities and social products interact with each other ecologically and survive if they find a niche in the free-market ecosystem, in contrast to the planned economy, where niches are determined by planners as a single biological organism, like the centrally planned chicken that follows the plan in its fertilized egg.

The market economy involves learning through social interaction, corresponding to coexistence of state and market as emergent orders in fiscal sociology as well as entangled political economy. Boulding's (1981) distinction between centrally planned chickens and free-market ecosystems corresponds to the distinction between limited access orders and open access orders following North et al. (2011). Using these distinctions, we characterize open societies as polycentric open access orders with a free-market ecosystem and an ecology of digital currencies, while autocratic societies are monocentric limited access orders with a planned economy—a centrally planned chicken—where digital currencies are subject to the centrally controlled legal tender digital currency, which is a limited access order.

A fragmented international monetary order that involves conflict between an autocratic society bloc (low human freedom) and an open society bloc (high human freedom) would be feasible, but such a conflict may make open societies more authoritarian and thus more autocratic. In open societies, cryptocurrencies, including stablecoins, belong to the market square while CBDCs belong to the public square. However, CBDCs may blur the boundaries of those squares by submitting the market square to the public square through state control over money. Payment systems may become public-private partnerships that are controlled by central banks, turning the squares into fortresses and transforming them from open access orders to limited access orders. Hence, open societies may become more autocratic, and an authoritarian international monetary order with limited access may emerge.

According to Boulding (1981), economic development is the evolution of human artifacts, and development leads to niche expansion, through which empty niches are created and destroyed. Fiscal sociology suggests that the state (the public square) and the market (the market square) are interacting ecosystems, like polity and economy in entangled political economy, so both are characterized by niche expansion. The monetary

system has a niche for cash in the public square and a niche for credit money (deposits) in the market square. For the latter, banks create money out of nothing when issuing credit, which lends to complementarity between political and market enterprises and thereby establishes some balance between the respective squares. However, the niche for digital currencies is open to both the public and the market squares, which makes CBDCs as political enterprises and stablecoins as market enterprises substitutes and thus competitors.

Replacing cash with a CBDC replaces one political enterprise with another. They are two forms of political enterprises, so the balance between the market square and the public square would not be affected. Similarly, replacing bank deposits, i.e., credit money or bank money, with stablecoins would replace one market enterprise with another. This would not directly affect the balance between the market square and the public square, but it would affect the monetary transmission mechanism and thereby the public square. Stablecoins differ from credit money; both are private, but credit money is created *ex nihilo* when commercial banks create deposits by granting credit. By challenging both commercial banks and central banks, and thereby the monetary system, stablecoins may affect the balance between the market square and the public square. However, a CBDC may challenge both credit money and stablecoins, filling a niche and thus making the public square dominant over the market square, which could result in 100% reserves banking. Cesaratto and Febrero (2023), who regard neither CBDCs nor stablecoins to be beneficial to society, question whether CBDCs are a proper response since they could lead to a conversion of deposits to CBDCs.

This would result in narrow banking similar to the Henry Simons and Irving Fisher's Chicago Plan, the key feature of which was the separation of the monetary and credit functions of the banking system by requiring 100% backing of deposits by government-issued money and for new bank credit to be financed through retained earnings in government-issued money or borrowings of existing government money—not by the creation of deposits *ex nihilo* by banks, which is a transition from privately issued, debt-based money to government-issued, debt-free money (Benes & Kumhof, 2012). This kind of narrow banking gives the government full control over money, thus giving the public square full control of the market square. This would make the monetary system more authoritarian and society more autocratic.

#### 4. Stablecoins as Blockchain-Based Market Enterprises

The blockchain is a ledger that records all transactions in a network, and the accounts of all these transactions are distributed among the participants using DLT. The blockchain acts as a protocol for coordination, or distributed consensus over a shared digital database, and functions as a technology of trust. DLT is a system of electronic records that establishes consensus on the authoritative ordering of cryptographically validated transactions, and the ledger provides the authoritative version of these records. The distributed ledgers thus function as a universal Turing institution that can simulate the institutional characteristics of any other institution (Berg et al., 2019). The blockchain is also described as a distributed ledger that provides a payment system, where the account-keeping of all transactions taking place from the start to the present is distributed among all users in a chain of blocks (Amato & Fantacci, 2020).

Cryptocurrencies are digital assets for which consensus is ensured over the shared ledger, and they are created by solving cryptographic problems. Cryptocurrencies are both artifacts—tokens rather than money—and digital assets that maintain and ensure consensus over the distributed ledger (Berg et al., 2019), but they are also

decryption devices for encrypted messages authorizing a transaction (Amato & Fantacci, 2020) and rewards for solving the cryptographic problem necessary to add a new block, thus validating new transactions as assets that are not yet money (Malherbe et al., 2019). Hence, cryptocurrencies may be referred to as cryptoassets. Nevertheless, cryptocurrencies can serve as units of account and media of exchange in blockchains, and there are interfaces among them; stablecoins have interfaces with fiat currencies, linking political and market forces, in line with entangled political economy (Potts et al., 2022).

Stablecoins are market enterprises, but they are linked to monetary policy as a political enterprise. A stablecoin is a cryptocurrency pegged to a fiat currency (Berg et al., 2019), a synthetic fiat currency, or a tokenized version of government money (Potts et al., 2022). Stablecoins provide a new asset class that may compete with government-issued fiat currencies because of their backing by gold or other assets; cash-based backed by cash (e.g., bank deposits), asset-based backed by noncash equivalent assets (e.g., bonds or commodities), cryptoasset-based backed by cryptoassets, or unregulated—classified as (a) tokenized funds if cash, deposits, and electronic money funds, (b) off-chain collateralized stablecoin assets if securities, commodities, and cryptoassets are held by an intermediary, (c) on-chain collateralized stablecoin cryptoassets if cryptoassets are held directly on the blockchain, or (d) algorithmic if uncollateralized and based on expectations (Girasa, 2023).

Unlike unbacked cryptoassets, which are pure assets and not a liability to anyone, stablecoins are liability driven. This stands in contrast to bank money, which is asset driven. Issuers of stablecoins create a liability (stablecoins) when they receive assets, while banks create liability (deposits) *ex nihilo* when they create assets, i.e., grant credit (Cesaratto & Febrero, 2023). When using a permissionless blockchain, stablecoins are hard to regulate, and global stablecoins represent a real threat to the existing monetary and payments infrastructure (Arner et al., 2020). Because stablecoins are pegged to official currencies, they make the crypto ecosystem possible. This challenges official currencies in particular because it makes stablecoins operational in the emerging Web3, and thereby leads the Bank for International Settlements (BIS) and central bankers to want to prohibit them or regulate them away (Jossey, 2022).

Facebook's now-abandoned Libra/Diem project was an attempt to create a BigTech global stablecoin. The advantages of the Libra system included a unification of global values and measures by using a basket of currencies and issuing a worldwide currency with intrinsic value that was backed by real assets with the potential to become a super-sovereign currency (Tan & Xue, 2021). However, the project's goal was never realized and what we have instead are multiple stablecoins that represent a possible denationalization of money along the lines of Hayek (1976a, 1976b) and therefore free currencies and free money rather than free banking, i.e., digital multi-currency systems. This represents a shift from the nation-state to some semi-discrete space created by the digital infrastructure and its ecosystem (Potts et al., 2022).

## 5. CBDCs as Political Enterprises

CBDCs are political enterprises that display elements of cryptocurrencies but use permissioned blockchains in contrast to the permissionless blockchains of stablecoins. A CBDC can be defined as the possibility for the private non-financial sector to hold current accounts at the central bank. These accounts may consist of digital banknotes if non-interest-bearing, but they may also cause bank disintermediation if interest-bearing, and in an extreme case they may lead to full disintermediation and thereby narrow banking along the lines of the

Chicago Plan (Cesaratto & Febrero, 2023), thus giving the government full control over money. CBDCs are a new form of digitalized sovereign currency, alongside cash and reserves, that are a liability of central banks and thus require design choices, such as retail (general purpose) vs. wholesale, token-based vs. account-based, and expansion of balance sheets vs. replacement of existing liabilities (Bilotta & Botti, 2021). A general-purpose CBDC is considered here.

Some countries are going cashless, like Sweden and China, making their CBDC projects more successful, but the desire to implement them differs. China is an autocratic society with very low human freedom, ranking 149th in the Human Freedom Index in 2021, while Sweden is an open society with very high human freedom, ranking 5th in the same index and year (Vásquez et al., 2023). China needs a CBDC to control digital money, while Sweden has been predicted to become the first cashless society in the world by 2023; the Swedish central bank has worked on a CBDC, the e-krona, since 2017 (Arner et al., 2020; Bilotta & Botti, 2021). By 2021, both countries had conducted pilot testing and could have introduced their CBDCs (Dupuis et al., 2021). Despite Covid-19, the Swedish CBDC has not been realized yet. One potential explanation is that Sweden is a virtually cashless open society, where digital retail payments are made through a payment application operated by banks (Swish). While cash is disappearing in Sweden, the use of cash is still widespread in Europe (Cesaratto & Febrero, 2023), even though Covid-19 has given an impetus to the use of online transactions and contactless instruments (Passacantando, 2021). Hence, there is no need for a CBDC to replace cash, as proposed by D'Ippoliti et al. (2024).

A group of central banks that represent rather open societies with high human freedom are collaborating on CBDCs together with BIS—Bank of Canada, Bank of England, Bank of Japan, European Central Bank, Federal Reserve, Sveriges Riksbank, and Swiss National Bank. This group considers CBDCs as complementary to the cash provided by central banks while highlighting the coexistence of central bank and private digital currencies in the ecosystem (Bank of Canada et al., 2020). There seems to be a commitment to the current monetary system, thus maintaining the balance between central bank money in the public square and credit money in the market square.

Berg et al. (2019) argue that rather than creating new fiat currencies (CBDCs) or cryptocurrencies that resemble hard money (stablecoins), the existence of cryptocurrencies will tether viable fiat currencies to cryptocurrency hardness. However, while cryptocurrencies open the door to the denationalization of money and currency competition, their volatility prevents them from functioning as good money unless they achieve stability in the consumer goods market as digital-community currencies (Nishibe, 2020). This would mean further decentralization, making cryptocurrencies more community-specific by adapting features of complementary currencies that are adapted to the development of the local real economy. However, central banks desire centralization, which essentially means replacing cryptocurrencies with CBDCs to re-establish the one-currency system, with bad money driving out the good. Nevertheless, BIS attributes the collapse in 2022 of the market size of cryptocurrencies and decentralized finance following its peak in 2021 to fragmentation among cryptocurrencies. BIS argues that instead of cryptocurrency fragmentation, decentralization can be achieved through permissioned DLT (BIS, 2022, Chapter 3). This would crowd out stablecoins, thus establishing public square hegemony.

Is it possible for stablecoins and CBDCs to coexist? The policy experiment Project Helvetia in Switzerland, a collaboration between the SIX Group with its Digital Exchange distributed ledger platform, the Swiss



National Bank, and the BIS Innovation Hub, explores settlement of tokenized assets in central bank money, specifically a stablecoin and either a wholesale CBDC or the extant interbank clearing system. The outcome of the experiment suggests that coexistence of a stablecoin and a wholesale CBDC is feasible (BIS et al., 2020). However, this CBDC differs from the general-purpose CBDC considered here, for which there is competition between stablecoins and CBDCs. Submitting stablecoins to government control would favor the CBDCs. Carstens (2021) argues that stablecoins need to be submitted to regulation and supervision to be useful.

In fact, BIS argues for a new monetary system in which central banks are the tree trunks surrounded by commercial banks and other private payment service providers in diverse ecosystems, but with regard to stablecoins, even if they were stable they would be unable to underpin the future monetary system, as they import their credibility from fiat currencies without being subject to the same regulation as commercial bank credit money and the central bank as lender of last resort (BIS, 2022, Chapter 3). Stablecoins are seen as undesirable because they go beyond the control of central banks. Ultimately it is not stability that is the problem, but that stablecoins challenge the central bank's position, while CBDCs are considered unproblematic and a means to preserve the two-tier financial system even though they may cause bank disintermediation. CBDCs are to be issued in a way that maintains a two-tier system within some hybrid public-private partnership, where the private sector handles payments while central banks provide backup using CBDC balances as settlements (Carstens, 2021). This suggests public square dominance, although with some room for the market square.

The Western shift from caution to enthusiasm for CBDCs was spurred by both China being a first-mover with global ambitions, and the BigTech Libra/Diem project, but the West should promote open crypto marketplaces where new entrants can compete with BigTech companies on trust (Jossey, 2022). This would be an open society response with multiple digital currencies instead of a potentially autocratic CBDC that provides governments with a tool for economic and social control, thus submitting the market square to the public square as CBDCs fill the digital currency niche. This transformation reflects a shift from open society towards autocratic society by mimicking the autocratic ones, thus submitting the market square to the public square, by letting CBDCs fill the digital currency niche, thereby making a transition from open access order to limited access order.

## 6. Covid-19 and the Rise of Digital Currencies

Covid-19 was an international crisis that contributed to the rise of digital currencies through a top-down digital transformation of the economy toward contact-free payments. Covid-19 was a major impetus to the use of online transactions and contactless instruments and opened the door to big commercial players. However, while the European Central Bank would create a digital euro with the aim to preserve the monetary system from the challenges of stablecoins and early-mover foreign central banks, bank disintermediation still presents a threat since European firms rely heavily on bank intermediation, thereby causing fragmentation in European payment systems, and the public might not even accept a digital euro (Passacantando, 2021). During Covid-19, a global stablecoin was initially regarded as beneficial to global exchange because it facilitated both contactless payments and a global payment system, as illustrated by the eventually abandoned Libra/Diem project. However, Covid-19 also induced an economic policy response.

The pandemic led to expansionary monetary and fiscal policy. Central banks relied on quantitative easing, while the EU launched the Next Generation EU recovery plan, a joint EU fiscal response to achieve recovery through green and digital transformation (Marmefelt, 2020). Next Generation EU raises concerns about whether member states can absorb their allocated funds and uncertainty about the repayment of the plan's massive debt, and some voices advocated making this debt permanent to address climate change, Russia's war in Ukraine, and higher energy prices (Schramm et al., 2022). As a result, the public square would expand at the expense of the market square. Helicopter money would be able to monetize that kind of debt and was proposed as a response to Covid-19 for such monetization (Galí, 2020; Kapoor & Buiter, 2020; Yashiv, 2020), and CBDCs would be able to facilitate both helicopter money and quantitative easing, thus disturbing monetary policy (Cesaratto & Febrero, 2023). A CBDC can act as a facilitator because it can be targeted, thus opening a new effective transmission mechanism for monetary policy (D'Ippoliti et al., 2024). In addition, CBDCs would help increase financial inclusion, to "bank the unbanked," with the argument that Covid-19 unveiled gaps in the financial system that CBDCs could help fill as people waited for government-provided financial relief, but access would still be constrained since there are barriers to the use of any digital currency (Jossey, 2022). Hence, the state would control money.

In addition to state control, CBDCs provide tools for digital authoritarianism. China banned cryptocurrencies in 2021, although NFTs, i.e., blockchain-based cryptographic tokens used for Covid-19 passports and supply chain traceability, were tolerated but not recognized, referred to as "digital collectibles" (Harsono, 2022). Using blockchain technology and cryptographic tokens may seem pragmatic, but it must be understood in terms of the larger context, the overall blockchain strategy, which includes CBDC promotion and digital surveillance. The purpose of China's Blockchain-based Service Network, which it announced in 2019, was to both bridge payments between digital entities through a universal digital payments network, thus supporting the e-CNY, and achieve greater digital surveillance of China's population (Harsono, 2022).

Furthermore, central-bank thinking changed during the pandemic, with growing preference for using permissioned rather than permissionless DLT. In 2020, the above-mentioned group of BIS central banks that collaborated on CBDCs considered CBDCs to be complementary to the cash provided by central banks while highlighting the coexistence of central bank currencies and private digital currencies in the ecosystem (Bank of Canada et al., 2020). However, in 2022, BIS proposed a new monetary system where central banks would be tree trunks surrounded by commercial banks and other private payment service providers in diverse ecosystems, and the international monetary order would include an ecosystem of digital currencies that use multiple CBDC (multi-CBDC, or mCBDC) platforms, where tokenized deposits could be used in autonomous ecosystems through permissioned DLT, through which decentralization can be applied to cross-border transactions when several central banks are involved (BIS, 2022, Chapter 3).

Auer et al. (2021) present three approaches to multi-CBDCs: (a) compatible CBDC systems, based on compatible standards with a multitude of private payment services; (b) interlinked CBDC systems, using a technical interface with centralized or decentralized clearing; and (c) a single mCBDC system, with a single rulebook and set of governance arrangements, a single infrastructure and ledger, and a single set of participants. Compatible CBDC systems, which would have a multitude of private payment services, would be more in line with open societies, while autocratic societies would prefer at least interlinked CBDC systems, although a club of autocratic societies could develop a single mCBDC system among themselves, favoring integration within the autocratic club. The BIS Innovation Hub, in collaboration with the Hong Kong

Monetary Authority, the Bank of Thailand, the Digital Currency Institute of the People's Bank of China, and the Central Bank of the United Arab Emirates within the Bridge Initiative, explores a single multi-currency multi-CBDC system that would prevent competition from global stablecoins, something single CBDCs would not do (Auer et al., 2021). An internationally coordinated multi-CBDC system raises many policy issues for central banks, while cryptocurrencies would facilitate remittances (Jossey, 2022).

The forest metaphor suggests an overall global ecosystem with compatible CBDCs, but an open society requires space for cryptocurrencies and stablecoins rather than top-down governance through multi-CBDCs. An open society would have an ecosystem of digital currencies rather than a single centralized CBDC. Cryptocurrencies, either digital commodity money or stablecoins pegged to a national currency, allow for multiple monetary policies in the economy rather than just one led by the central bank, while CBDCs merely allow citizens to bypass the banking system.

Before Covid-19 the focus was on how stewardship, as stakeholder governance, evolves rather than how regulation is designed. Tapscott and Tapscott (2017) propose self-organizing, bottom-up, and multi-stakeholder governance of blockchain and cryptocurrencies across three levels: platform, application, and overall ecosystem. The overall ecosystem provides a ledger of ledgers that connects the platforms, including stakeholders (Ethereum, an open-source platform for decentralized applications where stakeholders need ether as a token for operations on the platform, has six different classes of stakeholders). Decentralized autonomous organizations, as bundles of smart contracts, incorporate a system of governance for complex economic activity in economies whose constitutional level has rules set in a protocol and cryptocurrencies (Berg et al., 2019). They are not a multi-CBDC forest.

## 7. Russia's War in Ukraine Amplifying the Rise of Digital Currencies

Another international crisis following Covid-19, which amplified the rise of digital currencies, is Russia's war in Ukraine. This war and the subsequent Western sanctions against Russia in 2022 increased financial systemic risk, comparable to the global systemic crisis caused by the war and sanctions in 1914, according to Danielsson et al. (2022). Russia's invasion threatened European banks, and the central banks had already injected a lot of liquidity due to Covid-19, preventing them from injecting more (Danielsson et al., 2022). In the long term, Russia's invasion and the Western sanctions resulting from this invasion could lead to financial deglobalization and an international financial system with a lower demand for foreign reserves, which had already stopped growing due to the global financial crisis (Brunnermeier et al., 2022).

Digital currencies, such as cryptocurrencies, have increased the risk of sanction evasion (Wronka, 2022). However, CBDCs may render economic sanctions ineffective as a foreign policy tool. By using energy to prevent financial sanctions in 2022, a Russian presidential decree made gas transaction settlement in roubles mandatory for gas importers from countries labeled as unfriendly through the rouble trading venue MICEX, thus providing protection from Western financial sanctions (Mamonov et al., 2022). As China was preparing its CBDC, Russia and China were preparing an integrated alternative to the SWIFT transfer system using blockchain; China first encouraged pooling of cryptocurrency mining before restricting it in 2018 and promoting its CBDC (Duque, 2020). Russia is also exploring Web3 to gain strategic advantage, like China and the US (Harsono, 2022). Sanctions against Russia make an e-CNY-based alternative to SWIFT useful for a Russia-China cooperation, and the e-CNY could be a revolutionary tool for international payments, more modern and efficient than SWIFT (Laband, 2022).

Through the e-CNY, China could replace the US dollar as the dominant currency in the international payments system. By using its prime-mover advantage in CBDC development, China has the potential to merge artificial intelligence, digital payments, and blockchain to generate an unprecedented amount of data to promote China's economic and strategic interests, while a digital yuan would reshape global financial governance and trade, as a risk-free government-backed currency that would enable transactions without SWIFT, and it may link payments connected to a future Internet of Things (Slawotsky, 2020). China is now trying to export its CBDC model to BIS, and some Western democracies seem willing to follow China's lead; governments can also have a mandatory digital identification process in place to set the foundation for CBDCs, thus letting the central powers have your identity, allowing them to control the flow of money in an absolute manner (Jossey, 2022). This is a likely impact of a CBDC arms race for financial hegemony. Slawotsky (2020) argues that a digital US dollar as a response to the e-CNY would maintain sanctions power.

Fostering international cooperation among central banks within BIS could seem to be a way to prevent an economic arms race. Could there be a global solution that would prevent excessive CBDC proliferation? A global single multi-CBDC can be ruled out with Russia's war in Ukraine and the subsequent Western sanctions, but blocs may develop, reflecting the different approaches of open societies and autocratic societies. The BIS Innovation Hub, as mentioned above, is exploring a single multi-currency multi-CBDC system that would prevent competition from global stablecoins; this is something single CBDCs would not do (Auer et al., 2021). In contrast, decentralized autonomous organizations, in their role as self-governing systems, may play a crucial role for blockchain-based global governance within a liberal world order by addressing climate change, which involves complex coordination such as climate-related crowdfunding implemented through smart contracts on the Ethereum platform (Reinsberg, 2021). This would preserve an open society with a flourishing market square.

## 8. Conclusion

The purpose of CBDCs is to prevent global stablecoins from threatening central banks' control of money, essentially by crowding out stablecoins. If successful, this would submit the market square, where cryptocurrencies and stablecoins belong, to the public square, where the CBDC reigns, giving the government full control of money, especially if the government manages to establish narrow banking with 100% reserves. Along the same lines as with stablecoins, foreign CBDCs may also be perceived as a threat. When operating in the same niche, general-purpose CBDCs, which are political enterprises, are likely to crowd out stablecoins, which are market enterprises, from the ecosystem of digital currencies, filling the niche and thereby making the monetary order more authoritarian by moving from polycentric open access orders with free-market economy towards monocentric limited access orders with planned economy. BIS and central banks became more aggressive against stablecoins from 2020 to 2022, although the Libra/Diem project was abandoned. China's digital yuan, e-CNY, which is pushing Western central banks to pursue CBDCs in an economic arms race, and the Covid-19 pandemic, which strengthened e-CNY and created incentives for digital payments, were major catalysts for the rising support for CBDCs. BIS, representing central bank consensus, envisages a global multi-CBDC system, calling for a forest of CBDCs. During the pandemic, there was a shift from permissionless to permissioned DLT. This was then followed by Russia's war in Ukraine, which amplified the shift and the support for CBDCs through economic warfare channels. If central banks become tree trunks and commercial banks their branches in a forest of CBDCs, this would make the international monetary system more authoritarian.

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## Conflict of Interests

The author declares no conflict of interests.

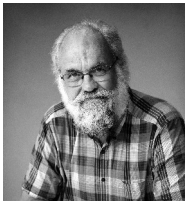
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