ANALYSIS

ECONOMY AND FINANCE

CHINA AND ITS CENTRAL BANK DIGITAL CURRENCY

Is the E-Yuan a Role Model for Europe and the Euro System?

Felix Klein and Nadim Baker
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Central digital bank currencies are on the rise and are shaping a new financial order. The Chinese government is pulling ahead with the development of the E-Yuan and is setting standards.

With the development of the E-Yuan, government opportunities come with risks as well as the potential for the comprehensive monitoring of payment activities. A European answer is crucial.

This analysis of the Chinese approach and a review of the development of decentralised finance leads to recommendations for the governance of European monetary policy.

FRIEDRICH EBERT STIFTUNG

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FOREWORD

The People's Republic of China (PRC) has abandoned its previous restraint and is now actively shaping the global order of the 21st century. For years, party and state leaders followed the first step of Deng Xiaoping's counsel for the field of foreign policy: "Hide your strength, bide your time". Under Xi Jinping's leadership, it would appear that the time has now come. China has shifted the logic underlying its foreign and security policy with a view to its increased political and economic power, thereby reprioritising a variety of strategic interests.

In the past, China's foreign policy moved mainly within the institutional bounds of the post-war order laid down by U.S. American leadership. This order was not questioned often, in part because it was not in China's own interest to do so. Now, instead of selectively adjusting to international norms and rules, the PRC aims to bring the world into line with Chinese ideas incrementally. The intent is not to completely supplant previous structures upon which the international order was founded. Nevertheless, the Chinese Communist Party (CCP) is working to shape world politics in China's image. Its interests are being articulated with increasing clarity and sustainability, lending momentum in recent years to the discourse surrounding an intensifying competition between systems, with the Chinese model of authoritarian state capitalism squaring off against the Western model of a democratic constitutional state and social market economy.

The Chinese government is keen to use new digital and disruptive technologies in its quest for a more powerful position at all levels of the global political system. China has continuously invested in digital currencies and crypto-based payment systems in recent years and is willing to become the first major economy to launch an official central bank digital currency (CBDC). The opportunity to play a leading role in shaping the new field of CBDCs, establishing favourable structures, and setting new standards are all in line with Beijing's general geopolitical approach to increasing its degree of independence from the West. This analysis by the Friedrich-Ebert-Stiftung (FES) picks up on these ambitions; its two authors, Nadim Baker and Felix Klein, outline the opportunities and risks posed by digital currencies in the context of China's objectives and have implications for Europe and, ultimately, the European Central Bank (ECB).

The authors explain how the emergence of decentralised cryptocurrencies is revolutionising and challenging traditional finance. Central banks face the challenge of responding to this development and providing a regulated approach to the new global digital economy. While new CBDCs are in development, standards have not yet been finalised, and the central banks or governments that can establish their CBDCs first will almost certainly be the ones to set (the initial) international standards. Based on their detailed analysis of Chinese efforts and attempts, Baker and Klein recommend that the development of digital central bank currencies, such as the e-yuan in China, be met with a more sustained European response to help shape the emerging standards for the digital economy in a European way. The ability to track and analyse payment flows in real-time offers a new opportunity to improve monetary policy sustainably. According to the authors, Europe needs to take a comprehensive approach to the establishment of a digital euro as a competitive component of the global digital economy.

This analysis is part of a series of publications put out by the FES that explores Chinese strategies in a range of global policy fields. The overarching question addressed in the series revolves around the future of multilateralism in the face of China's ascendance and increasing competition over the establishment of values and norms: What approaches could facilitate chances to initiate a constructive political negotiation process between Europe and China on the framework conditions for international governance? In which areas is more coordination and cooperation with China possible? Where is push-back by Europe warranted? And where does Europe have homework of its own to do?

Through this publication series, the FES would like to contribute to an informed approach to China. The aim and intent are to help European actors gain a more profound understanding of key Chinese notions, Chinese thinking, and concepts, as well as their real-world manifestations and implementations. This will help readers develop informed strategies and be (more) self-assured and well-prepared for dialogue with Chinese partners.

I wish you informative reading!

Stefan Pantekoek
China Desk, Friedrich-Ebert-Stiftung, Berlin

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INTRODUCTION

In June 2022, the Chinese newspaper *Economic Daily* published an article warning that the price of the digital currency Bitcoin was "heading to zero",[1] adding "Bitcoin is nothing more than a string of digital codes, and its returns mainly come from buying low and selling high."[2] The *South China Morning Post* elaborated: "In the future, once investors' confidence collapses or when sovereign countries declare Bitcoin illegal, it will return to its original value, which is utterly useless."[3] Nine months earlier, in September 2021, the Chinese Government had introduced a ban on all activities related to cryptocurrencies. The ban includes both trading and mining.[4] Chinese officials announced they would "resolutely clamp down on virtual currency speculation […] to safeguard people's properties and maintain economic, financial and social order".[5] In May 2022, Chinese state media referred to the collapse of the cryptocurrency LUNA, which was related to the fall of its associated "fractional stablecoin" TerraUSD (UST), to support its decision to ban cryptocurrency trading, as the risks it involved might be too high.[6]

This policy of banning digital currencies is in contrast with the policy decisions made by other countries. For example, just a few months earlier, in June 2021, El Salvador announced that the bitcoin would become legal tender on its domestic market and a new "Bitcoin Law" was passed by the country's parliament. The law requires all companies or businesses in El Salvador to accept Bitcoin for all payments from 7 September 2021 onwards.[7] In late 2021/early 2022, however, the International Monetary Fund (IMF) urged the Salvadorian government to drop Bitcoin as a legal tender, anticipating that growing adoption – which was now beginning to extend beyond the sovereign state level – would become a threat to the current monopoly of state-issued currency.[8] Digital disruptions in the payment sector pose a challenge for governments, but they also use such disruptions in their own interests to pursue political goals. This analysis outlines strategies employed by the Chinese government to develop its central bank digital currency and describes the challenges and opportunities in the context of new financial policies at the European level.

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2 Billy Bambrough, "'Heading To Zero'—China Issues Shock Bitcoin Price Warning Amid Huge $2 Trillion Crypto Crash," 25 June 2022, Forbes Digital Assets, https://www.forbes.com/sites/billybambrough/2022/06/25/heading-to-zero-china-issues-shock-bitcoin-price-warning-amid-huge-crypto-crash/

3 Brian Newar, "China warns Bitcoin is heading to zero but BoE looks on the bright side," 23 June 2022, Cointelegraph, https://www.scmp.com/tech/policy/article/3182654/bitcoin-market-meltdown-prompts-fresh-warning-china-value-worlds and https://cointelegraph.com/news/china-warns-bitcoin-is-heading-to-zero-but-boe-looks-on-the-bright-side

4 Alun John, Samuel Shen and Tom Wilson, "China's top regulators ban crypto trading and mining, sending bitcoin tumbling," 24 September 2021, Reuters, https://www.reuters.com/world/china/china-central-bank-vows-crackdown-cryptocurrency-trading-2021-09-24/

5 *Ibid*.

6 Yaling Jiang, "Luna collapse used by Chinese state media to justify cryptocurrency ban following 'bloodbath' for investors," 16 May 2022, South China Morning Post, https://www.scmp.com/tech/policy/article/3177913/luna-collapse-used-chinese-state-media-justify-cryptocurrency-ban?module=inline&pgtype=article

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8 "IMF urges El Salvador to remove Bitcoin as legal tender," 26 January 2022, BBC News, https://www.bbc.com/news/world-latin-america-60135552

2

CRYPTOCURRENCIES AND CHINA'S SEARCH FOR A NEW ROLE

The Chinese government, leading a strong world economy as it does, is searching for a new and more powerful place at all levels of the system of world politics. The chance to shape the new field of digital currencies and crypto-based payment systems, establishing new and favourable structures and setting new standards is something it finds attractive, as this tool would expand its geopolitical repertoire. This analysis will discuss the opportunities and risks of digital currencies in the context of Chinese global policy, as well as global trends, going on to derive recommendations for action for the European Central Bank (ECB). As part of its digital finance package announced in 2020, the European Commission issued a regulatory proposal for crypto-assets, aimed at harmonising standards within the increasingly fragmented national regulatory landscape for crypto-assets in the EU.[9] In June 2022, the European Commission and the European Parliament reached an additional provisional agreement[10] on "the markets in crypto-assets (MiCA)".[11] The new regulatory framework aims to protect investors and is a milestone as it is the first such framework at EU level. Stefan Berger, the Member of European Parliament who led the negotiations, announced: "Today we put order in the Wild West of crypto assets and set clear rules for a harmonised market."[12] Although the new framework is provisional, it includes consumer protection by requiring high standards to protect wallets and introducing liability in case crypto-assets are lost. In addition, it also bans any type of market abuse, especially market manipulation and insider dealing.[13]

These are important steps as, central banks in Europe[14] are calling for more restrictions (for mining as well as using cryptocurrencies) and are changing the policies for key interest rates at the same time. A higher price volatility is not expected to devalue cryptocurrencies in general or weaken the systematic approach.[15]

But one step at a time. The emergence of decentralised cryptocurrencies such as Bitcoin revolutionises traditional finance. As one of the first forms of internet-native money, it facilitates the storage and transfer of value in a trustless way through a global peer-to-peer network,[16] without public or private intermediaries. Along with the continuous adoption of Bitcoin as a provably scarce digital asset with a strictly limited supply, alternative cryptocurrencies such as Ethereum enable dynamic growth of decentralised capital markets, operating independently and without financial institutions or legal entities acting as intermediaries. The technological evolution of cryptocurrencies impacts many facets of the global financial system, such as market structures and payment services, as well as fiscal regulations and monetary politics, in new ways.

Bitcoin is governed by software that is executed in parallel on a global computer network run by separate individuals and organisations around the world, collaboratively processing transactions at any time, all the time. This distributed structure ensures that Bitcoin cannot be confiscated or cen-

9 European Commission, "Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937," 24 September 2020, https://eur-lex.europa.eu/resource.html?uri=cellar:f69f89bb-fe54-11ea-b44f-01aa75ed71a1.0001.02/DOC_1&format=PDF

10 Scott Chipolina, "EU finalises sweeping rules for 'wild west' crypto industry," 1 July 2022, Financial Times, https://www.ft.com/content/38df2e75-76a8-4be9-bde5-ad410e3f95e0; Ryan Browne, "EU agrees on landmark regulation to clean up crypto 'Wild West'," 30 June 2022, CNBC, and https://www.cnbc.com/2022/06/30/eu-agrees-to-deal-on-landmark-mica-cryptocurrency-regulation.html

11 Council of the EU, "Digital finance: agreement reached on European crypto-assets regulation (MiCA)," 30 June 2022, press release, https://www.consilium.europa.eu/en/press/press-releases/2022/06/30/digital-finance-agreement-reached-on-european-crypto-assets-regulation-mica/

12 Huw Jones and Tom Wilson, "EU agrees to tame 'Wild West' with new crypto market rules," 1 July 2022, Reuters, https://www.reuters.com/markets/europe/eu-seeks-deal-ground-breaking-rules-regulate-crypto-2022-06-30/

13 Council of the EU, "Digital finance: agreement reached on European crypto-assets regulation (MiCA)," 30 June 2022, press release, https://www.consilium.europa.eu/en/press/press-releases/2022/06/30/digital-finance-agreement-reached-on-european-crypto-assets-regulation-mica/

14 Nelson Wang, "Hungary's Central Bank Head Calls on EU to Ban Crypto Mining and Trading," 11 February 2022, CoinDesk, https://www.coindesk.com/policy/2022/02/11/hungarys-central-bank-head-calls-on-eu-to-ban-crypto-mining-and-trading/

15 Claire Jones and Izabella Kaminska, "The regulatory threats to crypto are mounting," 21 January 2022, Financial Times, https://www.ft.com/content/d16c9481-f56b-423d-b3ba-c3dda36ce3c1

16 Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," https://bitcoin.org/bitcoin.pdf

sored by any person, company or government because no single entity owns enough resources to control 51 per cent of the network's computing power. Initiated in 2009 in the context of the global financial crisis, the code of the decentralised Bitcoin network employs a disinflationary monetary policy, limiting its supply to a maximum of 21 million units. Unlike other monetary systems, the validation of transactions and the governance of the scarce Bitcoin supply do not rely on a central entity. This unique set of technical and economic characteristics gives it properties similar to gold, but in a digital form.

Central banks discussing the issuance of central bank digital currencies (CBDCs) are a logical consequence of the developments mentioned above. A 2019 survey by the Bank for International Settlements (BIS) found that almost 80 per cent of the central banks were engaged in CBDC research efforts.[17] At the same time, the People's Bank of China (PBOC) has made significant progress in developing and introducing a Chinese CBDC. Indeed, the PBOC reported a transaction volume equivalent to 1.1 billion[18] Chinese Yuan as part of a pilot project, which is in the process of being extended to large parts of the country. In contrast, neither the Federal Reserve (FED) nor the European Central Bank (ECB) have started to develop their CBDC initiatives. That said, both conduct active research on the issue. In 2020, the ECB published a report on a digital euro,[19] similar to a survey on CBDCs published by the IMF.[20] Recently, Bitcoin has increasingly been attracting the attention of governments and private companies, the latter regarding it as an inflation hedge in the current unprecedented macroeconomic environment, characterised by the low interest rates and expansive monetary policy of central banks.[21] The increasing establishment of Bitcoin as an asset class is attested by large payment providers such as PayPal enabling payments in cryptocurrencies,[22] or other companies such as Fidelity Investments, which has publicly launched a Bitcoin fund.[23]

Currently, about 842,364 Bitcoins (BTC) are known to be held by publicly traded companies as treasuries,[24] amounting to a sum of four per cent of the maximum BTC supply.

As in most areas of society, digitalisation causes widespread changes and disruptions in the global financial system. The commercial banking sector and the services it provides are complemented by competitive decentralised peer-to-peer financial applications within the crypto ecosystem, where users can lend out and borrow against their crypto-assets. The capitalisation of the decentralised finance (DeFi) space was worth ~100 billion US dollars in 2021.[25] Central banks' initiatives to develop CBDCs as a digital update of their current fiat currencies is emerging as another fundamental driver of the global digital economy. The issuance of a CBDC provides central banks with a wide range of potential monetary instruments to incentivise and stimulate parts of the economy. For example, central banks are able to introduce loan or issuance programmes which are offered to certain financial institutions or banks. The ability to follow money streams helps to determine the outcomes of measures and verify whether incentives to use money are proving useful in the achievement of predefined and traceable goals. CBDC issuance holds significant potential to enable central banks to conduct more effective monetary policy and for governments to improve their fiscal policy, i.e., tax and social service procedures, as well as numerous other aspects of financial governance. Last but not least, the emergence of CBDCs is an important geopolitical consideration in the competition for a prospective reserve currency status in the future global economy.

While new CBDCs are in the process of development, standards are not yet finalised and the central banks or governments that are able to establish their system of CBDCs first are more likely to be the ones setting international standards. In the economic and financial system of the Bretton Woods Institutions, Western countries are in a strong position. As the Chinese government is willing to use new digital and disrupting technologies, the opportunity to shape the new field of CBDCs, establish favourable structures and set new standards is something it finds highly attractive, as this tool would slot nicely into the set of geopolitical strategies that it is already pursuing.

17 Raphael Auer, Giulio Cornelli, and Jon Frost, "Rise of the central bank digital currencies: drivers, approaches and technologies," 24 August 2020, BIS Working Paper No. 80, https://www.bis.org/publ/work880.htm

18 Chad Bray and Alison Tudor-Ackroyd, "People's Bank of China's digital currency already used for pilot transactions worth 1.1 billion yuan," 5 October 2020, South China Morning Post, https://www.scmp.com/business/banking-finance/article/3104281/peoples-bank-chinas-digital-currency-already-used-pilot

19 "Report on a digital euro," October 2020, European Central Bank, https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf

20 John Kiff, Jihad Alwazir, Sonja Davidovic, Aquiles Farias, et al., "A Survey of Research on Retail Central Bank Digital Currency," 26 June 2020, https://www.imf.org/en/Publications/WP/Issues/2020/06/26/A-Survey-of-Research-on-Retail-Central-Bank-Digital-Currency-49517

21 Grayscale, "A digital-native asset manager, for a digital-driven world," https://grayscale.co/insights/valuing-bitcoin/

22 PayPal, "PayPal Cryptocurrency Terms and Conditions," 7 June 2022, https://www.paypal.com/us/webapps/mpp/ua/cryptocurrencies-tnc

23 Michael McDonald and Vildana Hajric, "Fidelity Launches Inaugural Bitcoin Fund for Wealthy Investors," 26 August 2020, Bloomberg, https://www.bloomberg.com/news/articles/2020-08-26/fidelity-launches-inaugural-bitcoin-fund-for-wealthy-investors

24 https://bitcointreasuries.org/

25 DeFi Pulse, https://defipulse.com/

3

THE CHINESE APPROACH TO FINDING A NEW PLACE IN THE WORLD

In 1978, the Chinese government introduced reforms that began to open up the country's economy and it has experienced rapid growth since then, with GDP growth averaging at ten per cent per year, for example[26] The Chinese government used cheap production conditions to serve as a "workbench" for international, mostly Western, companies. But this relationship has transformed over the last few decades. Previously, the basis for Chinese growth was its export-oriented economy. In the context of the 2009 financial crisis, however, the Chinese government faced a declining GDP growth rate as Western economies deteriorated. As a result, new reforms were introduced with a view to making China more independent from Western imports and strengthening the role of the country's economy. One of the main goals of these reforms was for China to become a leading nation in the technology sector. A well-known example is the strategic **Made in China 2025**[27] (中国制造2025[28]) programme, which aims to develop ten of China's key industries enabling them to achieve world-leading positions. This included the information technology or robotics industry. Another important example of this approach is the government's **Internet + Finance** sub-strategy, which is one arm of the **Internet Plus**[29] strategic portfolio (互☒网+) that was introduced by Chinese prime minister Li Keqiang in 2015. This strategic portfolio aims in general to improve the cooperation and interconnectivity between economic areas through internet-based services. The Internet + Finance sub-strategy also aims to enhance the broad range of financial, mostly payment, services through internet-based applications.

These strategic reforms are focused on technological advancement. Combined with geopolitical strategies and China's claim to leadership, this adds a new and important dimension. One very important strategy to be considered in this context is the **Belt and Road Initiative (BRI)**[30] (一☒一路). This investment programme involves China cooperating with over 70 countries, primarily through granting financial aid, loans and organisational help, mainly to develop infrastructure. According to the Chinese plan, this infrastructure funding should help the economies involved to develop and, at the same time, attract trade with Chinese partners. Contracts related to the BRI are in the interests of the Chinese government and strengthen the position of the Chinese economy. The regional integration of the BRI established three types of connectivity: transport infrastructure, energy infrastructure, and information and communication technologies (ICT) infrastructure, which is generally referred to as "Information Silk Road".[31] These economic and technological advancements complete the reform programmes implemented by the Chinese Communist Party, which aim to reduce the economic and political predominance of Western countries and institutions.

By using disruptive movements and methods, the Chinese government seeks to assume some of the power of traditional financial institutions such as the World Bank, the IMF or the World Trade Organization (WTO) by introducing its own institutions. Bretton Woods Institutions are mirrored by Chinese counterparts that offer the same or similar services. Some examples are the New Development Bank (an alternative to the World Bank and IMF) and the Asia Infrastructure Investment Bank (an alternative to the Asian Development Bank).[32] It is also important to bear in mind that Western governments hindered China's integration over the last century. China did not become a full member of the WTO until 2001. As a new member at the time, the Chinese government had to accept many trade agreements and rules that were made before its accession with no opportunity to par-

26 "The World Bank in China," 29 September 2022, World Bank, https://www.worldbank.org/en/country/china/overview

27 State Council 2016, The People's Republic of China, Made in China, http://english.www.gov.cn/2016special/madeinchina2025/

28 The State Council, "Made in China 2025," 7 July 2015, http://www.cittadellascienza.it/cina/wp-content/uploads/2017/02/IoT-ONE-Made-in-China-2025.pdf

29 Gordon G. Chang "China's "Internet Plus" Strategy, a net minus" https://www.forbes.com/sites/gordonchang/2015/04/19/chinas-internet-plus-strategy-a-net-minus/?sh=7637c0f54e05

30 World Bank, "Belt and Road Initiative," 29 March 2018, World Bank Brief, https://www.worldbank.org/en/topic/regional-integration/brief/belt-and-road-initiative

31 Henry Tugendhat and Julia Voo, "China's Digital Silk Road in Africa and the Future of Internet Governance," Working Paper No. 50, August 2021, China Africa Research Initiative (CARI), https://static1.squarespace.com/static/5652847de4b033f56d2bdc29/t/61084a3238e7ff4b666b9ffe/1627933235832/WP+50+-+Tugendhat+and+Voo+-+China+Digital+Silk+Road+Africa.pdf

32 "Beijing's challenge to the world of Bretton Woods," Financial Times, https://www.ft.com/content/db2dcaf8-6042-11e4-88d1-00144feabdc0

ticipate in the process of development or implementation. These obstructive policies also prevented the comprehensive integration of the Chinese economy into the world economy. Chinese policies and the country's aspiration to establish an independent system should also be understood in this context.

An additional area where the Chinese government aspires to advance is currency, specifically when it comes to increasing the significance of the Chinese yuan compared to other world currencies. One approach it has taken to achieve this is to implement a digital central bank currency or CBDC to strengthen the Chinese currency in comparison to other leading world currencies, especially the US dollar or the euro, by accelerating the distribution. The Chinese currency was not added to the Special Drawing Rights Basket until 2016, which was a very late stage.[33] And it still plays a minor role compared to the US dollar, euro, Japanese yen and British pound. The Chinese government has adopted various approaches to increase the importance of the yuan and to acquire the associated political power.

At the same time, the US, as the main competitor of the People's Republic of China, does not support a self-developed digital currency to back up the position of the US dollar. Private US-American companies are working on their own launches of digital currencies, such as the Meta-led (Meta Inc., formerly Facebook Inc.) digital currency initiative, which began as Libra in 2019 and was rebranded to Diem in late 2020. Following the leading position of the dominant US dollar, which featured in 88 per cent[34] of all foreign exchange transactions in 2019, a high level of influence could be achieved, but this opportunity for a digital currency organised by the Federal Reserve (FED) was missed. Many economies are geared towards the policies of the US dollar. Trusting this strong position of leadership, the FED is more focused on helpful policies determining interest rates and supporting the American economy with economic stimulus packages. Private US-American companies, such as Meta Inc., started to initiate private digital currencies, relying on their extremely large global customer base.

One way of challenging the leading position of the US dollar would be to introduce a sovereign digital currency as a technologically superior form of currency.[35] The Chinese CBDC, or digital yuan, is fully controlled by the Chinese Central Bank and allows all transactions to be monitored within the digital system. These steps support the Chinese government's effort to introduce a new world currency. The Chinese government assumes that developing countries which are part of **Belt and Road Initiative**, in particular, are more likely to use the yuan and its digital currency. This approach is backed by the huge Chinese population that is accustomed to using digital elements. In general, use of electronic payment methods is widespread among the population. Chinese tech companies, such as Tencent or Alibaba, are widely accepted and promote digital business within Chinese society. In 2020, there were more than 854 million online payment users registered in China.[36] Outside of China, these Chinese payment systems are not yet established, but there are moves to do so. For example, WeChat Pay is present in 25 countries,[37] mainly for Chinese users but non-Chinese users may soon follow. Younger members of the population in developing countries are attracted by the possibilities of digital currencies or other digital innovation. For example, in Africa, monthly cryptocurrency transfers to and from Africa under 10,000 US dollars increased by 55 per cent from 2019 to 2020, reaching a peak of 316 million US dollars in June 2020.[38] The introduction of a digital currency should be understood in the context of the following two aspects: On the one hand, it enables the Chinese government to better monitor and direct transactions within the country, and on the other, it provides it with a new method to gain influence in the world economy.

Effects resulting from this approach will now be discussed in detail. This will be followed by a series of policy recommendations for the ECB, identifying steps that can be taken to help the European Union learn from the Chinese government but also recognising the challenges and the EU's potential to establish new standards of its own.

3.1 CHINA'S POPULATION IS ACCUSTOMED TO A HIGH LEVEL OF DIGITALISATION IN EVERYDAY LIFE

China has the largest population in the world, and that population is open-minded when it comes to using or adapting to new technologies. It is part of the common understanding that to become a prosperous and strong society, technology is needed. It is clear that rapid economic growth has been accompanied by big tech players, such as

33 International Monetary Fund, "IMF Adds Chinese Renminbi to Special Drawing Rights Basket," 30 September 2016, IMF News, https://www.imf.org/en/News/Articles/2016/09/29/AM16-NA093016IMF-Adds-Chinese-Renminbi-to-Special-Drawing-Rights-Basket

34 "Triennial Central Bank Survey. Foreign exchange turnover in April 2019," 16 September 2019, Bank for International Settlements (BIS), https://www.bis.org/statistics/rpfx19_fx.htm

35 Steven Ehrlich, "Not A Cold War: China Is Using A Digital Currency Insurgency To Unseat The US Dollar," 15 October 2020, Forbes, https://www.forbes.com/sites/stevenehrlich/2020/10/15/not-a-cold-war-china-is-using-a-digital-currency-insurgency-to-unseat-the-us-dollar/?sh=33269ffd748a

36 "Number of online payment users in China from 2011 to 1st half of 2022", August 2022, Statista China: number of online payment users 2022 | Statista and "Number of internet users in China from 2015 to 2020 with a forecast until 2026," July 2021, Statista, https://www.statista.com/statistics/278417/number-of-internet-users-in-china/

37 "WeChat Pay in the UK – What's the Future of WeChat Payment International," 13 April 2017, QPSoftware, https://qpsoftware.net/blog/wechat-pay-uk-whats-future-wechat-payment-international

38 Ineke Mules, "Africa's quiet cryptocurrency revolution," Deutsche Welle, 8 October 2020, https://www.dw.com/en/africas-quiet-cryptocurrency-revolution/a-55199637

Tencent, Alibaba or Huawei. Thanks to their economic potential, these names, once only recognised in China, are increasingly represented in the West, as well. In 2021, China had more than one billion internet users (1,031.95 million users).[39] Digital services, such as WeChat Pay or Alipay, can count on more and more people subscribing. In 2020, about 555 million customers used mobile payments, and about 901 million users used digital commerce for general purposes.[40] Baidu, the biggest search engine in China, even accepted Bitcoin as a payment method for a short period, until the Chinese government banned it and some other cryptocurrencies in 2013,[41] going on to ban all cryptocurrencies in 2021.[42] In 2021, the PBOC stated: "Virtual currency-related business activities are illegal financial activities […] it seriously endangers the safety of people's assets." [43] After banning cryptocurrencies, the Chinese government introduced plans to establish its own digital currency to meet the population's demand for digital payment systems. The introduction of a new digital currency by the Chinese Central Bank started in 2014 and has to be understood as a way of meeting domestic and foreign agendas. Up until then there was a duopoly for digital payment systems, with the two providers WeChat Pay (Tencent) and Alipay (Alibaba) dominating the field. A new digital currency introduced by the government offers an alternative for payments and serves the government's endeavour to better monitor digital payment tracks. Regulations for private service providers would reduce their ability to participate and offer services, while the state-owned system would gain in strength. In many regulatory cases involving aspects of digital commerce, the ambivalent approach of the Chinese government acts as a double-edged sword: On the one hand, the digital economy is being actively encouraged, while on the other, the degree of surveillance is being increased and recent regulations or bans support the Chinese government's claim to domestic leadership.

3.2 DIGITAL CURRENCY AS A TOOL FOR INTERNAL CONTROL

In 2020 the first trial of a CBDC was launched in the regions of Shenzhen, Suzhou, Chengdu, Xiong'an and Beijing. With the introduction of a new digital currency, the Chinese government provides an additional payment track that can be monitored and controlled by governmental institutions. The opportunities to acquire information from the system at the same time is attractive, as governmental regulations can be implemented without obstacles, and information about changes in people's behaviour can be observed and analysed. Based on this knowledge, the logical next step would be to merge existing payment systems with the new system.

The Chinese Central Bank provides a core structure for the financial system, and all other intermediaries, such as commercial banks, are connected by providing services to the public. Chinese CBDC is thus a two-tier system. First, the central bank issues digital currency for commercial banks, and second, commercial banks issue digital currency intending to replace China's monetary base.[44] Wallets are distributed by banks to users and direct payments are possible. Using this approach, the customer still deals with the commercial bank they are familiar with and does not have to find a new vendor or open an account with the central bank. This is more convenient for the customer and results in more trust.

By introducing its own governmental digital currency, the Chinese government solves different issues which are linked to non-transparent payment tracks in China. For example, in the early 2000s, a peer-to-peer banking system was progressively established. Direct vendors of loans met with companies or private persons to exchange money, which led to a system of shadow banking. As the government is unable to control the payment structures of peer-to-peer systems, it is looking for methods to do so. A digital currency directed by the central bank allows it to monitor and control these outflows without changing the character of the peer-to-peer system, as direct payments and exchanges are still possible. The users of the digital currency can still participate in the structures they are used to, but the government gains access to track payment flows. These payment flows can then not only be tracked, but also controlled. Outcomes of decisions on key interest rates, financial products offered by banks, or consumer behaviour can be thoroughly monitored and evaluated on a real time basis.

Within the Chinese CBDC structure, financial intermediaries are still responsible for customer registration and customer checks. In this financial environment, users can remain anonymous for transactions between each other but can be identified with the help of their service counterpart. Based on this financial structure, the Chinese government claims to be able to detect crimes and any other illicit activity that is not in line with the government's agenda.

One aim of establishing these structures is to limit funding channels for illegal activities and detect potential terrorism or other criminal activities. This is evidenced by the ban on

39 "Number of internet users in China from 2015 to 2020 with a forecast until 2026," July 2021, Statista, https://www.statista.com/statistics/278417/number-of-internet-users-in-china/ and Statista, "Number of internet users in China from 2008 to 2021" https://www.statista.com/statistics/265140/number-of-internet-users-in-china/

40 *Ibid.*

41 "Baidu Stops Accepting Bitcoins After China Ban," 7 December 2013, Bloomberg News, https://www.bloomberg.com/news/articles/2013-12-07/baidu-stops-accepting-bitcoins-after-china-ban

42 "China declares all crypto-currency transactions illegal," 24 September 2021, BBC News https://www.bbc.com/news/technology-58678907

43 *Ibid.*

44 Oriol Caudevilla, "China expands its Digital Yuan testing to Hong Kong and Macau," 29 September, 2020, Challenger Insider, https://www.challengerinsider.com/blog/china-digital-yuan-hong-kong-and-macau

cryptocurrencies in 2013[45] which supports the claim that the government is not against digital payment structures but rather non-transparent financial tracks. The Chinese government is also very careful to mitigate and ban capital flight, which decentralised payment systems such as Bitcoin make easier to do.[46] The Chinese claim that it wants to combat criminal activities is understandable, and all measures introduced in support of are feasible and acceptable. But other measures linked with technological advancement that enable surveillance are not mentioned or publicly discussed in China. In addition to technical advantages, the central bank benefits in another way: The cost of money printing and maintaining is reduced as the use of digital currencies increases. Digital currencies therefore have direct and indirect advantages.

3.3 INITIAL STEPS AND SHORT-TERM TIME SCHEDULE

When it comes to the issuance and control of the digital currency, the Chinese Central Bank is in charge. The handover process, however, is implemented by local banks that are partly privately organised and partly state owned. The Chinese CBDC is thus being supported by the four biggest state-run banks: the Chinese Agricultural Bank designed the digital wallet app, for example. This enables the central bank to direct and monitor the whole process, while for the end user, the local Chinese bank remains their point of contact. After the successful trial of the CBDC in selected areas in early 2020, on 14 August 2020,[47] the Ministry of Commerce announced that they would be expanding the trial to the Greater Bay Area, an administrative area covering Hong Kong and Macau, in order to develop and test its functionality. To support this trial, a monetary policy law was implemented, which banned any other yuan-backed stablecoins. An important milestone – to have a sovereign digital currency established by the 2022 Winter Olympics[48] – was achieved[49] and the volume and number of users is on the rise. For 2021, transactions equivalent to 14 billion US dollars were recorded.[50] The plan is now to introduce the currency in Northern China (Tianjin and Hebei province) as well as the Yangtze River Delta region, including Shanghai.

3.4 DIGITAL CURRENCY AS A FOREIGN POLICY TOOL

Besides domestic use cases and needs, a third, foreign use case is worth discussing. The goal of Chinese foreign policy is first to achieve a leading role within the Asian region and then to do the same in the world economy at a later stage. These goals are supported by the ambitious endeavour of developing the digital and non-digital yuan into a strong, new world currency. Currently, the Chinese reserve currency extends across China's foreign political sphere of influence, while the yuan is still regarded as a risk in the West, because of the systemic rivalry between China and the US. The Chinese government aspires to use partnerships with developing countries on several levels. Through the BRI, it aims to integrate economies into a new Chinese system of political influence, where many economic dependencies, especially in small and developing countries, are established. Participating governments receive Chinese credit lines, often to invest in infrastructure projects, which help increase economic and trade activities. The credits that are paid out are, in many cases, used to pay Chinese companies that operate in the borrowing countries. This procedure helps to keep money within the Chinese economic system, and no currency exchange is needed as the Chinese companies ask for payments in yuan. This system of the Chinese government being the lender, the foreign government being the recipient and then making payments to the Chinese government helps to increase the geopolitical power and importance of the Chinese currency. This practice is facilitated by the introduction of a CBDC, which simplifies the distribution processes and enables easier access is acquired more easily.

The one country, two systems principle (一国两制) helps the government gain expertise on disseminating processes. Introducing the Chinese CBDC in the Greater Bay Area, including Macau and Hong Kong, for example, is creating a blueprint and helping the government gain initial experience. This provides the Chinese Central Bank with insight into the challenges of establishing the digital currency in a defined geographic area which already has a different economic system. The Greater Bay Area has a GDP of around 1.5 trillion US dollars. As a financial centre, Hong Kong has ties to many other Asian countries and the Commonwealth. A Chinese CBDC should be seen as supporting the country's aspiration to increase its economic power and to gain more political influence. Therefore, not only does the Chinese CBDC align with China's domestic agenda, it also contributes to the international agenda by developing soft power to gain influence and weaken the strong position of the US dollar. Observing the recent trend of gaining political and economic influence, it is already possible to map out China's next steps

45 Rain Xie, "Why China had to 'Ban' Cryptocurrency but the U.S. did not: A Comparative Analysis of Regulations on Crypto-Markets Between Comparative Analysis of Regulations on Crypto-Markets Between the U.S. and China," 18(2), 2019, Washington University Global Studies Law Review, https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1684&context=law_globalstudies

46 "What's behind China's cryptocurrency ban?," 31 January 2022, World Economic Forum, https://www.weforum.org/agenda/2022/01/what-s-behind-china-s-cryptocurrency-ban/

47 Oriol Caudevilla, "China expands its Digital Yuan testing to Hong Kong and Macau," 29 September, 2020, Challenger Insider, https://www.challengerinsider.com/blog/china-digital-yuan-hong-kong-and-macau

48 Oriol Caudevilla, "People's Bank of China (PBOC) lays regulatory foundation for its CBDC," 28 October 2020, Challenger Insider, https://www.researchgate.net/publication/345180889_People%27s_Bank_of_China_PBOC_lays_regulatory_foundation_for_its_CBDC

49 Joe Light, "China Is Showing Off the Digital Yuan at the Olympics. Can the U.S. Compete?," 15 February 2022, Bloomberg, https://www.bloomberg.com/news/articles/2022-02-15/china-is-showing-off-its-central-bank-digital-yuan-currency-at-beijing-olympics

50 *Ibid.*

in its mission to establish its political power. Although countries and economies are integrated at different speeds and using different approaches, it is clear that the general trend of integration into the Chinese sphere of influence is related to political or geographic proximity to the Chinese borders and political system. The opportunities provided by a Chinese CBDC can be used as an additional tool to support these aspirations by strengthening the interdependencies between these economies. The access to a digital system of transactions run by the Chinese government would integrate participating economies and users, and at the same time would increase the cost of switching to other systems (e.g., a European CBDC) that are introduced afterwards. The PBOC or other Chinese institutions that have access to data and customer activities can derive macroeconomic trends and react to these in a way that is favourable for the Chinese government. The digital tool would serve as a catalyst for the achievement of the government's aspirations.

3.5 CHALLENGES AND DIFFICULTIES

The Chinese government is not the first to develop and introduce a cryptocurrency; for example, the Bahamas, Iran, United Arab Emirates and Sweden have all made clear progress in their development phases.[51] However, due to the large scale of its CBDC, the Chinese government has a considerable advantage, proceeding significantly faster than other economies of comparable scale, specifically the United States and the European Union. China's ties to other countries and their implementation of its CBDC, for example, as a side effect of the BRI, reinforce the yuan's claim to global currency status and weaken the position of the current world currencies. The effects of the CBDC and its damage to the position of existing world currencies can be summarised as follows:

First, the Chinese CBDC or digital yuan is more easily distributed, and levels of access are reduced. Users in countries that have a weak and highly volatile currency are looking for alternatives that are stable and accessible. For example, during the economic crisis in Venezuela, the number of users exchanging Bitcoin increased significantly and the number of trades also increased from 2016 onwards[52] linked to the economic crisis. A similar effect could be generated by the Chinese CBDC if it is able to provide financial stability and becomes more accessible for a broader group of users.

Second, contracts and offers made by the Chinese government for countries participating in the BRI are often related to loans that are paid out in Chinese yuan. A technical path that allows more controlled and easier distribution would speed up the process of creating economic partnerships. As a result, governments and other economic partners are more likely to collaborate.

Third, users in European countries who would like to create or participate in monetary flows that cannot be tracked or traced by governments gain a payment track. By participating and buying Chinese CBDC, they can have access to Chinese capital markets but also send money within the network to other users. This can undermine Western currencies and economic systems as non-traceable channels for money become available. These channels can be used in both directions, from Europe to China and from China to Europe. The risk is that European users or companies engage in business activities in China, or any other country that is participating in the Chinese CBDC system (e.g., another European country), with no chance of European institutions being notified as money flows are not traceable. This risk also applies to Chinese users or companies engaging in silent transactions and activities within the European Union without being noticed. If the ECB were to engage in this field, not only would it meet the demand for its own CBDC, it would also help meet European data security needs.

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51 Raphael Auer, Giulio Cornelli, and Jon Frost, "Rise of the central bank digital currencies: drivers, approaches and technologies," 24 August 2020, BIS Working Paper No. 80, https://www.bis.org/publ/work880.pdf

52 Agata Kliber and Katarzyna Andrzejczak Świerczyńska, "Bitcoin as a Panacea for the Venezuelan Crisis," European Financial Systems 2019, Proceedings of the 16th International Scientific Conference, https://www.researchgate.net/publication/337113481_Bitcoin_as_a_Panacea_for_the_Venezuelan_Crisis

4

CBDCS AS A RESPONSE TO MONETARY EVOLUTION IN CYBERSPACE

While the global COVID-19 pandemic was a sudden economic shock at the beginning of 2020, it also rapidly accelerated existing digitalisation trends. Initially, the Meta-led digital currency initiative met with a sceptical and disapproving reception from global regulators who pointed out its potential threats for monetary stability. However, it was widely considered to have been a "wake-up call" for central banks to reflect on their own responses to the digital evolution of money. The ECB Executive Board stated publicly in October 2021 that digital currency could expand rapidly at the global level by relying on the large existing users' base of big techs: "We should not wait for another crisis to regulate an increasingly digitalised finance with new global players."[53]

In line with the vast majority of central banks which are globally exploring the issuance of CBDCs to their economies, the Bank for International Settlements (BIS), one of the world's biggest financial institutions, is developing its capacity to conduct experimentation on the evolution of central banking. Indeed, it has already published several research contributions, outlining its view on core features and fundamental principles of potential CBDCs. It comes as no surprise that central bank digital money and its potential implications for domestic economies, as well as for the structure of the global financial system, are subject to controversial discussions.

The vast majority of global CBDC initiatives are still in the early stages of development and specific characteristics have not yet been defined, which prohibits any premature conclusions regarding the real effects they might have. Considering the technical infrastructure of CBDCs, when it comes to their design, central banks must decide between a conventional centralised approach and decentralised distributed ledger technology (DLT) approach.[54] A centralised information system would be under the full control of the central bank, while decentralised databases, such as in the case of Bitcoin and many other cryptocurrencies, are openly accessible for participants for the validation of transactions. Another fundamental design consideration is the choice between an account-based CBDC model and a token-based one.[55] Account-based CBDCs are tied to an identity scheme, where users are registered through user accounts and conduct transaction orders settled by the system owner. Token-based CBDCs would allow users to hold digital tokens directly in their personal wallet under their own custody, similar to contemporary cash money issued by central banks.

Responding to emerging private digital currencies and similar initiatives from central banks around the world, the ECB launched its digital euro project in July 2021.[56] We argue that a token-based approach would be the most suitable option for a CBDC within the eurozone, as there are favourable parallels between digitally tokenised assets and existing digital currencies in the crypto space. This may provide potential for various synergy effects in terms of interoperability between a CBDC and other existing digital assets. Most design decisions regarding a CBDC for the eurozone have not yet been publicly disclosed. This analysis elaborates aspects of CBDC issuance, ranging from fiscal to monetary implications, as well as geopolitical considerations. There are several individual but intertwined developments emerging from the contemporary crypto sphere, triggering several trends that have the potential to affect the commercial banking system and state-enforced monetary policy.

4.1 DECENTRALISED FINANCE DISRUPTING THE FINANCIAL SECTOR

While the start of Bitcoin marks the genesis of peer-to-peer networks enabling decentralised finance without intermediaries, the vast majority of decentralised financial applications are built on the flexibly programmable infrastructure

53 Fabio Panetta, "Stay safe at the intersection: the confluence of big techs and global stablecoins," 8 October 2021, Speech by Fabio Panetta, Member of the Executive Board of the ECB, https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211008~3c37b106cf.en.html

54 Raphael Auer, Giulio Cornelli, and Jon Frost, "Rise of the central bank digital currencies: drivers, approaches and technologies," 24 August 2020, BIS Working Paper No. 80, https://www.bis.org/publ/work880.pdf

55 "Report on a digital euro," October 2020, European Central Bank, https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf

56 "Eurosystem launches digital euro project," 14 July 2021, European Central bank, press release, https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210714~d99198ea23.en.html

layer of the second-largest cryptocurrency Ethereum. The total value locked in decentralised financial applications increased from approximately 600 million to 15 billion US dollars in 2020,[57] projecting the value of cryptocurrency, which is collateralised, lent, borrowed, and used for a broad range of economic activities without the interference of corporate intermediaries such as banks. In this way, innovations emerging from the crypto space challenge established models in finance, where corporate banks traditionally act as custodial intermediaries settling transactions and providing services to their customers. In addition to disruptive developments driven by cryptocurrency markets resulting in traditional private banks facing the threat of disintermediation, large tech firms also announced their aspirations to provide digital and tokenised means of payment to their global user bases. One of the most prominent cases was the "Diem" initiative proposed by Meta Platforms, which threatened traditional financial institutions and their business models, before the project was sold by Meta to Silvergate Capital Corporation.[58]

The maturation of crypto-native companies has attracted a number of institutional investors, suggesting that as they develop further, they could in time become top tier financial institutions that eventually compete with today's traditional financial institutions. With the prospect of privately issued stablecoins providing alternative means of payment and offering store-of-value opportunities for consumers and enterprises in Europe, the ECB assessed their potential impact on the euro system. Whereas decentralised finance (DeFi) products, such as lending and collateralised borrowing of digital assets, primarily threaten the business models of the corporate banking sector, a scenario involving stablecoins being widely adopted and used for a significant share of the EU's economic activity, replacing euro deposits on a large scale, would drive the ECB to consider issuing a CBDC itself in order to defend its dominance within the eurozone.[59]

While the number of globally coordinated regulatory initiatives (e.g., on G20 level) pertaining to the crypto space increase, it remains unclear how regulation of decentralised peer-to-peer networks can be achieved. There is no doubt that retail and wholesale access to cryptocurrencies could be limited by regulators using centralised exchange companies as a starting point. Additionally, disincentivising measures such as a comprehensive taxation scheme addressing cryptocurrencies may be conceivable. Such measures, however, may only limit the access to and usage of digital assets, but would be unable to manipulate the technical base layers of globally adopted blockchain networks. A beneficial approach could be the evaluation and certification of decentralised financial services and crypto-assets. Such measures could increase security for European users and aggregate trustworthy products, incentivising their adoption through a positive certification. This inclusive approach of transparent integration, regulation and certification would be a significant alternative to the prohibitive governance in China and the reluctant governance in the US. Domestic attractiveness to financial technology firms is becoming a key factor in international competition. A financial environment introducing transparent and plausible regulation by the ECB would help to shape global standards and to attract digital business models and innovation within the eurozone.

Whereas DeFi alternatives potentially threaten traditional business models and the banking sector's intermediary role, a CBDC could also significantly reduce the liquidity of commercial banks, acting as a more attractive store of value for consumers and replacing bank deposits. Therefore, similar to stablecoins and corporate digital means of payment provided by centralised companies, CBDCs also pose a threat of disintermediation for the financial sector within domestic economies. The ECB intends to prevent such scenarios, as it regards the financial sector as an integral part of the euro system and its disruption as a threat to financial stability, impairing the lending and investment funding of commercial banks and potentially reducing economic activity in Europe.

In order to avoid scenarios of a CBDC replacing conventional deposits with commercial banks by acting as a more attractive store of value, the ECB could make use of several dynamic features created by its digital nature and, more precisely, its programmability. Similar to the contemporary concept of the two-tiered banking system, the ECB may consider disincentivising large-volume deposits of its CBDC through a less attractive interest rate than on account deposits provided by commercial banks.[60] Alternatively, ECB officials also indicated that they were considering limiting the amount of CBDC held by economic actors, while the Bank of England raised the option of restricting the convertibility of bank deposits to CBDC in order to disincentivise large-volume accumulations of such.[61] In doing so, the ECB would attempt to maintain the current position of commercial banks in global capital markets, by in fact, subsidising their business models, motivated by their need for financial stability and economic growth within the eurozone.

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57 DeFi Pulse, https://defipulse.com/

58 Olga Kharif, "Meta-Backed Diem Association Confirms Asset Sale to Silvergate," 31 January 2022, Bloomberg, https://www.bloomberg.com/news/articles/2022-01-31/meta-backed-diem-association-confirms-asset-sale-to-silvergate

59 "Stablecoins: Implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area," September 2020, European Central Bank Occasional Paper Series No. 247, https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op247~fe3df92991.en.pdf?b85631de8b2fdfa5395c2a4c87de05e1

60 Ulrich Bindseil, "Tiered CBDC and the financial system," January 2020, European Central Bank Working Paper Series No. 2351, https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2351~c-8c18bbd60.en.pdf

61 Michael Kumhof and Clare Noone, "Central bank digital currencies — design principles and balance sheet implications," May 2018, Bank of England Staff Working Paper No. 725, https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2018/central-bank-digital-currencies-design-principles-and-balance-sheet-implications

4.2 PROGRAMMABLE MONETARY POLICY AND FISCAL IMPLICATIONS

The programmability of CBDCs, as observed in the crypto space, is one of their core characteristics and drives their value proposition compared to the contemporary financial system. While this programmability in the crypto space is manifested in the form of "smart contracts" facilitating decentralised decision-making on DeFi protocols and imposing terms and conditions on their users, CBDCs are likely to incorporate programmable features as well, enabling new forms of monetary policy and even fiscal measures. This facet of CBDCs allows central banks to dynamically adjust and enforce monetary instruments within their networks, potentially resulting in their governance decisions being based on sophisticated forms of data analysis.

The monetary and financial historian Franklin Noll and Kristin Boggiano, co-founder and president of CrossTower, described the potential programmability of state-issued digital currencies as follows: "CBDCs could, theoretically, incorporate smart contracts or other similar technology. Smart contracts are pieces of code, often run on distributed ledger technology platforms, that execute a function when certain conditions are met. Such smart contracts can be inserted into a CBDC."[62]

Specifically, the analysis of transactions within CBDC networks can allow central banks to increase their understanding of capital flows and economic activity within domestic economies. Such functionalities may be utilised to a different extent by authorities, where the contrast between the Chinese and the European approach serves as an illustrative example. Central banks may develop new types of monetary tools through CBDC issuance, enabling them to dynamically iterate their implementation for particular sectors or other groups of economic participants. These trends could manifest in the form of interest rates imposed only on particular sectors or branches in order to incentivise desired behaviour. Similarly, stimulating measures could be applied to other predefined classes of economic participants. Potentially, in addition to advanced monetary instruments, CBDCs could enable sophisticated forms of fiscal policy, enhancing governmental services, such as automated taxation procedures and social security funding. Even financial aspects of law enforcement may be facilitated through data-driven CBDC governance based on sophisticated forms of data analysis and behavioural incentives.

The prospect of such extended forms of governance tools for central banks raises a variety of hypothetical questions, including the concentration of power in the hands of central banks, blurred boundaries between fiscal and monetary policy instruments, and questions regarding constraints on the free market economy. Different societies may resolve such issues in different ways depending on their individual governance concepts, resulting in an opportunity for observers to contrast different approaches regarding CBDC issuance and its implications. In addition to such complex and wide-ranging uncertainties, central banks find themselves operating in an incredibly dynamic geopolitical and macroeconomic environment.

4.3 COMPETITIVE MACROECONOMIC ENVIRONMENT OF CBDCS

As existing fiscal and monetary policy tools proved to be less effective in 2020, governments and central banks completely exhausted them in response to the COVID-19 pandemic. The noteworthy aspects of these expansive monetary measures are low and negative interest rates, loosened inflation targets, a significant decrease in reserve requirements for commercial banks, and commitment to unlimited quantitative easing, resulting in unprecedented amounts of fiat currency brought into circulation within a short period of time. Facilitated by such monetary easing instruments, governments rolled out fiscal stimulus programmes to support their domestic economies, which appear to be increasingly dependent on policy decisions and monetary stimulus. While the short-term focus on monetary stimulus may only show its real effect on economies in the long term, it is evident that market actors listen carefully to decisions made by the ECB, in particular their assessments regarding the key interest rate for the euro. The stimulus of reduced interest rates to incentivise economic activities is weakened because of excessive overuse. A new policy to normalise financial markets and readjusting to provide conditions where active monetary policy becomes more effective is necessary and should be supported by additional tools. The introduction of new digital tools for monetary policy, with their ability to track financial streams and supporting analysis, could be a useful addition.

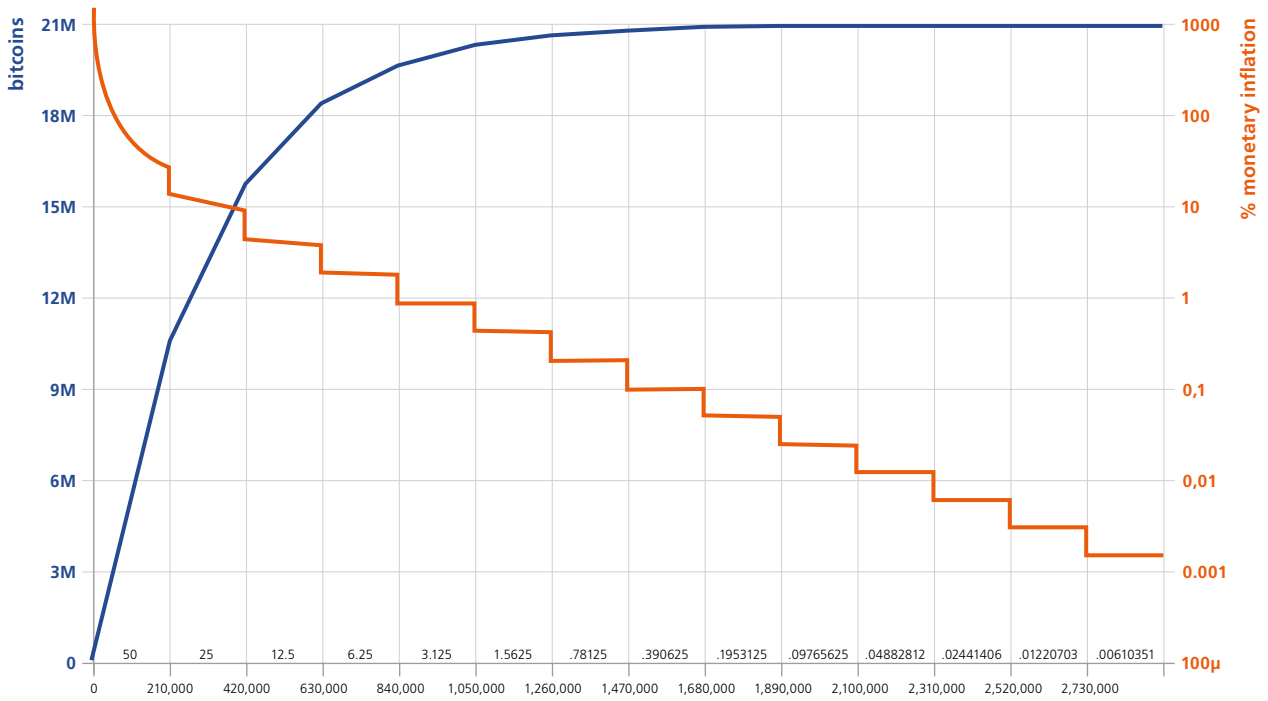
In light of these events, financial institutions have taken actionable steps and increased capital allocation to Bitcoin, recognising cryptocurrencies as an emerging digital asset class. Besides a growing spectrum of individual retail investors, a number of hedge funds publicly traded companies such as Square and Microstrategy and insurance companies such as MassMutual announced asset allocations to Bitcoin as a hedge against inflation and a store of value.

Lastly, even investment banks have started to research and explore digital asset custody for their customers. Here, there is an emerging trend of Bitcoin being recognised as a provable scarce digital asset and a store of value, similar to gold but in cyberspace. This narrative predestines Bitcoin to be an asset used as collateral for all sorts of economic activity on the internet, as well as a potential global reserve asset if its market capitalisation continues to increase at its current pace.

At the same time, recent statements from regulators in the US and Europe have been limited to narratives centred on

62 Kristin Boggiano and Franklin Noll, "Central bank digital currencies have the power to upend global finance", October 2020, Cointelegraph.com https://cointelegraph.com/news/central-bank-digital-currencies-have-the-power-to-upend-global-finance

Bitcoin Monetary Inflation



Source: Wallabit Media LLC (2023): Bitcoin halving clock. Januar 2023; https://buybitcoinworldwide.com/halving/

Bitcoin's role in illicit financing, which have been proven to be inaccurate.[63] According to a report published by *Chainalysis* in 2021, the criminal share of all cryptocurrency activity fell to just 0.34 per cent in the previous year.[64] Such developments demonstrate, despite cryptocurrencies increasingly being perceived as an emerging asset class, a vast majority of current regulators still tend to base their decisions on a fragmentary reflection of the crypto space and its implications for traditional finance. Global regulators should embrace digital finance innovations as an opportunity to create synergy effects, instead of focusing on restrictive rhetoric.

63 Hailey Lennon, "The False Narrative Of Bitcoin's Role In Illicit Activity", 19 January 2021, Forbes, https://www.forbes.com/sites/haileylennon/2021/01/19/the-false-narrative-of-bitcoins-role-in-illicit-activity/?sh=43ebabd23432

64 "The Chainalysis 2022 Crypto Crime Report", https://blog.chainalysis.com/reports/2021-crypto-crime-report-intro-ransomware-scams-darknet-markets

5

A DIGITAL EURO AS AN INTEGRAL COMPONENT OF THE GLOBAL DIGITAL ECONOMY

The maturation process of the cryptocurrency market is inevitable. Its rapidly growing market infrastructure, increasing influx of capital, and continuous development of innovative business models are likely to attract more investors and market participants in the future. We consider these trends as an opportunity for central banks and for the ECB in particular, to pursue a participatory approach towards the emergence of digital assets instead of a restrictive one.

Regarding potential synergies between CBDCs and existing digital assets, we regard the composability and interoperability of the digital euro with widely established cryptocurrencies, such as Bitcoin and Ethereum, as a key driver for a successful coexistence of two thus far isolated domains. Ensuring that a digital euro can be integrated into existing decentralised financial services and freely exchanged with other digital assets would stimulate mutual benefits. Such synergy effects may materialise in the form of the European CBDC being integrated into innovative business models emerging in the digital economy, as well as digital assets appreciating in light of capital flows and shared liquidity from the eurozone economy.

When it comes to the impressive potential for fiscal and monetary instruments provided by CBDCs which were mentioned earlier, many of these aspects still require thorough consultation and discussion, as they involve fundamental issues of distribution of power within the EU and the free market economy within the eurozone. Of course, there are many different political views and interests, while some Member States will be quick to develop e-payment or e-government systems, others might be more reluctant. Therefore, the ECB should be empowered by the European Member States to introduce a common system that is provided by central banks on state level, in order to support common European interests in a shared economic area and shared standards. Diversification with too many siloed systems or the absence of a CBDC in individual countries would create a vacuum filled by other players and result in strengthening of activity areas with less involvement of governmental institutions.

Regarding the potential development of a CBDC by the ECB, we call for a digital euro to be developed in a transparent and inclusive design process. Furthermore, we appeal for an open network structure, allowing external access to data within reasonable limits, in order to encourage co-creative innovation, iteration and sustainable competitiveness of a European CBDC as an established component of the global digital economy.

A parallel financial structure that exists without access of central banks or other public institutions could be harmful and reduce their actual influence on the economic circumstances. Every central bank has to find its own answer to this new trend of digitalisation, and for the European Central Bank, as the third biggest between the American and the Chinese system, it is particularly important to develop an independent response according to its unique values. It is not only the technical opportunities that are a driving factor for the introduction of a European CBDC, but also the advances of other countries and, above all, the rapid progress of the Chinese CBDC. To ignore this opportunity of technological as well as fiscal influence would weaken the competitiveness of the eurozone and make it more costly, economically and politically, to catch up later on. In the momentum created by this vacuum and as yet ill-defined international standards, set and accepted by central banks, the ECB could step up and use the huge economic impact of the eurozone to set a standard before other digital currencies do.

While the international development of CBDCs is taking place in a competitive environment driven by geopolitical and macroeconomic interdependencies, central banks are also starting to be challenged by globally adopted digital currencies such as Bitcoin. The hypothetical scenario of CBDCs being integrated into large parts of the digital space characterised by free capital flows between state-issued money and other digital assets would create a level playing field and foster direct monetary competition between CBDCs and cryptocurrencies. The current inflationary nature of state-issued currency stands in contrast to the disinflationary monetary policy enacted within the Bitcoin network. In a free market setup, capital allocators may perceive Bitcoin as a more attractive store of value than state-issued currency, under the premise of continuous monetary expansion from the side of central banks. On a very small scale, such tendencies can already be observed today. We do not consider this scenario to be a fundamental threat for CBDCs but point out that an extended environment shifting from com-

petition between economies to systemic competition may require fundamental considerations regarding the euro's prospective role in the future digital economy and its respective monetary characteristics.

OUR RECOMMENDATIONS TO THE ECB CAN BE SUMMARISED AS FOLLOWS:

- The emergence of decentralised cryptocurrencies revolutionises traditional finance and requires central banks to respond.

- CBDCs provide significant technical potential to improve monetary policy instruments and financial governance.

- The development of other CBDCs, particularly in China, forces the ECB to develop a European CBDC in response so that it can shape standards.

- The technological opportunities to track and analyse payment flows in real time provide a new chance to enhance monetary policy and learn directly from its outcomes.

- The ECB should pursue a participatory and integrative approach towards the emergence of digital assets in order to establish a digital euro as a competitive component of the global digital economy.

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ABOUT THE AUTHORS

Felix Klein holds a Master of Science in Accounting, Organisation, and Institutions from the London School of Economics and Political Science. Currently, he is pursuing a second master´s degree in business administration at the Humboldt University of Berlin. Since October 2022, he has been a young Fellow at the German Council on Foreign Relations, focusing on the competition between the European Union and the People´s Republic of China.

Nadim Baker holds a Master of Science in E-Governance with study periods in Belgium, Germany, and Estonia. During his studies, he specialized in information systems and completed internships at the European Central Bank and the European Parliament. Nadim has been active in the field of cryptocurrencies for five years. As a digital asset analyst, he currently focuses on early crypto collectibles within the Bitcoin and Ethereum ecosystems.

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CHINA AND ITS CENTRAL BANK DIGITAL CURRENCY

Is the E-Yuan a Role Model for Europe and the Euro System?

The emergence of decentralised crypto-currencies revolutionises and challenges traditional finance. Central banks must respond to and provide a governed approach to the new global digital economy. Central Banks, as first movers, will develop an advantage as they shape and set new international standards.

The development of other Central Bank digital currencies, particularly the E-Yuan in China, demands the European Central Bank step up and initiate a European response so that it can shape new evolving standards for the digital economy.

The opportunities for tracking and analysing payment flows in real-time provide a new chance to enhance monetary policy. Europe needs an integrative approach to establish a digital euro as a competitive component of the global digital economy.

Further information on the topic can be found here:
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