

Central Bank Digital Currency: the Next Money Revolution?

Central Bank Digital Currencies in the Dimension of Geopolitics

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SUMMARY

Throughout history, financial innovation was always interlinked with shifts in the world's economic centre of gravity and the emergence of new power hubs. Nowadays, the huge interest in central bank digital currencies proves that we must have arrived at a new turning point in the development of money. Most studies, however, focus on financial issues related to CBDCs, and only few embark on discussing historical analogies and geopolitical consequences in a comprehensive way. Our study aims to deliver such an analysis. According to the results, the revolutionary effects of CBDCs might arise from re-modelling cross-border payments, i.e., achieving direct (atomic) transactions through multilateral platforms. The remarkable results of China in developing the digital yuan, and most importantly, acquiring a key role in international projects, reinforce the geopolitical trends of the last decade. Global or regional standard-setting will be a critical question, and in this regard, there is still some room for manoeuvre on the side of the U.S. which started its own CBDC development (Project Hamilton) belatedly. In the long run, it might be realistic to expect a scenario in which the global financial system is divided in two parts, a Western and an Eastern one.

KEYWORDS: financial innovations, central bank digital currency (CBDC), cross-border CBDC platforms, geopolitics, China

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The keen interest in central bank digital currency (CBDC) can be detected in literature mainly in the examination of issues related to the financial system and the circulation of money. Some of these works include introductions to monetary history, but they rarely connect the role of financial innovations – in particular, that of CBDCs – with the global economic and geopolitical changes taking place in a given age.

It is the economic press which more frequently discusses the geopolitical aspects of CBDCs and especially the progress made by China in this respect. These articles, however, have only limited space and scope to interpret the background of the outlined future scenarios. Therefore, our study attempts to give a comprehensive interpretation of the possible geopolitical aspects of CBDCs. More specifically, we examine two connected questions:

❶ From the aspect of the global financial system, in what way can CBDCs bring a breakthrough which is similar in its magnitude to that of earlier ‘money revolutions’?

❷ How can the future of the world’s power hubs be affected by China’s digital yuan (e-CNY) project?

The validity of our approach is underpinned by the next chapter, which illustrates that financial innovations have always been closely related to shifts in the world’s economic centre of gravity and the rise of new power hubs. Following that, the first research question will be answered in the chapter ‘Breakthrough in cross-border payments’, while the second question will be addressed in the chapter ‘China and the perspectives of the digital yuan’, as well as in the closing outlook.

FINANCIAL INNOVATION AS A DRIVING FORCE IN GEOPOLITICS

Throughout history, the transformation of money played a key role in the rise of

different regions, from ancient Mesopotamia to the present superpower status of the USA. Financial innovations often go hand in hand with technological innovation, i.e. “as infrastructure leads, the assets [forms of money] often follow” (International Economy, 2020:16). As the novelty of CBDCs lies first of all in technology (a new type of digital operation of central bank liabilities, and the possibility of direct digital transactions), it is worth reviewing the earlier examples of the relationship between technology-related ‘money revolutions’ and the emergence of economic and power hubs. Based on *Kiss* (2018), *Bánfi* (2013), *Bordo* (2020) and *Balogh et al.* (2022), *Table 1* illustrates the most important episodes in history.

Throughout the millennia in ancient times, the birth of the first states and the organisation of the economy required the emergence of writing and records (e.g. cuneiform tablets), and the evolving forms of commodity money (produced currency) – including minted coins – contributed to the flourishing of city-states and empires in the Mediterranean region. Paper money appeared in China in the 11th century, supporting the power of the Chinese Empire, one of the most advanced economies of the world at that time. Although this form of currency fell into oblivion in China, cash equivalents and paper money were later created in Northern Italy and Western Europe, supported by the development of mathematics and accounting (double-entry bookkeeping) (Fibonacci, Pacioli). Banking houses (e.g. the Medicis) and the emergence of stock exchanges became the driving forces of the Renaissance era, laying the foundation for the rise of Europe and indeed the centuries of the Atlantic era.

Later, with the foundation of the Bank of England (1694) and other institutions, the awarded monopoly in issuing banknotes clearly indicated the stronger central role of the state. *Bordo* (2021) compared this with

Table 1

SOME KEY FINANCIAL EPISODES AND THEIR GEOPOLITICAL CONNECTIONS

Period	Innovation in the monetary and financial system (in the forms and circulation of money etc.)	Geopolitical connection
Antiquity	Emergence of economic accounts, commodity money, including minted coins in the Ancient East and the Mediterranean region	Flourishing ancient civilisations (e.g. Mesopotamia), rise of trading city-states and empires
11 th century	State-issued paper money in China	Contribution to the economic progress of the Chinese Empire
Approx. from 13 th century	Arabic numeral system, double-entry bookkeeping, banking houses and bills of exchange, classic banknotes and paper money, banknote issuing monopolies (e.g. Bank of England, 1694)	Renaissance: Rise of Europe and the start of the Atlantic era (from 16 th century)
19 th century	Gold standard and the British pound as world currency	England, the power hub of the world
1944	Bretton Woods, USD as world currency, created money (money creation)	U.S. superpower
From the 1960s	Bank cards, ATMs, SWIFT	
21 st century	Internet, distributed ledger technology and central bank digital currencies	Further strengthening of China and the East?

Source: Own edited

the digital finances of our days: “Just as the history of multiple competing currencies led to central bank provision of currency, the present day rise of cryptocurrencies and stablecoins suggests that the outcome may also be a process of consolidation towards a CBDC.” (op. cit., 2021:5).

The operation of the Bank of England formed an integral part of the economic processes that made England the financial and power hub of the world by the 19th century, and made the pound a world currency under the so-called gold standard. In that period, electricity already played a role in the development of the monetary system by the use of the transatlantic telegraph network and telephone.

At the end of World War II, the introduction of the Bretton Woods system and the central role of the dollar were the result of the ‘power game’ at that time, but the USD may attribute its continued dominance to the renewal of money and technology, too. In 1971, even the formal link to gold was abolished, and since that point, money has fully been functioning as ‘created money’. Money creation offers a large scope for digitalisation (and vice versa), so it is not surprising that the past decades have been all about bank cards, ATMs, and electronic and internet systems (e.g. SWIFT international messaging system). Technological development was led by the USA for a long time in this regard, too.

The new digital money revolution in the

21st century is driven by technology on the one hand, and the emerging powers on the other hand. As *Matolcsy* (2020) put it, we live in an age dominated by the fusion of geopolitics, money and technology. These three factors together make the world’s economic centre of gravity shift to the East, supporting the emergence of a multipolar or even a bipolar system (USA-China) (Boros & Kolozsi, 2019). Nowadays the financial power of the USA is still robust, but recently we have detected the signs of stagnation in the use of the dollar – and in the case of international foreign currency reserves – even its slow erosion (*Figure 1*).

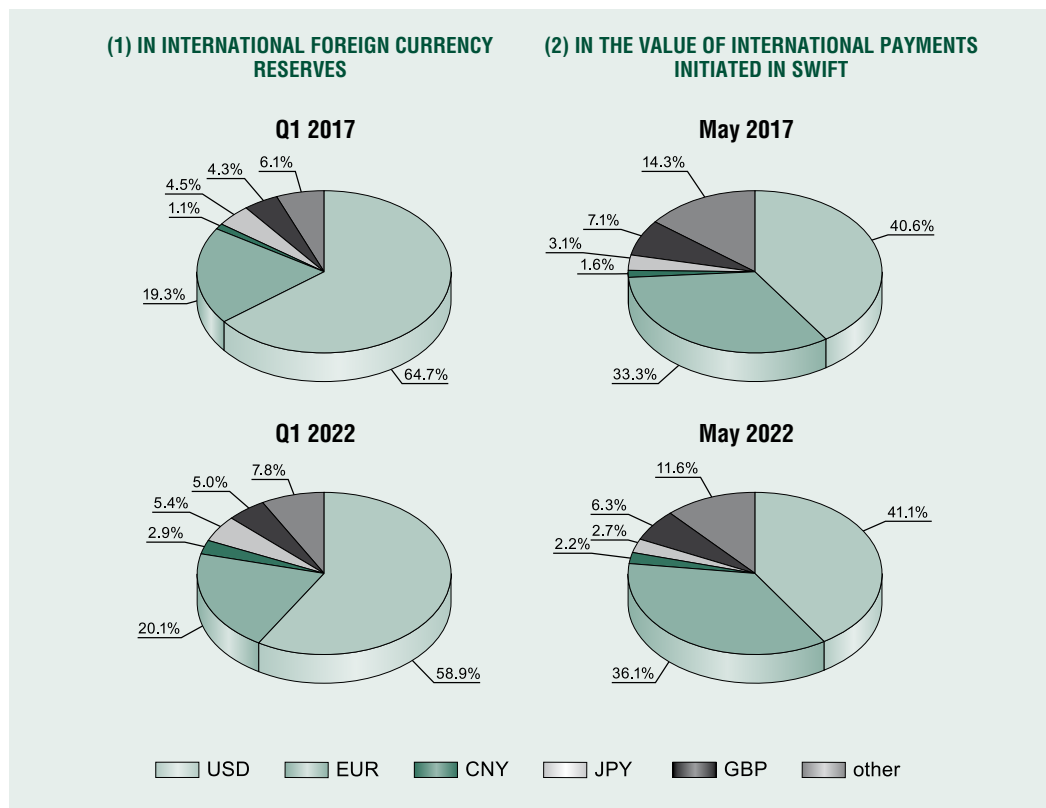
Can CBDCs catalyse this process, and if yes, why? This is what the rest of the study will examine.

CBDCS AND THE REVOLUTION OF CROSS-BORDER PAYMENTS

The idea of CBDC was brought into life by a number of interrelated factors. The most important one is accelerated digitalisation, which made the use of money move more and more into the virtual space, as opposed to cash transactions. Customers had already got used to mobile and card payments, but during the

Figure 1

SHARE OF MAJOR CURRENCIES



Source: Own editing based on (1) the IMF COFER (allocated reserves) (IMF, 2022) and (2) SWIFT data

pandemic, online financial services became even more appreciated. In addition, the growing interest in cryptocurrencies (e.g. bitcoin) and the ‘money issuing’ ambitions of BigTech companies also attracted the attention of central banks. The common feature of the mentioned digital solutions is that they are private money or assets of similar private nature. Presently, the players of the real economy may have access to digital forms of legal tenders only as private money (typically on accounts kept by commercial banks). Therefore, the need arises to ensure access to central bank money in a digital form, too; and there should be a payment system that is able to replace the existing digital channels, if necessary. This could be a precondition of preserving monetary sovereignty (Bordo, 2021; Horváth, Horváth, 2021; Zhou, 2021).

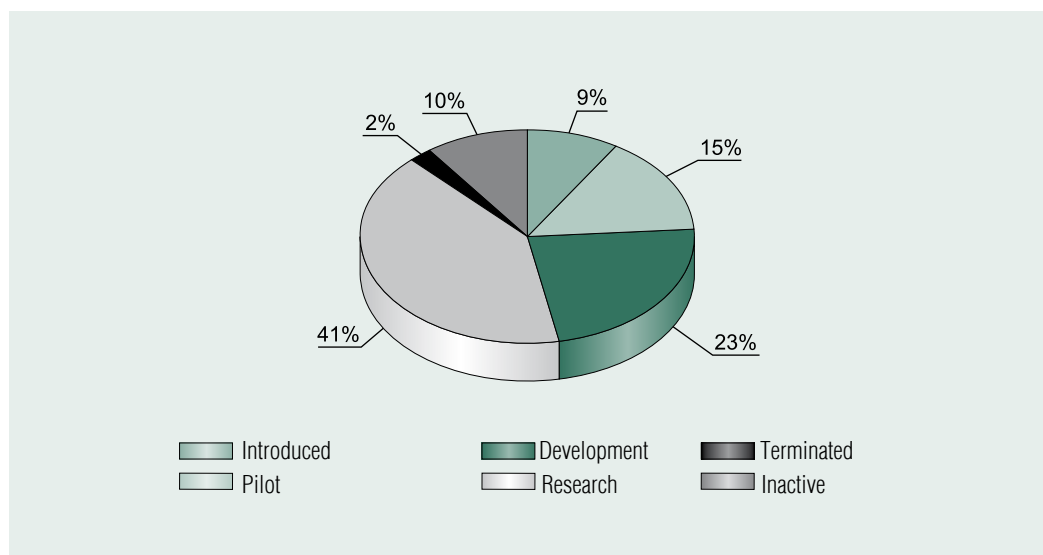
CBDCs could be able to reduce the costs of using cash and could make payments more efficient. Our study discusses efficiency – as a

key motivation – in detail, just like geopolitical motivations, which are related to the search for alternatives to the existing USD-centred financial system. Among the additional motives for CBDCs, the promotion of financial inclusion is also mentioned frequently, as well as the improvement of monetary transmission, and even the more efficient delivery of fiscal transfers (BIS, 2022; Bordo 2021).

So far, the Bahamas and Nigeria have introduced CBDCs, while the Eastern Caribbean Central Bank (ECCB), Jamaica and China are conducting advanced pilot projects (BIS, 2022; Atlantic Council, 2022). Among the major economies, China could be the first to officially introduce a CBDC (although such a decision has not been made yet). CBDCs have been tested in more than a dozen countries (Sewall & Luo, 2022), and 90% of the 81 central banks participating in the BIS 2021 autumn survey indicated that they were working on the subject (BIS, 2022).

Figure 2

STATUS OF CBDC PROJECTS IN 103 COUNTRIES (MAY 2022)



Source: Own edited based on data collected by the Atlantic Council CBDC Tracker

According to data collected by the *Atlantic Council*, in May 2022 almost half (47%) of the examined 103 countries reached at least the CBDC development phase (*Figure 2*). This data source registers 9 countries which have already started the official introduction of a CBDC (the Bahamas, Nigeria, six independent countries of the ECCB and Jamaica). Among the Western countries, Sweden is in the pilot phase, and other countries, such as Mainland China and Hong Kong, Saudi Arabia, the United Arab Emirates, the Republic of South Africa, South Korea, Singapore, Thailand, Malaysia, Ukraine and Russia are also considered to be in that stage. The euro area and Canada are in the development phase, while the USA is in the research phase.¹

Breakthrough in cross-border payments

When it comes to CBDCs, it is a frequent question whether they should be applied in the whole economy or interbank payments only. In the former case we are talking about retail CBDC, in the latter wholesale CBDC.

Commercial banks have long had access to central bank money in a digital form, too (on accounts kept for them by the central bank, i.e., the so-called central bank reserves). Thus, in terms of domestic interbank cash flow, CBDCs would primarily bring a technological novelty. The main point would be to make direct payments between the banks, instead of the traditional centralised general ledger kept by the central bank. From financial and geopolitical aspects, the wholesale CBDC becomes most exciting when it is viewed in an international context.

Retail CBDC – even when considered only in the domestic market – raises a number of questions beyond technology. The role of the commercial banks (the financial intermediary system) is especially a critical

issue. In most countries, the CBDC systems under development do not seek to eliminate commercial banks. In fact, the future distribution of CBDC would still rely on these institutions. This study does not discuss the related financial policy issues, but considering the focus of the examination, the following points are important:

► In the developed world – especially in the USA, the EU and Singapore – it is a relatively common argument that domestic retail CBDC is not a priority, as the instant payment systems already in use efficiently satisfy customer needs: real-time payments are carried out at negligible costs, through a stable banking system at any time (Meyers, 2022). Therefore, the real progress in efficiency could be achieved in international payments, and that requires the transformation of global interbank cash flows (wholesale CBDC).

► Nevertheless, geopolitical analyses typically assume that the general public would also have access to the future digital currencies.

Retail turnover is important, but after all, the next money revolution attributed to CBDC is based on the reform of cross-border payments. This requires the connection of various CBDCs, and the primary stakeholder is the banking system. The major international CBDC collaborations – e.g. Multiple CBDC Bridge (mBridge), Project Dunbar – also model the relationships of central banks and commercial banks in the participating countries.

Surprisingly, the efficiency of cross-border transactions is much lower than that of the domestic payment systems (Project Dunbar Report, PDR, 2022). This is due to the multistage correspondent banking model, in which banks keep accounts for each other and forward information using international messaging systems (e.g. SWIFT), so that transactions would be completed at the level of the relevant common account keeping

bank(s). In this process, the transactions are recorded in multiple ledgers, and the steps of verification (e.g. client identification) are repeated at every stage. This takes several days, and it is non-transparent and very expensive. According to the World Bank, in Q1 2022 the average transaction cost of cross-border income transfers consumed 6.09% of the amounts sent (World Bank, 2022). According to calculations, a 5 percentage point reduction in fees would result in cost savings of USD 16 billion annually. *Figure 3* indicates that while the average global transaction cost has shown a slight downward trend in recent years, the current level of over 6% is still high.

Another disadvantage of the system is that correspondent banks do not cover the entire

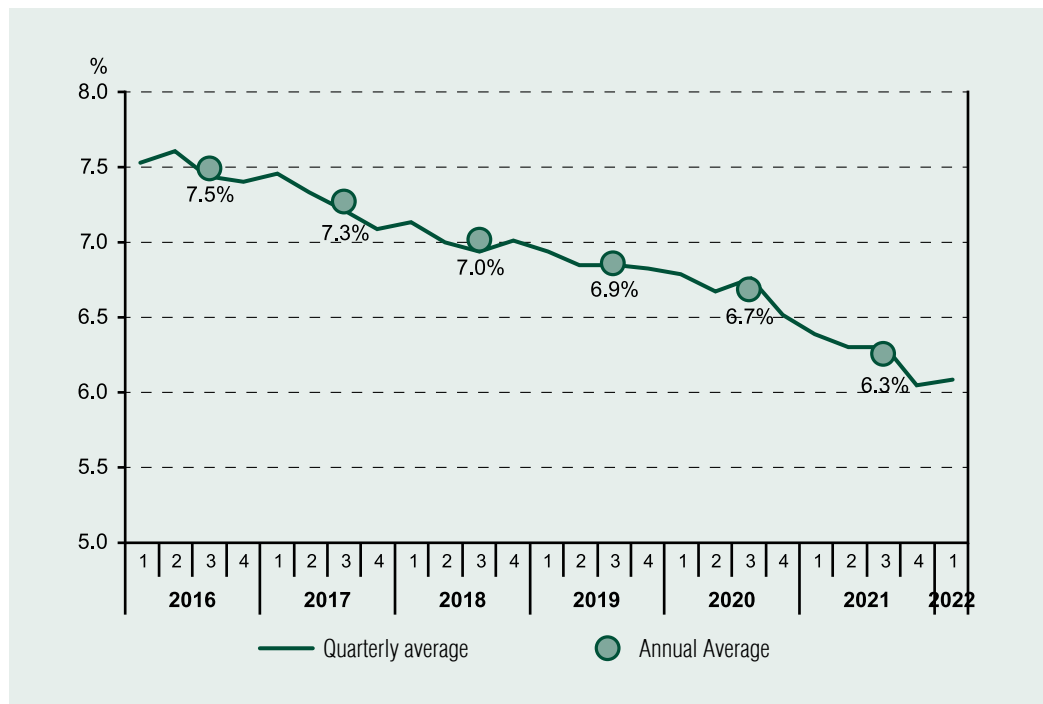
world evenly, which may lead to extremely high costs in certain regions. In Latin America and Africa, the number of active correspondent banks dropped significantly in the last decade due to the risk mitigation and optimisation attempts of the institutions (mBridge Report, 2021).

Recognising this problem, the G20 including the 19 most advanced countries of the world plus the EU set the objective of creating a cheaper, faster and safe international payment system (mBridge Report, 2021). They wish to reduce the average transaction cost of global income transfers to 5% (World Bank, 2022).

In the long term, the most efficient tool in these efforts could be the international CBDC

Figure 3

AVERAGE TRANSACTION COSTS OF CROSS-BORDER INCOME TRANSFERS, 2016–Q1 2022



Source: Own edited based on the World Bank Remittance Prices Worldwide reports

platforms covering multiple currencies. Several countries have already found partners to test cross-border CBDC flows. Saudi Arabia and the United Arab Emirates (EAE) carried out a joint initiative called Project Aber, while Thailand and Hong Kong tested bilateral CBDC transactions under the Inthanon-LionRock project. This was the basis of the already mentioned Multiple CBDC Bridge (mBridge) project which was extended to include the following participants:

- the monetary authorities of the UAE, Thailand, Hong Kong and Mainland China (People’s Bank of China, PBOC), and
- the Hong Kong office of the Bank for International Settlements Innovation Hub (BISIH).

The other major multilateral initiative is Project Dunbar, in which the following parties participate:

- the Singapore office of the BISIH,
- the monetary authorities of Singapore, Malaysia, Australia and the Republic of South Africa,
- the Magyar Nemzeti Bank (MNB, i.e., the Central Bank of Hungary) and the Banque de France as observers.

Both projects are aimed at direct transactions among the central banks and commercial banks of various countries. There is a single common platform, which performs operations with the CBDC versions of several different currencies. This is based on the tokenisation of money and the distributed ledger technology (DLT), which was originally made known by cryptocurrencies. The funds exist as digital tokens, which is a different logic compared the the digital records kept on the (traditional) bank accounts. Tokens can be directly forwarded to any participant, so foreign banks will also be able to access various currencies as central bank money in a digital form. CBDCs

are issued by the central banks, and the players can use them for direct payments among each other (atomic transactions).²

Transactions are recorded in a single ledger. Participants can track their balances in real time, and central banks can monitor the amount of their own currency (irrespective of whether the funds are held by foreign or domestic players). With the so-called smart contracts facilitated by DLT, a lot of bank control functions (e.g. detection of money laundering and terrorist financing) can be reduced to a single verification (depending on the legal environment; PDR, 2022).

With CBDC, it is possible to eliminate computation-intensive validation as the main limitation of DLT technology. By default, DLT is based on the consensus of a large number of nodes: the approval of transactions and their recording in the ledger requires the unanimous feedback of the majority of these nodes. The creation of new tokens (‘mining’) is also extremely computationally intensive, and the completed computation work validates the token (proof-of-work). This requires a huge amount of energy – at an annual level, the energy consumption of bitcoin, for example, is approximately the same as that of Argentina (Central Banking, 2022a). However, in the case of CBDC, central banks are widely trusted institutions who can certify individual transactions (proof-of-authority) and issue the central bank money itself. This way the system can be much more energy-efficient (mBridge Report, 2021).

The international results so far are encouraging in terms of technical feasibility and efficiency. According to the mBridge report, the Thai-Hong Kong Inthanon-LionBridge Phase 2 prototype – that is the predecessor of the project – drastically reduced the time needed to complete payments, to a few seconds only. It was possible to get rid of almost half of the main cost elements of the correspondent

banking system, especially three important cost factors:

- liquidity to be kept on various accounts and the costs of management,
- a significant portion of the costs of treasury operations,
- a large portion of compliance costs (mBridge Report, 2021).

The pilot projects have identified a lot of challenges, and the scope of participants and observers might be extended to solve them. The main objective is to create “a production-ready network that can serve the broader central banking community as a public good through open-sourcing” (mBridge Report, 2021:8). From the viewpoint of our study, the following development issues are the most important:

■ **ATOMIC TRANSACTIONS OR PRESERVING SOME (SPECIFIC) INTERMEDIARY FUNCTIONS:** due to different national legislations, it is not clear yet what kind of ‘intermediary’ functions should still be carried out, and who will do them. In terms of geopolitical impacts, it could be important if the special roles of some hubs are retained.

■ **SCALABILITY:** at the moment we have limited experience about the ability of the pilot models to handle huge global cash flows.

■ **INTEGRATION WITH OTHER CENTRAL BANKING, BANKING AND DOMESTIC PAYMENT SYSTEMS:** if some countries do not introduce retail CBDCs, the benefits of multilateral platforms could still be available by connecting them to domestic financial channels.

■ **DATA PROTECTION:** One of the focus points of the projects is who has what information about the individual transactions, which also affects operational efficiency. From a geopolitical point of view, the information collected by central banks is the most critical issue as the use of CBDCs may be significantly influenced by the trust in the given central bank (state).

Naturally, the most efficient solution would be to establish a single global platform. However, due to the above challenges, it is more likely that a number of large regional platforms will arise (PDR, 2022).

The perspectives of China and the digital yuan

In the future, cross-border CBDC platforms may overcome the present lack or limitations of multilateral payment solutions, and that would be a drastic change compared to the USA-centred correspondent banking system. Digital currencies therefore will be inevitably entering the geopolitical space. International CBDC projects are presently dominated by emerging Asian power hubs. Among them, it is China’s e-CNY programme that raised the possibility of weakening the role of the United States and the USD.³ Owing to its quick e-CNY development, Beijing is already actively shaping multilateral CBDC cooperation.

China started to work on CBDC as early as in 2014, and in 2016 they created the PBOC Digital Currency Institute (Zhou, 2011). The testing of the e-CNY started in 2020 in real payment transactions. Under the pilots, users have been able to buy goods with CBDC, and the latest test transactions have already included loans, tax and fee payments, as well as asset management products (CBN, 2022a, 2022b).

According to publicly available information, the e-CNY is a retail payment instrument that enables direct real-time payments even in offline mode (Birch, 2020). It is issued by the PBOC, and it will be channelled into the economy by the selected commercial banks, as well as payment and telecommunications service providers. These institutions have already been involved in the development phase, with no requirements for specific

technological arrangements (other than interoperability with each other; PBOC, 2021; Zhou, 2021).

China's main motivation to start its own CBDC research came from the intention to protect its monetary sovereignty (Birch, 2020). The spread of cryptocurrencies and the Libra project⁴ announced by Facebook were considered as a threat to Beijing. In parallel with the development of the e-CNY, the Chinese government gradually stepped up its measures against cryptocurrencies, and finally banned them in 2021.

The protection of monetary sovereignty was also raised in a further context. Mobile phone payments have been extremely popular in China for a long time, and the use of cash has dropped significantly. According to a 2019 survey of the PBOC, 66% of all transactions were mobile payments, while cash represented 23%, and bank cards only 7% (PBOC, 2021). Apart from some rural areas, the circulation of money is dependent on digital service providers, among which the two giants dominating the market, the Ant Group (Alibaba) and Tencent, are private companies. Since the end of 2019, Beijing has seen serious risks in this market concentration. Consequently, it considers a state-run backstop system necessary in the field of digital payments (mBridge Report, 2021).

The Chinese efforts also include improving the efficiency of the payment system, further reducing the costs of money issuance, promoting financial inclusion, and even better protecting privacy (mBridge Report, 2021). These are all internal objectives, and China emphasizes that the e-CNY is intended primarily for domestic use (PBOC, 2021; Zhou, 2021). In reality, however, the Chinese CBDC has at least as much foreign policy relevance as domestic importance, especially because China has been systematically encouraging the international use of the CNY

for almost twenty years. This so-called 'RMB internationalisation' was supported by the creation of the offshore yuan market and the gradual reform of the exchange rate system (Das, 2019; Boros, Kolozsi, 2019). Further key factors are

- the bilateral FX swap agreements between the PBOC and several foreign central banks;
- encouraging the settlement of foreign trade in CNY, and the Cross-Border Interbank Payments System (CIPS) set up for international yuan payments;
- extending loans in CNY abroad, and
- inclusion of the CNY and increasing its weight in the currency basket of the International Monetary Fund reserve asset (SDR).

According to empirical analysis, the exchange rate movements of the CNY now significantly influence the exchange rates of the South and South-East Asian currencies, especially since the latest major exchange rate reform (2015) (Boros, Sztanó, 2022). The strengthening role of the CNY is closely related to the strategic programme announced by President Xi Jinping in 2013, the Belt and Road Initiative (BRI), which has become a complex infrastructural, digital and green economic development scheme between China and four continents (Europe, Asia, Africa and Latin America).

A number of Chinese statements suggest that Beijing wishes its (digital) currency to play a geopolitical role, too. This aspect has become even more important since the outbreak of the Russia-Ukraine war. The Western sanctions against Russia have generated serious concerns in China, drawing renewed attention to the vulnerability of dollar reserves and the dangers of reliance on SWIFT (SCMP, 2022). In the wake of the Russian invasion and the subsequent sanctions, Zhou Xiaochuan, former governor of the PBOC

argued that replacing SWIFT was feasible, and the alternative channels would be increasingly important with the extension of the sanctions policy. Although in his opinion the digital yuan is not intended to replace the USD, it can still play a role in extending the room for manoeuvre in monetary and financial matters (Global Times, 2022).

Based on the above it is clear that the e-CNY – and its connection with multilateral CBDC platforms – is a major challenge for the dollar system, as it is a direct, fast and cheap payment solution, which can be an attractive alternative for many people in the medium term. Its use would not only facilitate the bypassing of Western sanctions, but it would offer a huge information base to China, in line with the new store of information function of money (Rosa, Tentori, 2021; Sewall & Luo, 2022).⁵

From a geopolitical point of view, several factors would support the use of the digital yuan outside China (Horváth & Boros, 2021):

- ▶ Mobile wallets that are popular in the developing world could be easily integrated with a digital yuan wallet, and e-commerce platforms could also offer the option for payments in e-CNY. In this respect it is important that the Chinese online giants already have major shares in a number of Asian FinTech companies and internet platforms.

- ▶ The BRI could offer a wider scope for the digital yuan. On the one hand, China has enough regional influence to encourage the use of the yuan (Rosa & Tentori, 2021). On the other hand, in Asia and Africa, and in fact all around the world, the Chinese diaspora is increasing, and its members play key roles in local businesses. Their activities strongly rely on relations with their home country (French, 2015), so they would certainly contribute to the spread of the e-CNY.

- ▶ Beijing may use other international platforms as well to promote its digital currency in the future, such as the Regional

Comprehensive Economic Partnership (RCEP), which covers 30% of global GDP.

- ▶ There are a large number of Asian guest workers in China, who transfer their income home to support their families. The possibility of instant, direct and cheap transfer of money could be much more attractive to them than the present options.

- ▶ A number of rivals of the USA would also welcome a system that bypasses Western sanctions. Some of them have already established closer links with China. These countries include Iran, Pakistan, and lately Russia. Another telling piece of news is that in June the largest cement company of India paid for a Russian coal consignment in yuan (Reuters, 2022a), so far unprecedented between India and Russia.^{6 7}

However, the international spread of China's (digital) currency also faces obstacles, mainly due to the Chinese exchange rate and financial system:

- ▶ The managed rate of the yuan (floating within a currency band) relies on a central parity against a currency basket. Therefore, “yuan issuance is currently anchored to the US dollar to a certain extent... It is by no means a long-term solution from the perspective of China's future international status and development needs”. This was pointed out at a recent forum of the Tsinghua University's PBOC School of Finance (PBCSF) (SCMP, 2022).

- ▶ Financial flows between Mainland China and the world are made more difficult by Chinese capital restrictions, which hinder the development of a deep liquid CNY market that would be necessary for its world money status.

- ▶ Until the 2010s, China's economic model was based on export-driven growth. The still typical external surplus is not conducive to a high level of international yuan liquidity, although this problem may be

less severe in future. In the targeted new dual circulation model, the promotion of domestic consumption – in principle – provides better conditions for the outflow of yuan from China.

► In the acceptance of the e-CNY, geopolitical aspects and trust play a critical role, with particular regard to the information that might become available to Beijing. The West would hardly use a currency that would provide real time information to China about its economy, and would even undermine its sanctions.

As for the first two points, Beijing takes regular steps to ease the capital restrictions and establish a more market-driven exchange rate regime. However, the question is whether its stability-oriented economic policies would allow for the full opening-up of the mainland financial market. A Chinese expert talking at the PBCS forum captured the typical approach very well: “we need to make preparations [to become independent of the dollar] (...). But it should stay low profile and its pace should be well managed” (SCMP, 2022).

The USA is now starting to realise that the Eastern CBDC initiatives may damage one of the main pillars of its superpower status: its global financial influence. But there are different opinions on the response to make. Some argue that the solution is not necessarily the digital USD, but the development of the dollar-based international payment infrastructure (Hughes, 2022). However, the topic of CBDCs has become unavoidable by now, so in March President Biden ordered an urgent review of the digital USD option, with continuing the related work of the Federal Reserve (Fed) and making US participation in multilateral projects a priority (White House, 2022).

The Boston Fed published a report in February about the first phase of its joint CBDC project (Project Hamilton) with the

MIT (Massachusetts Institute of Technology). The initial objective was to set up a central transaction module that meets the requirements of an extensive retail payment system (transfer within 5 seconds, over 100,000 transactions per second). In the course of this work, experts primarily assessed the limitations of the DLT and the need for atomic transactions. They managed to create an architecture that is capable to carry out 1.7 million payment transactions per second (without recording transaction history). The issues of data processing, the various controls, offline use, and the role of intermediaries were left to the second phase of the project (Boston Fed, MIT, 2022), which means a disadvantage compared to the pace of development in the case of the digital yuan and other CBDCs.

At the same time, it is worth noting that in the current phase of exploring digital currencies, the influence on standards can be a decisive factor, and in this respect, Project Hamilton has not necessarily lost the race yet. Sewall and Luo (2022) pointed out that while Beijing published only general information on the technological solutions of the e-CNY, the Fed and MIT published the full source code for the first phase of Project Hamilton.

The other major player of the Western world, the EU and within that, the eurozone started their CBDC project in 2021. In March, Fabio Panetta, Member of the Executive Board of the European Central Bank (ECB) said that the testing of the digital euro could start at the end of 2023, and it might as well be officially introduced in 2026 (Central Banking, 2022b). From a geopolitical point of view, the most interesting remark by Panetta regarding the necessity of the digital euro was that the lack of a CBDC would threaten the EU’s strategic autonomy. It is also worth mentioning that, according to an ECB survey, it is the data protection issues of CBDC that are of most concern to EU residents (ECB, 2021).

CONCLUSIONS AND OUTLOOK

According to our results,

① it is the field of cross-border payments – surpassing the correspondent banking model dominated by the US – where CBDCs may bring a real breakthrough.

② Beijing’s own digital yuan project, and in particular its involvement in international CBDC initiatives, has given it an advantage over the West, which could further boost the emergence of a new power hub in Asia, dominated by China.

The current patterns in the development of central bank digital currencies are in line with the emergence of a multilateral world order and the rise of a new Eastern pole that will ultimately reinforce the vision of a bilateral global system based on US-China competition. The definition of a new Eastern pole is not so clear-cut here. Although it is common to identify this new power hub broadly as ‘Eurasia’, this term usually includes the member states of

the EU as well, which would be really unlikely to widely use the digital yuan. Anyway, it can be assumed that an Eastern pole will emerge with expanding networks of the e-CNY and other interoperable digital currencies, and China will be a major hub. The division of the global financial system into two large parts (Western and Eastern) is a realistic alternative in the medium and longer term.

This is attributable not only to China’s global economic weight in general, but rather to its very early start in CBDC development. Although Beijing does not publish open source codes, it can still hold the advantage of innovators in shaping future international standards, as China is already active in shaping the mBridge and other partnerships (e.g. connection with Hong Kong). Even if the limits to the spread of e-CNY owing to the specificities of the Chinese financial system remain, the impact on global CBDC innovation will be an important tool for Beijing to implement the Chinese vision of world order. ■

NOTES

¹ It is worth mentioning here that in line with the international trends, the Magyar Nemzeti Bank has also started to explore the possibilities offered by CBDC and the related technological solutions (e.g. blockchain), using, among others, the Digitális Diákszéf (Digital Student Safe) and the Pénz-múzeum (Money Museum) applications for this purpose (see FinTech.hu, 2022 for more details).

² Intermediaries may still operate in practice, in a certain sense (they connect others to the system, or they are the first to receive the CBDC issued by the central bank). However, the emphasis is still on the replacement of the traditional model.

³ The Chinese legal tender has various names and abbreviations in use: most generally it is called

renminbi (RMB, „the people’s money”) or yuan. The yuan is a unit of RMB and it is also used to refer to the currency in general. Its typical abbreviation is CNY. In strict terms, CNY refers to the yuan used in Mainland China (onshore yuan). However, in the study we follow the common practice of the CBDC literature, i.e., we use the CNY abbreviation in general terms. So, by digital yuan or e-CNY, we always mean the Chinese CBDC under development.

⁴ Facebook had been developing its own digital currency under the name Libra, and then Diem, but the project was eventually stopped in early 2022.

⁵ The data management model of the digital yuan is also referred to as ‘managed anonymity’. This

means that the anonymity of transactions would be ensured up to a certain limit.

⁶ Although India has significant conflicts of interest with China, in the present situation its main objective is to secure Russian energy supplies.

⁷ As a matter of fact, since the outbreak of the Ukrainian war, the Russian central bank has accelerated its own digital rouble project (Reuters, 2022b).

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