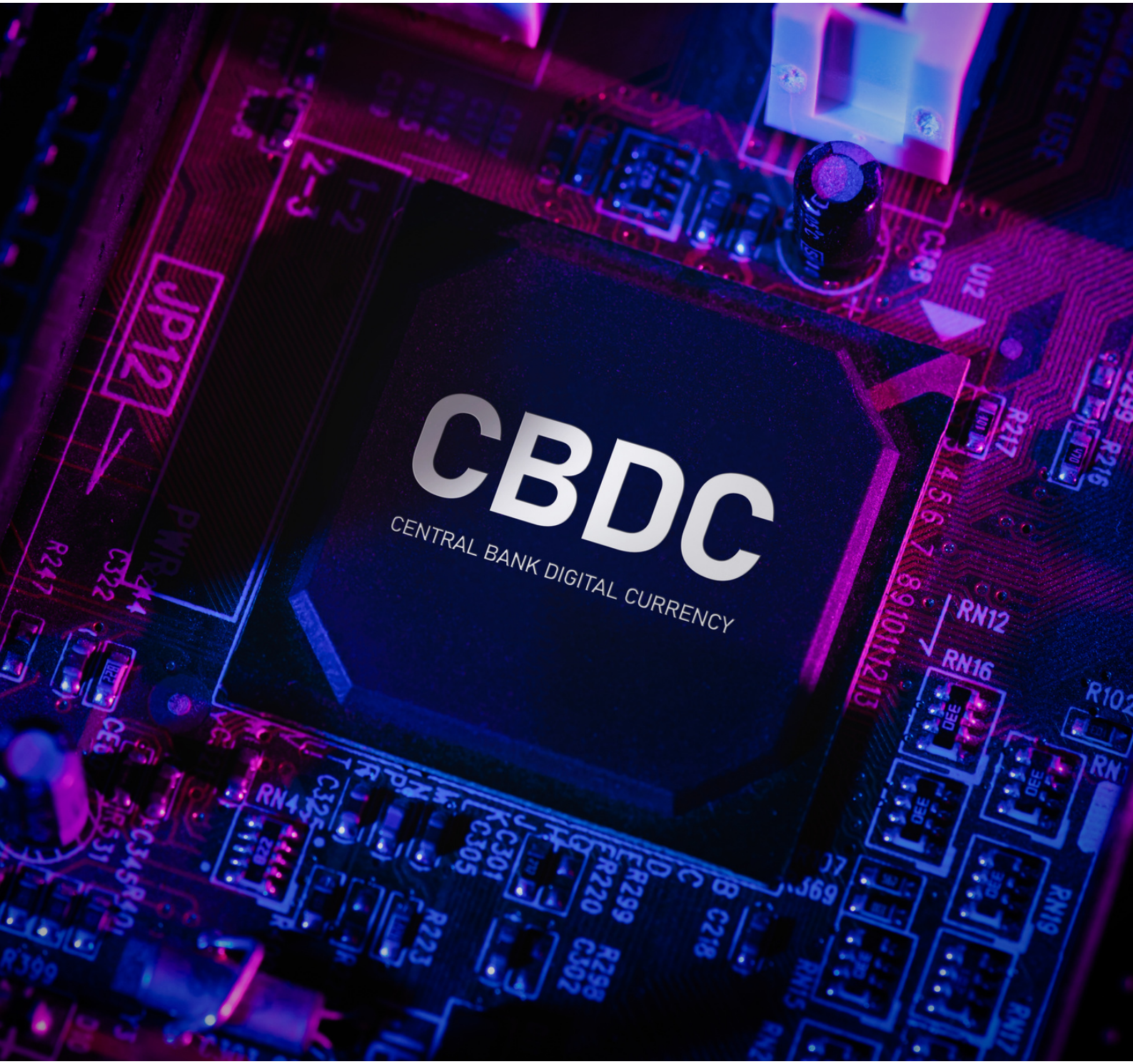

DISCUSSIONS ON

CHINA'S DIGITAL YUAN SETTING THE STANDARD FOR CENTRAL BANK DIGITAL CURRENCIES (CBDC)

hdh

MAY 2023

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PHENOMENON

More Chinese Government Employees Will Be Paid in Digital Yuan

Public sector employees in the Chinese city of Changshu will start receiving their salaries in central bank digital currency (CBDC), as China's rollout of the financial technology continues apace. The notice came from the city's financial authorities, according to a local media report, and the shift will be effective starting in May.

As of last month, China's CBDC rollout has expanded to 26 different regions in 17 of 23 provinces, the report states. **Another report** noted that Changshu City has previously promoted the digital yuan's use in certain situations, such as paying for public transport, medical expenses, groceries, and utilities like gas and water.

What China is doing

CBDCs resemble stablecoins because they are digital tokens pegged to the price of Chinese yuan. The e-CNY aims to be retail "digital cash" and it is fully backed by the People's Bank of China (PBoC). Instead of being issued by commercial entities on decentralized networks, CBDCs are issued and controlled by a country's government or central bank.

China is not the only jurisdiction that has an uneasy relationship with cryptocurrencies. Facebook's Diem digital currency project was stopped short partly because of US regulatory objections.

So far, the only major economy that has already launched a CBDC is China, which unveiled trials of the e-CNY at the end of 2021. But others aren't far behind. A 2021 survey by The Bank for International Settlements found that 86% of central banks were "actively researching the potential" of CBDCs.

Big Tech Cut Down To Size

> **Due to the widespread use of Alipay and WeChatPay, which link people's bank accounts to a digital wallet, China is already close to being cashless and many places no longer accept notes and coins.**

Yet, huge private platforms where the majority of people live their economic lives – as many as one billion Chinese people do so on Alipay – are, arguably, a threat to monetary stability if the transactions use a private crypto asset.

There is likely another factor in China's move to a CBDC: data. Before the government's crackdown to decentralised digital currencies, such as Bitcoin (which was banned last year), around 10% of China's consumer loans were made through Alipay's app.

The state-owned banks complained Alipay had an unfair advantage from lower costs of capital and lighter regulations.These big platforms have largely relegated commercial banks to funding pipes, whilst they had vast amounts of data that the state-controlled banks did not.

Having a digital yuan that puts the commercial banks front and centre in payments, and opens up the sector to new competitors, is certainly a step away from private big tech, and this will substantially change the payments sector in China.

Advantages of CBDC

With the advancement of technology, the concept of CBDCs has gained tractions in recent years, as they have the potential to provide many benefits...

Advantages of CBDC

01.

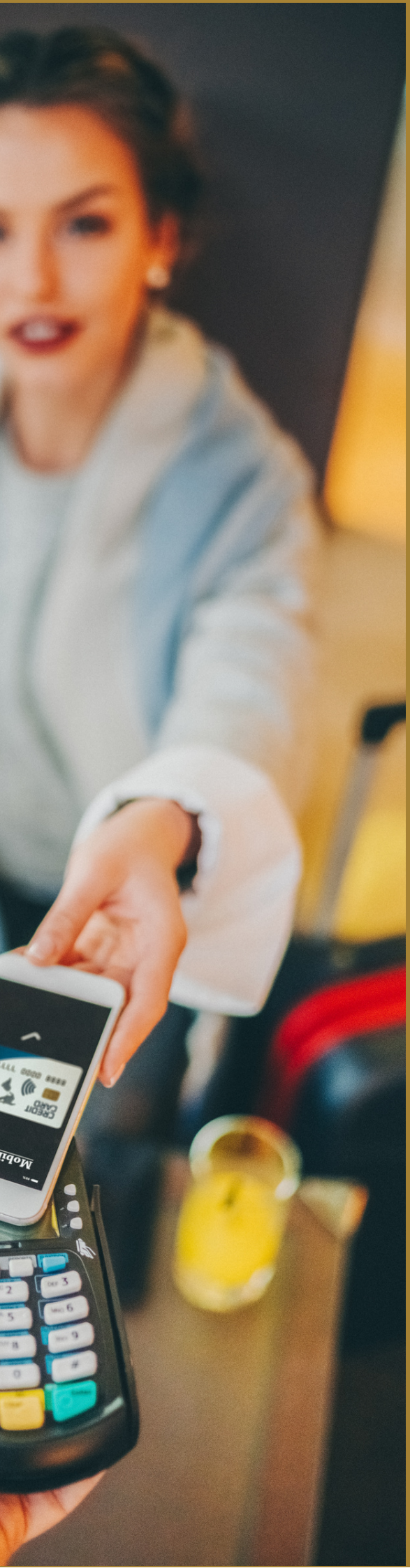
A **reduction in crime** (especially financial fraud) could be an advantage induced by CBDC: Should it become mandatory that digital wallets be linked to a person's national identification, allowing for easy verification of identity, financial fraud could be reduced substantially as all transactions would be traceable and thus adhere to higher AML and KYC standards as current cash (Engert & Fung, 2017). Besides, physical cash, especially notes is prone to counterfeiting. Being digital and directly issued by the central CBDC would not be vulnerable to the conventional means of counterfeiting (Löber & Houben, 2018).

02.

Financial Inclusion, for instance, could be enhanced as this electronically issued legal tender can directly be credited to digital wallets which can be accessed via mobile phones or other digital devices. This may facilitate accessing financial services for individuals and businesses, especially those in remote or underserved areas provided they dispose of a mobile phone and network connectivity. This could make it easier and more convenient for citizens to access financial services and participate in the economy (Auer et al., 2022). Moreover, CBDC would also allow for an efficient distribution of universal basic income should governments decide to introduce such subsidies (Söilen, 2021).

03.

If the CBDC design satisfies the public policy requirements of other supervisory and tax regimes, it is safe to say that a CBDC regime has the potential to induce a significant **reduction of tax evasion** as it would be the only legal tender in a scenario where CBDC has replaced physical notes and coins (Kwon, Lee, & Park, 2022). Moreover, the programmability of CBDC would allow entirely new and highly efficient methods of tax collection (Mitra, 2022). Virtually any tax could be charged at source, from VAT to income tax. Even import and export duties could be collected at source.



Advantages of CBDC (con'd)

04.

CBDCs are issued by central banks. This fact eliminates the risk of default or counterparty risk that exists in traditional banking systems. Transactions with CBDCs would be settled directly with the central bank. The user can therefore rest assured that he or she will always get paid the balance that they are due, and any transaction would thus bear **zero counterparty risk** with commercial banks (Prasad, 2021).

05.

Arguably this reduction of counterparty risk would also increase of the security and stability of the financial system and thus enhance the **robustness of the financial system** as it would scale down the role of banks in money creation and thus moral hazard (Bindseil, 2019).

06.

In general, it is also argued that CBDCs would boost the **efficiency of payment systems** altogether as CBDCs would lower not only settlement costs, but also reduce frictions and fees associated with payments as fewer middlemen are involved and thus risks reduced (Baronchelli, Halaburda, & Teytelboym, 2022). A consumer could for instance pay at the point of sale and the vendor would immediately receive the funds without delay and free of risk.

Advantages of CBDC (con'd)

07.

Furthermore, it is argued that the CBDC would further contribute to the stability of the financial system as it provides more possibilities to implement **efficient monetary policies** not least because central banks can bypass intermediaries and directly target sectors or groups (Oxford Analytica, 2020). For instance, helicopter money could be distributed in a highly efficient manner (Bindseil, 2019), but governments could also take advantage of CBDCs' programmability to manipulate the value of the currency which could be used to manage economic instability, stimulate economic growth, or support certain industries (Tata, 2023). Most notably, however, central bankers suggest that it is easier to implement negative interest rates on cash holdings under a CBDC regime and thus reduce the money in circulation (Davoodalhosseini, Rivadeneyra, & Zhu, 2020).

08.

Since banks would be disintermediated their role in the monetary system in general and for money creation in particular would be significantly reduced. As a result, commercial banks would create less money and central banks would increase their money creation. Consequently, government, respectively the public would benefit from collecting **increased seigniorage** instead of a range of privately owned commercial banks (Bindseil, 2019).

Advantages of CBDC (con'd)

9.

As all accounts and their balances are logged centrally, CBDC will also safeguard users from the loss of money. Should a device on which CBDCs are stored get lost or corrupted, the bookkeeping at the central bank will serve as a **loss protection**. A consumer could therefore no longer "lose" cash. (Choi, Henry, Lehar, Reardon, & Safavi-Naini, 2021) (Kahn, Van Oordt, & Zhu, 2021).

10.

Another argument in favor of CBDC is **convenience**: CBDCs could potentially facilitate the development of new financial products and services, such as peer-to-peer transactions, digital payments, and micro-lending as it offers possibilities to aggregate balances in a fashion that do not exist for cash and traditional bank accounts (Kahn & Rivadeneyra, 2020).

11.

Improved data privacy is often another argument for the introduction of retail CBDC: when a monetary transaction is made among contracting parties, banks or payment providers can gather information on the deal itself and on the buyer and seller. Gathered at large scale this information is extremely valuable and at times sold on to interested parties without the user profiting the sales of his or her data. CBDC would put an end to rent generation as central banks would not engage in such data gathering and sales thereof (Ahnert, Hoffmann, & Monet, 2022). The end-user would no longer give away valuable information to private entities for free and run the risk that they are traded on.

DISADVANTAGES OF CBDC

Yet, there is a flip side to this story:

Disadvantages of CBDC

01.

CBDCs could enable governments to access citizens' transaction data, which could be used to track and monitor their financial transactions, potentially violating their privacy and economic freedom. This data could also be shared with other government agencies or private entities, leading to ever higher degree **compromised data privacy** of citizens (Coeuré et al., 2020).

02.

Resulting from the compromised data privacy, governments could gain more control over citizens' financial transactions, which could lead to an increase in **state surveillance** and a **decrease in economic freedom**. Governments could use their newly gained powers by excusing them with the need to control of inflation, manage economic instability, or support certain industries. (Source: European Central Bank, "Virtual currency schemes – a further analysis", 2015).

03.

Given that the CBDC balance is directly held with the central bank, the introduction of retail CBDC could lead to a decrease in the volume of traditional bank deposits, which could lead to a decline in the profitability and stability of commercial banks. This **crowding out of commercial banks** by the central bank may lead to a concentration of financial power in the hands of the central bank and a decrease in competition in the banking sector (Bian, Ji, & Wang, 2021).

Disadvantages of CBDC (con'd)

04.

What is more, the large-scale adoption of CBDCs and thus a wide-spread flight to the safe harbor central bank could ultimately lead to a **destabilization of the financial system**, which in turn could lead to a financial crisis should a bank run occur (Monnet, Riva, & Ungaro, 2021).

05.

As mentioned afore the programmability of CBDC will provide central banks with a wider range of possibilities to efficiently implement monetary policies. One of these tools could be **depreciative money**. On a macro-level this could be a highly efficient tool to increase the effects of governmental stimulus or boost economic activity in general. By putting a best-before label on money consumers could be forced to spend their money before it becomes worthless (Tata, 2023). The citizen clearly runs the risk that his or her money is rendered worthless, if not spent in time. A similar effect could be generated by imposing a **holding cap** (BIS, 2021): citizens could be restricted to holding a certain amount of money in order to foster consumption. Any amount above that saving cap could become worthless.

06.

Once retail CBDC has been replaced physical cash, it could be linked to a digital ID in order to enable governments to implement a **social credit system**. Such social credit system could track and monitor citizens' financial and social and ethical behavior. This will undoubtedly not only lead to a decrease in an individual's privacy and autonomy but could also be used to control certain behaviors such as travels and purchases and restrict certain rights such as the freedom of movement or contractual freedom (Jin, 2021).

Disadvantages of CBDC (con'd)

07.

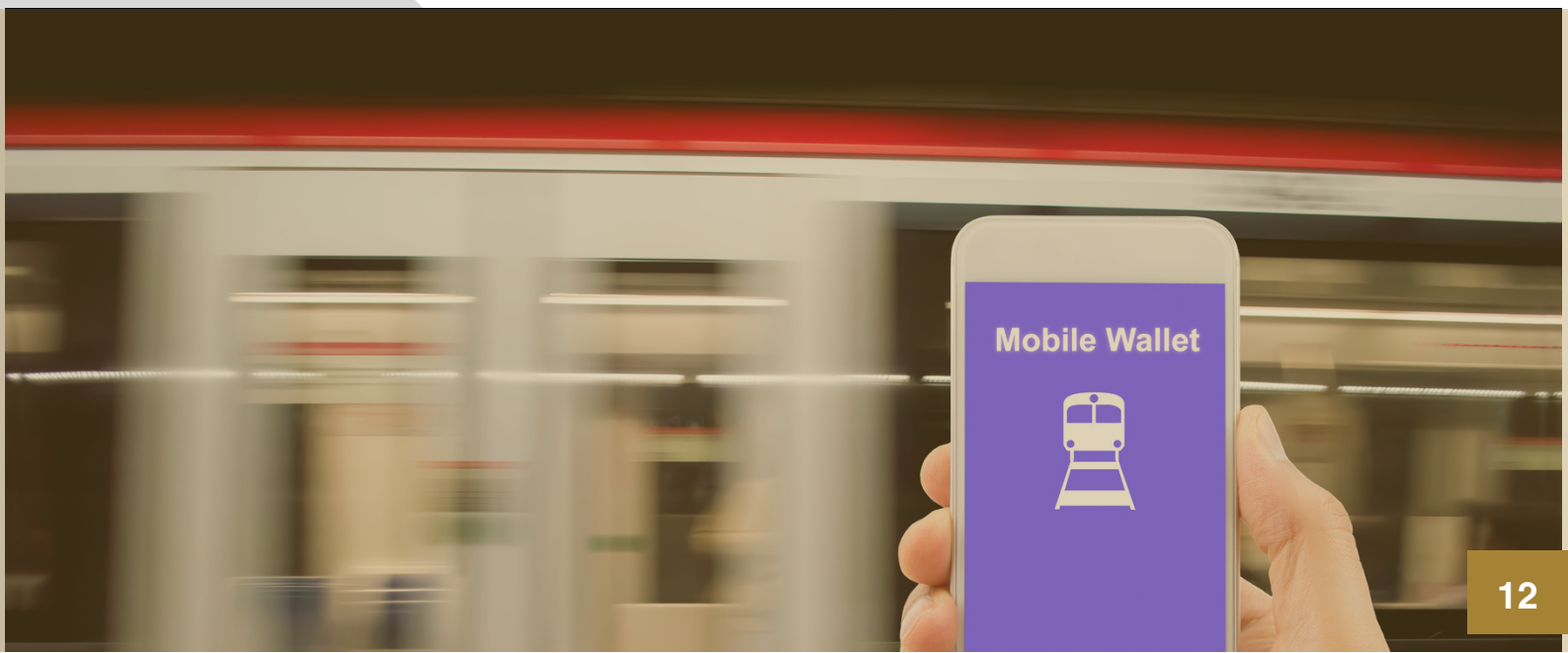
Being not only digital in nature but also instantly settled, CBDCs will in all likelihood call for **hacks against the CBDC** system (Allen et al., 2020). A successful hack could result in electronic counterfeiting of money, the theft of funds, or even to a disruption of the financial system and ultimately loss of confidence in the currency. Additionally, hackers could even use CBDCs to evade sanctions or launder money (Bank of England, 2020).

08.

Should foreign governments become party to such hacks, they could also be brought to an entirely new level and result in **deliberate attacks of malicious foreign actors**. Parties located abroad could attempt to hack the ledgers of central banks in order to obtain the payment information stored in such ledgers. This could be used for espionage purposes. Moreover, well-funded nationstate attackers could strive to identify weaknesses of the system in order to illegally obtain foreign exchange, potentially also undermining AML and KYC rules. Ultimately, however, hostile foreign actors could attack the CBDC system of a country to disrupt the financial system and thus the economy and ultimately destabilize the entire country.

09.

Given the disadvantages mentioned afore it may not come as a surprise should counterparties be reluctant to accept CBDC. The restrictions that can be potentially incorporated in CBDC by utilizing their programmability may result in a **poor acceptance** of digital legal tender. This may be all the more the case in cross-border settings, such as international trade, where the receiving party may not trust the central bank of the paying party (Slawotsky, 2020). The value of a currency, however, large stems from it being widely accepted (Pareek & Manur, 2022).



Disadvantages of CBDC (con'd)

10.

Since CBDC are digital currencies, transacted instantaneously over a network and stored in electronic wallets they will typically rely on the availability of energy and web connectivity (Mancini-Griffoli et al., 2018). Thus, their **electricity and network dependence** is not to be underestimated. Outages or disruptions in these services may lead to a loss of access to funds and could potentially even disrupt the financial system. This could be especially problematic in underdeveloped or remote areas with limited access to electricity and internet connectivity.

11.

Governments could use CBDCs to impose spending caps on certain individuals or groups of citizens, which could limit their financial freedom and ability to transact. A case in point are **spending caps**: the consumer could be restricted in the amount of money he or she can spend. This could be used to steer specific industry sectors but also to impose sanctions on specific groups of people, for instance to prevent people receiving welfare payments for groceries to spend these subsidies on anything but food. The most extreme case of the spending cap is the **spending block**: here the administration could use CBDCs to freeze or block the accounts of individuals or organizations that are deemed to be engaging in suspicious or illegal activities, thereby restricting their financial resources and ability to transact. In this way the funds of oppositional protesters, for instance could rendered useless as they cannot spend them any longer and are thus forced to cease their campaign (Slawotsky, 2022).

12.

In a similar vein transfer limits could be utilized by governments to impose limits on the amount of money that can be transferred among individuals and entities (Löber & Houben, 2018). If, for example, a government imposes a limit on party donations it could introduce such **transfer limits** to enforce such a rule. Similar to the spending block, a **transfer block** is the most extreme case of a transfer limit as it sets the payment limit to zero. Such radical measures could be applied by government to block certain types of transfers, such as those to or from certain individuals or organizations which are deemed suspicious or illegal by the administration. Oppositional parties, for instance, could no longer receive any monetary support.

Disadvantages of CBDC (con'd)

13.

CBDCs could also applied by governments to control capital flight, manage balance of payments, or preserve exchange rate stability. For the individual consumer this could result in tangible **foreign exchange limits**: he could become restricted in the amounts of currency that can be converted into foreign currency (Bindseil, 2019). Should a citizen of a high-inflation country, for instance, decide to convert parts of her life savings into a foreign currency, her government could prevent her from doing so. Conversely governments could also confiscate funds held by foreigners in CBDC should they deem it appropriate. Tensions or conflicts with foreign nations may justify such a step.

14.

Just as well as foreign exchange limits government could impose **capital export controls** (Foster, Blakstad, Gazi, & Bos, 2021). The motivation to do so could be similar: trade sanctions, fostering domestic growth and protecting national security but also managing balance of payments and preserving exchange rate stability. What it means for the citizen, however, is that she would be limited in the amount of money she could bring abroad. Retiring with the life savings abroad could be made impossible from one day to another and so could be purchasing real assets in a foreign country to protect oneself from domestic inflation.

15.

The deployment of CBDCs will potentially provide government with a vast database containing any transaction that any individual or legal entity has ever made. Besides, its programmability will give the administration the possibility to impose restrictions on what citizens can buy or consume, for example through a carbon budget (Chen, van der Beek, & Cloud, 2019). Such **consumption controls** could be applied to specific industries, goods and service, but also down to the individual level, such preventing an individual to buy a plane ticket in case of a low carbon budget.

Disadvantages of CBDC (con'd)

16.

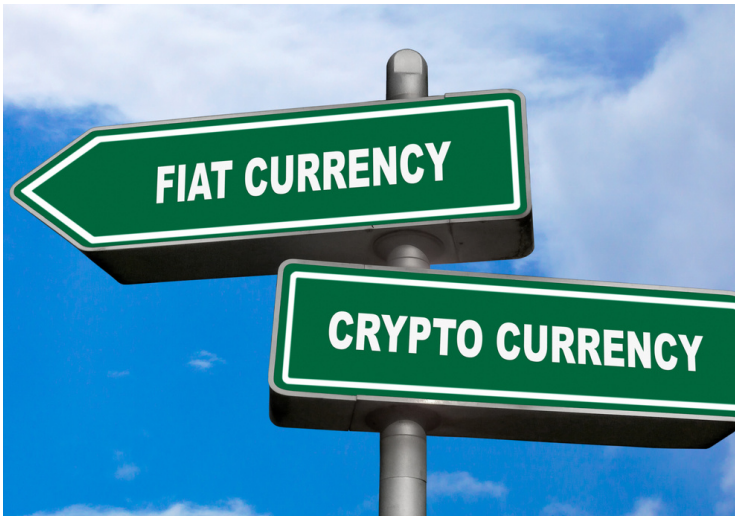
Another approach for steering the consumption is to impose **penalty taxes**. These could be levied on certain types of transactions or activities in order to discourage certain behavior or discourage the use of certain financial products or services. Designed accordingly, CBDC could, for instance, be used to steer the consumption towards ESG compliant goods and services and away from of so called "sin goods", such as Alcohol and Tobacco, Candies, Drugs, Soft drinks, Fast foods, Coffee, Sugar, Gambling etc. (Agur, Ari, & Dell'Ariccia, 2022).

17.

Throughout centuries the concept of **forced loans** has been applied by rulers and governments at times. Such compulsory loans are loans to the government that individuals are required to make in fiscal emergencies. Thus, the citizen is forced to lend money to the government which has the economic effect of a compulsory levy or tax. Given the programmability and the potential usage of smart contracts (Bank of England, 2020), forced loans could be imposed on the consumer with the introduction of CBDC.

18.

Nudge economics is a term to describe the possibility to manipulate an individual's choice and to lead him or her to make specific decisions. CBDC could be used by governments to influence their citizens to make certain choices (Dapp, 2021), such as to nudge consumers towards products and services they deem healthy, green or pro-social or towards business and organizations which are ESG compliant.





19.

Consumers regularly increase their savings quota during crises to build up a buffer against economic hardships. As this behavior often thwarts governmental efforts to stimulate the economy, central banks could impose **negative interest on cash holdings** (Davoodalhosseini et al., 2020). By doing so the individual is pushed to spend his savings as otherwise those reserves will continuously lose in value. The safekeeping function of traditional cash "under the mattress" would no longer be available as the central bank is the custodian of this new money and not the saver.

20.

Geo-fencing refers to the ability to set geographic boundaries and limit the usage of a particular products or services to those confines. It is commonly used in mobile apps and digital advertising. The programmability of CBDCs could potentially enable the implementation of various restrictions and rules, including geographical limitations (BIS, 2021). Governments could use this functionality to manage public health crisis such as the outbreak of a virus. In a more extreme version geo-fencing combined with predefined timings could be used for curfew enforcement. Notwithstanding this measure would restrict citizens' freedom of movement, potentially violating their human rights. It could also be abused to limit protests and hamper the movement of political opponents.

As was shown a monetary system based on CBDCs has various advantages versus the status quo. Yet, it also bears many other disadvantages. When weighing these pros and cons against each other, it becomes apparent that a choice emerges between security, stability, equality, efficiency and convenience on the one hand versus surveillance, control and centralization on the other.

However, the question arises which purpose capital markets would have in the future as any means of payment that circumvent CBDC could also be banned under a tight CBDC regime, including the transfer of securities.

Citizen participation is also at stake should CBDC not be equally accessible to all citizens. If CBDCs are only available to certain groups of people due to censorship or require access to technology that not everyone has.

Thoughts on the trend

References

Agur, I., Ari, A., & Dell'Ariccia, G. (2022). Designing central bank digital currencies. Journal of Monetary Economics, 125, 62-79. doi: https://doi.org/10.1016/j.jmoneco.2021.05.002

Ahnert, T., Hoffmann, P., & Monet, C. (2022). The digital economy, privacy, and CBDC.

Allen, S., Čapkun, S., Eyal, I., Fanti, G., Ford, B. A., Grimmelmann, J., Juels, A., Kostiainen, K., Meiklejohn, S., & Miller, A. (2020). Design choices for central bank digital currency: Policy and technical considerations.

Auer, R. A., Banka, H., Boakye-Adjei, N. Y., Faragallah, A., Frost, J., Natarajan, H., & Prenio, J. (2022). Central bank digital currencies: a new tool in the financial inclusion toolkit? : Bank for International Settlements, Financial Stability Institute.

Bank of England. (2020). Central Bank Digital Currency - Opportunities, challenges and design. Retrieved from London: https://www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper

Baronchelli, A., Halaburda, H., & Teytelboym, A. (2022). Central bank digital currencies risk becoming a digital Leviathan. Nature Human Behaviour, 6(7), 907-909.

Bian, W., Ji, Y., & Wang, P. (2021). The crowding-out effect of central bank digital currencies: A simple and generalizable payment portfolio model. Finance Research Letters, 43, 102010. doi:https://doi.org/10.1016/j.frl.2021.102010

Bindseil, U. (2019). Central bank digital currency: Financial system implications and control. International Journal of Political Economy, 48(4), 303-335.

BIS. (2021). CBDCs: an opportunity for the monetary system Annual Economic Report (pp. 65-95). Basel: Bank for International Settlements.

Chen, D. B., van der Beek, J., & Cloud, J. (2019). Hypothesis for a Risk Cost of Carbon: Revising the Externalities and Ethics of Climate Change. Understanding Risks and Uncertainties in Energy and Climate Policy: Multidisciplinary Methods and Tools for a Low Carbon Society, 183-222.

Choi, K. J., Henry, R., Lehar, A., Reardon, J., & Safavi-Naini, R. (2021). A Proposal for a Canadian CBDC. Available at SSRN 3786426.

Coeuré, B., Cunliffe, J., Lane, T., Panetta, F., Uchida, S., Skingsley, C., Zurbrügg, F., Brainard, L., & Shin, H. S. (2020). Central bank digital currencies: foundational principles and core features.

Dapp, M. M. (2021). From Fiat to Crypto: The Present and Future of Money. Finance 4.0-Towards a Socio-Ecological Finance System: A Participatory Framework to Promote Sustainability, 1-25.

References (con'd)

Davoodalhosseini, M., Rivadeneyra, F., & Zhu, Y. (2020). CBDC and monetary policy. Retrieved from Ottawa: https://www.banqueducanada.ca/2020/02/note-analytique-personnel-2020-4/

Engert, W., & Fung, B. S.-C. (2017). Central bank digital currency: Motivations and implications. Retrieved from Foster, K., Blakstad, S., Gazi, S., & Bos, M. (2021). Digital currencies and CBDC impacts on least developed countries (LDCs). The Dialogue on Global Digital Finance Governance Paper Series.

Jin, Y. F. E. (2021). China's Digital Currency. Retrieved from https://www.jstor.org/stable/resrep28651.7

Kahn, C. M., & Rivadeneyra, F. (2020). Security and convenience of a central bank digital currency. Retrieved from

Kahn, C. M., Van Oordt, M. R., & Zhu, Y. (2021). Best before? Expiring central bank digital currency and loss recovery. Retrieved from

Kwon, O., Lee, S., & Park, J. (2022). Central bank digital currency, tax evasion, and inflation tax. Economic Inquiry, 60(4), 1497-1519.

Löber, K., & Houben, A. (2018). Central bank digital currencies. Retrieved from Basel, Switzerland:

Mancini-Griffoli, T., Peria, M. S. M., Agur, I., Ari, A., Kiff, J., Popescu, A., & Rochon, C. (2018). Casting light on central bank digital currency. IMF staff discussion note, 8(18), 1-39.

Mitra, D. (2022). Glimpses on digital currency - A case study of China. In E. LauPoh Hock (Ed.), AN APPROACH TOWARDS CENTRAL BANK DIGITAL CURRENCY (pp. 228). New Delhi: Kunal Books.

Monnet, E., Riva, A., & Ungaro, S. (2021). The Real Effects of Bank Runs. Evidence from the French Great Depression (1930-1931).

Oxford Analytica. (2020). Digital currencies hold much promise for central banks. Emerald Expert Briefings(oxan-db).

Pareek, A., & Manur, A. (2022). De-Dollarising Nexus: A Mirage.

Prasad, E. S. (2021). The case for central bank digital currencies. Cato J., 41, 251.

Slawotsky, J. (2020). US financial hegemony: the digital yuan and risks of dollar de-weaponization. Fordham Int'l LJ, 44, 39.

Slawotsky, J. (2022). Digital currencies and great power rivalry: China as a disseminator in the digital age. Asia Pacific Law Review, 30(2), 242-264. doi:10.1080/10192557.2022.2085412

Söilen, K. S. (2021). The internet is leading the world towards forms of totalitarianism: How to fix the problem. Journal of Intelligence Studies in Business, 11(1).

Tata, F. (2023). Proposing an interval design feature to Central Bank Digital Currencies. Research in International Business and Finance, 64, 101898. doi:https://doi.org/10.1016/j.ribaf.2023.101898

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