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Domestic and Global Implications of China's Digital Currency

Russia's invasion of Ukraine and the resulting financial sanctions, as well as the parallel growth in the exploration of CBDCs by other countries have led to increasing interest in payments networks outside of the traditional cash and bank deposit infrastructure offered by "traditional finance." Rapid development of decentralized ledger technology and its applications for the movement of money and other assets has had an enduring impact on the future of money.

Concerns regarding China's central bank digital currency, the e-CNY, have existed since its inception in 2017. Currently, there are several bills in the U.S. Congress that aim to curb e-CNY's development and expansion into American or European payments networks.¹ National security debates around the development of e-CNY have focused on threats to "dollar dominance" (Sullivan, 2023), which largely relates to the role of the dollar as not only the world's reserve currency, but as a highly liquid bridge between different currencies, as an instrument for borrowing as well as global trade. It has also led to concerns regarding sanctions evasion. Given what we know about China's payments architecture, what effect would e-CNY have on the dollar and sanctions? To answer this question, we have to dive deeper into the domestic and international goals that China is seeking to accomplish with its payments architecture, including what recent sanctions on Russia have revealed about the renminbi (RMB).²

China's payments landscape

China has been developing indigenous capacity in payments architecture for the last two decades, and it has

1 H.R.804 – 118th Congress (2023-2024): Chinese CBDC Prohibition Act of 2023.

2 Throughout this article, I use RMB to denote the fiat currency and e-CNY to denote China's CBDC.

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been largely successful in doing so. In 2002, under the supervision of the People's Bank of China, a card network, China UnionPay was launched (Union Pay International, n.d.). Over the last twenty years, it has been able to create networks into over 100 countries, and partnered with companies such as BNP Paribas, PayPal and Discover to become the third largest card network in the world. In the late 2000s, China was also the first successful playground of mobile wallet applications such as AliPay and TenPay/WePay that converted a mostly cash-dependent society into a largely digital payments based one (Chorzempa, 2022). Together, they now cover more than 90% of China and have over one billion customers, including ones abroad.

UnionPay, AliPay and WePay were meant to create closed-loop payment networks for domestic and retail use primarily. When UnionPay was launched, it was the only card network available in China, since VISA and Mastercard had not yet entered Chinese markets (Perez, 2020). When AliPay and WePay were launched, almost no Western country was developing mobile wallet solutions. They were able to create functionality beyond what was provided by existing networks by enabling peer-to-peer payments.

In 2015, against the backdrop of the first wave of sanctions on Russia for its hostilities toward Ukraine, China began to see the need and potential for offshore RMB settlement. The country then focused its efforts on the Cross-Border Interbank Payments System (CIPS), combining the settlement and messaging system often differentiated in payments networks. CIPS is a wholesale settlement system, which means that it is used to settle money between banks, sometimes across borders (Kumar and Lipsky, 2022). Transaction volume on CIPS has more than doubled since 2020 (People's Bank of China, 2022), and the number of direct and indirect participants in its network has also increased (Duffie, 2023). While CIPS heavily relies on the SWIFT messaging system, it is meant to create an alternative to the dollar-based payments settlement and messaging infrastructure.

In 2017, the People's Bank of China (PBOC) began re-researching a digital form of its fiat currency, which at the time was called the digital currency/electronic payments project. It has since been renamed e-CNY. China

entered the pilot stage of CBDC development in 2019, which now covers 25 cities including the big commercial hubs of Shanghai, Beijing, Hebei, Yangtze River delta and Pearl River delta (Kumar, 2022). Rollout has now begun in smaller towns and villages as a part of rural development programs. Viewed in the context of China's other payments developments, the creation of e-CNY reveals an ambitious plan to create domestic payments efficiencies, compete with Western private players, support the internationalization of the RMB and prevent effects of the Western sanctions regime.

The e-CNY is supported by both a single tier and two-tier infrastructure, meaning that users can download an app created by the PBOC or by the 14 banks participating in the pilot or indeed, with their Alipay account (Atlantic Council, 2023). It currently has 260 million users (Kumar, 2022), circulating RMB 13.61 billion (Wright, 2023). Adoption numbers are persistently low, and the e-CNY faces stiff competition from the well-developed mobile wallet infrastructure created by Alipay and WePay. But China's pilots do more than just put money in peoples' hands. Domestically, these pilots are in a test-and-learn mode, while internationally, China is creating technical and regulatory models for other states to mimic and repurpose. The following section describes China's current ambitions within its borders and beyond.

Domestic ambitions of the e-CNY

As the pilots have expanded over the last four years, so have the use-cases tested by them. The 200 use-cases being tested through the pilots include: public transportation, public health checkpoints including COVID-19 test centers, integrated identification cards to receive and pay utilities such as retirement benefits and school tuition payments, as well as tax payments and refunds (Kumar, 2023). The pilots have also begun testing technical and programmability functions like smart contracts for business-to-business and business-to-consumer functions, e-commerce and credit provision. The PBOC has issued 7,000 cards that will integrate employee identification (Kumar, 2023) and trade union membership cards into the e-CNY hardware wallet. The "Shanghai Carbon Journey" platform calculates users' low carbon behavior (taking the subway or bus, biking, walking) and converts it into e-CNY (Kumar, 2023). Such tests are unique to the pilot in China, since the other 20 countries in the pilot phase of testing have yet to develop a complex methodology with which they are assessing the use-cases (Atlantic Council, 2023). This kind of testing is likely to grow through the rest of the year and indicates the PBOC's interest in experimentation with real-world scenarios.

The experimentation reveals that the PBOC views e-CNY as more than just a bearer instrument changing hands, and it is interested in leveraging the technology behind it to create an ecosystem of functionality, all going back to the use of e-CNY. Testing like this is meant to encourage the use of e-CNY by broadening the universe of activities that can be included in the network. By doing this, concerns about how data on users' habits and spending using e-CNY is collected, stored and used are rising. This largely has a privacy and surveillance concern in addition to the vulnerability of such data to cyberattacks domestically or abroad.

Beyond testing, a current application of the e-CNY can be to stimulate domestic consumption, as China likely faces an economic downturn. It has already increased banks' short-term liquidity by US \$118 billion and long-term liquidity by US \$72 billion through reducing reserve ratio requirements this year (Bloomberg, 2023). In the short run, the e-CNY is a useful monetary policy tool in the hands of the PBOC, which it can use to increase or decrease money supply with more direct effects as needed.

International goals

Use of e-CNY largely refers to this domestic retail payments infrastructure. However, the PBOC has been collaborating with other central banks to achieve cross-border settlement as well. Through Project mBridge (BIS, 2022), the PBOC, in addition to the Bank of Thailand, the Central Bank of the United Arab Emirates, and the Hong Kong Monetary Authority has been conducting such wholesale cross-border testing. In October 2022, the project successfully settled a total of US \$22 million through 164 transactions in collaboration with 20 banks across the four countries (BIS, 2022). e-CNY had the largest share of all transactions due to its automatic integration with the retail system and its well-developed architecture.

Many have characterized this as a movement toward de-dollarization and internationalizing the RMB (Tett, 2023). However, liquidity constraints that apply to RMB today are not likely to be lifted through its digitization. In other words, even if the use of e-CNY is widespread and its technology is proven to be fairly successful, its use in international finance is still going to be limited due to capital constraints. And given a potential downturn in Chinese domestic markets, it seems even more unlikely that China will lift those controls.

But what about sanctions? Recent trends in RMB internationalization

While the internationalization of RMB through e-CNY is unlikely, the concern over the dollar's potential future

seems to be stemming from the use of other modes of settlement created by China. In April 2023, Bangladesh paid for a nuclear plant built by a Russian company through CIPS, using a Chinese bank and transferring RMB (Gupta and Majumder, 2023). This kind of use of RMB for third country payments was previously extraordinarily rare. It reflects the rising use of the currency for trade settlement. Combined with increased RMB trade settlement in China's own books, this qualifies as "low threshold internationalization" (DiPippo and Palazzi, 2023). But there are several important factors to consider when it comes to assessing this particular transaction and others like it.

First is the role of Russia in all of this. Since being removed from SWIFT, its reliance on CIPS and RMB has grown. Last October, it became the fourth largest RMB offshore clearing center (Fabrichnaya and Shen, 2022). China is Russia's largest trade partner, and Russia is the source of most of RMB's demand (Eichengreen, 2023) as a reserve currency. In addition, the partnership between UnionPay and the Russian Mir card network is the only way Russians abroad can conduct transactions. Russia is an interesting case for understanding the RMB's internationalization efforts since most of the movement in Russia toward the RMB has risen out of necessity and is not a calculated or coordinated move on either country's part. Indeed, this creates dependencies for Russia with grave consequences in the long run (Prokopenko, 2023).

Second is the type of transaction that Bangladesh's deal denoted. Nuclear material, arms deals and oil and gas supply chains are crucial and fragile for most customer countries, and often carved out of secondary sanctions regimes. India's dependence on Russian oil and gas (Surabhi, 2023), and the increasing use of "petroyuan" by OPEC countries in settlements with China denote a movement away from the dollar for specific needs (Holmes, 2023). Economic opportunism (in the case of India's oil and gas imports from Russia at a discounted price) and economic constraints (for instance, in the deal between Pakistan and Russia in yuan for oil due to Pakistan's low reserves) are likely to grow as emerging market demands rise, and denote a kind of "low threshold" internationalization of the RMB (Kimani, 2023).

Wrapped into these assessments is the role of the U.S. and its allies' sanctions regime. While historical evidence suggests that sanctioned countries have not been successful at moving away from the dollar (Arslanalp et al., 2022), who is being sanctioned and how interlinked their economy is with others matters more than ever. Sanctioning Russia has not had a commensurate financial impact because of its trade relationships with other coun-

tries. The issue of sanctioning Chinese companies or citizens seems unlikely in the near future, but in the event of such sanctions, could China's emerging payments infrastructure help?

The answer is complicated. mBridge aims to not just create a potential settlement architecture, it seeks to advance technical and regulatory standards coming out of China's CBDC experiments internationally (Kumar, 2023). This could lead to the creation of regional country blocs which accept RMB-based payments and enable Chinese financial architecture that can be tapped into when needed. Indeed, a key takeaway from the Russian example is that countries will tap into such networks, often in conjunction with each other when need arises. While some internationalization away from the dollar is inevitable (Eichengreen, 2011), the success of RMB's internationalization through e-CNY or CIPS is dependent on how useful other countries find these networks. Furthering sanctions or other punitive economic measures will actually lead to a justification for creating and expanding these alternative financial networks. This is to the detriment of U.S. foreign policy goals.

Finally, two findings emerge from this assessment of e-CNY's history, the recent sanctions on Russia and the resulting payments arrangements. First, while the development of e-CNY does not in itself lead to the erosion of the dollar's dominance, Chinese payments infrastructure, including CIPS, UnionPay and e-CNY, can be successfully weaponized given the right need and justification. Second, punitive economic measures have and will continue to enhance the usability of Chinese financial architecture by other countries. Drastic measures like financial sanctions on China therefore will have counterproductive outcomes for the U.S. dollar and its foreign policy ambitions in the region.

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