

國企

SINO
GLOBAL CAPITAL

e-CNY and Exorbitant Privilege:
Implications for Dollar Hegemony

Agenda

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Monetary history

China, e-CNY and the evolution of money

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What is e-CNY?

To crypto or not to crypto? Economic effects

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Why is the PBoC leading on CBDCs?

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Summary and open discussion

Monetary History

China is no stranger to strategic innovation



In the beginning...



9000 - 6000 B.C.

Barter

Direct trade of resources for mutual advantage without a medium of exchange



1200 B.C. (China)

Cowrie Shells

Livestock

Standardized trade.
Inherent value.



1000 B.C. (China)
First Metal Money
and Coins

Value in body
ornamentation. First true
medium of exchange



1200 B.C. (China)

Cowrie Shells

Man made money. Made
from useable metal with
some inherent value.



806 (China)

Paper
Currency

Value in body
ornamentation. First true
medium of exchange



1816

Gold
Standard

Mass produced man-
made currency, no
inherent value

Tied directly to gold.
When enacted in US, led
directly to establishment
of the Central Bank



1971
End of Bretton Woods

On 15 August 1971, the US unilaterally terminated convertibility of the US dollar to gold, effectively bringing the Bretton Woods system to an end and rendering the dollar a fiat currency and de facto global reserve currency.



1944
Bretton Woods

First example of a fully negotiated monetary order intended to govern monetary relations among independent states. Made both gold and the US dollar the reserve currency of the system.

What is e-CNY?



Macroeconomic

- **Digital version of fiat currency**, 1:1 exchange with RMB. Replacement for cash in circulation (M0), coexists with physical RMB.
- **Legal tender** - cannot be refused by merchants.
- **Small cash transactions**. Targeted at domestic retail payments / daily transactions as opposed to wholesale / large international transactions.
- **China controlled**. Could also be used to navigate international transactions around payment systems and networks that can be shut off to Chinese financial institutions serving U.S.-sanctioned entities.
- **Modern currency** to promote a consumption economy, financial inclusion (no bank account needed).
- **More data** to inform macro policy decisions.
- **High speed** and low cost transaction may enhance the transmission of policy rates to the money and credit markets.
- Not interest bearing, thus will not shift capital from low risk assets like bank deposits, mitigating risk to monetary status quo.



Microeconomic

- Consistent with physical RMB, the PBOC does not charge authorized operators for exchange and circulation services, and the operators do not charge individual clients for the exchange of e-CNY.
- e-CNY is loosely coupled with bank accounts, and thus payments through e-CNY wallets are settled upon payment.
- Deployed via domestic bank wallets, easy to obtain.
- Threat to other payment platforms like Alipay and Alibaba.
- Easy, fast and cheap transfer of money to low income areas, charity and other government programs.
- Consumers will have additional means of accessing and paying for government services. Utility bills etc. can already be paid via existing apps like Alipay (for now). China may shift public services like pensions etc to e-CNY wallet interfaces in the future if they see such transactions sticking to private third party payment apps.



Structure

- Centralized management – two tier transmission: Issued by central bank to domestic retail banks and authorised operators (retains traditional monetary transmission structure).
- One coin, two databases, three centers” (一币，两库，三中心):
 1. **One coin**: the e-CNY - essentially an “encrypted digital string representing a specific amount that is guaranteed and signed by the central bank for sale.”
 2. **Two databases**: (1) the central bank’s ledger that keeps track of all e-CNY outstanding and (2) all the e-CNY ledgers maintained by the network’s lower tier either locally or on the same cloud used by the central bank.
 3. **Three centers**: Details are scarce, seem all at PBoC level. Reportedly, (1) certification center; database that maps real identities against all digital wallet users; the second is the registration center, (2) will track e-CNY ownership and transactions, (3) big data analysis center, monitor payment flows for KYC/AML.



Technology

- To achieve the speeds necessary for small payments in a mobile e-commerce powerhouse like China (Alipay had peak of 256,000 TPS during “Double 11”), the e-CNY will **not** be a decentralized cryptocurrency.
- Value transfer takes the form of cryptocurrency strings
- E-CNY follows the principle of “anonymity for small value and traceable for high value” (controllable anonymity).
- E-CNY adopts a variety of technologies, including digital certificate system, digital signature, and encrypted storage to make double-spending, illegal duplication and counterfeit, transaction falsification, and repudiation unfeasible.
- E-CNY obtains programmability from deploying smart contracts that don’t impair its monetary functions.
- Digital wallets are the medium of e-CNY that reaches out to users. There are different types of wallets, depending on the strength of customer personal information identification. There are individual and corporate wallets, parent wallets and sub-wallets.
- Uses NFC for transfers in low network areas

Why is the PBoC leading on CBDCs?

Necessity breeds invention

Domestic pressure	
①	China has a history as an innovator in money, tracing back to imperial days of high levels of international trade and a well educated civil service.
②	China is eager to reclaim lost ground in scientific and technological innovations, as well as the respect it feels it deserves, after almost 90 years of western dominance.
③	Such sanctions extend to the monetary system, with the investment banking unit of Bank of China recommending that all domestic banks move from SWIFT to China's CIPS (Cross-Border Interbank Payment System) in preparation for potential US sanctions..
④	Payment channels like WeChat and Alipay account for more than 90% of Chinese mobile payments. This is a sizeable flow of funds: <ol style="list-style-type: none"> 1. Not monitored by the central bank 2. Accruing fees not running through state owned banks 3. Inaccessible to economic policy makers
⑤	The onset of Bitcoin and other cryptocurrencies has exacerbated fears of money laundering and offshoring of illicit gains.
⑥	Imperative to shift to a consumption economy

International pressure	
①	China is also eager to reduce its reliance on foreign high-tech research and components, driven by its "Made in China 2025" plan.
②	China is strategically vulnerable to foreign sanctions and blockades: The extension of the U.S. restrictions in May 2020 resulted in Huawei being cut off from having its own chip designs manufactured in Taiwan.
③	Such sanctions extend to the monetary system, with the investment banking unit of Bank of China recommending that all domestic banks move from SWIFT to China's CIPS (Cross-Border Interbank Payment System) in preparation for potential US sanctions.
④	China has a strategic desire to overtake U.S. in technology innovation & global finance: <ol style="list-style-type: none"> 1. Increased influence in developing markets 2. Reduced dollar hegemony and more RMB denominated receipts 3. Threat of US expansion via Libra (basket of assets not including RMB) 4. Leverage over foreign debt -> historical link to commodities and natural resources
⑤	As an economy matures, the need for more diversified payment systems arise (int'l: Revolut, Venmo, Paypal etc). China wants the RMB to be the only show in town.

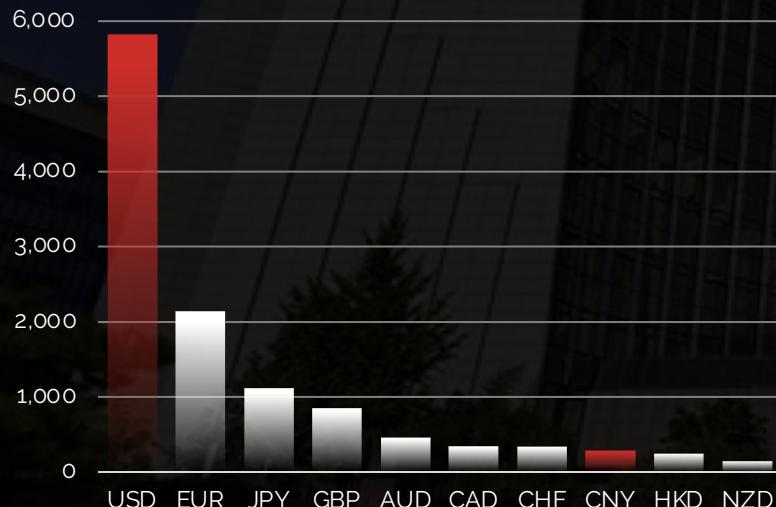
Year	Who	Breakthrough
1936	UK	"On Computable Numbers, with an application to the Entscheidungsproblem." Alan Turing's paper became the foundation of computer science by presenting the Turing Machine.
1948	USA	John Bardeen invents the transistor
1952	USA	Grace Hopper created the concept of a compiler.
1964	USA	IBM releases the IBM System/360, the first computer system to offer general purpose-computing.
1964	USA	Intel formed to build the integrated circuit.
1969	USA	Man walks on the moon
1972	USA	Intel releases the 8080, the first true microprocessor, which led to the PC revolution.
1977	USA	The basis for the RSA public-key cryptosystem is invented at MIT.
1991	USA	The World Wide Web is born at the CERN physics laboratory
1996	USA	IBM's Deep Blue wins chess match against world champion Garry Kasparov. Milestone for AI
2007	USA	Apple launches the iPhone
>2021	China	DCEP first viable CBDC? BSN first global blockchain infrastructure? 5G? AI?

Why is the PBoC leading on CBDCs?

Synergy with strategic goals, potential for first mover advantage, and engagement of key strengths

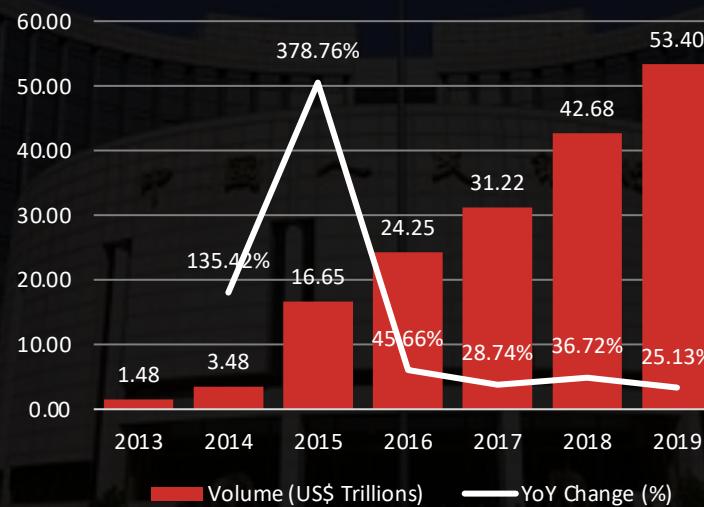
Turnover of OTC FX instruments,
by Currency, 2019

(US\$ Billions)



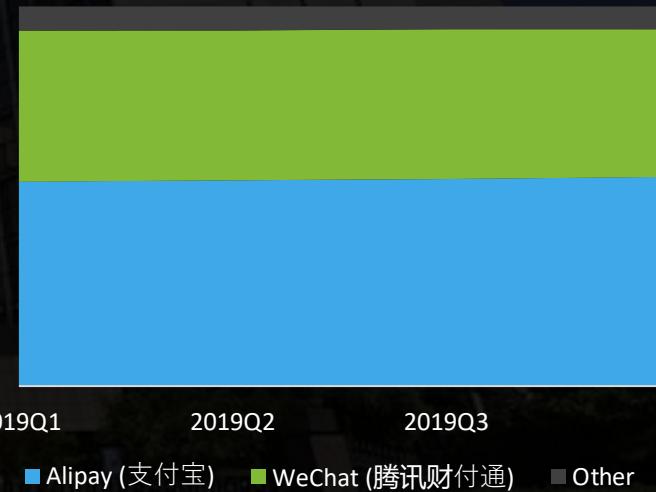
USD global dominance
Source: BIS

China Mobile Payment
Transaction Volume



Increasing demand for digital payments
Source: PBoC

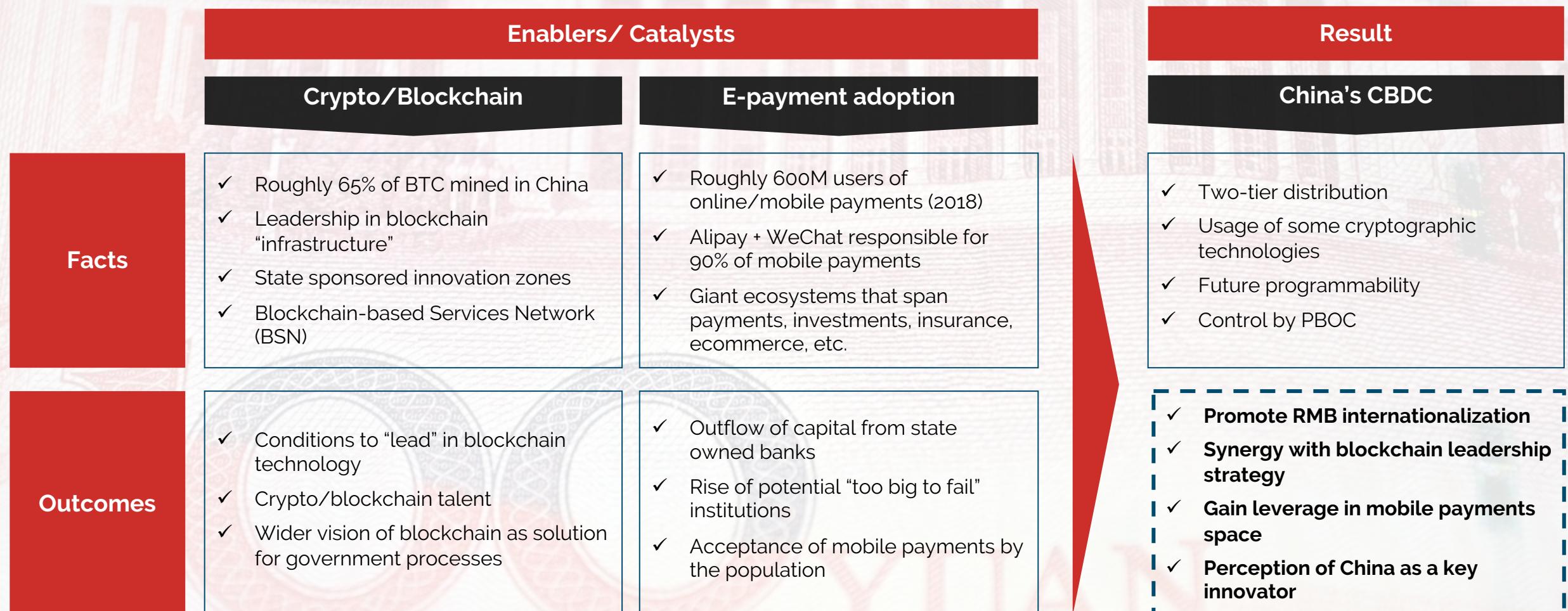
China Mobile Payments
(2019 Market Share)



Two players dominate the market
Source: Sina

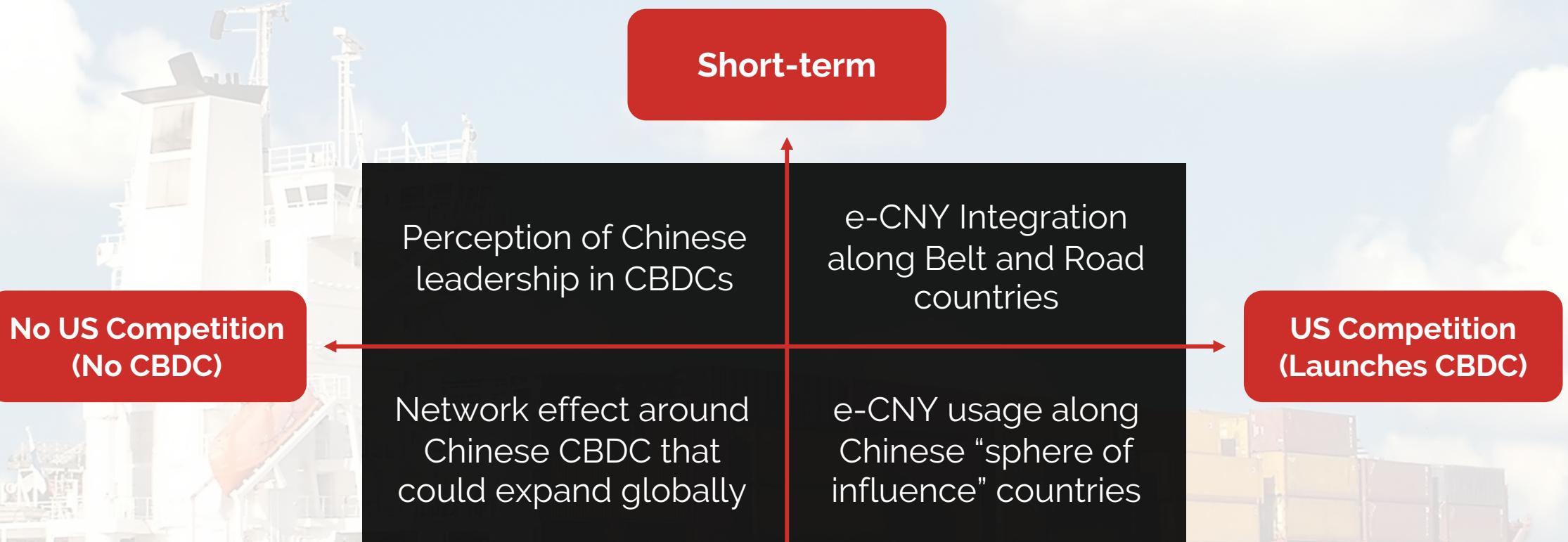
Why is the PBoC leading on CBDCs?

Summary Push and Pull Factors



Why is the PBoC leading on CBDCs?

Summary Push and Pull Factors



Potential impact

Internationalization & influence

Internationalization of RMB / Cross border payments

- Greater speed, convenience, and safety offered by the e-CNY may also, over time, appeal to businesses that trade heavily with China. Currently the proportion of China's foreign trade settled in RMB stands at ~15%
- Currently more than half of payments between France and China are settled in RMB
- e-CNY by itself will make little difference to the position of RMB as a reserve currency. SAFE (State Administration of Foreign Exchange) heavily regulate and restrict RMB capital flow. e-CNY would help skyrocket RMB settlement only with requisite deregulation, which is very unlikely
- Many view the RMB based Cross-Border Interbank Payment System (CIPS) as having a larger impact on RMB internationalization, however CIPS is still far from a threat:
 - CIPS handled 2.2 million payment transactions last year (2020) with a total value of 45.2 trillion yuan (~\$6.9 trillion), up 20% YoY. Total value of transactions was up by over 30%. In contrast SWIFT messages direct the transfer of nearly \$5 trillion worldwide each day.
 - CIPS is used for international transfers of yuan-denominated transactions between banks. Most CIPS payment traffic moves between Hong Kong and mainland China. Banks in ASEAN countries also use the system, accounting for 8 % of CIPS payment transfers last year and 15 % of value. Use of CIPS in Africa, Latin America and Europe is still marginal, accounting for only about 0.5 % of payment transactions and less than the 0.1 % of their value.
- Initial cross border uses will be limited, likely only small retail transactions e.g. purchases on AliExpress

International influence

- e-CNY will strengthen China's transition in international opinion from a copycat to an innovator and cement China as global leader in mobile and digital payments
- Given that no bank account is necessary to set up e-CNY, it may appeal to unbanked individuals e.g. along the BRI (Belt and Road Initiative).
- e-CNY may accelerate these trends but it is unlikely without SAFE deregulation
- SWIFT is a major means by which the US monitors illicit transfers and violations of sanctions (e.g. monitoring payments related to Iran's nuclear program). An advanced digital RMB infrastructure would allow the bypassing of SWIFT and make avoiding sanctions much easier. This may blunt efforts to curb Chinese influence overseas.
- Increasing influence will essentially mean dethroning the dollar. This is no easy task:
 - Aside from traditional trade, much influence of the dollar comes from the settlement of financial instruments as it is seen as a safe and stable currency. Almost 40% of the world's debt is issued in dollars, and, as a result, foreign banks need a lot of dollars to conduct business.
 - Around 90% of forex trading involves the U.S. dollar.
 - The eurozone sovereign debt crisis reduced confidence in the Euro as a stable currency and further increased dollar dominance.

Any potential for increased Chinese influence abroad following e-CNY will depend heavily on RMB internationalization (deregulation) and vice versa.
It is unlikely we will see one without the other.

Conclusion

Any questions?

- 1 e-CNY is a significant evolution in money and digital payments.
- 2 It is a tool for greater oversight of the cash economy by policymakers, wresting a duopoly of mobile payments away from Tencent and Alibaba. Policymakers in China seek to leverage e-CNY to accomplish internal and external goals.
- 3 The e-CNY is blockchain, not crypto. It uses "controllable anonymity" to "satisfy the public's demand for digital cash and support financial inclusion". Daily transactions will be anonymous, larger ones will culminate with in person verification at local bank. May use some crypto technologies; e.g. authentication could use Public Key Infrastructure (PKI) or be identity-based cryptography (IBC), or similar technologies.
- 4 Chinese leadership in CBDCs is possible due to China's leadership in mobile payments and blockchain/crypto applications in the public sector.
- 5 e-CNY is the most developed CBDC to date with completed technical and transmission structure as well as successful pilots and transactions.
- 6 May be a threat to US dollar hegemony depending on how aggressively it is expanded beyond Chinese borders (e.g. along BRI). However, this would require more liberal regulations governing the currency which doesn't look likely moment.



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