CRYPTO RMB: FINANCE INNOVATION OR NEW TOOL FOR CONTROL?

China’s New Digital Currency and What It Means To The World

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Reports of the Chinese government’s plan, via the People’s Bank of China, to introduce a cryptocurrency, digital currency or some other blockchain form of money, have been leaking out for years. Those pronouncements gained a higher level of confirmation in 2019 as Xi Jinping affirmed a commitment to adopting and dominating the blockchain space and the People’s Bank of China (PBOC) made its intentions, if not plans, more explicit.

Since then, the intentions and timetable for the introduction of some type of digital RMB have been elevated from the level of rumours to the subject hotly debated headlines and official reports - and more rumours. The ren min bi, abbreviated as RMB and also called the yuan, is the Chinese currency and its basic unit, respectively.

However, there remains a great deal of ambiguity as to what exactly the PBOC will introduce in 2020 and how it will be used. More controversial is the intention of the PBOC and how its actions will fit into a larger strategic approach to global and regional affairs by the Chinese Communist Party (CCP).

The CCP is for the purposes of this report, considered synonymous with ‘Chinese government’. Even though the two have separate structures, the intentions of the former determine the course of the latter and this paper will use the two interchangeably, considering them a coordinated and aligned unit.

1 On the RMB - The Chinese currency is the ren min bi (simplified Chinese: 人民币), roughly translating as ‘people’s currency’. It is abbreviated as RMB in English. The ‘yuan’ is the basic unit of RMB. The terms are used interchangeably throughout this document and in common parlance, much as one would sometimes write € and euro, or USD and dollar.

2 Also referred to as the CPC for the Communist Party of China. This paper will use CCP for consistency.
To consider the likelihood of which of these uses a digital currency could be used for in the near future, an understanding of what kind of currency is being proposed, how it would be distributed, who would adopt it at what rate and what resistance it may face must be considered.

Europeans have a special responsibility to consider the implications of this technological innovation for privacy, human rights, the status of the Euro and the dominance of regional or global economic factors by a potential strategic, economic, political or even military rival - or partner.

A wide range of motives are attributed to the introduction of a digital currency, ranging from the obvious and benign to the insidious and malignant. They include:

- Internationalisation of the RMB
- A means of payments and clearings for Chinese traveling overseas
- Provide redundancy to the current electronic payment systems in China (particularly WeChat and Alipay)
- Improve visibility of transactions for Anti Money Laundering (AML) and Know Your Customer (KYC) enforcement (i.e. to prevent fraudulent activity)
- Gain some of the seigniorage advantages currently enjoyed by the USA as the issuer of the dominant world currency
- Control monetary policy of regional economies that have widespread adoption of the RMB
- Provide unlimited government visibility into domestic financial transactions
- Integrate the domestic financial transaction record into new domestic surveillance programmes like 'social credit' monitoring
- Gain visibility into a wide range of offshore financial transactions
- Undermine the US currency hegemony
- Provide the underpinning for a global financial system that evades American dominance of finance, including unilateral American sanctions

This report is broken out into four major sections:

**Introduction and Background** - Understanding the context and details of major factors.

**The Proposed Digital Currency** - Potential structure, distribution and adoption.

**Scenarios for Adoption, by Region** - How the digital currency may land in various regions of the globe.

**Conclusions** - The global economic and monetary implications of a Chinese digital currency.
Internationalisation of the RMB: Seeking Global Currency Status

In 2019 the renminbi celebrates the first decade of its internationalisation, which was launched after the global financial crisis of 2008 and has been proceeding at a gradual pace ever since.

The key feature of an internationalised currency is that it is widely used by both the private and official sectors outside the home country. That’s why 10 years ago Beijing created the so-called dim sum bond market — or yuan-denominated bonds issued outside the mainland — and allowed for cross-border trading of the renminbi.

By the middle of 2015, almost 30% of China’s trade was being settled in renminbi. Hong Kong banks were holding some 1 trillion RMB worth of yuan-denominated deposits and there was life in the dim sum bond market, with issuance running close to the equivalent of US$10 billion per month.

The yuan joined the International Monetary Fund’s basket of reserve currencies in 2016. However, the criteria described was for a currency to be “fully usable”, but not convertible, which over time has proved to be one of the challenges for the RMB internationalisation.

These days, the share of China’s trade that is settled in renminbi is less than half of what it was in 2015. In August 2019 more than 2,200 financial institutions worldwide were said to be using the yuan in their transactions. Data from the IMF indicated that by the end of the first quarter of this year central banks worldwide had $212.9 billion in RMB-denominated reserves.

The People’s Bank of China said yuan-denominated assets held by foreign institutions and individuals rose more than 65% from about 2.9 trillion yuan in 2013 to 4.85 trillion yuan in 2018.

While the RMB is now ranked 8th in the SWIFT chart of international payments currencies, as of March 2020, its share of global transactions is less than 1.2%. By March 2020, the RMB was the 5th most active currency for global payments by value, with a share of 1.85%.

The Communist Party of China remains attached to its preference for capital controls (sometimes referred to as capital controls).

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4 Li Xia Economic Watch: Overseas institutions hold more RMB assets. Xinhuanet September 4, 2019
5 RMB Tracker: Monthly reporting and statistics on renminbi (RMB) progress towards becoming and international currency SWIFT April 2020
euphemistically with a term translated as ‘discretion’).
The Chinese government still cannot get past its fear of massive capital outflows. The fear is justified; many Chinese investors prefer to hold their assets in the international market and move their money there, rather than keep it inside the country.

To maintain strategies involving capital flow out of China, the Belt and Road Initiative (BRI) was established in 2013, followed by opening the Silk Road Fund in 2014. The Fund has around $30 billion invested, some 70% of those investments are just equity positions. While the initiative is considered a major potential driver of RMB internationalisation, China hasn’t required these projects to be denominated in RMB.

Another major innovation (and an attempt to control the outflow) was the introduction of the bond and stock connect programs allowing international investors access — through Hong Kong — into Shanghai and Shenzhen. The 2019 launch of the Shanghai London Stock Connect provides a different model where investors trade in depository receipts rather than direct ownership due in part to the significant time gap between the two exchanges.

Another problem with RMB is its lack of convertibility. Sometimes it stands in the way of investment opportunities. Late November 2019, at a major investment conference in Moscow, Russia, Wang Yanzhi, executive director of the Silk Road Fund, brought up the important question of using the renminbi as a swipe against the dollar, and lobbyed Russia to accept renminbi (RMB) as a form of payment and investment. "It would be easier if we could invest directly with RMB," he said. "The local banks or financial institutions can undertake the renminbi-ruble exchange to make it easier. This is the future business cycle for us, in our view. If that works, then more RMB capital could flow into Russia." Conversely, Russian President Vladimir Putin reminded Wang about one obvious obstacle: "The renminbi has restrictions due to convertibility, and China says it is too early for full market liberalization like the ruble. It’s realistic to want to do trade settlements in our own national currencies, but the instances of that have been low. As for raising money in RMB, we are not interested in the currency, we are interested in the investment proposal first.”

But opportunities are created not only in the positive environment and not only by economic allies. The so-called trade war initiated by the United States, involving a harsh economic policy and cracking down on trading tariffs, is actually helping China prove that a one dimensional, US-dominated financial system is not necessarily a desirable state of affairs.

This could lend to China’s coveted long-term financial goals to internationalise RMB and to build its status as a reserve currency.

One of the building blocks of this opportunity is the creation of a Digital Yuan, a Central Bank Digital Currency (CBDC) introduced by PBOC and aimed at challenging not only the US dollar, but the whole payment system.

“In today’s world,” says Dr Alicia Garcia Herrero, Chief Economist for Asia Pacific at Natixis, "where we already see another prominent economic side, the idea of having a single reserve currency and depending on it becomes more difficult. This strategic competition, which is the essence of the trade war, creates the need for more reserve currencies. And CBDC could perhaps accelerate that process. This is not the case of all central banks in the world, we could argue that this is the case of Norway, let alone Uruguay and their e-peso. For PBOC it’s a different matter: why not test something that could perhaps, if needed, leapfrog pursuing that role of international currency?"
Cryptocurrency is a type of digital asset that is based on strong cryptographic techniques and ensures multi-level encryption in financial transactions. Such currencies can be sent directly between two parties via the use of private and public keys (in effect, highly secure passwords). Cryptocurrencies leverage blockchain technology to gain decentralization and transparency.

Different blockchain networks allowed for the development of various currencies. The first cryptocurrency ever created and the most popular one is Bitcoin\(^9\). From a digital coin value of which wasn’t even calculated and which was used in Darknet for mostly unlawful purposes, Bitcoin has become a hotly trade store of value whose value peaked at $20,000 in December 2017. It still tops price charts and is considered the standard; other cryptocurrencies are referred to as “altcoins” (alternative). Its creator has a name - Satoshi Nakamoto - but not a known identity. No person or group is the accepted single creator of Bitcoin.

A main attraction of Bitcoin’s structure is the slow and costly rate of creating new Bitcoins and the final limit of 21 million Bitcoins that can be produced. This is seen as a clear advantage by enthusiasts over normal government fiat monies where central banks can choose to print unlimited funds and thereby drive inflation and debase the currency. This, along with its unrealised use as medium of exchange, have led to it being referred to as the gold of the cryptocurrencies - unwieldy for daily use, but inflation proof.

The second most established coin in a global crypto ranking is Ethereum\(^10\), a base platform for creating decentralised services. ETH is sometimes referred to as “digital oil” because of its “gas” function within transactions. It also is the base for many smart contract processes. It was created by a trio of Toronto innovators, Russian-emigre Vitalik Buterin, Consensys founder Joe Lubin, and Decentral founder Antony Di Iorio.

There are also cryptocurrencies that were created as a result of the main network’s (Bitcoin) «fork», or a deliberate programming split. Examples include Litecoin and Bitcoin Cash\(^11\)\(^12\). They have been created to correct perceived shortcomings in Bitcoin’s design that limits its usefulness as a medium of exchange (i.e. slow transaction speeds).

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9 Nakamoto, Satoshi Bitcoin: A Peer-to-Peer Electronic Cash System Bitcoin.org October 31, 2008
10 Ethereum.org
11 litecoin.org
12 bitcoincash.org
Central Bank Digital Currencies

**In turn, Central Bank Digital Currencies (CBDC) are essentially a digital version of cash - accessible electronic central bank liabilities that can be used in exchanges universally. It is “a digital extension of a central bank’s medium of exchange, able to permanently settle transactions between parties. The central bank is able to remove credit risk and ensure stability by guaranteeing the value of the CBDC, exactly like paper money. And any person tied to any central bank on the network can instantaneously transfer value between any other person tied to any other central bank on the network.”**

### Stablecoins

Stablecoins aim to bridge the gap between cryptocurrencies and fiat currencies, offering price stability and being backed by an actual reserve asset: a currency like the U.S. dollar or a commodity’s price such as gold, silver, oil etc. The most famous example is **USDT Tether** - a so-called fiat-collateralised stablecoin claimed to be backed by the US dollar, even though many questions have been raised about its dollar reserves and possible market manipulation.14 15

“The strength of stablecoins is their attractiveness as a means of payment.”17 “Low costs, global reach, and speed are all huge potential benefits. Moreover, stablecoins could allow seamless payments of blockchain-based assets, and can be embedded into digital applications thanks to their open architecture, as opposed to the proprietary legacy systems of banks.”

### Central Bank Digital Currencies

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There is also a special type of CBDC proposed by IMF and called “synthetic”:

“This synthetic central bank digital currency—or “sCBDC” for short—offers significant advantages over its full-fledged cousin, which requires getting involved in many of the steps of the payments chain.” IMF note16. “This can be costly—and risky—for central banks, as it would push them into the unfamiliar territory of brand management, app development, technology selection, and customer interaction. In the sCBDC model, which is a public-private partnership, central banks would focus on their core function: providing trust and efficiency. The private sector, as providers of stablecoins, would be left to satisfy the remaining steps under appropriate supervision and oversight, and to do what they do best: innovate and interact with customers.”

Decentralised currencies like Bitcoin are those where multiple entities are involved in the network operation. They are scattered across nodes of a dedicated blockchain network. Holders of the currency provide decentralised control, independence and, most important, anonymity.

By contrast, centralised currencies are controlled by a single entity which usually also issues the currency and maintains control over their price and data. This creates more stability within the currency. However, the pro-decentralised blockchain community often contends that they are not genuine cryptocurrencies and their nature contradicts the original vision of the benefits of having cryptocurrencies in the first place - freedom from political interference lending to inflation, economic control and a lack of privacy.

### Control and Distribution

The PBOC intends to keep control of the proposed digital yuan. Mu Changchun, Deputy Chief at the Payment and Settlement Division of the PBOC revealed that the digital yuan will leverage a two-layer operation system.15 This means that the bank will distribute the digital currency to commercial banks or other operating institutions where the public could acquire it. No public blockchains will be used. PBOC will use private controlled nodes to issue the currency, insisting on centralised management.

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13 tether.to
14 Robinson, Matt and Schoenberg, Tom Bitcoin-Rigging Criminal Probe Focused on Tether Bloomberg November 20, 2018
15 Palmer, Daniel Another Class Lawsuit Claims Bitfinex, Tether Manipulated Bitcoin Market Coindesk November 25, 2019
16 Adrian, Tobias and Mancini-Griffoli, Tommaso Digital Currencies: The Rise of Stablecoins IMF September 19, 2019
17 Schlapkohl, Kyle Central bank digital currency explained IBM October 29, 2019
18 Adrian, Tobias and Mancini-Griffoli, Tommaso From Stablecoins to Central Bank Digital Currencies Blogs.imf.org/ September 26, 2019
19 Teng, Lylian China’s State Cryptocurrency Coming Soon, Featuring Two-Layer Structure Bitcoin Magazine August 29, 2019
Global Context, Competitors and CBDC Use cases

According to a report by the Bank for International Settlements (BIS), a Swiss-based organization that comprises 60 of the world’s central banks, as much as 70% of financial authorities worldwide are considering or conducting research into CBDCs.

Particular plans for implementation vary remarkably and depend on the country. It must be noted that in the second half of 2019, the number of central banks and governments announcing plans to consider or launch central bank currencies has accelerated and this list will be out of date as soon as it is published.

Here are some significant examples of CBDCs adoption or developing:

**ECCB pilot** by Eastern Caribbean Central Bank in March 2019 introduced a digital version of the EC dollar (DXCD) based on blockchain, to be used as a generalized medium of payment to reduce cash usage by 50 percent.

**El Petro (Petromoneda)** - an oil-backed national cryptocurrency of Venezuela, one of the most well-known CBDCs, was launched in February 2018. It has a complex history of mixed perception by Venezuelan people and a tragic context of larger economic crisis that deepened crucially over the last months.

**South African Reserve Bank** explored the benefits of blockchain systems for process the typical volume of the South African payment system – **with project Klokha**.

**France is now getting on board** - The Bank of France’s governor, François Villeroy de Galhau, said that the bank would start testing digital currency quite soon and “will launch a call for projects before the end of the first quarter of 2020,” as originally reported by AFP.
The People’s Bank of China’s Central Bank Digital Currency

The Stella project by the Bank of Japan in phase 3 attested that improvements can be obtained in cross-border payments in terms of safety by using distributed ledger technology (DLT).24.

The Central Bank of Sweden have started considering E-krona in 2019, procuring suppliers to develop proposals.23.

The Stella project by the Bank of Japan in phase 3 attested that improvements can be obtained in cross-border payments in terms of safety by using distributed ledger technology (DLT).24.

A joint project by the Bank of Canada and Monetary Authority of Singapore, called Jasper-Ubin, in 2019 successfully proved that distributed ledger technology can be used to make safe cross-border payments by an exchange of wholesale CBDC across different distributed ledger platforms.25. Related projects: Ubin phase 2 by MAS (2017), Jasper phase 3 by the Bank of Canada, Payments Canada, and TMX (2018).26 27.

Project Aber from Saudi Arabia Monetary Authority and Central Bank of the United Arab Emirates. In January 2019 two countries signed an agreement to collaborate on the creation of a project which is a proof of concept for a common digital currency traded between the two institutions.22.

A joint project by the Bank of Canada and Monetary Authority of Singapore, called Jasper-Ubin, in 2019 successfully proved that distributed ledger technology can be used to make safe cross-border payments by an exchange of wholesale CBDC across different distributed ledger platforms.25. Related projects: Ubin phase 2 by MAS (2017), Jasper phase 3 by the Bank of Canada, Payments Canada, and TMX (2018).26 27.

23 Sveriges Riksbank E-krona The Rikbank December 13, 2019

24 MIP news Third phase of Stella project completed EuropeCentral Bank June 4, 2019

22 Abubaker, Rasha.audi-Emirati powerhouse announces 7 joint initiatives in vital sectors Emirates News Agency January 19, 2019

25 Enabling Cross-Border High Value Transfer Using Distributed Ledger Technologies Accenture 2019

26 Accenture PROJECT UBIN PHASE 2 Accenture November 2017

27 Payments Canada Jasper Phase III: A collaborative research initiative between Payments Canada, the Bank of Canada and TMX Payments.CA December 17, 2019
China’s Complex Relationship with Blockchain and Cryptocurrency

Despite being a global leader in blockchain technology and home for 25 percent of the whole number of blockchain projects worldwide, China’s relationship with blockchain, and in particular cryptocurrencies, has been a tumultuous one.

**Mining**

China is home to some of the world’s largest cryptocurrency mining farms – data centres hosting the mining rigs. Thanks to relatively cheap electricity in some of the country’s regions and mining producers’ outstanding activity over the past two years, Chinese Bitcoin miners currently control two-thirds of the crypto network’s processing power, 66 percent of the global hash rate (cryptocurrency generating power). Chinese mining manufacturers such as Bitmain and MicroBT are among the world’s biggest producers of bitcoin mining gear, and Canaan Creative launched a $90m initial public offering on Nasdaq in November of 2019.

For almost 6 months in 2019 the future of crypto mining in China was quite uncertain, as the Chinese National Development and Reform Commission (NDRC) announced plans to blacklist the industry and put mining of cryptocurrencies on a list of banned industrial activities. In November 2019 NDRS updated its guidelines and removed crypto mining from the list.

Even though Bitcoin is actively mimed and is legally recognised as a virtual property, it’s illegal to use it as a currency in China, and financial institutions are restricted to be involved with it.

**ICO Bad, Blockchain Good**

Back in 2017, Chinese authorities banned ICOs due to high risk of fraud and went on with shutting down cryptocurrency exchanges. China has consistently been after those who have been misusing the concept of blockchain technology for hype and fast cash. Instead, after banning crypto, Chinese authorities clearly made a bet on innovation and digital transformation, with blockchain and DLT being a cornerstone of these processes.

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32 Nation leads world in blockchain projects China Daily April 2, 2019
33 Wilson, Tom China’s bitcoin miners scoop up greater production power - research Reuters December 11, 2019
34 Huang, Zheping China, home to the world’s biggest cryptocurrency mining farms, now wants to ban them completely South China Morning Post April 9, 2019
35 中国人民银行 中央网信办 工信部等七部门印发《关于防范代币发行融资风险的公告》 People’s Bank of China September 4, 2017
36 China orders Bitcoin exchanges in capital city to close BBC September 19, 2019
In October 2019 President Xi Jinping officially embraced blockchain technology, saying that the country needs to "seize the opportunity" afforded by it. "We must take the blockchain as an important breakthrough for independent innovation of core technologies," Xi said. The speech made cryptocurrency prices pump and hit record highs in 2019.

Several weeks after President Xi Jinping reaffirmed the anti-crypto stance. He gave a speech on CCTV1 and ultimately criticised cryptocurrencies and brushed them off as unregistered securities, “financial fraud”, and illegal Ponzi schemes. China’s central bank immediately launched a fresh crackdown on cryptocurrencies, warning of the risks entailed in issuing or trading them. The People’s Bank of China’s Shanghai followed Xi Jinping’s narrative and cautioned investors not to confuse crypto with blockchain technology.

Following the “blockchain only” narrative, the Standardization Administration of China (SAC), the standards organization authorized by the State Council of China that oversees all standardizing regulations in the country, has set up a national standards committee for blockchain technology to boost the overall digital transformation.

PBOC is taking a leading role in regulating blockchain related industries, including fintech. According to a report from state media Xinhua News Agency, which quotes PBOC vice president Yifei Fan, blockchain is among 17 categories of financial technologies, including cloud services and artificial intelligence, to be regulated under the new bank standards.
THE PROPOSED DIGITAL CURRENCY

Expected Characteristics

It is important to note that while the People’s Bank of China has been researching and planning for this digital currency, its final version or structure has not been published. PBOC officials, current and retired, drop hints and suggestions about what they are considering and commit to little. From a blockchain cryptocurrency to a centralised digital currency/electronic payment system, the most plausible form of this digital currency has evolved over time. Some features seem more likely than others and we consider those elements here as well present the uncertain elements and explain considerations for or against those features.

Centralised versus decentralised: Consensus outside the PBOC is that the currency will not be a decentralised currency like Bitcoin. Indeed, one of the most important emerging desired features (by its creators) is centralisation of information. Mu Changchun, the head of the PBOC’s digital currency research centre, was widely quoted in late August of 2019 as saying that the currency would be based on blockchain, but centralised under PBOC control.1

This form of blockchain is also sometimes referred to as “private, permissioned” blockchain. By private, it means the creator (here, the PBOC) is the only body that can see the transactions. It is not private just to the user. Likewise, the permission here does not rest in the hands of the ‘owner’ of the currency; it lies with the PBOC.

Identifiable - While various representatives of the PBOC have made nods to the concept for individuals to have privacy protection built into the currency (but provided no details on practicalities), they revert to emphasising that the PBOC will have to be able to see all transactions - regardless of geographical distribution or through which platform - for AML purposes. Only the PBOC will have this access; other authorities from other countries will not.2

PBOC generated, private sector distributed - While the central bank will generate and have visibility into transactions, it will distribute the funds via state-owned and Chinese private banks and major payment platforms like WeChat and Alipay. While it is practically possible for the

1 Chan, Jason Top 10 Facts about Changchun Mu, Project Head of China’s National Cryptocurrency Asia Crypto November 16, 2019
2 Shin, Laura The IMF on How to Design Central Bank Digital Currencies Unchained August 13, 2019
PBOC to issue the currency, create and administer accounts, and monitor peer to peer transactions, it would be a major technological burden and risk factor for the PBOC. However, The PBOC’s Mr Mu has described the system as an attempt “to provide redundancy to our very advanced electronic payments” including WeChat Pay and Alipay.3

At the most localised level - the individual - people will be able to hold their digital currency in a personal wallet, in addition to their bank accounts and social media accounts (like WeChat Pay). Even in a personal wallet, each unit of currency and any transaction involving it will still be visible to the PBOC.

**Blockchain or not blockchain** - Up until the end of 2019, all signs have pointed towards the use of blockchain as the underlying technology to be used for administering the digital currency. Both Mr Mu and his predecessor, Yao Qian, have in the past claimed the digital currency would be blockchain based. However, recent analysts and even Mr Mu himself are creating a space for the possibility that it will not be blockchain based, citing concerns about the ability of blockchain to support the volume and speed of transactions needed for mass adoption.4

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3 Tran, Sarah China’s Central Bank’s DCEP is Trying to Make WeChat Pay and Alipay Redundant Blockchain News, Nov 12 2019
4 Quicktake Why China’s Rushing to Mint its own Digital Currency Bloomberg News, September 11 2019
Planned Partners and Propagation

The first phase of the introduction of this currency will see it distributed to partners in China. However, the distribution outside of China will be facilitated by Chinese corporations. The concept of meaningful pushback by corporate China is inconceivable; in public, what Mr Xi Jingping wants, he gets. The PBOC is an extension of this and the introduction of the CBDC will not be announced unless it bears the imprimatur of all levels of Chinese government.

Of those players, digital payment providers are best positioned to connect the dots to make it easier for foreign entities, from credit card issuers to SMEs, to work with their home payments systems.

According to the latest announcements by Mr Mu, speaking at the Singapore Fintech Festival (SFF2019) in November, 2019, it will be used to support cross-border payments and domestic digital transactions. The aim will be to supplement and ‘make redundant’ the ‘lower’ tiers of money supply - M₁ to M₃. By ‘redundant’, this is in the sense of providing a backup, not an eventual replacement. Mr Mu’s comments at the SFF2019 went to pains to explain that this would not disrupt current payments players (like Alipay and WeChat Pay) and the domestic banking system⁵. In fact, they will be vital partners.

Alipay and WeChat - Alipay and WeChat (APWC), owned by Alibaba and Tencent (respectively), dominate the Chinese electronic and mobile payment landscape. While consumers in developed economies use bank-provided credit cards first and pay out of their bank accounts later, Chinese consumers receive their salary and then move the proceeds straight into their APWC accounts for daily life purchases.

WeChat has over 1 billion users; Alipay over 520 million. Alipay is the sole means of payment for Taobao, a global online sales giant. Approximately half of all consumer goods sales in China are processed through the APWC combo⁶. It is popular with merchants who can deal solely with the payment provider and not have to deal with (and pay) multiple banks and credit card companies with every transactions.

It is the contention of this report that, outside China, APWC is going to be THE channel for spreading the PBOC CBDC. While a recent report by Bloomberg suggests that the PBOC could open e-wallets and compete with Alipay and WeChat Pay, this report considers this highly unlikely (see below). The APWC will be vital partners both in China and in spreading the use of the digital yuan abroad.

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⁵ Tran, Sarah China’s Central Bank’s DCEP is Trying to Make WeChat Pay and Alipay Redundant Blockchain News November 12, 2019

⁶ Surane, Jennifer and Cannon, Christopher Why China’s Payment Apps Give US Bankers Nightmares Bloomberg May 23, 2018

⁷ Chen, Lulu Yilun and Huang Zheping Alipay, Tencent Beware: China’s Digital Yuan is closing in Bloomberg October 25, 2019

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Domestic banks - The PBOC has signaled its intent to make retail bankers partners in the distribution of and holding of its CBDC. The former central bank governor Zhou Xiaochuan signaled that considerations were being paid to the potential to bypass the retail banking system in payments, which could result in a significant loss of revenue from, and contact with, retail banking customers. To that point, he says, “Although in theory the central bank’s digital currency can also be used as a retail service, [we should be] very cautious, because of the major blow that could deal to the existing financial system.”⁸

Domestic banks can also help on the cross-border role. They have systems and structures in place to control, monitor and administer forex services for business clients.

There have also been suggestions that the first use of the PBOC CBDC will be to provide means for banks to settle payments with each other. This could serve as a testing ground for the PBOC and banks to become more familiar with the technology and discover flaws before wider distribution.

Distribution to personal e-wallets - As noted, it is highly unlikely that the PBOC will distribute funds directly to individual e-wallets, just as they do not hand out bags of cash to people who walk in with another store of value or claim (i.e. a cheque). As noted above, it poses risks that the bank is uninterested in bearing. Likewise, while it is theoretically possible for the PBOC or another government body to offer accounts to the public (i.e. like Japan Post), there is no indication for any such plans at present (December 2019).

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⁸ Yuan, Yang and Lockett Hudson What is China’s Digital Currency Plan Financial Times November 25, 2019
Unplanned partners and adoption

Small overseas merchants - Note that those using APWC accounts outside China (mostly in Hong Kong) cannot use them inside China; the two systems are not the same. However, in November of 2019, both electronic payment giants announced that they would support the opening of accounts based on credit cards including Visa, Mastercard, JCB (from Japan) and Singapore’s Diners Club. In recent months, the adoption of APWC in urban centres has meant that visiting tourists found themselves unable to function independently from handlers or support from their hotel. They are reduced to begging strangers to take cash in return for paying their restaurant or taxi bills via the electronic payment. By allowing tourists to connect their credit cards to APWC (by forcing them to download the app and open an account), they will tap a whole new clientele who can then become vehicles for using a new APWC distributed PBOC CBDC as they travel to other countries who accept APWC. Tourists (141 million people visited China in 2018) can pay into their APWC account and use it in China - and, theoretically, abroad. Perhaps in their home market. This is now becoming true for tourist areas in China’s neighbours like Vietnam, The Philippines, Laos, Cambodia and more.

SMEs - Beyond tourism

While this has not been mooted for use in other realms, it is easy to see how SMEs and independent business operators could use their credit cards to open their own APWC accounts for other than tourist uses. One such group of early adopters would likely be e-commerce providers in Asian countries that use Taobao as their supplier. If Alibaba chose, it could mandate payment via Alipay in PBOC CBDC, forcing business people to get on the new system. The alternative would be finding other suppliers or closing shop. However, if Alipay was one of many Chinese financial players demanding clients pay using the new system (all under pressure from the PBOC to switch clients onto the new CBDC), suppliers’ options would not only be to find a new supplier, but a new country of supply. If it is simple and easy to open an account with Alipay using a credit card, few would object.

With a potential burgeoning money for digital yuan market from more Chinese tourists spending their digital yuan abroad and the ability to purchase the same currency via their credit cards, another source of demand for digital yuan opens up.

Overseas Banks

Overseas banks may find much to object to if asked to create facilities for small volumes of micro-payments that are instantaneously visible to the People’s Bank of China. The expense alone may prove objectionable. However, if major credit cards have resolved these issues to their satisfaction, banks will have little cover to claim they will find it difficult to implement. Those in China will have little choice but to comply and will likely create a framework that will allow them to administer the PBOC CBDC globally. With other national banks planning similar moves, they will likely be processing many CBDCs for interbank clearances, forex transactions and perhaps retail banking in the near future. Their only real obstacle will be the concerns of national regulators and international standard setters (like the OECD).

9 Kharpal, Arjun Tourists to China can finally use the country’s massively popular mobile payment systems CNBC November 6, 2019
10 Saiidi, Upton Payments just got a lot easier in China, where no one wanted to accept my cash CNBC November 7, 2019
11 Alibaba’s total international revenues reached RMB 27,725,000,000 (approximately €3.5 billion) by September 2019, already surpassing the 2018 total. This includes sales from Taobao, T Mall, Alibaba.com and smaller services. - Ref: Blazyte, Agne Annual e-commerce revenue of Alibaba from 2010 to 2019, by region (in million yuan) September 23, 2019
PBOC puts together a team dedicated to digital currency research.

Tencent-backed WeBank is established as China’s first digital bank.

A meeting is held in Beijing where bank’s governors discussed strategic objectives, including the digital renminbi, together with a group of “relevant research institutions, major financial institutions and advisory bodies of experts”.

July

Wang Xin, director of the People’s Bank of China (PBOC)’s research bureau, during an academic conference hosted by Peking University’s Institute of Digital Finance voices concern that Facebook’s Libra project poses risks for the traditional financial system and urges regulators and governments to develop their own digital currencies, also implying US dollar possible centralisation:

“If the digital currency is closely associated with the US dollar, it could create a scenario under which sovereign currencies would coexist with US dollar-centric digital currencies. But there would be in essence one boss, that is the US dollar and the United States. If so, it would bring a series of economic, financial and even international political consequences.”

August

Heads of financial and economic institutes of China, Party Central Committee and the State Council hold a joint video conference on priorities in country’s economic and financial initiatives, including cryptocurrencies. According to PBOC, the R&D process for digital yuan should be accelerated.

September

New head of the R&D division: Mu Changchun replaces Yao Qian, who was the first director of the research institute on digital currency. Mu notes that the new currency would bear some similarities to Facebook’s Libra and would be able to be used across major payment platforms such as WeChat and Alipay. State-run newspaper China Daily reports that “closed-loop testing” of the digital yuan has already begun to simulate payment scenarios with “some commercial and non-government institutions.” However, just days later PBOC’s head Yi Gang says that there is particularly «no timetable» for launch.
October
President Xi Jinping calls on accelerating efforts in blockchain adoption as a core for digital innovation.

November
Tencent joins hands with major international credit cards to allow more foreigners to use WeChat Pay. Tencent’s announcement follows Alipay’s move to launch an e-wallet in order to give foreign visitors to the mainland access to its mobile payments platform under a program called ‘Tour Pass’.

Tencent releases a blockchain white paper where it is stated that Libra could pose a serious threat to existing digital payment systems, including its WeChat Pay and Alipay.

December
The pilot for PBOC’s CBDC is said to be rolled out in Shenzhen, and include participation of four major banks and major economic participants such as China Telecom.

January
After reporting «smooth progress», PBOC accomplishes the top-layer design of the planned digital yuan, develops relevant standards, carries out a joint testing of the CBDC.

February
PBOC announces the application for 84 patents designed to enable the PBOC digital currency to launch and be integrated into the national monetary, banking and payment systems.12

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12 Helms, Kevin 84 Digital Currency Patents Filed by China’s Central Bank Show the Extent of the Digital Yuan Bitcoin.com February 16, 2020
SCENARIOS FOR ADOPTION, BY REGION

Actual Adoption: Asia

As cited above, tourist operators chasing the Chinese tourist dollar will find it more and more lucrative to take the PBOC digital currency. Indeed, it is hard to see how, from the SME perspective, it will be different than accepting APWC payments today. If anything, accepting such payments will only become easier moving forward.

Tourism spreads RMB today, CBDC tomorrow

China is now the world’s largest outbound tourism market with over 174 million trips originating in the market in 2019 (estimated final)\(^1\). Of the Top 10 outbound tourist destinations, Hong Kong has the highest number of visitors (over 25 million) and a certain amount can be considered day-trippers. However, they are all spenders. Though Chinese, Hong Kong operates under the ‘One Country, Two Systems’ framework and has its own money, central bank (the Hong Kong Monetary Authority) and an independent capital control regime from China (i.e. almost not controls). Even the famously ‘cash only’ taxis are giving in to accept APWC, while still spurning widespread, homegrown payments systems. Chinese tourists are shocked when they cannot use APWC in Hong Kong, much as the reverse is true when Hong Kongers can’t even use mainland Chinese cash in mainland cities. Macau receives the second most visitors and is similar to Hong Kong’s situation. Both are moving quickly to accept APWC to satisfy Chinese spenders.

Destinations 3 to 9 on the list of outbound destinations are all in Asia and are, in order, Thailand, Japan, South Korea, Vietnam, Singapore, Taiwan, and Malaysia. The United States rounds out the number 10 spot. Myanmar tops the list of the fastest growing destination for visits in the first half of 2019. Mongolia and Cambodia also make the top 10 - the other fastest growing destinations, excepting Israel, are all in Europe\(^2\).

While there have been incidents of commentators raising the spectre of China ‘weaponising’ its tourists to deliver economic blows to ASEAN nations in particular\(^3\), (by restricting its citizens’ exit visa to out of favour countries) most countries are eager to attract these Chinese tourists and facilitate their in-country spending.

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\(^1\) China Outbound Research Institute China Outbound Latest Accessed December 18, 2019

\(^2\) ibid.

\(^3\) Chin, Curtis S. and Collazo, Jose B. Why ASEAN must be wary of the Chinese tourist ‘weapon’ Straits Times June 9, 2019
The only nation that has provided significant pushback on this is Nepal⁴. Fearing loss of foreign currency earnings, the Central Bank banned the APWC payment channels, popular with tourist operators serving the Chinese clientele. Many of those operators are originally from China and have significant links there, meaning that accumulating RMB, digital or otherwise, from tourists is easier as passing money to family and friends in China to fulfill familiar obligations or for informal commitments is easier.

In Asian nations, Chinese tourists are an important part of the industry. While complaints by locals against their top tourists (by volume of people) may have risen in line with their numbers in recent years, their absence is keenly felt. Even with the doors wide open on the China side and in receiving countries, the economic slowdown in China has resulted in anxiety in major tourist recipients from Thailand⁵ to Hong Kong.

All of this is to say that, Nepal excepted, that local economies will likely go along with efforts to increase their attractiveness to Chinese tourist spending by accepting RMB payments from Chinese tourists, whether by APWC or other means, digital or traditional. For smaller, poorer countries very close to China, the importance of the Chinese tourist is huge.

Two examples illustrate the point:

Cambodia’s inbound tourist traffic is 38.3 per cent mainland Chinese (to October 2019)⁶. But there are concerns the money goes to Chinese businesses with mostly mainland Chinese staff⁷. These firms would likely be less concerned about acquiring RMB - although many would probably rather the PBOC didn’t have such strong visibility into their finances. Laos received 17 per cent more Chinese tourists in 2017 compared to 2016. While this is only third overall (after neighbours Thailand and Vietnam), there are concerns among some - and business opportunity for others - as a China-Laos high-speed railway is expected to bring many more Chinese to Laos after its completion in December 2021⁸. One of the concerns is that local tourist operators are ill-equipped to capitalise on the opportunity and will have to sell out, or lose out, incoming Chinese tourism operators. However, the Laotian government is all on board with Chinese investment from rails to tourism.

⁴ Nepal bans Chinese digital wallets Alipay and WeChat Pay to prevent loss of foreign currency earnings Agence-France Presse May 21, 2019
⁵ Land of Nervous Smiles: A fall in the number of Chinese tourists breeds unease in Cambodia The Economist August 29, 2019
⁶ Yuruu Number of Chinese Tourists to Cambodia reaches 2 million in 10 months Xinhua December 17, 2019
⁷ Connor, Logan ‘They only go to Chinese shops’: why Cambodia’s influx of mainland tourists is causing tensions South China Morning Post January 2, 2019
⁸ Janssen, Peter Chinese tourist ‘invasion’ feared as high-speed Laos-China Railway will boost visitor numbers dramatically South China Morning Post August 24, 2018
All of this is to say that, Nepal excepted, that local economies will likely go along with efforts to increase their attractiveness to Chinese tourist spending by accepting RMB payments from Chinese tourists, whether by APWC or other means, digital or traditional.

In short, these countries appear to have little interest or will in pushing back on an increase in Chinese tourism and means to facilitate Chinese spending - including the spread of Chinese payments systems, digital currency or no. Dr Simon Ogus, Founder and CEO of DSG Asia, interviewed for this report, cited them as two potential countries that would be likely to fall under Chinese monetary influence (along with Myanmar) along with China’s growing economic and political clout in those countries. The term ‘client state’ may be excessive at this point, but given the narrow access to political leadership in those countries and their dependence on Chinese investment and patronage, the term may seem appropriate in the near future. Widespread use of a PBOC currency in these countries would provide more leverage for China here.

E-commerce and the spread of PBOC CBDC (the Trojan horse)

SMEs across Asia supply Chinese buyers and buy Chinese products to supply their own markets. Right now, the vast majority of Chinese trade, whether it be with Japan, Korea, ASEAN countries or other regional payers is still conducted in USD. None of the economists interviewed for this report thought that any version of the PBOC CDBC would change that.

However, the spread of Chinese platforms, organically or through M&A, could better position PBOC partners to become useful levers to force others to take up the PBOC CBDC. The first step would be integrating Chinese financial channels across Southeast Asia before other means of pressure were brought to bear.

An example of how Chinese corporate partners could influence e-commerce across the region is through Alibaba’s purchase of Lazada. Lazada is a platform through which many, many entrepreneurs sell their wares to Southeast Asia’s 600 million potential buyers. And many of them will now have Alipay accounts, courtesy of Lazada.

Alibaba has increased its investment in Lazada, a Singaporean e-commerce platform dominant in South-East Asia including a USD $1 billion investment in 2017 to raise its stake to approximately 83 per cent. Lazada’s payment platform, HelloPay, was promptly rebranded as Alipay\(^9\). Another USD $2 billion investment announced in March 2018 also saw it install an Alibaba executive, Lucy Peng, as the new CEO\(^10\). Lazada is a major player in Singapore, Malaysia, Thailand, The Philippines, Indonesia, and Vietnam\(^11\) and is signing up more to their platform - and Alipay accounts - daily.

Carrot and sticks

While the spread of APWC accounts in the region is one thing, convincing the merchants and consumers using it to increase their holdings of the PBOC CBDC is another.

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9 Yu, Eileen Alipay brand expands into Southeast Asia via Lazada ZDNet April 20, 2017
10 Choudhury, Saheli Roy Alibaba invests additional $2 billion in Southeast Asian e-commerce firm Lazada CNBC March 19, 2018
11 Wang, Yamai Spotlight: Southeast Asian e-commerce boosted by Chinese expertise Xinhua November 2, 2019
However, there are some things the PBOC could do to promote the goal of increasing the use of their currency abroad.

Means of doing this include:

1) **Restricting access to USD in China, forcing Chinese importers to press external suppliers to take the PBOC CBDC as payment.** Assuming the digital currency’s widespread adoption in China (by fiat), it would be more easily available (although still controlled by the PBOC to avoid capital flight). The PBOC could still control how much traditional yuan, CBDC, and USD could flow out of the country. This may incur significant resistance from outside suppliers, however.

2) **Require Chinese suppliers to take payment** - in part or in whole - from overseas buyers in the CBDC. This would push external buyers to seek out CBDC (made easier through increased CBDC in circulation from tourists and facilitation via APWC) so they could continue to purchase Chinese goods. SMEs using platforms like Lazada and Taobao would already have Alipay accounts and just need to accustom themselves to trading more often in digital yuan to avoid having to switch suppliers, a process fraught with risk and difficulty in the short term.

3) **Provide an incentive to holders of CBDC.** One advantage of digital currencies, to the minds of central bankers, is to take control of interest rates directly to holders. A central bank knows where digital funds are and could choose to pay interest directly to fund holders. In a world of low or even negative interest rates, holding an interest-bearing currency could make it very attractive. Dr Simon Ogus, Founder and CEO of DSG Asia, interviewed for this report, cites this as an attractive feature from the point of view of the PBOC. However, this could also make the reverse possibly; it would be even easier, especially for domestic accounts, to enforce negative interest rates and take away monies from accounts.

**Even so...**

Even this would only increase the circulation of the RMB, in the form of the PBOC CBDC, marginally against the global backdrop. It is hard to estimate and any theoretical approximation would be a very loose exercise in guesswork for a new monetary vehicle that doesn’t exist and whose final form is not known. However, every economist contacted for this report was highly sceptical of this new currency becoming a true global reserve currency, widely used in major financial institutions and transactions.

The potential for use of the PBOC CBDC for truly large global trade flows will be discussed in a later chapter.
Actual Adoption: Europe

If the PBOC CBDC is to come into Europe, its first point of penetration will likely be through the APWC channels serving Chinese tourists. While not at the levels for Chinese tourists visiting their Asian neighbour countries, their numbers are still significant.

China Tourism Academy (CTA) and HCG Travel Group’s Chinese Tourism released a report on Chinese Tourism in European countries in the first half of 2019, according to which Chinese tourists made over 6 million trips to Europe in 2018 (which was officially the EU-China tourism year), and that number was expected to rise 14% in 2019[12]. HCG Travel data reveals that the number of Chinese booking a trip to Europe in the first half of 2019 grew by 12.3% year-on-year. Ctrip[13] data shows that Europe is the second top world region for Chinese tourists, accounting for 10% of outbound trips.

Shopping and visits to major outlets play a big role in it, and so does APWC: more than 70 European brands, including luxury fashion brands such as Valentino, Ermenegildo Zegna and Loro Piana, have their WeChat accounts hosted since 2016. Alipay, which also started its European expansion in 2015 with the establishment of an office in London, is now accepted across 18 European countries.

Hence, the digital yuan could be theoretically adopted via existing services and tourist operators, but this again brings us to a question of the payments market monopoly and whether European boutiques and banks would choose to switch to another digital currency, rather than stay with APWC.

As a side note, the introduction of the PBOC CBDC could prove problematic for luxury brands. If the PBOC has even more visibility into Chinese consumer spending, it could impinge on sales to high-earning bureaucrats and others in one of the periodic crackdowns on imports of luxury goods into China (such as that in 2018[14]).

E-commerce: A rather (European) approach

European market is a big and quite saturated environment, where regulators are deeply concerned about privacy and transparency of financial transactions. It might not be as reliant for the Chinese CBDC as smaller Asian countries, not united by such strong and ancient economic ties. Widespread use of the digital yuan by European e-commerce firms seems an unlikely scenario. Aliexpress, however, sees big potential in Europe and has particular plans to make

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[12] 华程国旅集团官微 数据报告 丨 2019上半年中国游客赴欧洲旅游大数据报告 中国旅游研究院 & 华程国旅集团
[13] The biggest online travel agency in China that operates Trip.com, Skyscanner, and Ctrip.com
it headway outside of China. In early 2018, it launched its AliExpress affiliate program in Europe. This functions in a similar way to Amazon’s own marketplace whereby sellers can use its portal to sell their wares and send these out to customers via its delivery network in exchange for a selling fee. According to insights company Kantar, this is already paying off in Spain, which is now one of its largest markets along with the US and Russia.

**ECB and digital currencies have a history**

European Central Bank (ECB) enjoys its own strong opinion on CBDCs and how global digital currencies can affect the market.

Firstly, after Facebook announced the launch of its Libra currency, followed by weeks of heated regulatory discussions both in the US government and in Europe, European Union finance ministers have finally agreed to a de facto ban on the launch of global stablecoins in the region. In a joint statement, the European Council and Commission noted that “no global ‘stablecoin’ arrangement should begin operation in the EU until the legal, regulatory and oversight challenges and risks have been adequately identified and addressed.”

> "When a ‘stablecoin’ initiative has the potential to reach a global scale, these concerns are likely to be amplified and new potential risks to monetary sovereignty, monetary policy, the safety and efficiency of payment systems, financial stability, and fair competition can arise," the report also said. Moreover, the new European Commission is already working on a regulatory base for global stablecoins. Preventing Libra impact might also include pushback on other currencies seeking global status.

Secondly, since the idea of a central bank digital currency heats the air, a good number of countries are competing in who will be the first to issue it and eventually make it work. The central bank of France announced its plans to pilot a CBDC of its own. François Villeroy de Galhau, the governor of the Bank of France, confirmed that the bank will start testing the digital euro project by the end of the first quarter 2020, French financial publication Les Echos reports on Dec. 4, 2019. The digital euro, however, will target financial institutions only, so far leaving retail payments and individuals behind.

Thirdly, as opposed to clearly centralised nature of the digital yuan, the ECB started exploring a crucial feature of anonymity for a central bank digital currency. The bank, issued a report where, with the help of the Corda blockchain platform, explained how a balance of privacy and aligning with compliance procedures can be reached by using the Proof-of-Stake protocol. The system that is described makes use of anonymity vouchers, using which the network clients can process low-value transactions without actually revealing their identities.

The ECB Twitter said: "Our latest research shows that it is possible to build a simplified payment system for central bank digital currencies. Such a system would safeguard users’ privacy for low-value transactions while ensuring that higher-value transfers are subject to anti-money laundering checks." Hence, a centralised and fully controlled digital currency such as the PBOC token might experience a strong pushback from European regulators who are very sensitive about privacy and transparency of financial transactions.

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16 Council of the EU Joint statement by the Council and the Commission on “stablecoins” European Council Council of the European Union December 5, 2019

17 EU agrees tough line on digital currencies like Facebook’s Libra Reuters December 5, 2019

18 Towards the retail payments of tomorrow: a European strategy European Central Bank November 2019

19 Nessim, Aït-Kacimi and Raphaël, Bloch La Banque de France va expérimenter un euron digital en 2020 Lesechos December 4, 2019

20 Exploring anonymity in central bank digital currencies Issue No 4 European Central Bank December 2019

21 ibid.
Actual Adoption: Other Regions

Other regions of interest include Canada, the United States, India and Australia. While India is normally considered part of Asia, it deserves its own short treatment here.

Latin America, Australasia (ex Australia), and the Middle East are not considered to be an area of interest with a high likelihood for adoption of the digital currency rising from widespread adoption of Chinese dominated payment systems.

Neither are they believed by any interviewees nor this reports authors to be of major interest. However, North America and Australia pose interesting cases.

Canada and Australia have both seen the spectre of Chinese censorship being extended to their citizens using the WeChat platform, in particular. However, neither has seen much debate over the use of payment platforms in their jurisdictions.

Canada - Tourists, Immigrants, Small Business

Canada has enjoyed immigration from China for over 150 years. However, in the modern era, Hong Kongers came in larger numbers from 1990 onwards (post-Tiananmen Square), followed by a smaller wave from Taiwan in the mid-1990s. A steady stream of mainland Chinese have come in the currency century and in 2016, the Canadian census reported 610,835 persons have Mandarin Chinese as their mother tongue (mostly from mainland China; only 594,030 reported Cantonese (mostly from Hong Kong). From 1999 to 2009, mainland Chinese were the largest immigrant group to Canada. While Vancouver and Toronto are the largest populations Chinese immigrants and top tourist destinations, Chinese communities exist all across Canada.

Chinese Canadians have, for the most part, have not come as refugees and enjoy travel to and many personal and economic ties in China. In Chinese communities, WeChat is the social media of choice. Immigrants and tourists alike so bring their WeChat preferences and APWC payment ability in their pockets. Business helping Canadian businesses to integrate these payment options into their businesses; one has even signed up with the Chinese government to provide payment options for Chinese embassy and consular payment services in Canada.

Informal business exists everywhere and is often conducted in cash. It is kept down to an acceptable level and cannot grow into a major enterprise without ‘going legit’ or employing sophisticated criminal methodology and networks. While the above example is innocent and likely poses little threat to the international banking order or Canadian government revenues, it does suggest an opening for illegal business to evade local detection. This could range from innocent young entrepreneurs accidentally evading taxes to small level criminal payments for illicit goods or undeclared service provision to more substantial criminal behaviour.

With the introduction of a PBOC CBDC, the People’s Bank would have visibility into all transactions, malevolent or benign. Revenue Canada, the national tax man, and its many partners in monitoring public financial transactions (licensed financial institutions) would not.

On the SME and e-commerce front, Canada is dominated by Amazon. While Taobao is known, it is not widely used as an e-commerce platform for businesses. There is not a similar situation to China and Southeast Asia (via Lazada) where e-commerce is Alibaba dominated. While the APWC move to accept credit cards may improve the situation in their favour (by making it easier to open Alipay accounts, in particular), this remains to be seen.

Substantial Canadian trade with China is, criminal networks aside, largely transacted through major financial institutions. In short, Canada hosts a beachhead for Chinese payment networks that can act as a path for the PBOC CBDC to become used as a small part of the M₃ money supply in Canada. Personal transfers, informal networks and maybe even criminal elements are currently part of how the system is being used.

Australia

Australia’s situation mirrors Canada in many ways with similar immigration flows, albeit at lower numbers matching Australia’s lower population. WeChat Pay made its original

22 Packham, Colin Australia to probe foreign interference through social media platforms yahoo! Finance December 5, 2019
23 Chan, Anthony B. Chinese Canadians The Canadian Encyclopedia May 22, 2019
24 Chinese Embassy in Canada Signs a Partnership Agreement with Motion Pay to Accept AliPay & WeChat Pay Motion Pay March 4, 2019
25 Kotyk, Alyse WeChat Pay and Alipay now accepted at 7-Eleven stores in Metro Vancouver Vancouver Is Awesome November 23, 2018
26 Bula, Frances Pay Day: Why Vancouver Loves WeChat Vancouver Magazine October 26, 2018
27 Smith, Buckley Amazon dominates most trusted e-commerce brands in latest BrandSpark study IT World Canada August 19, 2019
push into Australia in 2017. It was preceded by Alipay who partnered with a local payments company, Quest, to enter the market in 2015\(^\text{28}\).

It continues to promote itself as an advertising platform to Australian advertisers (including the national Tourism Australia) now - with WeChat Pay as part of the solution\(^\text{29}\).

New solution providers promise to displace some of Visa and Mastercard’s business by providing a lower-cost solution for merchants using the APWC platforms\(^\text{30}\).

Alipay is not to be outdone and is wooing Australian merchants and banks to join it. In a recent public meeting in Sydney, Alipay’s Australia and New Zealand boss, George Lawson, was touting the superiority of Chinese payment systems and the benefits of working with Alipay to capture mainland Chinese students (over 300,000 currently in Australia). Alipay’s stated strategy is to help merchants from Down Under to sell to China\(^\text{31}\).

A PBOC CBDC circulated inside and outside China via the Alipay network would again give the PBOC visibility into a wide range of transactions. As per the notes in the above section, a large Australian export sector ‘hooked’ on Chinese e-commerce sales, could be amenable to persuasion to deal with the digital yuan.

While Alipay is not looking to push its app to Australian consumers, Mr Lawson promised to soon be able to provide access to another group of consumers to Australian retailers and banks - those of India\(^\text{32}\).

### India

Paytm is India’s biggest payment provider for e-commerce, used by international and local providers alike ranging from the national titan Indian Railways to America’s Uber. It has a partnership with Citibank to offer credit cards and even sells pure gold.

Alibaba via Ant Financial has upped its stake in Paytm and Paytm Mall (an e-commerce provider) and is currently PayTM’s biggest shareholder\(^\text{33}\). Paytm is assisting Alibaba to introduce Alipay across the Indian mobile e-commerce market and using Alibaba’s cloud computing as the platform. Tencent (WeChat’s parent) is also heavily invested in the Indian tech sector and is seeking partnerships with Indian financial institutions. It has also invested in India’s biggest e-tailer, Flipkart. However, the whole company was sold to Wal-mart in 2018, with Tencent retaining a first “right to purchase” should Walmart sell to an ostensible rival, Alibaba\(^\text{34}\).

This belies one difference between India and Southeast Asian in particular. Ecommerce is just taking off here, but American players are also in the market and it is not clear if who will dominate in this large nation. However, APWC do not lack ambition in trying to capture the Indian ecommerce market for consumers and entrepreneurs; their investments reflect it.

### United States of America

The United States of America is, in some ways, the most consequential player in the contest. If the goal of the PBOC CBDC is the internationalisation of the RMB, then it is fairly benign and expected for a national expecting to become the world’s biggest currency. If its aim is to dethrone the USD as the world currency, then that is another matter.

While it may seem a natural aspiration, the United States would no doubt take issue. For this report, the potential for China to displace the US will be dealt with in later sections. Here, we consider the spread of a PBOC CBDC in the US as per other sections, that the reach and use of a potential currency if introduced in 2020.

While WeChat Pay entered the US market in 2017, there is little evidence it has been able to get any purchase beyond tourist markets. Accordingly, it has deals with hotel groups to get them on the WeChat Pay platform\(^\text{35}\). Small fintech payment providers, like SnapPay, have been offering it as a solution in the US\(^\text{16}\). More usefully, it has partnered with Stripe, a payment provider to e-commerce and traditional firms to facilitate acceptance of credit card and other payment types.

Alipay has also signed up with Stripe. It has also struck more partnerships, but with major American payment providers, banks and retailers including First Data, JP Morgan Chase and Walgreens, respectively\(^\text{37}\). No doubt there are not the same opportunities to buy up national champions in payments and e-commerce like there have been in Southeast Asia and India.

Especially given the US-China trade war, the Huawei situation and other political uncertainties, it seems likely that these major players will tread lightly in the US market where the kinds of bold moves they are making elsewhere would draw the attention, and perhaps ire, of lawmakers.

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28 Perez, Bien. Alipay steps up mobile payments expansion in Australian stores South China Morning Post December 7, 2019
29 Bennett, Tess. Tencent Courts Australian Advertisers with WeChat Pitch Which-50 November 27, 2019
30 Bajkowski, Julian. Banks position for payments war as PAX enters Australia with Android card-killer terminal ITnews December 13, 2019
31 Ross, David. “Alibaba isn’t looking to dominate in the Australian market - but it’s here for other reasons” Business Insider Australia June 24, 2019
32 Eyers, James. Alipay: we want to help retailers and we won’t disrupt banks The Australian Financial Review March 7, 2019
33 Li, Jane. How China’s Alibaba and Tencent are divvying up India’s unicorns Quartz December 17, 2019
34 Tencent has first ‘right to buy’ in future Flipkart share sale The Hindu Business Online September 8, 2018
35 Renouard, Guillaume. WeChat Pay and Alipay are now targeting the 3 million Chinese travelers visiting the U.S. every year Usbek & Rice March 16, 2019
36 SnapPay provided. SnapPay helps small North American merchants accept Alipay and WeChat Pay Finextra August 28, 2019
37 Renouard, Guillaume. WeChat Pay and Alipay are now targeting the 3 million Chinese travelers visiting the U.S. every year Usbek & Rice March 16, 2019
ECONOMIC AND GEOPOLITICAL IMPACT

Reactionaries: Tax, Multinationals, Central Banks and Regulators

Right now, the Chinese payment providers will likely be the vehicle to bring the PBOC CBDC to the world. Assuming widespread adoption at home and propagation abroad, there are a number of considerations for private and public sector players around the world. Their reaction to the spread of a digital yuan in their economies will depend on their perception of how far it is spread and what problems it may pose.

For example, Australian authorities may have no issues with Chinese authorities knowing the intimate details of Australian e-commerce providers’ sales data to mainland Chinese buyers and the purchasing of tourists and students in Australia. Canadian tax authorities, on the other hand, may take issue with a shadow economy in digital yuan that starts with the Chinese community and spreads to other WeChat friendly communities.

However, if the PBOC starts taking means to promote the use of their digital yuan, such as providing interest-bearing or by forcing mainland buyers to pay in digital yuan, non-Chinese central bankers may find their domestic population holds increasing amounts of digital RMB. That population may choose to use it as a medium of exchange in their local economies, or seek to have more facility to exchange it for other fiat currencies. Lacking those facilities, they may turn to alternative means of currency exchange, such as cryptocurrencies like Ripple.

All these could provide a small-scale push for the internationalisation of the RMB as its digital counterpart slowly gains traction at the retail level or as part of the M1 supply in some countries.

Tax authorities

No tax authorities have, as of yet, raised a red flag concerning unreported earnings that may arise from a PBOC digital currency. Most sophisticated jurisdictions have tackled the issue of cryptocurrencies and there are now enough tax lawyers and accountants in these jurisdictions that feel comfortable servicing those holding and dealing with blockchain-based assets.

However, if they believed that there was a significant amount of tax evasion arising from those trading on WeChat Pay and Alipay platforms they cannot see, they would no doubt quickly act to warn those using them as to their continued tax reporting obligations.
However, without the full cooperation of the PBOC, they would be hard-pressed to track funds after they had passed into the Chinese CBDC platforms. It is important to note that the WeChat Pay and Alibaba platforms would be helpful to spread the use of the digital yuan; they would not be necessary for all transactions to be completed.

**Global Multinationals**

As noted in this report, the most likely targets for the PBOC to push for the adoption of the PBOC digital currency will be small businesses in countries in China’s orbit buying from Chinese suppliers.

Tourism is one area where major multinationals, such as hotel chains, may be under pressure to begin accepting and thereby dealing in the new digital currency shortly after its introduction.

At the moment, major multinationals have made no announcements regarding their plans to use or not use the new digital currency. If it becomes required in China, it may force firms selling online - for example, Apple’s apps to iPhone users - to quickly become adept in using the new currency, along with domestic firms. Companies adept in selling in China typically adapt quickly. Witness Apple’s move to force app developers to get a license from China’s censorship bureau to continue selling on their platform.

Major manufacturers are currently preoccupied with the disruption to supply chains due to coronavirus induced disruptions and concerns over the US-China trade war and generally degrading relations.

**Central Banks and Regulators**

As noted, many central banks have indicated varying levels of interest in progressing to introduce their own digital currency. The introduction of Facebook’s Libra and the PBOC digital currency have spurred their efforts along.

April will see a joint meeting of the ECB with the central banks of Japan, Canada, the UK, Sweden and Switzerland meeting to discuss the issue of cryptocurrencies (national or private) at the IMF meetings in Washington. While none has explicitly addressed the issue of the PBOC digital currency at least one decision by a central bank has been linked to its renewing its CBDC research.

In early February 2020, a number of publications linked the Bank of Korea’s decision to re-boot its CBDC research - after previously abandoning it and disbanding its research group - to the aggressive progress of the PBOC.

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1. Bank of Japan, ECB and other central banks to discuss starting digital currencies The Japan Times February 7, 2020
2. Alper, Tim China Worries Driving South Korean Central Bank to CBDC Research cryptonews.com February 3, 2020
PBOC v $M_{16}$: Undermining and Avoiding the USD Hegemony

The United States is the undisputed king of global finance and uses its dominance of global finance to impose its political will on China, Iran, North Korea and any other number of countries, companies and individuals that earn its ire.

Pindar Wong, Chairman of VeriFi, was the founding Vice Chairman of ICANN (the body regulating internet address system) and is, more recently, the founding Chairman of the Belt and Road Blockchain Consortium, a body aiming to build a common trading standard for international trade using blockchain.

In keeping with the various designations of the money supply and the US military’s standard weapon of choice for over 55 years (the M16 family of automatic weapons), he refers to the “weaponisation of the USD” as $M_{16}$. Whether it is through enforcement of oil embargos on Iran or economic containment of North Korea, the $M_{16}$ dominance is deeply unsatisfying for those chafing under its dominance.

Like the M16, the days of $M_{16}$ may be numbered if a PBOC digital currency could serve as an alternate global pathway for funds to flow outside of the view and control of the American-dominated global financial system.

However, in the course of researching this document, there was little expectation among consulted experts that, while the Chinese state, the Communist Party and by extension the PBOC may like to undermine US dominance in this area, it is unlikely to happen in the short term, even with rapid adoption in the likely adopters described in this document. However, the medium- to long-term outlook may differ. Russia and India, two major economies, are investigating how to conduct financial transactions outside the US-dominated system by joining China’s Cross-Border Interbank Payment System (CIPS). Russia will connect its national financial messaging system to CIPS. India lacks a national system of this type but is a party to talks.

The possibility that it could allow for a significant portion of the global economy to escape American regulator scrutiny is taken various seriously by academics and military operators in the United States of America. In November of 2019, MIT and Harvard led a war game scenario set in 2021 whereby North Korea had launched a missile built using part purchased using the PBOC digital currency. ‘Serious people

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3 Chaudhury, Dipanjan Roy India-Russia-China explore alternative to SWIFT payment mechanism Economic Times November 14, 2019
took part including luminaries like U.S. Defense Secretary Ash Carter; former Commodity Futures Trading Commission Chairman Gary Gensler; former Under Secretary of State for Political Affairs Nicholas Burns; former Deputy Assistant Secretary of the Treasury Jennifer Fowler; former special assistant and Deputy National Security Advisor Meghan O’Sullivan; former Secretary of Defense Chief of Staff Eric Rosenbach; former Treasury Secretary Lawrence Summers.4

**Baby steps up - From tourist dollar to global shadow currency (or from M₀ to M₃/M₄ ⁵)**

The paper has outlined how the PBOC could impose its digital currency on the domestic market very quickly, by demanding banks and major payment gateways APWC to move the population on the system. There is no reason to believe that there would be any resistance at any level of the economy as it stands.

The next level would be adoption by tourism sites and retail outlets around the world where APWC makes it easy for Chinese travellers to pay in their local currency. Then, small businesses would need to convert the digital currency. The development of an offshore digital RMB market could be advanced by pressure from the PBOC on Chinese suppliers to ask for payment in the new CBDC. This would be especially true in small Asian economies with economic fortunes tied closely to China’s economy.

However, the graduation to a truly influential global currency would require much wider use by financial institutions and companies for everything from bond issuance to interbank loans to commercial lending to multinationals, credit facilities and much more.

Every economist approached for this project felt that the PBOC’s continued tight control of the monetary supply in and out of China, and lack of major bond issuance on global markets would continue to hobble the expansion of acceptance of the currency in major money markets. Those factors include:

**Lack of ability to hedge.** - As noted by Martin Chorzempa, Research Fellow at the Peterson Institute, the lack of ability to hedge the RMB on the international money markets - is still a roadblock to wider adoption. The new CBDC will face a chicken-and-egg problem here until it breaks through to wider adoption⁶. As he puts it, “think about payment systems usually in the context of network effects and also the ecosystem. You need to be able to plug into lots of other countries, and the ecosystem here is like financial infrastructure. Are there ways for people who are trading different currency payers, especially Euro currency, to be able to borrow in it, to be able to freely use it, to be able to hedge risk with financial instruments, are the markets liquid to buy and sell?”

**Lack of will to borrow externally by Chinese government**- Government acquisition of external debt in their own currency creates depth in money markets as external parties have to accept that currency as payment and hedge their bets on that debt (see above). China has traditionally avoided this. Dr. Alicia Garcia-Herrero, Chief Economist APAC for Natixis makes this point, saying “The nomination of investment products - meaning the ability of China to denominate investment products in RMB (so for investment purposes or funding purposes for Chinese companies abroad) that thing needs something as a macroeconomist which is very very important…you actually need to borrow…” She notes that “China’s debt today is overseas in [US] dollars. It is very small.”

Furthermore, there have been no indications - yet - that China plans to issue debt in the digital currency on international markets. As no one has mooted such an option, there is no gauge of how it would be received. However, watchers of this space may wish to take note if China did decide to experiment with PBOC CBDC issued debt. Another interesting implication is that the activity surrounding the introduction of the PBOC CBDC may accelerate developments that undermine the USD dominance. As noted above, a number of central banks are advancing their timetables for digital currency development and coordination (the ECB-plus-six meeting in April 2020) or revitalising their plans (e.g. Korea).

The cumulative effect of more CBDCs may undermine the USD dominance by providing alternate pathways through which money can flow, avoiding the US-dominated SWIFT and BIS systems. Thomas Olsen, a partner at Bain & Company, says, “In the long term, central bank digital currencies could create a different settlement mechanism for cross-border transactions between countries, which could reduce dependency on US-dollar clearing.”⁷

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4 De, Nikhilsh In Wargaming Exercise, a Digital Yuan Neuters US Sanctions and North Korea Buys Nukes Coindesk November 20, 2019
5 Money supply is how much money is circulating in the economy. The places it circulates are described by shorthand as M₀ (pronounced M-zero), M₁(pronounced M-one) up to M₄. M₀ and M₁ are cash and things that can quickly be turned into cash. M₂ includes both M₀ and M₁, plus short term deposits and some funds, M₃ the preceding plus long term deposits and M₄ includes all money in the financial system. Exact definitions may vary from country to country, but this rough guide applies for broad understanding.
6 Shin, Laura Why China aims to Replace Cash with the Digital Yuan Unchained November 19, 2020
7 Yuan, Yang and Lockett Hudson What is China’s Digital Currency Plan Financial Times November 25, 2019
CONCLUSIONS

What it is

The PBOC is currently researching the creation of a Central Bank Digital Currency with the stated intention of introducing such a currency, probably in late 2020. It must be noted that exact plans have never been fully spelt out and so predictions are based on observations, purported leaks of insider information and 'reading of the tea leaves' - interpreting official statements on the topic made from time to time.

That being said, the latest thinking is that:

- The digital currency will be issued and monitored by a centralised computer system. The currency will be distributed to Chinese banks and through the dominant payment gateways of AliPay and WeChat Pay.
- It will not be a cryptocurrency - that is, a decentralised digital asset with multiple points of generation and/or a distributed ledger.
- The PBOC will be able to see and track all transactions made with each discrete unit of currency.
- The PBOC will be able to control the currency as held by all account holders.
- The PBOC will NOT directly hold deposits or open accounts with CBDC currency holders. While it could, it would provide a direct blow to the business model of existing banks (by robbing them of deposits) and payment gateways (by diverting transactions off their network).
The Spread of the PBOC CBDC

The PBOC is in a position to unilaterally impose its digital currency on its own country by diktat. It would mandate that electronically held funds in banks and payment platforms, including but not limited to WeChat Pay and Alipay, convert RMB to the new digital currency. Indeed, China has one of the world’s most advanced electronic payment systems, making it relatively easy to convert a majority of the nation’s transactions to the new currency in short order.

Adoption could spread anywhere outside of China there is significant spending and a Chinese supported payment system to take payments. This would begin with tourist destinations and to populations with large numbers of Chinese immigrants comfortable with the relevant payment gateways.

Looking longer-term and more speculatively, economies in Asia dependent on Chinese trade could be subject to pressure to adopt the digital yuan for payment and to make payments to Chinese suppliers.

Looking longer-term and more speculatively, economies in Asia dependent on Chinese trade could be subject to pressure to adopt the digital yuan for payment and to make payments to Chinese suppliers.
While it would be difficult for the yuan to become more than a niche currency outside of Asia, and probably not widespread in major Asian economies (like Japan and Korea), the PBOC could gain a fair deal of visibility and some degree of control of the currency as it spread in small, regional economies.

However, the same fiscal and macroeconomic factors inhibiting the spread of the RMB would also inhibit the rise of a digital version to become a truly global reserve currency (for now).

**Control at home**

"It has extraordinary power and visibility into the financial system, more than any central bank has today," said Martin Chorzempa, a research fellow at the Peterson Institute for International Economics in Washington.¹

In a nation that is deploying facial recognition and social credit scores to control its population, virtually unlimited visibility into every financial transaction in the country is irresistible, a logical step to be taken if at all possible. China is moving ahead to make this a reality, unhindered by any domestic protest movement or demands for privacy from government visibility.

It also provides the secondary benefit of controlling corruption and threats to fiscal stability posed by shadow banking. A full analysis of shadow banking and the threat it poses to China’s fiscal stability is outside the scope of this paper, but some estimate it could be as high as USD $9 trillion of all assets trading in the country². Bringing it into the light would give the PBOC scope to contain it and control the threat.

**International Aims**

As noted, it is not the position of this paper that the Chinese digital yuan will on its own support the RMB, digital or otherwise, to become a global reserve currency to supplant the USD or even the Euro as the second reserve currency. However, there is potential for the digital currency to play a role in the creation of a global financial system to evade the American dominated system, allowing China-friendly or China-neutral players, nations or otherwise, to participate in a global economic order outside of the M₃ framework - the 'weaponisation' of the American currency’s global dominance. By creating a digital currency that trades through Chinese banks, Chinese tech giants’ payment platforms and through the Chinese version of SWIFT, the Chinese Cross-Border Interbank Payment System (CIPS), American hegemony over the global financial system will be weakened. Furthermore, its spread into small, weak regional economies, such as Laos, Cambodia, perhaps The Philippines and more, could give China visibility into the workings of these economies and a measure of economic influence.

**Policy Advisory**

Recent events, in particular, have made prognostication, always a tricky business, very uncertain. Advisory against that is likewise fraught.

However, there are some measures that German legislators can consider advancing at the national or European level, to minimise the worst impact of a Chinese CBDC.

**Demand transparency when used in Europe**

This paper has outlined how this currency could penetrate the EU and become a part of an underground economy through use by those signed up to APWC network. Legitimate European business entities, like hotels, luxury retailers and even small businesses, should be made to understand that transactions using the Chinese CBDC must be recorded and reported to relevant authorities on pain of prosecution. This may require a significant public education effort to small business owners.

**Require transaction data be stored in Europe**

Chinese regulations require customer data to be held in servers in China accessible by Chinese authorities. European authorities can demand the same. While the nature of digital currency means it could be transferred from person to person, most will pass through payment gateways. Legitimate payment providers will accede in order to have access to the European market, providing some parity of information with the People’s Bank of China.

**At the European institutional level, decline to deal in Chinese CBDC denominated financial instruments.**

If China decides to only provide international financial instruments denominated in the CBDC, it will give the PBOC visibility into the internal workings of European institutions whether they are central banks or private firms. The flow of funds would be instantaneously visible to the PBOC, revealing information about the intention of firms that could be shared with Chinese institutions competing with European managers or seeking to manipulate the markets.

**Quietly encourage European financial institutions to decline in dealing in financial instruments denominated in the Chinese CBDC.**

As per above, the visibility afforded the PBOC could put Europeans at a significant disadvantage to Chinese competitors. The PBOC is part of the greater Team China that includes the CCP, state owned firms (including financial institutions) and other Chinese financial regulators. These bodies are not even theoretically independent, but serve the national mission as directed by the CCP.

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¹ Zhong, Raymond China’s Cryptocurrency Plan has a Powerful Partner: Big Brother The New York Times October 18, 2019
² Bloomberg News A Guide to China’s $9 Trillion Shadow-Banking Maze Bloomberg November 30, 2019
Make common cause with America and American financial institutions to block the use of Chinese CBDC denominated financial instruments through global financial institutions like the IMF and World Bank.

This creates an alternate risk that may play into the Chinese plan to increase the spread of the RMB, digital or otherwise to those seeking to evade the US dominated global financial system. However, Chinese firms seeking to access global markets and the deeper liquidity afforded therein could be forced to issue the ‘normal, old-fashioned’ RMB.

Demand that any digital currency operating in the European economic sphere is issued by a government that is compliant with European standards of democracy and governance (i.e. a democratic government and independent central bank.)

While this is not the standard for other currencies, digital currencies, as amply outlined in this document, are a different animal.

Final Word: Implications for the Euro and Europe

In short, the Euro does not need to fear displacement as the world’s second reserve currency - yet.

European financial regulators should be on the watch for a rise in undisclosed transactions if a global financial system with the PBOC CBDC at its core, should spread. This could complicate Europe’s efforts to comply with American sanctions, global AML and KYC efforts and tax collection by national governments.

In the longer-term, strategic rivals to Europe, including Russia, could choose to divert more and more of their financial activity into these platforms. While dealing solely with China is an unlikely outcome for any nation wary of Chinese hegemony, nations may choose to diversify to likewise avoid American dominance.

If China genuinely did decide to create the conditions whereby the RMB could be widespread, such as starting to shift its government debt issuance to external lenders, it could soon see its digital currency become a rival to the Euro as the world’s second-largest reserve currency - only the PBOC would have much more control over each individual unit of currency, including visibility of every transaction in a way the ECB could only dream of. Whether or not it chose to share that data with European or other authorities would very much depend on the kind of nation and global participant China has become at that theoretical point.

Whether Europe is ready or not for that future will depend on how it prepares today.

The Euro does not need to fear displacement as the world’s second reserve currency - yet.
APPENDICES

Appendix A: Authors, Interviewees and credentials

Principal Author

ANDREW WORK
Editor in Chief, Harbour Times
Director, The Lion Rock Institute

Andrew Work is the founder and Editor in Chief of Harbour Times (est. 2014), a publication focussed on Hong Kong policy and politics. He created this under the corporate entity New Work Media. It also produces bespoke political and policy reports for clients. In this role, he is frequently called on to explain Hong Kong policy, politics and economics to local and global audiences and is widely quoted in global media. He also produces the content for the in-house magazine, Sphere, for Cheung Kong Hutchison Holdings. Sphere is distributed to 40,000 top executives globally in this 300,000 strong, Hong Kong headquartered conglomerate. He is also a co-founder and Director of The Lion Rock Institute (est. 2004), Hong Kong’s first and only economic think tank focused on providing free market solutions to Hong Kong issues. In this capacity, he has studied and influenced Hong Kong policy in realms from taxation policy and health regulations to budgetary planning and competition law.

Mr Work is also the former Managing Director, Head of Media, Asia and Europe at NexChange Group, a digital merchant bank focused on cryptocurrency finance and blockchain investment. It is the creator of the Fintech O2O (with Cyberport), Healthtech O2O, and Block O2O brands and events. He played a leading role in commenting on fintech and blockchain issues and was the lead on-stage host for Consensus Singapore 2018, Hong Kong Blockchain Week, Block O2O, Hong Kong Fintech Week (2015-2017), the first Token 2049, SME Finance Forum (2015-2017), World Business Angel Investor Forum (2017-2019) and many more world-leading blockchain and fintech events.

He is also the former Executive Director of The Canadian Chamber of Commerce in Hong Kong, and worked for The Economist Group, Penton Media and on Parliament Hill with a senior Cabinet Minister in Ottawa. He holds a Bachelor of Science from McGill University and an MBA from the University of Victoria.

Supporting Author

OLGA YAROSHEVSKY, PHD

Olga Yaroshevsky has become a personality known in the global blockchain community for her media management and content work with NexChange Group and previously with Tokenbox project. Her interviews with widely respected figures in the blockchain world are renown and include talks with Roger Ver, Brock Pierce, John McAfee, and Dirk Ahlborn.

Before joining the blockchain industry, Ms Yaroshevsky worked as journalist, interviewer, editor and reporter for TV channels in Moscow and Kiev, Ukraine, while contributing to a number of magazines and printed journals. In 2014 she moved to the United States, where she worked as an editor and writer for RT news website and pursued an academic career as a teacher of Russian language and literature for students of AU, Georgetown University, Russian Cultural Centre and post-graduates involved in the international Alfa Bank fellowship program.

Ms Yaroshevsky graduated from the Journalism Department at the Russian State University for the Humanities. In 2010, she completed her PhD research in Russian literature (philology) and received a scientific degree.

Interview Subjects

DR ALICIA GARCÍA HERRERO
Chief Economist for Asia Pacific, Natixis
Senior Fellow, BRUEGEL

Alicia García Herrero is a Senior Fellow at European think-tank BRUEGEL. She is also the Chief Economist for Asia Pacific at Natixis and non-resident Research Fellow at Madrid-based political think tank Real Instituto Elcano. She is currently an Adjunct Professor at the Hong Kong University of Science and Technology and a member of the advisory board of Berlin-based China think-tank MERICS. Finally, Dr Garcia Herrero is an advisor to the Hong Kong Monetary Authority’s research arm (HKIMR) and the Asian Development Bank (ADB) as well as a member of the board of the Hong Kong Forum and co-founder of Bright Hong Kong.
In previous years, Dr Garcia Herrero held the following positions: Chief Economist for Emerging Markets at Banco Bilbao Vizcaya Argentaria (BBVA), Member of the Asian Research Program at the Bank of International Settlements (BIS), Head of the International Economy Division of the Bank of Spain, Member of the Counsel to the Executive Board of the European Central Bank, Head of Emerging Economies at the Research Department at Banco Santander, and Economist at the International Monetary Fund. In addition, Alicia has always combined her professional career with academia, having served as visiting Professor for John Hopkins University, China Europe International Business School (CEIBS) in Shanghai and Carlos III University in Madrid.

She holds a PhD in Economics from George Washington University and has published extensively in refereed journals and books. She is also very active in international media (Bloomberg and CNBC among others) as well as social media (Twitter, LinkedIn and Weibo). In recognition of her thought leadership, Dr Garcia Herrero has recently been nominated TOP Voices in Economy and Finance by LinkedIn.

**SIMON OGUS**  
*Founder and CEO, DSG Asia*

Dr Simon Ogus is the founder and CEO of DSG Asia Limited, an independent consultancy, based in Hong Kong. DSG Asia offers analysis of the economies and politics of Asia, and works with a variety of multinational and regional entities in the financial, non-financial and governmental spheres. Simon serves on the board of a number of companies and official bodies, and has also held academic positions and lectured at various universities across the region.

Prior to founding DSG Asia in 1999, Dr Ogua was Managing Director and Chief Economist for Asia at Swiss Bank Corporation (subsequently SBC Warburg and then UBS) in Hong Kong. Assuming this role in 1994, he was responsible for developing and spearheading the bank’s macroeconomic research product for the region including Japan, Non-Japan Asia and Australasia. He is generally recognised as one of the few analysts who accurately predicted both the Asian and the more recent global economic and financial crisis, and during his time on the sell-side he was consistently voted as one of the top ranked regional macro analysts across a range of industry surveys.

Dr Ogus trained as an actuary with William M Mercer Fraser. He subsequently moved into funds management with the United Bank of Kuwait in London before joining GT Management in Hong Kong in 1990. Simon gained his PhD in Economics from the University of London’s School of Oriental and African Studies. He also holds an MSc in Management and Finance from the University of London’s Imperial College, and a BA in Economics and Econometrics from the University of Manchester.

**PINDAR WONG**  
*Chairman, VeriFi*

Commissioner, Global Commission on Internet Governance  
Pindar Wong is an internet pioneer, who co-founded the first licensed Internet Service Provider in Hong Kong in 1993 and Chief Architect of the ‘Belt and Road Blockchain Consortium’. Mr Wong serves on the *Hong Kong Government’s Committee on Innovation, Technology and Re-industrialisation*, as a Director of the *Hong Kong Applied Science and Technology Research Institute (ASTRI)* and also serves on the *Hong Kong Trade Development Council ICT Services advisory committee*, the *School of Engineering Advisory Committee* Hong Kong University of Science and Technology, the Technical Advisory Board of the *Packet Clearing House* and on the Editorial Advisory Board of the *Internet Protocol Journal*.

Previously, he was the first Vice-Chairman of *ICANN*, the global body responsible for governance of the internet. Mr Wong has served as Chairman of the *Asia Pacific Internet Association, alternate Chairman of APRICOT, Commissioner on the Global Commission on Internet Governance* and elected Trustee of the *Internet Society*. From 2010-2015 he served on the *Digital 21 Strategy Advisory Committee of the Hong Kong Government* and the *Task Force on Industry Facilitation*. In 2015, he helped organise Asia’s first *Blockchainworkshops.org, Phase 1, 2 and 3 of ScalingBitcoin.org* and sponsored the *Hong Kong Bitcoin Roundtable*. Together with Dr. Shin’ichiro Matsuo, he is establishing the *bsafe.network* to promote applied academic research in blockchain technologies.
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