

**MCM Fintech Update<sup>1</sup>**  
**Friday, November 30, 2018**

*The IMF's Managing Director launched the publication of a staff discussion note proposing a conceptual framework to assess the case for central bank digital currency (CBDC). The Bank of Canada, Bank of England, and Monetary Authority of Singapore published a paper on alternative applications of distributed ledger technology-based wholesale CBDC for payment and settlement systems. Crypto-asset markets resumed their slide. Total market capitalization fell 40 percent amid dwindling hopes that crypto-assets would soon be institutional-grade investment assets, crypto-asset community infighting, over the evolution of the technology and increasing regulatory scrutiny. This edition includes a special feature on the World Bank's recently issued Blockchain Operated New Debt Instrument (bond-i) and other "blockchain bonds".*

**The IMF's Managing Director gave an influential [speech](#) on central bank digital currency (CBDC) at the [Singapore Fintech Festival](#) in November, emphasizing that "while the case for digital currency is not universal, we should investigate it further, seriously, carefully, and creatively."** The Festival was attended by over 45,000 people. The speech coincided with the [publication](#) of a staff discussion note on the topic, finding no universal case for issuance of a widely-accessible "retail" CBDC intended for use as legal tender, but encouraging central banks to carefully consider the option. End-user demand will depend on the attractiveness of other forms of money, and although CBDC may improve the efficiency and security of payment systems and enhance financial inclusion, other policy options also exist. CBDC risks could be mitigated by appropriate design and policies. Also, CBDC raises new cross-border questions that merit investigation. Central banks are encouraged to investigate further, including technological feasibility and operational costs. In fact, 61 percent of 80 central banks [surveyed](#) by the CPMI are conducting work on CBDC, or plan to. An overview of central bank CBDC experiments and research is offered (Table 1).

Table 1. Jurisdictions Where Retail CBDCs Are Being Explored		
<a href="#">Australia</a> (on hold)	<a href="#">European Area</a> (and <a href="#">rejected</a> )	<a href="#">Norway</a> (ongoing)
<a href="#">Bahamas</a>	<a href="#">Hong Kong</a>	<a href="#">Palestine</a>
<a href="#">Bahrain</a>	<a href="#">Iceland</a> (rejected)	<a href="#">Philippines</a>
<a href="#">Brazil</a>	<a href="#">India</a>	<a href="#">Russia</a>
<a href="#">Canada</a>	<a href="#">Indonesia</a>	<a href="#">Sweden</a>
<a href="#">China</a> (and here)	<a href="#">Iran</a>	<a href="#">Switzerland</a>
<a href="#">Curaçao en Sint Maarten</a>	<a href="#">Israel</a> (ongoing)	<a href="#">Ukraine</a>
<a href="#">Denmark</a> (rejected)	<a href="#">Jamaica</a>	<a href="#">Uruguay</a> (and <a href="#">here</a> )(pilot)
<a href="#">Eastern Caribbean</a>	<a href="#">Korea</a> (and <a href="#">rejected</a> )	<a href="#">United Kingdom</a> (on hold)
<a href="#">Ecuador</a> (pilot complete)	<a href="#">Lebanon</a>	
<a href="#">Egypt</a>	<a href="#">New Zealand</a> (on hold)	
Sources: Central banks or various news sources per hyperlinks above. Italicized entries are sourced from news articles. Information has not been verified through official channels. There are other central banks who may be exploring CBDCs based on hearsay: Argentina, Colombia, and United Arab Emirates (but some of these may not be central bank issued).		

<sup>1</sup> Prepared by John Kiff and Hunter Monroe, reviewed by Tommaso Mancini Griffoli and cleared by Fabio Natalucci (all MCM). This issue covers developments since the October 29 edition. The information herein has not been verified through official channels. For an explanation of fintech concepts, see [Fintech and Financial Services: Initial Considerations](#).

## Innovation

**A report on approaches to enhancing cross-border payments and settlement was jointly [published](#)** by the Bank of Canada, Bank of England and Monetary Authority of Singapore. It analyzes two legacy system upgrades, and three approaches involving wholesale CBDC (W-CBDC). A W-CBDC is a special kind of CBDC available only to selected financial institutions that operate within the payment systems, and not to the public. The first two W-CBDC approaches use country-specific tokens - one can be exchanged across borders while the other one cannot. The third uses a cross-border universal W-CBDC backed by a basket of currencies issued by the participating central banks. The last two are found to provide the greatest benefits, but also raise fundamental legal, regulatory and public policy questions. The universal W-CBDC poses significant implementation challenges. (See Table 2 for a list of other key Fintech developments.)

## Regulation

**Regulation continued to tighten around crypto-asset markets.** The Bank of England and the Financial Conduct Authority's (FCA) Cryptoassets Taskforce [raised concerns](#) about crypto-asset trading and usage, and the FCA is [considering](#) prohibiting sales of crypto-asset derivatives to retail investors. The U.S. SEC began [cracking down](#) on decentralized exchanges, which, by their nature, cannot be easily shut down, but the principals may be [held liable](#) for their activities. The Swiss Financial Market Supervisory Authority has [imposed](#) an 800 percent risk weight on crypto-assets held by banks. Hong Kong's Securities and Futures Commission will [require](#) crypto-asset funds to be licensed and registered with the agency. The [Financial Services Agency of Japan](#) discussed possible regulation for wallet providers.

**Meanwhile, regulators are cautiously embracing fintech developments.** [Arizona](#) became the first U.S. state which introduced a regulatory sandbox for fintech start-ups. This raises some interesting jurisdictional questions between state and federal regulators. Other jurisdictions ([Poland](#), and [Kuwait](#)) have already introduced regulatory sandboxes. [The Norwegian FSA](#) was also tasked with establishing a regulatory sandbox by the Ministry of Finance. The People's Bank of China ([PBOC](#)) has introduced a pilot scheme to supervise five financial holding companies, including Ant Financial. [Thailand's Security and Exchange Commission](#) will approve the first ICO portal in November to help screen ICOs, conduct due diligence, etc.

## Cyber Risk

**Products designed to manage and mitigate cyber risk continue to appear.** Singapore [launched](#) the world's first commercial cyber risk pool to provide insurance against cyber risk to Asian corporates, expected to be backed by insurance-linked securities and reinsurance.

## Research and Commentary

**The BIS continued to emphasize the [need](#) to regulate Fintech and warn against the [dangers](#) of crypto-assets, while highlighting potential [benefits](#) for financial inclusion.**

**Studies continue to highlight the negative impact on energy consumption of crypto-assets such as Bitcoin.** A paper published in [Nature](#) found that "Bitcoin usage, should it follow the rate of adoption of other broadly adopted technologies, could alone produce

enough CO<sub>2</sub> emissions to push warming above 2 °C within less than three decades.” Another paper published in [Nature](#) found that Bitcoin, Ethereum, Litecoin and Monero mining from January 1, 2016, to June 30, 2018, drew more energy than mineral mining over the same period, with the exception of aluminum and some oxides.

The Financial Stability Board [published](#) a Cyber Lexicon comprised of about 50 core terms related to cyber security and cyber resilience in the financial sector.

## Market Developments

**Crypto-asset [market capitalization](#) collapsed to \$130 billion, down about 40 percent on the month (Figures 1 to 3).** [Bitcoin](#) plummeted to \$4,000 (down about 45 percent on the month), [Ethereum](#) dropped almost 45 percent, although [XRP](#) was only off 20 percent. XRP’s relative strength may be attributable to the growing use cases for [Ripple’s xRapid](#) cross-border payment platform which uses XRP. The market drop has been attributed to dwindling expectations that crypto-assets will soon be institutional-grade investment assets, against a background of crypto-asset community infighting (more below) and increasing regulatory scrutiny. Also, crypto-assets have yet to fulfill their promise as a means of payment. For instance, [Chainalysis](#) data [shows](#) that Bitcoin retail payments are down significantly in 2018.

**Bitcoin Cash ([BCH](#)), a variant of Bitcoin which is the fourth largest crypto-asset, split again into two variants when a routine upgrade unexpectedly provoked a technical dispute.** As a result, a trading platform [forced](#) early settlement of \$135 million in derivative contracts, illustrating the immature nature of crypto-asset markets.<sup>2</sup>

**Initial Coin Offering (ICO) [issuance](#) continued to fade as regulators cracked down on issuers** (Figure 4). The U.S. SEC fined two ICO issuers, ordering them to refund investors who bought the tokens, and reaffirmed that investors in ICOs have the right to sue issuers for compensation in the case of losses. ICOs [were a key theme](#) in the SEC’s Division of Enforcement’s Annual Report. Also, an SEC official, speaking at the IMF and Georgetown University (GTU) Law School [DC Fintech Week](#) conference, said that the SEC [will release](#) “plain English” token guidance to help token developers navigate regulations.

**Recent studies highlighted tradeoffs faced by regulators and issuers in the initial coin offering (ICO) space.** According to a GTU Law School [paper](#), regulators cannot (i) provide clear rules, while (ii) maintaining market integrity, and (iii) encouraging financial innovation. According to a University of British Columbia [paper](#), issuers cannot (i) have a compliant offering in the home jurisdiction of both the issuer and investor, while (ii) reaching a distributed pool of investors (iii) in a cost effective manner. Neither paper recommends not regulating, but propose various strategies for mitigating the impacts of the trilemmas.

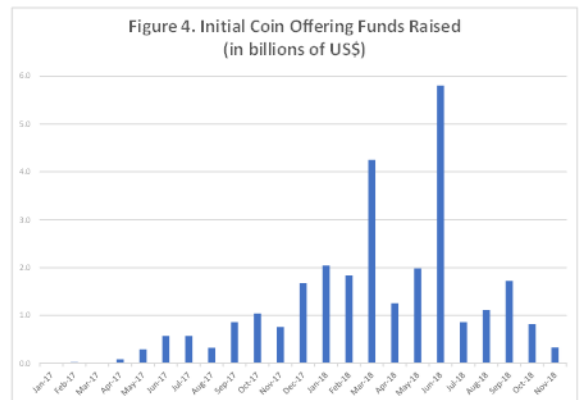
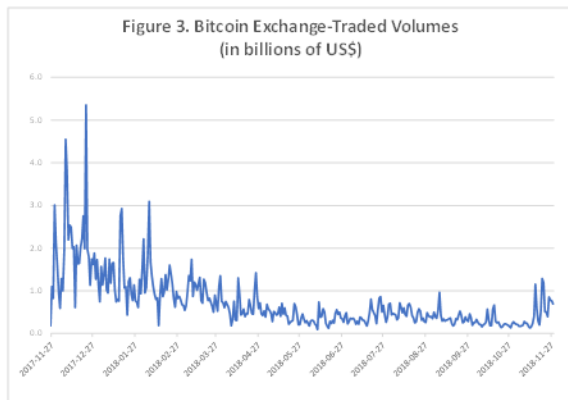
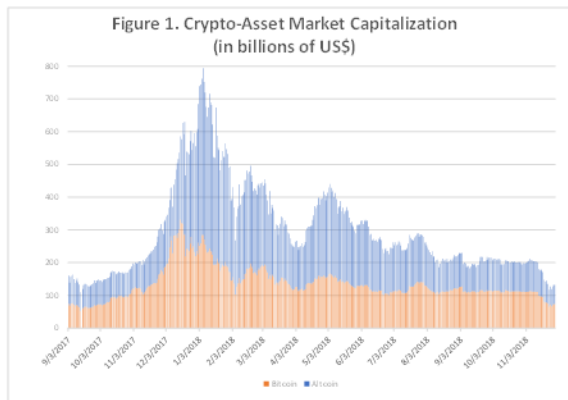
**Despite the market turmoil, the major [stablecoins](#) remained [pegged](#) to their underlying fiat currencies.** Several new coins were launched, including U.S. dollar-pegged [StableUSD](#)

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<sup>2</sup> BCH [emerged](#) after departing from Bitcoin’s original blockchain via a hard fork in 2017, to manage Bitcoin’s scalability problem. BCH was supposed to go through a [routine hard fork](#) protocol upgrade on November 15<sup>th</sup>. However, the BCH community [could not agree](#) on some of the technical details, and two competing crypto-assets emerged (Bitcoin ABC and Bitcoin SV). Not only did this generate [threats to dump](#) BCH and Bitcoin holdings, but the feud underscored the immaturity of crypto-asset markets.

backed by U.S. dollars held in escrow by Prime Trust, and [CarbonUSD](#) which is not fiat currency-backed but pegged via an algorithmic mechanism that alters the supply in order to maintain the peg. [Alprockz](#) has [developed](#) ROCKZ, a Swiss franc (CHF) pegged crypto-asset backed by CHF held at GSbanque. [X8 AG](#) has [obtained certification](#) from Islamic scholars for its [X8Currency](#) token backed by a basket of eight fiat currencies and gold.

**Products and infrastructure continued to be developed to allow institutional crypto-asset investment.** Goldman Sachs has signed customers for its yet-to-be-launched bitcoin non-deliverable forward contract, while it continues to consider offering crypto-asset custody service. OTC crypto-asset dealer [Genesis Trading reported](#) that it has lent out \$553 billion of crypto-assets during the last six months, mostly to hedge funds and trading firms looking to take short positions or to engage in arbitrage trading between crypto-assets. The SIX Swiss Exchange [approved](#) an exchange-traded product tracking multiple crypto-assets. However, the U.S. SEC [deadline for public comments](#) on the nine pending bitcoin exchange-traded fund (ETF) applications that were initially dismissed in August came and went, and the market is still waiting for a CFTC decision.



**Sources:** Figure 1: <https://coin.dance>; Figure 2: <https://coinmetrics.io>; Figure 3: <https://blockchain.com>; Figure 4: <https://coinschedule.com>

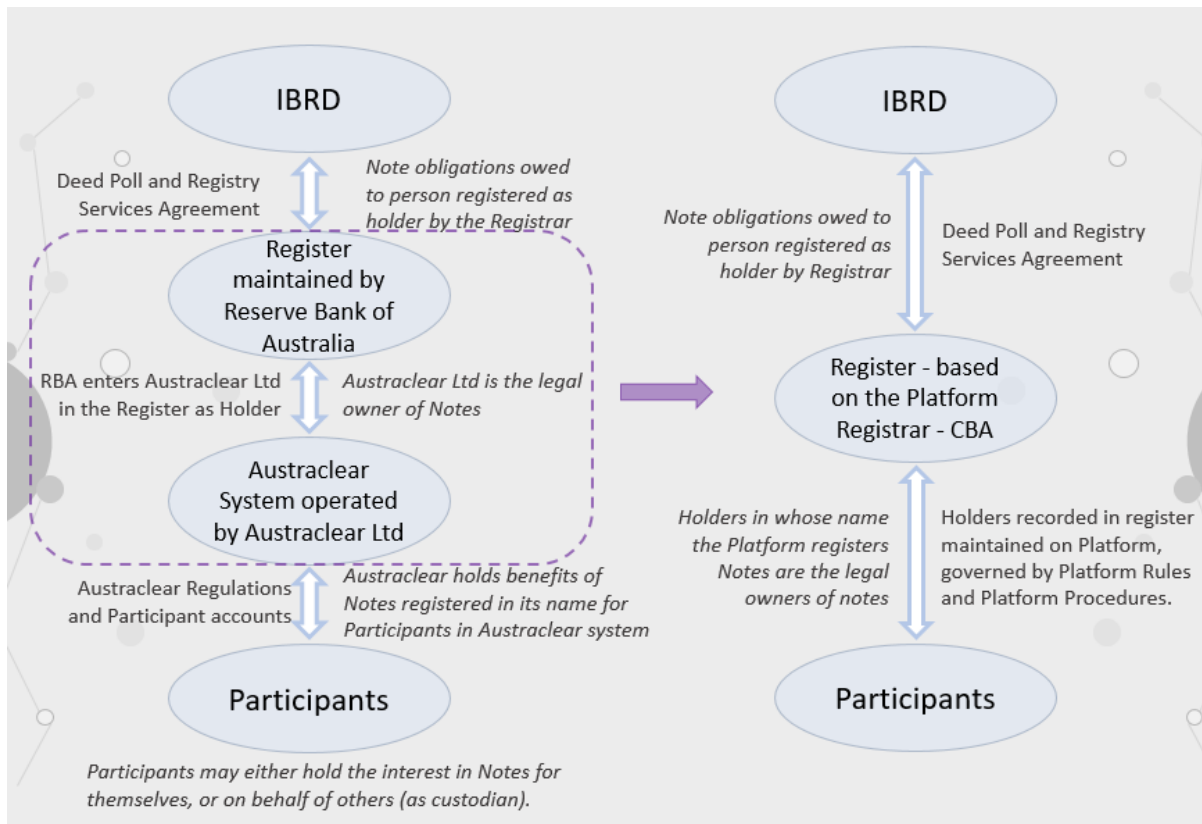
### Special Feature: Blockchain Bonds

**The World Bank issued the first global “blockchain bond” in August 2018: the Blockchain Operated New Debt Instrument (bond-*i*).** The Commonwealth Bank of Australia (CBA) arranged the bond, raising about \$80 million with a tenor of two years from seven Australian financial institutions.

**A blockchain bond is a bond with its ownership recorded in a distributed database called a blockchain.** This format, which originated with Bitcoin, has generated substantial interest in the financial sector for the transparent way in which it records transfers of ownership of an asset. A blockchain records transactions for a given period in a cryptographically stamped block of data, with each block linked to the previous period’s stamp, thereby chaining the blocks together.

**The ownership of the bond-*i* is authoritatively recorded in an Ethereum blockchain database, rather than in a register maintained by the Reserve Bank of Australia (Figure 1).** The ownership records in blockchain database are also visible to each investor, but not to the public. Phase 2 of the bond-*i* project will facilitate secondary market transactions recorded on the blockchain, and custodians will be able to hold bonds on behalf of other institutions. The blockchain does not at this point incorporate a payment token such as a Central Bank Digital Currency, which would allow delivery versus payment, so payments will be made through traditional means. The blockchain approach is aimed at lowering costs, easing reconciliation, allowing direct holding of assets, and digitally orchestrating actions such as interest payments thereby removing intermediaries.

**Figure 1. Market Structure for a Traditional Bond and for bond-*i***



Source: World Bank.



**There have been previous blockchain bonds issued domestically, for instance, by [Overstock](#) in July 2015 (US\$5.0 million) and by a Russian [telecommunications company](#) in May 2018 (about US\$12 million), both sold to a single institution.** In addition, Austria became the first sovereign to issue a blockchain bond in October 2018. Oesterreichische Kontrollbank assisted the Austrian Debt Management Office to notarize the issuance of €1.15 billion (\$1.35 billion) of government bonds using the Ethereum blockchain. The authorities believe that using blockchain technology will provide transparency, additional security, and indirectly reduce the funding costs. The bond-*i*'s strong legal and market infrastructure, the World Bank's role as a large global borrower, and its track record as a financial innovator (the World Bank launched the first swap contract), may promote market acceptance of blockchain bonds.

<b>Table 2. Other Fintech/Blockchain Announcements</b>
African mobile operators MTN and Orange <a href="#">teamed up</a> to launch Mowali, a continent-wide mobile money interoperability joint venture which allows users send money between mobile money accounts across different providers.
Spain's BBVA and two partner banks <a href="#">completed</a> the first blockchain-based syndicated loan.
Abu Dhabi's Al Hilal Bank <a href="#">sold and settled</a> in the secondary market a portion of its \$500 million five-year sukuk, issued in September, using distributed ledger technology.
Malaysian lender CIMB Group's SpeedSend remittance product <a href="#">will use</a> Ripple's blockchain <a href="#">xCurrent</a> cross-border payments network (which does not utilize XRP).
The web standard setter World Wide Web Consortium is <a href="#">developing</a> a new payment application program interface (API) for web browsers that will include support for the <a href="#">Lightning Network</a> .
The Central Bank of Barbados (CBB) and the Financial Services Commission (FSC) have collaborated to <a href="#">establish</a> a regulatory sandbox framework.
JPMorgan <a href="#">signed an agreement</a> with <a href="#">Plaid</a> to allow secure access to customer data using APIs. This is significant given that Plaid counts Acorns, PayPal, and Robinhood as customers.
IBM <a href="#">announced</a> the launch of an open banking platform for financial institutions last week, with the initial rollout planned for the EU market.
Magyar Nemzeti Bank's Innovation Hub has <a href="#">received</a> a dozen submissions since its March launch.
Outstanding Chinese P2P loans <a href="#">have shrunk</a> to around \$122 billion at end-October, from \$177 billion at end-2017, following a wave of defaults. The sector's immediate priority is meeting a filing requirement that all P2P platforms must complete or else cease operations.
Western Union is <a href="#">expanding</a> its partnership with Kenya's Safaricom, facilitating cross-border money transfers for Safaricom's approximately 28 million M-Pesa mobile wallet holders.
Banco Central do Brasil is <a href="#">introducing</a> real-time 24/7 payments next year through QR Codes and allowing payments without the need for point of sale terminals.
JP Morgan's <a href="#">Quorum</a> Ethereum-based blockchain is <a href="#">being used</a> to tokenize gold bars, which could allow trading to be conducted directly between parties.
The Depository Trust & Clearing Corporation, working with 15 global banks, is <a href="#">entering</a> the testing phase of its credit derivatives Trade Information Warehouse based on distributed ledger technology.
Ernst and Young has <a href="#">launched</a> the prototype of a system that enables secure and private transactions to take place on the Ethereum blockchain.
Singapore Exchange Limited and the Monetary Authority of Singapore successfully <a href="#">tested</a> the use of blockchain technology for tokenized assets settlement.

Smart Dubai and IBM <a href="#">launched</a> the Dubai Blockchain Platform to serve as a stepping stone for organizations to transition their blockchain testing and development into full-production. It will also transform and digitize applicable government processes and citizen services.
A new blockchain-based trade finance platform, developed by HSBC, Standard Chartered and 10 other banks, was <a href="#">launched</a> in Hong Kong to allow access to real-time, secure and comprehensive trade information to conduct their risk assessment on loans.
The Securities and Markets Stakeholder Group, an advisory group of European Securities and Markets Authority (ESMA) <a href="#">recommended</a> that tradeable crypto-assets be added to the Markets in Financial Instruments Directive (MiFID) financial instruments list and regulated under MiFID II.
The Mauritius Financial Services Commission <a href="#">released</a> a draft crypto-asset custodian services regulatory framework.
The Central Bank of the Bahamas has a <a href="#">proposed</a> a new regulatory framework for crypto-assets after it claimed current frameworks were too “fragmented” to properly manage risks.
South Korea’s Financial Services Commission <a href="#">cleared</a> banks to work with crypto-asset exchanges.
The Isle of Man will <a href="#">require</a> crypto-asset firms to have two local “resident directors” on the board, and, management and control of “convertible virtual currency” businesses must be on the Island.
The Monetary Authority of Singapore (MAS) <a href="#">broadened</a> its regulatory regime for payment providers to bring certain crypto-assets under its jurisdiction.
The Department of Federal Revenue of Brazil (RFB) is looking to <a href="#">oblige</a> Brazil-based crypto-asset exchanges to send them detailed reports on all crypto-related operations on monthly basis.