

# A PRELIMINARY ASSESSMENT OF CRYPTOCURRENCIES IN THE CARIBBEAN – A LOOK AT CENTRAL BANKS RESPONSES

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**Ms. Julia Jhinkoo and Dr. Dave Seerattan**  
**Caribbean Centre for Money and Finance**

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# Presentation Outline

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- Motivation of study
- Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency
- International View – Central Banks and Digital Currency
- Caribbean View – Central Banks and Digital Currency
- Conclusions and Possible Way forward for Caribbean Central Banks

# Motivation of Study

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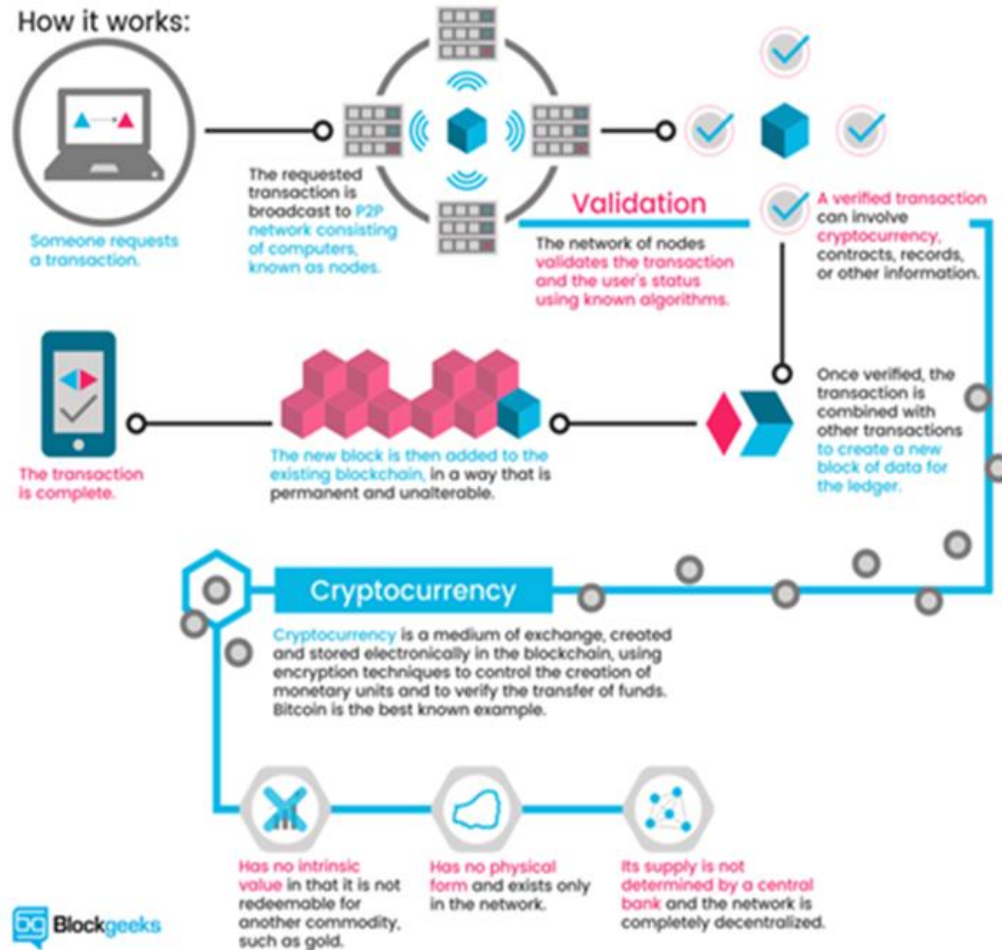
- The increasing prominence of Bitcoin and other cryptocurrencies since 2009 has led to central banks to enter this relatively new trending topic of cryptocurrencies.
- Since 2015 to now Central Banks have been having discussions and research on this topic, with several of them - Sweden, China, England, European Union and Norway, announcing that they are conducting their own pilot studies of the viability of the blockchain technology to be used in its payment systems and the prospect of a central bank digital currency (CBDC).
- The DLT represents a possible evolution of the financial architecture and landscape of the Caribbean region. Many discussions – private sector led are currently occurring in the Caribbean region
- This study is preliminary in its efforts to document the events occurring within the Caribbean region with respect to the cryptocurrencies and Caribbean central banks.

# Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency

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- A cryptocurrency is defined as an encrypted decentralized digital currency transferred between peers and confirmed in a public ledger via a process known as mining.
- It is difficult to counterfeit because of this security feature and it is not issued by any central authority, rendering it theoretically immune to government interference or manipulation.
- Cryptocurrency stemmed from the work of Satoshi Nakamoto (2008), in which he proposed a payment system that allows one person to pay another, without the need for any middle parties such as banks using Bitcoin.
- In January 2009, Bitcoin began operating and it was the first decentralized cryptocurrency based on blockchain .
- The Blockchain is defined as a type of distributed ledger that is composed of a chain of cryptographically linked ‘blocks’ containing batched transactions; generally, broadcasts all data to all participants in the network.

# Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency



There are five key components of a blockchain:

- Cryptography
- P2P Network
- Consensus Mechanism
- Ledger
- Validity Rules

# Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency

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Bitcoin was ill-suited for a variety of reasons. G. Hileman and M. Rauchs (2017) describes these reasons as “Enterprise Requirements” that are needed:

1. Performance
2. Speed
3. Scalability
4. Settlement finality
5. Governance
6. Privacy/confidentiality
7. Compliance
8. Safeguards

# Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency

In 2013, new dimensions of the blockchain technology emerged. The new types of blockchains that emerged had restrictions on a specific set of participants. The blockchains were grouped by identifying the different types of permission models.

Main types of blockchains segmented by permission model						
		Read	Write	Commit	Example	
Blockchain Types	Open	Public permissionless	Open to anyone	Anyone	Anyone*	Bitcoin, Ethereum
		Public permissioned	Open to anyone	Authorised participants	All or subset of authorised participants	Sovrin
	Closed	Consortium	Restricted to an authorised set of participants	Authorised participants	All or subset of authorised participants	Multiple banks operating a shared ledger
		Private permissioned (Enterprise)	Fully private or restricted to a limited set of authorised nodes	Network operator only	Network operator only	Internal bank ledger shared between parent company and subsidiaries

**Note: \*: requires significant investment either in mining hardware (proof-of-work) or cryptocurrency itself (proof-of-stake model)**  
**Source: G. Hileman and M. Rauchs (2017)**

# Background and Basic Concepts – Blockchain , Distributed Ledger Technology and Cryptocurrency

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- Distributed Ledger Technology (DLT)
  - Distributed databases are a type of database which have no central ‘master database’ that unilaterally decides on updating the database state.
  - Distributed ‘ledgers’ are a subset of distributed databases that use a different assumption about the relationship between nodes.
- The major difference between distributed ledgers and traditional distributed databases is the use of an adversarial threat model, which assumes that not all nodes are honest.
- Note there is a difference between blockchain and a distributed ledger, although they are often used interchangeably.



# International View – Central Banks and Digital Currency

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- **G. Hileman and M. Rauchs (2017) – The Cambridge Centre for Alternative Finance**
  - They surveyed 57 central banks and other public institutions, of which 44 per cent of sample was central banks. It was found that central banks are investigating the use of the DLT in areas such as a :
    - Central Bank Digital currency (82%)
    - Payments (55%)
    - Regulatory Compliance (36%)
    - Ownership Management (23%)
    - Identity Management (18%)
    - Audit Trail (18%)
    - Personal Records Management (14%)
    - Taxes (5%)
    - Other areas (41%) some of which are asset transfer, clearing and settlement of securities, financial messaging system, syndicated loans and trade finance.

# International View – Central Banks and Digital Currency

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The study cited challenges of Central banks towards its adoption and application of DLT:

- Immature technology
- Unclear regulatory and legal framework.
- Security, scalability, and performance.
- Difficulty of building participant networks and changing business processes.
- Confidentiality issues were a major challenge to DLT adoption.
- Unknown costs/benefits.
- Governance issues.

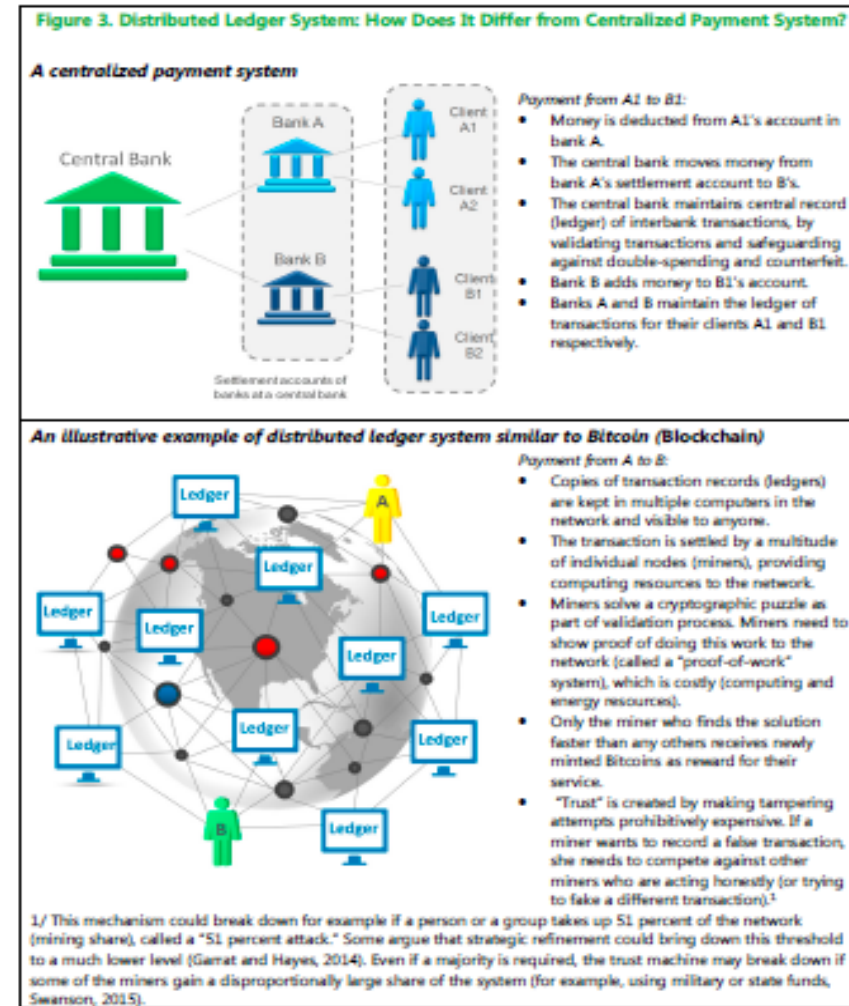
# International View – Central Banks and Digital Currency

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- **Brodo and Levin (2017)** examines the efficiency of a central bank cryptocurrency in its function to fulfil the basic functions of money – a unit of account, a medium of exchange and a store of value.
- They advised that if central banks are not considering issuing a digital currency they will at some point in the future have to. The suggested four possible risks policymakers may encounter in being passive to the adoption of a CBDC:
  - Macroeconomic Instability
  - Loss of monetary control
  - Systematic Risks
  - Susceptibility to severe downturns

# International View – Central Banks and Digital Currency

- The IMF's recently established High-level Advisory Group on FinTech (March 2017) is actively looking at the potential of virtual currencies, Fintech and financial services. They have two Staff Discussions Notes – January 2016 and June 2017.
- January 2016 found that virtual currency schemes are rapidly evolving making it difficult to predict the future landscape of financial and monetary systems.



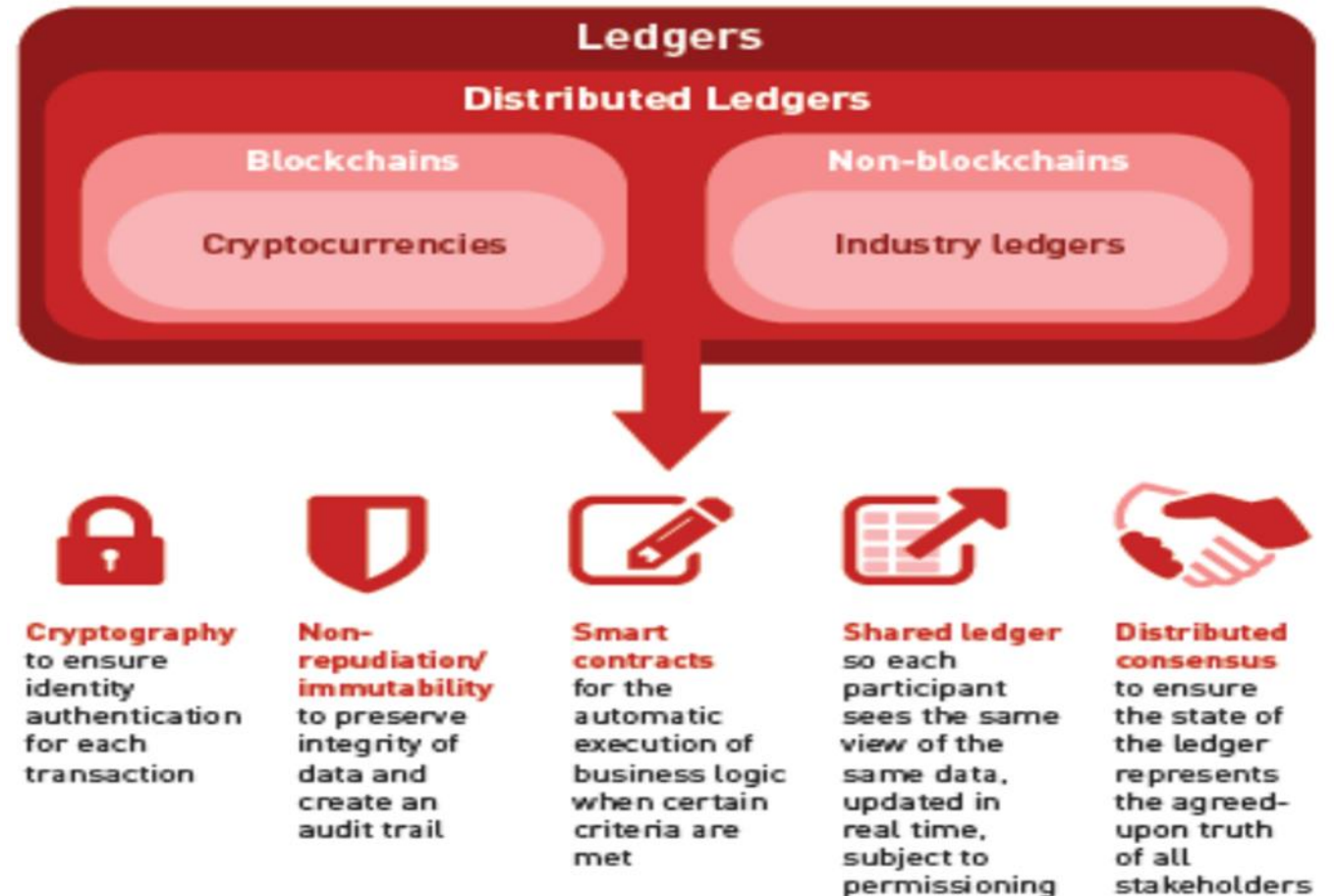
# International View – Central Banks and Digital Currency

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- IMF stated that the potential implications of the technological advances underlying virtual currencies, such as the distributed ledger system showed that it has the potential to change finance by **reducing costs** and allowing for **deeper financial inclusion** in the longer run.
- In principle, the DLT can be applied to any area that requires fast, accurate, and secure record keeping. For example, land and credit registries, and payment and settlement infrastructure for transactions in existing currencies, securities, and other assets.
- The IMF June 2017 Study looked at the further developments in FinTech and how it can reshape the cross-border payment system landscape in three ways all which is centred on the DLT.
  1. via back-end processes- SWIFT
  2. Compliance
  3. New means of Payments – cryptocurrency

# International View – Central Banks and Digital Currency

- The key features of DLT that attracted Central Banks to investigate its potential use of DLT in their payments systems were



# International View – Central Banks and Digital Currency

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Countries that have projects on DLT and CBDC:

- Canada – Project Jasper (March 2016)
- Sweden (March 2017)
- England – FinTech Accelerator (June 2016)
- Euro Area } Project Stella (December 2016)
- Japan }
- China ( April 2017)
- Singapore – Project Ubin (November 2016)

# International View – Central Banks and Digital Currency

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- The experience of the international central banks has been very exploratory in nature with their test studies and engagement with FinTech firms and other financial institutions to develop and better understand the workings of DLT and its application to a CBDC within their payments systems.
- Note that all of them have concluded that the DLT is still very new and all their research to date indicates that while its benefits are noteworthy, none of the central banks will have a CBDC until they have fully assessed the workings and complete evolution of DLT.



# Caribbean View – Central Banks and Digital Currency

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- United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) commenced a study in November 2014, entitled “Opportunities and risks associated with the advent of digital currency in the Caribbean,” the final report and findings of that study was presented in 2016.
- S. Bissessar (2016) found that the Caribbean economies could benefit from having cryptocurrencies via cheaper remittances, improved payment systems and increase participation in the digital economy. In this study 13 sub-regional central bank representatives were officially invited to participate in a survey via a questionnaire, but only two completed questionnaires were received at the end of the study period – The Bahamas and Guyana.

# Caribbean View – Central Banks and Digital Currency

- The Commonwealth Secretariat convened a round table on virtual currencies in February 2015, comprising of representatives from ten-member countries of which two were Caribbean countries -Barbados and Jamaica and from regional and international organisations as well.
- In October 2015, The Commonwealth Working Group on Virtual Currencies published its working group report which found that virtual currencies are prevalent in almost every member country and within every region of the Commonwealth.

## Downloads of Bitcoin core clients in the Caribbean (2015)

Country	Downloads per 100,000 internet users
Antigua and Barbuda	216
Dominica	348
Barbados	180
The Bahamas	160
Belize	150
Guyana	37
Jamaica	93
St. Lucia	117
St. Kitts and Nevis	86
St. Vincent and the Grenadines	157
Trinidad and Tobago	156

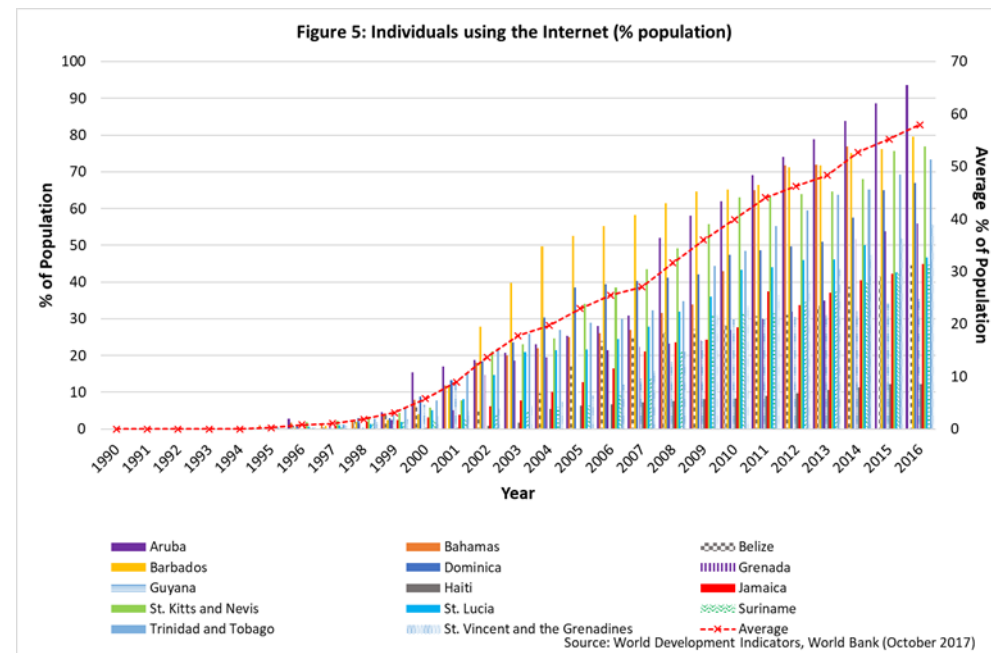
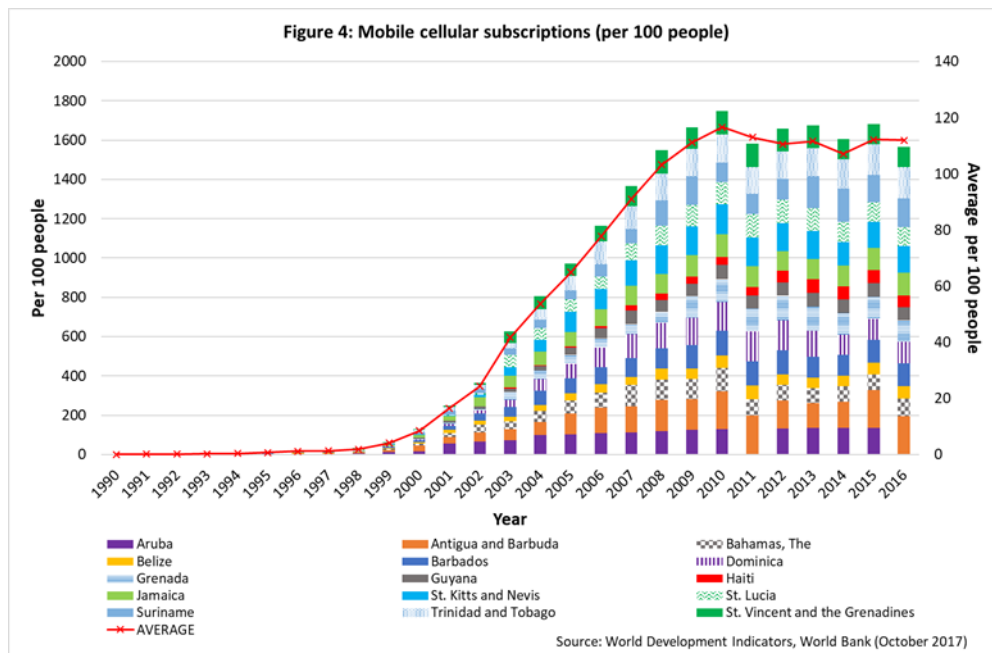
Source: The Working Group Report for Commonwealth Meeting, titled “The Prevalence of Virtual Currencies in Commonwealth Member Countries”, October 2015. Table 1.1, Pg. 9, data as at 30th July 2015.

# Caribbean View – Central Banks and Digital Currency

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- A. Wood and R. Brathwaite (2016) – Barbados
- Moore and Stephen (2016) – Barbados
- R. Williams (2017)- UNECLAC study examines the possibility of blockchain technology to solve the problem of de-risking in the Caribbean. Three potential models for blockchain-based management of interbank payments for the Caribbean economies; The Open Model, The Permissioned Model and The Centralized Model.

# Caribbean View – Central Banks and Digital Currency



The ownership of mobile phones in the Caribbean is considerably high and the internet usage of the population in most countries is also high.

The use of technology to make payments easier is still breaking ground in the Caribbean, not because of accessibility to electronic devices but because of lack of education and knowledge of the new payment options available to them.

# Caribbean View – Central Banks and Digital Currency

*“Where are we in the Caribbean with respect to the development and use of cryptocurrencies in the Caribbean region?”* – at differing states, each Central bank seems to be have a varying stance towards cryptocurrencies.

**CAUTIOUS**

Belize, Guyana, Suriname and  
Curacao and Sint Maarten

**INQUISITIVE**

The Bahamas, Jamaica, ECCU,  
Trinidad and Tobago

**EXPLORATORY**

Aruba and Barbados

# Conclusions and Way Forward for Caribbean Central Banks

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- One of the function of a central bank is to ensure financial stability within its economy and all research to date has made it clear that DLT will be disruptive to the way things are done.
- ***What then should Central banks in the Caribbean do in this current digital revolution?*** - The answer is clear, they should initiate the conversation and be pro-active in monitoring the changing trends in technology, particularly with respect to FinTech.

*“The role of the Central Bank in this process is acknowledged as being focused on maintaining financial stability and promoting economic development. This requires that **we foster innovation by working together with key stakeholders, to ensure a smooth transition to tomorrow’s evolving financial system in a safe and sound manner, supported by the requisite due diligence and regulatory reviews of new market entrants.**”* - Ms. Michelle Doyle-Lowe (Deputy Governor, Central Bank of Bank Barbados (September 2017))

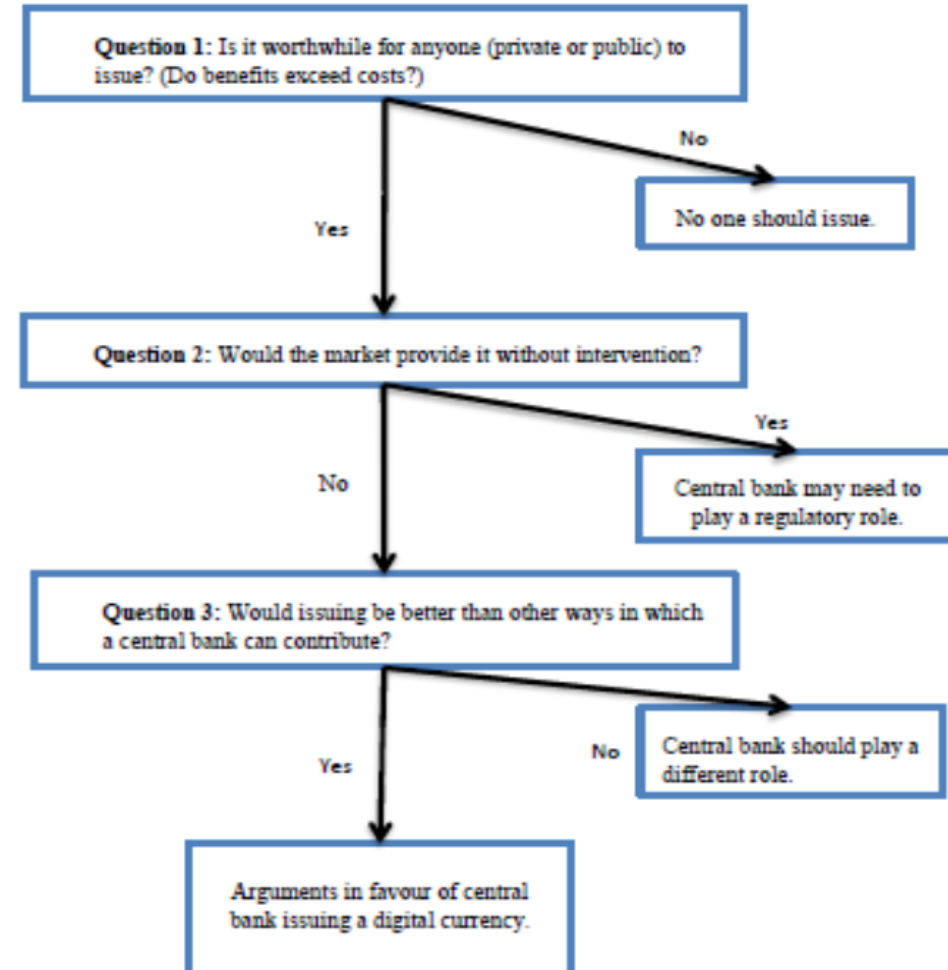
# Conclusions and Way Forward for Caribbean Central Banks

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- If policymakers take a relatively passive approach to considering the adoption of a CBDC they may eventually be exposed to risks Bordo and Levin (2017) suggested : Macroeconomic instability, Loss of monetary control, Systemic risks and Susceptibility to severe downturns.
- The passivity of central banks may cause them to miss the opportunity to transform their selves and be relevant to the future world. E. Etsebeth (2017) cites the following factors as possible reasons this may occur:
  - Workforce of the past
  - Slow decision making process
  - Current technical skill set of staff limited
  - Buy vs Build approach of IT staff

# Conclusions and Way Forward for Caribbean Central Banks

- A good starting point for their research would be for Caribbean central banks to consider the framework described in Fung and Halaburda (2016) – Bank of Canada.
- The framework they propose is based on the general question: ***Should central banks issue digital currency?*** this question is informed from the outcome of three questions.





# Conclusions and Way Forward for Caribbean Central Banks

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It is worth the efforts of Central Banks in the Caribbean to take initiative and research and study the implications on the possible use of a CBDC because reasons such as:

- The use of electronic payments is becoming popular in the Caribbean, with the number of electronic payment methods provided by the financial industry increasing e.g. credit, debit and pre-paid cards.
- Improved efficiency in its payment settlements with the technological developments from the DLT or variants of DLT via the introduction of a CBDC.
- Lower remittance costs from the improved efficiency of the payments systems, in particular the shorten settlement time.
- A solution to De-risking
- Ease of travel between Caribbean islands – easy convertibility of currencies.

# Conclusions and Way Forward for Caribbean Central Banks

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- The DLT that exist now is effective at enabling a cryptocurrency that has all the attributes of fiat money –a unit of account, a medium of exchange and a store of value; but it is still too early to decide on how to implement a CBDC because of the rapid pace at which the technology is changing.
- Caribbean central banks will benefit by conducting their own investigations and having their own projects as it will help them to build the experience and familiarity with the use and limitations of this new and evolving technology.

*“CBDC is far from just a simple question of technology; any central bank contemplating CBDC will need to answer a host of fundamental economic questions, as well as considering how feasible it is to achieve all the required features and what type of technology might enable this. Whilst it’s easy to write down a set of requirements, a great deal of further research is required before making CBDC a reality.” S.Scorer (2017)*

THANK YOU  
for your attention.

