Ravi Menon: Economic possibilities of blockchain technology

Keynote address by Mr Ravi Menon, Managing Director of the Monetary Authority of Singapore, at the Global Blockchain Business Conference, Singapore, 9 October 2017.

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Honourable Chief Minister Chandrababu Naidu

Distinguished guests, ladies and gentlemen, good morning.

Andhra Pradesh and Singapore

I am delighted to be here in Andhra Pradesh – the land of the Tiruppati temple, Carnatic music, Kuchipudi dance, and of course, the charming sea town of Vishakapatnam. I am grateful to Chief Minister Chandrababu Naidu for his kind invitation to speak at this conference.

Andhra Pradesh and Singapore share in common a modern outlook.

- We both believe in the value of innovation for economic growth and harnessing the power of technology for the common good.
- That Andhra Pradesh is organising a global conference on the topic of blockchains shows its progressive nature.
- It is also a tribute to the vision of Chief Minister Chandrababu Naidu, who has inspired an IT revolution in Andhra Pradesh.

Little wonder that Andhra Pradesh and Singapore have forged good relations and have been working closely together.

- The Andhra Pradesh government has appointed a Singapore consortium to develop the new capital city of Amaravati.
- The Andhra Pradesh government and the Monetary Authority of Singapore (MAS) signed a FinTech cooperation agreement in October last year.
    - A delegation of more than 10 FinTech startups from Singapore attended the FinTech Valley Vizag Spring Conference in March this year.

Establishing trust in a decentralised way

Trust underpins all economic transactions. In the absence of direct trust among parties, the alternative is to rely on trusted central parties.

- In payments and settlement, there is a central operator that records and updates the balances of the clearing participants

But trusted central parties are not always available. And even if they are, what if they fail? Single points of failure make attractive attack targets. And what if trust is broken? What if the central party colludes?

The key breakthrough of blockchain technology is its ability to establish trust in a decentralised system.

Blockchain technology allow diverse parties to collaborate without trusted central parties.

- All parties to a set of transactions are able to maintain a coherent and consistent view of the state of the world.

- When I am confident that what you see is what I see, we can collaborate more seamlessly without a third party to maintain a “golden source of truth”.

How does a blockchain make sure that what you see is what I see without third party verification?

First, data are recorded and shared in a way that ensures a consistent view across multiple parties.

- Copies of the data are spread around all the nodes of the blockchain network.
- Rather than trusting any single party, the trust is placed in the collective view of all parties.
- Anybody can check whether something is wrong.

Second, data are heavily encrypted or signed with digital signatures that makes the blockchain secure against tampering.

- This means that all parties in the blockchain can be sure that no one can unilaterally make changes without the signature of the others.

Third, data are generated by smart contracts which always execute in the same expected way.

- The smart contract acts as an impartial judge.
- It executes contracts faithfully in accordance with the pre-defined contractual terms that all parties on the blockchain have agreed to.

A blockchain is essentially a database that provides proof of who owns what at any given moment and an immutable record of all transactions. It is, in other words, a distributed ledger.

Distributed ledger technology, or DLT, has the potential to transform many industries and economic activities.

- This goes well beyond the original application of blockchains to Bitcoins and crypto-currencies.
- In fact, although crypto-currencies have attracted the most public attention, it is the broader applications of DLT that hold more promise over the short to medium term.

Industry applications of distributed ledger technology

DLT is particularly suited for industry applications where it is important to know the histories of ownership but there is no trusted central party or reliance on the central party is inefficient or costly.

Take supply chain management for instance.

- DLT can provide the means for registering, certifying, and tracking the supply chain process at low cost.
- All goods will be uniquely identified and transferred through the distributed ledger, with each individual transaction verified, time-stamped, and encrypted in a transparent process.

In financial services, DLT is being experimented with for a variety of applications.

- DLT may provide a more efficient alternative to credit bureaus that compile consumer credit information from banks.
- The insurance industry in Singapore is looking at how DLT can help prevent duplicate insurance claims.

Probably, one of the potentially more powerful applications in financial services is in customer verification, the so-called “know-your-customer” or KYC process.

- Banks spend an inordinate amount of time and money on KYC, and yet struggle to effectively detect and deter money laundering, tax evasion, and other forms of illicit finance.
- DLT brings about opportunities for a shared industry-wide KYC utility that can verify customers and transactions in a more efficient and robust manner.
- This is not just conjecture. It is beginning to happen.
    - In Singapore, OCBC Bank, HSBC and MUFG announced last week that they have completed a KYC blockchain project to reduce the duplicity of KYC processes, providing convenience for customers and efficiency across the banks.

The “killer app” for DLT is really in cross-border transactions.

- When multiple entities across different jurisdictions are involved, there is no natural trusted central party.
- DLT allows the possibility of various parties working directly with one another to make cross-border transactions cheaper, faster, and safer.

Cross-border trade is a good example. In Singapore, we are exploring two specific applications – trade finance and trade documentation.

- In trade finance, DBS Bank and Standard Chartered Bank are exploring the use of DLT to prevent the problem of duplicate invoicing while preserving client confidentiality.
- In trade documentation, Singapore is exploring how we can use DLT to link our National Trade Platform to trade platforms in other countries, such as Hong Kong.
    - The DLT-based platform will allow users to exchange digital trade documents across borders with confidence.

A vibrant and growing DLT ecosystem in Singapore

Innovation and technology will be the main drivers of growth in the future.

- The MAS has been working actively with the financial industry to create a Smart Financial Centre, where innovation is pervasive and technology is used widely.
- We want to do this to increase efficiency, manage risks better, create opportunity, and improve people’s lives.

Building a strong DLT ecosystem is part of this broader FinTech strategy. And the DLT ecosystem in Singapore has been growing handsomely.

- There are now approximately 50 locally based FinTech startups in the DLT space.
- The local universities are doing research in various aspects of DLT.
- Venture capitalists are looking for interesting DLT ideas to invest in.
- Major technology consulting firms and system integrators have set up in Singapore dedicated practices or teams for DLT.

An effective way to develop the ecosystem is through collaborative projects that bring together various parties. And MAS has been an active participant in such projects, helping to co-create solutions together with the industry.

Project Ubin: Using DLT for inter-bank payments

Project Ubin is a good example of such collaboration as well as challenging the status quo.

The problem statement is this:

- In a real-time gross settlement payment system, transactions typically go through a single trusted party, often the central bank.
- The challenge MAS posed itself was: can we create a more efficient inter-bank payment and settlement system without MAS acting as the trusted party?

This began Project Ubin – a collaborative effort among MAS, the Singapore Exchange, ten banks, six technology companies, and six academic institutions.

- Over the course of the project, more than 150 people were trained in DLT.

Phase 1 of Project Ubin successfully demonstrated that banks are able to transact with one another on an Ethereum-based prototype without going through the MAS.

- MAS issued a digital representation of the Singapore Dollar – a central bank digital currency – and placed it on the distributed ledger for domestic inter-bank settlement.

Phase 2 of Project Ubin – just recently concluded – successfully produced three software models that achieved decentralised netting of payments in a manner that preserved transactional privacy.

The next step in Project Ubin is to extend the application to cross-border payment and settlement.

- Cross-border payments today rely on a correspondent banking network.
- Banks hold balances with one another and settlement occurs through the adjustment of these relative balances.
- There is counterparty risk, liquidity is split, and reconciliation is a major pain point.
- In cases where multiple correspondent banks are involved, transactions may take days and at high cost to customers.

We are therefore exploring how Project Ubin can be linked up with other central bank DLT projects to facilitate cross-border payments.

- If successful, it will help bring about significant improvements in efficiency, cost, speed, and risk management.
- The grand vision is a DLT-based settlement system that paves the way for 24/7 operations and allows cross-border transactions to be settled instantly.

Collaboration between Singapore and Andhra Pradesh through DLT

DLT is a natural platform for collaboration.

- With the strong trade flows between Singapore and India, there are good opportunities for FinTechs and financial institutions in Singapore and Andhra Pradesh to collaborate.
- We can explore how our customs and trade platforms can be linked up to facilitate exchange of trade documents and advance the digitalisation of trade.
- Our banks can work together on new models of cross-border payments to improve settlement time, allow for round the clock operations, and reduce settlement risk.

This is an opportune time for DLT collaboration, and more broadly FinTech collaboration, between Andhra Pradesh and Singapore. I look forward to seeing FinTechs in Singapore developing solutions for use cases in Andhra Pradesh that will create value and opportunity for the people of this up-and-coming state.

Thank you and I wish you fruitful and stimulating discussions.