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## Session 15A: Realising the Promise of Blockchain

### The potential of distributed ledger technology

Blockchain and other distributed ledger technologies (DLTs) represent an important shift in the way data and value are represented, stored and transacted in the digital environment.

By using a combination of distributed shared databases, cryptography, and predictable network protocols, blockchain networks are capable of creating and establishing ownership over unique digital assets, whether they be a piece of information, a representation of a real-world asset, or a natively digital asset. These networks can be set up to provide transparency, traceability and trust between transacting parties, which can eliminate the need for intermediaries, improve efficiency, and automate certain processes through ‘smart contracts’ – pieces of self-executing code which can be programmed into transactions.

Like the Internet, blockchain is general-purpose and provides a new technological foundation upon which new tools and applications can be built. It is set to impact – and potentially transform – a wide range of industries. It also presents a powerful tool to help governments meet policy challenges in areas such as tax, responsible business conduct, aid and development, anti-corruption, illicit trade, privacy and cybersecurity, entrepreneurship and financial inclusion.

### Many use-cases but no truly scaled solutions

Investment in blockchain and DLT applications has seen exponential growth over the past three years, and projects in the private and public sectors have proliferated. On the surface, blockchain and DLT applications appear to be delivering on their promise of efficiency, transparency and automation, with the financial sector at the forefront adoption and many other industries following close behind. Prominent applications have included: venture capital raising and debt issuance, clearing and settlement of payments and shares, remittances and cross-border payments; tracking and verification throughout supply chains, and land titling and registry services.

These innovations are exciting and often grab headlines because they hint at the kinds of transformations that blockchain will eventually bring about. But while they are illustrative of blockchain’s promise, they also underline the extent to which this emerging technology is still in its infancy. Most, if not all, mainstream blockchain-based applications are still in an early pilot phase, and with the possible exception of some cryptocurrencies, none are truly commercially scaled or in common use.

### The technical and regulatory barriers

The blockchain applications seen thus far have served to underline some of the challenges and limitations facing blockchain use today, which are both technological and regulatory in nature.

The use blockchain-based token sales to raise funds for start-ups, and the use and investment in cryptocurrencies, has largely taken place inside a regulatory vacuum, which has led to market integrity issues like fraud and tax evasion. Debt issuance over blockchain has been limited by the need to tightly control access to information, and the lack of an appropriate digitised currency – for example the World Bank’s recent blockchain-based bond issuance had just two nodes on a private network, and settlement was still required through traditional banking means.

Blockchain-based trading or payment platforms have been stymied by low transaction speeds at the scale required. Land registry projects in developing nations have failed because the basic, real-world information about property ownership required for the system either doesn't exist or is still subject to interference before being placed on the blockchain.

As technology inevitably develops and improves, many of the technical issues facing blockchain and DLT applications are being addressed. For example, the Depository Trust and Clearing Corporation and Accenture recently demonstrated private DLT networks had the capacity to manage over 100 million trades on the US equity market per day – far above current volumes.

The regulatory challenges are less straightforward, and will require active engagement from policymakers. While regulators have been reacting to specific developments in financial markets, for example, blockchain provides a entirely new way of managing assets and information across the economy. It will impact existing public priorities like privacy, cybersecurity, market design and public governance.

### Realising the promise: future issues

In responding to blockchain's impact on policy, governments need to be able to make a sober assessment of blockchain technology, and consider its immediate and long-term impacts on public outcomes. In weighing the benefits and risks, they also need to consider how the policy environment will affect innovation and use.

Future considerations for policymakers may include:

- **The design and governance of blockchain networks:** Most promising blockchain applications thus far have all had to use either private, permissioned networks, or private layers on top of public networks. Network governance – who sets the rules of the network – can have a profound effect on the balance of power, incentives, decision-making, and ultimately the social outcomes of the network.
- **Interoperability:** Blockchain will likely be used across many industries and by different organisations within industries. Fully realising the benefits of blockchain will mean networks will need to be able to communicate with one another and share information – this type of standardisation often requires government support.
- **Policy responses:** blockchain's potential is dependent on its ability to disintermediate and decentralise economic activity. It is a technology which seeks, by varying degrees, to redistribute economic and political power and make borders irrelevant. A major question facing the technology is how governments will react, and immediate issues could include the legal status of blockchain-based assets and smart contracts and responsibility and liability for data retention and data privacy in blockchain networks which exist in many jurisdictions at once.

**Q1:** What are some of the key benefits and risks of blockchain technology from the perspective of domestic and international public priorities?

**Q2:** What have been the challenges to date, and what steps can governments take to allow blockchain to develop and reach its potential?

**Q3:** What future developments in blockchain technology can we expect, and how can policymakers position themselves to best respond?