## 5.2 Blockchain in Finance

The **Ethereum blockchain** enables more open, inclusive, and secure business networks, shared operating models, more efficient processes, reduced costs, and new products and services in banking and finance. It enables digital securities to be issued within shorter periods of time, at lower unit costs, with greater levels of customization. Digital financial instruments may thus be tailored to investor demands, expanding the market for investors, decreasing costs for issuers, and reducing counterparty risk. Over the last five years, the technology has matured for enterprise-grade use demonstrating the following benefits:

- **Security**: Its distributed consensus based architecture eliminates single points of failure and reduces the need for data intermediaries such as transfer agents, messaging system operators and inefficient monopolistic utilities. Ethereum also enables implementation of secure application code designed to be tamper-proof against fraud and malicious third parties — making it virtually impossible to hack or manipulate.
- **Transparency**: It employs mutualized standards, protocols, and shared processes, acting as a single shared source of truth for network participants
- **Trust**: Its transparent and immutable ledger makes it easy for different parties in a business network to collaborate, manage data, and reach agreements
- **Programmability**: It supports the creation and execution of smart contracts — tamper proof, deterministic software that automates business logic – creating increased trust and efficiency
- **Privacy**: It provides market-leading tools for granular data privacy across every layer of the software stack, allowing selective sharing of data in business networks. This dramatically improves transparency, trust and efficiency while maintaining privacy and confidentiality.
- **High-Performance**: It's private and hybrid networks are engineered to sustain hundreds of transactions per second and periodic surges in network activity
- **Scalability**: It supports interoperability between private and public chains, offering each enterprise solution the global reach, tremendous resilience, and high integrity of the mainnet

According to a **report by Jupiter Research**, blockchain deployments will enable banks to realize savings on cross-border settlement transactions of up to $27 billion by the end of 2030, reducing costs by more than 11%. Ethereum specifically has already demonstrated disruptive economics, creating over 10x cost advantages against incumbent technologies. Financial institutions acknowledge that distributed ledger technology will save billions of dollars for banks and major financial institutions over the next decade.

**How does the Digitization of Financial Instruments Impact Finance?**

The digitization of financial instruments – comprising digital assets, smart contracts and programmable money – takes the benefits of blockchain further by forging unprecedented

levels of connectivity and programmability between products, services, assets and holdings. These digitized instruments will redefine the processes of commercial and financial markets, creating a new paradigm where value is brought at every touch point. Digital financial instruments offer the following business benefits:

- **Authenticity and scarcity**: Digitization ensures data integrity, and enables asset provenance and full transaction history in a single shared source of truth
- **Programmable capabilities**: Code that addresses governance, compliance, data privacy, identity (KYC/AML attributes), system incentives and features that manage stakeholder participation (for voting and other rights) — can be built into the assets themselves
- **Streamlined processes**: Heightened automation increases overall operational efficiency. It enables real-time settlement, audit and reporting; and it reduces processing times, the potential for error and delay, and the number of steps and intermediaries required to achieve the same levels of confidence in traditional processes
- **Economic benefits**: Automated, more efficient processes trigger reduced infrastructure costs, operation costs, and transaction costs
- **Market reactivity**: Digital securities allow greater customization than standardized securities, and can be issued within shorter timeframes. Issuers can create bespoke digital financial instruments directly matched to investor demand.
- **New products and markets**: Secure, scalable and rapid asset transfers, fractionalized ownership of real-world assets, tokenized micro-economies, and more

Together, these benefits result in more accountable transparent governance systems, more efficient business models, improved incentive alignment between stakeholders, greater liquidity, lower costs of capital, reduced counterparty risk, access to a broader investor and capital base, and access to all other digital financial instruments.

**What are the Blockchain Use Cases in Financial Services?**

- **Capital Markets**
  - Issuance
  - Sales and trading
  - Clearing and settlement
  - Post-trade services and infrastructure
  - Asset servicing
  - Custody
- **Asset Management**
  - Fund launch
  - Cap table management
  - Transfer agency in asset management
  - Fund administration
- **Payments and remittances**
  - Domestic retail payments
  - Domestic wholesale and securities settlement

  - Cross border payments
  - Tokenized fiat, stablecoins and cryptocurrency
- **Banking and Lending**
  - Credit prediction and credit scoring
  - Loan syndication, underwriting and disbursement
  - Asset collateralization
- **Trade Finance**
  - Letters of credit and bill of lading
  - Financing structures
- **Insurance**
  - Claims processing and disbursement
  - Parametrized contracts
  - Reinsurance markets

***How does blockchain impact capital markets?***

Capital markets refers to the pairing of issuers with demand for capital, to investors with corresponding risk and return profiles. Whether issuers be entrepreneurs, startups or large organizations, the process of raising capital can be challenging. Firms face increasingly stringent regulations, longer times to get to market, volatility from interest rates and liquidity risk. Particularly in emerging markets, they must navigate the lack of rigorous monitoring, thorough regulation and sufficient market infrastructure for issuing, settlement, clearing, and trading. Blockchain offers multiple benefits for several capital market use cases:

- Elimination of a single point of failure through decentralized utilities
- Facilitation of capital market activities streamlining processes, reducing costs and decreasing settlement times
- Digitization of processes and workflows, reducing operational risks of fraud, human error, and overall counterparty risk
- Digitization or tokenization of assets and financial instruments, making them programmable and much easier to manage and trade. In token form, they gain wider market access through increased connectivity and the possibility of fractionalized ownership. This results in increased liquidity and decreased cost of capital.

***How does blockchain impact asset management?***

Venture capital firms, private equity firms, real estate funds, and specialty markets are facing demands to improve liability risk management, adapt more dynamic decision-making structures, and address the increasing complexity of ever-changing regulations. Blockchain can effectively streamline asset and stakeholder management. It allows:

- Automated fund launch
- Seamless stakeholder engagement with digitized assets and services
- Digitization of portfolio and existing holdings for wider market access, liquidity and fractionalization

- Customizable built-in privacy settings for transaction confidentiality
- Voting and other shareholder rights and obligations programmed into digital assets, resulting in seamless user experience and reduced risks of human error
- Creation and enforcement of incentive mechanisms to promote participation and punish nefarious activity
- Improved governance and transparency for investors and stakeholders
- Efficient cap table management
- Automated fund administration
- Automated transfer agency in asset management

***How does blockchain impact global payments and remittances?***

Global payments and remittances today are executed by a number of intermediaries that exact tolls for their service. It takes 2 to 7 days and costs a global **average of 6.94% to send $200** between countries. This means that remittances are directly reduced by $48B through fees, intermediaries, and financial institutions. Blockchain can streamline payment and remittance processes, reducing settlement times and significantly reducing costs. It allows:

- Rapid and secure domestic retail payments
- Rapid and secure domestic wholesale and securities settlement
- Rapid and secure cross border payments
- Real-time gross settlement between central banks, commercial banks, and independent banks
- Digitized KYC/AML data and transaction history, reducing risks of fraud and enabling real-time authentication
- Automated regulatory oversight and auditing
- Multiple forms of payment enabled on blockchain: Tokenized fiat, **stablecoin**, and **cryptocurrency**

***How does blockchain impact banking and lending?***

Core banking comprises of transaction, loan, mortgage, and payment services. Many of these services depend on legacy processes of execution. For example, between information verification, credit scoring, loan processing and distribution of funds— it takes 30 to 60 days for individuals to secure a mortgage, and 60 to 90 days for small or medium enterprises to secure a business loan. Blockchain can streamline banking and lending services, reducing counterparty risk, and decreasing issuance and settlement times. It allows:

- Authenticated documentation and KYC/AML data, reducing operational risks and enabling real-time verification of financial documents
- Streamlined credit prediction and credit scoring markets, instantaneously informed by the collation of user activity and sanctioned data across a network
- Automated syndicate formation, underwriting, and disbursement of funds i.e. principal and interest payments, reducing cost, delay and friction of syndication
- Facilitated collateralization of assets because digitization enables real-time asset management, tracking, and enforcement of regulatory controls

***How does blockchain impact trade finance?***

Trade finance refers to the infrastructure, processes and funding that support international trade supply chains. The industry continues to rely on paper-based processes that are susceptible to security vulnerabilities. Individual transactions can take as long as 90-120 days in order to process letters of credit, verify documents, and establish trust among stakeholders. Blockchain can digitize the entire trade finance lifecycle with increased security and efficiency. It can enable more transparent governance, decreased processing times, lower capital requirements and reduced risks of fraud, human error, and overall counterparty risk. It allows:

- Digitized and authenticated documentation (i.e. letters of credit and bill of lading) and KYC/AML data with real-time verification of financial documents
- Asset digitization to enable faster settlement times
- Creation of more efficient financing structures through shared secure networks and digitized processes
- Creation of a consistent financing vehicle for the entire trade lifecycle, eliminating the legacy practice of negotiating independent finance vehicles for each stage of the trade

*Learn more about blockchain in global trade and commerce→*

***How does blockchain impact insurance?***

Property and casualty insurance claims are prone to fraud and claim assessments can extend long periods of time. Blockchain can securely streamline data verification, claims processing, and disbursement, reducing processing time significantly. It allows:

- Authenticated documentation and KYC/AML data, reducing the risk of fraud and facilitating claim assessments
- Automated claims processing with the use of smart contracts
- Automated parameterized contracts to pay out upon occurrence of certain risk
- Automated disbursement of insurance payments
- Tokenized reinsurance markets to facilitate policy reinsurance in open marketplaces, stepping away from traditional broker and relationship-based systems

*Learn more about blockchain in insurance→*

***How does blockchain facilitate compliance?***

Regulatory compliance has become increasingly important in the commerce and finance space. It is necessary in order to ensure that financial institutions respect laws, rules, and regulations applicable to their activities. It is a huge challenge for firms to keep up with the pace and complexity of regulatory change— particularly when firms operate across borders and are thus exposed to multiple regulatory regimes. Blockchain offers these benefits:

- Unique governance and compliance attributes programmed into digital assets

- Streamlined processes that automate data verification and reporting, facilitate regulatory oversight, reduce operational friction, and eliminate errors associated with manual auditing and other activities — all in real-time
- Creation and enforcement of incentive structures to improve network governance