# Quantitative Methods

## Study Session 3 Quantitative Methods

### Reading 6 Fintech in Investment Mgmt

#### Data Science

Data processing: capture/ curation (data quality and accuracy assurance)/ storage/ search/ transfer (from data source/ storage to analytical tool)

Data visualization: heat map, interactive 3-D, tag cloud, network graphs, tree diagrams

#### Selected Applications of Fintech to IM

Text analytics and NLP: analyze annual report, transcripts, policy statements, voices etc.

Robo-Advisory Services: fully automated/ advisor-assisted

Risk Analysis: stress testing and risk assessment

Algorithmic Trading: HFT

#### DLT

Not fully secure, breaches in privacy and data protection are possible.

DLT: a type of database that may be shared among entities in a network.

Cryptography: an algorithmic process to encrypt data, making data unusable if received by unauthorized parties.

Smart contracts: self-execute programs

Blockchain: a type of digital ledger in which info is recorded sequentially within blocks, that are then linked or “chained” together, and secured using cryptographic methods.

Permissioned and Permission-less Networks

DLTG Applications:

1. Cryptocurrencies: ICO
2. Tokenization: representing ownership rights to physical assets on a blockchain or DLT. A single, digital record of ownership with which to verify ownership title and authenticity, including all historical activity.
3. Post-trade clearing and settlement: confirm, clear and settle transactions among counterparties and intermediaries.
4. Compliance: shared information, communications, transparency within and between firms, exchanges, custodians and regulators. Security and privacy in closed or permissioned networks.

### Reading 7 Correlation and Regression

Sample covariance

Sample correlation