FEDERAL RESERVE BANK of NEW YORK

Overview of U.S. PCS Landscape

Payment System Policy and Oversight Course
May 2016

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Important Note

The views expressed in this presentation do not necessarily reflect the views of the Federal Reserve Bank of New York or any other component of the Federal Reserve System.

Presentation overview

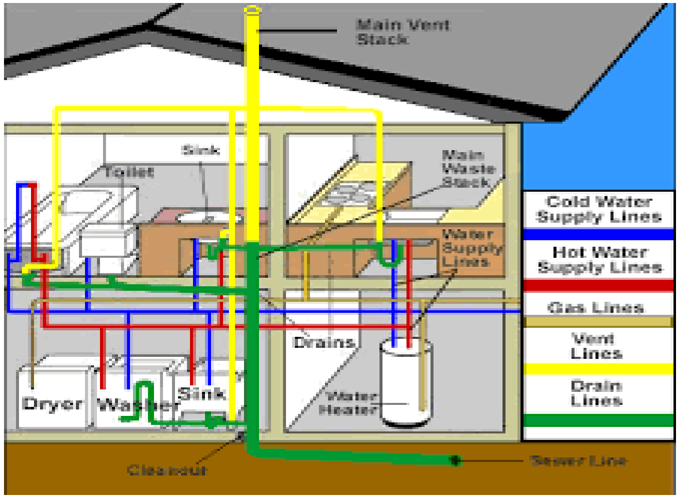
- Goal
  - Understand the structure of the U.S. financial system by learning the roles and interconnections of key entities, including market participants and infrastructures.

- Topics
  - What are payments, clearing and settlement systems?
  - The U.S. financial market infrastructure: FMI versus FMU versus DFMU
  - Trade lifecycle
    - Execution
      - Market Participants
    - Clearing
      - CCPs
      - Netting
    - Settlement
      - Payment Systems
      - Securities Settlement Systems
    - Recording and custody
      - Central Securities Depositories
      - Trade Repositories

High-level overview

- Financial Crisis 2008
  - G20 Mandate for central clearing
  - The Dodd-Frank Act

- PCS: Payment, Clearing and Settlement systems and transactions
  - The plumbing of the financial system: systems of pipes and valves that allow monetary transfers between companies and people all over the world that are hidden from view for most people
  - Wholesale transactions
  - Retail transactions



Overview

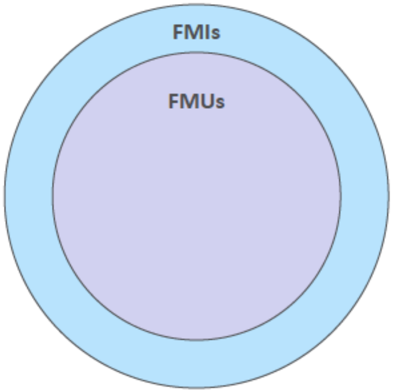
- Definitions of market infrastructure transactions
  - Clearing: the process of transmitting, reconciling, and in some cases, confirming transactions prior to settlement and potential netting
  - Settlement: The transfer of ownership involving the exchange of securities and payments
  - Payment systems: Transfer of funds between or among participants

- US quirk: tri-party repo and the clearing banks

Overview of the U.S. market infrastructure

- **Clearing systems**
  - Central counterparties (CCPs)
- **Settlement systems**
  - Payment Systems
    - Large-Value
    - Retail
  - Securities settlement systems (SSS)
- **Recording and custody**
  - Central securities depositories (CSDs)
  - Trade repositories (TRs)
- **Supporting Systems**
  - Messaging

FMI / FMU / DFMU Definition



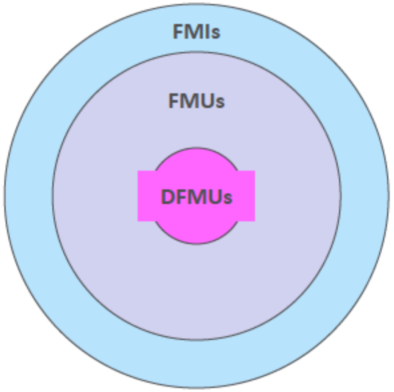
Financial Market Infrastructures (FMIs)

- Multilateral system
- Used by financial institutions
- Purpose: transfer, clear, settle, or record payments, securities, or other financial transactions
- Infrastructure Types:
  - Payment systems
  - Clearing systems
  - Securities settlement systems
  - Central securities depositories
  - Trade repositories (TRs)
  - *Excludes trading venues*
- Context: International

Financial Market Utilities (FMUs)

- Multilateral system
- Used by financial institutions
- Purpose: transfer, clear, or settle payments, securities, or other financial transactions
- Infrastructure Types:
  - Payment systems
  - Clearing systems
  - Securities settlement systems
  - Central securities depositories
  - *Excludes trading venues*
- Context: Domestic

FMI / FMU / DFMU Definition



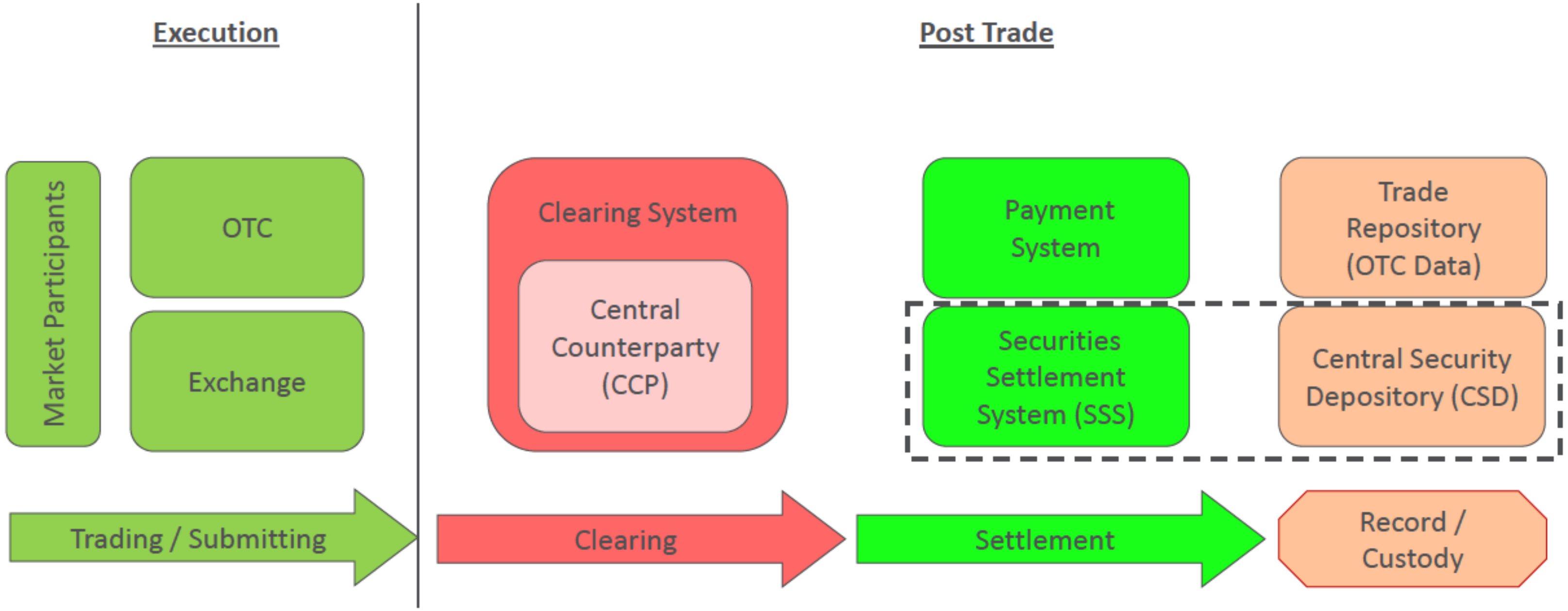
Financial Market Utilities (FMUs)

- Multilateral system
- Used by financial institutions
- Purpose: transfer, clear, or settle payments, securities, or other financial transactions
- Scope:
  - Payment systems
  - Clearing systems
  - Central securities depositories
  - Securities settlement systems
  - *Excludes trading venues*
- Context: Domestic

Designated Financial Market Utilities (DFMUs)

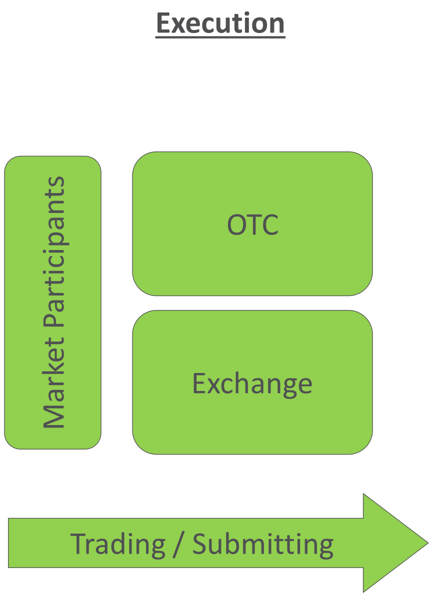
- FMUs designated as systemically important by the Financial Stability Oversight Council (FSOC)
- Context: Domestic

Financial System Transaction Lifecycle



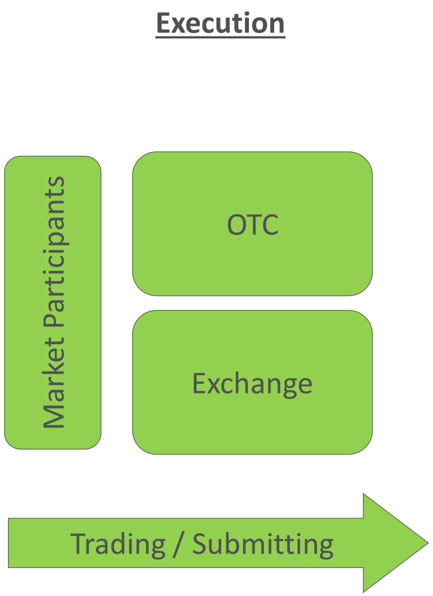
- A transaction can take different paths after execution depending on the type of transaction, mode of execution, type of product, asset class, and counterparty
- Settlement cycle: time between execution and final settlement
  - May range from intraday for payments to many years for derivatives contracts

Execution - Overview



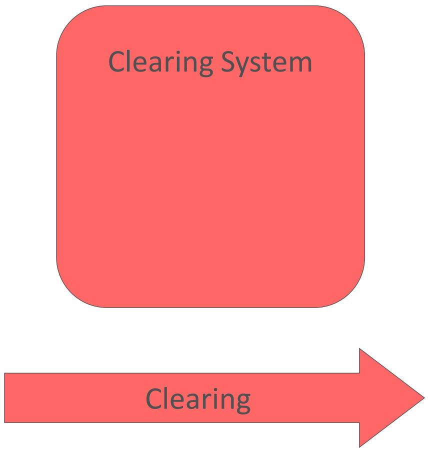
- Execution is
  - The submission of a payment instruction; or
  - The completion of a buy or sell order for an asset
- For financial instruments, trades occur either on an exchange or over-the-counter (OTC)
  - Exchange: a trading venue that brings buyers' and sellers' orders together and uses transparent, non-discretionary rules to manage and execute trades
    - Designated Contract Markets (DCM): CFTC-registered exchanges that offer derivatives
    - Swap Execution Facilities (SEFs): OTC trading platforms for SWAPs
  - OTC: a trade occurring outside of a regulated exchange
    - Includes trades executed bilaterally between two parties, through intermediaries, and via organized platforms

Execution - Market Participants



- Bank: depository institutions, including members of the Federal Reserve System
- Broker: any entity engaged in the business of effecting assets transactions for others
  - Inter-dealer Broker (IDB) – effects transactions on behalf of dealers
  - Futures Commission Merchant (FCM) – broker for futures products
- Dealer: any entity engaged in the business of buying and selling assets for their own account, and who the market relies on to be a readily available counterparty.
- Registered Investment Company (RIC): issuers of securities that engage primarily in investing, reinvesting or trading of securities
  - Includes mutual funds and money market mutual funds (MMFs)
- Unregistered Investment Company (Hedge fund): a private investment partnership that provides actively managed investment funds that are not registered with the SEC under the Investment Company Act of 1940

Clearing - Overview

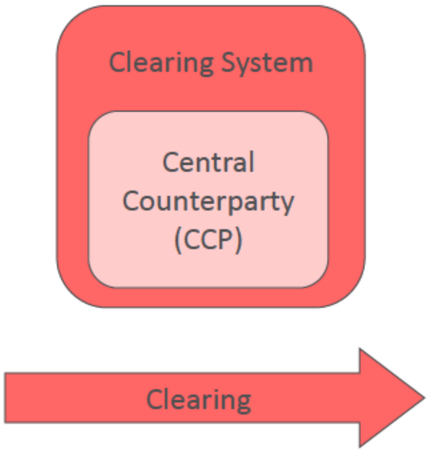


- The process of transmitting, reconciling, and, in some cases, confirming transactions prior to settlement, potentially including the netting of transactions and the establishment of final positions for settlement

- Reconciliation begins with comparing the trade data received from counterparties on a transaction’s long and short sides (confirmation) to ensure they agree (matching)
  - For trades conducted on an exchange, comparison and matching may occur at execution

- Typically includes netting of offsetting obligations
  - Reduces risk
  - Provides operational and economic efficiencies

Clearing – Clearing Systems



- Conducted by clearing systems
  - Central Counterparty (CCP): clearing system that interposes itself between counterparties thereby becoming the buyer to every seller and the seller to every buyer

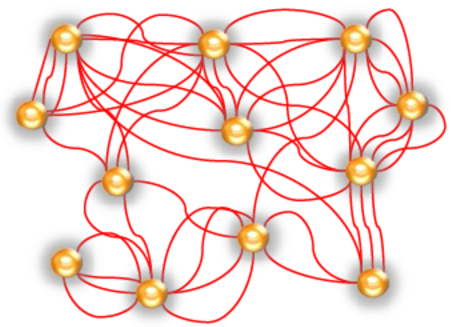
- Clearing systems
  - Registered Clearing Agency: SEC-registered clearing system
  - Derivatives Clearing Organization (DCO): CFTC-registered clearing system

- Users are the financial institutions that execute transactions
  - Often referred to as “members” or “participants”

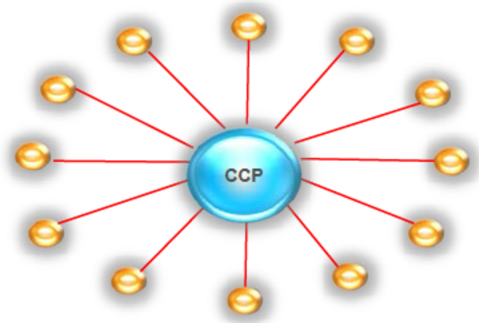
- Ownership structure varies
  - For profit or utility
  - Publicly traded or privately owned
  - Vertically integrated or horizontally integrated

- Clearing may include a guarantee of final settlement and risk management over the settlement cycle

Clearing – CCPs



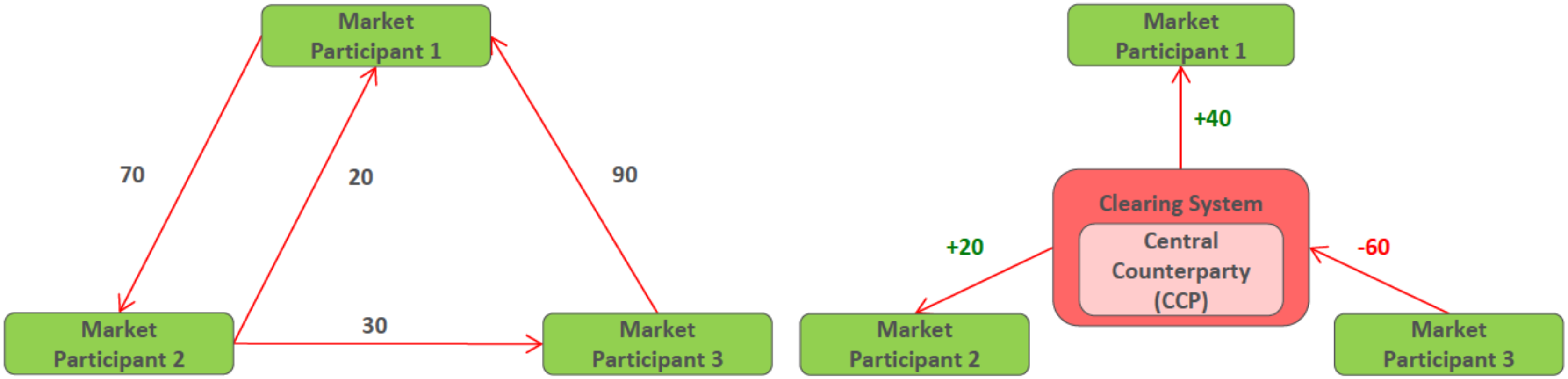
A market without a CCP



A market with a CCP

- A CCP becomes the buyer to every seller and the seller to every buyer through novation or open offer
- In bilateral markets, counterparties exchange directly with each other
  - Risk management practices are not standardized
  - Market participants' transactions can only be netted on a bilateral basis
- CCPs can reduce risk by multilaterally netting trades and imposing more-effective risk controls on participants
  - But, CCPs also concentrate activity, and therefore, risk

Clearing - Netting

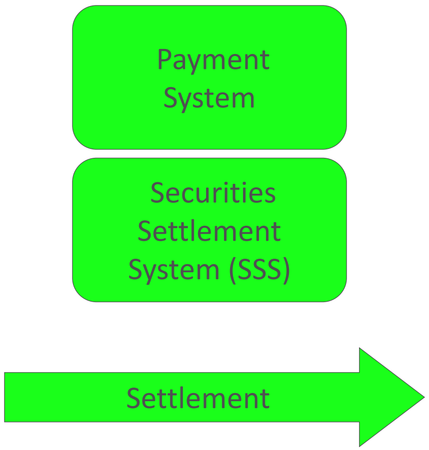


Transfers:	4
Total Transfers:	210
Maximum Value:	90

Transfers:	3
Total Transfers:	120
Maximum Value:	60

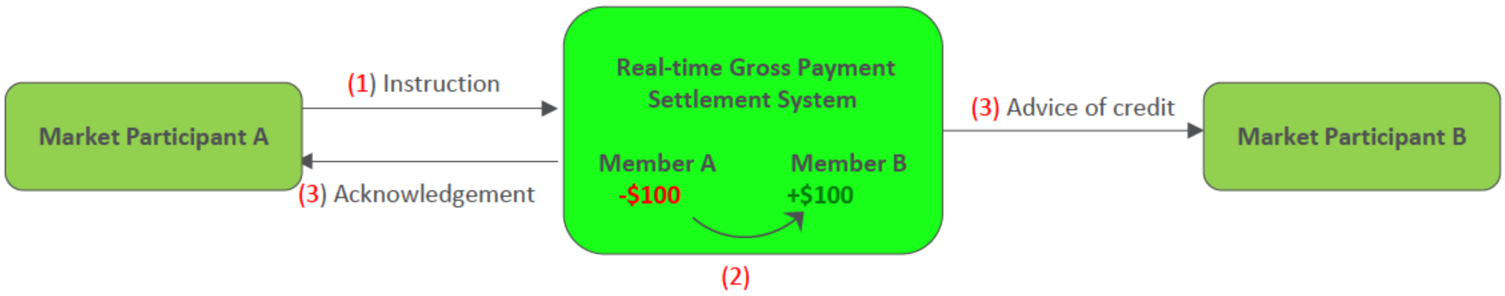
- The offsetting of obligations between or among participants in a netting arrangement
- Reduces the number and value of payments or deliveries needed to settle a set of transactions
- Utilized by a variety of FMIs to
  - Reduce risk
  - Provide operational and economic efficiencies

Settlement - Overview



- Settlement is the
  - Transfer of an asset or financial instrument, or
  - Discharge of an obligation in accordance with the terms of the underlying contract
- Final settlement is when settlement is unconditional and irrevocable
- Conducted by
  - Payment systems for payments
  - Securities settlement systems for financial instruments
- Settlement systems may
  - Guarantee final settlement
  - Extend credit to their participants
  - Net participants’ offsetting obligations

Settlement – Payment Systems: RTGS

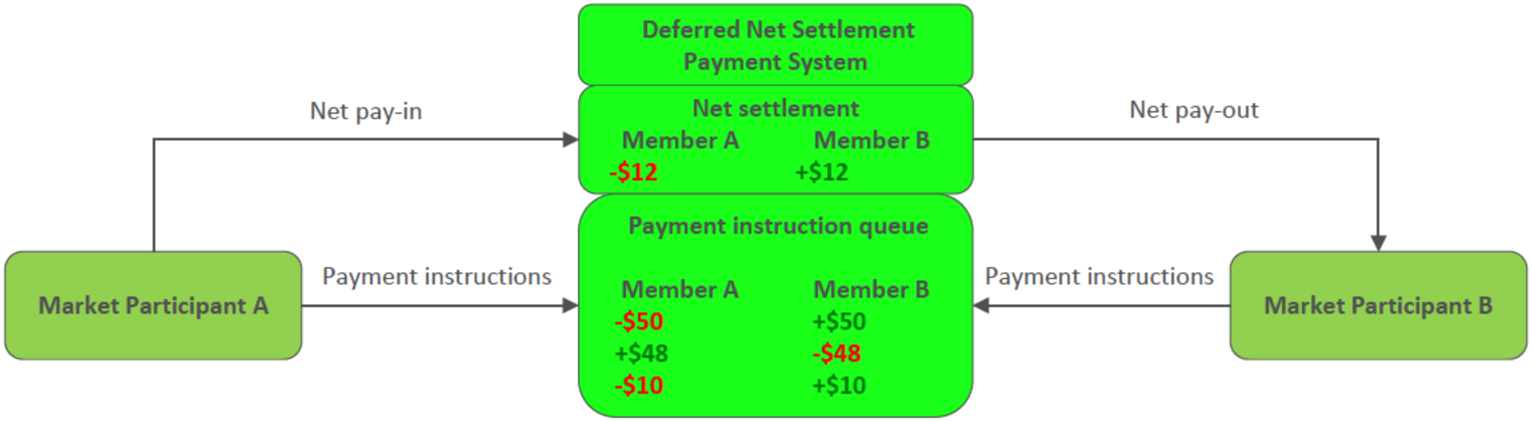


- A set of instruments, procedures, and rules for the transfer of funds between or among participants

- Large-value payment systems (LVPS) versus retail payment systems
  - LVPS facilitate large-value and time-critical payments
  - Retail payment systems facilitate smaller, more numerous payments

- Settlement methods: real-time gross settlement (RTGS); deferred net settlement (DNS); hybrid

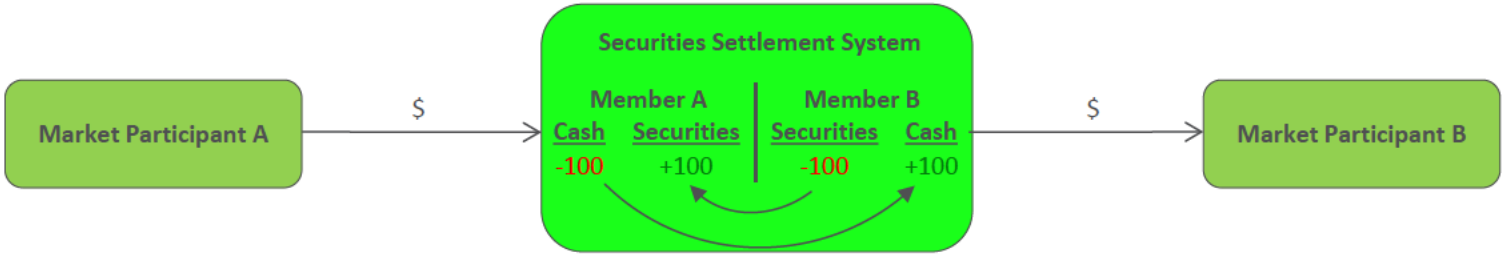
Settlement – Payment System: DNS



- DNS systems accumulate payment instructions over a period of time, net offsetting obligations, and transfer the net payment values

- Payment systems may settle transactions in multiple currencies
  - Multicurrency payment systems rely on correspondent, or nostro, banks

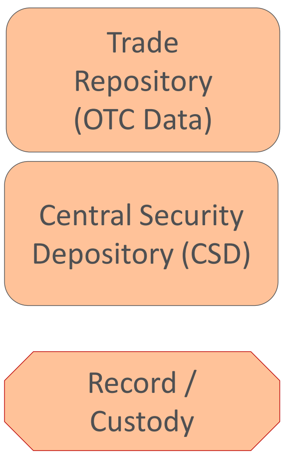
Settlement – Securities Settlement Systems



- An entity that enables securities to be transferred and settled by book entry according to a set of predetermined multilateral rules
- Securities transfers can be either free of payment or against payment
- Delivery versus payment (DvP) models
  - Final settlement of one leg will occur <u>if and if only</u> final settlement of the other leg occurs

	Delivery		Payment	
	Gross/Net	**Timing**	**Gross/Net**	**Timing**
Model 1	Gross	Simultaneous with payment	Gross	Simultaneous with delivery
Model 2	Gross	Throughout processing cycle	Net	End of the processing cycle
Model 3	Net	End of the processing cycle	Net	End of the processing cycle

Record and Custody – Central Securities Depository



- Provides securities accounts, central safekeeping services, and asset services
- Holds securities in
  - Physical form
    - Likely immobilized
  - Dematerialized form
- Maintains ownership records
- May administer corporate actions and redemptions
- Helps ensure the integrity of securities issues

Record and Custody – Trade Repository

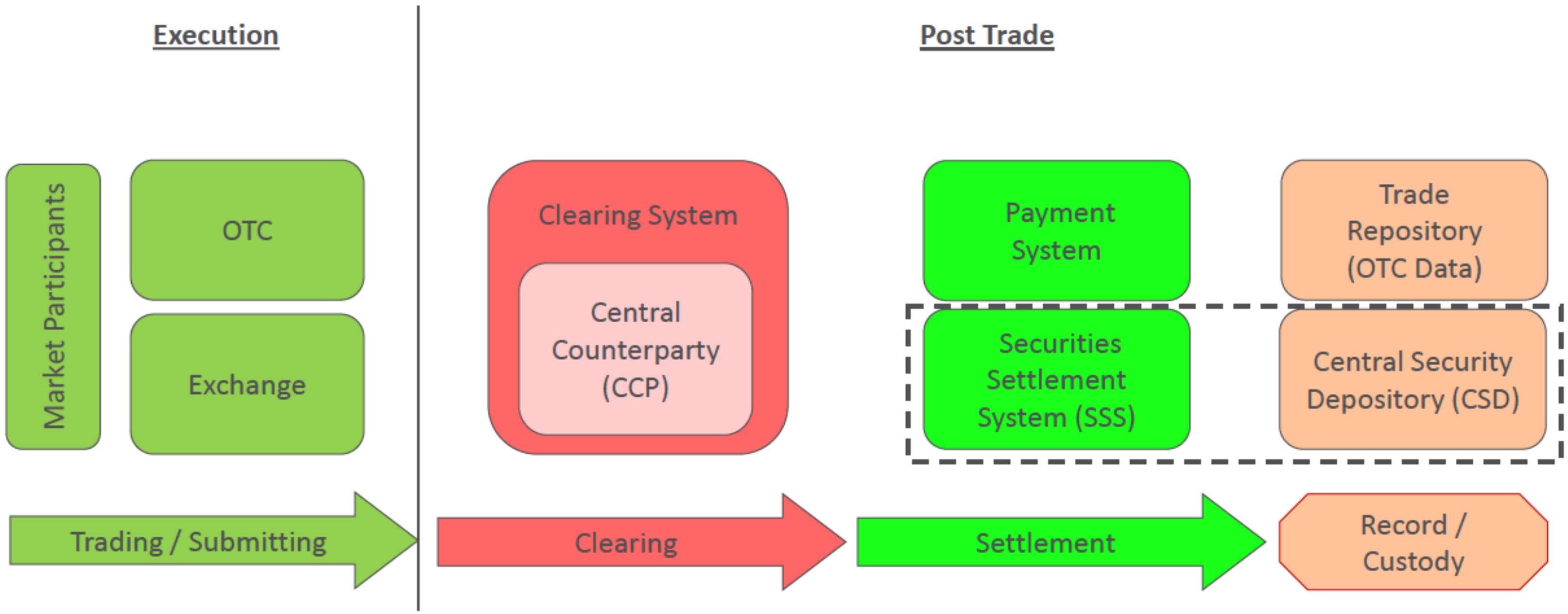
Trade Repository (OTC Data)

Central Security Depository (CSD)

Record / Custody

- Maintains a centralized electronic record (database) of transaction data
  - Swap data repository (SDR) or Security-based swap data repository (SB-SDR): CFTC-registered or SEC registered trade repository that provides data reporting and recordkeeping services for swaps or security based swaps
- Enhances the transparency of transaction information to relevant authorities and the public
- Provides information that supports risk reduction, operational efficiency and effectiveness, and cost savings for both individual entities and the market as a whole

Financial System – Transaction Lifecycle



Why Do We Care About FMIs?

- FMIs, and especially DFMUs
  - Play a critical role in the financial system and the broader economy
  - Are highly interconnected with other entities in the financial system
  - Can centralize and concentrate risks
  - Can be major channels through which financial shocks are transmitted across domestic and international financial markets if not appropriately risk managed

- Potential sources of systemic risk
  - The risk that the inability of one or more participants to perform as expected will cause other participants to be unable to meet their obligations when due

- Potential mitigants of systemic risk
  - Multilateral netting will cause a reduction in total exposure, and FMIs can provide centralized and strategic management of participant defaults

- FMIs', and especially DFMUs', smooth functioning is important to
  - Financial institutions' safety and soundness, both individually and collectively
  - The stability of financial markets and public confidence in them
  - The effective functioning of the economy

Key U.S. FMIs

Payment systems

- Clearing House Interbank Payment System* (CHIPS)
- Continuous Linked Settlement Bank* (CLS)
- Fedwire Funds Service
- National Settlement Service (NSS)

SSS & CSD

- Depository Trust Company* (DTC)
- Fedwire Securities Service

Clearing systems

- Chicago Mercantile Exchange Clearing* (CME)
- Fixed Income Clearing Corporation* (FICC)
  - Government Securities Division
  - Mortgage-Backed Securities Division
- ICE Clear Credit* (ICC)
- National Securities Clearing Corporation* (NSCC)
- Options Clearing Corporation* (OCC)

*DFMU