# Bond Market Development in Emerging East Asia

## Derivatives and Risk Hedging

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# What is a Derivative?

- A financial agreement or contract between two parties in which its value is “derived” from an underlying asset or index.

- Uses:
  - Risk hedging
  - Speculative or investment motive

# General Categories of Derivative

- Forward Commitment

  In a forward commitment-type derivative, the transaction is carried out at a later date.

- Contingent Claim

  In a contingent claim-type derivative, a transaction is carried out if a specified event occurs.

# Examples of Forward Commitment Derivatives

- Forward Contracts
- Futures Contracts
- Interest Rate Swaps
- Currency Swaps

# Examples of Contingent Commitment Derivatives

- Call Options – gives the holder the right but not the obligation to buy an asset at a set price.
- Put Options - gives the holder the right but not the obligation to sell an asset at a set price.
- Equity Warrants – a type of call option for equity.
- Swaptions – give the holder the right but not the obligation to enter in a swap agreement.

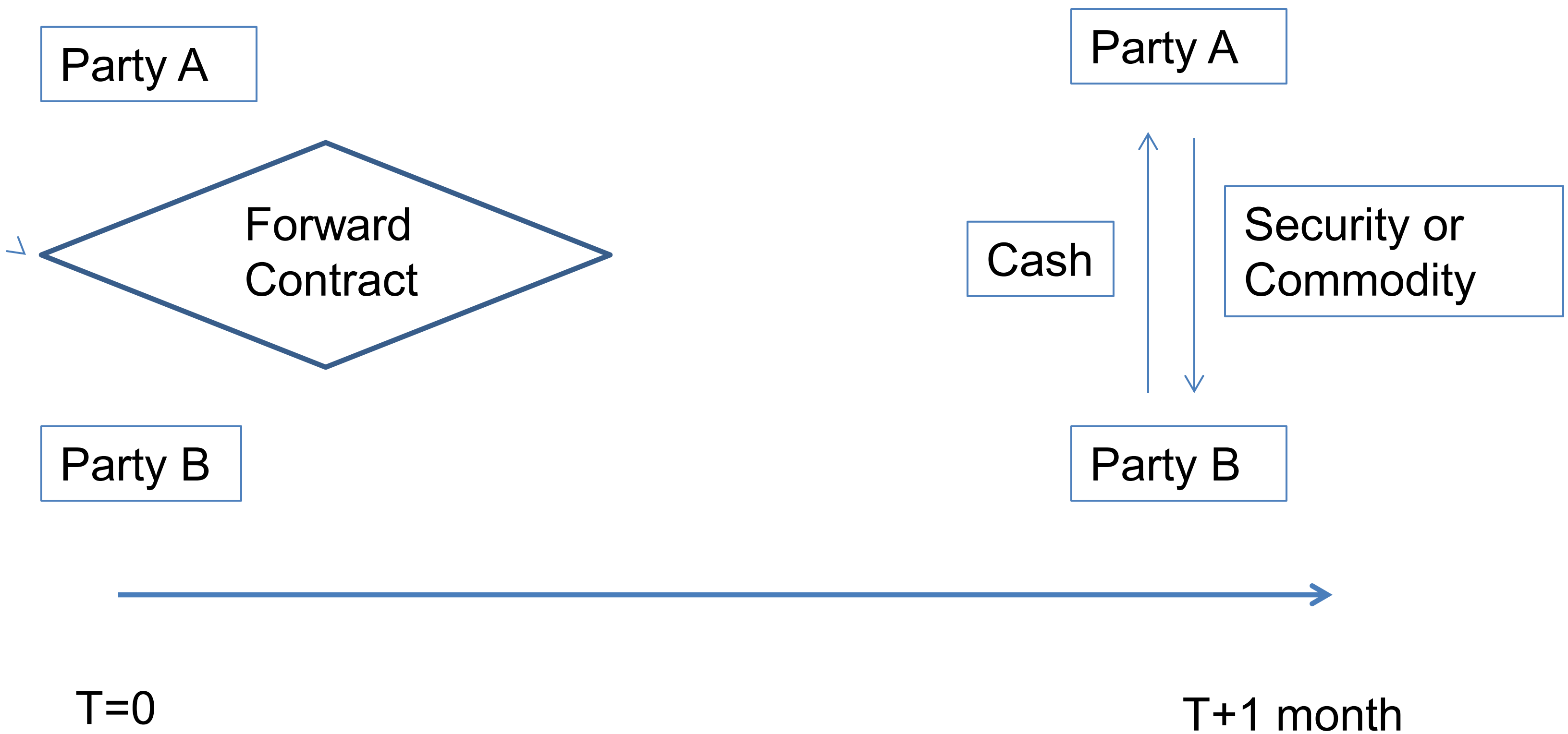
# Forwards

- Forwards are derivative contracts that will allow parties to exchange assets at a future data at a specified price.
- Allows for hedging of price risk.
- Typically, cash is exchanged for another asset.

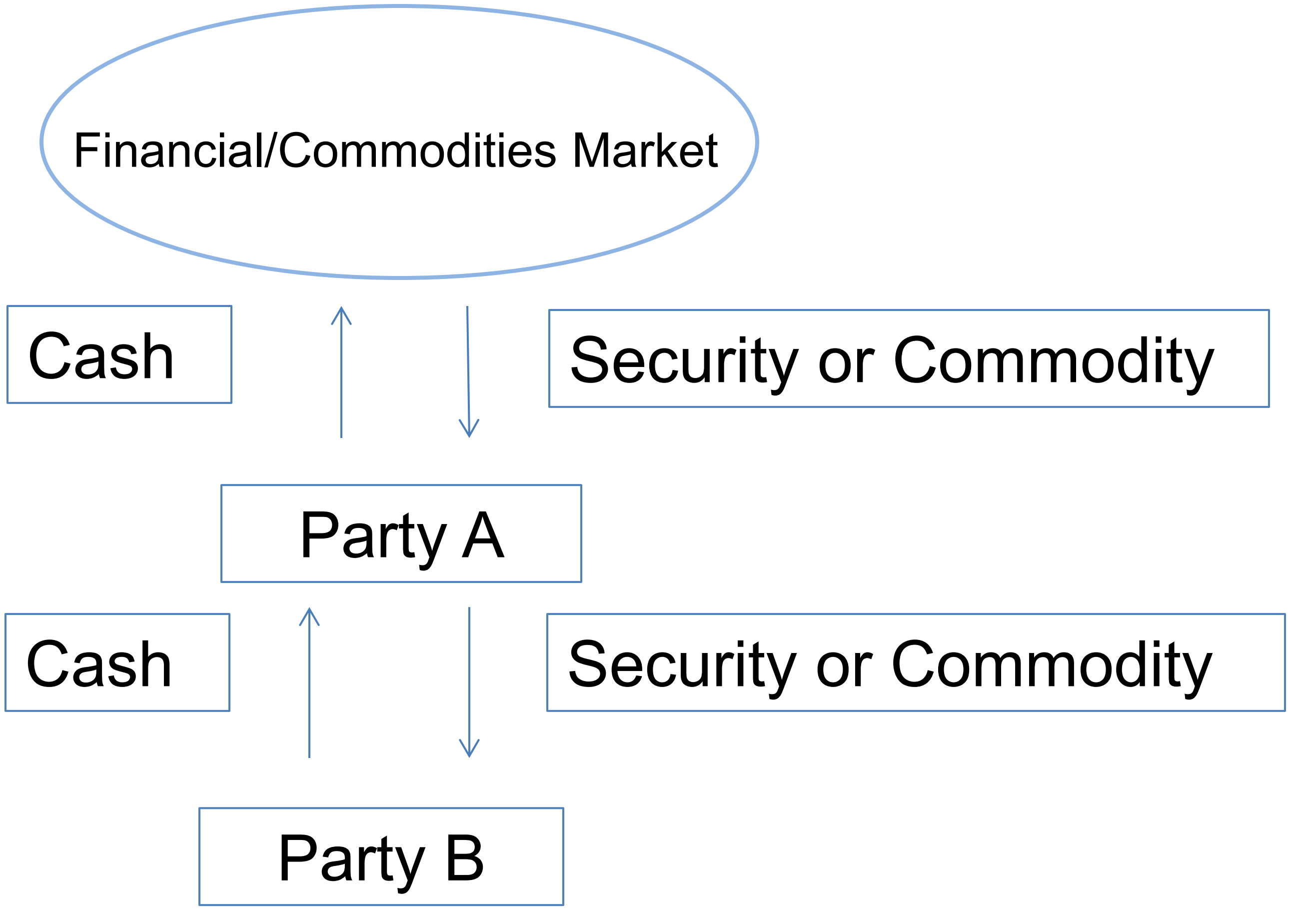
# Terms Used for Derivatives

- Spot Price – the current price of the asset
- Forward Price – the agreed upon transaction price of the asset
- Underlying – the asset that is being referred to in the forward contract
- Notional – the size or amount of the underlying

# Sample Transaction



# Risks in a Forward Transaction



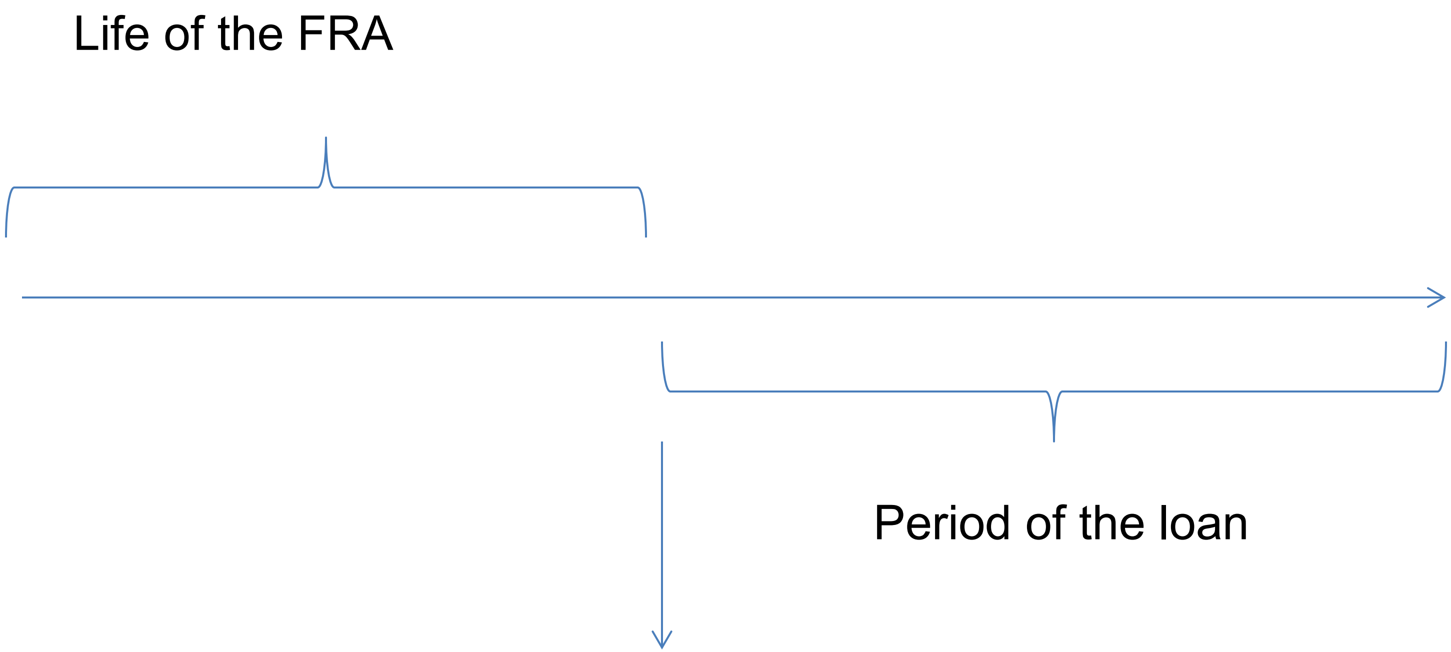
# Examples of Forwards

- Commodity Forwards
- Equity Forwards
- Bond Forwards
- Interest Rate Forwards or Forward Rate Agreements

# Forward Rate Agreement

- Used to hedge a change in interest rate.
- The payout is based on a difference between the agreed upon interest rate at the time the contract is entered into and the current market rate of the reference interest rate.
- Normally used to hedge interest rate risk exposure before entering into a loan.
- The asset exchanged is an interest payment.

# Forward Rate Agreement




$$Payout = \frac{Notional * (c - r) \; * \dfrac{t}{360}}{1 + r * t/360}$$

# Futures Versus Forwards

| Futures | Forwards |
|---|---|
| Marked-to-market | Not marked-to-market |
| Traded on a centralized exchange | Traded on the over-the-counter (OTC) market |
| Standardized | Not standardized |
| Settled daily | Settled at the end of the contract |
| Margin requirements | No Margin Requirements |

# Methods of Settlement

- Physical Delivery
- Cash Settlement
- Offsetting Position

# Leverage in Derivatives

- Prior example shows that derivatives are highly leveraged transactions.
- Can be an efficient way of gaining exposure to the underlying asset classes.
- But potentially increases risk.

# Bond Futures/Forwards

- A type of derivative contract used to hedge or gain exposure to bond investments.
- Settlement can be cash-settled or physical delivery, depending on market.
- A hypothetical bond is used as the underlying.

# Bond Futures/Forwards

| | China, People's Republic of | Hong Kong, China | Korea, Republic of | | | Malaysia | | Thailand |
|---|---|---|---|---|---|---|---|---|
| Instrument | 5-year Treasury Bond Futures | 3-year EFN Futures | 3-year KTB Futures | 5-year KTB Futures | 10-year KTB Futures | 3-year MGS Futures | 5-year MGS Futures | 5-year Government Bond Futures |
| Settlement | Physical | Physical | Cash | Cash | Cash | Cash | Cash | Cash |
| Contract Size | | HKD5M | KRW100 M | KRW100 M | KRW100 M | MYR0.1 M | MYR0.1 M | THB1M |
| Exchange | China Financial Futures Exchange | Hong Kong Futures Exchange | Korea Exchange | | | Bursa Malaysia | | Thailand Futures Exchange |

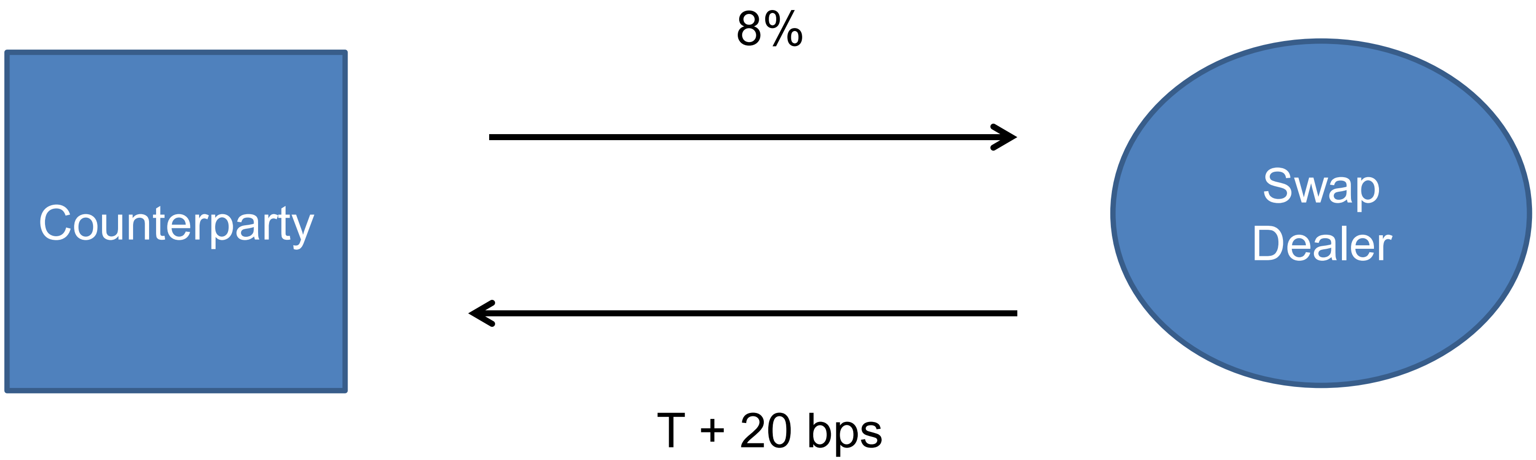
# Swaps

- A type of derivative contract wherein periodic exchanges or payments are made over the life of the contract.
- Can be viewed as a series of forward transactions.

# Interest Rate Swaps

- A type of swap wherein one party pays a periodic payment based on a fixed interest rate, while the other pays based on a variable interest rate.
- No exchange of principal

# Interest Rate Swaps



# Uses of Interest Rate Swaps

- Allows for transformation of a liability or asset.
- Converts exposure to a fixed rate to a floating rate or vice versa.
- Can hedge against either a fall or a rise in interest rates.

# Example

| | LIBOR | Floating Payment | Fixed Payment | Net |
|---|---|---|---|---|
| Q2 2013 | 4.2% | | | |
| Q4 2013 | 4.8% | 2.1 | 2.5 | -0.40 |
| Q2 2014 | 5.3% | 2.4 | 2.5 | -0.10 |
| Q4 2014 | 5.5% | 2.65 | 2.5 | 0.15 |
| Q2 2015 | 5.6% | 2.75 | 2.5 | 0.25 |
| Q4 2015 | 5.9% | 2.80 | 2.5 | 0.30 |
| Q2 2016 | 6.4% | 2.95 | 2.5 | 0.45 |

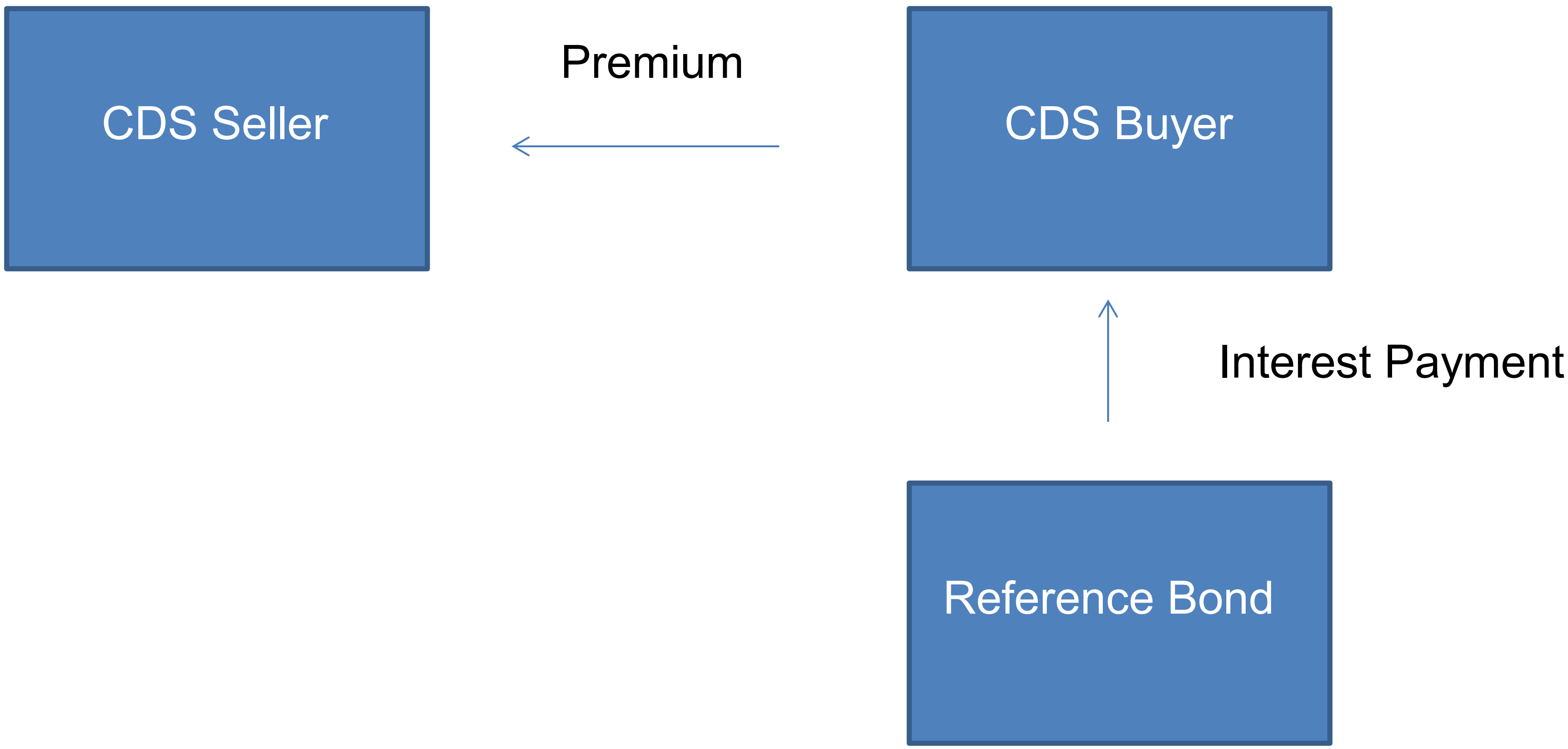
# Use of Netting

- Not just for ease of payment.
- Mitigates credit risk.
- Netting applies if one counterparty should become bankrupt.
- Also reduces systemic risk of derivatives, by reducing total exposure.

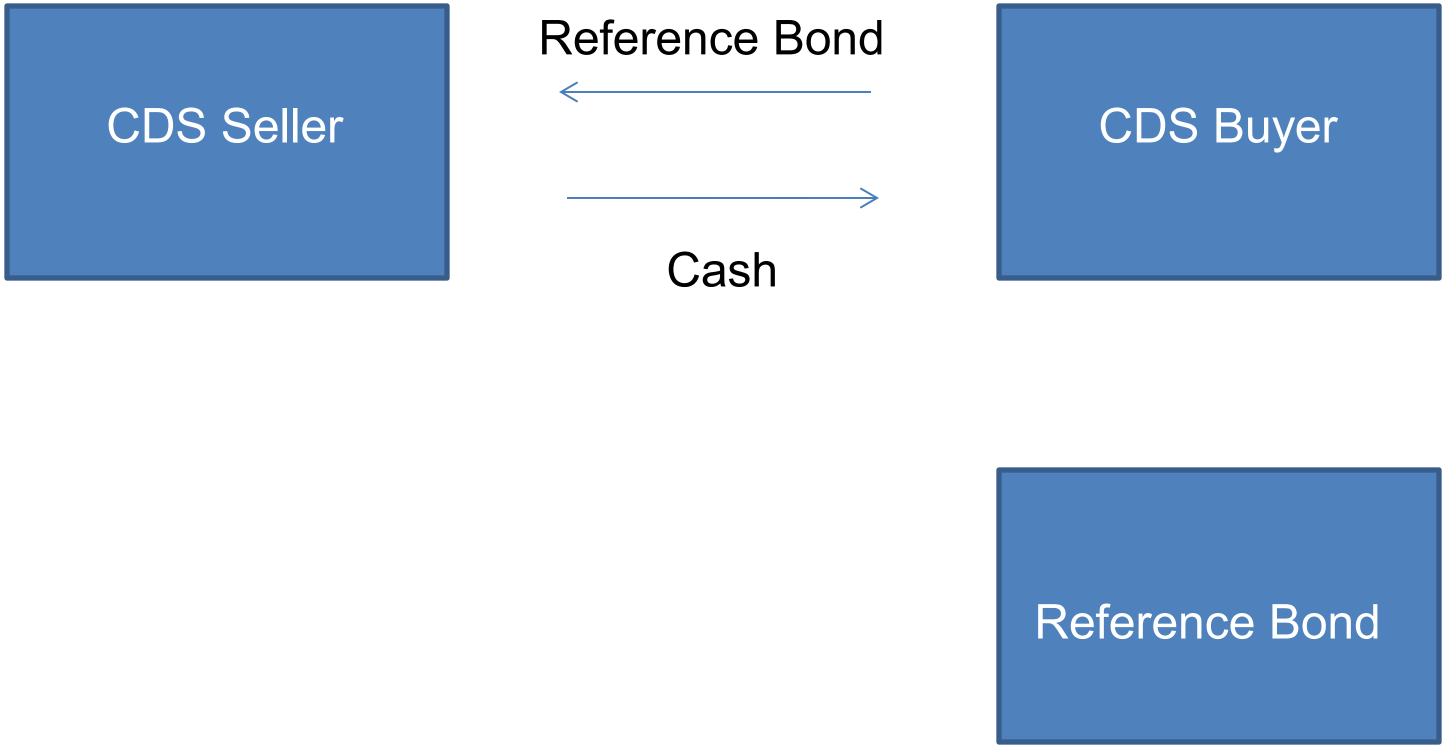
# Credit Default Swaps

- A type of derivative transaction used to hedge credit risk.
- Credit default swaps are similar to insurance, wherein the triggering event for a payout is a credit event.
- Does not remove credit risk, merely transfer burden to the seller of the credit default swap.

# Credit Default Swaps



# Credit Default Swaps



# Settlement for Credit Default Swaps

- Buyer delivers the bond, seller delivers cash equivalent to par value.
- Seller delivers cash value equal to par value less market value of bond.

# Trigger Events for Credit Default Swaps

- Bankruptcy
- Failure to pay
- Restructuring
- Repudiation or moratorium
- Obligation acceleration or default