

TOPIC 5 - OVERVIEW

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1. THE FOREIGN EXCHANGE MARKET

1.1 Background and Definitions

- The foreign exchange market is the world's largest global financial market
- Also referred to as the *forex* or FX market
- An OTC market which is traded 24 hours a day without any specific geographic location
- Trades covering currencies at current exchange rates are known as the **spot market**; currencies traded for delivery at a future date at an agreed rate are known as the **forward market**
- Participants in the FX market quoting prices for currencies are known as **dealers** or **traders**
- The majority of currencies in the FX market are quoted against the US dollar
- When a pair of currencies are quoted against each other without reference to the US dollar, the quote is known as a **cross rate**
- If the USD:HKD rate is quoted as 7.80, this means USD1 = HKD7.80

1.2 History of Exchange Rates

- The **gold-exchange standard**, which enabled countries to convert their currencies into gold, started in Britain in 1821. The Bank of England was legally required to redeem its notes and coins in gold
- Other major countries using the gold standard were: Germany, France and the United States
- Under the gold standard, countries maintained their conversion rates fairly constant, which meant exchange rates between countries were also fairly constant
- For the gold standard to maintain stability, relative inflation and interest rates could not deviate significantly between countries
- The gold standard ended at the outbreak of the **First World War**, when a system of **flexible exchange rates** was introduced
- A revised gold standard was introduced at the end of the War, when many countries suffered from excessive inflation. This position remained until 1944
- The **Bretton Woods Agreement** was made in 1944 as the Second World War was approaching its end. The Agreement involved 44 countries and established a global financial system that was designed to operate after the war
- Under the Bretton Woods Agreement, the US dollar was fixed at USD35 per ounce of gold and other countries established a par value against the US dollar. Rates against the US dollar were maintained by buying and selling home currencies
- The gold exchange-standard **collapsed in 1973** under the weight of Vietnam War driven by US budget deficits. It was replaced by a system of **floating exchange rates**

1.3 Exchange Rate Regimes

- The above events led to the current FX pricing mechanisms:
 - *Floating rates*: a currency's value is determined by market supply and demand
 - *Fixed rates*: a government/monetary authority sets a fixed rate of exchange with another currency and will intervene in the FX markets to ensure that the fixed rate is maintained
 - *Linked rates*: a type of fixed rate regime where the local currency is linked (or pegged) to a particular foreign currency. Usually, there is a trading range around the target rate, which is monitored by the government/monetary authority. The HK dollar has a linked exchange rate with the US dollar

Hong Kong Dollar Rate

- From 1863 to 1935, the HK dollar was linked to the price of silver and was known as the silver dollar
- Between December 1935 and June 1972, the HK dollar was fixed against the GB Pound at HKD16 and then at HKD14.55. Between 1972 and 1974, the HK dollar was fixed against the US dollar at HKD5.65 moving to HKD5.085
- After the Bretton Woods system collapsed, the HK dollar was floated against the US dollar, depreciating to a low of HKD9.60 in September 1983
- In October 1983, the current system was put in place whereby the HKMA undertakes to buy US dollars at HKD7.75 and sell US dollars at HKD7.85

The Hong Kong Currency Board System

- Note issuing banks deposit equivalent amount of US dollars with the HKMA for issuing HK dollar notes
- Therefore, the Hong Kong monetary base is **fully backed by US dollars**

Exchange Rate Mechanism, European Monetary System and Euro

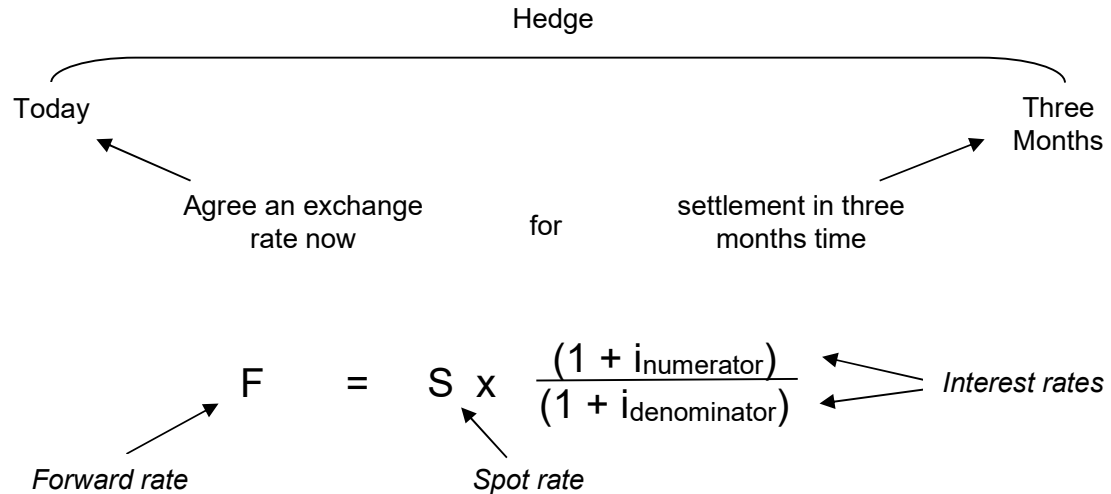
- The European Monetary System was introduced in 1978 to create a zone of monetary stability in Europe through a currency system that involved an adjustable fixed exchange rate, known as the Exchange Rate Mechanism (ERM)
- The GB Pound joined the ERM in 1990, however it had to be withdrawn in September 1992
- Eleven European countries formed the Euro currency in January 1999 and by August 2019, there were 19 eurozone members
- To maintain the common currency, there must be a consistent set of macro-economic factors among Eurozone member states – this is proving to be a challenge

1.4 The Foreign Exchange Market

- The FX market has no specific geographic location, no formal hours and is considered a perfect market as it has a large number of active buyers and sellers
- Transactions may relate to trade settlements or speculation, where speculators are looking to profit from exchange rate movements
- Trades to protect underlying activities are known as “hedging” and take place using both the spot and derivative markets
- **Market participants** can be viewed as either speculators or hedgers and include the following:
 - *Retail market*: a large number of small-value transactions which have little or no influence on the value of a floating currency
 - *Corporations*: FX markets are used to settle international trade transactions. Exporters may receive FX payments, while importers may make them. Corporations can hedge by buying currency forward
 - *Fund managers*: have large amounts of money to invest in various asset classes such as shares, property, bonds and cash. Owing to the large size of some fund managers’ transactions, their trades can have a significant effect on spot exchange rates
 - *Financial institutions*: these can include transactions involving:
 - Investment/divestment
 - Receipt/repatriation of profits
 - Funding of overseas operations
 - Client transactions
 - Providing liquidity to group companies
 - *Brokers*: act as intermediaries for buyers and sellers of currencies, receiving commissions for carrying out trades. Electronic dealing systems are replacing brokers in some instances
 - *Central banks*: can buy foreign currency on behalf of their governments or intervene in FX markets using a country’s foreign reserves. They also implement countries’ monetary policies

1.5 Calculating Currency Forward Exchange Rates

- Currency forwards are agreements to buy or sell a quantity of currency for delivery at some time in the future, at an exchange rate fixed at the time of the agreement



Currency Forward Exchange Rate Example

Calculate the forward exchange rate with the following information:

- GBP/USD spot rate: 1.35
- UK interest rate: 3% pa
- US interest rate: 0.75% pa

Answer

$$\begin{aligned}
 F &= 1.35 \times \frac{(1 + 0.0075)}{(1 + 0.03)} \\
 &= 1.32
 \end{aligned}$$

2. THE DERIVATIVES MARKET

2.1 What are Derivatives

- Derivatives are financial instruments that derive their value from an underlying asset or financial instrument.
 - *Commodity derivatives*: derive their value from an underlying commodity such as oil or gold
 - *Financial derivatives*: derive their value from financial instruments such as stocks, bonds, interest rates and currencies
- Derivatives markets are predominantly focused on financial derivatives although commodity derivatives come a close second. **Hong Kong** is principally a financial derivatives market.

2.2 Functions of Derivatives

- There are four functions of derivatives:
 - *Risk management*: a “price” can be fixed now protecting (hedging) against future adverse price movements
 - *Reduction in borrowing costs*: interest rate derivatives are used to reduce borrowing costs
 - *Increased flexibility*: dealers/traders are able to choose between trading derivatives or the underlying assets, providing trading strategy flexibility
 - *Arbitrage*: locking in to a risk-free profit, thereby keeping markets accurately priced
- Derivatives are a zero-sum game where one party will gain and the other will lose

2.3 Classification of Derivatives

2.3.1 Exchange-Traded vs Over-The-Counter Derivatives

- **Exchange-traded derivatives** are traded on an organized exchange. The oldest commodity exchange in the United States is the Chicago Board of Trade (CBOT), which trades agricultural commodity futures such as, corn, oats and soybeans, as well as financial derivatives
 - The most common exchange-traded derivative is the **future**
 - Examples of **exchange-traded derivatives** are:
 - *Index futures and options*: value derived from a stock market index
 - *Warrants*: value usually derived from underlying stocks
 - *Stock futures and options*: value derived from underlying stocks
 - *Treasury bill futures and options*: value derived from underlying benchmark treasury bills
 - *Treasury bond futures and options*: value derived from underlying benchmark treasury bonds
 - As with any exchange-traded transaction, **counterparty risk is eliminated** as the exchange will act as counterparty to both buyer and seller

- **Over-the-counter (OTC) derivatives** dominate the derivatives market, with much higher volumes than the exchange-traded market
- Unlike standardized exchange-traded derivatives, OTC derivatives are **tailor-made/customised** to the requirements of the counterparties

Exchange-traded Derivatives

- Standardized features
- Traded on exchanges
- Exchange acts as counterparty between buyer & seller
- No credit (counterparty) risk

OTC Derivatives

- Tailor-made features
- Set up by phone/email
- Direct contract between buyer and seller
- Credit (counterparty) risk

2.3.2 Futures

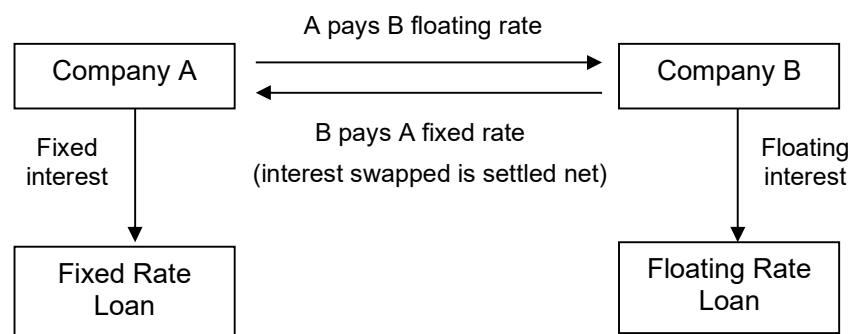
- An agreement to buy or sell an underlying asset at a specified price and future date
- **Exchange traded** with standardized features
- **Initial margin** is paid at the beginning of the contract, with margin calls following, if the position loses sufficient money – daily marking to market will trigger margin calls
- Futures are usually **closed out**, prior to expiry, with a buy being cancelled by a sell and vice versa. A small number are settled by physical delivery

2.3.3 Forwards

- Two parties agree to buy and sell an asset at an agreed price, at an agreed time in the future
- Unlike futures, forward contracts are traded OTC and terms are not standardized
- There are no margin/collateral requirements to assure contract performance, resulting in credit (counterparty) risk
- **Forward rate agreements (FRAs)** are forward contracts between two parties that lock them into an agreed fixed interest rate over a stated period of time

2.3.4 Swaps

- Two parties agree to exchange (swap) income streams derived from a portfolio of assets or liabilities
- The most popular types are **interest rate swaps** and **currency swaps**, which are traded **OTC** and are **highly customized**
- With interest rate swaps, loan principals are not swapped and net interest is exchanged between parties
- With currency swaps, principals are swapped and gross interest payments are exchanged
- The principles of a fixed for floating interest rate swap are outlined below:



2.3.5 Options

- A **call option** is the right to buy an underlying asset at a specified price (strike price) on or before a specified date (expiry date)
- A **put option** is the right to sell an underlying asset at a specified price (strike price) on or before a specified date (expiry date)
- Taking up the right is known as **exercising the option**
- The seller (writer) of an option has an **obligation** to sell/buy when the option is exercised by the buyer (holder)
- Unlike futures and forwards, the buyer of an option has **no obligation** to sell or buy the underlying asset, but will exercise if it is profitable to do so
- The price paid to purchase an option is known as the **option premium** and is paid to the option seller
- Examples of **exchange-traded options** are: options on shares; options on indices; and options on futures
- Examples of **OTC options** are: interest rate options; currency options; and exotic options
- A **swaption** is an option to enter into a swap agreement

3. THE DERIVATIVES MARKET IN HONG KONG

3.1 Structure of the Derivatives Market

- A number of derivatives products are traded on the Stock Exchange of Hong Kong and the Hong Kong Futures Exchange
- Details of exchange-traded contracts in Hong Kong, as per the HKEx Fact Book 2018, follow:

Contract	Daily Average Number of Contracts
HSI futures	234,424
HSI options	51,693
Mini-HSI futures	100,262
Mini-HSI options	10,005
Hang Seng China Enterprise Index (HSCEI) futures	152,241
HSCEI options	98,610
Stock futures	3,508
Stock options	517,395
CES China 120 index futures	3
One-month HIBOR futures	1
Three-month HIBOR futures	2
USD/CNH futures	7,135
London Aluminium Mini futures	3

- Hong Kong has a well-established OTC derivatives market trading a variety of products, including: FX forwards and swaps; interest rate FRAs; and interest rate swaps
- In April 2019, it was reported that the average daily turnover of the Hong Kong OTC interest-rate derivatives market was USD436 million (BIS survey)

3.2 Types of Derivatives

- Although derivative products continue to evolve, they can still be categorized as futures, forwards, swaps and options

3.2.1 Exchange-Traded Derivatives

- Contracts traded on the Hong Kong Futures Exchange are:
 - *Equity and index derivatives*: equity derivatives include stock futures and stock options. Index derivatives include:
 - HSI futures and options
 - Mini-HSI futures and options
 - HSCEI futures and options
 - Mini-HSCEI futures
 - Dividend futures
 - HSI Volatility Index futures (VHSI)
 - Global fund managers use **HSI index futures and options** to hedge or speculate on the direction of the Hong Kong market
 - **Mini-HSI derivatives** are smaller versions of HSI products designed for retail investors with a multiplier of HKD10 instead of HKD50 per index point
 - **HSCEI derivatives** are offered by HKEx to meet the growing needs of investors interested in China related securities
 - **Dividend futures** is the dividend payoff from stock index constituents for one calendar year
 - **VHSI futures** allow investors to manage volatility risk in HSI or Hong Kong's stock market in general
 - *Interest rate derivatives*: traded on the HKFE are 1-month and 3-month HIBOR futures contracts, allowing borrowers and lenders to lock into a fixed interest rate in times of interest rate instability
 - *Commodity derivatives: traded on the HKFE are:*
 - London Aluminium Mini Futures
 - London Zinc Mini Futures
 - London Copper Mini Futures
 - **London Metal Mini Futures** are the first batch of Renminbi (RMB)-traded commodities contracts to be launched in Hong Kong. They are designed to match Chinese physical players' exposure to RMB priced commodity contracts
 - **Currency derivatives traded on HKFE are:**
 - RMB currency futures
 - RMB currency options

3.2.2 OTC Derivatives

- Hong Kong traded OTC derivatives consist primarily of FX instruments such as currency swaps and forwards, as well as interest rate swaps and FRAs
- A significant number of international intermediaries benefit from swapping interest rate and currency exposures

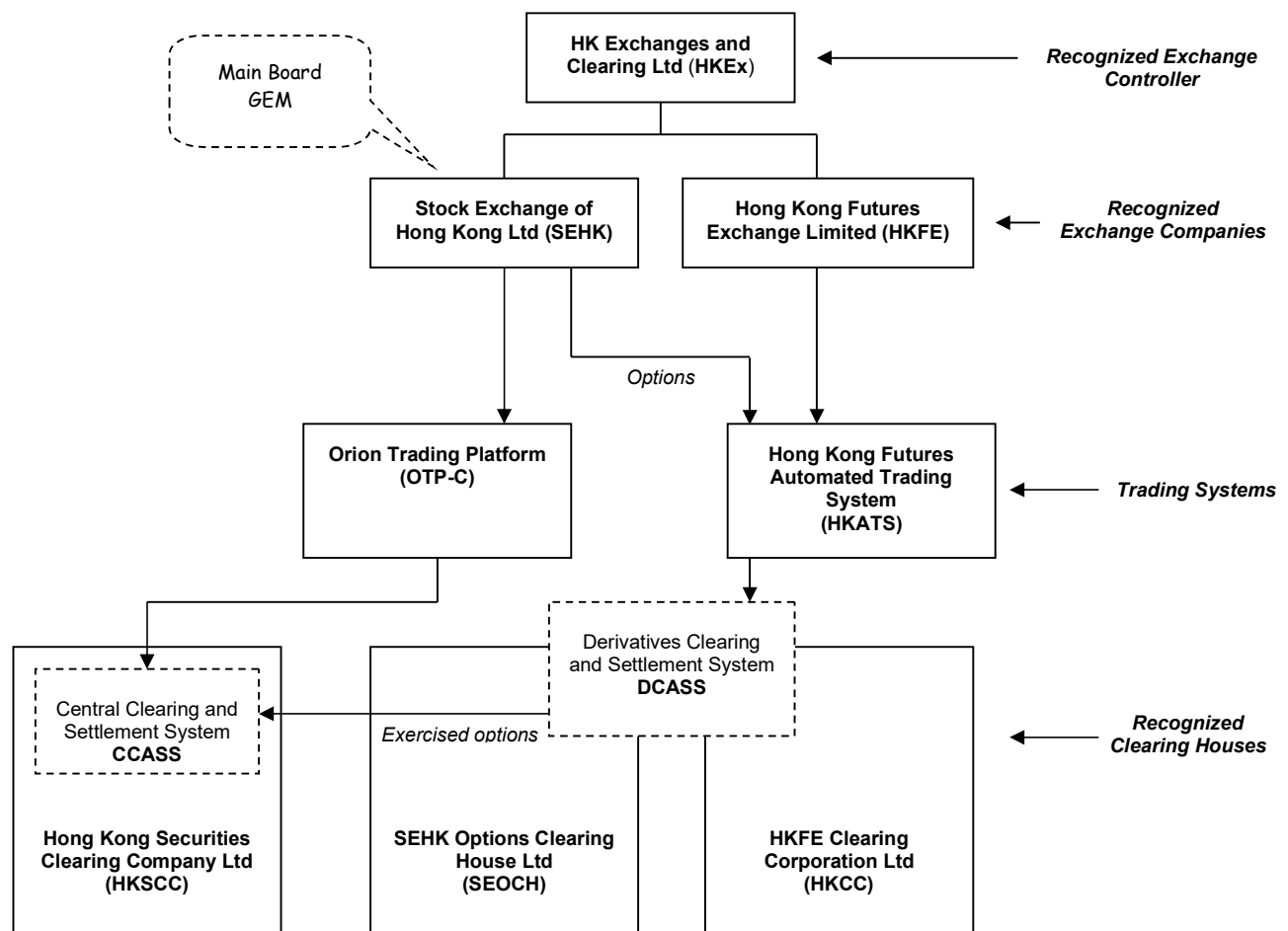
3.2.3 Exotic Derivatives

- Exotic derivatives available in Hong Kong include:
 - **Structured notes** have features similar to options or swaps. An example would be the Accumulator on stocks, which is a contract to buy stocks at specified intervals at a fixed strike price, subject to a “knock out” terminating the contract
 - **Equity-linked notes (ELNs)** have features of both options and debt
 - **HIBOR-linked deposits**, which are linked to HIBOR, have features of both options and debt

3.3 Participants in the Derivatives Market

- Participants in the derivatives market include:
 - *Borrowers and lenders* of the underlying assets using derivatives to hedge, speculate or arbitrage
 - *Dealers and traders* acting as principals or agents
- A notable trend has been the use of online trading in the derivatives market
- The derivatives market is monitored by the HKFE with prudential supervision provided by the SFC

3.4 Trading and Settlement Systems



- The **trading and settlement** of derivatives can be summarized as follows:
 - A derivatives trade (futures and options) is **matched** using **HKATS**
 - The trade is registered with SEOCH/HKCC through an Exchange Participant with clearing rights
 - The HKCC/SEOCH assumes the role of counterparty between buyers and sellers, known as **novation**, thereby eliminating any counterparty risk
 - **Initial margin** is the minimum required level of margin set by the HKFE. Firms may set higher margin levels for their clients
 - **Maintenance margin** represents the minimum amount of protection against potential losses at which the HKFE participant will allow its clients to carry a position or a portfolio. If the margin falls below the maintenance level, the account must be **re-margined back** to the initial margin level
 - **Cash-settled contracts** are cleared and settled by HKCC
 - **Physical delivery** involves the seller of a contract physically delivering the underlying asset to the buyer. The HKCC must be informed