Summary

-Multinational Finance-

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Chapter 1 – Multinational Financial Management: An Overview

MNC's are multinational corporations. They try to maximize the shareholder wealth (value of the entire MNC).

- Blockholder system: fewer, larger stakeholders in companies with corporate governance laws that seek to protect creditors and employees (Continental Europe).
- Market-based approach: more dispersed ownership and much greater emphasis on shareholders' rights (UK, US).

The agency problem is the conflict between managers and shareholders. In order to assure that managers maximize the shareholder wealth, there are costs to monitor. These costs are bigger for MNCs compared to domestic companies because:

- MNCs with subsidiaries scattered around the world may experience larger agency problems because monitoring managers of distant subsidiaries in foreign countries is more difficult.
- Foreign subsidiary managers raised in different cultures may treat the goals of its MNC in a different way from that intended by the senior management.
- The sheer size of the larger MNCs can create communication problems.
- The complexity of operations may result in decisions for foreign subsidiaries of the MNCs that are inconsistent with maximizing shareholder wealth.

Impact of management control:

- Centralized management style: can reduce agency costs because it allows managers of the parent direct control of foreign subsidiaries and therefore reduces the power of subsidiary managers.
- Decentralized management style: results in higher agency costs because subsidiary managers may make decisions that do not focus on maximizing the value of the entire MNC.
- Trade off (combined): allow subsidiaries to make the key decisions, but the parent's management monitors the decisions to ensure that they are in the best interests of the entire MNC.

Impact corporate control:

- Share options: to partially compensate the board members and executives.
- Hostile takeover threat: shareholders will sell the shares of companies they believe to be badly run. It's a threat to assure that managers make better decisions.
- Investor monitoring: a MNC whose decisions appear inconsistent with maximizing shareholder wealth will be subjected to shareholder activism.

Constraints interfering with the MNC's goal:

- Environmental constraints: local environmental laws create additional costs and might give reasons to locate elsewhere.
- Regulatory constraints: affect cash flows.

- Ethical constraints: different norms and values.

Theories of international business:

- Economic theories: does international business increase or decrease a nation's wealth?
  - Theory of absolute and comparative advantage: countries should produce the good in which they have a comparative advantage. That way, the total amount of produces goods will be higher and hence, each country is better off with trade.
  - Imperfect market theory with unrestricted mobility, costs and returns would be equalized and there wouldn't be comparative advantages. But it is restricted with property rights, quotas, etc.
- Business theories: why are firms motivated to expand their business internationally?
  - Product cycle theory: first the company creates a product that meets the local demands. Then, the company exports the product to meet local demands. Finally, when the market stabilizes, production will be located internationally to exploit costs savings.
  - Global strategies: larger investments can only be recouped if demand is sufficiently large and larger than the domestic consumer base.

International Business methods:

- International trade: export and import. There is limited risk because there's no big investment.
- Licensing: selling copyrights, patents, trademarks, etc. The company is selling the right to produce their good. A company can use the technology in foreign, without making a big investment and without transport costs.
- Franchising: franchisor provides a specialized sales or service strategy, support assistance and possibly an initial investment in exchange for periodic payments.
- Joint ventures: a venture is owned by two or more firms.
- Acquisitions: get fully control. Easy way to grow, but risks that you paid too much.
- Foreign subsidiaries: new operations in foreign countries to produce and sell their products. Requires a big investment.
- Special purpose vehicles: these are separate companies set up by the one or more sponsoring MNCs to exploit a particular project. A PV is legally and financially independent of the sponsors and other providers of capital. The success of the SPV depends on the project's ability to repay the contracted debt and reward the sponsors.

International opportunities:

- Investment opportunities:
  - Take advantage of immobile resources of foreign countries, foreign infrastructures and market.
  - Greater diversification of risk.
- Financial opportunities:
  - Take advantage of cheaper funding opportunities in foreign countries.
  - Access to international investors.
  - Take advantage of greater diversification of financial risk.

There is no summary of Opportunities in Europe and Opportunities in Asia. During the lectures, he never explained anything. → Page 16 – 20.

Exposure to international risk:

- Exposure to exchange rate movements: cash outflows may change. It's the risk for the exporters and importers.
- Exposure to foreign economies: demand depends on the economic conditions in foreign markets.
- Exposure to political risk: if government takes actions that affect the MNC's cash flows.

Overview of MNC's cash flows:

	Payments received	Payments made
Profile A: MNC focused on international trade.	Products and exports	Supplies and import
Profile B: MNC focuses on international trade and international arrangements.	Products, exports and services provided.	Supplies, import and expenditures resulting from services provided.
Profile C: MNC focused on international trade, international arrangements and direct foreign investments.	Products, exports, services provided and funds remitted back to UK parent.	Supplies, import, expenditures resulting from services provided and funds invested in foreign subsidiaries.

Valuation model for an MNC:

- Domestic model: $V = \sum_{t=1}^{n} \frac{[E(CF_{£,t})]}{(1+k)^t}$
  - V = MNC value
  - $E(CF_{£,t})$ = expected home currency value of cash flows from all projects undertaken by the MNC received at the end of period t.
  - k = overall cost of capital.
  - n = distant time period.

The value of the company depends on is the total of the expected dividends for each period, discounted by the cost of capital for that period.

Separation theorem: the independence of shareholder risk preferences from the risk of the projects undertaken by the MNC. Directors do not have to ask the shareholders whether or not a project is too risky, they simply have to value each project according to its market risk and keep the stock market informed of any significant changes to the MNC's overall risk.

- $E(CF_{£,t}) = \sum_{j=1}^{m}[E(CF_{j,t}) \; x \; E(ER_{j,t})$
  - $E(CF_{£,t})$ = expected value in home currency of cash flows across all projects for period t.
  - $CF_{j,t}$ = cash flow projects in currency j in time t.
  - $E(ER_{j,t})$ = expected exchange rate at time t for currency j in direct form.

Valuation mode where the domestic model and international model are combined:

$$V = \sum_{t=1} \frac{\sum_{j=1}^{n} [E(CF_{j,t}) \; x \; E(ER_{j,t})}{(1+k)^t}$$

Chapter 2 – International Flow Funds

The Balance of payments is a summary of transactions between domestic and foreign residents for a specific country over a specified period of time. *Double entry to bookkeeping: the domestic currency side involved in the transaction is recorded twice in the balance of payments in a similar manner. It therefore does not matter how much or what currency is involved on the other side of the transaction, only what is happening to the currency held by residents is of interest.*

- Current account: export and import payments for goods and services.
  - Balance of trade: export and import.
  - Balance of services: export and import.
  - Balance of income: dividend, interest and salary payments.
  - Current transfers: sundry transactions including payments and receipts from the EU and charity payments.
- Financial account: summary of investments in stocks and shares.
  - Direct foreign investment: investments in fixed assets in foreign countries that can be used to conduct business operations.
  - Portfolio investment: investments involving long-term financial assets between countries.

  Difference: with portfolio investment there is no participation in the management.

Overall balance of payments:

- Current account in surplus, financial account in deficit → developed country. A surplus on current account would be expected from such a productive economy. Exports exceed imports and hence the currency appreciates. A deficit on the financial account means that there is a net demand for foreign currency.
- Current account in deficit, financial account in surplus → developing country. A deficit on the current account due to the excess imports, which is financed by a demand by foreign currency for home currency to invest in deposit accounts, shares and bonds of the developed country.
- Current account and financial account in balance → being in balance is not an especially desirable goal.

International Trade flows:

- Trade agreements: to reduce trade restrictions. *GATT: general agreement on tariffs and trade.*
- Trade disagreements: countries seek to promote free trade so that their companies seeking to export goods are able to compete in foreign markets without discrimination. *WTO: World Trade Organization.*

- Different labor laws → transfer labor.
- Bribes/government subsidiaries → Solar Glass China example.
- Tax breaks → protect domestic companies.
- Exchange rate manipulation → keep currency low, better for export.
- Outsourcing → protection in countries with low wages.
- Trade policies → import goods with no child labor.

Factors affecting international trade flows:

- Inflation ↑ → competitiveness ↓ → export↓, import ↑ → current account ↓
- National income ↑ → demand ↑ → import ↑ → current account ↓
- Government restrictions ↑ → imports ↓ → current account ↑
- Exchange rate ↑ → value currency ↑ → prices ↑ → competitiveness ↓ → export ↓, import ↑ → current account ↓

Correcting a balance of trade deficit:

- Any policy that will increase foreign demand for the country's goods and services will improve its balance of trade position.
- A floating exchange rate could possibly correct any international trade imbalances: a deficit suggests that the country is spending more funds on foreign products than it is receiving from exports to foreign countries. Because it is selling its currency *to buy foreign goods) in greater volume than the foreign demand for its currency, the value of its currency should decrease. This decrease in value should encourage more foreign demand for its goods in the future.
- If a country's home currency weakens, its balance of trade deficit will not necessarily be corrected:
  - Demand of imports and exports is too inelastic.
  - Counter pricing by competitors: competitors lower their prices as well to remain competitive.
  - Impact of other weak currencies.
  - Prearranged international transactions: the price effects (increased costs of imports) are likely to occur more quickly than the more favorable quantity effects (reduction in quantity of imports and increase in the quantity of exports).
    J curve UK devaluation makes imports more expensive, balance worsens immediately → imports slow down due to higher prices → exports are cheaper and increase → exports are cheaper, imports more expensive. Improved balance if export volumes increase and import volumes decrease sufficiently.
  - Intercompany trade: importers and exporters that are under the same ownership have unique relationships.

International capital flows:

(Portfolio investments out: movements in mainly shares and bonds held abroad).

(Portfolio investments in: changes in liabilities to foreign share and bond holders).

- Factors affecting foreign direct investment:
  - Changes in restrictions → opportunities for developing countries.
  - Privatization → selling governmental operations to corporations.

    - Potential economic growth → high potential attracts FDI.
    - Exchange rates → prefer FDI in countries with exchange rate that will strengthen over time.
    - Tax rates → low taxes are preferred.
- Factors affecting international portfolio investment:
    - Tax rates on interest/dividend → prefer low taxes.
    - Interest rates → money to country with high interest rates, as long as the local currencies are not expected to weaken.
    - Exchange rates → when investors invest in a security in a foreign country, their return is affected by:
        - The change in the value of the security.
        - The change in the value of the currency in which the security is denominated. *If a country's home currency is expected to strengthen, foreign investors may be willing to invest in the country's securities to benefit from the currency movement.*

Agencies that facilitate international flows:

- International monetary fund (IMF):
    - Promote co-operation among countries on international monetary issues.
    - Promote stability in exchange rates.
    - Provide temporary funds to member counties attempting to correct imbalances of international payments.
    - Promote free trade.
- World Bank (International Bank for Reconstruction and Development):
    - Make loans to countries to enhance economic development.
- World Trade Organization (WTO):
    - Provides a forum for multilateral trade negotiations and to settle trade disputes.
- International Financial Corporation (IFC):
    - Loan policy that is more appropriate for less prosperous nations.
- Bank for international settlements:
    - Attempts to facilitate co-operation among countries with regard to international transactions.
- BRICS:
    - Brazil, Russia, India, China and South Africa → representative group of the major developing nations.

The increased revenues from international trade are a clear source of increased MNC's value.

Chapter 3 – International Financial Markets

Motives for using international financial markets:

- Motives for investing in foreign markets (investors):
    - Economic conditions: foreign firms might achieve higher performance.
    - Expected appreciation of foreign currencies gives higher return.

    - International diversification: risk reduction due to cross-border differences.
- Motives for providing credit in foreign markets (creditors):
    - High foreign interest rates give higher return.
    - Exchange rate expectations: beneficial when denominated currency appreciates against the creditor's home currency.
    - International diversification: reduces probability of simultaneous bankruptcy across its borrowers.
    - Crisis: some currencies are unlikely to suffer large devaluations.
- Motives for borrowing in foreign markets (borrowers):
    - Exchange rate expectations: depreciation means lower pay back in own currency.
    - Lower interest rates: cheaper to borrow.

Foreign exchange market: MNCs rely on the foreign exchange market to exchange their home currency for a foreign currency that is needed to purchase import or to use for FDI. They also may need the market to convert foreign revenues to their home currency.

Foreign exchange transactions:

- Spot market: immediate exchange at spot rate or using forwards, futures, swaps and options.
- Over-the-counter (OTC) stock market: trading takes place without a middleman. This is also called disintermediation.
- Use of the dollar in the spot market: many foreign transactions do not require an exchange of currencies but will accept foreign currency.
- Spot market structure: the exchange rate between two currencies should be similar across the various banks that provide foreign exchange services. If a bank begins to experience a shortage in a particular foreign currency, it can purchase that currency from other banks (interbank market).
- Spot market liquidity: the liquidity reflects the level of trading activity. The more willing buyers and sellers there are, the more liquid a market is.
- Forward transactions: a forward market for currencies enables an MNC to lock in the exchange rate at which it will buy or sell a currency. A forward contract specifies the amount of a particular currency that will be purchased or sold by the MNC at a specific future point in time and at a specified exchange rate.

Interpreting foreign exchange quotations:

- Direct and indirect quotations:
    - Direct quote: the number of units of home currency for one of the foreign currency.
    - Indirect quote: the number of units of foreign currency for one unit of the home currency.

  Indirect quotation = 1/direct quotation.
- Bid/ask spread of bank:
    - A bank's bid (buy) direct quote for a foreign currency will be less than its ask (sell) direct quote.
    - The bid/ask spread represents the differential between the bid and ask quotes.

- (ask – bid)/ask.
  - Factors that affect the spread:
    - (+) → order costs and inventor costs.
    - (-) → competition, volume and currency risk.

- Cross exchange rate:
  UK: £1
  Australia: A$2,30/£1
  Mexico: 20 New pesos/£1
  → A$2,30 = 20 New pesos (both worth £1)
  → A$1 = 8.70 New pesos.

Currency futures and options markets:

- Currency futures contract: specifies a standard volume of a particular currency to be exchanged on a specified settlement date.
  - Currency call option: provides the right to buy a specified currency at a specified price within a specific period of time. NO OBLIGATION.
  - Currency put option: provides the right to sell a specified currency at a specified price within a specific period of time. NO OBLIGATION.

International money market:

- Clearing house: attempt to enhance the markets' creditworthiness and efficiency.
- Market efficiency: refers to how well information is used in the marketplace. The currency market requires traders to look into the future, and using the information to hand, estimate the value of the currency. The value of a currency may fall if a current account deficit is larger than expected. The value may rise if there is an economic report that is better than expected.
- Market efficiency:
  - Weak form efficiency: currency prices move randomly.
  - Semi-strong efficiency: prices reflect all published information.
  - Strong form: prices reflect all published and private information.

Standardizing global bank regulations:

- Basel accord: uniform standardized guidelines. Banks must maintain share capital equal to at least 8 per cent of their assets.
- Basel II accord: to correct some inconsistencies that still existed.
  - Minimum capital requirements: share capital must be at least 8 per cent of special valuation of lending.
  - Supervisory review.
  - Market discipline.
  - Basel III accord: three pillars and further recommendations concerning their implementation.

Single European Act:

- Capital can flow freely throughout Europe.
- Banks can offer a wide variety of lending, leasing and securities activities in the EU.

- Regulations regarding competition, mergers and taxes are similar throughout the EU.
- A bank established in any one of the EU countries has the right to expand into any or all of the other EU countries.

International credit market:

- Euro credit loans: loans of 1 year or longer extended by banks to MNCs or government agencies in Europe.
- Syndicated loans: each bank within the syndicate participates in the lending. The interest rate depends on the currency denominating the loan, the maturity of the loan and the creditworthiness of the borrower.

International bond market:

- Bonds offer a fixed interest payment for a number of years or term, combined with a repayment of the nominal amount borrowed at the end of the term. There is no ownership interest and so no voting rights.
- MNCs may choose to issue bonds in the international bond markets for three reasons:
  - Issuers recognize that they may be able to attract a stronger demand by issuing their bonds in a particular foreign country rather than in their home country.
  - MNCs may prefer to finance a specific foreign project in a particular currency and therefore may attempt to obtain funds where that currency is widely used.
  - Financing in a foreign currency with a lower interest rate may enable an MNC to reduce its cost of financing, although it may be exposed to exchange rate risk.
- Foreign bonds are issued by a borrower foreign to the country where the bond is placed.
- Parallel bonds: the currency denominating each type of bond is determined by the country where it is sold.
- Eurobonds: bonds that are sold in countries other than the country of the currency denominating the bonds.
  - Usually issued in bearer form and coupon payments are made yearly.
  - Eurobonds are commonly denominated in a number of currencies.
  - Eurobonds are underwritten by a multinational syndicate of investment banks and simultaneously placed in many countries.
  - Eurobonds also have secondary market.

Comparing interest rates among currencies: rates vary between countries due to two factors:

- Different inflation rates.
- Different risk.

The demand schedule for loanable funds is downward sloping for any currency, which means that the quantity of funds demanded at any point in time is inversely related to the interest rate level.

The supply schedule for loanable funds in a given currency is upward sloping, which means that the total amount of loanable funds supplied at a given point in time is positively related to the interest rate level.

But higher interest rates are not always good:

- It often means higher inflation.
- Saving deposits in some of these countries are not insured, which presents another risk to foreign investors.
- Some emerging countries impose restrictions that discourage investors form investing funds there.

International stock markets: MNCs and domestic firms commonly obtain long-term funding by issuing share locally. Yet, MNCs can also attract funds from foreign investors by issuing shares in international markets. In addition, the issuance of shares in a foreign country can enhance the firm's image and name recognition there.

- Issuance of foreign shares in the USA: non-US corporations or governments that need large amounts of funds sometimes issue shares in the USA due to the liquidity of the new-issues market there.
  - American depository receipts: certificates representing bundles of shares. P = conv x P_{fs}x S.
    (price ADR = number of foreign shares for one ADR * price foreign shares * spot rate).
- Issuance of shares in foreign markets:
  - Impact of the euro: the adaptation of the euro by many European countries has encouraged MNCs based in Europe to issue shares.
  - Comparison of stock markets: financial institutions and other firms own a much larger proportion of the shares than individuals.

International Financial markets and the MNC:

- Foreign trade with business clients.
- Direct foreign investment or the acquisition of foreign real assets.
- Short-term investment or financing in foreign securities.

An MNC's parent may use international money or bond markets to obtain funds at a lower cost than they can be obtained locally. By doing so, it reduces its cost of debt and therefore reduces its weighted average cost of capital, which results in a higher valuation. If the MNC achieves a lower cost of capital, it can achieve a higher valuation.

Chapter 4 – Exchange Rate Determination

Exchange rate movements affect an MNC's value because they can affect the amount of cash inflows received from exporting or from a subsidiary, and the amount of cash outflows needed to pay for imports.

- Depreciation/devaluation: decline in a currency's value.
- Appreciation: increase in a currency value.

Percentage change in a foreign currency value: $\frac{S_t - S_{t-1}}{S_{t-1}} * 100\%$

Exchange rate equilibrium: the price of a currency is determined by the demand for that currency relative to supply.

- Demand for a currency:
  - Price of dollar ↓ → dollar demand ↑
  - Price of dollar ↑ → dollar demand ↓
- Supply of a currency for sale:
  - Price of dollar ↑ → price UK goods ↓ → import ↑ → supply of dollars ↑
  - Price of dollar ↓ → price UK goods ↑ → import ↓ → supply of dollars ↓
- Equilibrium: if the currency's sot market is liquid, its exchange rate will not be highly sensitive to a single large purchase of sale of the currency (deep markets). When the currency's spot market is illiquid, its exchange rate may be highly sensitive to a single large purchase or sale transaction.

Factors that influence exchange rates:

- Change in the differential between UK inflation and the foreign country inflation.
  - US inflation ↑ while UK inflation is low → demand dollars ↓ → depreciation → supply of dollars ↑ → equilibrium ↓.
- Change in the differential between the UK interest rate and the foreign country's interest rate.
  - UK interest rate ↑, while US interest rate constant → demand dollars ↓ → UK more attractive → supply of dollars ↑ → equilibrium ↓.
- Change in the differential between the UK income level and the foreign country's income level.
  - UK income ↑, while US income level remains unchanged →
    - Demand dollars ↑ → demand US goods ↑.
    - Supply of dollars constant.

    ➔ Equilibrium increases → dollar value ↑.
- Change in government controls.
  - Imposing foreign exchange barriers.
  - Imposing foreign trade barriers.
  - Intervening in the foreign exchange markets.
  - Affecting macro variables such as inflation, interest rates and income levels.
- Change in expectations of future exchange rates.
  - If high inflation is unexpected, it may cause currency traders to sell dollars, anticipating a future decline in the dollar's value. But if the high inflation was less than expected then traders may buy dollars because the situation is better than at first thought. If in line with expectations, there may be no movement.

Interaction of factors: an increase in income levels sometimes causes expectations of higher interest rates. So, even though higher income level can result in more imports, it may also indirectly attract more financial inflows.

Chapter 5 – Currency Derivatives

Forward market:

- Facilitates the trading of forward contracts on currencies. A forward contract is an agreement between a corporation and a commercial bank to exchange a specified amount of a currency at a specified exchange rate on a specified date in the future.
- MNCs use forward contracts to hedge their imports.

Forward rates:

- Bid/ask spread: the spread is wider for forward rates of currencies of developing countries.
- Premium: the foreign currency is more expensive than the current cost as given by the spot rate.
- Discount: the foreign currency is less expensive than the current cost as given by the spot rate.

The premium and discount are usually expressed as a percentage movement from the current spot price. → $F_{t+1,t} = S_t(1+p)$ → $\frac{F}{S} - 1 = p$

When the forward rate is less than the spot rate, the forward premium is negative (discount).

Forward rates typically differ from the spot rate for any given currency. The difference is dictated by arbitrage possibilities. It should not be possible to make a riskless profit through buying and selling currencies. The arbitrageur could borrow in the country with the lower interest rate, invest in the country with the higher interest rate and arrange a conversion back at the forward rate.

Because of the arbitrage possibilities, the forward exchange rate between any two currencies will depend on the interest rates in those countries and the current spot rate. Any movement over time in the spot rate and the interest rates of the two countries will affect the forward rate.

The forward rate is only a good predictor of the spot rate in so far as the difference in interest rates and the spot rate is a good predictor of the future spot rate.

In some cases, an MNC may desire to offset a forward contract that is previously created. Closing out is the underlying process that determines the cost.

- Original contract: bank A is selling 1 million pesos to M at time t for an agreed rate (M has a forward contract to buy from A).
- To close out: M takes out a forward contract to sell 1 million pesos to B. So, Bank B is buying 1 million pesos from M at time t.
- Closing out position: Bank A can sell 1 million pesos directly to Bank B at time t for the rate agreed between M and B. M will have already settled with A any difference between the price with A and the price with B.

A swap transaction involves a spot transaction along with a corresponding forward contract that will ultimately reverse the spot transaction.

Non-deliverable forward contracts (NDF):

- It is frequently used for currencies in emerging markets.
- It's an agreement regarding a position in a specified amount of a specified currency, a specified exchange rate, and a specified future settlement date.
- An NDF does not result in an actual exchange of the currencies at the future date. Instead, one party to the agreement makes a payment to the other party based on the exchange rate at the future rate.
- The purpose is to protect against changes in the value of the currency. An NDF provides payment based on the change to the value of the currency, effectively locking in the purchaser to a fixed rate.
- So, if an MNC is buying a currency and takes out an NF and the rate rises above the agreed future rate, the MNC will receive compensation for the difference. If there were a fall in the value of the currency, the MNC would have to pay the difference against the total cost would be the equivalent of buying at the agreed future rate.

Currency futures contracts:

- Contracts specifying a standard volume of a particular currency to be exchanged on a specific settlement date. Currency futures contracts are similar to forward contracts in terms of their obligation, but differ from forward contracts in the way they are traded.
- Active trading determines the price of a futures contract.
- Currency futures contracts are available for several widely traded currencies at the Chicago Mercantile Exchange (CME).
- When participants take a position, they need to establish an initial margin which may represent as little as 10 per cent of the contract value. Depositing such funds with the clearing house ensures that losses and gains are debited or credited to the customer account on the day they occur (marking to market).

	forward	Futures
Size of contract	Tailored to individual needs.	Standardized.
Delivery date	Tailored to individual needs.	Standardized.
Participants	Banks, brokers and multinational companies. Public speculation not encouraged.	Banks, brokers and multinational companies. Qualified public speculation encouraged.
Security deposit	None as such, but compensating bank balances or lines of credit required.	Small security deposit required.
Clearing operation	Handling contingent on individual banks and brokers, no spate clearing house function.	Handled by exchange clearing house. Daily settlements to the market price.

Marketplace	Over the telephone worldwide.	Central exchange floor with worldwide communication.
Regulation	Self-regulating.	Commodity futures trading commission; national futures association.
Liquidation	Most settled by actual delivery. Some by offset, at a cost.	Most by offset, very few by delivering.
Transaction costs	Set by spread between bank's buy and sell prices.	Negotiated brokerage fees.

Currency futures contracts are similar to forward contracts in that they allow a customer to lock in the exchange rate at which a specific currency is purchased or sold for a specific date in the future. But currency futures contracts are sold on an exchange, while each forward contract is negotiated between a firm and a commercial bank over a telecommunications network.

The price of currency futures is determined by arbitrage. You buy the asset now and put it in storage. For currencies, the storage cost (carry cost) is the borrowing cost less interest earned through investment during the storage period. The futures price should be identical as the end result is the same.

The CME imposed margin requirements to cover fluctuations the value of a contract, meaning that the participants must make a deposit with their respective brokerage firms when they take a position. Daily settlement is required because it ensures the creditworthiness of both parties.

Speculation with currency futures:

- Currency futures contracts are often purchased by speculators who are simply attempting to capitalize on their expectation of a currency's future movement.
- If the currency futures market is efficient, the futures price for a currency at any given point in time should reflect all available information. Both the spot rate and the futures rate will be derived from the same information set. The only difference is that expected events of significance will be discounted to the future date for the futures and the present for the spot.
- Arbitrage ensures that the futures price differs from the spot by the interest rate differential.

How firms use currency futures:

- The purchase of futures contracts locks in the price at which a firm can purchase a currency.
- The sale of futures contracts locks in the price at which a firm can sell a currency.

Closing out a futures position:

- If a firm holding a currency futures contract to purchase decides before the settlement date that it no longer wants to maintain its position, it can close out the position by selling an identical futures contract at a later date.
  With forward contracts closing out was unusual, with futures, closing out is normal.
  - Futures contract is much used for speculation where the interest is in the currency movements rather than actual buying or selling of the currency.
  - A futures contract has fixed settlement dates.

If the spot rate of a currency increases substantially over a 1-month period, the futures price is likely to increase by about the same amount. In this case, the purchase and subsequent sale of a futures contract would be profitable.

Currency options market

- Currency options provide the right but not the obligation to purchase or sell currencies at specified prices.
- The main difference with futures and forward contracts is that, in the case of an option, a range of prices are offered and also the purchaser does not have to fulfill the contract, which can be allowed to lapse.
- MNCs use this as an insurance policy → when buying foreign currency an option contract can be used to ensure that the company will not have to pay more than a certain amount. When selling foreign currency, a minimum value can be established. Thus an MNC can limit its exposure to exchange rate fluctuations but not eliminate exposure as with a fully covered futures position.
- Two types of options:
  - American option: allows purchase or sale at any time before the settlement/exercise date.
  - European option: allows purchase or sale of the currency only at the exercise date.
- Over-the-counter market: unlike the currency options traded on an exchange, currency options are tailored to the specific needs of the firm.

Currency call options:

- Grants the right to buy a specific currency at a designated price within a specific period of time if it is an American option or at a certain time if it is a European option. The price at which the owner is allowed to buy that currency is known as the exercise price/strike price and there are monthly expiration dates for each option.
- Desirable when one wishes to lock in a maximum price to be paid for a currency in the future. If the spot rate of the currency rises above the strike price, owners of call options can exercise their options by purchasing the currency at the strike price, which will be cheaper than the prevailing spot rate.
- differences with futures contract:
  - Futures contracts do not offer a range of prices; forward en futures only offer the expected price.
  - Forward and future contracts require an obligation to buy or sell, while the currency option does not. The owner can choose to let the option expire on the expiration date without even exercising it.

    - Owners of expired call options will have lost the premium they initially paid, but that is the most they can lose. Losses are potentially unlimited for purchasers of futures contracts – though losses can be halted by closing out.
- A currency call option is said to be
    - In the money when the present exchange rate exceeds the strike price.
    - At the money when the present exchange rate equals the strike price.
    - Out the money when the present exchange rate is less than the strike price.

Factors affecting currency call option premiums:

- The premium represents the cost of having the right to buy the underlying currency at a specified price. For MNCs that use currency call options to hedge, the premium reflects a cost of insurance or protection for MNCs.
- $C = f(S - X, T, \sigma, r_{f(\frac{H}{F})}$
    - S – X = the difference between the spot exchange rate and the strike price.
    - T = time to maturity.
    - σ = volatility of currency, as measured by the standard deviation of the movements.
    - $r_{f(\frac{H}{F})}$ =risk free rate in the home and foreign country.
- The higher the spot rate relative to the strike price, the more likely a payout.
- The spot rate has a greater chance of rising high above the strike price if it has a longer period of time to do so.
- The greater the variability of the changes in currency, the higher the probability that the spot rate will be above the strike price. Thus, more volatile currencies have higher call option prices.

How firms use currency call options:

- Using call options to hedge future payables.
- Using call options to hedge project bidding and hence to lock in the cost of potential expenses.
- Using call options to hedge target bidding and hence to hedge a possible acquisition.

Speculating with currency call options:

- Individuals may speculate in the currency options market based on their expectations of the future movements in a particular currency. Speculators who expect that a foreign currency will appreciate can purchase call options on that currency.
- The seller of a call option is obliged to sell a specified currency at a specified price. It is the buyer of the option who decides whether or not the option is exercised, not the writer.
- The only way a currency call option will be exercised is if the spot rate is higher than the strike price. The seller will receive the premium when the option is purchased and will profit by the entire amount if the option is not exercised.
- A speculator can profit from selling an option which is in the money. The premium for such options will include the profit that can be made on the option now plus an extra amount to pay for the risk of even higher profits being due at the actual maturity date.

Further points:

- When brokerage fees are ignored, the currency call purchaser's gain will be the seller's loss.
- Where the spot rate is above the strike price, the call option will be exercised.
- The purchaser of the call option is the party that decides whether or not the option is to be exercised.

Currency put options:

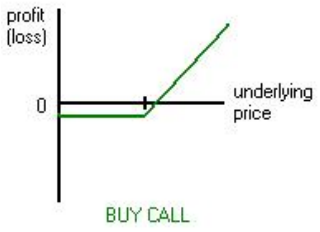
- The purchaser of a currency put option receives the right to sell a currency at a specified price within a specified period of time for an American option or at the settlement date in the case of a European option.
- A currency put option is said to be:
  - In the money when the present exchange rate is less than the strike price.
  - At the money when the present exchange rate equals the strike price.
  - Out the money when the present exchange rate exceeds the strike price.

Factors affecting currency put option premiums:

- $P = f(S - X, T, \sigma, r_{f(\frac{H}{F})}$
  - S – X = the difference between the spot exchange rate and the strike price.
  - T = time to maturity.
  - σ = volatility of currency, as measured by the standard deviation of the movements.
  - $r_{f(\frac{H}{F})}$ =risk free rate in the home and foreign country.
- The lower the spot rate relative to the strike price, the more valuable the put option will be, because there is a higher probability that the option will be exercised.
- The longer the time to expiration, the greater the put option premium as a payout is more likely due to the greater uncertainty of prices over time.
- The greater the variability, the greater the put option premium will be.

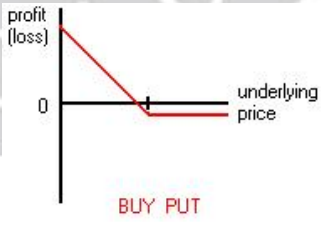
Speculating with currency put options:

- Individuals may speculate with currency put options based on their expectations of the future movements in a particular currency. If you expect the currency to depreciate, you can purchase put options. If you expect the currency to appreciate, you can sell a put option.



Speculating with put and call option →

- Use both a put a call option at the exercise price in protect against



combined straddle. option and same order to volatility.

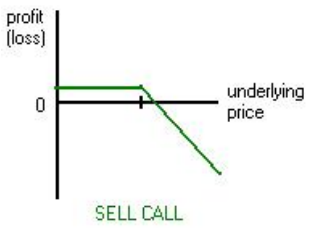
Contingency graphs for currency options measure the profit or loss per unit.

- Purchasing a call option:

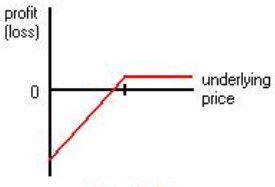
- Selling a call option:

- Selling a put option:

- Buying a put option:



SELL CALL



SELL PUT

Conditional currency options:

- A currency can be structured with a conditional premium, meaning that the premium paid for the option is conditioned on the actual movement in the currency's value over the period of concern. This enables the instrument to compete more with futures where there is no premium.

Chapter 6 – Exchange Rate History and the Role of Government

Exchange rate systems:

- Fixed exchange rate systems: exchange rates are either held constant or allowed to fluctuate only within very narrow boundaries. If an exchange rate begins to move too much, governments intervene.
  - Devaluation: downward adjustment of the exchange rate by the central bank.
  - Depreciation: downward change caused by exchange rate markets.
  - Revaluation: upward adjustment of the exchange rate by the central bank.
  - Appreciation; upward change caused by the exchange rate markets.

  Advantages:
  - MNCs can engage in international trade without worrying about the future exchange rate.

  Disadvantages:
  - Possibility that the government will devalue or revalue its currency.
  - It makes each country more vulnerable to economic conditions in other countries.

- Managed float exchange rate system: exchange rates are allowed to fluctuate on a daily basis and there are no official boundaries. The government can intervene to prevent their currency from moving too far in a certain direction.

- Pegged exchange rate system: the home currency's value is pegged to a foreign currency or a basket of foreign currencies.
  - Currency board: system for pegging the value of the local currency to some other specified currency. The board must maintain currency reserves of the specified currency for all the local currency that it has issued. A currency can stabilize a currency's value.
  - A currency board is effective only if investors belief that it will last. If investors expect that market forces will prevent a government from maintaining the local currency's exchange rate, they will attempt to move their funds to other countries where they expect the local currency to be stronger.
  - A country that uses a currency board does not have complete control over its local interest rates, because it rates must be aligned with the interest rates of the currency to which it is tied.
  - A currency that is pegged to another currency cannot be pegged against all other currencies. If it is pegged to the US dollar, it is forced to move in tandem with the dollar against other currencies.

- Dollarization: replacement of a foreign currency with the US dollars.

- Freely floating exchange rate system: exchange rate values are determined by market forces without intervention by governments. This system allows complete flexibility.
  Advantages:
  - A country is more insulated from the inflation of other countries.
  - A central bank is not required to constantly maintain exchange rates within specified boundaries.
  - Governments can implement policies without concern as to whether the policies will maintain the exchange rates within specified boundaries.

  Disadvantages:
  - Countries that initially experienced economic problems may be insulated from the problems experienced in other countries.
  - It's cheaper for governments, but more expensive for industry.

Reasons for government intervention:
- To smooth exchange rate movements.
- To establish implicit exchange rate boundaries.
- To respond to temporary disturbances.

Direct intervention:
- To strengthen the Euro's value, the ECB draws on its reserves of foreign currency to buy Euros. As a result, there is an outward shift in the demand for pounds in the foreign exchange market.
- To weaken the Euro's value, the ECB sells Euros for foreign currency, which causes an outward shift in the supply of pounds for sale in the foreign exchange market.
- Sterilized intervention: the CB intervenes in the foreign exchange market and simultaneously engages in offsetting transactions in the treasury securities markets. As a result, the money supply is unchanged.
- Non-sterilized intervention: when CB intervenes in the foreign exchange market without adjusting for the change in the money supply.
- CBs attempt to intervene without being noticed.

Indirect intervention:
- A CB can affect its currency's value indirectly by influencing the factors that determine it.
  - Government adjustment of interest rates: when countries experience substantial net outflows of funds, they commonly intervene indirectly by raising interest rates to discourage excessive outflows of funds and therefore limit any downward pressure on the value of their currency. However, this strategy adversely affects local borrowers and may weaken the economy.
    The central bank can attempt to lower interest rates by increasing the money supply. Lower interest rates tend to discourage foreign investors from investing in home securities, thereby placing downward pressure on the value of the home currency.

- Government use of foreign exchange controls: a control exists where a resident has to obtain permission to buy foreign currency and where a foreign national needs permission to buy a currency.

Exchange rate target zones:

- An initial exchange rate would be established, with specific boundaries surrounding that rate. It's wider than a fixed exchange rate system.
- It stabilizes international trade patterns by reducing exchange rate volatility.
- Governments are responsible for intervening to maintain their currencies within the zones. If the zones were sufficiently wide, government intervention would rarely be necessary.

Intervention as policy tool:

- The government of any country can implement its own fiscal and monetary policies to control its economy. It may attempt to influence the value of its home currency in order to improve its economy.
- A weak home currency can increase foreign demand for domestic goods.
  Export ↑ → production ↑ → unemployment ↓, inflation ↑.
- A strong currency can increase the demand for foreign goods.
  Import ↑ → domestic competition ↑ → inflation ↓, unemployment ↑.

Chapter 7 – International Arbitrage and Interest Rate Parity

International arbitrage: arbitrage can be defined as making profit from a discrepancy in quoted prices. It does not involve risk and does not require an investment of funds to be tied up for any length of time.

- Locational arbitrage: the process of buying a currency at the location where it is priced cheaply and immediately selling it at another location where the price is higher. Possible when a bank's buying price (bid price) is higher than another bank's selling price (ask price) for the same currency.
  - Investment / lowest ask price * highest bid price.
  - Gains are based on the amount of money used to capitalize on the discrepancy, along with the size of the discrepancy.
- Triangular arbitrage: cross exchange rates represent the relationship between two currencies that are different from the chosen base currency. It's possible when a cross exchange rate quote differs from the rate calculated from spot rate quotes
  - £0.50 = $1 → £1 = $2
    £0.80 = €1 → £1 = €1.25
    therefore: $2 = €1.25 → $1.60 = €1.
  - The bid/ask spread incurs transaction costs that can reduce or eliminate the gains from triangular arbitrage.

- Covered interest arbitrage: the process of capitalizing on interest rate differences between two countries while covering exchange rate risk. You should compare the forward premium with the interest rate differential:
  - Forward premium: $p = \frac{F}{S} - 1$
  - Interest rate differential: $\frac{1+i_h}{1+i_f} - 1$
    - When the premium is higher than the differential, the domestic capital will fly to the foreign economy. What an investor loses on the lower interest rate from a foreign investment is more than compensated by a high forward premium.

Comparison of arbitrage effects:

The threat of:

- Locational arbitrage ensures that quoted exchange rates are similar across banks in different locations.
- Triangular arbitrage ensures that exchanging money via another currency is in line with direct conversion.
- Covered interest arbitrage ensures that forward exchange rates offset interest rate differentials.

Interest rate parity (IRP):

- Once market forces cause interest rates and exchange rates to adjust such that covered interest arbitrage is no longer feasible, there is an equilibrium state referred to as IRP.
- Derivation of IRP:
  - The forward rate is at premium when the foreign currency is more expensive in the future and at discount when the foreign currency is less expensive in the future.
  - IRP maintains that the return from investing abroad and converting back to the home currency at the forward rate is the same as investing domestically. A currency forward premium or discount should exactly offset any difference in interest rates otherwise arbitrage profits will be possible.
- The investor's return from using covered interest arbitrage:
  - The amount of the home currency that is initially invested (A_h)
  - The spot rate (S) in direct form (home currency to a single unit of foreign currency).
  - The interest rate on the foreign deposit (i_f)
  - The forward rate (F) in home currency to a single unit of foreign currency.
- $A_n = (A_h/S)\,(1 + i_f)\,F$

  $F = S(1 + p)$

  $A_n = (A_h/S)\,(1 + i_f)\,[S(1 + p)]$

  $A_n = A_h(1 + i_f)(1 + p)$

  $R = \frac{A_n - A_h}{A_h}$

  $R = \frac{A_h(1+i_f)(1+p) - A_h}{A_h}$

  $R = (1 + i_f)(1 + p) - 1$

  $R = i_h$

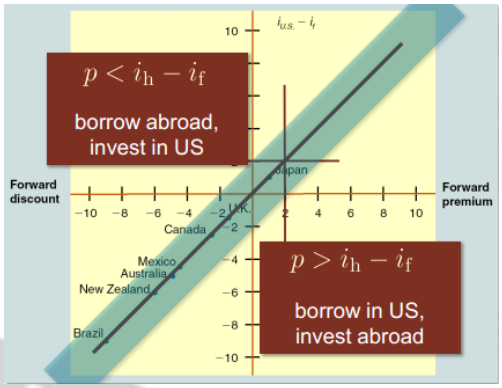
  $(1 + i_f)(1 + p) - 1 = i_h$

  $(1 + i_f)(1 + p) = 1 + i_h$

  $(1 + p) = \frac{(1+i_h)}{(1+i_f)}$

  $p = \frac{1+i_h}{1+i_f}$

- Locational arbitrage capitalizes on discrepancies in exchange rates between two locations.
- Triangular arbitrage capitalizes on discrepancies in cross exchange rates.
- Covered interest arbitrage capitalizes on discrepancies between the forward rate and interest rate differentials.



Graphic analysis of interest rate parity:

- Points representing a discount: for all situations in which the foreign interest rate exceeds the home interest rate, the forward rate should exhibit a discount approximately equal to that differential.
- Points representing a premium: for all situations in which the foreign interest rate is less than the home interest rate, the forward value of the foreign currency should exhibit a premium approximately equal to that differential.
- Points representing IRP: any points lying on the diagonal line cutting the intersection of the axes represent IRP.

Various empirical studies indicate that IRP generally holds, but some deviations from IRP have been found (they are in general not large enough to make covered interest arbitrage worthwhile). This is due to the characteristics of foreign investments:

- Transaction costs: if an investor wishes to account for transaction costs, the actual point reflecting the interest rate differential and forward rate premium must be farther from the IRP line to make covered interest arbitrage worthwhile.
- Political risk: investing funds overseas is subject to political risk.
- Differential tax laws.
- Changes in forward premium: changes in the forward premium will match changes in the relative interest rates. What you gain on the interest rate you lose on the exchange rate.

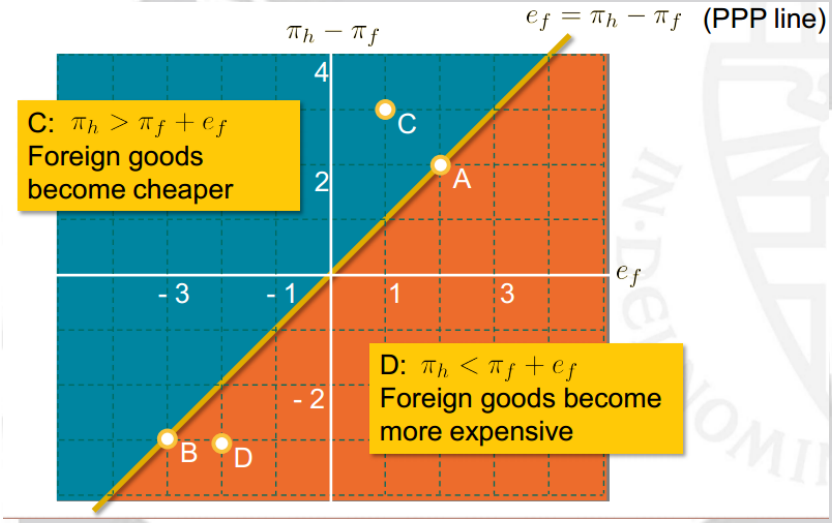
Chapter 8 – Relationships among Inflation, Interest Rates and Exchange Rates

Purchasing power parity: the theory bases its predictions of exchange rate movements on changing patterns of trade due to different inflation rates between countries.

- Absolute PPP: based on the notion that without international trade barriers and transport costs, consumers shift their demand to wherever prices are lower. It suggests that the prices of the same basket of products in two different countries should be equal when measured in a common currency.
- Relative PPP: accounts for the possibility of market imperfections such as transportation costs, tariffs and quotas. Because of these market imperfections, prices of the same basket of products in different countries will not necessarily be the, but the rate of change in the prices should be similar when measured in a common currency.

Derivation of the PPP:

- $P_h(1 + I_h)\ and\ P_f(1 + I_f)$
  - If home inflation is greater than foreign inflation and the exchange rate between the currencies does not change, then the consumer's purchasing power is greater when buying in foreign instead of buying at home. PPP does not exist.
  - If home inflation is smaller than foreign inflation and the exchange rate between the currencies does not change, then the consumer's purchasing power is greater when buying at home instead of buying in foreign. PPP does not exist.
- The PPP theory suggests that the exchange rate will not remain constant but will adjust to maintain the PPP. If inflation occurs and the exchange rate of the foreign currency changes, the foreign price index from the home consumer's perspective becomes: $P_f(1 + I_f)(1 + e_f)$



- The percentage change in the foreign currency should change to maintain parity between the new price indexes on the two countries.

$P_f(1 + I_f)(1 + e_f) = P_h(1 + I_h)$

$(1 + e_f) = \frac{P_h(1+I_h)}{P_f(1+I_f)}$

$e_f = \frac{P_h(1+I_h)}{P_f(1+I_f)} - 1$

- If $I_h > I_f$, → this implies that the foreign currency will appreciate when the home country's inflation exceeds the foreign country's inflation.
- If $I_h < I_f$ → this implies that the foreign currency will depreciate when the foreign country's inflation exceeds the home country's inflation.

Example:

US	inflation	=		9
UK	inflation	=		5
I_h	–	I_f	=	-4.

So depreciation of 4% for US dollar.

The real exchange rate: the exchange rate adjusted for inflationary effects in the two countries of concern. If the real exchange rate increases from 120 to 132, there has been an increase in purchasing power by 10 per cent → (132-120)/120 = 0.10

- Causes of change in real value of currency:

- A change in the exchange rate
- Relative inflation.

- $\Delta R_h = e_h + (I_h - I_f)$
  - ΔR_h=percentage change in the real value of the home currency
- PPP implies that there is no change in the real value of the home currency:
  $\Delta R_h = 0$
  $e_h = I_f - I_h$
  e_h is roughly equal to $-e_f$, so:
  $-e_f = I_f - I_h$
  $e_f = I_h - I_f$ → PPP formulation.

Purchasing power parity in the long run:

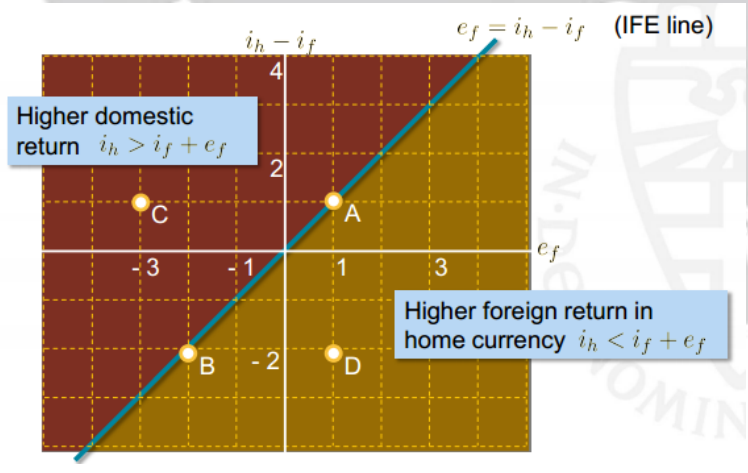
- Constant/stationary: any deviation from the mean is temporary.
- Non stationary: it does not tend to revert to some mean level and therefore cannot be viewed as constant in the long run.

International Fisher Effect (IFE):

- It uses interest rates to explain why exchange rates change over time.
- Closely related to the PPP theory because interest rates are often highly correlated with inflation rates.
- The IFE theory suggests that foreign currencies with relatively high interest rates will depreciate in the same way as currencies with high inflation rates.
- The actual return to investors who invest in money market securities in their home country is simply the interest rate offered on those securities. The actual return to investors who invest in a foreign money market security depends on not only the foreign interest rate but also the percentage change in the value of the foreign currency denominating the security.
  - $r_f = (1 + I_f)(1 + e_f) - 1$
- According to the IFE, the effective return on a foreign investment should be equal to the effective return on a domestic investment. Therefore, the IFE suggest that the expected return on a foreign money market investment is equal to the interest rate on a local money market investment:
  - $E(r_f) = i_h$
    $(1 + I_f)(1 + e_f) = (1 + i_h)$
    $(1 + e_f) = \frac{(1+i_h)}{(1+i_f)}$
    $e_f = \frac{(1+i_h)}{(1+i_f)} - 1$
- When $i_h > i_f$, then e_f will be positive because the lower foreign interest rate reflects lower inflationary expectations in the foreign country. That is, the foreign currency will appreciate when the foreign interest rate is lower than the home interest rate.
- When $i_h < i_f$, then e_f will be negative. That is, the foreign currency will depreciate when the foreign interest rate exceeds the home interest rate. This depreciation will reduce the return on foreign securities from the perspective of investors in the home country, making returns on foreign securities no higher than returns on home currency.

- Points on the IFE line reflects exchange rate adjustments to offset the differential in interest rates.
- Points below the IFE line reflects the higher returns from investing in foreign deposits.
- Points above the IFE line reflects returns from foreign deposits that are lower than the returns possible domestically.

Ife barely occurs, because differences in interest rates are often small.



Chapter 9 – Forecasting Exchange Rates

Why firms forecast exchange rates

- Hedging decisions. MNCs constantly face the decision as to whether to hedge future payments and receipt in foreign currencies.
- Short-term financing decisions. When large corporations borrow, they have access to several different currencies. The currency they borrow will ideally:
  - Exhibit a low interest rate.
  - Decline in value over the financing period and therefore be cheaper to repay.
- Short-term investment decision. Corporations sometimes have a substantial amount of excess cash available for a short time period. Large deposits can be established in several currencies. The ideal currency for deposits will:
  - Exhibit a high interest rate.
  - Strengthen in value over the investment period.
- Capital budgeting decision. When an MNC's parent assesses whether to invest funds in a foreign project, the firm takes into account that the project may periodically require the exchange of currencies.
- Earnings assessment. The parent's decision about whether a foreign subsidiary should reinvest earnings in a foreign country or remit earnings back to the parent may be influences by exchange rate forecasts. In a strong foreign currency is expected to weaken substantially against the parent's company, the parent may prefer to convert the foreign earnings before the foreign currency weakens.
- Long-term financing decisions. Corporations that issue bonds to secure long-term funds may consider denominating the bonds in foreign currencies. They prefer the currency borrowed to depreciate over time against the currency that are receiving from sales. T

Effective Market Hypothesis (EMH):

News = actual information – expected information.

- Weak form efficiency: the prices reflect estimates of the future value of the currency. All known information about the future is discounted into the currency price. Historical information has no role to play in explaining a change in price. Implications:
  - Technical analysis attempts to find patterns in exchange rates, which doesn't happen here.
  - The movement of the exchange rate should be random as there can be no pattern.
  - If the movement is random, the changes should be normally distributed.
- Semi-strong efficiency: the exchange rate reacts in an immediate and unbiased way to all publicly available information. Price movements are reactions to new information available.
- Strong-for efficiency: all relevant public and private information is already reflected in today's exchange rates.

Forecasting techniques:

- Technical: Involves the use of historical exchange rate data to predict future values based on patterns in past prices. Corporations tend to make only limited use of

technical forecasting because it typically focuses on the near future, which is not very helpful for developing corporate policies. Technical forecasting is related to EMH because you use the information that is available to forecast.

- Fundamental: Based on fundamental relationships between economic variables and exchange rates. Given current values of these variables along with their historical impact on a currency's value, corporations can develop exchange rate projections.
  - Use of sensitivity analysis: firms recognize that poor forecasts of these factors can cause poor forecasts of the exchange rate movements, so they may attempt to account for the uncertainty by using sensitivity analysis.
  - Use of PPP for fundamental forecasting: PPP specifies the relationship between the inflation differential and the exchange rate. The PPP states that the currency of the relatively inflated country will depreciate by an amount that reflects that country's inflation differential. But problems:
    - The timing of the impact of inflation fluctuations on changing patterns, and therefore on exchange rates, is not known with certainty.
    - Data used to measure relative prices of two countries may be somewhat inaccurate.
    - Barriers to trade can disrupt the trade patterns that should emerge in accordance with PPP theory.
    - Other factors, such as the interest rate differential between countries, can also affect the exchange rates.
  - Limitations of fundamental forecasting:
    - The precise timing of the impact of some factors on a currency's value is not known.
    - Some factors exhibit an immediate impact on exchanges.
    - Some factors that deserve consideration in the fundamental forecasting process cannot be easily quantified.
    - Coefficients derived from the regression analysis will not necessarily remain constant over time.
- Market-based: the process of developing forecasts from market indicators. This is based on:
  - Spot rate: today's spot rate may be used as a forecast of the spot rate that will exist on a future date. So there will be no change in the exchange rate.
  - Forward rate: when there is a large difference in inflation, the interest rate difference is likely to be significant. The forward rate will capture this information and quote a discount in the value of the currency with the higher inflation.
  - Long-term forecasting with forward rates: can be derived from long-term forward rates.
  - Implications of the IFE and IRP for forecasts using the forward rate:
    - IRP: forward rate premium reflects the interest rate differential.
    - IFE: a currency that has a higher interest rate than the home currency, should depreciate against the home currency because the higher interest rate implies a higher level of expected inflation in that country than in home.
- Mixed: combination of forecasting techniques. The actual forecast of the currency is a weighted average of the various forecasts developed.

Evaluation of forecast performance:

- Absolute forecast error as a fraction of the realized value: $\frac{|forecasted\ value - realized\ value|}{realized\ value}$
- Forecast accuracy over time: the EMH assumes that the best forecast of a future exchange rate is the spot rate. All the information that is included in the estimate of a forward rate will also be included in the spot rate.
- Statistical test of forecasts – the de-trending problem.
  $S_t = a_0 + a_1 F_{t-1,t} + \mu_t$
  - S_t = the spot rate in direct form at time t.
  - $F_{t-1,t}$ = the forward rate prediction for time t make at time t-1.
  - μ_t = error term of period t.
  - a_1 = the regression coefficient.
  - a_0 = the intercept.
- This model is not de-trending. The results appear to produce in most instances a regression model of very high significance and therefore good prediction with a high R^2. But the model is measuring error from using the model compared to the error made by no prediction.

Exchange rate volatility: stock market efficiency suggests that an MNC cannot out predict the market in attempting to forecast the actual future exchange rate.

Methods of forecasting exchange rate volatility:

- Use of short-term volatility to predict long-term volatility: the volatility of historical exchange rate movements over a recent period can be used to forecast the short-, medium-, and long-term future.
- Use of historical pattern of volatilities: since historical volatility can change over time, the standard deviation of monthly exchange rate movements in the last 12 months is not necessarily an accurate predictor of the volatility of exchange rate movements in the next month.
- Implied standard deviation: drive the exchange rate's implied SD from the currency option pricing model.
- Subjective estimation: statistical techniques do not more than inform what is essentially a subjective judgment.

Chapter 10 – Measuring Exposure to Exchange Rate Fluctuations

Why is exchange rate risk irrelevant?

- PPP argument: according to the PPP theory, exchange rate movements are just a response to differentials in price changes between countries. Therefore, the exchange rate effect is offset by the change in prices. But PPP does not necessarily hold, so the exchange rate will not necessarily change in accordance with the inflation differential between the two countries.
- The investor hedge argument: investors in MNCs can hedge exchange rate risk on their own. Investors have sufficient information on corporate exposure to exchange rate fluctuations as well as the capabilities to correctly insulate their individual exposure.

- Currency diversification argument: if an MNCC is well diversified across numerous countries, its value will not be affected by exchange rate movements because of offsetting effects.
- Stakeholder diversification argument: if stakeholders are well diversified, they will be somewhat insulated against losses experiences by an MNC due to exchange rate risk.

The response from MNCs: creditors who provide loans to MNCs can experience large losses if the MNCs experience financial problems. Thus, creditors may prefer that the MNCs maintain low exposure to exchange rate risk. MNCs attempt to stabilize their earnings with hedging strategies because exchange rate risk is significant.

Types of exposure:

- Transaction exposure: the degree to which the value of future cash transactions can be affected by exchange rate fluctuations.
    - The value of a firm's cash inflows received in various currencies will be affected by the respective exchange rates of these currencies when they are converted typically into the home currency.
    - The value of a firm's cash outflows in various currencies will be dependent on the respective exchange rates of these currencies.
  - Estimating 'net' cash flows in each currency: to measure its transaction exposure, an MNC needs to project the consolidated net amount in currency inflows or outflows for all its subsidiaries, categorized by currency.
  - Measuring the potential impact of the currency exposure: the value of net cash flows converted into the home currency will vary due to both business risk and exchange rate risk.
    - Measurement of currency variability: here countries trade extensively with each other, the standard deviation tends to be lower, though other factors may intervene.
    - Measurement of currency correlations: measures the degree to which two currencies move in relation to each other. When they move in opposite directions, they offset each other.
  - Assessing transaction exposure based on value-at-risk: VAR is a measure that incorporates volatility and correlations to determine the potential maximum 1 day loss on the value of positions held by an MNC.
    Factors that affect the maximum 1-day loss:
    - It is dependent on the expected percentage change in the currency for the next day.
    - It is dependent on the confidence level used. A higher confidence level will cause a more pronounced maximum 1-day loss.
    - It is dependent on the standard deviation of the daily percentage changes in the currency over a previous period.

- Economic exposure: the degree to which a firm's future cash flows can be influenced by exchange rate fluctuations. All types of anticipated future transactions that cause transaction exposure also cause economic exposure because these transactions

represent cash flows that can be influenced by exchange rate fluctuations. It includes transaction exposure and indirect effects on revenues and costs.

- Economic exposure to home currency appreciation:
  - A firm's exports in home currency will decline as the exports are more expensive.
  - The costs of imported supplies denominated in the home currency will not be directly affected by changes in exchange rates.
  - The costs of imported supplies denominated in the foreign currency will increase in value.

  Appreciation in the home currency causes a reduction in both cash inflows and outflows.

- Economic exposure to home currency depreciation:
  - Home sales increase due to reduced foreign competition, because prices denominated in strong foreign currencies will seem high to the home customers.
  - The firm's exports denominated in the home currency will appear cheap.
  - Imported supplies denominated in the home currency will not be directly affected by any change in exchange rates.
  - Imported supplies denominated in the foreign currency will rise because more of the weakened home currency will be required to obtain the foreign currency needed.

  Depreciation of the firm's home currency causes an increase in both cash inflows and outflows.

- Measuring economic exposure:
  - Sensitivity of earnings to exchange rates:
    - Calculate the volume changes in the currency where they occur.
    - Concert to the home currency at the exchange rate for the chosen scenario.
  - Sensitivity of cash flows to exchange rates:
    - $PCF_t = a_0 + a_1 e_t + \mu_t$
      - PCF_t = percentage change in inflation-adjusted cash flows measured in the firm's home currency over period t.
      - e_t = percentage change in the exchange rate of the currency over period t.
      - μ_t =random error term.
      - a_0 = intercept
      - a_1 =slope coefficient

- Translation exposure: the exposure of the MNC's consolidated financial statements to exchange rate fluctuations.
  - Does translation exposure matter?
    - Cash flow perspective: translation of financial statements for consolidated reporting purposes does not by itself affect an MNC's cash flows. If a subsidiary's local currency is weak, the earnings could be retained rather than converted and sent to the parent.

        - Stock price perspective: many investors tend to use earnings when valuing firms.
    - Determinants of translation exposure:
        - The proportion of its business conducted by foreign subsidiaries → the greater the proportion, the larger the percentage of a given financial statement item that is susceptible to translation exposure.
        - The locations of its foreign subsidiaries → the financial statement items of each subsidiary are typically measured by the home currency of the subsidiary's country.
        - Accounting methods:
            - The functional currency of an entity is the currency of the economic environment in which the entity operates.
            - The current exchange rate as of the reporting date is used to translate monetary assets and liabilities of a foreign entity from its functional currency into the reporting or presentation currency.
            - The weighted average exchange rate over the relevant period is used to translate revenue, expenses and gains and losses of a foreign entity from its functional currency into the reporting currency.
            - Translated income gains or losses arise mainly due to the different rate applied to when the transaction took place and when the resultant assets and liabilities are reported.
            - Realized income gains or losses due to foreign currency transactions are recorded in current net income.

Chapter 11 – Managing Transaction Exposure

Transaction exposure exists when the anticipated future cash transactions of a firm are affected by exchange rate fluctuations. If transaction exposure exists, the firm faces three major tasks:

- It must identify its degree of transaction exposure.
- It must decide whether to hedge this exposure.
- It must choose among the various hedging techniques available.

A MNC should identify the net transaction exposure on a currency-by-currency basis. It's about the difference between expected inflows and outflows for a particular time and currency. The MNC can identify its exposure by reviewing the consolidation of subsidiary positions. The overall performance of the MNC may already be insulated by the offsetting positions between subsidiaries and therefore, hedging the position of each individual subsidiary may not be necessary.

Techniques to eliminate transaction exposure:

- Futures hedge (standardized):
    - Purchasing currency futures: a firm is entitled to receive a specified amount in a specified currency for a stated price on a specified date. To hedge a payment on

future payables in a foreign currency, the firm may purchase a currency futures contract for the currency it will need in the near future.
    - Selling currency futures: a firm is entitling to sell a specified amount in a specified currency for a stated price on a specified date. To hedge the home currency value of future receivables in a foreign currency, the firm may sell a currency futures contract for the currency it will be receiving.
- Forward hedge: these are commonly used for large transactions.
    - Forward contracts: negotiated between the firm and a commercial bank en specify the currency, the exchange rate and the date of the forward transaction.
    - Forward hedge vs. no hedge on payables: in some cases, an MNC may prefer not to hedge its exposure to exchange rate movements, because gains and losses will offset themselves.
    - Forward rates for hedging: the decision as to whether to hedge a position with a forward contract or to keep it unhedged can be made by comparing the known result of hedging to the possible results of remaining unhedged.
    - The hedge versus no hedge decision is based on the firm's degree of risk aversion. The higher the risk aversion, the more hedging.
    - If the forward rate is an accurate predictor of the future spot rate, the expected cost of hedging will be zero.

Forward hedge versus no hedge on receivables: the expected cost of hedging receivables (ECH_r) can be estimated as with payables:

- $ECH_r = \sum[(CNH_r - CH_r) * P_i]$
    - ECH_r = expected cost of hedging receivables.
    - CH_r = receivables when hedged for a given possible exchange rate.
    - CNH_r = receivables when not hedged for a given possible exchange rate.
    - P_i = probability of a given exchange rate.
    - $\sum[\cdot]$ =overall average being the total of the expression in the squared brackets for all possible exchange rates.

The cost of hedging has two uncertainties:

- Exchange rate.
- Actual amount involved.

Money market hedge: involves taking a money market position to cover a future payables or receivables position.

- Money market hedge on payables: if the firm has a payment required in a foreign currency in 6 months time, it can buy the required amount of foreign currency now and deposit it in a bank account denominated in that currency. Only the discounted value will need to be converted. When the payment is due, the converted sum plus interest will amount to the payment.
  MNCs prefer to hedge payables without using their own cash balances, then it requires two money market positions:
    - Borrowed funds in the home currency.
    - Short-term investment in the foreign currency.
- Money market hedge on receivables: if in 6 months' time, a firm expects receivables in a foreign currency, it can hedge this position by borrowing the present value of the

receivables now in that foreign currency and converting the amount into the home currency. The foreign receivables can then be left to repay the foreign borrowing and will therefore not be converted.

Hedging with a money market hedge versus a forward hedge: these hedges are similar, because both eliminate currency risk. The forward rate guarantees a rate now for the future point in time; whereas the money market hedge converts the present value of the receivables or payable at the current spot rate.

Implications of IRP for the money market hedge: if IRP exists and transaction costs do not exist, the money market hedge will yield the same results as the forward hedge.

Currency option hedge: the ideal hedge that insulates the firm from adverse exchange rate movements but allow the firm to benefit from favorable exchange rate movements.

- Hedging payables with call options: provides the right to buy a specified amount of a currency at a specified price within a given period of time.
- Hedging receivables with put options: provides the right to sell a specified amount in a currency at a specified price within a given period of time. This can be used to hedge future receivables in foreign currencies, since it guarantees a certain price at which the future receivables can be sold.
- Hedging contingent exposure: currency call options are also useful for hedging contingent exposure, in which an MNC's exposure is contingent on a specific event happening.

Comparison of hedging techniques:

- To hedge payables: focus on obtaining a foreign currency at the lowest possible cost.
- To hedge receivables: focus on selecting a technique that will maximize the dollars to be received as a result of hedging.

Hedging policies of MNCs: hedging policies vary with the degree of risk aversion.

- Hedging most of the exposure: allows the firm to know the future cash flows in terms of the home currency that will result from any foreign transaction that have already been negotiated.
- Hedging none of the exposure: MNCs that are well diversified across many countries may consider not hedging their position.

Limitations of hedging:

- Limitation of hedging an uncertain amount: might result in over-hedging where the MNC is hedging a larger amount than the actual transaction amount. This happens because the precise amount to be received in a foreign currency at the end of a period can be uncertain.
- Limitation of repeated short-term hedging: a hedge gives the MNC time to rearrange its affairs.

Hedging long-term transaction exposure:

- Long-term forward contract: popular, because it can be tailored to accommodate the specific needs of the firm.
- Currency swaps: with brokers who act as intermediaries for swaps.
- Parallel loan: an exchange of loans in different currencies between two parties, they then agree to pay the interest on each other's loan and repay the amount borrowed on maturity.
- Borrowing policy: for many MNCs the exposure of their profits to exchange rate changes will be predictable as the pattern of trade will not change greatly. For such companies such knowledge will over time guide their choice of currency in which to borrow.

Alternative hedging techniques:

- Leading and lagging: involves adjusting the timing of a payment request or disbursement to reflect expectations about future currency movements.
  - Leading: make payment before the foreign currency depreciates.
  - Lagging: payment until after the foreign currency appreciates.
- Cross hedging: reduce transaction exposure when the currency cannot be hedged.
- Currency diversification: limits the potential effect of any single currency's movements on the value of an MNC.

Chapter 12 – Managing Economic Exposure and Translation Exposure

Exposure:

- Transaction exposure: the exchange rate risk when converting net foreign cash inflows to its home currency or when making payments in foreign currency.
- Economic exposure: includes transaction exposure but also represents any impact of exchange rate fluctuations on a firm's future cash flows.

An MNC must determine its economic exposure before it can manage its exposure. It can determine its exposure to each currency in terms of its cash inflows and outflows. The income statements for each subsidiary can be used to derive estimates.

MNCs may restructure their operations to reduce their economic exposure. The restructuring involves shifting the sources of costs or revenue to other locations in order to match cash inflows and outflows in foreign currencies.

Recommended action when a company has net cash inflows in the foreign currency	**Recommended action when a company has net cash outflows in the foreign currency**

Reduce foreign currency sales or invoice in home currency.	Increase foreign currency sales.
Increase foreign supply orders (costs).	Reduce foreign supply orders (costs).
Restructure debt to increase debt payments in foreign currency.	Restructure debt to reduce debt payments in foreign currency.

Possible strategies to hedge economic exposure:

- Pricing policy: being competitive by providing lower prices. Not best way to hedge.
- Hedging with forward contracts: only hedges for the period of the contract, so no long-term hedge.
- Purchasing foreign supplies.
- Financing with foreign funds: reduce the economic exposure by financing a portion of its business with loans in foreign currency. If the foreign currency weakens, the unit will need less home currency to cover the loan repayments. But limitations:
  - The strategy only makes sense if the company needs some debt financing.
  - The company might not desire this strategy when the foreign currency has a very high interest rate.
  - The strategy is unlikely to create a perfect hedge.

Hedging exposure to fixed assets: when an MNC has fixed assets in a foreign country, the cash flows to be received from the ultimate sale of these assets is subject to exchange rate risk.

Managing translation exposure: when an MNC translates each subsidiary's financial data to its home currency for consolidated financial statements. It can reduce an MNC's consolidated earnings and risks causing a decline in its share price.

MNC's can hedge forward contracts or futures contracts to hedge translation exposure. They can sell the currency forward that their foreign subsidiaries receive as earnings. Then they create a cash outflow in the currency to offset the earnings received in that currency.

Limitations of hedging translation exposure:

- Inaccurate earnings forecasts: if the actual earnings turned out to be much higher and if the foreign currency weakened during the year, the translation loss would likely exceed the gain generated from the forward contract strategy.
- Inadequate forward contracts for some currencies: forward contracts are not available for all currencies.
- Accounting distortions: the forward rate gain or loss reflects the difference between the forward rate and the future spot rate, whereas the translation gain or loss reflects the difference between the average exchange rate over the period of concern and the future spot rate. Translation losses are also not tax deductible, whereas gains on forward contracts used to hedge translation exposure are taxed.
- Increased transaction exposure.

- A translation loss is not a real loss.

Chapter 13 – Foreign Direct Investment

Net present value: a project is seen as an initial investment followed by a series of cash inflows.

- $NPV = -IO + (\sum_{t=1}^{n} \frac{CF_t}{(1+k)^t} + \frac{SV_n}{(1+k)^n}$
  - NPV = net present value.
  - IO = initial investment.
  - CF_t = cash flow in period t.
  - k = required rate of return.
  - n = lifetime of the project
  - SV = Salvage value = terminal value.

The real option approach considers what can be done to improve the value of the investment if it reaches any particular node – a contingent plan.

Game theory and strategy: the link between a game in extensive form and the lattice that supports NPV and real options differ:

- The probability attached to moving from one node to the other in the NPV and real option model is 50% reflecting market efficiency. In the game theory approach, there are no probabilities.

Motives for foreign direct investment: MNCs consider foreign direct investment because it can improve their profitability and enhance shareholder wealth.

- Firm specific advantages:
  - Proprietary technology: patents to exploit by taking its business abroad.
  - Managerial/marketing skills: making profit by taking over other companies and running them using their skills.
  - Trademarks: competition with other international brands.
  - Economies of scale: selling on the world market → large capital requirements.
- Internalization advantages:
  - High enforcement costs.
  - Buyer uncertainty over value.
  - Need to control production.
- Country specific advantages:
  - Natural resources.
  - Technology.
  - Labor force.
  - Tax.
  - Trade barriers.

Benefits of international diversification: diversification is selecting foreign projects whose performance levels are not highly correlated over time. In this way, the various international projects should not experience poor performance simultaneously.

- Greater risk as foreign economies are likely to be more volatile.

- The project naturally riskier compared to lower risk as the returns are more likely to be unsynchronized.

Host government views of foreign direct investment.

- The bargaining model: the country gets long-term benefits in return for allowing MNCs to operate in their country. Bargaining is at two levels:
  - Between governments including international institutions.
    - Bilateral investment treaties (BITs) are aimed at allowing often developed countries' industries to invest in a host country.
  - Between governments and individual MNCs.
    - The governments want technology, employment, taxes and managerial knowledge.

Subsidiary versus parent perspective: some would say the subsidiary's perspective should be used because it will be responsible for administering the project and there will be shareholders with interests only in the subsidiary, but the parent is financing the project.

The feasibility of the capital budgeting analysis can vary with the perspective:

- Tax differentials: if the parent's government imposes a high tax rate on the remitted funds, the project may be feasible from the subsidiary's point of view, but not from the parent's point of view.
- Restricted remittances: the government may require that a percentage of the subsidiary earnings remain in the country. Then the parent may never have access to those funds and the project is not attractive to the parent, but it is attractive to the subsidiary.
- Excessive remittances: to the subsidiary, the fees represent an expense. To the parent, the fees represent revenue that may substantially exceed the actual cost of managing the subsidiary.
- Exchange rate movements: the amount received by the parent is influenced by the existing exchange rate.

Chapter 14 – Country Risk Analysis

Country risk: the potentially adverse impact of a country's environment on an MNC's cash flows. An MNC may also use this analysis to revise its investment or financing decisions in light of recent events, such as a terrorist attack or a major labor strike in an industry.

Political risk factors: an MNC must assess country risk not only in countries where it currently does business but also in those where it expects to export or establish subsidiaries.

- Attitude of consumers in the host country: tendency of residents to purchase only locally produced goods.
- Actions of host government: pollution control standards, additional corporate taxes or withholding taxes and fund transfer restrictions.
  - Lack of restrictions: allows illegitimate business behavior.

- Blockage of fund transfers: forces subsidiaries to undertake projects that are not optimal (just to make use of the funds).
- Currency inconvertibility: an MNC's parent may need to exchange it for goods to extract benefits from projects in that country.
- War: affects safety of employees hired by an MNC's subsidiary. Also, due to the threat of war MNCs typically have volatile business cycles.
- Bureaucracy: may complicate an MNC's business.
- Corruption: increases the cost of conducting business or it can reduce revenue.

Indicators of economic growth:

- Interest rates:
  - Interest rates ↑ → growth economy ↓ → demand ↓.
  - Interest rates ↓ → growth economy ↑ → demand ↑.
- Exchange rates:
  - Strong currency → export ↓, import ↑ → production/national income ↓.
  - Weak currency → export ↑, import ↓ → production/national income ↑.
- Inflation: affects purchasing power and therefore the demand for an MNC's good.
  - Inflation ↑ → economic growth ↓.

Types of country risk assessment:

- Macro assessment: involves consideration of all variables that affect country risk except those unique to a particular firm or industry. Should consider:
  - Political factors: including the relationship of the host government with the MNC's home country government, the attitude of people in the host country toward the MNC's government, the historical stability of the host government, the vulnerability of the host government to political takeovers and the probability of war between the host country and neighboring countries.
  - Financial factors: including GDP growth, inflation trends, government budget levels, interest rates, unemployment, the country's reliance on export income, the balance of trade and foreign exchange controls.
- Micro assessment: indication of the country's overall status. It determines how the country risk relates to the specific MNC.
  - Political variables.
  - Financial variable: including sensitivity of the firm's business to real GDP growth, inflation needs, interest rates and other factors.

Techniques to assess country risk:

- Check list approach: involves making a judgment on all the political and financial factors that contribute to a firm's assessment of country risk.
- Delphi technique: involves the collection of independent opinions on country risk without group discussion by the assessors (employees or outside consultants).
- Quantitative analysis: identifies the characteristics that influence the level of country risk.

- Inspection visits: involves travelling to a country and meeting with government officials, business executives and/or consumers.
- Combination of techniques.

Measuring country risk: using checklist.

- Political factors are assigned values within some arbitrarily chosen range and are assigned weights.
- Financial factors are assigned values and weights.
- A country's overall risk rating can be determined by assigning weights to the political and financial ratings according to their perceived importance.

Country risk assessors have their own individual procedures for quantifying country risk.

Using the country risk rating for decision making: if the country risk is too high then the firm does not need to analyze the feasibility of the proposed project any further.

Comparing risk ratings among countries: an MNC may evaluate country risk for several countries.

- Foreign investment risk matric (FIRM): displays the financial and political risk by intervals ranging across the matric from 'poor' to 'good'.

Government bonds interest rates are made up of three main factors:

- Time preference
- Inflation
- Risk.

Incorporating country risk in capital budgeting: by adjusting the discount rate or by adjusting the estimated cash flows.

- Adjustment of the discount rate: the discount rate is supposed to reflect the required rate of return. The discount rate can be adjusted to account for the country risk. The lower the country risk rating, the higher the perceived risk and the higher the discount rate applied.
- Adjustment of the estimated cash flows: most appropriate method.

Country risk tends to be concerned with the possibility of sudden big events described as crisis.

Reducing exposure to host government takeovers: the most severe country risk is a host government takeover. The most common strategies:

- Use a short term horizon: an MNC may concentrate on recovering cash flow quickly so that in the event of expropriation, losses are minimized.

- Rely on unique supplies or technology: if the subsidiary can bring in supplies from headquarters that cannot be duplicated locally, the host government will not be able to take over and operate the subsidiary without those supplies.
- Hire local labor: if local employees would be affected by the host government's takeover, they can pressure their government to avoid such action.
- Borrow local funds: if the subsidiary borrows funds locally, local banks will be concerned about its future performance. If for any reason a government takeover would reduce the probability that banks would receive their loan repayments promptly, they might attempt to prevent a takeover by the host government.
- Purchase insurance: to cover the risk of expropriation.

Chapter 15 – Long-term Financing

Long-term financing decision: long-term projects take longer to generate funds and are more appropriately financed by investors who are prepared to deposit their funds for the longer term.

- Sources of equity:
  - Home funds denominated in local currency.
  - Global equity offering, in which they issue stock in their home country and in one or more foreign countries.
  - Private placement of equity to financial institutions in their home country.
  - Private placement of equity to financial institutions in the foreign country where they are expanding. Private placements are beneficial because they may reduce transaction costs.
- Sources of debt: similar set of option.
  - Engage in public placement of debt in their own country or a global debt offering.
  - Engage in a private placement of debt in their own country or in the foreign country where they are expanding.

Costs of debt financing: an MNC's long-term financing decision is commonly influenced by the different interest rates that exist among currencies.

- MNCs often consider issuing bonds denominated in foreign currencies, because these bond sometimes have lower yields.
  - If the currency appreciates against the firm's home currency, more funds will be needed to make the coupon payments.
  - If the currency depreciates less funds will be needed to make the coupon payments.
- To make long-term financing decisions, the MNC must:
  - Determine the amount of funds needed.
  - Forecast the price at which it can issue the bond.
  - Forecast periodic exchange rate values for the currency denominating the bond.

The cost of financing in a foreign currency is influenced by the value of that currency when the MNC makes coupon payments to its bondholders and when it pays off the principal at the time the bond reaches maturity.

- The currency that was borrowed appreciates over time, an MNC will need more funds to cover the coupon or principal payments.

The international fisher effect suggests that home interest rate should be the same as foreign interest rates when changes in the exchange rate are taken into account.

- $i_h = i_f + e_f$

Assessing the exchange rate risk of debt financing:

- Use of exchange rate probabilities: develop a probability distribution for an exchange rate for each period in which payments will be made to bondholders. The expected value of the exchange rate can be computed for each period by multiplying each possible exchange rate by its associated probability and totaling the products.
- Use of simulation: the program will randomly draw one possible value from the exchange rate distribution for the end of each year and determine the outflow payments based on those exchange rates.

Reducing exchange rate risk:

- Offsetting cash inflows: a firm may be able to finance with bonds denominated in a foreign currency that exhibits a lower coupon rate without becoming exposed to exchange rate risk. Nevertheless, it is unlikely that the firm would be able to perfectly match the timing and amount of the outflows in the foreign currency denominating the bond to the inflows in that currency.
- MNCs may be able to offset their exposure to exchange rate risk by:
  - Issuing bonds denominated in the local currency.
  - Obtaining debt financing in its home currency at a lower interest rate, but it will not be able to offset its earnings in the foreign currency.

Forward contracts: when a bond denominated in a foreign currency has a lower coupon rate than the firm's home currency, the firm may consider issuing bonds denominated in that currency and simultaneously hedging its exchange rate risk through the forward market.

Currency swaps: enables firms to exchange currencies at periodic intervals. The motive is to make payments in a currency where revenues are being earned and thereby reduce exposure to exchange rate movements.

Parallel loans: occurs when two parties provide simultaneous loans with an agreement to repay at a specified point in the future.

- Parallel loans can function as a useful alternative to forward or futures contracts as a way to finance foreign projects.

Diversifying among currencies: a firm may denominate bonds in several foreign currencies rather than a single foreign currency, so that substantial appreciation of any one currency will not drastically increase the number of home currency needed to cover the financing payments.

- Currency cocktail bonds: reflects a multicurrency unit of account. It will protect companies from the depreciation of one particular currency and protection may be enhanced by selecting currencies with relatively low correlations.

Interest rate risk from debt financing:

- An MNC must decide on the maturity that it should use for its debt:
  - Short maturity: the MNC is exposed to interest rate risk, forcing it to refinance at a higher interest rate. It can avoid this exposure by issuing a long-term bond with a fixed interest rate that matches the expected life of the operations in the foreign country.

The yield curve gives some idea of the different rates for differing periods of borrowing at a point in time.

MNCs that wish to use a long-term maturity but wish to avoid the prevailing fixed rate on long-term bonds may consider floating rate bonds. A floating coupon rate can be an advantage to the bond issuer during periods of decreasing interest rates, when otherwise the firm would be locked in at a higher coupon rate over the life of the bond.

Hedging with interest rate swaps: enables a firm to exchange fixed rate payments for variable rate payments.

- A firm may take out a futures contract on bonds. A bond price varies inversely with any change in the interest rate. If interest rates go up, bond prices fall to offer a similarly attractive return and vice versa.

Plain vanilla swap: standard contract without any unusual contract additions.

- Determining: the payments are typically determined using some notional value agreed upon by the parties to the swap and established contractually.

But two limitations of the swap:

- There is a cost of time and resources associated with searching for a suitable swap candidate and negotiating the swap terms.
- Each swap participant faces the risk that the counterparty could default on payment.

Other types of interest rate swaps:

- Accretion swap: an accretion swap is a swap in which the notional value is increased over time.
- Amortizing swap: the opposite of an accretion swap. Here, the notional value is reduced over time.
- Basis swap: involves the exchange of two floating rate payments.
- Callable swap: gives the fixed rate payer the right to terminate the swap. The fixed rate payer would exercise this right if interest rates fell substantially.

- Forward swap: an interest rate swap that is entered into today. However, the payments start at a specific future point in time.
- Puttable swap: gives the floating rate payer the right to terminate the swap. The floating rate payer would exercise this right if interest rates rose substantially.
- Zero-coupon swap: all fixed interest payments are postponed until maturity and are paid in one lump sum when the swap matures.
- Swaption: gives the owner the right to enter into a swap.

Project financing: reduces risk by creating a legal structure that protects the investor in the event of a strong negative outcome.

Chapter 16 – Ethics

Ethics: a set of directions or a code that acts as a guide to individual and social behavior.

The implied ethical code of finance:

- Profit maximization for the owners, usually shareholders.
- MNCs increasingly recognize that other sections of society, in particular pressure groups, feel significantly affected by their actions and that such groups can adversely affect the MNC's own profit maximizing goals by influencing government rules and legislation.

The permissiveness of legal frameworks across the world has a number of explanations:

- The politicians in developed countries are reluctant to regulate in any of the economic markets.
- The technological change in markets through the Internet and greater financial sophistication.
- The rapid increase in communication that has led to disintermediation – there is no market to regulate.
- International non-governmental organization are either committed to the economic argument of reduced regulation as is the case with the IMF, or are ineffective as is often said of UNCTAD incorporating UNCTC.

Ethical behavior:

- Conduct fair and open business activities.
- Develop a globally connected company.
- Create new value through business vision.
- Respect and encourage individuality and originality.
- Promote good corporate governance.
- Safeguard ecological and cultural diversity

The green movement: a pressure group in some countries and a political party in others. It has six principles:

- Ecological wisdom.
- Social justice.
- Participatory democracy.
- Nonviolence.
- Sustainability.
- Respect for diversity.

A green policy should include: imply higher costs.

- Waste reduction: encourage reuse and recycling.
- Purchasing.
- Energy.
- Travel.
- Can carbon credits be purchased to offset consumption?
- Is the worker provided with an acceptable working environment?

Globalization: countries have differing productivities and therefore, the world economic output can be increased by allowing a degree of specialization and then trading the surpluses. But then, countries with no pension provision, poor hospital services and no social security attract investment to take advantage of the lower employment costs.

Sources of discontent:

- To compete against these cheap countries, firms in the developed world must lower their standards (race to the bottom).
- Restrictions on foreign owned shares and foreign investment have largely been lifted.
- Due to the Internet, copyright, ideas and patents are easily stolen and transmitted worldwide.
- The huge labor force in developing countries is willing to work for a fraction of the wages in the developed world.
- The growth in population would outstrip their means of support leading to widespread poverty.

International corporate governance: increasing concern over the way in which companies has been motivated by financial scandals. Corporate governance is questioned particularly by the Green movement over issues such as the environment and child labor.

The basis common format for ownership is of shareholding in a legal entity that engages in commercial activities. One of the main international differences is in the nature of the relation between the owner and the managers or directors.

The influence of shareholders on managers depends in large measure on the size of the shareholding. A small shareholding has little influence in voting and hence cannot influence decisions (UK/USA).

The advantage of having large shareholders is that information asymmetry is far less. The investors will have access to the detailed accounts of the company in that they will be able to nominate directors to the board.

There is a large difference between the Anglo Saxon model of the USA and the UK where there is a strong division between shareholders and directors and the continental model where the division is far less. Why are there differences?

- The UK and USA have the most highly developed stock markets and are therefore attractive to a range of investors thus widening the ownership base.
- There is a very large difference in the legal structures.
    - The UK and USA are governed by common law which is case based.
    - The alternative is civil law system with is rule or principal based.
        - Common law is more flexible.

Chapter 17 – Financing International Trade

Payment methods for international trade:

- Prepayment: the exporter will not ship the goods until the buyer has remitted payment to the exporter. This affords the greatest degree of protection.
- Letters of credit: an instrument issued by a bank on behalf of the importer promising to pay the exporter upon presentation of shipping documents. The exporter is assured of receiving payment from the issuing bank.
- Drafts: an unconditional promise drawn by own party, usually the exporter, instructing the buyer to pay the face amount of the draft upon presentation. It's a you-owe-me note.
- Consignment: the exporter ships the goods to the importer while still retaining actual title to the merchandise. The importer has access to the items but does not have to pay for the goods until they have been sold to a third party.
- Open account: the exporter ships the merchandise and expects the buyer to remit payment according to the agreed upon terms. The exporter is relying fully upon the financial creditworthiness, integrity and reputation of the buyer.

Trade finance methods:

- Accounts receivable financing: if the exporter needs funds immediately it may require financing from a bank. The bank will provide a loan secured by an assignment of the account receivable as security.
- Factoring: when an exporter ships goods before receiving payment, the account receivable balance increases. Since there is a danger that the buyer will never pay at all, the exporter firm may consider selling the accounts receivable to a third party, the factor. The factor assumes all administrative responsibilities involved in collecting from the buyer.
- Letters of credit (L/C): an undertaking by a bank to make payments on behalf of a specified party. The exporter is paid upon presentation of the required documents in compliance with the terms of the L/C.
    - Types of letters of credit:
        - Commercial letters of credit: trade-related letters of credit.
        - Draft: the exporter's formal demand for payment.
        - Bill of lading: a receipt for shipment. A significant feature of a B/L is its negotiability.
        - Commercial invoice: description of the merchandise being sold by the buyer.
    - Variations of the L/C:
        - Standby letter of credit: to guarantee invoice payments to a supplier.
        - Transferable letter of credit: allows the first beneficiary to transfer all or a part to the original L/C to a third party.
- Banker's acceptance:
    - The importer orders goods from the exporter.
    - Importer requests its local bank to issue an L/C on its behalf.
    - The L/C allows the exporter to draw a time draft on the bank in payment for the exported goods.
    - The importer's bank accepts the draft, creating the banker's acceptance.

    - The exporter can request that the banker's acceptance be sold in money market, but then he will receive less funds than if it had waited to receive payment.
- Working capital financing: purchase of inventory → sale of the goods → creation of an account receivable → conversion to cash.
- Medium-term capital goods financing (forfaiting): because capital goods are often quite expensive, an importer may not be able to make payment on the goods within a short time period.
    - Forfaiting: the forfeiter buys the bills or promissory notes from the exporter. These financial obligations are usually guaranteed by the importer's bank. The payments are made to a financial institution rather than to the exporter. The forfeiter enables the exporter to receive the money immediately and the importer at the same time has a period of credit before payment has to be made.
- Countertrade: all types of foreign trade transaction in which the sale of goods to one country is linked to the purchase of exchange of goods from the same country
    - Barter: the exchange of goods between two parties without the use of any currency as a medium of exchange.
    - Compensation: the delivery of goods to one party is compensated for by the seller's buying back a certain amount of the product from the same party.

Due to inherent risks of international trade, government institutions and the private sector offer various forms of export credit, export finance and guarantee programs to reduce risk and stimulate foreign trade.

Chapter 18 – Short-term Financing

Sources of short-term financing

- Euronotes: unsecured debt securities. These are bonds issued by MNCs with an interest payment and a fixed term after which the MNC will repay the nominal amount. Interest rates are based on Libor.
- Euro-commercial paper: a promissory note issued by a large reputable MNC needing to borrow for a very short term or any stated length usually about 180 days but can be for 1 year.
- Eurobank loans: direct loans from Eurobanks.

Before an MNC's parent or subsidiary in need of funds searches for outside funding, it should check other subsidiaries' cash flow positions to determine whether any international funds are available.

Why MNCs consider foreign financing:

- To offset foreign currency inflows: a large firm may finance in a foreign currency to offset a net receivables position in that foreign currency.
- To reduce costs: if the interest rates on those currencies are relatively low and the currency stable.

Determining the effective financing rate:

- The actual cost of financing by the debtor firm will depend on:
  - The interest rate charged by the bank that provided the loan.
  - The movement in the borrowed currency's value over the life of the loan.
- Effective financing rate: $r_{eff} = (1 + r_1)(1 + r_2) - 1$
- $r_{eff} = (1 + i_f)(1 + e_f)$ → When managing international loans a natural division to examine is how much of the effective interest rates is due to foreign interest rates and how much due to the percentage change in the exchange rate.

Criteria considered for foreign financing

- Interest rate parity
  - Covered interest rate parity:
    - Borrow a foreign currency and convert that currency to the home currency for use.
    - Simultaneously purchase the foreign currency forward to lock in the exchange rate of the currency needed to pay off the loan.
  - Interest rate parity: $r_{eff} = \big(1 + i_f\big)(1 + p) - 1$
    - r_{eff} = overall cost of financing
    - i_f = foreign currency interest rate
    - p = forward rate premium.
  - If interest rate parity exists: $r_{eff} = i_h$
    - $i_h = \big(1 + i_f\big)(1 + p) - 1$
    - $p = \frac{1+i_h}{1+i_f} - 1$
    - The premium has to reflect the difference in interest rates to avoid arbitrage profits.
- Exchange rate forecasts
  - Some firms may make decisions based on their estimation of the future value of the currency. The estimate may be based on market forecasts through a stockbroker subscription service or the quoted futures rate may be taken as a prediction of the future rate.
    - Draft probability distribution
    - Apply scenarios.

Chapter 19 – International Cash Management

Cash flow analysis: subsidiary perspective

- Subsidiary expenses: the subsidiary will normally have a more difficult time forecasting future outflow payments if its purchases are international rather than domestic because of exchange rate fluctuations.
- Subsidiary revenue: if subsidiaries export their products, their sales volume may be more volatile than if the goods were only sold domestically. This volatility could be due to the fluctuating exchange rate of the invoice currency.
- Subsidiary dividend payments: the subsidiary may be expected to periodically send dividend payments and other fees to the parent.

- Subsidiary liquidity management: it uses liquidity management to either invest its excess cash or borrow to cover its cash deficiencies.

Centralized cash management

- Centralized cash management group: monitors the parent-subsidiary and intersubsidiary cash flows. This group has two functions:
  - Optimizing cash flow movements.
  - Investing excess cash.
- The centralized cash management division of an MNC cannot always accurately forecast events that affect parent – subsidiary or intersubsidiary cash flows. But it should be ready to react at any event by considering:
  - Any potential adverse impact on cash flows.
  - How to avoid such an adverse impact.

Techniques to optimize cash flows:

- Accelerating cash inflows: the more quickly the inflows are received, the more quickly they can be invested or used for other purposes.
  - Lockboxes: post office boxes to which customers are instructed to send payments.
  - Preauthorized payments: allow a corporation to charge a customer's bank account up to some limit.
- Minimizing currency conversion costs:
  - Netting: can be implemented with the joint effort of subsidiaries or by the centralized cash management group. This technique optimizes cash flows by reducing the administrative and transaction costs that result from currency conversion.
    - Key benefits:
      - Reduces the number of cross-border transactions between subsidiaries, thereby reducing the overall administrative cost of such cash transactions.
      - Reduces the need for foreign exchange conversion since transactions occur less frequently, thereby reducing the transaction costs associated with foreign exchange conversion.
      - Imposes tight control over information or transactions between subsidiaries.
      - Cash flow forecasting is easier since only net cash transfers are made at the end of each period.
    - Bilateral netting system: between parent/subsidiary or two subsidiaries.
    - Multilateral netting system: interchange among the parent and several subsidiaries.
- Managing blocked funds: the MNC may instruct the subsidiary to set up a research and development division, which incurs costs and possibly generates revenues for other subsidiaries. Another strategy is to use transfer pricing in a manner that will increase the expenses incurred by the subsidiary.
- Managing intersubsidiary cash transfer: efficient use of cash can reduce debt.

Complications in optimizing cash flow:

- Company-related characteristics: a centralized approach that monitors all intersubsidiary payments should be able to minimize problems such as delayed payments.
- Government restrictions: disrupts cash flow optimizing policy.
- Characteristics of banking systems: the ability of banks to facilitate cash transfers for MNCs vary among countries.

International money markets have grown to accommodate corporate investments of excess cash. MNCs may use international money markets in an attempt to earn higher returns than they can achieve domestically.

- Centralized cash management:
  - Centralization when subsidiaries use the same currency.
  - Centralized cash management of multiple currencies: all excess funds could be pooled and converted to a single currency for investment purposes. However, the advantage of pooling may be offset by the transaction costs incurred when converting to a single currency.
  - Impact of technology on centralized cash management requires timely information across subsidiaries regarding each subsidiary's cash positions in each currency, along with interest rate information about each currency.
- Determining the effective yield:
  - The effective yield of a bank deposit considers both the interest rate and the rate of appreciation or depreciation of the currency denominating the deposit and can therefore be very different from the quoted interest rate on a deposit denominated in a foreign currency.
  - $r = (1 + i_f)(1 + e_f) - 1$
- Implications of interest rate parity: if IRP exists, short-term foreign investing may result in a higher effective yield than domestic investing, but it cannot be guaranteed.

If IRP exists, the forward rate serves as a break-even point to assess the short-term investment decision. When investing in the foreign currency, the effective yield will be more than the domestic yield if the spot rate of the foreign currency after 1 year is more than the forward rate at the time the investment is undertaken.

If IRP exists, the forward premium or discount reflects that interest rate differential and represents the expected percentage change in the currency's value when the forward rate is used as a predictor of the future spot rate.

Use of exchange rate forecasts:

- $e_f = \frac{1+r}{1+i_f} - 1$

Diversifying cash across currencies: because an MNC is not sure how exchange rates will change over time, it may prefer to diversify cash among securities denominated in different currencies. limiting the percentage of excess cash invested in each currency will reduce the MNCs exposure to exchange rate risk.

Dynamic hedging: a strategy of applying a hedge when the currencies held are expected to depreciate and removing the hedge hen the currencies held are expected to appreciate. The objective is to protect against downside risk while benefiting from the favorable movement of exchange rates.

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