Managing Foreign Exchange Exposure

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Agenda

- Corporate Risk Management
- Transactional Exposure
- Operating Exposure

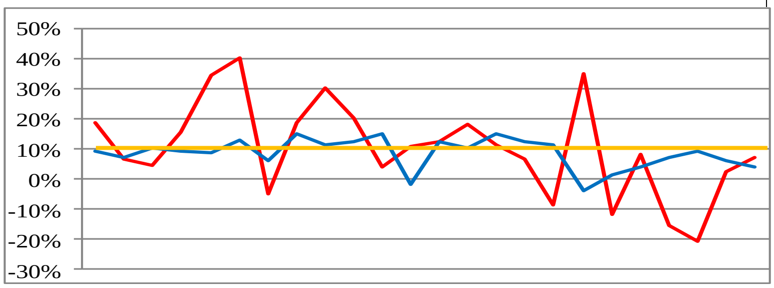
Part-I

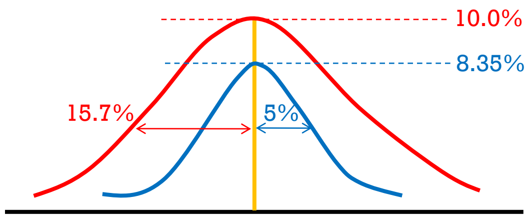
Corporate Risk Management

What is Risk?

- Risk is cash flow fluctuations due to future uncertainty.
  - In investment field, risk (fluctuation) has positive correlation with return
  - In business process, fluctuation refers to COST, thus it has negative correlation with return
- Example fluctuation in business process:
  - High variation in product quality
  - Demand fluctuation
  - Unstable net income

Hedging the Risk





NOTE:
Hedging activities will reduce risk at expense reducing cash flow (or profit), or increasing cost

General Risk Category

- Market risk

  Financial gain or loss due to market value changes of an asset, e.g. equity price risk, interest rate risk, foreign exchange risk, commodity risk.

- Credit risk

  Financial loss potential due to counterparty's activities, e.g. importer fails to pay imported goods at agreed date.

- Operational risk

  Financial loss potential due to error in internal process, or unanticipated events that disturb business process.

- Etc.

Example

Overseas Wheat Seed Producer → **Bogasari** → **Distributor** → **Market**

- Import wheat seeds
- Sell flour to distributors on credit

- Give examples of risks expose to Bogasari.
- Can you guess how does Bogasari hedge or reduce those exposures?

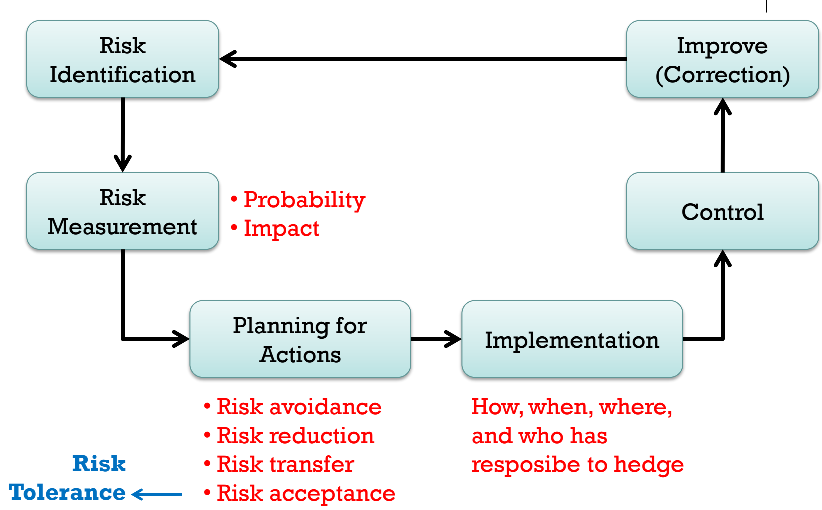
Hedging: Pros and Cons

- **Pros:**
  - Hedging provides future cash flow stability. It is easier to make planning and investment decision.
  - Hedging reduces the likelihood that the firm's cash flow will fall below minimum level.
  - Management is more informed than individual shareholder.
- **Cons:**
  - Hedging activities increase cost (reduce cash flow)
  - Shareholders have diversified their portfolio to manage foreign exchange risk.
  - Agency problem.
  - Most managers can not outguess the market.

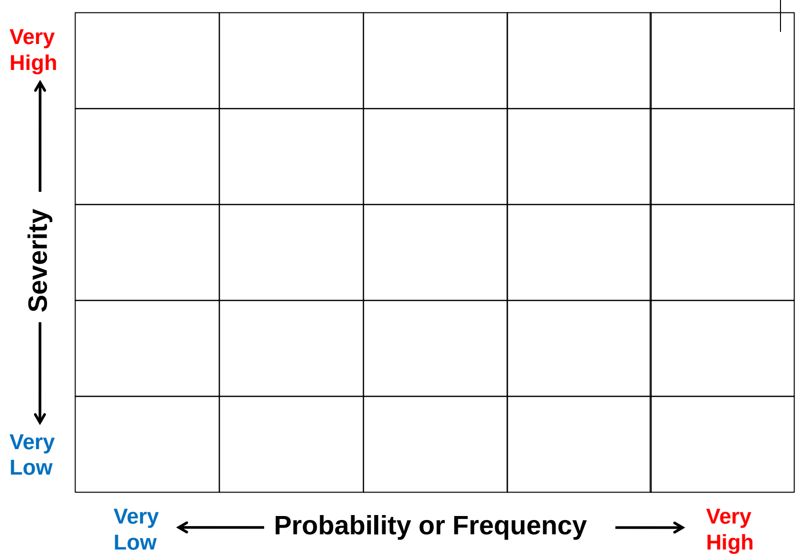
Risk Management

- Risk Management is any set of actions taken by individuals or organizations in an effort to reduce or zero the exposure arising from their activities (Merna & Smith, 1996).
- Risk Management aims to maximize shareholder value (Meulbroek, 2002) → increase and stabilize profit, cash flow, and firm value

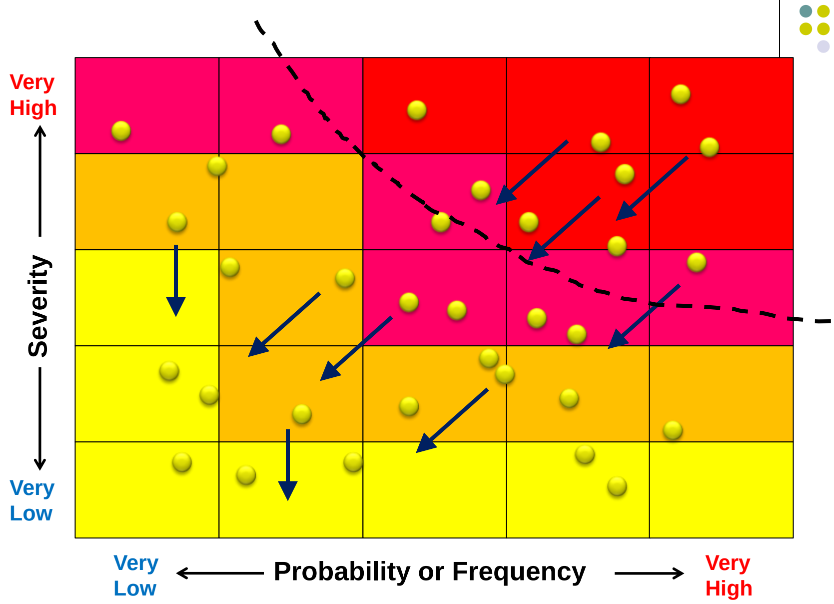
Risk Management Process



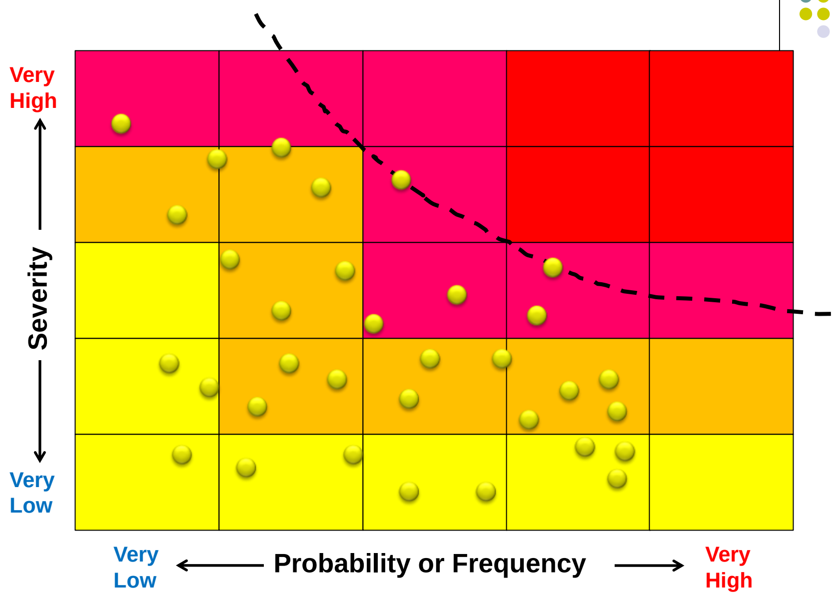
Risk Exposure Matrix (REM)



REM - Before



REM - After

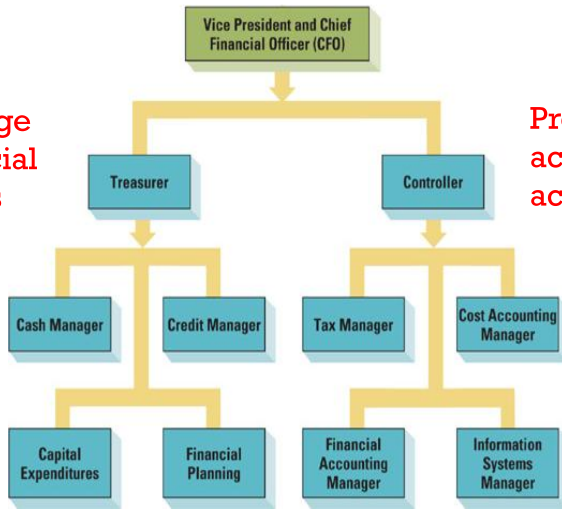


Hedging Policy

- What are the goals of risk management
  - They have to be consistent with maximizing firm value
  - Hedger, Speculator, Arbitrageur
- Which exposures to be reduced, transferred, avoided, and accepted?
  - Identify all type of exposures
  - Set risk tolerance
- How, when, where, and who have responsible to hedge?
  - Create guidance what hedging technique should be used, for what type of exposures, where to hedge, who are responsible?
  - Set system to monitor and resolve possible conflicts or problems

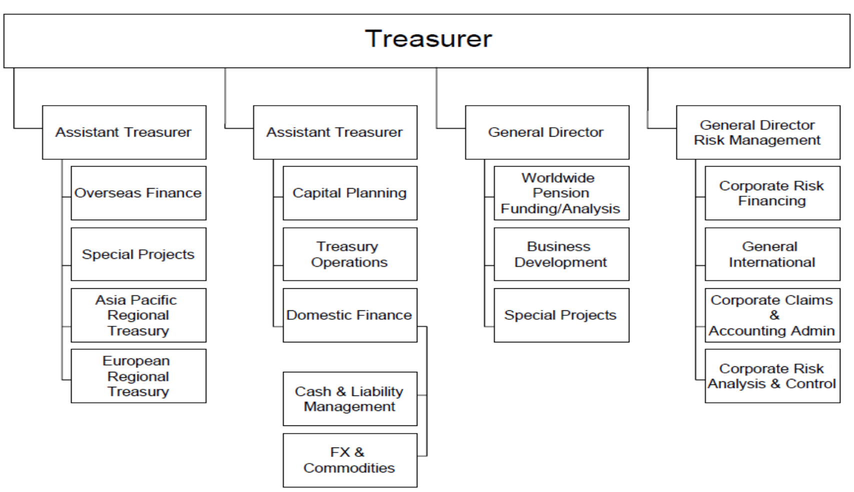
Financial Manager

Manage financial assets



Proceed accounting activities

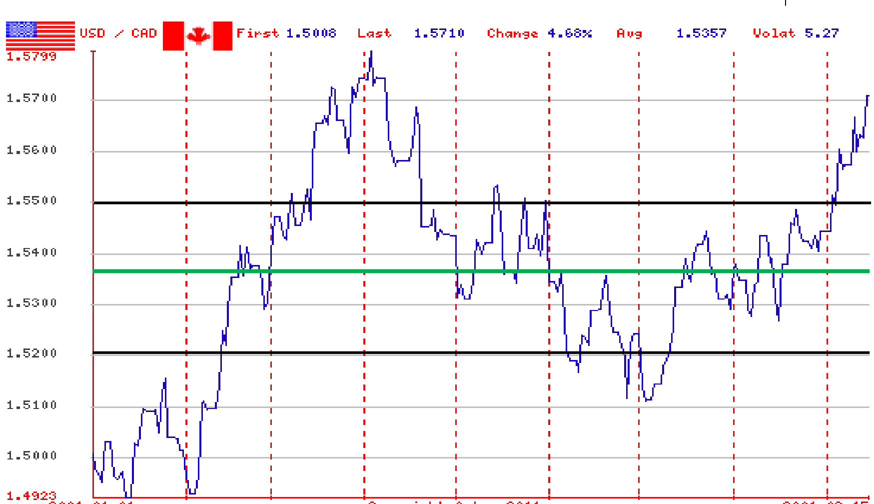
Example: Treasurer at GM



Part-II

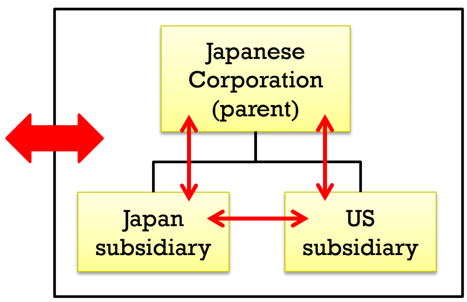
Transactional Exposure

Exposure = Risk = Variance



Foreign Exchange Exposure

- FEE: a measure of potential gain or loss in firm's cash flow (or firm value) as changes in exchange rate.
- FEE may impact single firms with global transactions, or corporations which have subsidiaries abroad.



Type of cash flow:
- Operating cash flow
- Financial cash flow

Example

- A Japanese company has two subsidiaries: one in Japan and another in US. How to hegde if:
  1. Japan subsidiary has payable of EUR 1 million in the next three months
  2. US subsidiary regulary exports goods to Canada
- Case-1 refers to the transactional exposure
- Case-2 refers to the operating exposure

Type of FEE

Translation (Accounting) Exposure	Transactional (Contractual) Exposure	Operating (Competitive) Exposure
Change in owners' equity in consolidated financial statements due to change in exchange rate.	Change in expected cash flow that are already contracted for, due to change in exchange rate	Change in expected longer term cash flow due to change in exchange rate (not yet contracted for).
Example: Changes in common stock, retained earning, dividend	Example: AR, AP, debt, credit denominated in forex	Example: Changes in future revenue, operating cost, value of assets
Impact on: Investors' perception about firm's value	Impact on: near future cash flow that are contracted for	Impact on: • longer future cash flow • competitive adv.

Transactional Exposures

- Source of Transaction Exposure
  - Purchasing or selling in foreing exchange that have been contracted (most common)
  - Borrowing and lending in foreign exchange (e.g. US company borrows JPY which has lower interest rate).
  - Acquiring asset dominated in foreign exchange, (e.g. US company has obligation denominated in EUR).
- Financial technique
  - Hedging Instruments

    Money market, forward, future, options, exotic

Financial Technique

- Considerations:
  - Commonly less than 1 year (e.g. money market, forward, future)
  - Mostly need additional cost (some are high enough)
  - Limited in emerging countries
  - It may create other risks (e.g. exotic derivative)
- What are advantages and disadvantage of: 1) money market, 2) forward, 3) future, 4) option, and 5) exotic?
- When are usually forward, options, and exotic used?

Awareness & Adoption Survey

Respondent: 173 corporations of Fortune 500
Source: Jesswein, Kwok, Folks (1995)

Type of Product	Heard of (Awareness)	Used (Adoption)
Forward contracts	100.0%	93.1%
Foreign currency swaps	98.8	52.6
Foreign currency futures	98.8	20.1
Exchange-traded currency options	96.4	17.3
Exchange-traded futures options	95.8	8.9
Over-the-counter currency options	93.5	48.8
Cylinder options	91.2	28.7
Synthetic forwards	88.0	22.0
Synthetic options	88.0	18.6
Participating forwards, etc.	83.6	15.8
Forward exchange agreements, etc.	81.7	14.8
Foreign currency warrants	77.7	4.2
Break forwards, etc.	65.3	4.9
Compound options	55.8	3.8
Lookback options, etc.	52.1	5.1
Average across products	84.4%	23.9%

Part-III

Operating Exposure

Operating Exposure

- Changes in expected future cash flow, market value, or profitability due to changs in exchange rate (not yet contracted for)
- Example:
  - Depreciation IDR against USD in 1997 reduced property developer's profit due to increasing loans in USD.
  - Yen depreciation increase Japanese automakers operating profit in US market
- Ability to manage operating exposure is dependent upon the predictability of: 1) future firm cash flow, and 2) competitors' response to exchange rate changes

Combination of Hedging

- There are hundreds or thousands way to manage operating exposure, including financial techniques
- In essence, all techniques or methods can be used to manage transactional and operating exposures (as complement or substitution)
- Example
  - How to hedge US subsidiary (of Japanese corporation) that regularly exports goods to Canada?
  - It's long-term CAD cash inflow (continuously receive in CAD)
- It can be used hedging instrument per period, long-term options, etc.

Managing Operating Exposure

- **Diversifying Cash Flow (Strategic Level)**
  - Diversify Financial
  - Diversify Operatins
- **Changing Financial Policies**
  - Exposure Netting
  - Parallel Loan
- **Changing Operating Policies**
  - Risk Sharing and Risk Shifting
  - Lead and Lag
  - Reinvoicing Center

Diversifying Cash Flow

- **Diversifying Financing**
  - Create financial assets and liabilities in different currencies
  - Advantage:
    - Reduce the impact of forex exposure from financial
    - Take advantage on deviation of International Fisher Effect
- **Diversifying Operations**
  - Establish operation process in some countries (sourcing raw materials, markets, plants, product, etc.)
  - Advantage:
    - Reduce the impact of forex exposure from operational
    - Take advantage on disequilibrium of PPP

Exposure Netting

Natural Hedging

Netting exposure with operational cash flow

Example:
- Use existing relevant payable
- Create new payable in CAD

Matching

Netting exposure with financial cash flow

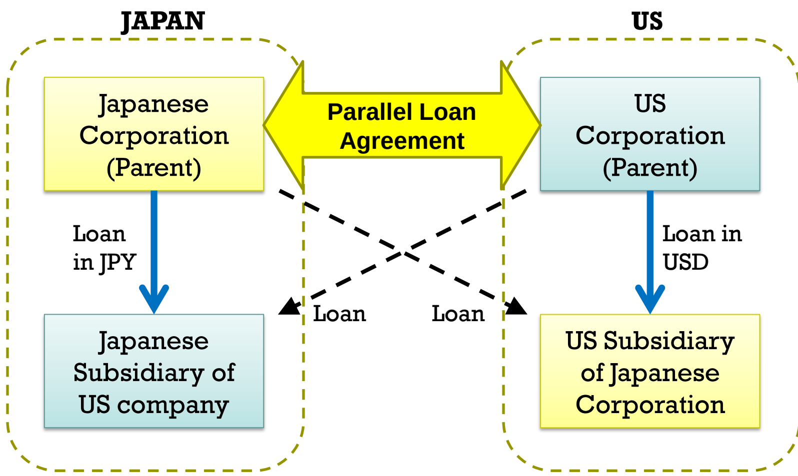
Example:
- Use existing relevant loans payment
- Create new loan in CAD

Currency Switching

Netting exposure with payment to/from other party

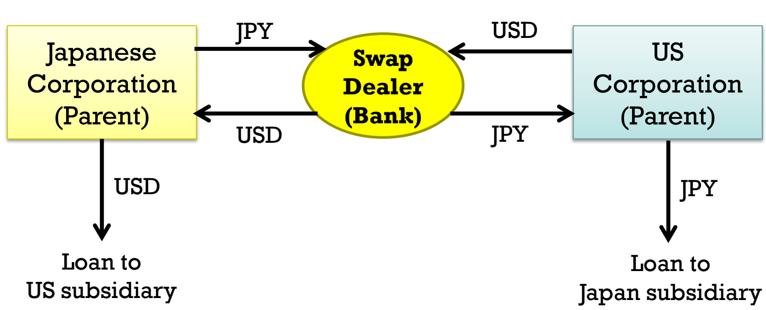
Example:
- Buy raw material from other firm that need CAD

Parallel Loan



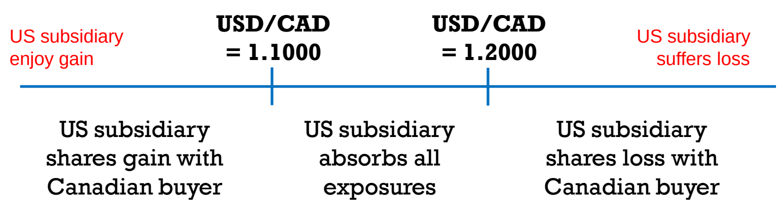
Parallel Loan with Swap

- Weaknesses of Parallel Loan:
  - Difficut to find counterparty
  - Credit risk exists



Risk Sharing

- Agreement to share gain or loss due to forex movement beyond band of exchange rate
- Example:
  - Canadian buyer (pay in CAD) agrees to share exposures with US subsidiary



Risk Sharing

- If spot USD/CAD = 1.0000 (lower than bottom level)
  - Difference = - 0.1
  - Agreed exchange rate = $1.1000 - \frac{0.1}{2} = 1.0500$
- If spot USD/CAD = 1.4000 (higher than upper level)
  - Difference = + 0.2
  - Agreed exchange rate = $1.2000 + \frac{0.2}{2} = 1.3000$
- Risk sharing can be formed by paying some part of cashflow in home currency, and the rest in forex.
- Risk shifting → all payment in USD

Risk Sharing

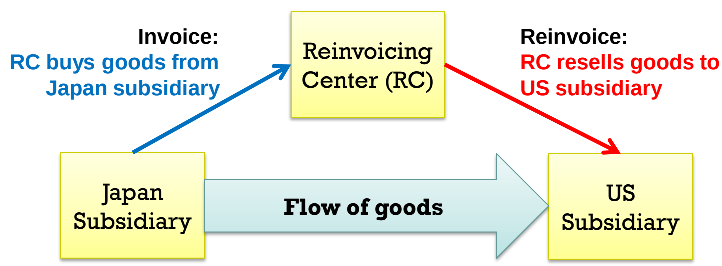
- Risk sharing agreement does not provide perfect hedge. It is intended to smooth the impact on volatility of exchange rate.
- It benefits to solidify the partnership between two firms, especially for intrafirms.
- Risk sharing have been in large uses during 1970s. As Bretton Woods collapsed, it was a rarity.

Lead and Lag

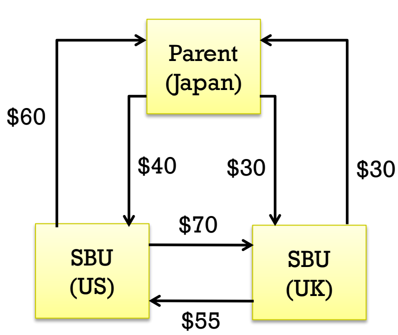
- It is a retiming the transfer of fund, i.e. the use of soft currency in relation to hard currency, and otherwise
  - Lead = to pay early (accelerate)
    When holding soft currency to pay in hard currency
  - Lag = to pay late (decelerate)
    When holding hard currency to pay in soft currency
- Lead and Lag may be initiatied by buyer or seller, and treat them like a credit agreement (apply discount or interest rate)
- It is more feasible in intrafirms than interfirms.

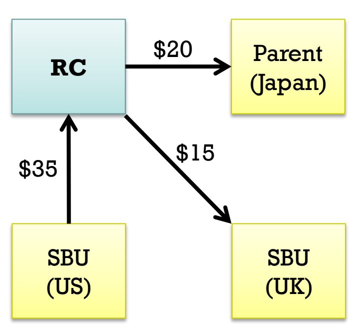
Reinvoicing Center

- Reinvoicing center is a corporate subsidiary that pools all payments related to a corporation (parent and its subsidiaries) → like a middleman



Reinvoicing Center Mechanism





Advantages of RC

- Managing foreign exchange exposure more efficient
  - All foreign exchange transactions are located in one place
  - Netting foreign exposures → the residual will be hedged
  - RC deals with large transaction → get competitive price
- Managing intra-subsidiary cash flow
  - Easier to manage cash inflow-outflow, e.g. Lead and Lag, parallel loan, etc.
  - Flexibility for subsidiaries to invoice in particular currency

Reinvoicing Center

- Reinvoicing Center can be set in other countries (not always in head office country).
- Example: GM has two centers like RCs:
  - Domestic Finance Group in New York
  - European Regional Treasury Center (ERTC)
- Corporations are often set RC in low or zero tax country (tax haven). Why?
- One main disadvantage of RC is the cost to create and maintain its operation (including cost of communication with subsidiaries)

Other Methods

- Raising Productivity
  - Reduce cost, improve process quality, increase employees' motivation
  - Modify product offering
- Pricing Strategy
  - Whether to emphasize market share or profit margin
  - Example: if USD is depreciated, US exporters may increase price (maintain profit margin), or keep the price (increase market share)
- Product Strategy
  - Launch new product or variant as new growth source (example: from commodity to more complex product)
  - Target other market segments