💡 Commercial banks - take deposits and lend out
Investment banks - everything else, e.g. advisory services, underwriting, provide advice in transactions, manage funds ***do not take deposits***

1.2 The economic functions performed by financial institutions

1. ***Timing intermediation***

   financial institutions intermediate by:

   - accept surplus funds (although no immediate demand); and
   - lend (in anticipation of receiving $$ in future)

   timing mismatch creates ***liquidity risk***

   → managed through *liquidity management*

2. ***Maturity intermediation***

   financial institutions intermediate by using:

   - ST deposits (e.g. bank deposits with maturity of less than 2 years); to make
   - LT loans (e.g. corporate loans of 4-5 years)

   maturity mismatch creates ***interest rate (market) risk***

   → IR fluctuation has an asymmetric impact on assets & liabilities

   → managed through *market risk management* process

3. ***Risk reduction via diversification (credit allocation)***

   lending and investing to broad range of clients $\implies$ enhances creditworthiness of banks' portfolio

   - consistent with modern portfolio theory
     - diversification $\implies \downarrow$ risk
     - reduces unsystematic risk (borrower-specific risk)

   creditworthiness of bank is a function of creditworthiness of investments

   $$\text{c.w of bank} = f(\text{c.w. of investment})$$

   lending/investment activity creates ***credit risk***

   → managed through diversification of investments

4. ***Reducing transaction costs - including contracting and information processing (info. costs)***

   - agency costs
   - info & monitoring costs
   - liquidity costs → in matching investors/borrowers

5. ***Providing a payments mechanism***
    - e.g. cheques, credit cards, debit cards, ETFs
    - usually by depository institutions

6. ***Transmission of monetary policy***

    repos (repurchase agreements)
    - buy securities from banks
    - ↑ cash holdings of banks & ↓ interbank rate

    vice versa

7. ***Risk intermediation***
    - altering underlying transactional arrangements; or
        - e.g. mortgage holdings want fixed rate rather than variable when rates are expected to increase
    - through use of ***derivative transactions***

1.3 Investment banking

Glass-Steagall Act (1933) → *distinction between commercial banks & securities firms*

- as a result of conflict of interest - comm. banks and investment banks have incentive to push forward risky loans and transfer credit risk to depositors
- to avoid risk spillovers from invest. bank to comm. banks

1999: removed Glass-Steagall with passing of ***Financial Services Modernization Act (Gramm-Leach-Bliley Act)***

- RESULT: merger between investment banks & commercial banks

Types of markets

1. Primary markets
    - IPO, SEO, underwriting, advisory services, market making
2. Secondary markets
    - Trading - position (speculative), pure arbitrage (buy/sell in different markets), program trading (anomalies)
    - Broking - discount, full services, institutional brokers
3. Tertiary markets
    - Facilitation of risk management activities for the issuers and holders of securities (derivative & futures markets)

1.4 Risk and financial institutions

Risk - possibility of an ***adverse deviation from an expected output***

To measure risk, assess:

- probability of risk event occurring
- likely impact of an event (Δearnings or Δvalue)
    - i.e. quantum of loss incurred if risk event occurs

(Finance) "Risk is a measure of the potential changes in value that will be experienced by a portfolio as a result of differences in the environment between now & future

Types of risk:

- Market risk
    - Interest rate risk
    - Foreign exchange risk (not covered in course)
- Credit risk
- Sovereign risk
- Liquidity risk
- Operational risk (not covered in course)

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2. Interest rate risk

2.1 Overview of risks banks are exposed to

2.1.1 Market risk

Market risk *- incurred in trading or from holding assets and liabilities in a portfolio due to changes in underlying market for those instruments*

- Increase in significance due to:
    - $\uparrow$ bank trading activities
    - $\uparrow$ disintermediation
    - *DEFINED: process of direct access to capital markets through the issuance of securities rather than obtaining financing from an FI*

Market risk arises whenever a financial institution takes ***open, unhedged or imperfectly hedged*** position in a traded market

The different categories of market risk

Interest rate sensitive instruments risk

- risk of change in value of fixed income security (i.e. Δvalue of cash flows)

🎯 **Maturity model**

Calculates structure of portfolio as weighted average maturity of assets and liabilities in the portfolios

→ calculates approx. average maturity of portfolio

→ rule → larger maturity gap, larger the risk

→ model suggests matching M_A & M_L will reduce or eliminate ***(immunise)*** interest rate risk

$$M_{GAP} = M_A - M_L$$

where,

M_A is the weighting of each asset in the portfolio $\times$ maturity of each asset

M_L is the weighting of each liability in the portfolio $\times$ maturity of each liability

$M_{GAP} > 0 \implies$ worry about $\uparrow$ IR

- because value of assets will decline or be more discounted by higher interest rates

$M_{GAP} < 0 \implies$ worry about $\downarrow$ IR

- because value of liabilities or debt obligations may be worth more due to lower rates

Weaknesses:

- does not account for degree of leverage
- does not account for timing of cash flows
- assumes symmetric change in interest rates across different maturities

Definitions:

Book value accounting is an accounting method in which assets and liabilities of FIs are recorded at historic values (price at which they bought initially)

Market value accounting is an accounting method in which asset and liabilities of FIs are revalued according to the current level of interest rates

Marking to market *involves valuing securities at their current market price*

2.2 Duration