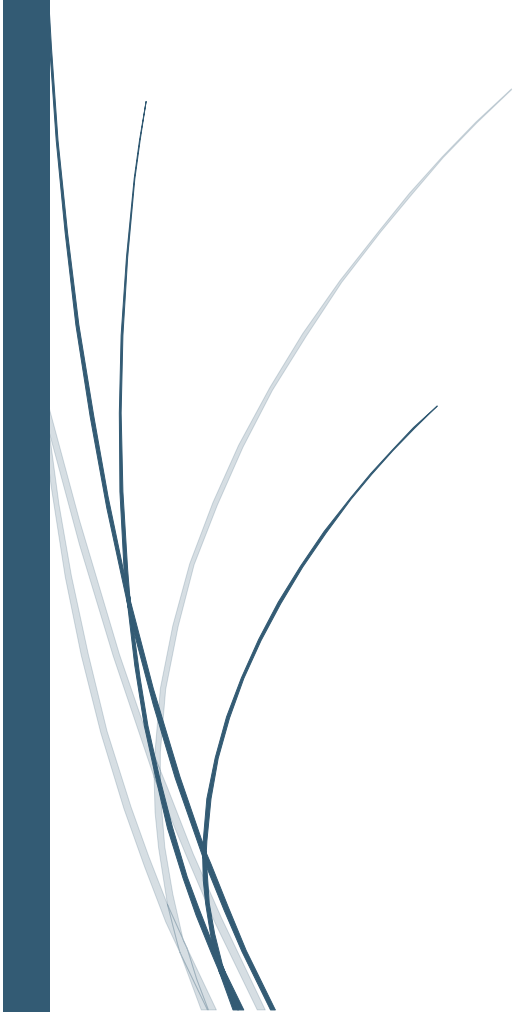
Semester One, 2018

FINS3630

Bank Financial Management



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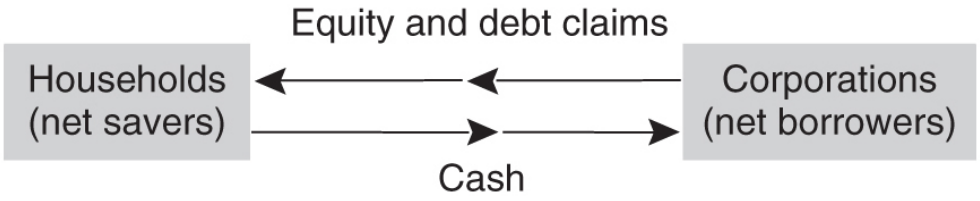
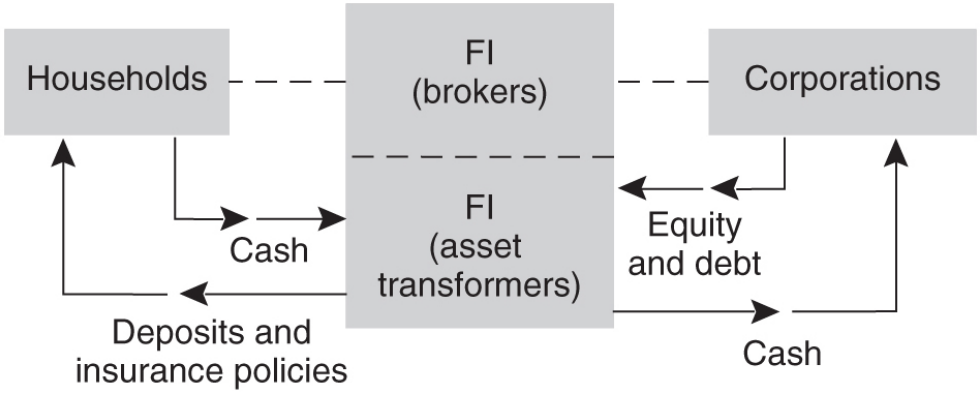
L01 – INTRODUCTION

FLOW OF FUNDS [WITHOUT FINANCIAL INSTITUTIONS]

- Households earn income from labour & investments, consume & save/invest money.
- Firms use invested money & labour to produce & sell consumer/investment goods.



Financial institutions act as Brokers and Asset Transformers.



Brokers	**Asset Transformers**
Provide information.	Buy primary securities issued by corporations.
Provide transaction services.	Issue more liquid, secondary securities to investors.

PROBLEMS → MITIGATED THROUGH FINANCIAL INSTITUTIONS

MONITORING (AGENCY PROBLEM)

Lending money to a firm in exchange for financial claims causes need for supervision concerning the use of the funds. Not monitoring can cause the potential problems of fund wastage, laziness, withdrawal of money.

- High cost of information collection.
- High chance of broken contracts due to lack of monitoring.

With financial institutions,

- Asset transformers take the risk of agency problems and take the task of monitoring the firm.
- Brokers collect information and provide them to investors at lower cost.

MATURITY MISMATCH (MATURITY CONFLICT OF INTEREST)

Investors search for a liquid investment with the ability to withdraw money whenever needed. Firms search for long-term loans without the risk of having to repay earlier.

- No usage of household's liquidity resources for economic production.

With financial institutions,

- Asset transformers provide short-term, liquid investment opportunities to investors.
- Asset transformers provide long-term bank loans to firms.

TRANSACTION COSTS

The acquisition of financial assets, and the selling process in the case of needed financial resources, causes costs.

- Some assets are not available for individual investments due to a large face value.
- Finding a trading partner is costly → causes less frequent portfolio reallocation.
- Information is costly → leads to a lower degree of information prior to investment.

With financial institutions,

- Money market mutual funds help investors to overcome size constraints and reduce transaction costs (e.g. bid-ask spreads).
- Brokers find trading partners and provide cheaper information.

LIQUIDITY

Households need liquid assets for everyday purposes, which they can use whenever required. The direct investment in firms might be illiquid, especially without intermediation.

- More buy & hold approach → leads to less liquidity.
- Bid-ask spreads are normally higher for assets sold or bought in small quantities.
    - Risk moving the market price for large quantities.

With financial institutions,

- Brokers facilitate buying & selling of shares.
- Asset transformers diversify withdrawal needs and offer liquid assets to investors.

PRICE RISK (RISK OF PRICE CHANGES)

The value and, thus, also the prices of firms change.

- Difficulties to diversity because direct investment in firms needs a certain size.
- Lower availability of almost risk-free assets.

With financial institutions,

- Mutual funds offer diversified & managed portfolios to investors.
- Asset transformers diversity risks inherent to corporate loans and offer safe assets to savers.

OTHER SERVICES OF FINANCIAL INSTITUTIONS

- Transmission of monetary policy.
    - Money creation through credit cycle.
- Credit allocation.
    - Provides credit for residential real estate, etc.
    - Provides resources for innovation, start-ups and project financing.
- Time intermediation.
    - Transfer wealth across generations.
    - Wealth accumulation for retirement (pension funds) and life insurance.
- Payment services.
    - Non-cash payment methods available through banks.
    - Check clearing and wire-transfer services.
- Denomination intermediation.
    - Certificates of deposit (CD) and commercial papers often only available in minimum packages, sold in smaller sizes to savers.

REGULATION

- Attempt to increase social welfare and reduce potential cost of system failure.
- Regulation imposes private costs to the owners of financial institutions.
    - *Net regulatory burden* is the private cost of regulation minus the private benefits of regulation.
- Negative externalities.

FORMS OF REGULATION

- Diversification → no more than X % of own equity capital to one single borrower.
- Minimum capital to risky asset ratio.
- Equity provides a buffer against losses in the asset portfolio.
- Deposit insurance.
- Monitoring and surveillance.

MONETARY POLICY REGULATION

- Central Bank directly controls notes & coins (outside money).
- Most of the money supply consists of deposits (inside money).

CREDIT ALLOCATION REGULATION

- Supports the financial institution's lending to socially important sectors, such as housing and farming (not in Australia).

CONSUMER PROTECTION REGULATION

- Tries to prevent discrimination on the basis of age, race, sex or income.

INVESTOR PROTECTION REGULATION

- Laws against insider trading, lack of disclosure, outright malfeasance and breach of fiduciary responsibilities.

ENTRY REGULATION

- High direct entry costs (required equity & capital contributions).
- Indirect entry costs (restricting individuals who can establish financial institutions).

RISK TYPES

Interaction of Risks

Risks often overlap → one risk can trigger another risk → often positively correlated.

Risks that financial institutions face:

Interest rate risk The risk incurred by an FI when the maturities of its assets and liabilities are mismatched.

Market risk The risk incurred from assets and liabilities in an FI's trading book due to changes in interest rates, exchange rates, and other prices.

Credit risk The risk that promised cash flows from loans and securities held by FIs may not be paid in full.

Off-balance-sheet risk The risk incurred by an FI as the result of activities related to its contingent assets and liabilities held off the balance sheet.

Foreign exchange risk The risk that exchange rate changes can affect the value of an FI's assets and liabilities denominated in nondomestic currencies.

Country or sovereign risk The risk that repayments to foreign lenders or investors may be interrupted because of restrictions, intervention, or interference from foreign governments.

Technology risk The risk incurred by an FI when its technological investments do not produce anticipated cost savings.

Operational risk The risk that existing technology, auditing, monitoring, and other support systems may malfunction or break down.

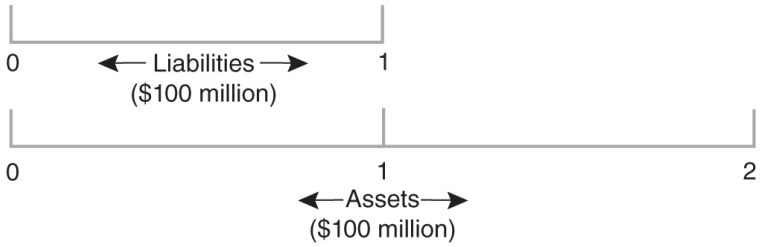
Liquidity risk The risk that a sudden surge in liability withdrawals may require an FI to liquidate assets in a very short period of time and at less than fair market prices.

Insolvency risk The risk that an FI may not have enough capital to offset a sudden decline in the value of its assets.

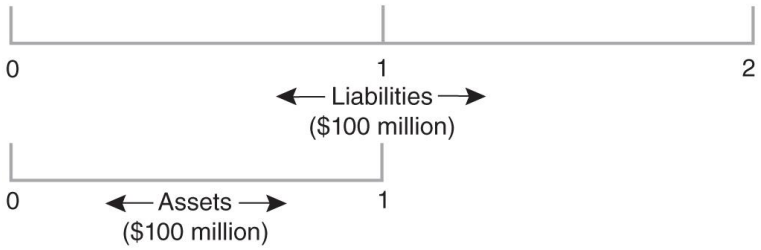
INTEREST RATE RISK

Financial institutions are maturity & liquidity transformers.

- REFINANCING RISK.
    - The maturity of its assets is longer than the maturity of its liabilities.



- REINVESTMENT RISK.
    - The maturity of its liabilities is longer than the maturity of its assets.



Interest rates also have effects on the market values of financial assets & liabilities.

- Rising interest rates increase the discount rate of future cash flows and reduce the market value.
- Matching maturities is only an approximate hedge.

Financial institutions cannot hedge interest rate risk through maturity matching, and be a maturity transformer at the same time.

CREDIT RISK

If the interest & principal of a loan would always be paid in full, there would be no credit risk. However, due to bankruptcy, firms may default on their payments → credit risk.

- Fixed upside potential (principal & interest payment to the holder).
- Large downside risk (loss of loan & interest).
- Average repayment on the loan portfolios is less than the principal + interest.
- Financial institutions need to monitor and collect information about borrowers.
- DIVERSIFICATION.
    - Can reduce firm-specific credit risk.
    - Leaves exposure to systematic credit risk.

LIQUIDITY RISK

Liquidity risk arises if,

- Claim holders demand immediate cash.
- Off-balance sheet loan commitments (credit lines) are exercised.
- Financial institutions must either borrow additional funds or sell assets to meet the demand.

CHAIN REACTION;

- Lack of confidence by liability holders or larger demand for cash.
- Other financial institutions face a similar problem and cost of borrowing funds increases.
- Financial institutions have to sell some of their less liquid assets.
- Liquidation reduces prices to fire-sale prices → results in losses.
- Threat to financial institution's profitability & solvency.

FOREIGN EXCHANGE RISK

- Different economies are subject to different macroeconomic shocks.
    - Additional diversification.
- Exchange rate risk → exchange rates are not constant.
- To be approximately hedged, financial institutions must match the size of their assets in foreign currencies.
- To be perfectly hedged, financial institutions must additionally match maturity of their assets in foreign currencies.

COUNTRY OR SOVEREIGN RISK

Sovereign risk is faced by financial institutions that purchased assets, such as bonds & loans, of foreign corporations & governments.

Examples;

- Restriction on currency flows.
- Nationalisation of foreign assets.

There are no courts against government decisions.

MARKET RISK

Risk that the financial markets develop in an adverse direction when holding an unhedged long or short position in bonds, equities, foreign exchange and/or derivative products.

- The more volatile asset prices are, the higher the market risk.
- Trading portfolio → Liquid assets held for a shorter period of time.
- Investment portfolio → Less liquid assets held for a longer period of time.

OFF-BALANCE-SHEET RISK

Off-balance-sheet assets are assets that currently do not appear on the balance sheet, but potentially affect the future shape of the balance sheet.

Examples of off-balance-sheet assets;

- Letter of credit guarantees.
- Forwards, futures, swaps, other derivatives.

If used as a speculative instrument, OBS assets can expose financial institutions to major risks.

TECHNOLOGY RISK & OPERATIONAL RISK

- Operational risk (including technological risk) → the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.
    - Can include reputational & strategic risk.
- Technology risk → the risk of technological investments not producing the anticipated efficiency improvements, and the risk of technologically falling behind, in comparison to competitors.
    - Can include failure to account for cyber security.
- Operational risk → the risk of breakdown of internal systems, employee errors, fraud, violation of compliance standards, etc.

INSOLVENCY RISK

- Occurs when the equity resources of a financial institution's owners are driven to, or near, zero.
- A lower leverage ratio (a higher equity level for a given amount of borrowed funds) decreases insolvency risk.
- Management and regulators focus on a financial institution's capital as a measure for insolvency risk.

EVENT & ENVIRONMENTAL RISK

- Risk of events such as earthquakes, climate change, war, collapse of financial markets, etc.
- Partially belongs to operational risk.

MACROECONOMIC RISK / SYSTEMATIC RISK.

- Changes in inflation, inflation volatility and unemployment.

L02 – INTEREST RATE RISK (I)

Why does interest rate risk arise?

- Financial institutions perform a maturity intermediation between households & firms.
    - Might suffer from losses, due to interest rate changes.
- Long-term interest rates to the firms might be fixed, but deposit interest rates to households are varying with the market interest rates.
- If interest rates are constant over time and deposits can be rolled over at the same rate, there is no risk to the bank.

INTEREST RATE CHANGES

Different measures of the effects of interest rate changes:

- NET INTEREST INCOME (NII).
    - Difference between financial institution's interest income & interest expense.
    - The *repricing model* measures the impact of interest rate changes on the NII.
- NET WORTH.
    - Difference between market value of assets & liabilities.
    - The *duration model* measures the impact of interest rate changes on NW.

Who determines the interest rate changes? **CENTRAL BANKS.**

- USA; the *Federal Reserve* determines a target rate and influences the interest rate through buying & selling Treasury bonds.
- Australia; the corresponding authority is the *Reserve Bank of Australia*.
- These central banks mostly influence the short-term rates, but these transfer to the long-term rates.
- Market integration between different countries made the effects of actions to control the short-term rate more difficult and less predictable.

RATE SENSITIVE ASSETS & LIABILITIES

A financial institution sorts its assets & liabilities, according to their maturity, into buckets.

1. One day.
2. More than 1 day to 3 months.
3. More than 3 months to 6 months.
4. More than 6 months to 1 year.
5. More than 1 year to 5 years.
6. More than 5 years.

EXAMPLES (1 YEAR HORIZON)

Rate Sensitive Assets	Rate Sensitive Liabilities
• 3-month T-bills. • 6-month T-notes. • 30-year floating rate mortgage. • Short-term consumer loans.	• 3-month Certificates of Deposit. • 3-month banker's acceptances. • 6-month commercial paper. • 1-year time deposits.
Not Rate Sensitive Assets	**Not Rate Sensitive Liabilities**
• 2-year consumer loans. • 3-year Treasury bonds. • 10-year fixed rate mortgage.	• Equity. • Demand deposits (debatable). • Passbook savings (debatable).

REPRICING GAP

Assets & Liabilities are repriced within the maturity bucket.

- RSA_i → Rate sensitive assets in bucket i.
- RSL_i → Rate sensitive liabilities in bucket i.

Reasons for repricing:

- Rollover of an asset.
- Variable rate instrument.

REPRICING GAP

Difference between rate sensitive assets & rate sensitive liabilities, in a bucket i.

$$GAP_i = RSA_i - RSL_i$$

Negative repricing gap: $RSA_i < RSL_i$.

Positive repricing gap: $RSA_i > RSL_i$.

TABLE 8–1
Repricing Gap (in millions of dollars)

	(1) Assets	(2) Liabilities	(3) Gaps	(4) Cumulative Gap
1. One day	$ 20	$ 30	$−10	$−10
2. More than one day–three months	30	40	−10	−20
3. More than three months–six months	70	85	−15	−35
4. More than six months–twelve months	90	70	+20	−15
5. More than one year–five years	40	30	+10	−5
6. Over five years	10	5	+5	0
	$260	$ 260		0

CUMULATIVE RSA & CUMULATIVE RSL

Sum of all GAPs up to the i^{th} bucket.

$$CRSA_i = \sum_{k=1}^{i} RSA_k \mid CRSL_i = \sum_{k=1}^{i} RSL_k$$

Cumulative repricing gap; $CGAP_i = \sum_{k=1}^{i} GAP_k$

Negative cumulative repricing gap: $\sum_{k=1}^{i} RSA_k < \sum_{k=1}^{i} RSL_k$.