

# **Topic 1. Asset Markets and Asset Prices**

**ECON30024 Economics of Financial Markets**

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# Outline

1. An overview of financial markets
  - Types of financial markets
  - Functions of financial markets
  - The growth of finance
2. Introduction to asset price determination
  - Basic framework
  - Role of expectation
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    - Rates of return
    - Arbitrage
    - Efficiency

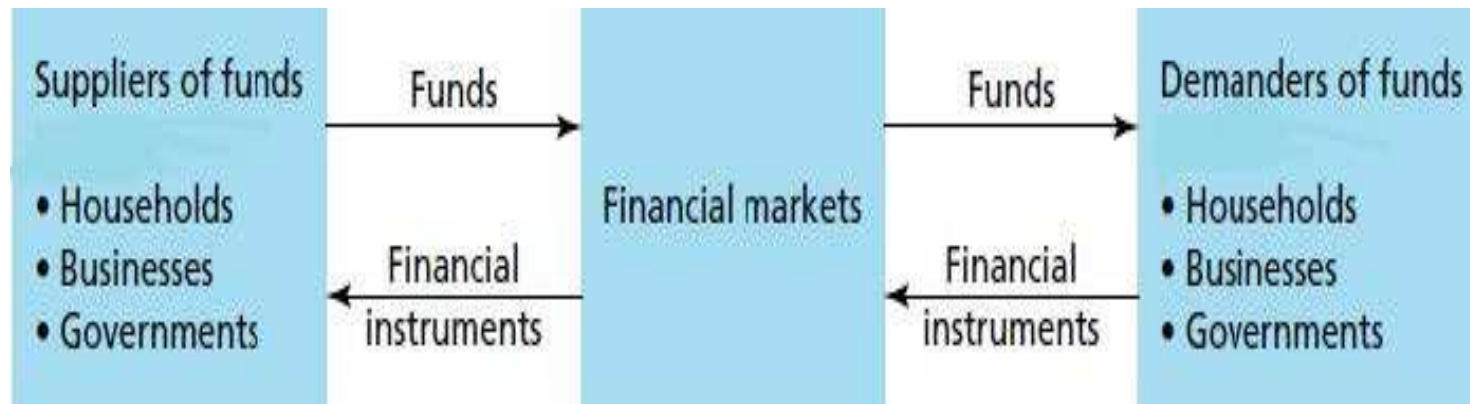
## Readings

- Required reading:
  - Chap. 1 of Bailey
  - Greenwood and Scharfstein (JEP, 2013), “The Growth of Finance” (Readings Online)
- Supplementary readings:
  - The global financial environment (a RBA report)  
<https://www.rba.gov.au/publications/fsr/2023/apr/global-financial-environment.html>

# 1. An Overview of Financial Markets

## 1.1 Types of financial markets

- Flow of funds in a modern society



- Financial markets encompass a broad, continually evolving collection of institutions (as a result of **financial innovations**) that serve to facilitate the exchange of financial assets/claims/instruments.
- There are many types of financial markets, depending on various classifications.

- By financial assets traded
  - **Bond** markets
  - **Equity** or **stock** markets
  - **Asset** or **mortgage backed securities** markets
  - **Foreign exchange** markets
  - **Commodity** markets
  - **Derivatives** markets: futures, options, credit default swaps
- By seasoning of the asset:
  - **Primary** markets are where financial assets are initially issued by borrowers of funds.
  - **Secondary** markets are where previously issued financial assets are traded among investors.

- By organisational structure:
  - **Exchange-traded:** centralised, primarily used to trade stocks
  - **Over-the-counter (OTC):** decentralised, dealers acting as market-makers, less transparent, primarily used to trade bonds, currencies, derivatives, and structured products
- By maturity of the asset
  - **Money markets:** deal with short-term claims which have high liquidity and low default risk.
  - **Capital markets:** deal with stock or longer-term debt instruments which are less marketable, have varying default risks and longer maturities.

## 1.2 Functions of financial markets

- Facilitating flow of funds from suppliers to borrowers is a fundamental function of the financial system, which allows the real economy to be financed and risks to be shared.
  - Ways of serving the real economy (discussion on Miro)  
([https://miro.com/app/board/uXjVIbyLTfU=](https://miro.com/app/board/uXjVIbyLTfU=/))



- More specifically, functions of financial markets, which are more stable than their institutions, can be classified as:
  - Clearing and settling payments
  - Pooling resources and subdividing shares
  - Transferring resources across time and space
  - Managing risk
  - Providing information
  - Dealing with incentive problems



- A well functioning financial market should offer:
  - **Price discovery:** asset prices are properly determined
  - **Liquidity:** ability to convert financial assets into cash at low cost and with little price impact
  - **Low transaction costs:** low search costs in finding a counterparty and low information costs in assessing the merits of assets

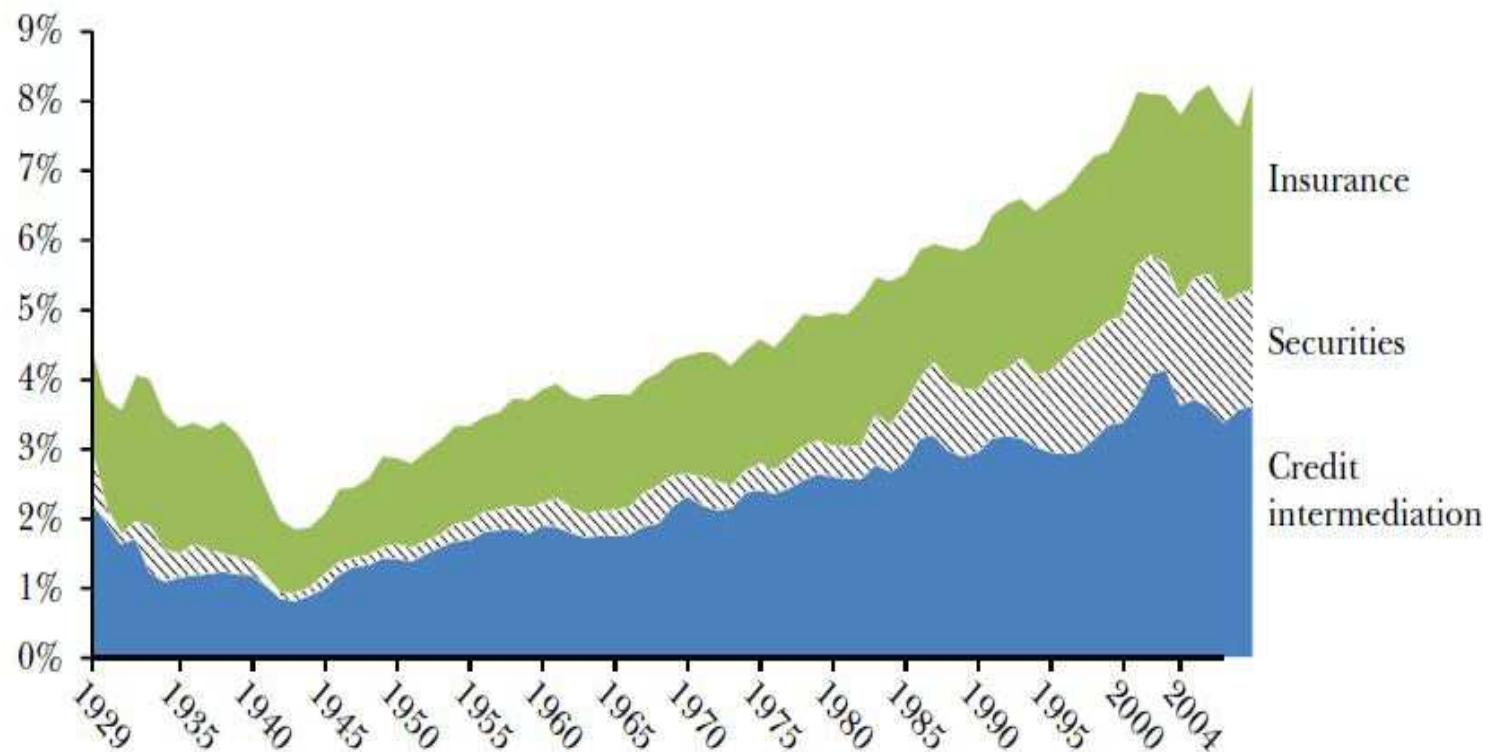
### 1.3 The Growth of Finance

- The financial sector has grown enormously in past few decades.
- For example, Greenwood and Scharfstein (2013) document for the U.S.
  - the value of financial assets was 10 times of GDP in 2007 (5 times in 1980)
  - the sector contributed 8.3% to GDP in 2006 (4.9% in 1980)
  - the average wage rate in this sector was 70% higher than in other industries in 2006 (about the same in 1980)
- In Assignment 1, you'll be asked to document some facts on the growth of finance in Australia.

- Much of the growth of finance is associated with two activities: **asset management** and the **provision of household credit**.
  - The value of financial assets under professional management grew dramatically, so as the fees charged to manage these assets.
  - Household credit increased from 48% of GDP in 1980 to 99% in 2007, with most growth in residential mortgages.
    - Leading to growth in fees on loan origination, underwriting, trading and management of MBS and derivatives.

# Growth of financial services in the US

**The Growth of Financial Services**  
(value added share of GDP)



Source: Authors' calculations using data from National Income and Product Accounts (1947–2009) and the National Economic Accounts (1929–1947).

- Reflection on the social benefits and costs of the growth in finance (see Greenwood and Scharfstein (2013)).
  - Has the society benefited from the growth of professional asset management?
  - Shadow banking, which greatly facilitated the expansion of household credit, could have made the financial system more fragile.
  - Increases in household indebtedness can have adverse consequences for macroeconomic stability.
  - This will be further discussed in Tutorial 1.

## 2. Introduction to Asset Price Determination

- The concept of financial asset
  - Most assets are categorised as either **real**, **financial**, or **intangible**
  - A financial asset is a tangible liquid asset that gets its value from a **contractual claim** on an underlying asset (cash, bank deposits, stocks, bonds)
  - Financial assets do not necessarily have inherent physical worth.
  - In this subject, “assets” refer to “financial assets”.

- The focus of this subject is to present some important theories of asset price determination and their applications.
- In previous economics subjects, the focus is on the determination of price and quantity of goods.
- Differences between goods and assets (discussion)

## 2.1 Basic analytical framework

- Prices are determined by supply and demand for assets.
  - Who supplies (sells) assets?
  - Who demands (buys) assets?
- Equilibrium prices are **defined** to be prices that clear markets (by equating demand and supply) at each date.
- Supply or total stock of an asset at a given date is assumed to be given.



- What determines the demand for assets? Investors choose their portfolio given
  - prices of assets
  - preferences
  - beliefs (about assets' future payoffs)
  - constraints (budget constraints, institutional constraints)

That is, a theory of portfolio choice under uncertainty is needed –**portfolio selection**.

- The market equilibrium at each date is defined by a set of asset prices and an allocation (portfolio) of assets among investors that satisfy:
  - (a) **Individual optimality:** Given the equilibrium asset prices, each investor's portfolio is optimal subject to the investor's preferences, beliefs, and constraints;
  - (b) **Market clearing:** Demand equals supply, i.e., the total stock of each asset equals the total demand aggregated over all investors.
- The capital asset pricing model (CAPM) exactly follows this framework.

## 2.2 Role of expectation

- It's clear from the basic framework that investors' portfolio selection is forward looking.
  - Future payoffs of assets are taken into account in making the portfolio decision today.
  - For almost all assets, the payoff is, at least in part, **uncertain**, when viewed from today.
  - Investors need to form belief or expectations about future payoffs.
- How do people form expectations?

- Conventional economics assumes **rational expectations** (RE): investors' expectations are formed with an awareness of all the forces that determine future payoffs.
- Although the RE assumption is too ideal, we'll maintain this assumption in our analysis.
- There has been development in behavioural finance, which proposes **psychology**-based theories to explain financial market behaviour.
  - A brief introduction will be given in Topic 11.

## 2.3 Some important concepts

- **Rates of return:** The rate of return on an asset is given by

$$r_{t+1} \equiv \frac{\text{payoff}_{t,t+1} - \text{price}_t}{\text{price}_t} = \frac{v_{t+1} - P_t}{P_t}$$

- Gross rate of return on an asset:  $1 + r_{t+1}$
- An asset's payoff may have several components depending on the type of asset:

$$v_{t+1} = P_{t+1} + d_{t+1}, \quad r_{t+1} = \frac{P_{t+1} + d_{t+1} - P_t}{P_t}$$

- $v_{t+1}$  and hence  $r_{t+1}$  are usually random variables.

$$E_t r_{t+1} = \frac{E_t v_{t+1} - P_t}{P_t}$$

- Given expected payoff, asset price determination is equivalent to determination of expected return.

- See Bailey, Appendix 1.3, for the concept of continuous compounding.
- **Arbitrage**
  - It is a common understanding that observed market prices should reflect the **absence of arbitrage opportunities**, or **the arbitrage principle**.
  - If arbitrage opportunities are present, then investors could design strategies that yield unlimited profits with certainty (Tutorial 1).
  - If financial markets are **frictionless**, the arbitrage principle implies connections among the prices of different assets.

- **Example:** The following information is provided for **frictionless** assets market. What  $p_1$  should be to ensure absence of arbitrage opportunities?

	Asset 1	Asset 2
Dividend next period	15	9
Price next period	216	156
Price today	$p_1$	150

Answer:

- The arbitrage principle provides a partial theory of asset prices (to be explored more formally in Topic 6).
- However, when frictions are pervasive, few implications about asset prices can be drawn even if arbitrage opportunities are absent (Tutorial 1).
- Common market frictions:
  - transaction costs
  - institutional restrictions on trade
  - borrowing constraints
  - indivisible assets



- ‘Perfect’ financial market: frictionless and competitive
- Efficiency: Financial market efficiency has several meanings:
  - Allocative efficiency (Pareto efficiency): Does the market allocate resources efficiently?
  - Operational efficiency: Is the market organised efficiently?
  - Informational efficiency: Do asset prices fully reflect the information available to investors? (Topic 2)
  - Portfolio efficiency: whether all portfolios chosen by investors are efficient, in the sense that the variance of return is minimised for any level of expected return? (Topic 4)

## Review Questions

- Carefully read through the Subject Guide and the List of Important Subject Policies. Be clear with the policies and expectations.
- Understand the flow of funds in a modern society.
- Understand the different types of financial markets by difference classification
- Why the institutions of financial markets are continually evolving? Think of a few institutional changes in recent years.
- Understand the difference between bond and equity (refer to Bailey, if you are not clear).
- What is the fundamental function of financial markets? Name a few specific functions of financial markets.
- Have a general understanding of the growth in finance in past few decades, and the possible social benefits and costs of such growth.
- Understand the difference between financial assets and real assets.
- Understand the difference between assets and goods.
- Understand the basic theoretical framework for asset price

determination: supply, demand, market clearing.

- Why expectation plays such an important role in asset price determination? What is the rational expectations assumption?
- Understand the concepts of rate of return, real rate of return, continuous compounding, force of interest. Be able to calculate the rate of return and force of interest.
- Try to understand why the absence of arbitrage opportunities serves to link prices of different assets in a frictionless market in view of the example given (another example to be given in Tutorial 1).
- Have a general understanding of several common market frictions.
- Is this statement true: when market frictions are pervasive, the arbitrage principle would not hold.
- Understand the different meanings of asset market efficiency.