

## **Lecture 2: The nature of financial intermediation:**

The issue of why financial intermediaries exist is a puzzle for the “complete markets” paradigm of Arrow and Debreu. As we describe in this lecture, the reasons why intermediaries such as banks exist is related to the various market failures which vitiate the complete markets paradigm. In particular, there is the key issue of imperfect information which makes financial institutions such as banks key channels for intermediating between savers and borrowers. We cover the key concepts of liquidity insurance and delegated monitoring in this context

## Why intermediation?

Definition: Intermediate between providers and users of financial capital  
Besides banks - pension funds, insurance companies, securities firms (differ in terms of assets. liabilities, matching).

- But in an Arrow-Debreu “complete markets” world, financing of firms and governments by households occurs via financial markets – no transactions costs, full set of contingent markets, no credit rationing, Pareto optimal allocation and no role for intermediaries  
- Moreover, (Modigliani-Miller) financial structure is irrelevant as households can construct portfolios offsetting actions of intermediaries and intermediaries cannot add value

- Corollary - markets are not strong form efficient or banks would not exist. Banks rather assist market efficiency as their information spills over.

Why do intermediaries exist?

(1) **Transactions costs** restricting scope for direct financing, or **incomplete information** means financial markets cannot be complete in an Arrow Debreu sense (theories of intermediation)

(2) Banks and other financial intermediaries **offer services** to which transactions are the visible counterpart (industrial organisation approach)

2 aspects of intermediary activity:

Distinguish **brokerage** (bringing together transactors with complementary needs) and **qualitative asset transformation** (transform attributes of an asset)

## **(1) Match transactors (information based financial services) - Brokerage**

- Fee based compensation
- No position taking involved, although reputation risk
- Basis of cost of gathering information  
reusability of information at zero cost
- Larger the grid, the more the saving,  
and the more difficult observation is
- Can be reused cross sectionally or  
through time

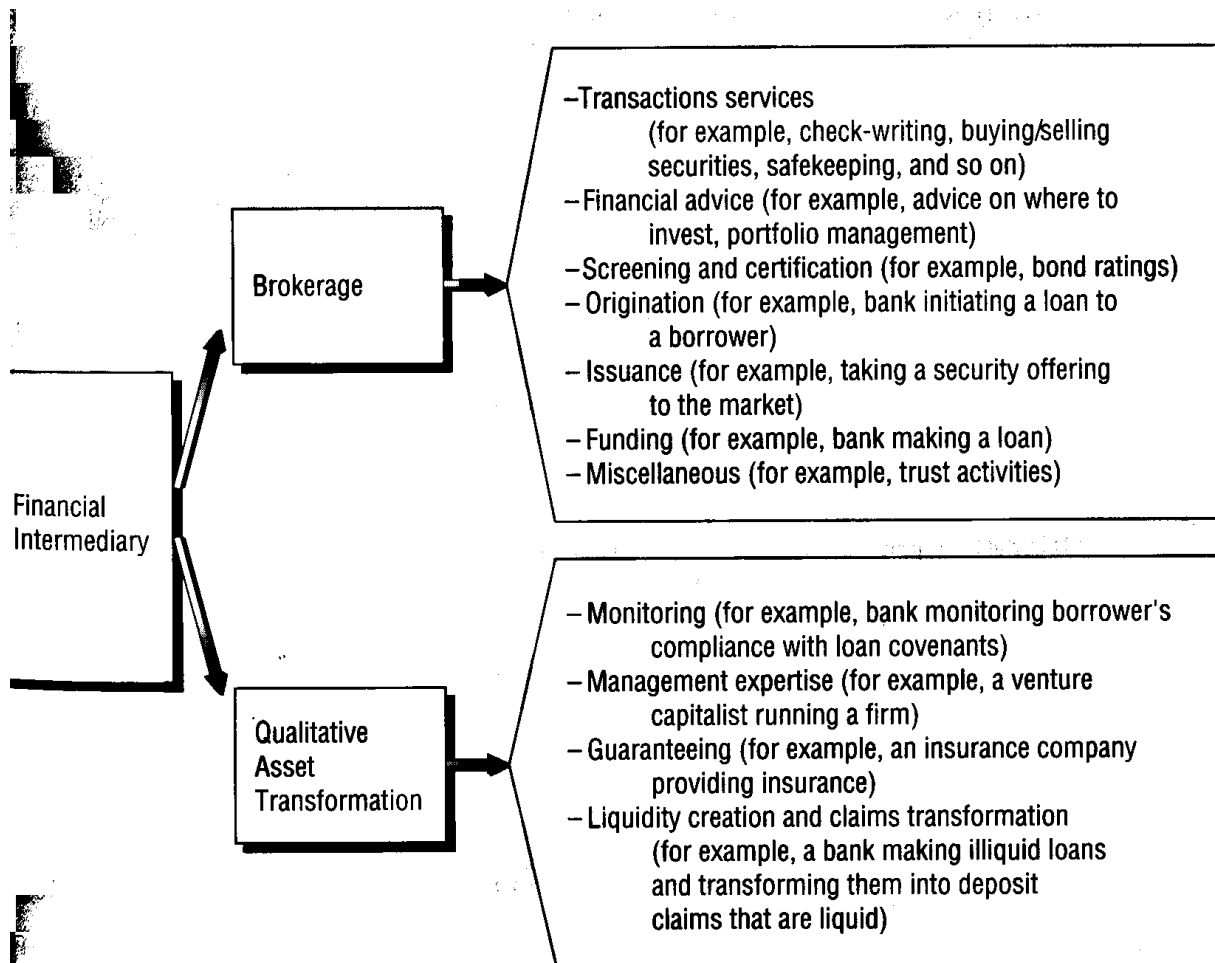
Examples: transactions services,  
financial advice, screening, origination,  
issuance, funding

## **(2) Manage risks and transform nature of claims – qualitative asset transformation or QAT**

- Provide better alternative to finding a counterpart for every transaction
- Transformations include duration, divisibility, credit risk, liquidity, currency
- Mismatch involves risk of loss to the intermediary
- Diversify (mutual funds) shift risk to others (derivatives) or accept exposure (banks)
- Examples: monitoring, management expertise, guaranteeing, liquidity creation

Exists continuum from brokerage to QAT, e.g. “firm commitment” and “best efforts” of investment banker

# Functions of intermediaries



# **Theories of intermediation**

Approaches to the theory of intermediation

Why don't transactions occur via markets?

Largely focus on QAT

Focus on transactions costs and asymmetric information

## **(1) Economies of scale**

Transactions costs at core

Arise e.g. due to fixed costs of evaluating assets

Declining average trading costs

Size and diversification – so individuals can no longer diversify perfectly (banks pool risk and diversify portfolios cheaper than do individuals, also provide payments services more cheaply)

## **Special case - Liquidity insurance and economies of scale in risk pooling (Diamond and Dybvig)**

- Focus on fact banks deposits cashable on demand while assets are long term and illiquid
- Banks as pools of liquidity providing individuals with insurance against idiosyncratic liquidity shocks only they can observe (information asymmetry)
- Also protect borrowers against early encashment of loans
- As long as shocks are not perfectly correlated, banks' cash reserves increase less than the number of customers (risk pooling)
- But the maturity mismatch leaves banks vulnerable to “runs” (also Lecture 7)



## Modelling liquidity insurance

3 periods 0,1,2, consumers only learn at  $t=1$  whether must consume endowment of good early: Depositor utility

$$U = \pi_1 u(C_1^1) + \pi_2 \rho u(C_2^2)$$

Returns under autarky (no trade), returns on good if liquidated early  $L < R$  if liquidated late. Can store

$$C_1 = 1 - I + LI = 1 - I(1 - L) \leq 1$$

$$C_2 = 1 - I + RI = 1 + I(R - 1) \leq R$$

Market economy case (can trade bond against good, price of bond  $p=1/R$ ):

$$C_1 = 1 - I + pRI$$

$$C_2 = \frac{1 - I}{p} + RI = \frac{1}{p}[1 - I + pRI]$$

Market economy Pareto superior (no liquidation) but not optimal.

Optimal allocation solves:

$$\max \pi_1 u(C_1) + \rho \pi_2 u(C_2)$$

$$\text{s.t: } \pi_1 C_1 + \pi_2 \frac{C_2}{R} = 1$$

satisfying

$$u'(C_1^*) = \rho R u'(C_2^*)$$

If risk aversion/intertemporal elasticity of substitution  $> 1$ :

$$\rho R u'(R) < \rho u'(1) < u'(1).$$

Market allocation can be Pareto improved by raising  $C_1^M$ , lowering  $C_2^M$   
 $C_1^M = 1 < C_1^*$ ;  $C_2^M = R > C_2^*$

- Market economy does not provide insurance against liquidity shocks as no complete contingent markets.

- Done by intermediary which offers deposit contract. To fulfil obligation it stores  $\pi_1 C_1^*$  and invests rest in illiquid technology.

- Crucial no one withdraws unexpectedly at  $t=1$  or bank becomes unstable

## **(2) Asymmetric information**

See discussion of adverse selection and moral hazard in previous lecture

### **(a) Intermediaries and screening**

- To overcome adverse selection, intermediaries can screen quality of entrepreneurs and firms (credit analysis – Lecture 5), communicate proprietary information at lower cost than borrowers, then sell claims to a diversified portfolio to investors.

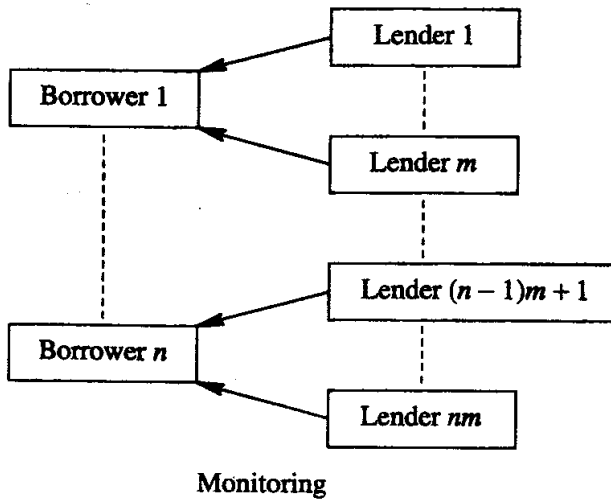
### **(b) Intermediaries and monitoring**

- Financial intermediaries act as delegated monitors (from depositors) to overcome asymmetric information, and risk of moral hazard.

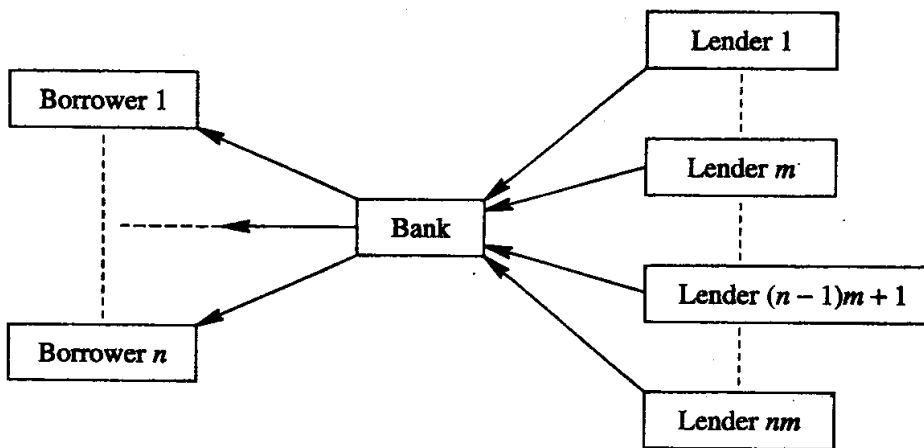
- Technology of monitoring offers economies of scale (e.g. obtained from ongoing credit relations, deposit history, transactions services)
- Diversification lowers borrowing costs (projects are too large for investors to finance alone).
- Investors need to monitor the intermediary, e.g. via non pecuniary penalties or the threat of a “run” (costs of this less than benefits from scale economies in monitoring investment projects)

## **Delegated monitoring (Diamond)**

n firms, m individuals, K monitoring cost, C cost of renegeing on debt  
 Optimality requires  $nK + C_n < nmK$



**Figure 2.1**  
 Direct Finance: Each Lender Monitors Its Borrower  
 Total Cost:  $nmK$



**Figure 2.2**  
 Intermediated Finance as Delegated Monitoring  
 Total Cost:  $nK + C_n$

Result will hold if monitoring is efficient ( $K < C$ ), investors are small ( $m > 1$ ) and investment is profitable. Then intermediation (delegated monitoring) dominates direct lending as soon as the number of projects  $n$  is large enough (diversification)

### **(3) Control**

Justification for intermediation is based on:

Incompleteness of loan contracts

Ability of intermediary to influence borrowers' behaviour when loan outstanding

And ability to restructure when loan is in default.

### **(4) Commitment**

Formation of long term relationships by intermediaries with borrowers, reducing information asymmetry and moral hazard, while intermediary's reputation protects borrower.

# **Why are some transactions by banks and other by markets?**

Application of theories of intermediation

(1) Economies of scale – small loans made by banks and smaller firms borrow from banks

(2) Asymmetric information that reputation is needed to access market financing. So smaller and less reputable firms borrow from banks (firm life cycle)

(3) Control implies that banks will finance high risk firms as can exert control better than markets

(4) Commitment suggests relationships important in banking not in bond markets

## **New approaches to the theory of intermediation (Allen and Santomero)**

Deregulation has improved information provision, via technology and functions of financial system, lowering transactions costs and improving investor information

Traditional approaches seem to make less sense, although intermediation per se is increasing

Possible explanations:

### **Risk transfer and risk control**

There are a number of reasons why companies wish to control risk, not least the costs of financial distress

Intermediaries are better placed to perform value added services in financial markets for risk control



instruments more efficiently and knowledgably.

Risk avoidance – via underwriting standards, portfolio diversification etc

Risk transfer – via purchase and sale of financial claims such as swaps and adjustable rate lending

Risk absorption – via holding non marketable assets such as bank loans

## **Facilitating participation in markets of individuals**

Assume fixed costs of learning about a stock or financial instrument, and/or marginal costs to monitoring markets daily

Offer information, invest on individual's behalf or offer a fixed income claim against the intermediaries' balance sheet

## **Intermediaries and functions of the financial system**

(1) Clearing and settling payments: Banks provide payments services but so do markets, MMMFs

(2) Pooling: bank loan books are in this diversified form, so are the asset portfolios of institutional investors

(3) Transfer economic resources: Banks are able to accomplish this via transformation in terms of maturity, foreign, industrial lending - so are bond markets

(4) Manage uncertainty and control risk: Banks in themselves limit risk to depositors by backing liquid deposits which are insulated by bank capital from volatility of loans (liquidity insurance)

(5) Price information: Banks tend to rely on private information, although

their lending itself may thus offer information to others.

(6) Incentive problems: See the asymmetric information, control and commitment theories. Banks have comparative advantage for the small and information intensive assets

## **The evolution of financial systems and the role of banks**

- Declining role through the three stages? (see tables at end of lecture 1)
- Blurring of distinctions between intermediaries (cheque writing, MMMFs; tradability of assets, equity finance by banks as venture capital)