

8 An Economic Analysis of Financial Structure

A healthy financial system is critical to the state of the economy as it moves funds from savers to borrowers. In what follows, we will discuss how our financial structure promotes economic efficiency. If we examine financial structures around the world, we find there are eight basic facts:

Eight Facts

1. Stocks are not the most important source of external financial for firms.
2. Issuing marketable debt & equity securities is not the primary way in which businesses finance operations
3. Indirect finance is more critical than direct financing
4. Banks are the most import source
5. Financial systems are heavily regulated
6. Only large, well-established firms have access to securities markets
7. Collateral is a prevalent feature of debt contracts
8. Debt contracts are extremely complicated and place heavy restrictions on the borrower.

8.1 Transactions Costs

Influence in the Financial Structure:

Transaction costs freeze individuals out of financial markets. Recall the example that we discussed earlier: Suppose you have \$100 that you would like to invest in Apple. Using an only trading platform, you are only able to purchase 1 share at \$100/share plus you must pay a \$10 buying fee. Because you have to pay a \$10 selling fee when you decide to sell, you need Apple's stock to go up to \$120/share in order for you to break even.

Reducing Transaction Costs

To reduce transaction costs, financial Intermediaries make use of their large size achieve *economies of scale* by bundling investor funds together. In doing so, they purchase many shares at the same buying and selling fee effectively lowering the transaction cost per share. The presence of transaction costs explains why Financial Intermediaries are more important than financial markets when firms are raising funds. They have the ability to reduce costs that individuals and most firms do not possess.

8.2 Asymmetric Information

Recall, *Asymmetric Information* occurs when one party has more information than the other when conduction a transaction which leads to a market failure. The presences of asymmetric information leads to two problems:

1. Adverse Selection
 - Risk takers/thieves are most eager to take out a loan because know they will not pay it back
 - With a higher risk of making bad investments, lenders may choose not to lend at all
2. Moral Hazard
 - Risk that borrowers will engage in undesirable activities after the transaction occurs
 - Risky behavior lowers the probability of repayment so lenders may not choose to make any loans

The presences of asymmetric information leads to an inefficient market which economists are not about. We apply **agent theory** in what follows to explain the eight facts listed above and provide insight as to why the financial structure takes the form it does.

8.3 The “Lemons Problem”

Example: 8.1. *Suppose there are 2 agents participating in the Used Car Market:*

1. Potential Buyers:
 - Unable to assess quality of used car which is: Low (Lemon) or High
 - Willing to pay average price of all cars on the lot: $price \in [V_L, V_H]$
2. Sellers:
 - Knows the quality of the car
 - If car is a Lemon \Rightarrow seller willing to sell at the price buyer is willing to pay
 - If car is High \Rightarrow seller knows car is undervalued at buyers price and doesn't sell

As a result of adverse selection, fewer High quality cars will come to market. This implies the average quality of cars on the market will be Low. Because no one wants to buy a lemon, fewer used car sales will occur and the market will function poorly.

In the absence of Asymmetric Information, the Lemons Problem goes away. Buyers know the exact quality of each used car and are willing to pay a value equal to the quality of the car. Because sellers can now get a decent price, they are more willing to bring their car to the market. Thus, more transactions will occur and the market will channel cars from buyers to sellers as it is intended to.

Lemons Problem & the Stock/Bond Market:

Changing “quality of car” to “profitability of a firm,” the Lemons Problem can be applied to financial markets. Suppose you are trying to decide whether to buy stock in Firm A or Firm B but you are unable to access the profitability of each firm. Knowing there is a bad quality firm out there, you offer the average between the two quality levels. This leads to fewer good quality firms willing to issue stock as the only price buyers will pay is the average. As the firms in the market become solely bad quality, investors rather not make any investments.

Fixing Adverse Selection:

Adverse selection explains why direct finance is not a major source of financing as it is hard to distinguish between profitable investments and investments that appear profitable. How do we fix it?

Problem: Incomplete Information

Solution: Provide buyers with better details about firms seeking investors

One way to achieve this solution is the Private Production & Sale of Information. In the U. S. companies like S&P and Moody's gather information on firms' balance sheets and investment activities to sell it to its subscribers. However, this does not completely solve the Lemons Problem as the private sale of information leads to the Free Rider Problem. To see why this is a problem, consider the following:

Example: 8.2. *Suppose you are a subscriber of this service and it leads you to a great investment that is trading at a lower value. When you purchase this investment, your buddy Jorge (who's not a subscriber) copy's you without paying for the information. If many investors act as Jorge does, this will bid up the price of good undervalued investments and you will be paying for the information without capturing the profits.*

Govt. Regulation to Increase Information

The free rider problem prevents the private market from producing enough information to eliminate the asymmetric information completely.

1. Govt. provision of information (potential political nightmare)
2. Regulate securities markets in a way that encourages firms to reveal information to investors (SEC)

Govt. regulation does not eliminate the problem completely as firms still know more than investors.

Financial Intermediation

Financial Intermediaries act like Used-car dealers in the auto market. Rather than individuals buying/selling cars independently, used-car dealerships can purchase the cars and provide a guarantee/warranty on High quality cars which acts as a signal to car buyers.

To distinguish profitable investments, banks become experts at gathering and producing information about firms. They acquire funds from depositors and use information to lend to High quality firms.

Collateral & Net Worth Another mechanism to reduce the effects of Adverse Selection is to require *collateral* on loans. If an entrepreneur with a extremely risky investment is looking for a loan, they are less willing to put up personal collateral as they know the investment has a high probability of failure. Alternatively, safe entrepreneurs will be willing to put up collateral because they know their project will most likely be a success.

8.4 Moral Hazard and Financial Contracts

Equity contracts (common stock) are subject to the **principal-agent problem**. This is when executives act in their own personal interests rather than the interest of the shareholders.

Example: 8.3. Suppose your bff Jill asks you to be a partner in her Hot Dog Cart in Newark. The cart requires \$10,000 to startup. Since she only has \$1,000, she agrees to run the cart as manager if you put up \$9,000. You agree and now you own 90% of the company. Consider two possible scenarios:

1. Jill works hard all year and after expenses, the cart brings in \$50,000 profit (90% of which is yours)
2. Jill slacks off, routinely closing early and not showing up to work. She believes the 10% (\$5K) is not enough for all the effort she has to put forward. In other words, Jill does not have the incentive to work hard.

Preventing Moral Hazard

- Costly State Verification - Frequently checking up on management
 - Makes equity contracts undesirable
- Govt. Regulation
 - Try to keep firms honest, impose stiff penalties for fraud
- Financial Intermediation
 - Venture Capital Firms
- Debt Contracts
 - On Shark Tank, "Mr. Wonderful" routinely offers the amount they are asking for a royalty/or a specific payment each month until he has received his money back. This mechanism allows him the ability to avoid the moral hazard problem. The only time he needs to check on management is when the manager misses a payment. Thus, if the manager is engaging in undesirable activity and still making payments, his profitability is not affected.

10 Banking and Management of Financial Institutions

Providing over \$10 trillion in credit annually, indirect finance and banking is more important source of financing businesses than direct financing. They provide loans to businesses, help finance college a education, and purchase new homes/cars. It is crucial to ensure the financial system and economy runs smoothly and efficiently. In this section, we examine how banking is conducted, why banks make loans, acquire funds, and earn income.

10.1 The Bank Balance Sheet

$$\text{Assets} = \text{Liabilities} + \text{Stockholders Equity} \quad (10.1)$$

A bank balance sheet gives an overview of the bank's financial condition.

Table 1: Bank Balance Sheet

Assets (%)		Liabilities & Stockholders' Equity (%)	
Reserves & Cash Items	15	Checkable Deposits	10
Securities	20	Small Denomination Time Deposits	41
Loans	56	Large Denomination Time Deposits	14
Other Assets	9	Borrowings	23
		Stockholders Equity	12
<i>Total Assets</i>		<i>Total Liabilities and Stockholders Equity</i>	
	100		100

Assets - Anything of value owned by Bank

- Reserves
 1. *Required Reserves*
 - Reserves banks are legally required to hold
 2. *Excess Reserves*
 - Reserves held above required amount
- Cash Items
 - *Checks being processed & Deposits at other banks*
- Securities
 - *U.S. Govt., State, & Local Securities*
- Loans
 - *promise to make certain payments to bank*

Liabilities - Any debt owed by Bank

- Checkable Deposits
 - *Money owed to households and firms*
- Small Denomination Time Deposits
 - *Savings Accounts & CD's <\$100,000*
- Large Denomination Time Deposits
 - *CD's >\$100,000*
- Borrowings
 - *Discount Loans & Loans from other banks*

Stockholders Equity - *Net worth of Bank*

10.2 Banks Create Money

Contrary to what the media leads us to believe, the govt. does not create money by simply printing it. The creation of money is done behind the scenes by Banks. To see how they create money, consider the following T-Account and example:

1. Suppose you deposit \$1,000 in your Checking Acct. \Rightarrow Reserves \uparrow & Deposits \uparrow
2. Banks are legally only required to hold 10% of Deposits. \Rightarrow Loans \uparrow & Deposits \uparrow

PNC			
Assets		Liabilities	
Reserves	1. +\$1,000	Deposits	1. +\$1,000
			2. +\$900
			3. +\$810
			4. +\$729
			⋮
		TOTAL:	\$10,000
Loans	2. +\$900		
	3. +\$810		
	4. +\$729		
	⋮		
	TOTAL:		
	\$9,000		

In making that initial \$1,000 deposit, checking deposits have increased to \$1,900 after the second step. However the story does not stop there. This process will continue until there is no additional money to loan out and Banks hold zero excess reserves. This process creates checking deposits greater than the initial cash deposit. How do we know how much the checking deposits have increased without doing the steps?

Simple Deposit Multiplier

- Ratio of the amount of deposits created by banks to amount of Reserves

$$\text{Simple Deposit Multiplier} = \frac{\Delta \text{Checking Deposits}}{\Delta \text{Initial Deposit}} = \frac{1}{RR} \quad (10.2)$$

Theory vs. Real World

The simple deposit multiplier (theory) assumes two things:

1. Banks hold no excess reserves
2. All cash is held in Bank

