

Lecture 1: "The main features of financial system"

What is the subject of our course?

Anytime we decide to do something we should decide what we want to spend our time for: there is an opportunity cost in the choice we do. In fact, we have limited resources which have to be allocated efficiently in the economic world. Time, for example, is a limited resource: if I buy a good or service from someone else, I can use my time in a valuable way. Therefore, in an economic world people every day have to face a very important problem regarding the efficient allocation of the disposable resources. The answer to this problem is the *specialisation* which permits the efficient allocation of limited resources.

As a consequence, modern economies are based on specialisation and exchanges: everybody specialise in something instead of doing everything alone and exchange their specialisation. In particular, advanced economies are very specialised and they are characterised by a very large number of exchanges. This concept refers to Will Smith's theory.

Any exchange of goods/services is very complicated because it is very difficult to say precisely how much the exchange values. An exchange could work only if we introduce a measure of value: the most important measure of value is represented by *money*.

Moneys allow exchanges because represent a universal payment method. Money are crucial for making the economic system work correctly but at the same time money are allocated among people in an uneven way, therefore they are responsible of a very important problem: society's inequality. In the world there are people who has more or less money than others, people who decides to save their money or spend their money. In general, we can distinguish between two different categories:

- 1) Savers or in economic term "Surplus Spending Units" (*SSUs*)
- 2) Spenders or in economic term "Deficit Spending Units" (*DSUs*)

Savers (or SSUs) are those that spend less than their income, they have more money than they need and for this reason are called surplus spending units. In this category we consider for example households (and more generally all the physical people who tend to save their money) and specific firms that have extra money to invest. Spenders (or DSUs) are those that spend more money than their income, they have less money than they need and for this reason are called deficit spending units (or borrowers). In this category we consider for example firms, which have to face a lot of costs before getting a return and spend all their money for investments (also the decision to lend money can be considered part of the investment strategy of a company), and governments which take money from taxation and use them to grant some very important services (for example education, health and in general all is about the public expense).

SSUs give the money they have in excess to DSUs. In this way, money flow from SSUs to DSUs. This movement (named *money flow*) is very important because it's the way in which value is created in the economic system allowing economic growth. The money flow (from SSUs to DSUs) is granted by the financial system. The financial system is the system that allows the transfer of money between savers (SSUs) and borrowers (DSUs); through the financial system monetary resources are allocated in a more efficient way by transforming savings into more productive investments. By doing so, the financial system promotes economic growth and development. Summarising, investing money is crucial to create new values and for economic growth of society, on the other hand keeping moneys without investments is a very relevant limit for the economic development of society.

Money are always given for something else not for free: for example, if we consider a firm that decides to lend some amount of money, it will get back a new amount of money computed considering the interest rate. The firm exchanges money for interest rate. Therefore, the *interest rate* can be considered the cost of money, and it is given by the risk-free inflation rate (π) plus a premium which reflects the income/credit risk, which is the risk of not getting money back from the borrower. As a consequence, the interest rate depends on risk and time. The higher is the risk the greater will be the compensation (premium); the longer is the time the greater will be the utility/disutility.

Through the interest rate the SSUs position and the DSUs position are made equivalent and balanced.

The financial system carries out its function through three components:

- 1) Financial assets: the medium by which the value of financial transaction within the financial system is recognized

- 2) Financial institutions: entities performing financial functions, for example banks and other financial intermediaries
- 3) Financial markets: institutions in which the creation, sale and transfer of financial assets may take place

Theoretically, the transfer of money could take place directly between SSUs and DSUs but in the real world, three formidable obstacles obstruct this direct transfer:

- 1) Transaction costs
- 2) Information asymmetries
- 3) Differences in preference

Transaction costs.

Every act in life implies costs which are not merely monetary costs and for this reason they are able to affect each aspect of the economic life. The relationships between SSUs and DSUs are extremely expensive. They are characterized by different types of costs: costs for searching the counterpart (for example broker's commissions, spreads, etc.), contracting cost (for example advices), monitoring costs, enforcement cost, policing costs, etc. They are the so-called *transaction costs* and are very important to investors because they are one of the key determinants of net return. In particular, transaction costs are responsible of a decrease in net return, and over time, reduce the amount of capital available to invest (producing inefficiency by the Coase theorem). Moreover, human beings have many limitations which affect their decisions (*cognitive limitations*) and differ real people from the perfect rational agent assumed by the economic theory. These cognitive limitations can be considered as transactions cost because people's bounded rationality influences the way they deal with economic transactions.

Information asymmetries.

In every economic relationship, which involves at least two parts, one part knows more than the other, that means it has more information than the other and has the possibility to take advantage. The existence of *information asymmetries* leads to two different consequences:

- 1) Moral hazard
- 2) Adverse selection

Moral hazard is the risk that a party has not entered into a contract in good faith or has provided deliberately misleading (skew or altered) information about its assets, liabilities, or credit capacity in order to attempt to make a profit on the contract. Moral hazards can arise anytime an agreement is entered into between two parties (for example between two companies) because each party in a contract may have the opportunity to gain from acting contrary to the principles established by the agreement.

Moral hazard is strictly connected with the *agency problem model* and vice versa because one gives rise to the other. The agency problem refers to an economic relationship in which we have two parts: the principal and the agent (agency relationship). The agent is someone who is supposed to do something for the principal and can be considered the part with superior information because he only knows if he is doing properly his job or if he is cheating to take some benefits. Therefore, the agency problem concerns a conflict of interest in any relationship where one party is expected to act in another's best interest. Because the two parties have different interests and the agent has more information, the principal cannot directly ensure that its agent is always acting in his best interest. The risk of the principal of being cheated is the moral hazard problem connected with the agency model. There is asymmetry of information because the agent can hide something to the principal.

However, the principal has the possibility to overcome this problem. We can distinguish between two different ways:

- 1) by monitoring the agent in the achievement of his task
- 2) by asking the agent some guarantee (bond or signal) to assure that everything goes well without cheats: this possibility is known in legal term as the bonding process (giving a bond means giving a guarantee)

Both the monitoring process and the bonding process are very expensive method (monitory more than bonding) to overcome the asymmetry of information. The costs associated with these processes could be so high that the

agent-principal relationship cannot work anymore. For this reason, trust is the simplest way to manage all these problems.

The agency problem model can be exemplified by considering the structure of a typical US company, in which shareholders are principals and managers are agents. Managers are supposed to make decisions that will maximise shareholders' wealth but in reality, managers' own body interest is to maximise their own wealth. Managers can be motivated to act in shareholders' best interests through incentives such as:

- Performance-based compensation
- Direct influence by shareholders
- Threat of being fired and of a takeover

The adverse selection refers generally to a situation in which sellers have information that buyers do not have, or vice versa, about some aspect of product quality (it is a case where asymmetric information is exploited). Adverse selection can be exemplified by considering the so-called "Market for Lemons". It is a well-known 1970 paper by economist George Akerlof which examines how the quality of goods traded in the market can degrade in the presence of information asymmetry between buyers and sellers, leaving only "lemons" behind. In American slang, a lemon is a car that is found to be defective after it has been bought. Akerlof's paper uses the market for used cars as an example of the problem of quality uncertainty. Suppose there are two guys (sellers) which are going to sell the same car model at the same price. Seller 1 sells a good used car (high-quality car), while seller 2 sells a lemon (low-quality car). The buyer does not know which is the good car because they look the same by assumptions. Therefore, the buyer has no information to distinguish the two cars because of asymmetry information, but he may imagine that there are bad sellers in the market. For this reason, he will discount the price of the car to compensate with the risk and offers a lower price to understand which seller is a cheater. Because sellers know whether they hold a high-quality or low-quality car, the good seller steps back because he wants a fair bargain, while the bad seller not. As a consequence, the market of good used car will disappear and the seller who remains in the market is the one who wants cheating the buyer at start (lemon problem). As we can see, we live in conditions in which we are not able to overcome or reduce the asymmetry of information. One possible solution is to ask the seller to provide a guarantee, but in the real world the brand is a more common way to signal quality and to overcome adverse selection by asymmetry information.

Differences in preference.

SSUs and DSUs have different preferences in term of time and risk. SSUs are savers and for this reason prefer short-term and low-risk investments. DSUs are generally entrepreneurs and for this reason prefer long-term and high-risk investments.

The presence of financial institutions allows to manage such problems. In particular, we distinguish between two main financial institutions:

- 1) Banks
- 2) Capital markets

Banks are intermediaries which make the flow of money possible. Banks can be considered the central counterpart between SSUs and DSUs: they collect money for SSUs in the form of deposit and lend money to DSUs.

SSUs are called savers because they lend money to banks through deposit which are contracts where the saver has the right to get his money back or the interest on the deposit. DSUs are called borrowers because they receive money from banks through loans and mortgages which are loans that require a piece of real estate as a guarantee (if the borrower doesn't pay back the money, the bank has the right to sell the collateral associated with the loan).

Banks are able to manage transaction costs, information asymmetries and differences in preference because they present themselves as intermediaries allowing the matching between different counterparties.

- 1) Banks manage transaction costs by their economies of scale: they put themselves in the middle of the regulation in order to reduce the costs of transactions. Because banks deal with many lenders and many borrowers the average cost for matching unit fall progressively.

- 2) Banks manage information asymmetries by their specialisation: they intermediate the relationship between SSUs and DSUs in a strong form presenting to them as the central counterpart (CCP) allowing the money to flow from SSUs to DSUs with no problem. The debtor of SSUs becomes the bank, which is the best debtor they can have (well-known and trusted institutions) and in this way, they solve the moral hazard problem from SSUs. Moreover, banks thanks to their specialisation and expertise are able to collect and elaborate information more easily solving the adverse selections problem for DSUs.
- 3) Banks manage differences in preferences by transforming risk and maturity: they collect (borrow) short-term money from SSUs at low-risk and lend long-term money to DSUs at high-risk (in economic terms it is called "asset and maturity transformation"). Through banks original lenders are insulated from the risk of borrowers' insolvency (credit risk) and final borrowers get financed according to their needs. At the same time, banks lend money to a high number of borrowers with different characteristic to diversify their risk of default.

Because banks are characterised by short-term low-risk payables and long-term high-risk receivables, they are for definition structurally unstable (or institutionally unbalanced). To mitigate their structural risk of instability, banks have to maintain some reserves to satisfy the demand for deposits' return and to avoid the risk of credit crunch (Basel 3 regulation).

In a normal environment, banks are supposed to pay interest rate to SSUs, which usually is very low, but at the same time they are supposed to receive a higher interest rate from DSUs. The differences between the interest paid on deposit and the interest received on loans represents the banks' profit and it is called intermediation margin (spread).

As we can see, banks are crucial for every economic system, but the parties involved in an economic relationship (SSUs and DSUs) can also decide to get rid of them: when banks do not operate as central counterparties between SSUs and DSUs we have a capital market. Capital markets allow money to flow directly from SSUs to DSUs, thus:

- avoiding the cost of banking intermediation
- shifting credit risk on original lenders and requiring matching preferences

If this happens the bank's profit (which is the compensation of bank to solve the three formidable obstacles that obstruct the direct transfer of money) can be split between the two parties and they can agree with different interest rates. In this way, the cost of financing would be much lower, but the two parties have to deal with transaction costs, information asymmetries and differences in preferences. Because in capital markets we do not have banks as central counterparties (commercial banks), these problems are managed in different ways:

- by the presence of some specific financial intermediaries: investment services providers and collective-investment schemes managers
- by the presence of secondary markets
- by regulation

- 1) Transaction costs need necessarily an intermediate to be overcome. In capital markets we do not have a very strong form of intermediation but only a weaker intermediation that helps DSUs to get in contact with SSUs. This weaker form of interposition is represented by investment banks and asset managers. Investment banks (broker or dealer) are financial intermediaries which arrange transactions more cheaply exploiting their economies of scale and specialisation. Asset managers (as for example mutual fund) are financial services providers which deal with the management of investments on behalf of others. A mutual fund is, for example, a company that pools money from many investors and invests the money in securities (such as stocks, bonds and short-term debt) creating a specific portfolio which would be able to generate capital gains or income for the fund's investors (in proportion of the quantity of the fund subscribed by each investor).
- 2) Information asymmetries in capital markets are managed first of all by disclosing regulation clearly. Regulation increases transparency and manages agency problems, in particular when financial assets are risk capital. In this way, moral hazard is solved by law (mandatory disclosures) as a tool to overcome asymmetry information problem, but at the same time regulation is not sufficient to solve adverse selection problem. To manage adverse selection, it is necessary the presence of financial intermediaries which are able to signal the quality of relevant financial assets by pledging their reputation: this mechanism which consists in using the reputation of a third party (who in practice lends

his reputation to the party which would suffer adverse selection problem) is called reputational intermediation.

- 3) Differences in preferences in capital markets are managed by the presence of secondary market, which are virtual places where investors meet easily and buy and sell securities they already own. Secondary markets (in economic terms exchanges) are generally regulated, so that it is possible to find always available counterparts for every transaction needed at lower transaction costs, and provide liquidity allowing diversification and communicating information. Liquidity is crucial for secondary markets' working, because it allows exchanges immediately and for this reason it measures the level of quality of the secondary market. Secondary markets are what most people typically think of as the "stock exchanges" but in reality, the main securities traded, which are used in capital market to permit the flow of money from SSUs to DSUs, can take three different forms:
 - a. Debt capital instruments (bonds): in which the only risk connected with is the issuer credit risk's.
 - b. Risk capital instrument (shares): which grant to their owners – shareholders – voting rights to participate in the general meeting with a weight that depends on the percentage of company shares owned by each one of them and this leads to the possibility of dividends.
 - c. Derivatives: which are financial securities whose value depends on their underlying assets and are able to move risk (risk shifting tools)

We can distinguish two other very important tools to manage differences in preferences (and the other problems we have to face) in capital markets:

- I. Portfolio diversification: which is the practice of spreading your investments around so that your exposure to any one type of asset is limited. It is a risk management strategy that mixes a wide variety of uncorrelated investments within a portfolio in attempt at limiting exposure to any single asset or risk. The rationale behind this technique is that a portfolio constructed of different kinds of assets will, on average, yield higher long-term return and lower the risk of any individual holding or security.
- II. Fintech: or financial technology is a term used to describe the new IT technology applied to finance (for example peer-to-peer lending or crowdfunding which are both characterized by an IT platform used to overcome transaction cost, information asymmetries and differences in preference) that seeks to improve and automate the delivery and use of financial services. Fintech is used to help companies, business owners and consumer better manage their financial operations, processes, and lives by utilizing specialised software and algorithms that are used on computers and, increasingly, smartphones.

From both a theoretical and historical perspective, financial systems may be more bank-oriented or centred (in economic terms *relationship-based systems*) or capital markets-oriented (in economic terms *arm's length systems*). Over time, there have been many discussions about the preference model based on banks or capital markets but at the end we can say that each model works better under certain condition and for this reason do not exist one that is better than the other. When we analyse the financial system used in a specific economic environment, we have to consider some important issues:

- a. Culture: the culture of a country plays a very important role in the choice of the appropriate financial system because the approach of certain population is influenced by different factors, as for example the way of thinking or the social environment which could be very different (European are more conservative, while American are riskier).
- b. Firms' dimension: in every state the dimension of a company can be different, and this can influence significantly the choice of the financial system because it involves different economic features, for example Italian companies are structurally smaller than American companies due to the different geographical dimensions of the two countries.

- c. Regulation: regulation is different from state to state, and for this reason the set of law could be able to affect the choice of the financial system needed by a specific country, for example American population is against banks which are responsible to limit the power of other financial intermediaries (investment banks as broker or dealer).

A relationship-based system is, generally, a bank-oriented model based on a stable relationship between the two parties, in which is very difficult to enter because it requires time effort and many other characteristics. The relationship-based system ensures a return to the financier by granting him some form of power over the firm being financed. For this reason, it gives rise to a monopolistic relationship, with the firm being financed, that requires some barriers to entry. These barriers may be due to regulation, or to a lack of transparency (“opacity”) of the system, which substantially raises the costs of entry to potential competitors. Therefore, in a relationship-based system:

- 1) *transactions are conducted on the basis of a direct and generally long-term relationship*: as a consequence, a relationship-based system can provide better forms of insurance, but it does that at the cost of reducing access to financing. For this reason, it tends to smooth temporary shocks and the prospect of future rents may induce the financier to interact and bail out possible financially distressed borrower. The opposite is true for systematic shocks, because of lack of transparency and disclosure this system prevents necessary adjustment when shocks reflect the necessity for structural change. At the same time, it is very difficult to be granted a loan because a long-term relationship is needed.
- 2) *the lender has private information* (information about the borrower which are not available publicly): as a consequence, in a relationship-based system there is little transparency, financial assets become very illiquid and the intermediary becomes indispensable to collecting on loans (the bank becomes a monopolist of information of the firm).
- 3) *the lender has a direct influence on the borrower and monopolistic power in the market*: as a consequence, it does not pay much attention to market or price signals. In such a system financing cannot take place in the presence of intense competition, hence, it will occur when competition is restricted and when prices tend to be not very informative. If investment decisions are not driven by prices, they become less effective in providing economic direction because reflect less information (weaker role for price signal).
- 4) *there is a greater government intervention*: because of its opacity a relationship-based system is naturally more prone to government direction because it depends more heavily on the government to maintain the restrictions on competition that enable it to work. The opacity of the relationship-based system makes it easier for the government to intervene because it is less visible and hides the real cost of its intervention (less costly and less transparent).

Therefore, we can conclude by saying that a relationship-based system works better when markets and firms are smaller (that’s why in the US, which is mostly market-based oriented, there are more big enterprises while in Italy SMEs are more widespread), when legal protection is weaker (this type of relationship is largely self-governing and self-enforcing, requiring just the protection of the most basic property rights and parties tend to respect the terms of the agreement because want to maintain their reputation), when there is little transparency, and when innovation is mostly incremental rather than revolutionary. It is based on social laws (which are applied by people without thinking about it).

An arm’s length system is a model based on a one-shot relationship that take distance (capital markets-oriented) in which is very easy to enter but very difficult to remain because of its structural instability: capital markets are open markets in which you need to share information with other people, and for this reason they are structurally easier to enter in but less stable than banks. Therefore, in an arm’s length system:

- 1) there is no need for a strong and long-term relationship between lenders and borrowers (short-term relationship): as a consequence it guarantees greater access to financing (there is a variety of potential lenders) at the cost of a greater exposure to shocks (therefore, arm’s length systems in general can deal with system wide adverse shocks better).

- 2) parties involved have no special information about each other that is not already available to the general public: as a consequence, the firm will be able to tap a wider circle of potential lenders because there will be more widespread financial information and it will be characterized by liquidity).
- 3) there is open competition among lenders: as a consequence, it involves a stronger role for price signal (prices are more informative and for this reason the more transaction come into the market the more likely and right will be the decision made on the basis of price).
- 4) government intervention is more visible and, thus, more difficult

Therefore, a market-based system works better when markets and firms are bigger (it is more suitable for more formally organised companies, especially in a developed country), when firms are more formally organised, when there is a better legal enforcement and transparency, and when innovation tends to be more revolutionary (an arm's length system gives new firms, attempting new technologies, a better change of obtaining financing because there are many investors from a variety of backgrounds, each of whom has the basic information to assess). It is based on actual laws (which must be applied clearly to have a stable market).

Relationship-based	Arm's length
Long-term relationship	Short-term relationship
Better shock absorption capacity	Systematic risk
Reduced access to financing	Greater access to financing
Private information	Public information
Incremental innovation	Revolutionary innovation
Illiquidity	Liquidity
Monopolistic power	Open competition
Price is not very significant	Price is very significant
Greater government intervention	Government intervention is difficult
Weaker legal protection	Transparency
Emerging markets	Mature markets

Thus far, we have just characterized the two extreme models of financing. No real-world financial system could be classified as purely arm's length or purely relationship based. They all rely on both modes of financing. The difference rests in the relative importance of these modes and how they are combined. U.S. venture capital, for instance, seems to combine the best elements of both financing models. By contrast, East-Asian systems seem to combine the worst of both modes. Of course, which type of financing is prevalent and which combination emerges is driven, at least in part, by the surrounding legal and institutional environment.