Economics of Banking and Finance Markets
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Lecture - 18
Banking Structure and developments - I

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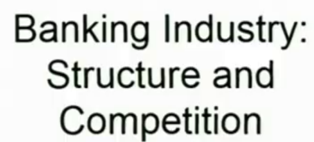

Welcome to this session. In this session and in the subsequent session we will discuss the Structure and further development in the Banking Industry. So, in the previous sessions we completed the discussion of what is banks and what are the various activities of banks especially by using its balance sheet. And in this session, let us start now with some of the banking activities without using a balance sheet; that means, some of the off-balance sheet activities.

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Off-Balance-Sheet Activities

Off-balance-sheet activities involve trading financial instruments and generating income from fees and loan sales, activities that affect bank profits but do not appear on bank balance sheets.

So, the off-balance sheet activities involve trading financial instruments and generating income from fees and loan sales and activities that affect bank profits, but they do not appear on bank balance sheets. So, there are couple of activities that do not come under off balance sheet activities.

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Off-Balance-Sheet Activities

1: Loan sales (secondary loan participation)

- Grown in importance in recent years involves income generated by loan sales.
- A loan sale involves a contract that sells all or part of the cash stream from a specific loan and thereby removes the loan so that it is no longer an asset on the bank's balance sheet.
- Banks earn profits by selling loans for amounts that are slightly greater than the amounts of the original loans.
- Because the high interest rate on these loans makes them attractive, institutions are willing to buy them (the higher price means that they earn a slightly lower interest rate than the original interest rate on the loan)

0.15%

One of them is loan sales. It is also called as secondary loan participation. So, the loan sales have grown in importance in recent years as it involves income generated by loan sales.

So, a loan sale involves a contract that sells all or part of the cash stream from a specific loan, and thereby removes the loan. So, that it is no longer an asset on the banks balance sheet. And banks earn profits by selling loans for amounts that are slightly greater than the amounts of the original loans right.

So, the point here is that some of the banks can attract lots of loan. That is, some banks they are able to attract a large amount of loans and the high interest rate on these loans make them attractive. To optimize their activity, they will sell some of their loans. They will be selling it slightly greater than the amounts of the original loans. So, those who will buy it because the high interest rate on these loans makes them attractive.

And some financial institutions are willing to buy them. And maybe they are unable to raise this kind of loans by their own. So, what they will do that they will find it as a business opportunity, and this is some other institution financial institutions are willing to buy them at a higher price.

So, approximately the difference will be in 0.15 percentage, this will be the difference in the interest rate at which other institutions are willing to buy it. The other financial institutions who buy these loans will be getting slightly lower profit (less return) as compared to the original seller. So, this is one kind of off-balance sheet activities.

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Off-Balance-Sheet Activities

- **2: Generation of fee income** for providing specialized services to their customers,, servicing a mortgage-backed security by

Examples:

- Foreign exchange trades on a customer's behalf
- Servicing mortgage-backed securities (collecting interest and principal payments and then paying them out)
- Backup lines of credit (loan commitment for a fee, the bank agrees to provide a loan up to a given dollar amount, over a specified period of time; Credit lines with "overdraft privileges")
- Creating SIVs (structured investment vehicles): A SIV is a pool of investment assets that attempts to profit from credit spreads between short-term debt and long-term structured finance products such as asset-backed securities (ABS).
- (Note: it can potentially expose banks to risk, as it happened in the global financial crisis)

The second one is generation of fee income for providing specialized services to their customers including servicing a mortgage-backed security. So, there are several examples for that; one is foreign exchange trades on customers behalf. So, during in this activity, through this foreign exchange trade, banks generate fee income which will not be reported in the balance sheet.

And servicing mortgage-backed securities, that is collecting interest and principal payments and then paying them out, that is another kind of services. Banks also provide a backup line of credit. We have seen in one of the previous sessions that, to reduce moral hazard problems, banks make loan commitment. So, here the loan commitment it come with a fee; that means, the bank agrees to provide a loan up to a given dollar amount over a specified period. Through committing this, the bank is earning a fee. There is also credit lines with a overdraft privilege; that means, the customers can overdraw than the amount they are having in their current account. So, the credit lines with overdraft privileges also earn some income.

Then comes creating structured investment vehicles. A SIV is a pool of investment assets that attempts to profit from credit spreads between short-term debt and long-term structured finance product such as asset backed securities. Creating SIVs; that means, so many short-term borrowings and then clubbing all together into different financial product and thus making investment in another financial products. So, in this process also banks can make (Refer Time: 05:56) profit they can earn an additional income. So however, you know that it can potentially expose banks to risk as it happened in the global financial crisis.

The way it was done in 2007-08 crisis with the mortgage loan. Many individual mortgage loans and (Refer Time: 06:19) were converted into a structured financial product and made it as a look like entirely different financial product, then it was sold out in the market. However, you know it was one of the main reasons for the 2007-08 financial crisis.

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Off-Balance-Sheet Activities

3: Trading activities and risk management techniques:

- To manage interest rate risk: banks engage in off-balance sheet activities such as trading in financial futures, options for debt instruments, and interest-rate swaps. Banks engaged in international banking also conduct transactions in the foreign exchange market.
- This kind of speculation can be a very risky business and has led to bank insolvencies
- Principal-agent problem arises
- **Internal controls to reduce the principal-agent problem:**
  - Separation of trading activities and bookkeeping
  - Limits on exposure
  - Value-at-risk (the maximum loss that its portfolio is likely to sustain over a given time interval)

Coming to further off-balance sheet activities, it includes trading activities and risk management techniques. So, the to manage interest rate risk, banks often engage in off-balance sheet activities such as trading in financial (Refer Time: 06:51) options for debt instruments, and interest rate swaps and bank engage in international banking and carry out transaction in the foreign exchange market.

Sometimes this kind of speculation can also be very risky business. And has often led to bank insolvency in many cases, it also led to principal agent problems; that means, a kind of conflict of interest come up when banks engage in trading activities and risk management. In order to overcome that kind of conflict of interest, there are several tools are recommended suggested and we will discuss this one in detail one of the future sessions.

The conflict of interest and asymmetric information: some of the tools to reduce this conflict of interest is separation of trading activities and bookkeeping limits on exposure and value at risk that the maximum loss that is portfolio is likely to sustain over a given time interval. We will be discussing these aspects in detail in some of the forthcoming sessions.

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Structure and Operation of the banking industry

- The operations of individual banks (how they acquire, use, and manage funds to make a profit) are roughly similar throughout the world. In all countries, banks are financial intermediaries in the business of earning profits.
- In most countries, four or five large banks typically dominate the banking industry.
- India: Few commercial banks ✓SBI → 36 & 46
- But in the United States there are on the order of 5,700 commercial banks, 800 savings and loan associations, 350 mutual savings banks, and 7,000 credit unions.
- Does this diversity mean that the American banking system is more competitive and therefore more economically efficient and sound than banking systems in India and other countries?

Let us now move our discussion to another area, that is the structure and operation of the banking industry over time. The operations of individual banks, how they acquire, use and manage funds to make profit are roughly similar throughout the world in fact. So, in all countries, banks mean normally like this they accept deposit from the public and lend to the needy people including households and firms.

And in all country's banks are financial intermediaries in the business and they earn profit. They are just like any other firm; however, because of the kind of business they are doing, that the accepting deposit and lending loans, because of the kind of activities is different from the rest of the business.

You can see that, in most countries, a few banks few large banks typically dominate the banking industry. So, for example, in India you know that there are nearly 36 commercial banks. So, out of this, you know, a few banks dominate the banking industry. For example, SBI, HDFC, these are the large banks, they dominate in the market. For example, SBI is the largest commercial bank in India.

In India, there are only 36 commercial banks scheduled commercial banks and nearly 46 foreign banks working in India. As compared to this, if you look at United States, we can see that there are more than 5700 commercial banks, 800 savings and loan associations and 315 mutual savings banks and more than 7000 credit unions.

So, here is a natural question is that because look at for example, in the US there are large number of banks, but in India there are only a few numbers of banks. So, does this diversity, for example, in the U.S system, the American banking system is more competitive and therefore, more economically efficient and sound than banking system in India and other countries?

To understand this, let us see how the structure and operation of the banking industry in the western settings as well as in India.

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Financial Innovation and the Growth of the "Shadow Banking System"

- In recent years, the traditional banking business of making loans that are funded by deposits has been in decline. Some of this business has been replaced by the shadow banking system, in which bank lending has been replaced by lending via the securities markets, with the involvement of several different financial institutions.
- The process of financial innovation: transformed the entire financial system. Like other industries, the financial industry is in business to earn profits by selling its products. to maximize their profits, financial institutions develop new products to satisfy their own needs as well as those of their customers; in other words, innovation—which can be extremely beneficial to the economy—is driven by the desire to get (or stay) rich.
- Financial innovation is driven by the desire to earn profits
- A change in the financial environment will stimulate a search by financial institutions for innovations that are likely to be profitable

So, one of the things happened in recent years is that financial innovation and the growth of the shadow banking system. In recent years the traditional banking business of making loans that are funded by deposits has been in decline, that is one of the recent developments for the last more than last two decades.

Some of this business has been replaced by shadow banking system in which bank lending has been replaced by lending via securities market with the involvement of several different financial institutions. So, the process of financial innovation. The financial innovation transforms the entire financial system like other industries.

So, their objective is also just like other firms to maximize their profits. Financial institutions, in order to maximize their profit, develop new products to satisfy their own needs as well as

of their customers. So, that is financial innovation which can be extremely beneficial to economy, and it is driven by the desire to get to earn more profit by these banks.

So, financial innovation, as I mentioned, this is driven by the desire to earn profits. So, a change in the financial environment will stimulate a search by financial institutions for innovations that are likely to be profitable.

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Financial Innovation and the Growth of the "Shadow Banking System"

- Starting in the 1960s, individuals and financial institutions operating in financial markets were confronted with drastic changes in the economic environment: Inflation and interest rates climbed sharply and became harder to predict, a situation that changed demand conditions in financial markets. The rapid advances in computer technology changed supply conditions. In addition, financial regulations became more burdensome.
- Financial institutions found that many of the old ways of doing business were no longer profitable. Many financial intermediaries found that they were no longer able to acquire funds with their traditional financial instruments, and without these funds they would soon be out of business. To survive in the new economic environment, financial institutions had to research and develop new products and services that would meet customer needs and prove profitable, a process referred to as to as financial engineering.
- Financial engineering led to an explosion in derivatives trading and speculation in the financial markets. It has revolutionized financial markets, but it also played a role in the 2008 financial crisis

So, starting in the 1960s individuals and financial institution operating in the financial markets were confronted with the drastic changes in the economic environment. So, one of it is the inflation and interest rates climbed sharply and became harder to predict a situation that changed demand condition in financial market.

The inflation risk and the interest rate risk became one of the key challenges for the banking industry. So, to overcome this, they started thinking alternative options in parallel to the rapid advances in the computer technology that change the supply conditions in the market.

In addition, financial regulations became more burdensome. So, because of all these things, gradually, banking system began to look for financial innovation. And the financial institution found that many of the old ways of doing business were no longer profitable.

Many financial intermediaries found that they were no longer able to acquire funds with their traditional financial instruments and without these funds they would soon be out of business. So, in order to survive in the new economic environment, financial institutions had to

research and develop new products and services that would meet customer needs and prove profitable. This process is often referred to as financial engineering.

Financial engineering it led to an explosion in derivative trading and speculation in the financial market. On the one hand, we can see that the financial engineering revolutionized the financial markets, but at the same time it also played a role in the 2008 crisis. In one of the sessions, we will study the financial crisis the theoretical background as well as the practical aspects.

And at that time, we will also see how financial engineering contributed to the collapse of financial system in 2008.

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Responses to Changes in Demand Conditions: Interest-Rate Volatility

- The most significant change in the economic environment that altered the demand for financial products in recent years has been the dramatic increase in the volatility of interest rates
- Large fluctuations in interest rates lead to substantial capital gains or losses and greater uncertainty about returns on investments.
- **Adjustable-rate mortgages**
  - Flexible interest rates keep profits high when rates rise
  - Lower initial interest rates make them attractive to home buyers
- **Financial derivatives**
  - Ability to hedge interest rate risk
  - Payoffs are linked to previously issued (i.e. derived from) securities.

So, one of the things was response to changes in demand condition. One of the risks that the banking system often face is the interest rate volatility. So, the most significant change in the economic environment that altered the demand for financial products in recent years has been the dramatic increase in the volatility of interest rate.

So, large fluctuations in the interest rate led to the substantial capital gains or losses as we discussed previous session that we discussed the interest rate risk management using the gap analysis how the net worth of the bank will increase or decrease due to fluctuations in interest rate. So, this created greater uncertainty about the returns on investments.

So, in order to overcome this kind of risk, financial institution find that lending is more attractive if interest rate risk is lower. So, in order to address this issue, they started using adjustable-rate mortgage. For example, an adjustable-rate mortgage might have initially one fixed rate of interest; however, when the market rate of interest changes the adjustable rate mortgage also changes.

That means flexible interest rate keep profits high when rates high. So, lower initial interest rates make them attractive to home buyers. So, this attractive feature of adjustable-rate mortgage allow mortgage issuing institutions to earn higher interest rates on existing mortgages when market rates rise, and profits remain high during this period. As a result, this attractive feature of adjustable-rate mortgage has encouraged mortgages issuing institution to issue adjustable-rate mortgages with lower initial interest rates than those on conventional fixed rate mortgages making them popular with many households.

Then another innovation is financial derivatives. The commodity exchanges such as Chicago Board of Trade recognize that if they could develop a product that could help investors and financial institutions to protect themselves or hedge interest rate risk then they could make profit by selling these instruments.

So, this includes the future contracts in which the seller agrees to provide a certain standardized commodity to the buyer on a specific future date at an agreed price had been around for a long time.

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Responses to Changes in Supply Conditions: Information Technology

- **Bank credit and debit cards**
  - Improved computer technology lowers transaction costs
- **Electronic banking**
- ATM, home banking, ABM and virtual banking (new type of banking institution, the virtual bank, a bank that has no physical location but rather exists only in cyberspace.)
- **Junk bonds**
- **Commercial paper market**

Then let us also see the responses to changes in supply conditions, that is due to the changes in information technology. So, the most important source of the changes in supply conditions that stimulated financial innovation has been the improvement in computer and telecommunication technology, which is often called as information technology.

Tt had two effects, first it has lowered the cost of processing financial transaction and thus making it profitable for financial institutions to create new financial products and services for the public. And second thing it has made it easier for investors to acquire information, thereby making it easier for firms to issue securities. So, the rapid development in it has resulted in many new financial products and services.

So, one of them, you may be familiar, is credit card and debit card. You know that the credit cards have been around since well long back even before World War II. So however, it became more popular recently due to the development in information technology.

We can make transactions using information technology very easily. So, for example, credit card, I think you are aware of what is credit card. So, a firm issuing credit card earns income from loans it makes to credit card holders and from payments made by stores on credit card purchases (the commission amount).

It all made the financial transaction very smooth, and very convenient to customers including households, consumers, and sellers. So, it also raised the banks business as well. You are well aware that actually the developments in electronic banking that the ATM (automatic teller machines) and home banking, and virtual banking.

So, automatic teller machine, an electronic machine that allows customers to withdraw cash, make deposit, transfer funds from one account to another and check balances etc And, one of the advantages of ATM is that because of their low cost, ATM's can be put at location in places even if they don't have its branches there.

An ATM can serve the purpose of a bank branch indeed, then actually no need of a branch itself. Then comes home banking, it's now cost effective for banks to set up electronic banking facility in which banks customer is linked up with the banks computer and allowed to carry out transaction by using smart phone, tablet, or personal computer.

Then another development is virtual bank. Virtual bank means a new type of banking institution, a bank that has no physical location, but rather exists only in cyberspace.

Then another development is junk bonds before the advent of computers and advance telecommunication, it was difficult to acquire information about the financial situation of firms that might want to sell securities. Because the difficulty in screening out bad from good credit risk the only firms that we were able to sell bonds were very well-established corporation that had high ratings. Some firms you know that before 1980s only corporation that could issue bonds with rating could raise funds by selling newly issued bonds. With the improvement of information technology, it became easier for investors to acquire a financial information, about corporations making it easier to screen out bad from good risk. So, with easier screening investors were more willing to buy long term debt securities from less well-known corporation with a lower credit rating.

That is, with this change in supply condition, one would expect that some smart individual would pioneer the concept of selling new public issues of junk bonds not for fallen angels but for companies that have not yet achieved investment grade status.

And another development is commercial paper market, you know commercial paper is a short-term debt security issued by large banks and corporations that was also possible due to the development in changes in supply condition, that is due to changes in information technology.

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Securitization and the Shadow Banking System

- **Securitization**
  - To transform otherwise illiquid (say, dues from a borrower) financial assets into marketable capital market securities(security receipts) that can be sold to investors.
- Securitization is a process of asset transformation that involves several different financial institutions working together. These institutions comprise the shadow banking system. In other words, asset transformation accomplished through securitization and the shadow banking system is not done "under one roof," as is traditional banking.
  - Securitization played an especially prominent role in the development of the subprime mortgage market in the mid 2000s.
- Subprime Mortgage Market A particularly important financial innovation that developed in the 2000s as a result of securitization and the shadow banking system was the subprime mortgage, a new class of residential mortgages offered to borrowers with less-than-stellar credit records.

Further development is securitization and shadow banking system. So, securitization means to transform otherwise illiquid financial assets into marketable capital market securities that can be sold to investors; that means, transforming illiquid assets into marketable capital markets securities.

So, securitization played an especially prominent role in the development of the subprime mortgage market in 2008.

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Avoidance of Existing Regulations

- Loophole Mining:
- Two sets of regulations have seriously restricted the ability of banks to make profits:)
- Reserve requirements act as a tax on deposits (reserve requirements that force banks to keep a certain fraction of their deposits as reserves (vault cash and deposits in the central bank)
- Restrictions on interest paid on deposits led to disintermediation (Fed set maximum limits on the interest rate that could be paid on time deposits.)

Then another development happened is to avoid the existing regulation; that means, loophole mining. That is, banking sector responding to avoid the regulation. So, there are there were two regulations mainly; one regulation is that reserve requirements of the banks.

That means, of the total deposit liabilities at certain fraction should be kept with the central bank, it means, they cannot lend their entire deposit in the market. That means, certain portion it should be kept with the central bank as reserve requirement

Second one is restriction on interest paid on deposits. There is certain threshold beyond that they cannot pay; that means, maximum limits on the interest rate that could be paid on time deposits.

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Financial innovation to avoid certain regulations

Money market mutual funds

- Money market mutual funds issue shares that are redeemable at a fixed price. The money market fund (from investor) invest in short-term money market securities (Treasury bills, negotiable certificates of deposit, commercial paper) that provide them with interest payments. Although money market fund shares effectively function as checking account deposits that earn interest, they are not legally deposits and so are not subject to reserve requirements or prohibitions on interest payments. For this reason, they can pay higher interest rates than deposits at banks.

Sweep accounts

- In the sweep account arrangement, any balances above a certain amount in a corporation's checking account at the end of a business day are "swept out" of the account and invested in overnight securities that pay interest. Because the "swept out" funds are no longer classified as checkable deposits, they are not subject to reserve requirements and thus are not "taxed."

To overcome these two regulations, one of the developments is birth of money market mutual funds. So, money market mutual funds issue shares that are redeemable at a fixed price. Money market fund raise fund from investor and invest in short-term money market securities like treasury bills, negotiable certificates of deposits, commercial paper etcetera.

They earn a profit, and at the same time you know that this cannot be considered as deposit. So, that they do not need to keep a reserve with the central bank. Second one is invention of sweep accounts. In the sweep account arrangement, any balance above a certain amount in a corporation's checking account at the end of a business day are swept out of the account and invested in overnight securities that pay interest.

So, because the swept account funds are no longer classified as checkable deposits, they are not subject to reserve requirements So, that means, whichever fund is kept in the sweep accounts will not be considered as deposit liability. So, there is no need of keeping certain fraction of it in the central bank as reserve.

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Financial Innovation and the Decline of Traditional Banking

- As a source of funds for borrowers, market share has fallen.
- Commercial banks' share of total financial intermediary assets has fallen
- No decline in overall profitability
- Increase in income from off-balance-sheet activities

Further development in the banking industry was a decline in traditional banking. They have started raising money from off balance sheet activities.

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Financial Innovation and the Decline of Traditional Banking

1: Decline in cost advantages in acquiring funds (liabilities)
  - Rising inflation led to rise in interest rates and disintermediation
  - Low-cost source of funds, checkable deposits, declined in importance

2: Decline in income advantages on uses of funds (assets)
  - Information technology has decreased need for banks to finance short-term credit needs or to issue loans
  - Information technology has lowered transaction costs for other financial institutions, increasing competition

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So, we have covered here mainly various aspects that the development of banking over time.

We have discussed the kind of financial innovation, what is the response of banking industry in the in the in terms of banking innovations, and to earn more profits. Most of these are responses to supply conditions. So, here our discussion was mostly with the developed countries context, but most of them are generalizable to the across other country settings as well.

So, in the next session we will continue this discussion and will discuss the banking structure in India as well.

Thank you and see, you in the next session.

Keywords: banking structure, financial innovation, off-balance sheet activities, financial engineering