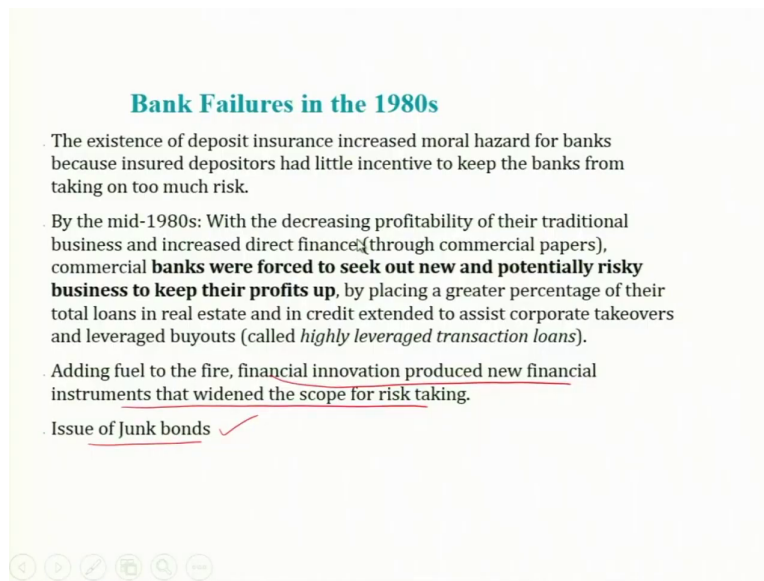


**Economics of Banking and Finance Markets**  
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**Lecture - 31**  
**Types of Regulation-I**

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**Bank Failures in the 1980s**

- . The existence of deposit insurance increased moral hazard for banks because insured depositors had little incentive to keep the banks from taking on too much risk.
- . By the mid-1980s: With the decreasing profitability of their traditional business and increased direct finance (through commercial papers), commercial **banks were forced to seek out new and potentially risky business to keep their profits up**, by placing a greater percentage of their total loans in real estate and in credit extended to assist corporate takeovers and leveraged buyouts (called *highly leveraged transaction loans*).
- . Adding fuel to the fire, financial innovation produced new financial instruments that widened the scope for risk taking.
- . Issue of Junk bonds ✓

Welcome to this session. In the previous session, we have discussed that how government safety net led to the aggravation of asymmetric information problem in the financial market, and which aggravated the problem of adverse selection and moral hazard problem and we have also seen that it created the problem of too big to fail.

And then we have seen that there were several bank failures, became more prevalent in the 1980s. One of the reasons for the bank failure in the 1980s was the existence of deposit insurance corporation. And the further reason was government standing as the lender of the last resort, and the problem of 'too big to fail', all these aggravated the problems.

So, further, we can also see that in the 1980s, since the banking systems were looking for financial innovation to earn more and more profit, because the traditional line of business is not going to earn more profit. Because, decreasing profitability of the traditional business and increased direct finance through commercial papers, commercial banks were forced to seek out new and potentially risky business to keep their profits up, by placing a greater

percentage of their total loans in real estate and in credit extended to assist corporate takeovers and leveraged buyouts.

Adding fuel to the fire, financial innovation produced new financial instruments that are widened the scope for risk taking. So, they also invested in junk bonds. So, as a result what we can see that there were large bank failures in the 1980s.

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**Financial Consolidation and the Government Safety Net**

- Larger and more complex financial organizations challenge regulation:
  - 1: Increased "too big to fail" problem ✓
  - 2: Extends safety net to new activities, increasing incentives for risk taking in these areas (as has occurred during the global financial crisis)
- Less incentive for large depositors (e.g., Pension funds) to monitor banks

And, as further reasons, we can also see that larger financial consolidation also contributed to the challenge.

So, larger, and more complex financial organization challenge the regulation. One is that the increase in "too big to fail" problem became aggravated, because the financial consolidation, the merging of several financial institution, financial and nonfinancial institutions, their complex relationship further aggravated the problem of "too big to fail". That, the increase size of financial institution resulting from financial consolidation increased the "too big to fail" problem, because there are now several large institutions whose failure would expose the financial system to systemic risk.

Thus, more financial institutions are likely to be treated as 'too big to fail' and the increased moral hazard incentives for these large institutions to take on greater risk, increases the fragility of the financial system. And second, the financial consolidation of banks with the other financial services, means that government safety net may be extended to new activities,

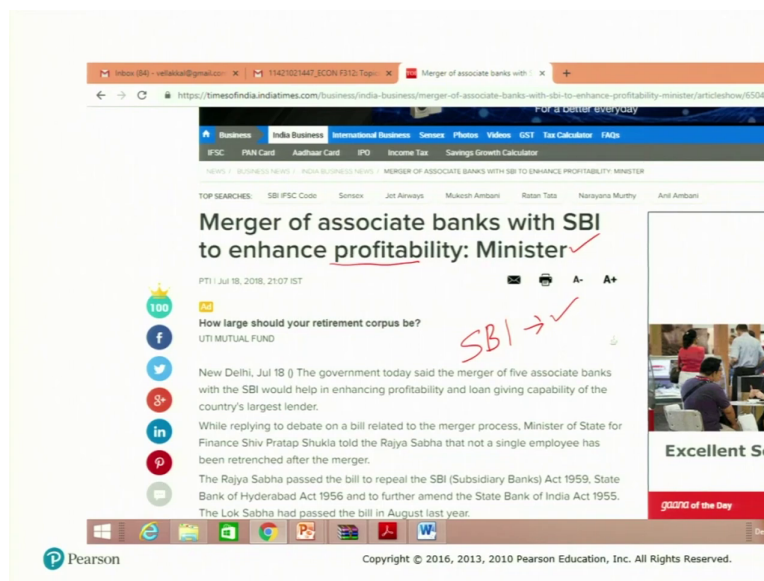
such as securities, underwritings, insurance, or real estate activities as occurred during the global financial crisis. So, that means, this increases the incentive for risk taking in other areas as well as in new activities including real estate, insurance etcetera.

Because, during the 2007-08 crisis, it was the banking sector, which was the most affected financial sector, and then they have been bailed out. Because of the “too big to fail” problem, government bailed them out.

So, then this issue spread to other sectors as well. So, overall, there is less incentive for large depositors, especially, pension funds. Normally, pension funds, they will be monitoring their investment, wherever they invested. For example, if they have invested in bond market, they will be monitoring the bond issuer’s financial and project activities. Now, they have less incentive to do the monitoring.

So, all these things further contributed to the weakening health of the financial market.

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So, in this context, let us see how bank merging of banks is going to increase the profitability. I am just showing you the screenshot of one of the newspaper clippings.

So, we normally by reading this, we can see that when merging of banks associate banks with the SBI, theoretically we expect that it is going to increase the efficiency, because they will be having economies of scale and economics of scope. So, clearly, we can see that is going to

increase profitability; but at the same time, we can also see merging of SBI is going to create ‘too big to fail’ problem as well.

So, when it is becoming ‘too big to fail’, it in fact incentivizes this bank to make a risky investment, because anyway government is going to bail out if they fail. And the investors, the individual depositors, and the institutional depositors like pension funds with SBI have less incentive to monitor them.

So, on the one hand, theoretically, the profitability is going to enhance. Overall, we can see that, maybe because of economic scale, their profitability is increasing, but at the same time we also need to think that this merging or becoming ‘too big to fail’ also going to aggravate the asymmetric information problem and finally, in the long term, it may adversely affect the smooth working of the financial system.

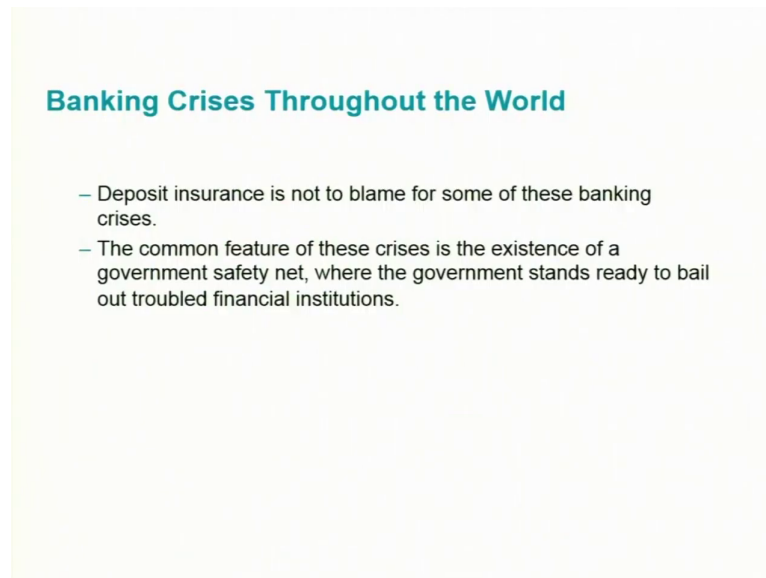
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Similarly, here again, you can see that many banks are getting merged, and the takeaway message for us here is that, based on the analysis that we had, we can see that all these going to aggravate the asymmetric information problem, moral hazard here, and it may in the long term, the financial system may collapse because of this bank merging. And we can see that there is now the competition is declining. Already we know that now, we have only few scheduled commercial banks in India. So, that means, the number of competitive banks in the country is declining as compared to U.S.

For example, they have more than 5000 banks. So, that means, each bank in India is going to occupy its own stand. That means, it is becoming an oligopoly market in India; and that means, government will not allow them to fail. We cannot allow any of these banks to fail. So, obviously, we know that it is aggravating the adverse selection problem.

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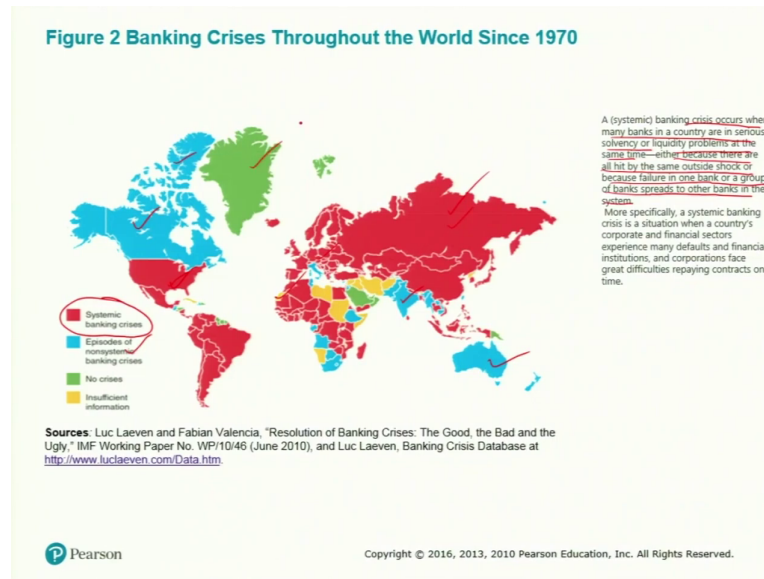
**Banking Crises Throughout the World**

- Deposit insurance is not to blame for some of these banking crises.
- The common feature of these crises is the existence of a government safety net, where the government stands ready to bail out troubled financial institutions.

So, let us have a quick overview of the banking crisis throughout the world. We can see that deposit insurance was implemented in several countries. However, deposit insurance alone is not to blame for some of these banking crises.

We know that we already saw that, the government safety net where governments stand ready to bail out troubled financial institution contributed to the banking crisis.

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And we can see from this figure, we can see that the banking crisis throughout the world since 1970s.

So, the red colour, you can see that this is systemic banking crisis is mostly in the U.S, North America and you can see here in Russia, China, and in these countries; in Europe, you can see that. So, you can see mostly there was systemic banking crisis occurred, when many banks in a country are in a serious insolvency or liquidity problems at the same time; either because they all hit by the same outside shock or because failure of one bank or a bank of group of banks spread to other banks in the system.

So, more specifically, a systemic banking crisis is a situation, when a country's corporate and financial sectors experience many defaults and financial institutions, and corporations face great difficulties paying contracts on time. Then, the episodes of non systemic crisis, you can see these areas, in India as well, in Australia. So, non-crisis only in few places, and there is insufficient information in some countries.

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**The Cost of Rescuing Banks in several Countries (1 of 3)**

Country	Year(s) of Crisis, 1980-2009	Cost as a Percentage of GDP
Indonesia	1997-2001	57
Argentina	1980-1982	55
Thailand	1997-2000	44
Jamaica	1996-1998	44
Chile	1981-1985	43
Macedonia	1993-1995	32
Turkey	2000-2001	32
South Korea	1997-1998	31
Israel	1997	30
Ecuador	1998-2002	22
Mexico	1994-1996	19

We have seen that government is willing to bail out banks, because bank failure that we have already discussed many times, we cannot allow big banks to fail. The bailout package costs a huge amount, lots of cost on the society. So, I am showing you the table, how much cost the bank failure, the cost of rescuing banks.

For example, in Indonesia in during 1997 to 2001 as per the estimate, the cost was 57 percentage of the GDP. So, from this itself, we can see that how important this bailout package. How the government is according so much importance to this bailout program because you know that this much money they spend in the rescuing of banks.

These are the all the other countries: Argentina, Thailand, and all you can see the cost as a percentage of GDP in the bailout program.

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**The Cost of Rescuing Banks in several Countries (2 of 3)**

Country	Year(s) of Crisis, 1980-2009	Cost as a Percentage of GDP
China	1998	18
Malaysia	1997-1999	16
Philippines	1997-2001	13
Brazil	1994-1998	13
Finland	1991-1995	13
Argentina	2001-2003	10
Jordan	1989-1991	10
Hungary	1991-1995	10
Czech Republic	1996-2000	7
Sweden	1991-1995	4
United States	1980	4
Norway	1990-93	3

So, you can see, China spent 18 percent of the GDP in 1998 and Norway spent 3 percent of the GDP 1990, 91 - 93 period.

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**The Cost of Rescuing Banks in several Countries (3 of 3)**

Country	Year(s) of Crisis, 1980-2009	Cost as a Percentage of GDP
<b>Global Crisis of 2007-2009</b>		
Iceland	2007-2009	13
Ireland	2007-2009	8
Netherlands	2007-2009	7
Belgium	2007-2009	5
United Kingdom	2007-2009	5
Luxembourg	2007-2009	5
United States	2007-2009	4
Germany	2007-2009	1

Sources: Luc Laeven and Fabian Valencia, "Resolution of Banking Crises: The Good, the Bad and the Ugly," IMF Working Paper No. WP/10/46 (June 2010); and Luc Laeven, Banking Crisis Database at <http://www.luc laeven.com/Data.htm>

Then during the global crisis of 2007 - 2009 period, Iceland spent thirteen percent of the GDP, and you can see for example, US spent 4 percent of the GDP to rescue the banks.

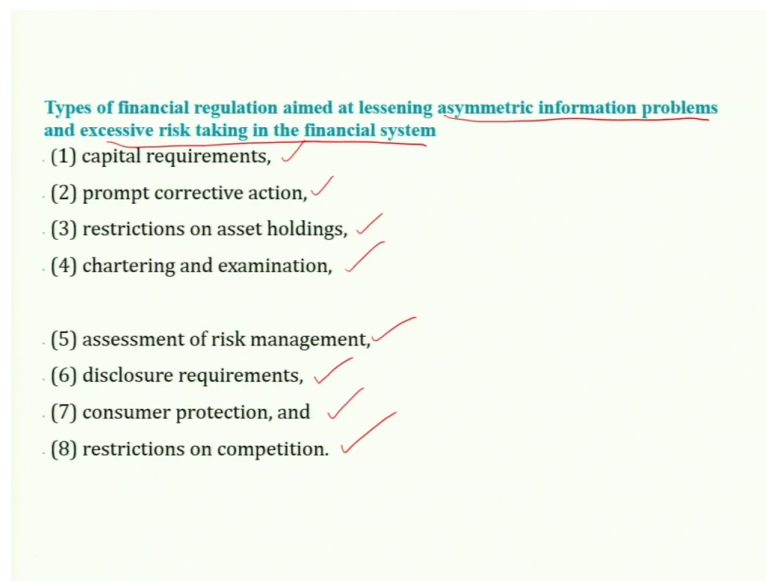
So, what we have covered so far is mainly the social safety nets and how it contributed to the bank failure, that is, social safety net and deposit insurance corporations and government



standing as lender of the last resort. We saw that it aggravated the problem of asymmetric information and many banks failed. Even banks fail, even again government is further ready to stand out to bail them out.

Now, we also saw here, many governments, many countries they had spent a lot of public money to save, to rescue the banks from collapse. The ultimate objective was to prevent the collapse of the financial system or to prevent the financial crisis.

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Now, let us continue this discussion by seeing what the different types of financial regulation are further aimed at lessening this asymmetric information problems and excessive risk taking in the financial system. Because what we can see that government cannot give up the banking system and the financial system. If there is a serious financial crisis is popping up, then it is the duty of the government to prevent them.

So, anyway they will be bailing it out. However, governments across the globe, countries across the globe, started regulating the financial market, because they understood that they must lessen the asymmetric information problem and excessive risk taking in the financial system.

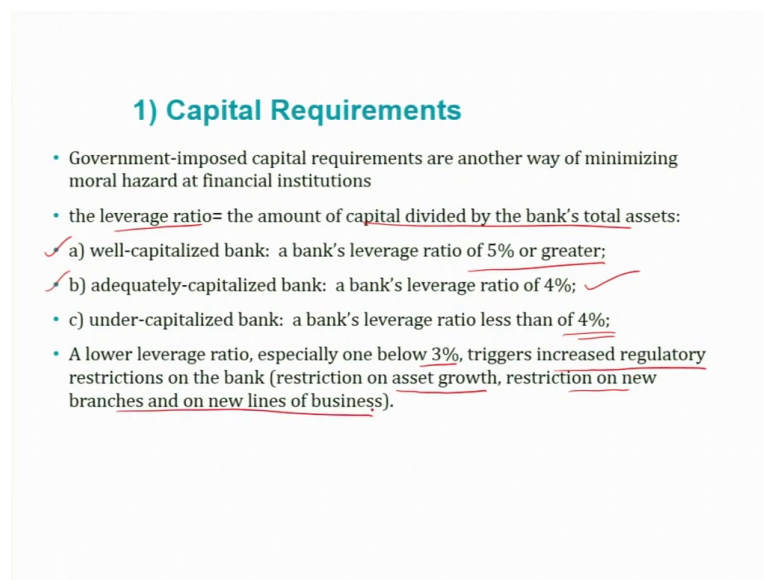
So, as a result, the regulatory bodies put up several types of financial regulation. One is capital requirements, and second one is prompt corrective actions, restrictions on asset

holdings, and chartering and examinations and assessment of risk management, disclosure requirement, consumer protection and restrictions on competition.

So, these are the broad 8 types of financial regulations. And across the globe. by country wise country, we can see that some countries will be putting some of this regulation more heavily, not that all the 8 types of financial regulation are universally prevalent.

Most countries will be following most of these, and for example, starting with a 1st one capital requirement, that is, globally there is some agreement that what should be the capital requirements of the banks.

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**1) Capital Requirements**

- Government-imposed capital requirements are another way of minimizing moral hazard at financial institutions
- the leverage ratio= the amount of capital divided by the bank's total assets:
- ✓ a) well-capitalized bank: a bank's leverage ratio of 5% or greater;
- ✓ b) adequately-capitalized bank: a bank's leverage ratio of 4%;
- c) under-capitalized bank: a bank's leverage ratio less than of 4%;
- A lower leverage ratio, especially one below 3%, triggers increased regulatory restrictions on the bank (restriction on asset growth, restriction on new branches and on new lines of business).

So, let us discuss this, one by one, first starting with the capital requirements; this is the government-imposed capital requirements, one way of minimizing moral hazard at financial institutions. So, when financial institution is forced to hold a large amount of equity capital, the institution institutions has more to lose if it fails and is thus less likely to pursue risky activities.

This points, we have seen in one of the previous sessions, where we discussed that capital functions as a cushion when bad shocks occur, making it less likely that a financial institution will fail, and thereby directly adding to the safety and soundness of financial institutions.

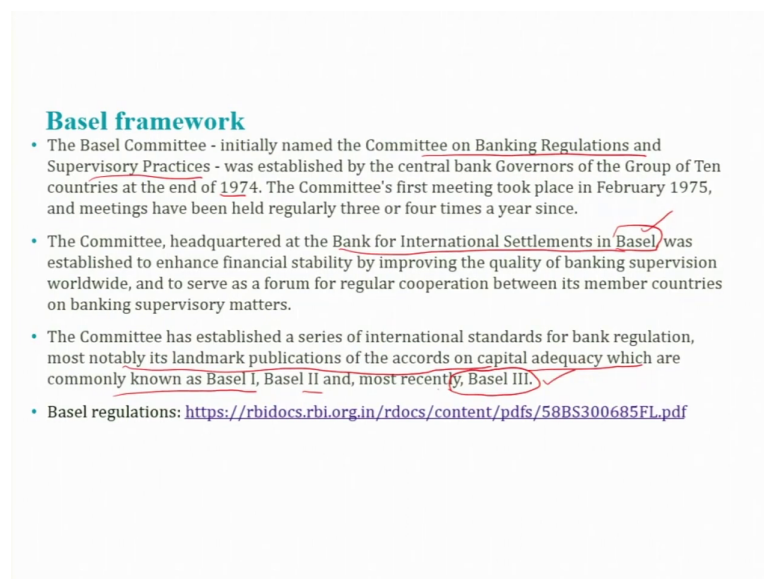
The capital requirements for banks take 2 forms. The 1st type is based on the leverage ratio; that means the amount of capital divided by the bank's total assets. So, that is the leverage

ratio, that is one. So, high leverage ratio means a well-capitalized bank. So, accordingly, based on the leverage ratio, we can broadly categorize banks into 3 categories.

One is well capitalized banks; that means, a bank's leverage ratio of 5 percentage or greater is called as well capitalized bank. And another is adequately capitalized bank, that means, a bank's leverage ratio of 4 percentage, that is amount of capital divided by the bank's total assets, if it is 4 percentage it has been termed as adequately capitalized bank. And then called undercapitalized bank means a bank leverage ratio less than 4 percentage.

These banks, banks with a lower leverage ratio means undercapitalized bank, especially, one below 3 percentage, triggers increased regulatory restrictions on the banks. That means, asset growth restrictions on new branches and or new lines of business.

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**Basel framework**

- The Basel Committee - initially named the Committee on Banking Regulations and Supervisory Practices - was established by the central bank Governors of the Group of Ten countries at the end of 1974. The Committee's first meeting took place in February 1975, and meetings have been held regularly three or four times a year since.
- The Committee, headquartered at the Bank for International Settlements in Basel, was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervisory matters.
- The Committee has established a series of international standards for bank regulation, most notably its landmark publications of the accords on capital adequacy which are commonly known as Basel I, Basel II and, most recently, Basel III.
- Basel regulations: <https://rbidocs.rbi.org.in/rdocs/content/pdfs/58BS300685FL.pdf>

So, the capital adequacy was derived from the Basel framework. Basel framework means the Basel committee, initially, named as the committee on banking regulations and supervisory practices, was established by the central bank governors of the group of 10 countries at the end of 1974.

So, this is the committee, first meeting took place in February 1975, and the meetings have been held regularly 3 or 4 times a year. Now, several countries are members of this Basel framework, where the heads of the appointed authority of central banks of each country, they meet at Basel is a city near to Germany. So, it is in Switzerland and border to Germany.

So, the committee headquartered at the Bank for International Settlements in Basel was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervisory matters.

So, the representative of central banks across the globe, they meet at Basel and then they developed the framework or regulatory framework, and one of them is the capital adequacy part. So, here the committee has established a series of international standards for bank regulation, most notably is landmark publication of the course on capital adequacy, which are commonly known as Basel I, Basel II and most recently as a response to 2007-08 crisis there is Basel III, a code was also published. So, you can get more information of Basel regulation by visiting RBI website.

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**Basel III: Tier 1 Capital Ratio**

- It is a key measure of a bank's financial strength that has been adopted as part of the Basel III Accord on bank regulation.
- The tier 1 capital ratio is the ratio of a bank's core tier 1 capital to its total risk-weighted assets.
- Core tier 1 capital: Bank's equity capital and disclosed reserves
- The risk-weighted assets are the assets that the bank holds and that are evaluated for credit risks (the assets are assigned a weight according to their level of credit risk. Examples: Vault cash would be weighted 0% while a mortgage loan would carry weights of 30%, 50% etc based on their default risk)
- Assume that a bank holds \$5 million in core capital and has a total of 2 loans (i.e., assets), one worth \$10 million with a risk of 50% and another worth \$ 20 million with a risk of 70%.
- Tier 1 Capital Ratio =  $[\$5,000,000 / (\$10,000,000 \times 50\%) + (\$20,000,000 \times 70\%)] \times 100$
- = 26.3%

About Basel III, it clearly laid out the requirement of Tier 1 capital ratio. It is a key measure of a bank's financial strength that has been adopted as part of the Basel III accord on bank regulation. So, Basel III mostly laid on the Tier 1 capital ratio. Tier 1 capital ratio of a bank is the ratio of banks core Tier 1 capital to its total risk-weighted assets.

This is the new measure that is used to regulate, to ensure the banks' capital requirements. So, coming to that the bank's core Tier 1 capital and let us see what bank's core Tier 1 capital is. The core Tier 1 capital is banks equity capital and disclosed reserve, this constitutes the

Tier 1 capital. And coming to the assets, assets especially loans and other related assets borrowings etcetera by the bank.

So, this also need to be risk weighted assets. So, risk weighted assets are the assets that the bank holds and that are evaluated for credit risk. That means, assets are assigned a weight according to their level of credit risk. For example, you can see that the vault cash with the bank and the reserve required reserve and excess reserve with the central bank, it will be weighted 0 risk, because there is 0 risk.

While mortgage loan you know that there is a high default risk, it can be based on the exact debt instrument the loan, it may be for example, may carry a weight of 30 percentage or 35 or 50 percentage etcetera based on their default risk right.

So, let us see based on this, how to calculate the Tier 1 capital ratio, assume that a bank holds 5 million in core capital, that is the core capital means equity capital and disclosed resource. And it has a total of 2 loans for the sake of simplicity, let us say that they have only 2 loans that is assets, one worth 10 million with a risk of 50 percentage default risk and another worth 20 million with a risk of 70 percentage default risk.

So, in this way, let us calculate the Tier 1 capital ratio. So, you can see that this is the core capital, and we need to take the weighted risk weighted assets, that is the one with the 50-percentage default risk. The 2nd one is 20 million with a 70-percentage default risk, then multiplied by 100, then you can see the Tier 1 capital ratio from this estimate, it is 26.3 percentage.

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**Basel III Capital Adequacy Requirements**

- Most banks held too much debt and low levels of equity, and they lacked adequate capital to absorb losses resulting from the financial crisis. The Tier 1 Capital Ratio was introduced in 2010 after the financial crisis as a measure of a bank's ability to withstand financial distress. Basel III requires that the equity component of Tier 1 capital should be at least 4.5% of risk-weighted assets.
- Basel III tightened the capital adequacy requirements that banks are required to observe. The accord categorizes regulatory capital into Tier 1 and Tier 2.
- Under Basel III, the minimum Common Equity Tier 1 increased to 4.5%. It also increased the minimum Tier 1 capital to 6% from 4% in Basel II. The overall minimum regulatory capital ratio was left unchanged at 8%, out of which 6% is Tier 1 capital.

Prior to the financial crisis, most banks held too much debt and low levels of equity capital, and they lacked adequate capital to absorb losses resulting from financial crisis. The Tier I capital ratio was introduced in 2010 after the financial crisis as a measure of a bank's ability to withstand financial distress.

So, Basel III requires that equity component of Tier 1 capital should be at least 4.5 percentage of risk-weighted assets. This is the requirement, requirement given by Basel III and central banks across the globe.

The Indian central bank RBI is member, India follows Basel III framework

It tightened the capital adequacy requirement that banks are required to observe. So, the accord categorizes regulatory capital into Tier 1 and Tier 2 under Basel III. The minimum common equity Tier 1 increased to 4.5 percentage. It also increased, the minimum Tier 1 capital, to 6 percentage from 4 percentage in Basel II.

So, the overall minimum regulatory capital ratio was left unchanged at 8 percentage, out of which 6 percentage is Tier one capital.

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Tier 1 (going concern)	Common Equity Tier 1 (CET1)	Sum of common shares (equivalent for non-joint stock companies) and stock surplus, retained earnings, other comprehensive income, qualifying minority interest and regulatory adjustments	CET1 > 4.5%
	Additional Tier 1 (AT1)	Sum of capital instruments meeting the criteria for AT1 and related surplus, additional qualifying minority interest and regulatory adjustments	CET1 + AT1 > 6%
Tier 2 (gone concern)		Sum of capital instruments meeting the criteria for Tier 2 and related surplus, additional qualifying minority interest, qualifying loan loss provisions and regulatory adjustments	CET1 + AT1 + Tier 2 > 8%

- Common Equity Tier 1 capital (CET1) is the highest quality of regulatory capital, as it absorbs losses immediately when they occur. Additional Tier 1 capital (AT1) also provides loss absorption on a going-concern basis
- Tier 2 capital is gone-concern capital. That is, when a bank fails, Tier 2 instruments must absorb losses before depositors and general creditors do.

These are the definitions of the Tier 1 and Tier 2 capital. Tier 1 you can see equity Tier 1, these are all the components, and the requirement it should be greater than or equal to 4.5 percentage, it should be greater than 4.5 percentage.

The 2nd one is additional Tier 1 capital, which is also introduced by Basel III. These are all the components included in that; that is a related surplus, additional qualifying minority interest and regulatory adjustment. So, this should be greater than 6 percentage. And then Tier 2 capital; that means, sum of capital instruments meeting the criteria for Tier 2 and related surplus additional qualifying minority interest, qualifying loan loss provision, all together it should be greater than 8 percentage according to Basel III.

So, the common equity Tier 1 capital is also called as 'going-concern basis', because this is the highest quality of regulatory capital as it absorbs losses immediately, when they occur. So, Tier 1 capital provides loss absorption on a 'going-concern basis'. At the same time the Tier 2, it is considered as a 'gone-concerned', because Tier 2 capital is gone-concerned capital that is when a bank fails Tier 2 instruments must absorb losses before depositors and general credits do.

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**Basel framework**

- **Basel I: the Basel Capital Accord**
- With the foundations for supervision of internationally active banks laid, capital adequacy soon became the focus of the Committee's activities. The 1988 Accord called for a minimum ratio of capital to risk-weighted assets of 8% to be implemented by the end of 1992.
- The three major principles of the Basel Accord are as follows:
  - (1) A bank must hold equity capital to at least a fixed per cent (8 per cent) of its risk-weighted credit exposures as well as capital to cover market risks in the bank's trading account.
  - (2) When capital falls below this minimum requirement, shareholders may be permitted to retain control, provided that they recapitalize the bank to meet the minimum capital ratio.
  - (3) If the shareholders fail to do so, the bank's regulatory agency is empowered to sell or liquidate the bank.

*Basel-III*

Before we summarize, let us also have a quick overview of Basel I accord. So, at that time the 1988, the accord called the minimum ratio of capital to risk-weighted asset 8 percent to be implemented by the 1992.

So, I am keeping some text here, the major principle that they followed in Basel I accord; that means, bank must hold equity capital to at least a fixed percent, and these are all the further provisions. This is only for your review and note these Basel III, that is the one which we discussed a couple of minutes before, that is the current requirement; the current capital requirements in India as well, across many other countries other banks in other countries who are following Basel framework. Let us conclude now, stop here, and meet you in the next session.

Thank you.

**Keywords:** social safety net, bank failure, bailout, Basel framework, capital adequacy ratio, Tier 1 capital, bank failures, bank bailout cost