

# International Money and Banking:

## 3. Liquidity and Solvency

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## Liquidity and Solvency: Definition

- We're going to focus on the ideas of *liquidity* and *solvency* and how these work in theory and in practice.
- Let's start with the basic definitions and then move on to real world examples and complications.
- Here's our theoretical bank balance sheet from earlier:

<b>Assets (Uses of Funds)</b>		<b>Liabilities and Equity (Sources of Funds)</b>	
Cash	€15	Deposits	€100
Loans	€95	Equity Capital	€10
Total	€110	Total	€110

- This bank's *liquidity* situation refers to its holdings of €15 cash. This can be used to honour requests to pay back deposits. The bank's other assets, its loans, are usually not very liquid: The bank can't ask for all its money back from someone it has just provided with a ten year loan.
- The bank's *solvency* situation refers to the €10 entry for equity capital. This tells us that the bank's assets are worth €10 more than what it owes.

## A Solvent Bank with Low Liquidity

- Now look at this bank:

Assets (Uses of Funds)		Liabilities and Equity (Sources of Funds)	
Cash	€1	Deposits	€100
Loans	€149	Equity Capital	€50
Total	€150	Total	€150

- It is highly solvent (assets are 50% higher than the deposits) but it has very little cash available if people come looking for their money (€1 compared to €100 in deposits).
- See page 121 of Governor Patrick Honohan's report on the Irish Banking crisis: *"one can speak of a bank being solvent – in the sense that its assets will, when they mature, provide more than enough to repay those who have lent to the bank – while at the same time being illiquid – in the sense that the bank is unable to repay its borrowings immediately and cannot find other lenders who can tide it over."*

# A Highly Liquid Bank with a Solvency Problem

- Finally, look at this bank:

<b>Assets (Uses of Funds)</b>		<b>Liabilities and Equity (Sources of Funds)</b>	
Cash	€50	Deposits	€149
Loans	€100	Equity Capital	€1
Total	€150	Total	€150

- It has lots of cash on hand to meet demands for redemption of deposits.
- But it only has to make very small losses on its loans (e.g. value of loans falls from €100 to €98 because of defaults) and then it becomes insolvent (equity capital is negative).

# What Equity Capital Is

- It is the gap between the value of the its assets and the value of its liabilities.
- In other words, equity capital measures how much you would have left if the bank had to sell off assets to pay off all its liabilities today.
- Equity capital can only be raised by either getting an outside investment or making a profit and retaining the earnings.
- Equity capital is considered to be “the shareholders’ funds”, i.e. it tells you what fraction of the banks assets can be considered to be owned by the shareholders rather than owed to creditors.
- A bank with negative equity capital is termed an insolvent bank—its assets do not cover its liabilities.
- I consider it VERY important that someone who has passed this class understands the difference between solvency and liquidity, between equity capital and cash reserves. There will be at least one question on this on the final exam and answers that show you don't understand this crucial distinction will score very poorly.

# Measurement Issues With Equity Capital

- Note that equity capital is very much a static “accounting concept”.
- The level of equity capital depends on the valuation that is applied to the assets. The published accounts of a bank represent the bank’s own valuation of its assets.
- These accounts are accompanied by a statement by the bank’s external auditors that they believe the bank’s assessments are valid.
- In practice, failing banks tend to over-state the value of their assets.
- And in Ireland and elsewhere, auditors have been pretty useless in preventing this from happening. They may feel they will lose business if they are too harsh in their assessments.
- So a bank may actually be insolvent – their assets are unable to repay their liabilities – and still publish accounts that show they have positive equity capital.
- Because people from outside a bank can have difficulty assessing the quality of a bank’s assets (e.g. how many of its borrowers will repay in full) estimates of equity capital are often treated with scepticism.

## Solvency May Be Hard to Assess

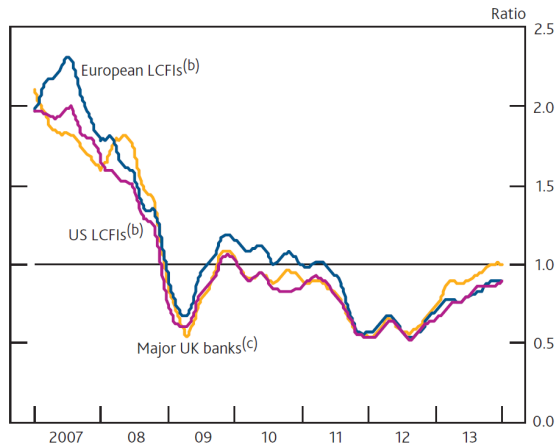
- More from Page 121 of the Honohan report: “Obviously, putting a solvent but illiquid bank into bankruptcy is unnecessarily costly for society which is where emergency liquidity assistance (“lender of last resort”) from the central bank arises. The emergency loans should be made at a penalty rate so that banks have an incentive to avoid getting into a situation of illiquidity. However, the main difficulty lies in determining whether the bank really is solvent. For this, one cannot rely on what will all too often be a self-serving and over-optimistic assessment from the troubled bank. Instead, the regulator must have assembled the necessary information and analysis to provide the needed advice.”
- On September 29, 2008, the Irish banks requested liquidity support from the Irish government, claiming they were fundamentally sound and had a temporary liquidity problem. The Irish government responded by guaranteeing almost all their liabilities.
- The banks were not, however, fundamentally solvent and the cost of honouring the government guarantee provided by the government has been huge.

## Book Equity Versus Market Value of Equity

- The value of a bank's equity capital shows the current value of the bank's assets minus its liabilities. It does not take into account anything that may happen in the future.
- The bank's shareholders have a share in any positive value that currently exists due to its assets being greater than its liabilities. But they will also gain from positive future developments.
- For example, the bank may be expected to grow in the future and pay higher dividends.
- For this reason, the market value of a bank (calculated as what it would take to buy all the bank's shares on the stock market) is often greater than the book value listed in its accounts.
- Since the global crisis of 2008, however, most banks have had market values below their book value. This shows that investors think bank assets are going to be worth less than stated in the bank accounts.
- See the chart on the next page from a Bank of England paper. The paper ("Understanding the fair value of banks' loans") covers a number of useful issues relating to the uncertainties surrounding bank accounting.



# Market Value Relative to Book Value for Banks

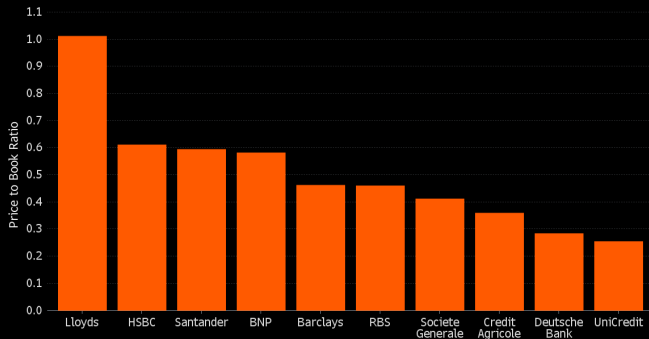


● Note: LCFI = Large and Complex Financial Institution.

# Market Value Relative to Book Value for Banks

## Below Book

Deutsche Bank and Unicredit are the lowest-valued among Europe's biggest lenders



Source: Bloomberg data

Bloomberg

## Equity Capital: Be Wary of Journalists!

- Despite its importance, most journalists and politicians do not understand the distinction between solvency and liquidity and so cannot distinguish between equity capital and cash reserves.
- A consequence of this confusion is the proliferation of really misleading terminology when bank capital gets discussed in the media.
- Here are three examples I dislike and would prefer you didn't use:
  - ① “*Capital reserves*”. This phrase makes it sound like capital is cash reserves. It's not.
  - ② A common phrase refers to banks as “*holding capital*”. This makes the bank's equity capital sound like a specific asset that is being “held” somewhere. It's not.
  - ③ Sometimes people talk about banks “*setting aside capital*” or capital as a “*rainy day fund*” which again sounds like it is a specific itemised set of assets. It's not.
- A good source for preventing confusion is the Cleveland Fed webpage “Bank Capital Requirements: A Conversation with the Experts” linked to on the class site. Watch the video. Stanford professor Anat Admati is a world-leading expert on the role played by bank capital.

## Three Examples of Misleading Journalism

- I have linked on the website (with health warnings) to three different examples of journalism on bank capital that misleads readers.
  - ① London Review of Books on Cypriot banks: *“Exactly where Laiki/BoC got the money to buy so much Greek debt isn’t clear (at one point in 2011, 95 per cent of Laiki’s core capital, the closest thing a bank has to actual money in a vault, was made up of Greek bonds.)”*
  - ② Fortune: *“First of all, bank capital requirements are a relatively new phenomenon. In the U.S., the first rules that explicitly required banks to hold some cash on the sidelines relative to their assets came into being in 1981.”*
  - ③ New York Times: *“the bill would create an entirely new, transparent and ungameable set of capital rules for the nation’s banks. In other words, a meaningful rainy-day fund.”*
- Can you see what the problems are with these statements?

## Bad Answers from Previous Tests

- I emphasise the concepts of solvency and liquidity every year, and stress that this topic will be on the exam. Still, many students give answers in the final exam that show they don't understand these concepts.
- Consider the following excerpts from bad answers to the question “*What does it mean when we say a bank has a solvency problem? How does it differ from a liquidity problem?*” from a previous exam. Can you see what's wrong with these answers?
  - 1 “Equity capital is money that must be set aside before a bank will be operational.”
  - 2 “A solvency problem occurs when a bank's equity capital is less than its assets.”
  - 3 “Solvency refers to a bank's equity capital, i.e. its assets.”
  - 4 “A solvency problem is when a bank's debt is larger than their equity.”
  - 5 “A bank has a solvency problem when its liabilities and equity are greater than its assets.”
  - 6 “A bank has a solvency problem when it is not making a profit.”
  - 7 “When a bank has a solvency problem, it means that the bank does not have enough equity capital to meet long-term debt.”

# Solvency and Liquidity Regulations

- Ideally, we want banks to avoid problems with either solvency or liquidity, so governments impose solvency and liquidity regulations.
- **Liquidity Regulations:**
  - ▶ Reserve Requirements. These are minimum fractions of deposits that must be kept in cash or balances at a central bank.
  - ▶ Other types of liquidity regulation have operated in the past, e.g. Regulations to limit maturity mismatch: Mortgage lenders had to take in long-term deposits, banks who had demand deposits only made shorter loans. These restrictions have generally been removed.
  - ▶ New rules to ensure banks have enough liquid assets to withstand substantial withdrawals are gradually being phased in. We will discuss them in more detail later.
- **Solvency Regulations (also known as Capital Adequacy Regulations):**
  - ▶ These relate to how much equity capital a bank must have. Usually expressed as a ratio: The bigger the bank, the more equity capital required. We will discuss capital adequacy regulations in detail later.

## More Bad Answers

Many students of this course cling hard to the belief that bank capital is the same thing as liquid assets. Consider the following excerpts from bad answers to the question “*What are capital adequacy requirements and how are they enforced?*” in a previous exam. Make sure you know what’s wrong with them.

- 1 “Capital adequacy requirements are much like other reserves. It’s money banks must put away.”
- 2 “Capital adequacy requirements mean banks must hold a certain percentage of their deposits as reserves. This cash is held and not touched. It provides the bank with an “airbag” so it has something to fall back on.”
- 3 “Capital adequacy requirements are requirements on how much a bank needs to keep on hold as capital to be able to meet day-to-day depositor requirements.”
- 4 “Capital adequacy requirements state that banks are required to keep 5% cash reserves in case of consumers demanding deposits”
- 5 “Capital adequacy requirements are the amount of capital that must be kept in reserve as set by a financial regulator — the bank must have enough capital on hand in order to deal with depositors looking to get their cash from the bank”

# Illiquidity Can Lead to Insolvency And Vice Versa

- Solvency and liquidity are different things. But, at times, they can interact with each other.
- Banks usually have enough cash or liquid securities on hand to cope with withdrawals.
- If not, they can usually borrow funds from other banks or the bond market.
- Sometimes, however, large withdrawals occur *because* depositors believe the bank is insolvent: They fear the bank doesn't have enough funds to pay back everyone and they want to get their money out in time.
- If these redemptions exhaust the bank's liquid assets and financial markets also don't trust the bank and won't lend to them, then the bank will run out of liquid assets.
- At this point, the possibility that the bank has a solvency problem turns into a liquidity problem. Often, banks in this position turn to the government for help.
- Alternatively, banks that need to sell assets quickly because of liquidity problems may have to incur losses on these sales, so a liquidity problem turns into a solvency problem.



## Recap: Key Points from Part 3

Things you need to understand from these notes:

- 1 Meaning of liquidity.
- 2 Meaning of solvency.
- 3 How a solvent bank can have a liquidity problem.
- 4 How to construct examples of banks that have either liquidity or solvency problems.
- 5 Why people may be sceptical of published values of equity capital.
- 6 Difference between book value and market value of bank equity.
- 7 Regulations related to solvency and liquidity.
- 8 The meaning of “capital adequacy requirements”
- 9 Why solvency and liquidity problems can occur together.