

# International Money and Banking:

## 2. 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 €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:

<b>Assets (Uses of Funds)</b>		<b>Liabilities and Equity (Sources of Funds)</b>	
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 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 a bank's 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.

# 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.
- However, the banks were not fundamentally solvent and the cost of honouring this guarantee was 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 pay higher dividends in the future.
- 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) has traditionally greater than the book value listed in its accounts.
- However, this has generally not been true in recent years. The next page shows a chart from the FT with the ratio of market value to book value for the largest global banks as of November 2022. Many are below 1. This shows that investors think bank assets are going to be worth less than stated in the bank accounts.
- The website has a link to a Bank of England paper ("Understanding the fair value of banks' loans") that covers a number of useful issues relating to the uncertainties surrounding bank accounting.

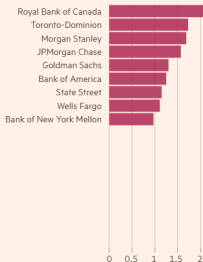


# Market Value Relative to Book Value for Global Banks

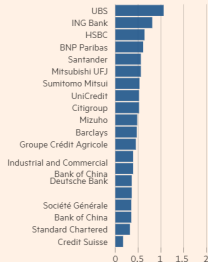
Investors value the equity of globally significant banks\* outside North America at below its book value

Price to book value of equity (as of Nov 30 2022)

North America



Not North American



FINANCIAL TIMES

Source: Refinitiv • \*These are the 'Global Systemically Important Banks' as defined by the Financial Stability Board.

## 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 misleading terminology when bank capital gets discussed in the media.
- Here are three examples I dislike and would prefer you didn't use:
  - ① 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.
  - 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 "*Capital reserves*". This phrase also makes it sound like capital is cash reserves. 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 provided links 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: *“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 Stuff.co.nz: About Reserve Bank of New Zealand Governor Orr: *“The war has mostly taken the form of a set of capital requirements Orr is looking to impose on the banks. Basically he wants to increase the amount of cash on hand that these banks hold in New Zealand in case of a crisis, by about \$20b. ”*
- Can you see what the problems are with these statements?
- And also think about this: If a bank did have a lot of cash in hand but was still fundamentally insolvent (assets worth far less than its liabilities) would all this cash on hand mean there was no problem?

# Equity Capital: Be Wary of Bankers!

- Jamie Dimon is CEO of JP Morgan Chase, the US's largest bank. He knows how banking works and yet he recently talked about his bank "setting aside" capital.

Higher capital requirements do not reflect "actual risk" in the system, Dimon wrote. If anything they exacerbate risk by eroding "banks' ability to meet customer needs" . . .

“

For example, regulatory capital minimum requirements already have JPMorgan Chase setting aside more than \$200 billion in capital, which is in addition to loan loss reserves. In the coming months JPMorgan's amount of required capital will increase not due to increased risk, but because long-needed adjustments have not yet been made to risk-agnostic size-based factors in parts of the capital framework, like the GSIB surcharge. This is bad for America, as it handicaps regulated banks at precisely the wrong time, causing them to be capital constrained and reduce growth in areas like lending, as the country enters difficult economic conditions. It is bad for consumers, as it forces banks to do illogical things like reducing mortgage exposure in order to drive down assets. Strong and resilient banks that can support the American economy through a crisis are key to American growth and competitiveness. I urge our nation's leaders to be thoughtful about the effect of arbitrary increases in capital requirements and its cumulative impact on lending, market liquidity and other economic activity

# Just in case you think this is just me and Jamie can't possibly be misleading people ...

Yet Jeremy Kress, assistant professor of business law at the University of Michigan's Ross School, dismissed Dimon's suggestion on Tuesday that JPMorgan has \$200bn "sitting in a locked box somewhere" that it could otherwise spend.

"Capital requirements are about how the bank funds its activities, whether through equity or debt. It's not about having a pile of cash in the vault that the bank isn't allowed to use for lending," he told Alphaville:

# 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 Requirements):**
  - ▶ 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.

# 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.

# Key Points

- 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 Why bank capital is not “set aside” or “held”.
- 8 Regulations related to solvency and liquidity.
- 9 Why solvency and liquidity problems can occur together.