

Instituciones Financieras

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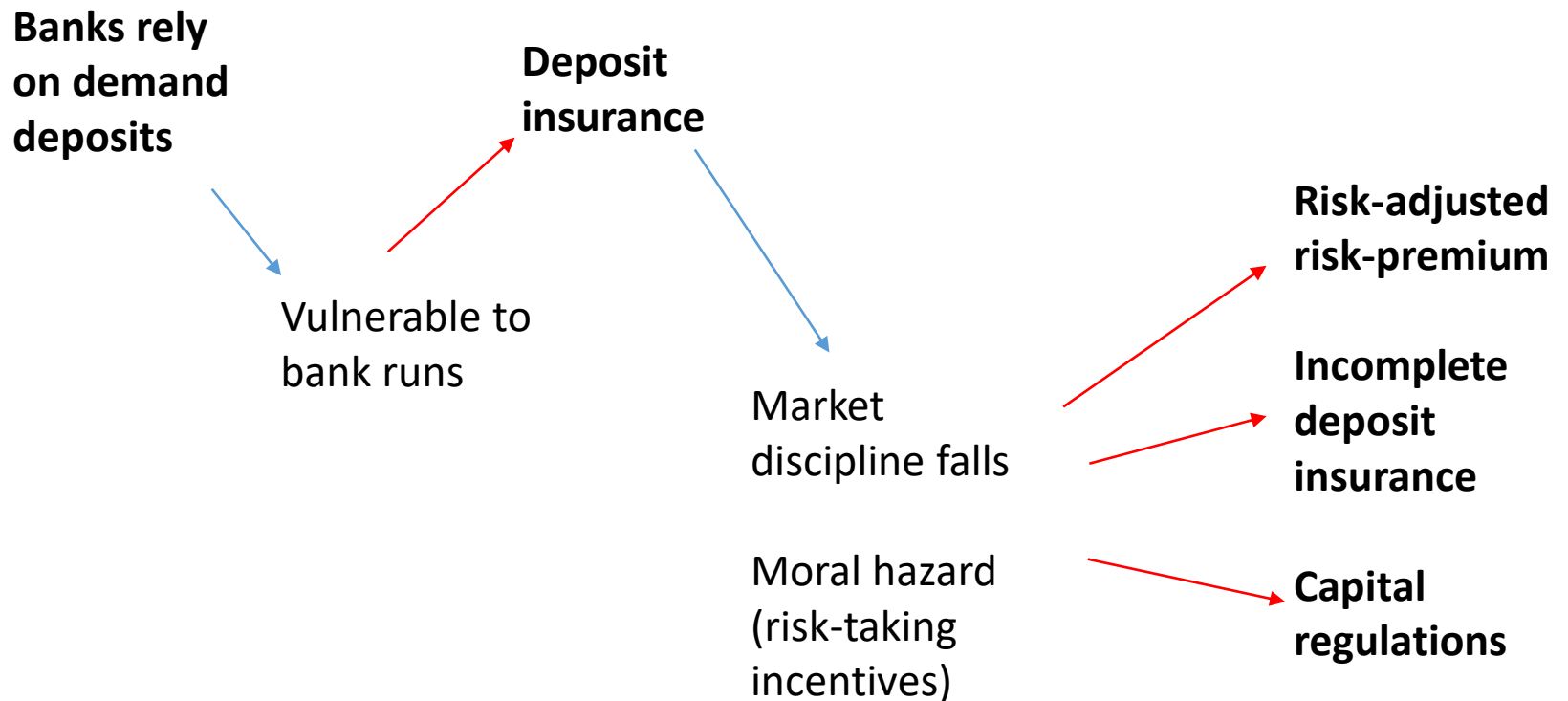
Clase 2

UTDT Maestría en Finanzas

Today

- Brief review
- Deposit insurance
 - Role of large depositors: the case of Bolivia (lecture slides 1)
- Addressing risk-taking incentives of deposit insurance
 - Capital regulations
- Liquidity risk in practice
- Application to COVID 19 and US banks

Roadmap



Addressing risk-taking incentives of deposit insurance

Addressing risk-taking incentives

- Optimal deposit insurance has to trade-off contagious bank run prevention versus moral hazard
- Three ways to reduce the moral hazard problem:
 - 1) Increase stockholder discipline
 - 2) Increase depositor discipline
 - 3) Increase regulator discipline

1- Stockholder discipline

Risk-adjusted deposit insurance

- If deposit insurance is fairly-priced (i.e., depends on the level of risk) there is no moral hazard problem though this is difficult to implement in practice
- But a risk-adjusted premium is possible and can alleviate the problem

1 – Stockholder discipline

Deposit Insurance and Other Liability Guarantees

Controlling DI Risk Taking: stockholder discipline.

- FDIC adopted risk-based premiums in 1993. Established by the FDIC Improvement Act (FDICIA) of 1991. Before 1993 it was a fix premium.
- In practice, it created a **matrix** of nine premiums (from \$.23 per \$100 to \$.31 per \$100 of total deposits) based on three capital ratios (capital adequacy dimension) and three supervisory categories (supervisory dimension).

1- Stockholder discipline

Deposit Insurance and Other Liability Guarantees

Controlling DI Risk Taking: stockholder discipline.

The Fee Structure for Deposit Insurance, Effective Jan. 1, 1993

	Healthy (No Sup. Concern)	Supervisory Concern	Substantial Sup. Concern
Well capitalized	23 bp	26 bp	29 bp
Adequately capitalized	26bp	29 bp	30 bp
Undercapitalized	29 bp	30 bp	31 bp

Problem: Risk premium differences were too small to have an effect.

1- Stockholder discipline

Deposit Insurance and Other Liability Guarantees **Controlling DI Risk Taking: stockholder discipline.**

In 1997, FDIC changed the matrix ranging premiums from \$0 per \$100 to \$.27 per \$100.

The Fee Structure for Deposit Insurance, Effective Jan. 1, 1997			
	Healthy	Supervisory Concern	Substantial Concern
Well capitalized	0 bp	3 bp	17 bp
Adequately capitalized	3 bp	10 bp	24 bp
Undercapitalized	10 bp	24 bp	27 bp

Higher **incentive** to maintain high capital ratios and reduce supervisory concern to save 27 cents. Most banks paid 0 but still imposed risks on the system.

1- Stockholder discipline

Deposit Insurance and Other Liability Guarantees

Controlling DI Risk Taking: stockholder discipline.

Starting **January 2007**, the FDIC began calculating deposit insurance premiums based on a **more aggressively** risk-based system. Slightly revised in April 2009.

- All banks pay a **positive** premium. Rates vary between 12 and 45 basis points.

2- Depositor discipline

- If some depositors are not insured (the larger ones, belonging to the most sophisticated investors), then the interest rate they demand should be related to the risk the bank is taking
- More generally, this discipline applies not only to uninsured depositors but to other type of bank debt, mainly banks' bond-holders
- The interest rate paid to debtholders makes the bank internalize the cost of taking more risk

2- Depositor discipline

- With the introduction of deposit insurance in the US in 1933, the coverage limit per deposit was established in \$2500, increased to \$100,000 in 1980 and to \$250,000 during the 2008 crisis
- There should be a coverage limit above which all is at risk:
 - Europe: up to € 100,000
 - US: up to \$ 250,000
 - UK: up to £ 85,000

Deposit Insurance: Argentina

- Cubre depósitos en pesos y moneda extranjera
- Tiene un límite de \$1.500.000 por persona
- Las FI aportan mensualmente un % de sus saldos de depósitos al **fondo de garantía** SEDESA. En este momento aportan entre 0,015% del promedio mensual de saldos diarios y 0,06% como máximo según el nivel de riesgo
- Las FI hacen un aporte adicional que depende del nivel de riesgo de la entidad (CAMEL, capital, calidad del portafolio)
- Son excluidos de la protección
 - los depósitos a la vista en los que se convengan tasas de interés superiores a las de referencia
 - Los depósitos e inversiones a plazo que superen 1,3 veces esa tasa o la tasa de referencia más 5 puntos porcentuales – la mayor de ambas–.
 - Las tasas de referencia son difundidas periódicamente por el BCRA por medio de Comunicaciones “B”

2- Depositor discipline and TBTF

- In practice, most depositors in large banks are implicitly protected by the TBTF effect
- The TBTF effect is the expectation investors have that large banks will be bailed out (even if the regulator announces that this will not happen)
 - The announcement is time-inconsistent
- Both insured and uninsured depositors have little incentives to monitor large banks

3- Regulatory discipline

- Regulations that increase the incentives of stockholders to monitor
 - Link between stockholder and regulatory discipline
- Regulator can impose more stockholder discipline by:
 - Requiring higher capital ratios (stockholders have more at stake)
 - In particular **risk-adjusted capital ratios** (where the assets, both on-balance sheet and off-balance sheet, are risk weighted to impose higher capital requirements when risk is higher)
 - And, when capital falls below the regulatory minimum, **prompt corrective action** is triggered

3- Regulatory discipline

Capital Adequacy

Functions of capital.

- Provide a **cushion** to absorb unanticipated losses.
- Reduce **moral hazard** created by deposit insurance and too-big-to-fail policies.
- Preserve **confidence** in the FI, and avoid depositor runs.
- Protect **uninsured** depositors and other stakeholders.
- Protect **deposit insurance** funds (FDIC) and taxpayers.

3- Regulatory discipline

Capital ratios: Assets vs risk-adjusted assets

- Bank A and Bank B have the same asset size and capital
- Bank A has a riskier portfolio of loans than Bank B
- The leverage ratio (capital/assets) of both banks is identical
- The risk-adjusted assets of Bank A are larger than Bank B.
- The risk-adjusted capital ratios ($\text{capital/risk-adjusted assets}$) of Bank A are lower than the ones for Bank B
- Bank A may need to raise more capital if the ratio is below the **minimum required by regulation**

3- Regulatory discipline

Prompt corrective action and capital requirements

- In 2018, Tier 1 risk-based capital ratio: 8%, 6%, <6%, <4% and <2

TABLE 20–5 Specifications of Capital Categories for Prompt Corrective Action

Source: Federal Reserve Board of Governors, September 10, 1993.

Zone	(1) Total Risk- Based Ratio		(2) Tier I Risk- Based Ratio		(3) Leverage Ratio		Capital Directive/Other
1. Well capitalized	10% or above	and	6% or above	and	5% or above	and	Not subject to a capital directive to meet a specific level for any capital measure
2. Adequately capitalized	8% or above	and	4% or above	and	4% or above	and	Does not meet the definition of well capitalized
3. Undercapitalized	Under 8%	or	Under 4%	or	Under 4%		
4. Significantly undercapitalized	Under 6%	or	Under 3%	or	Under 3%		
5. Critically undercapitalized	2% or under	or	2% or under	or	2% or under		

Liquidity risk in practice

Liquidity Risk

- It is the risk of a sudden **surge** in demand for liquid funds by customers (either depositors or firms) that may require a FI to **liquidate** assets in a very short period of time at less than fair market prices (**fire sale** prices).
- In **extreme** cases (e.g., a run), liquidity risk may lead to insolvency risk.
 - Example — IndyMac Bank.

- Liquidity risk arises for two reasons:
 - **Liability side**: Arises when short term liability holders (i.e., transaction depositors) decide to cash their claims immediately
 - **Asset side**: Arises when firms withdraw from their credit lines or loan commitments (off balance sheet items). The bank must fund the loans immediately

Liquidity Risk

The liquidity risk (both from the liability and the asset side) can be managed in two ways:

- **Purchased liquidity** management: An adjustment that occurs on the liability side of the balance sheet (e.g., purchased liquidity in **fund markets** such as federal funds, REPO or wholesale CDs).
- **Stored liquidity** management: An adjustment that occurs on the asset side of the balance sheet (e.g., draw down of **cash reserves**, sale of marketable securities).

Liquidity Risk

Purchased Liquidity Management:

Banks buy funds in open market such as:

- Federal funds market.
- Repurchase Agreement Markets (REPO market).
- Issue fixed-maturity certificates of deposit (CD).



Advantage: it allows the FI to **preserve** its overall balance sheet size.

Disadvantage: borrowed funds often come at the cost of **higher** interest rates (than low-interest-bearing deposits).

Example: Using purchased liquidity when facing a fall in deposits

Assets	Liabilities + NW
Treasuries	Purchased funds
Loans	Deposits
	Net worth

Example: Using purchased liquidity when facing a fall in deposits

Assets	Liabilities + NW
Treasuries	Purchased funds 
Loans	Deposits 
	Net worth

Liquidity Risk

Stored Liquidity Management:

Banks **liquidate** assets (i.e., use stored liquidity like excess reserves or sell treasury securities).

- Disadvantages:
 - **Decrease** the overall balance sheet size of the FIs.
 - Hold **low** interest rate excess reserves or treasury securities on the balance sheet => forgoing higher interest income (**opportunity** cost).

Purchased and stored liquidity management can be combined.

Example: Using stored liquidity when facing a fall in deposits

Assets	Liabilities + NW
Treasuries	Purchased funds
Loans	Deposits
	Net worth

Example: Using stored liquidity when facing a fall in deposits

Assets	Liabilities + NW
Treasuries ↓	Purchased funds
Loans	Deposits ↓
	Net worth

Example: Using stored liquidity when facing an increase in credit line drawdowns

- Assumption: No extra capital is needed

Assets	Liabilities + NW
Treasuries	Purchased funds
Loans	Deposits
	Net worth

Example: Using stored liquidity when facing an increase in credit line drawdowns

- Assumption: No extra capital is needed

Assets		Liabilities + NW	
Treasuries	↓	Purchased funds	
Loans	↑	Deposits	
		Net worth	



Example: Using purchased liquidity when facing an increase in credit line drawdowns

- Assumption: No extra capital is needed

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Liquidity risk and Covid 19

- Based on:
 - Acharya, V., Rob Engle, and S. Steffen, Why Did Bank Stocks Crash During COVID-19?, working paper, 2021

Liquidity risk and Covid 19

- March 2020: Borrowers are drawing down heavily on bank lines of credit anticipating that market sources of funding may dry up or get costlier.
- From Bloomberg News:
 - U.S. banks had a total of \$2.5 trillion of credit commitments to companies that weren't used at the end of 2019, according to the latest data from the Federal Deposit Insurance Corp. Regulatory filings show about 64% of those commitments had been made by the nation's four biggest banks: JP Morgan Chase & Co, Bank of America Corp., Citigroup Inc. and Wells Fargo & Co
 - <https://www.bloomberg.com/news/articles/2020-03-12/dash-for-cash-is-on-as-corporate-titans-draw-down-credit-lines>

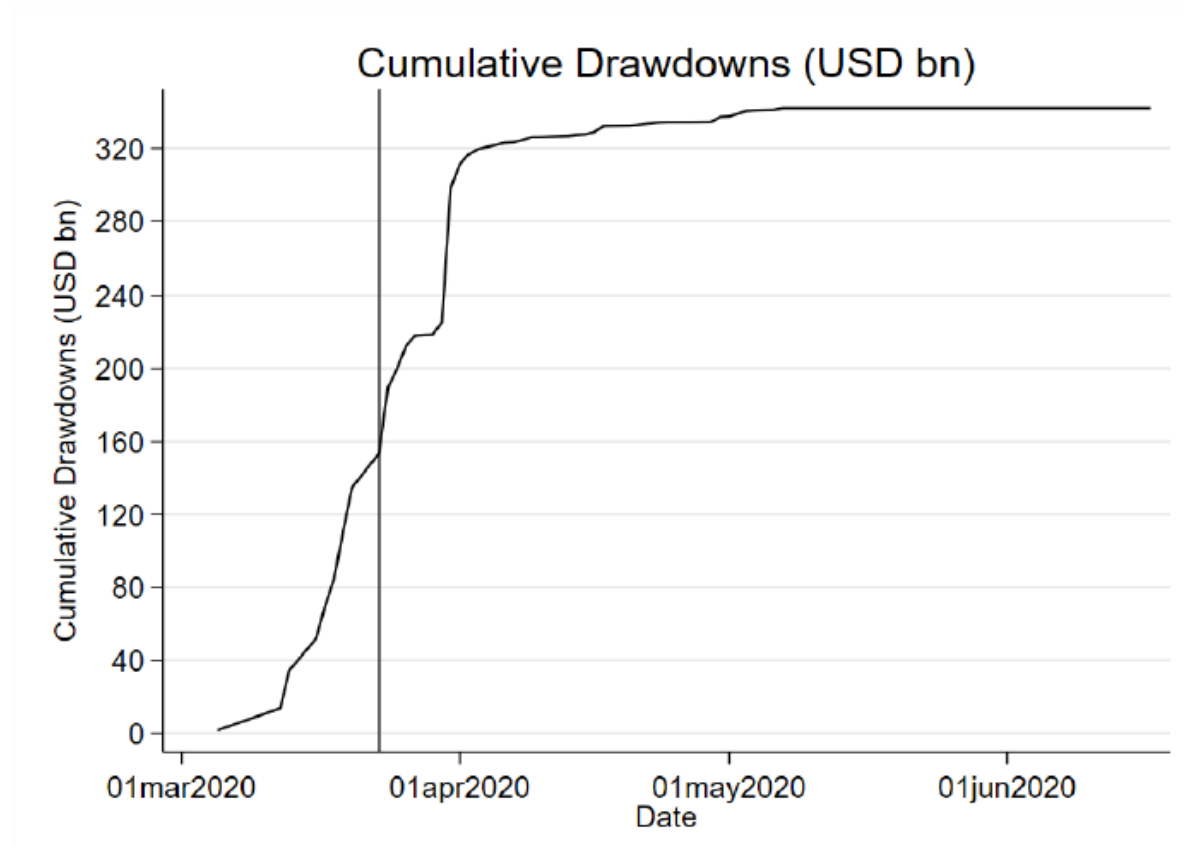
Why firms draw down credit lines?

- “Freeze” in certain segments that provide funds for firms (commercial paper, loans, bonds market)
- Since beginning of 2020, non-investment grade rated firms (BBB- or lower) and unrated firms lost access to public bond markets
 - Had to draw down their credit lines (only funding available)

Since March 1...

- Unprecedented drawdown rate on bank credit lines since early March 2020

Panel A. Cumulative drawdowns (in USD bn)



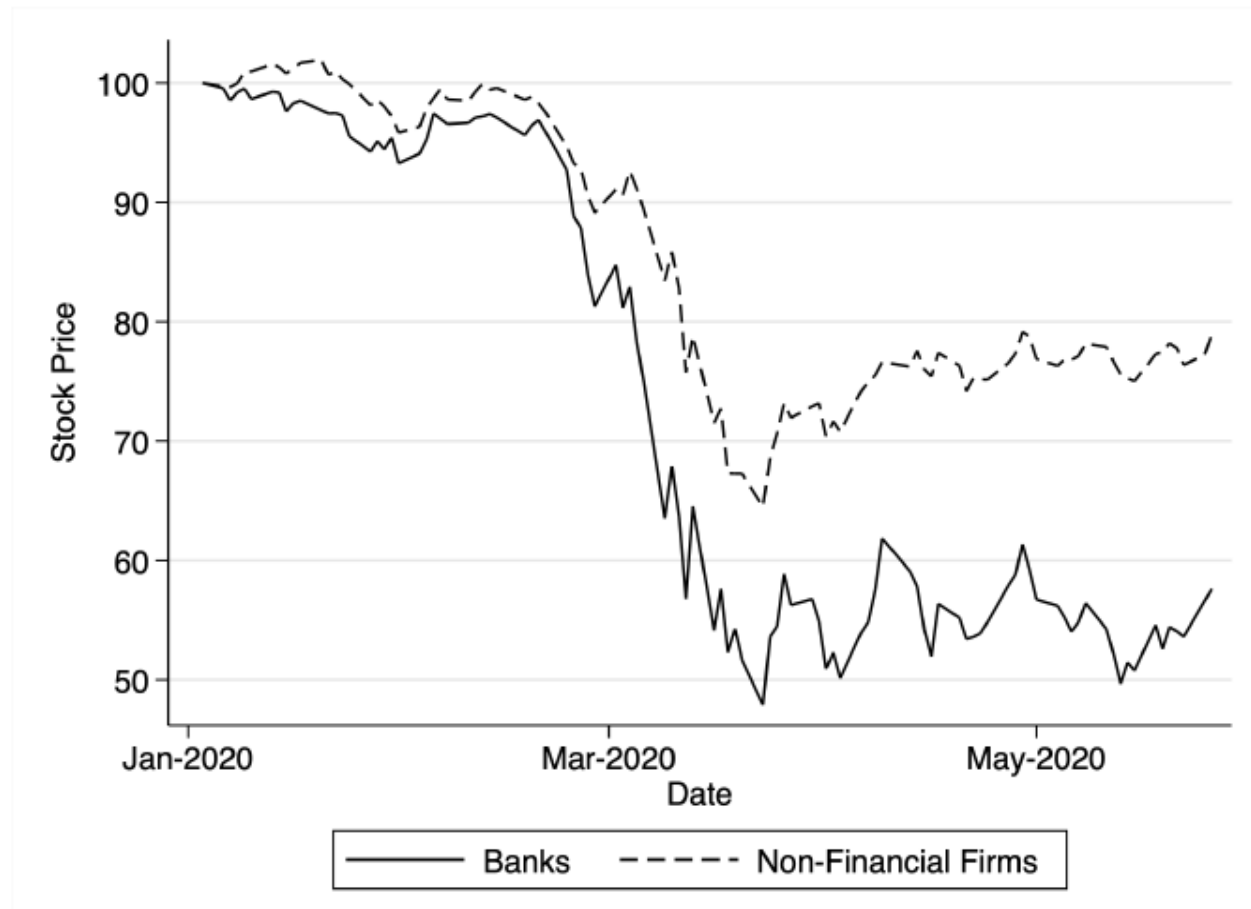
A large proportion correspond to high-risk firms

	Unused Credit Lines	Expected Drawdown Rate (2008)	Expected Drawdowns	Actual Drawdowns	Difference	Actual Drawdown Rate
AAA-A	322,183	17.00%	54,771	19,372	-35,399	6.01%
BBB	449,817	23.80%	107,056	103,616	-3,441	23.04%
Non-IG	309,163	28.50%	88,111	82,345	-5,767	26.63%
Not Rated	162,725	39.20%	63,788	20,006	-43,783	12.29%
Total	1,243,888		313,727	225,338	-88,389	

Table 1: Expected versus actual drawdowns (in USD mn).

What about bank stock prices?

Panel B. Stock prices of banks vs. non-financial firms



- Within four weeks, US firms drew down at least USD 235 billion, particularly from BBB-rated and non-investment grade rated firms
- Rapid and persistent market value decline of US bank equity (50%)
- Is the decline in stock prices a consequence of the drawdown risk?

Measuring bank balance sheet liquidity

- *Unused Commitments*: The sum of credit lines secured by 1-4 family homes, secured and unsecured commercial real estate credit lines, commitments related to securities underwriting, commercial letter of credit, and other credit lines (which includes commitments to extend credit through overdraft facilities or commercial lines of credit).
- *Wholesale Funding*: The sum of large time deposits, deposited booked in foreign offices, subordinated debt and debentures, gross federal funds purchased, repos and other borrowed money.
- *Liquidity*: The sum of cash, federal funds sold & reverse repos, and securities excluding MBS/ABS securities

We construct a comprehensive measure of bank liquidity risk:

$$\text{Liquidity Risk} = \frac{\text{Unused commitments} + \text{Wholesale Funding} - \text{Liquidity}}{\text{Total Assets}}$$

Liquidity risk was one of the drivers of the fall in bank equity prices

Relative bank stock return crash explained by ex-ante liquidity risk

