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Another Banking Crisis?
Implications for Banks and Other Assets

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Introduction

- Since the collapse of the crypto exchange FTX last November, the banking sector both in the US and Europe have come under increased stress.
  - While the reasons vary as to why particular banks have come under fire, the predominant risk to the banking system in general, depositors, and the shareholders of banks is the potential for "bank runs", where uninsured depositors all want concurrent withdrawals beyond the available liquidity of a specific bank.
- In this presentation, we will examine various aspects of the current situation and propose a way to improve bank risk regulation and management to reduce the chance of similar events in the future
- We will also illustrate how analytical services from Northfield assisted investors in dealing with the situation both in terms of direct effects on banking, and the impact on other investment activities such as sovereign debt, private equity, venture capital and real estate.

A Succinct Summary

- About a week ago, I had an unrelated phone conversation with a friend who is one of the most famous equity portfolio managers in history.
- His comment on the collapse of Silicon Valley Bank was brief:

“Greed and stupidity”

Disclaimer: Almost every financial institution mentioned in this presentation currently does business with Northfield.

How Fragile is (or isn't) the US Banking System?

- Just a few days after the collapse of SVB, a working paper by Jiang, Matvos, Piskorski, and Seru (SSRN, 2023) was posted online.

- The study considers two key aspects of the current situation to describe the fragility of a particular bank.
  - Uninsured deposits as a fraction of total assets of a bank
  - The estimated ***unreported*** decline in capital reserves arising from the loss of market value of bank assets as a result of recent increases in interest rates.

- SVB was in the 99th percentile (highest ratio) of insured deposits and in the 90th percentile in terms of capital status (i.e. 10% of banks are worse off).
  - In Northfield models SVB equity risk was in the 96th percentile of major banks

- *Up to 190 banks with $600 Billion in uninsured deposits could be at risk*

Going "Green" with Recycled Deposits

- The $600 Billion of uninsured deposits estimated in the study would represent *about $360 Billion adjusted for inflation in 2008 dollars.*
  - That figure compares to $750 Billion for the US allocated for "bailouts" in the GFC period
  - $182 Billion of the $750 Billion was allocated to AIG, which not only repaid the Treasury in full, but the US Government had $26 Billion profits on the deal

- While $360 Billion is almost half of the $750 Billion allocated in 2008, there is a fundamental difference.
  - *A bank run is a liquidity event, not a solvency event. The withdrawn cash isn't gone from the system, it just moves to other banks or money market funds.*
  - *Any loss of solvency arises from the impacted bank doing "fire sales" (high transaction costs) of assets to raise cash to meet withdrawals.*
  - This effect was illustrated by the recent deposit of $30 Billion into First Republic Bank by a consortium of larger banks led by JPMorgan.
  - Japan has a long tradition of "convoy" rescues within banking

The Anatomy of Unreported Losses

- US banks with less than $250 Billion in assets can choose not to "mark to market" certain assets in financial statements as most bank assets are loans with no secondary market.

- Among the asset types often treated under "statutory accounting" treatment are high quality bonds that a *bank intends to hold to maturity*.
  - Since the value of a bond is fixed at maturity the market value fluctuations through time become irrelevant an investor who is almost certain to hold the bond to maturity (e.g. a life insurance company)
  - Statutory accounting allows financial institutions to report much steadier earnings because the "income" of fixed income securities is always positive. If you can ignore price fluctuations, total returns are always positive.
  - *With rising interest rates, the market value of fixed income assets (bonds, MBS, loans) declines, so unreported losses arise and become relevant* ***if and only if*** *a current sale of these assets is required to meet withdrawals.*

Regulate Away Statutory Accounting?

- The US requires mark to market accounting for many financial entities.
  - Large banks with over $250 Billion in assets
  - Investment banks, brokers, exchanges, futures brokers
- Some countries (e.g. Canada) require mark to market even for financial entities with predominantly long-term liabilities (e.g. life insurance companies).
- Statutory accounting can be abused
  - First Executive Life 1991, MBTARS 2015
- But requiring mark to market for all financial assets would add operating costs and make earnings much more volatile for small institutions.
  - Marking illiquid assets under FASB 157 is vague and often manipulated.

Our Practical Proposal

- Except for the smallest institutions, banks are required to report risk assessment measures such as "Value at Risk" to regulators.

- Northfield has long advocated all financial entities subject to withdrawals of capital (e.g. a retail mutual fund) have a transparently documented "liquidity policy" as proposed in Acerbi and Scandolo (2008)
  - Builds the **transaction costs** of liquidating a chosen percentages of assets (e.g. 25%) in T trading days (e.g. 5) into *liquidity-adjusted VaR values*.
  - For banks, the percentage of assets covered can be tied to uninsured deposits
  - Since VaR represents potential dollar losses on a portfolio of financial assets, it seems reasonable to add in existing unrealized losses, as these losses will be realized if immediate liquidity is required to meet withdrawals.
  - Increased VaR values will require banks to add to liquidity and capital

- *The probabilistic nature of the unrealized losses being realized in the future belongs in the realm of risk management, not financial accounting.*

“Bank Runs” and Risk in Endogenous Time

- Since 2017, Northfield has adjusted our risk models daily in response to financial news coverage on companies, industries and countries.
  - The methodology is *called Risk Systems That Read®* and was first proposed in diBartolomeo, Mitra, and Mitra (Quantitative Finance, 2009)
  - Discussion at https://www.northinfo.com/Documents/795.pdf
- The RSTR process redefines the passage of time based on flows of information rather than traditional clock and calendar time.
  - When information flow is high, time is passing quickly for investors. Time moves slowly when no new information is being revealed.
  - See Return and Risk in Endogenous Time (northinfo.com).
- A bank run is a special case of this problem, as *uninsured depositors can only lose in response to financial news coverage.* No news is good news.
  - Online banking has made uninsured depositor response almost instantaneous

Playing Connect the Dots in the Timeline

- The voluntary bankruptcy of Silvergate bank and the collapse of Signature Bank were closely tied to turmoil in digital assets after the failure of FTX.
  - Both concentrated in transaction processing for crypto-related client
  - Crypto related investments were somewhere between 1% and 4% of all global venture capital deals in recent years.
  - *While not a huge percentage, it was still tens of billions of dollars and sufficient to focus the attention of VCs on financial stability*
- Silicon Valley Bank was concentrated in activities related to venture capital and was among the top of the nation in uninsured deposits.
- The SVB failure prompted investors to look generally at the issue banks with high degrees of vulnerability to a bank run.
  - Several West Coast regional banks seemed vulnerable along with CS and FRC
  - CS was considered of global systemic importance

Let's Look at Northfield Risk Model Data

- Our "near horizon" and "short term" models adjust risk estimates daily.
  - Closing data on 229 major banks traded in the US (including global banks as ADRs). Table reflects idiosyncratic risk only
  - *SVB and CS are at near the top as most risky of March 1st, 2023*
  - *SVB idiosyncratic more than doubles on March 9th, the day **before** the closure*

	3/1/2023	3/1/2023	3/1/2023	3/1/2023	3/9/2023	3/23/2023
	Mo Vol	Annual Vol	Z	%	Mo Vol	Mo Vol
UBS	4.71	16.32	-0.12	45	5.11	6.43
SVB	**11.95**	41.40	1.74	96	**27.46**	27.41
CS	12.42	43.02	1.86	97	14.11	28.42
FRC	6.08	21.06	0.23	59	7.59	12.53

SVB was a Trifecta

- SVB had three related attributes that made it inherently unstable.
  - It was in the 99th percentile for the highest ratio of uninsured deposits making it most vulnerable to a bank run.
  - It as in the 90th worst percentile for capital reserves after adjustment for unrealized losses.
  - A few months earlier SVB borrowed $20 Billion from the Federal Home Loan Bank, indicative of internal knowledge of concerns about liquidity.

- According to our models (as of 3/1/2023) SVB was in the 96th percentile for monthly idiosyncratic risk at 11.65% at two-week horizon and 10.85% at the one-year horizon.
  - *Even if uninsured depositors were unaware of SVB's problems, investors were quite aware.*
  - *This risk level contributed to the difficulty SVB encountered when trying to hastily arrange an equity share sale on March 9.*

Northfield Credit Ratings

- While Northfield is not a regulated credit rating agency, we started producing our own credit ratings a few years ago to allow our Everything, Everywhere and Fixed Income models to sensibly consider debt instruments that had no ratings from a major rating agency.
  - We use the same letter code scheme as S&P for easy interpretation
  - The method is a version of the contingent claims model in Merton (JoF, 1974).
  - See [Estimation of Corporate Bond Credit Ratings (northinfo.com)]

- Current coverage is 72,000 companies updated once a month.
  - This compares to an average time between changes in traditional ratings of about three years.
  - We could increase production to daily if clients are interested using the aforementioned RSTR® process.
  - See [Northfield News-September 2016 (northinfo.com)] for details.

Sustainability Scores

- Closely related to our credit ratings are "sustainability horizons" that represent the median of the number of years that equity investors believe a given company is expected to survive.
  - See diBartolomeo (Journal of Investing, 2010) for data from 1992 forward
  - The seemingly high values for SVB and FRC in 2021 relate to near-zero interest rates (i.e. even with high leverage it's hard to go broke if your cost of funds is negative)
  - The 10 Year horizon for CS and UBS equates to a 6.7% annual default probability

	Expected Life in Years		
	12/31/2021	2/28/2023	% Change
UBS	15	10	-33.33
CS	8	10	25.00
SVB	46	23	**-50.00**
FRC	42	24	-42.86

The Magic Disappearance of $17 Billion in Hybrids

- In the takeover of CS by UBS, approximately $17 Billion of "Additional Tier 1 capital" bonds were declared worthless.
  - This kind of "hybrid" bond is structurally similar to preferred equity shares.
  - Calling it a bond makes it easier to sell to investors and the "interest" is a tax-deductible expense to the issuing bank.
  - Most AT1 bonds are structured like a convertible bond in reverse, where the issuer decides when the bond should be converted to equity.
- **The CS AT1 bonds were different**
  - They were perpetual with no maturity date like preferred equity
  - The legal covenants were more like "catastrophe bonds" issued by insurance companies where predetermined conditions trigger a "wipe out" of the bondholders.
  - *As of late February, the 5.5% CS AT1 bonds were yielding 9.75%, as compared to about 1.4% for long term Swiss government bonds, so the market clearly recognized the high likelihood of default.*

Implications for Sovereign Debt

- The creditworthiness of the sovereign debt of a given country and the soundness of their banking system are highly interdependent.
  - Banks are strongly encouraged by regulation with minimal requirements for capital reserves to hold government debt as their major reserve asset.
  - The government needs banks to function smoothly to keep their national economy out of chaos, so acts as a de facto guarantor.
  - *The new combination of UBS/CS will have assets twice the annual GDP of Switzerland. Combined Swiss banks assets are around five times GDP.*
  - *All US bank assets combined are about one times annual GDP.*
- Mervyn King, former Governor of the Bank of England, has argued that central banks should act more like pawn shops, lending against collateral other than sovereign debt.
  - This might encourage some banks like SVB to diversify into credit risky securities rather than longer maturities to obtain attractive yields.
  - Credit risk is much more carefully regulated than interest rate risk

Implications for Other Asset Classes

- There is a non-zero probability that accounting standards for financial institutions will narrow the use of statutory accounting.
  - This will have significant negative impact on the attractiveness of illiquid assets (e.g. private equity) for organizations such as pension funds and insurance companies.
  - It is likely that the vague nature of FASB 157 would be tightened up, especially in terms of how much time is allowed to find a buyer when valuing an illiquid asset.
- Financing of commercial real estate will be more limited as lenders will prefer to hold assets that are more easily securitized (credit card receivables, residential mortgages).
- Specialty banks that cater to a single industry (VC, oil exploration, crypto) are likely to be subject to tighter regulation.

Conclusions

- The current stresses in the US and European banking systems have much more to do with liquidity than solvency.
- Bank runs associated with weakened institutions are always possible, but their probability is relatively easy to access.
- *We have proposed a risk-oriented rather than accounting-oriented change in bank regulation to address.*
- Uninsured deposits at risk in the US could be covered in full in a "bailout" process only a small fraction of the size of what was authorized in 2008.
- Possible changes in accounting rules would have significant impact on the attractiveness of illiquid assets such as private equity.