

Banking Crisis of 2023

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Abstract

We analyze the reasons for the New Banking Crisis of 2023. The Global Financial System, is highly interconnected and since the beginning of the latest round of interest rate hikes in the US due to domestic inflation, is showing signs of stress. We have so far seen two bank bankruptcies. Over the past few years, many Sovereign bankruptcies have also been witnessed. In this paper, I look at the chain of events that have taken place and draw lessons for any avid observer of finance. This macro environment prevailing in financial markets has been well written and documented and we try to find meaning in various such news broadcasts and it is our hope that after reading this paper our stakeholders will have greater intuition to make sense of the interconnected world we live in and how we are very close to another Financial Crisis. It is as if 2023 were 2006 all over again. We know what came then and the toll it took. This paper captures the journey from the last crisis to this crisis we find ourselves in today and examines what keeps India relatively insulated from the various shocks that seem to be occurring once every 15 years while we are expecting these to happen once every 100 years.

Keywords: Financial Stability, Banking, Risk, AT1 Bonds

1. Introduction

Banking is in crisis. This crisis did not happen overnight, in this paper, we examine why Banking in one form or another continues to draw the global financial system to the very edge of financial catastrophe.

Banking is a unique business that accumulates all kinds of risks on its Balance sheet. By accepting deposits of shorter tenor and making loans of longer tenor Banking serves a unique purpose of maturity transformation. This means Banks need to have continuous access to liquidity, just like fish need to be in the water. The lend far beyond its Deposit Base banks need to have confirmed sources of funding (Choudry 2012). The crisis of 2023 in the US banking system was brought about by sudden run-on banks. The fact that most of the depositors in Silicon Valley Bank were from the Startup community in the US meant that most would communicate with each other faster and mount a coordinated withdrawal

of funds that led to the US Fed to intervene. Are there lessons for this for Indian Banks? Indian banks especially the cooperative banks have shown to be extremely vulnerable. With the collapse of Raghavendra Cooperative Bank and Punjab and Maharashtra cooperative banks, questions obviously arise on the vulnerability of Indian Banks also.

2. How Did We Get Here?

After the Global Financial Crisis Regulators around the world put in place a new set of Regulations to prevent a recurrence of another Banking Bailout. This was done with regards to the quantum of capital banks would need to hold to cushion the losses both in the Banking business of Lending and also the business of Capital Raising were banks created new instruments to suit the needs of their clients. Banks often face risks of various types which can cause the value of their assets to fall. The top risks are the Interest Rate Risk, Credit Risk, and Liquidity Risk which can create solvency risks for these financial institutions.

Over the Past Century after every crisis new Regulations have been imposed on the Financial Services Industry to ensure the banks don't fail. Banking has an old and honorable tradition and Banking serves the community by offering payments service and credit creation. After the Great Depression the American Congress Passed the Glass Steagata Act to Prevent Banks from indulging in risky investment banking business. This compartmentalized banks and prevented Market risks from eroding the depositors' money. Commercial banks accepted deposits from millions of depositors and made small loans to millions of borrowers thus diversifying both their sources of funding and diversifying their loan portfolios. This method of banking was boring but it was stable. The next forty years this stability allowed countries in the west to recover from the ravages of World War 2 and heralded economic prosperity never seen before.

In India Banks have to be nationalized because a developing country with a propensity for high inflation needs stable, reliable financial institutions. Indian Experience with inflation has been a persistent one at an average of 6% per annum from 1980 to date. A combination of supply-side bottleneck and continuous budget deficit and expansion of money supply to finance the deficit led to a stubbornly slow rate of growth. Things came to a head when India experienced a Balance of Payment crisis and was left with enough foreign reserves to pay for one month of imports. The IMF bailout plan forced India to abandon the protectionist economic policies followed for four decades and caused a change in the regulatory regime for allowing foreign capital.

Table 1 gives the way interest rates behaved since 2005 till date. The sudden surge of interest rates caused by inflation has ensured interest rates move in lock step correlation across the top 25 economies. Now after bank mergers in India, the country has few large banks and a sprinkling of Private Banks that cater to the banking and credit needs of a large middle class and poor. The rich often bank with niche Private banks that offer wealth management services. These merged banks are yet to integrate the culture of the employees and train them sufficiently to manage operating challenges and answer customer queries. Indian banks are very tightly regulated by the Reserve Bank and are mandated to use

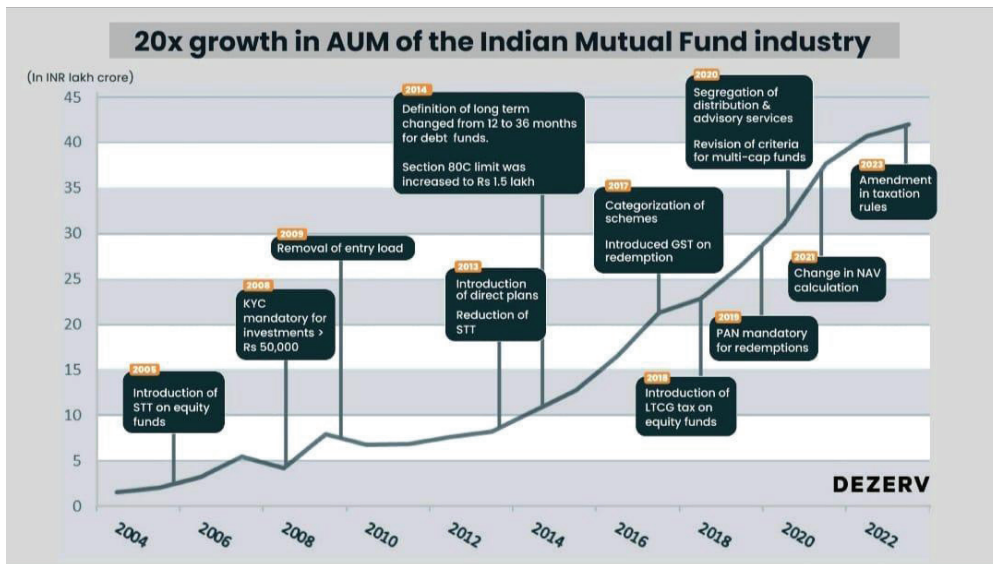
financial derivatives to hedge the underlying risk only and not to punt on the direction of the Market. This means that most Indian banks don't engineer new solutions to meet the needs of their customers. Some will argue that they don't need to. Indian Banks offer 7% on a Bank Fixed Deposit. They attract funds from the retirees and conservative Indian middle class who are averse to taking the risks of investing in the stock market.

TABLE 1. Interest rates trends in top 25 countries. Source: BIS.

Interest Rates Trends in Top 25 Countries (Source - BIS)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
TR:Turkey	18	17.5	17.5	16.8	15	7	6.5	5.8	5.5	10	8.2	8	8	24	24	17	19	14	9
PE:Peru	3.2	4.5	5	6.5	6.5	3	4.2	4.2	4.2	4	3.8	4.2	4.2	3.2	2.8	2.2	2.5	7.5	7.8
RU:Russia	13	12	11	13	13	8.8	8.2	8.2	8.2	17	17	11	10	7.8	7.8	6.2	8.5	20	7.5
ZA:South Africa	7.5	9	11	12	11.5	7	5.5	5.5	5	5.8	6.2	7	7	6.8	6.8	6.5	3.8	7	7.2
CZ:Czechia	2.5	2.5	3.5	3.8	2.2	1	0.8	0.8	0	0	0	0	0.5	1.8	2	2.2	3.8	7	7
RO:Romania	17	8.8	8.8	10.2	10.2	8	6.2	6	5.2	4	2.8	1.8	1.8	2.5	2.5	2.5	1.8	6.8	7
PL:Poland	6.5	4.5	5	6	5	3.5	4.5	4.8	4.2	2.5	2	1.5	1.5	1.5	1.5	1.5	1.8	6.8	6.8
IN:India	6.2	7.2	7.8	9	6.5	6.2	8.5	8.5	8	8	8	6.8	6.2	6.5	6.5	5.2	4	6.2	6.5
IS:Iceland	10	13.3	13.8	18	18	9.1	4.1	5.4	5.4	5.4	5.8	5.8	5	4.5	4.5	3	2	6	6.5
PH:Philippines	7.5	7.5	7.5	6	5.5	4	4.5	4.5	3.5	4	4	4	3	4.8	4.8	4	2	5.5	6
ID:Indonesia	12.8	12.8	9.8	9.5	9.2	6.5	6.8	6	7.5	7.8	7.8	7.5	4.8	6	6	5	3.8	5.5	5.8
RS:Serbia	8.5	18	14	17.8	17.8	11.5	12.5	11.2	11.8	9.5	8	4.5	4	3.5	3	2.2	1	5	5.5
SA:Saudi Arabia	4.8	5.2	5.5	5.5	2.5	2	2	2	2	2	2	2	2	3	3	2.2	1	5	5.2
MK:North Macedonia	10	8.4	5.8	7	9	8.5	4	4	3.7	3.2	3.2	4	3.8	3.2	2.5	2.2	1.5	4.8	5.2
HK:Hong Kong SAR	5.8	6.8	6.8	5.8	0.5	0.5	0.5	0.5	0.5	0.5	0.8	1	1.8	2.8	2.8	2.7	0.5	4.8	5
NZ:New Zealand	7.2	7.2	8.2	8.2	5	3	3	2.5	2.5	3.5	3.5	2.5	1.8	1.8	1.8	1	0.8	4.2	4.8
US:United States	4.2	5.2	5.2	4.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.6	1.4	2.4	2.4	1.6	0.1	4.4	4.6
CA:Canada	3.2	4.2	4.5	4.2	1.5	1	1	1	1	1	1	0.5	1	1.8	1.8	1.8	0.2	4.2	4.5
IL:Israel	4.5	5.5	4.5	4.2	1.8	2	3.2	2.8	1.8	1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	3.2	4.2

Mutual funds were the first to break the traditional FD route to create wealth by attracting middle-class savings. The Assets under management grew exponentially. Mutual fund Industry body AMFI or Association of Mutual Funds of India reports that the bulk of the money equity mutual funds get is from Individual Investors. This flies in the face of the assumption that Individual investors are risk averse and don't invest in equities. Thus Indians who traditionally invested in Gold, Real Estate and kept their surplus cash in Fixed Deposits and Post office deposits and Pension Funds looked to invest beyond government-guaranteed avenues (Figure 1).

FIGURE 1. Growth of Assets Under Management

This financial environment in India ensures banks are flush with funds. Indians also don't borrow as much for consumption expenditure. This phenomenon was broken by the New age Non-Banking financial institutions like Bajaj Finance which offered loans for everything from fridges to TVs to Mobile phones. Indians also began to borrow for two wheelers, Cars, Computers, Education and Home Loans. The banks funding such transactions created a robust auto sector and real estate sector. The next stop for banks was to offer credit cards but the high interest rates meant that a conservative and prudent Indian middle class would use it wisely to get a 30-day period to pay off a purchase. To understand this ethos of the Indian middle class one must know that to live within their means is hardwired in their minds. This ensures leverage is often reserved for asset creation and also education and not for vacations and weddings.

Contrasting the Indian approach with that of the affluent economies which have robust social security net the Western middle class is accustomed to having multiple credit cards and loans because the rate of interest on a home mortgage is 3% while it is 12% in India. Higher salaries in the West meant that only a small portion of the salary was blocked to make the mortgage payment. In India, if a couple works in the IT Sector one spouse's Income is to pay the housing mortgage and the other's income is for living. This quenches demand. While single-person homes are very common in the West, joint family is common even today simply because the housing costs have pushed the housing affordability out of the reach of most people.

In this precarious situation when Interest rates were low people would be able to meet their wants. Then came the Pandemic, semiconductor chip shortage, global supply chain crisis, Russia-Ukraine war and wheat shortage. The economies that had exhausted their fiscal resources during the pandemic found themselves grappling with skyrocketing inflation and shortage of goods due to the supply chain crisis, China's Zero COVID policies

that imposed lockdown caused a surge in food and transportation costs. Obstinate dollar rise against other currencies meant there were even fewer takers for American exports. This led to even more inflation in the US causing gas prices, housing costs and food prices to rise sharply. The Fed or the Federal Reserve was forced to act and raise Policy rates often times by as much as 50 basis points and sometimes by 25 basis points. Lurking in the US financial system was a danger they had not anticipated.

3. The Regulator and Stress Testing

Every country which has a sophisticated financial system has so because of its financial institutions. These financial institutions often guided by the central bank of the country accept deposits and loan money for various economic activities. It is now a norm to subject the Banks to “Stress test”. The banks have to conjure up a scenario and assess if they will stay solvent if such a scenario were to happen. These scenarios can be if rates rise, If key borrowers default, or any other scenario the Central bank wants to stress test them for. Interestingly the US banks that fell into crisis fell because the regulator had exempted them from carrying out such a stress test because of their relatively smaller size of less than \$250 billion deposit size. This allowed these “Smaller banks” to take on far greater risks than they would have had they been subjected to regular stress tests.

4. The Crisis

Silicon Valley Bank was a result of a joke between two players at a Poker game. Over the past 40 years, it became the preferred banker of choice for various startups and venture capitalists. SVB supported the startup community by also investing itself in many startups, partnering with others, and loaning money. VCs obtained funding from SVB to invest in many of their tech enterprises. The funded startups deposited their business cash in SVB, often far above the limit of \$250,000 which was the maximum Federal Deposit Insurance Corporation would guarantee in the event of a bank collapse. The surge of deposits when the startup investments were booming had to be deployed to earn interest. SVB was paying 0.5% on those Instant on-demand deposits. Instant on-demand deposits can be withdrawn instantly. This was the bulk of their deposit, instant and on demand which could potentially vanish in an instant. All of the customers of SVB were from one industry. The Startup Tech Industry. This meant they would all be talking to each other, moving in the same circles or even be on the same WhatsApp group. In 2022 when the Fed began raising rates banks like SVB began to suffer losses on the Long-Dated Treasury instruments which they held to maturity. Since Bond values are inversely related to interest rates a rise in interest rates.

Leads to a fall in Bond values. This loss would have been recognized in the Profit and Loss account if the instruments were Available for Sale, because these instruments were Held till maturity the Accounting rules did not require their losses to be recognized. The logic is that you hold bonds till maturity they mature at face value thus any drop in market

value of the bonds you intend to hold till maturity need not be recognized and once a loss is not recognized Equity does not take a hit and does not get eroded.



Seeing their Long-Dated Treasuries which were in theory supposed to be the safest and most liquid instrument lose value SVB internally recognized that the Economic Value of Equity was being eroded. They realized the mistake they had made, not in buying these Long-Dated Treasuries they intended to hold till maturity but in selling the swaps that are designed to hedge against the loss in value of these instruments.

5. Hedging

A financial institution enters into a contract with a Hedge fund or another Financial institution often brokered by a Bank to pass off the risk it does not want to hold. This

owning the asset but transferring the risk is accomplished by using a Financial derivative. A financial derivative is a risk transfer tool. If a bank does not want the low fixed rate interest rate it makes on long-dated held to maturity treasuries it can exchange this stable predictable fixed coupon (interest) for a floating rate interest. The intermediary who manages this transaction brings together two parties to engineer an interest rate swap or currency swap or Index swap.

Banks like floating rate returns because they want to pass on the floating rate income to their deposit holders. In an era of rising rates the customers will demand higher interest rates on their deposits and if the bank is unable to provide the same the customers vote with their feet and take their business elsewhere.

In 2022, 1.5% fixed coupon was valuable to receive and the swaps held by SVB were “In the Money,” i.e., any one would love to be in the position of the Counterparty to SBV. SBV paid what their received ie 1.5% and received the floating rate of 0.5%. From SVB’s perspective, their Net Interest Income margin would be higher if they could keep this 1.5% themselves and not have to pass it off to the counterparty of the swap. This thinking is a bit like saving money by not having health insurance. Naturally, this thinking was not popular thinking and SVB liquidated their swaps at a profit because far savvy banks who were anticipating an oncoming inflation were looking to enter into transactions where they could pay 1.5% fixed (what their received on their Long-Term Treasuries) and receive floating. When rates rise what you receive rises because you are a fixed rate payer and a variable rate receiver.

TABLE 2: Above shows how a successful hedge will preserve the economic value of equity , thus preventing a bank failure.

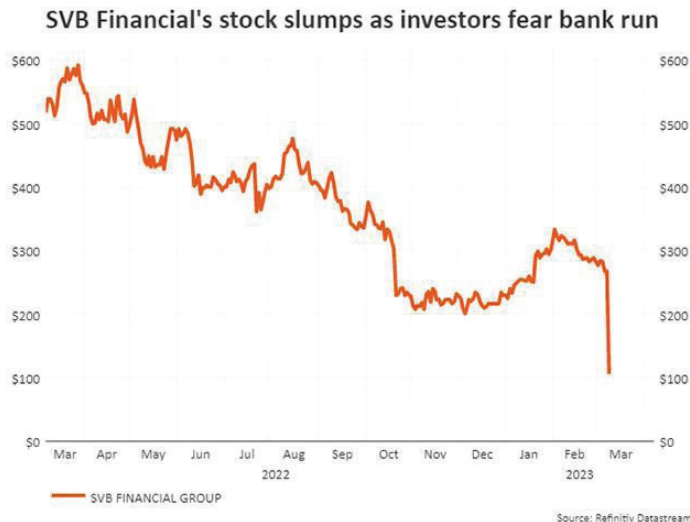
Table 1	Before Fed Rate hike	First hike	Seconf hike	Third Hike	Fourth Hike	Fifth hike
Face Value	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400
n (years)	30	30	30	30	30	30
l (Coupon)	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
YTM	1.50%	1.75%	2%	2.25%	2.75%	3%
Market Value	\$ 400	\$ 376.81	\$ 355.21	\$ 335.06	\$ 298.75	\$ 282.40
Loss		\$ 23.19	\$ 21.61	\$ 20.14	\$ 36.31	\$ 16.36
Cummulative Loss		\$ 23.19	\$ 44.79	\$ 64.94	\$ 101.25	\$ 117.60

Table 2

Interest Rate Futures	Starting Position	First hike	Seconf hike	Third Hike	Fourth Hike	Fifth hike
Contract Price	\$ 98.50	\$ 98.25	\$ 98.00	\$ 97.75	\$ 97.25	\$ 97.00
No of Contract Sold	96.06					
Notional Value of Futures	\$ 9,462	\$ 9,438	\$ 9,414	\$ 9,390	\$ 9,342	\$ 9,318
Profit on Short		\$ 24.02	\$ 24	\$ 24	\$ 48	\$ 24
Cummulative Profit		\$ 24.02	\$ 48.03	\$ 72	\$ 120	\$ 144
Final P&L impact		\$ 0.83	\$ 3.24	\$ 7.11	\$ 18.83	\$ 26.49

Table 2	Starting Position	First hike	Seconf hike	Third Hike	Fourth Hike	Fifth hike
Borrowing	\$ 380.00	\$ 380.00	\$ 380.00	\$ 380.00	\$ 380.00	\$ 380.00
Equity	\$ 20.00	\$ 20.83	\$ 24.07	\$ 31.18	\$ 50.01	\$ 76.51
Capital	\$ 400.00	\$ 400.83	\$ 404.07	\$ 411.18	\$ 430.01	\$ 456.51
MTM Value	\$ 400.00	\$ 376.81	\$ 355.21	\$ 335.06	\$ 298.75	\$ 282.40
Derivative Value		\$ 24.02	\$ 48.86	\$ 76.12	\$ 131.26	\$ 174.11
Total Asset	\$ 400.00	\$ 400.83	\$ 404.07	\$ 411.18	\$ 430.01	\$ 456.51

In the above three tables we deep dive into how a hypothetical Mortgage-backed Bond of \$400 million loses value as the rate is hiked successively. To hedge the loss in the original investment which is a long bond a short Interest rate futures position is taken in 4 million contract times Modified Duration of 24 times ie 96 million interest rate futures contract. The position gives a profit as rates are increased and this is adequate to nullify the loss in the Marked to Market Value of the original Mortgage Bond Portfolio. So long as the bonds are held the accompanying hedge must not be sold or else there is nothing to protect the value of equity.



6. The End game

By selling their in the Money Swaps SVB was able to book a profit and shore up their Equity, their happiness was till the Fed increased interest rate gain. Now they were exposed. The Good old DV01 or the Dollar Value of the 1 basis point fluctuation in the Yield curve came to bite. They did what was the only chess move they could do, they held on hoping this would be the last of the rate cut, no such luck the Fed increased rates again and again, each rate hike meant a hit on the Value of their Bond Portfolio, each rate hike meant the erosion in the equity value. The Fed finally moved in to take over the bank's Assets and Place it into a Bride Bank Before First Citizens Bank bought it.

7. European Theatre

Two Banks don't fail the same way, while interest rates were rising in much of the Western world Credit Swiss a Prestigious Too Big to fail bank systemically important was tethering on the edge. This bank had gone through several CEO's and several indictments often paying millions of dollars in fines when they got caught by various regulators sometimes laundering money sometimes helping corrupt regimes and crime syndicates to circumvent

global banking norms. The demise of this bank occurred when its backers the Saudi Sovereign Wealth Fund that held 9.9% shares of the bank refused to put in additional capital to shore up public confidence in the bank. They cited <AQ4> regulatory constraints in crossing the 10% threshold of ownership in the bank limiting their capacity to put in more funds. The Swiss Central Bank had to urgently ask a rival Bank UBS to acquire Credit Swiss and to ensure they made the deal worthwhile for UBS threw a 100 billion line of credit. In their anxiety to get the deal done they made a critical mistake that would shake the edifice of Global Investing community for a long time.

8. Additional Tier 1 Bonds

The capital structure of a Bank looks as follows. Common Equity is the first to suffer the loss while Senior Secured Debt is the last to suffer losses. Losses mean NPV Provisioning, Trading losses, Foreign currency loss, etc. Preferred Equity are instruments that stand ready but only after Equity has suffered losses. Application of Losses occurs as shown in the image below while Equity stands last in line for receiving any payment in liquidity. Equity is the only capital we have to cushion our loss. The strength of Equity is the risk absorption capability of the Institution. Imagine various risks like the challenges that come in a video game, Equity is like the life the player has. Just like three strikes and the game is over once the Equity gets eroded the institution has to shore up additional Equity capital. Indeed Credit Swiss did this in 2022 when at very short notice they raised capital from a Saudi Sovereign Debt Fund. In 2023 the Saudis refused. During liquidation, the Swiss central Bank wiped out Additional Tier 1 capital and showed the beleaguered investors the fine print which specifically said that Credit Swiss Additional Tier 1 capital would be wiped out if the National Banking Regulator had to step in the rescue it from a solvency event. It was as if a specific circumstance was imagined at the time of selling these bonds and the same was written in Term and Conditions to set up the investors for a loss. Credibility is the king of Financial Markets because capital follows credible behavior. This event has wiped out the confidence of the 270 billion dollar Additional Tier 1 market. These AT1 bonds were designed after the global financial crisis to ensure banks are well capitalized to never require a taxpayer funded bailout. Taxpayer funded bailouts are a political hot potato. The ordinary taxpayer wants high interest on his deposit, wants a loan with a long tenor, also wants liquidity for his investment, and wants the financial institution to be very safe and trustworthy (Figures 4 and 5).

Simplified Bank Capital Structure

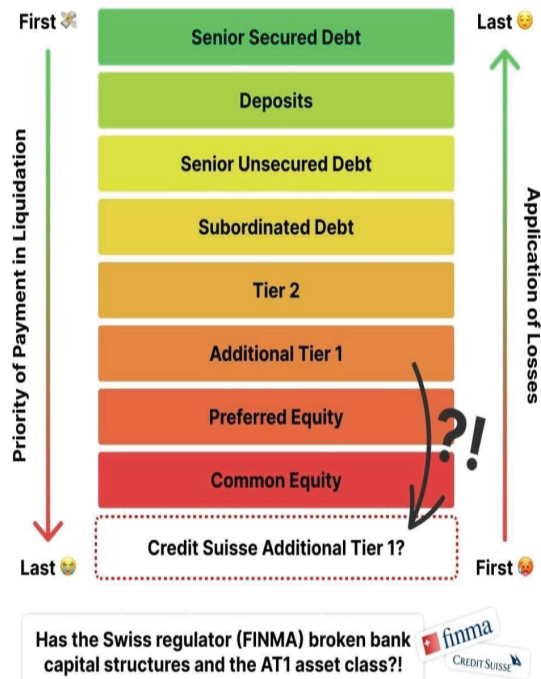
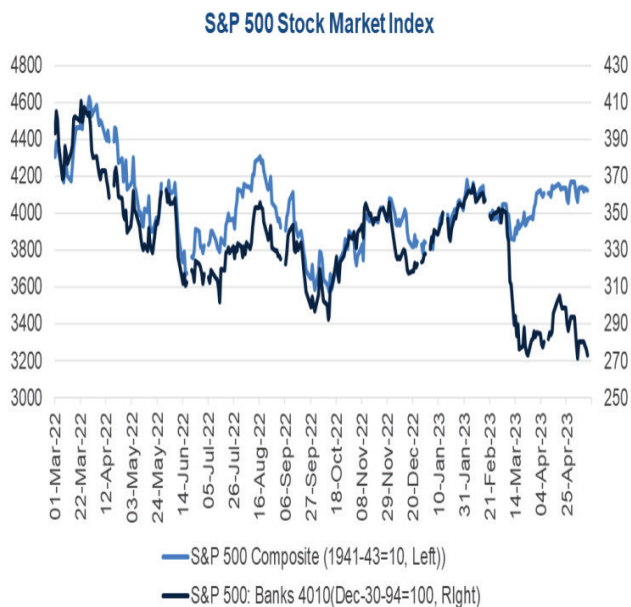


FIGURE 4. Banking crisis captured by the Indexes.



Sources: S&P and The Conference Board.

FIGURE 5. Pecking Order

The American Banking crisis led to a massive erosion of Equity wealth and brought venerable financial institutions to the edge of bankruptcy. It appears that the lessons of the Global Financial Crisis have been lost and once again at a great public cost the US Banking System is learning the same lessons.

9. Conclusion

Thus the old adage of know your risks having multiple sources of funds rather than just instant access credit, diversification in sources of funding, and good old Balance Sheet Risk, Interest Rate Risk Management or lack of it was the cause of the Banking crisis that is unraveling. The near future will expose how well-managed these banks were or if will there be further episodes of bankruptcy.

Conflict of Interest: The authors declare that there are no conflicts of interest regarding the publication of this paper.

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