US Banks (Short) | Gradually, then Suddenly: How Banks go Bust

"How did you go bankrupt?" Bill asked.
"Two ways", Mike said "Gradually, then suddenly".

Ernest Hemmingway "The Sun Also Rises" (1926)

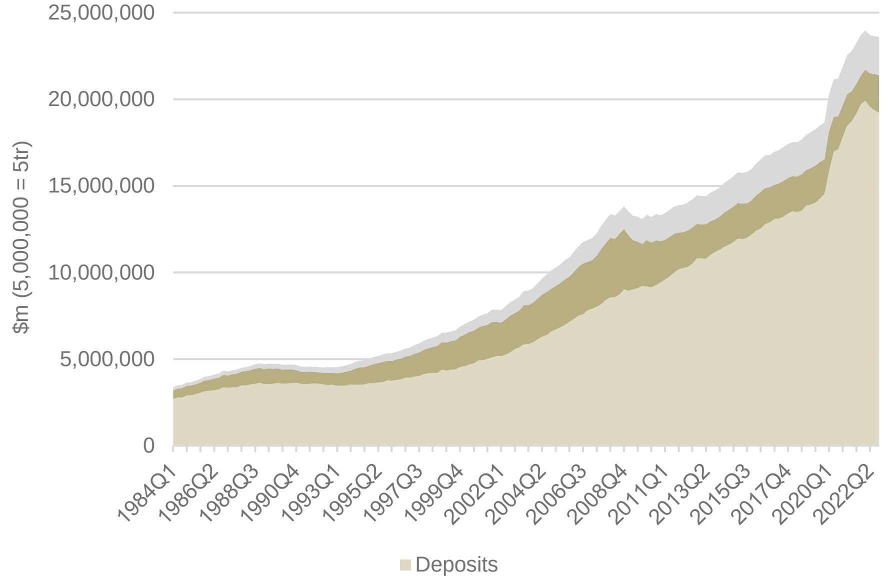
Part 1 | Suddenly

Though we are yet to see an economic recession or a significant deterioration in the credit cycle, three banks, Silicon Valley and Signature in America, and Credit Suisse in Europe, have all just failed. These institutions suffered a collective loss of confidence not just from their investors but crucially from their depositors, who transferred their savings elsewhere, but on which the banks were reliant to fund loans and other investments. Since the banks could not liquidate their assets at a fast enough pace to meet customer withdrawals, they ran out of cash, and were suddenly declared bankrupt.

What caused the 2023 banking crisis?

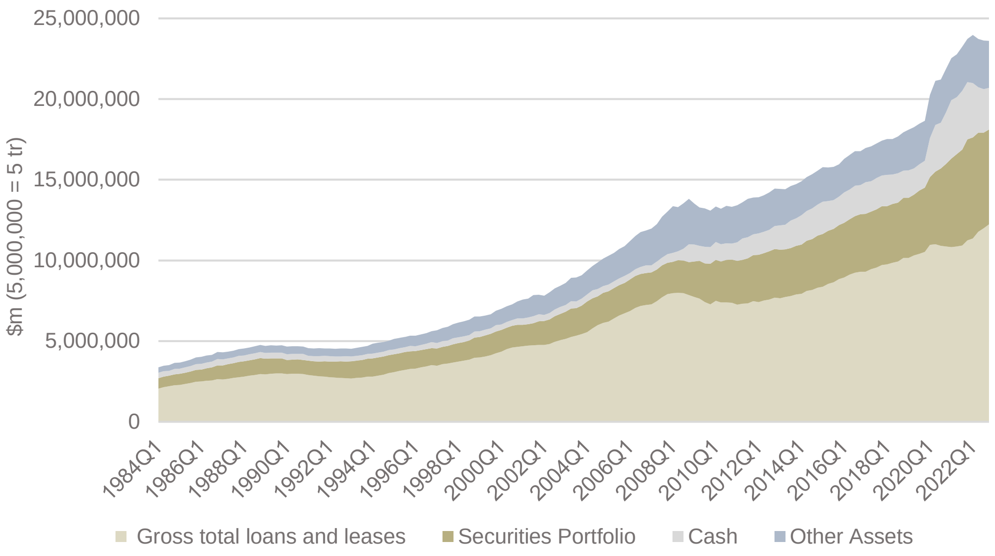
We need to start our explanation by returning to the extraordinary stimulus, following the outbreak of the COVID pandemic, which was largely not spent, but saved as bank deposits. In just two years, 2020-2021, the US banking system saw a $4.4trillion (+37%) surge in bank deposits (See Fig. 1), whereby deposit liabilities increased from just $14.5trillion in Q1 2020 to $19.9trillion in Q1 2022. Demand for credit in the real economy did not increase commensurately, meaning that over the same two years system bank loans increased by only $390bn (+3%), from $10.96 trillion to $11.35trillion (See Fig 2), leaving US banks with $4 trillion of excess deposits, which at the time cost them almost nothing, but still needed to be invested. The US banking system slowly began drowning in its own liquidity.

Fig.1 | US Bank Liabilities (since 1984)



Source: FDIC, Argonaut, March 2023

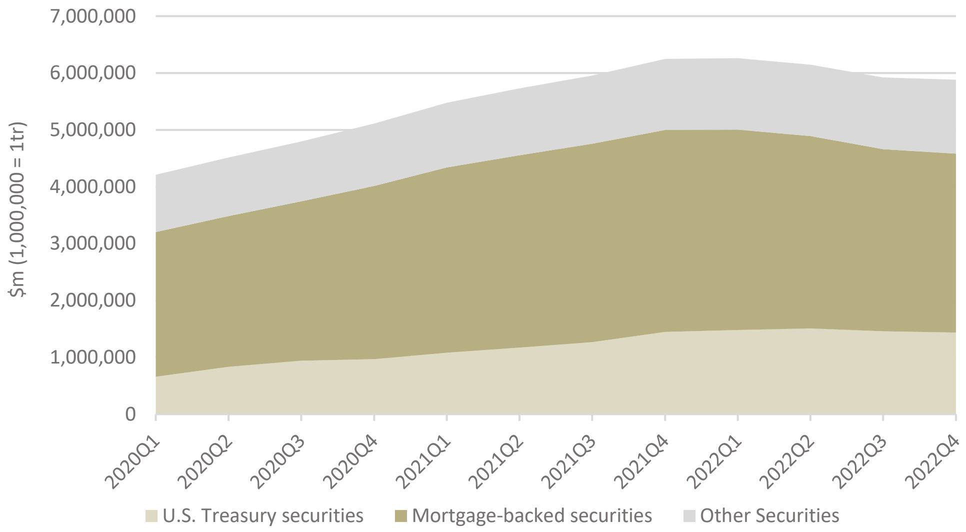
Fig.2 | US Bank Assets (since 1984)



Source: FDIC, Argonaut, March 2023

As part of the monetary stimulus, the Federal Reserve committed to forward guidance that interest rates would stay at near zero for the foreseeable future, with Chairman Powell stating in June 2020, that "we're not even thinking about thinking about raising interest rates."[1] The logical and presumably intended consequence was that investors took more duration risk, including US commercial banks, which, in the absence of loan growth, increased their securities portfolio's by 50% from $4.2trillion to $6.3trillion, 2000-2021, with $842bn (+128%) more Treasuries (holdings of longer duration US government bonds, increased from $658bn to $1.5trillion) and $1trillion (+40%) more Mortgage Backed Securities (mortgages that had been originated elsewhere but had now been repackaged and re-sold as collateralised securities, increased from $2.5trillion to $3.5trillion). (See Fig 3).

Fig.3 | US Bank Securities Portfolio (since 2020)



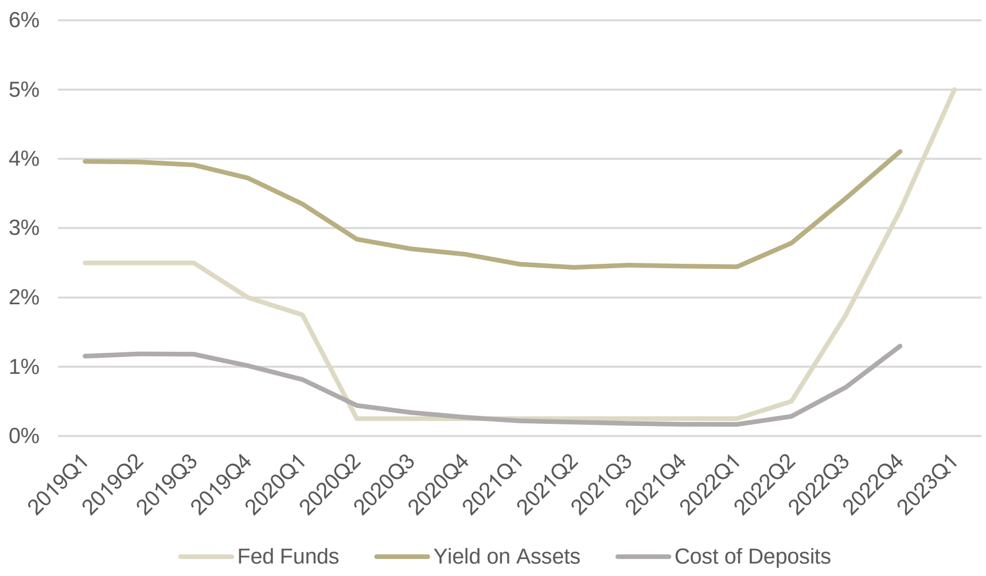
Source: FDIC, Argonaut, March 2023

[1] FOMC Conference June 10th, 2020

We should point out that investments in Treasuries ad Mortgage-Backed Securities were also encouraged by Basle III bank regulation, which focused on credit rather than duration risk, permitting banks to hold little or no capital as a buffer against potential losses. The recent political point scoring around the "deregulation" of smaller US banks is largely misplaced, unless it can be argued that this outcome of investing in low credit risk debt securities would have been specifically regulated against, by also forcing banks to hold more liquidity in ready cash, which would have made them significantly less profitable, and which in any case would likely never have specified a high enough weighting to prevent a depositor bank run.

This increased capital allocation to securities portfolios also resulted in a lower yield on bank assets. Exposure toward higher yielding loans decreased from 54% to 47% of assets, and as a result the average yield on assets (which now included more lower yield Treasuries and Mortgage-Backed Securities) fell from 3.97% in Q12019 and 3.72% in Q42019 to a low of just 2.44% in Q1 2022 (See Fig 4). This was not a problem when the Fed Funds rate was just 25bps, since the cost of deposits also fell from an average of 1.01% to just 0.22% over the same period, but this would sow the seeds of the next banking crisis as the Federal Reserve began raising its key interest rate from near zero, which would see upward pressure on deposit liabilities, but the yield on longer duration assets, including securities portfolios, was now largely locked-in.

Fig.4 | US Banks Net Interest Income (since 2019)



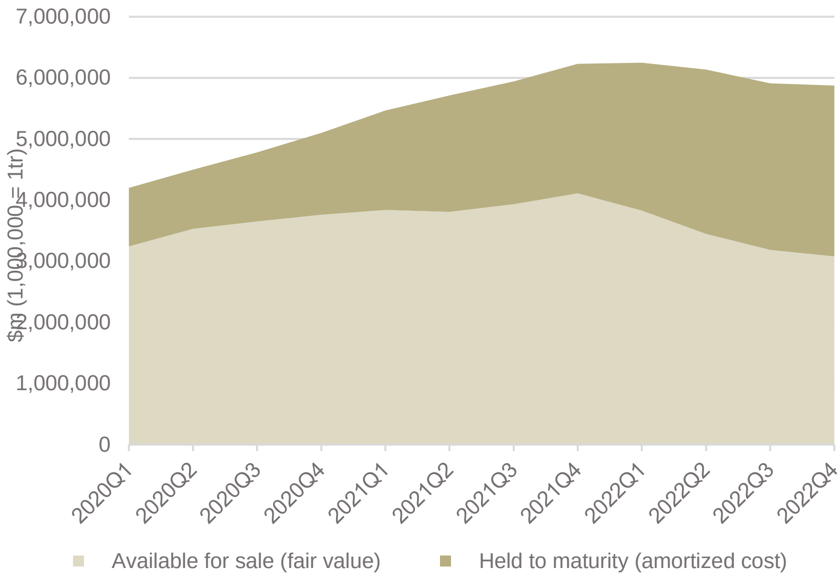
Source: FDIC, Argonaut, March 2023

Mark-to-market losses of securities

Regulators allow banks to mask the inherent volatility in their business models by recognising credit losses over an economic cycle and not marking-to-market the prices of interest rate sensitive debt securities they intend not to trade, but to hold to maturity, which unless the asset defaults, will be redeemed at par. This has logic since losses on a debt security reflecting only higher interest rates reflects only the lost opportunity cost of being unable to reinvest the capital used to purchase that security at higher prevailing rates of interest.

From the summer of 2000, which marked an all-time low, US interest rates rose across every duration, with the yield on the 10-year benchmark Treasury increasing from just 0.52% in August 2020 to its most recent peak of 4.23% in October 2022. This resulted in billions of dollars of mark-to-market losses for banks holding government and mortgage bond securities. Banks got around this problem with an accounting reclassification. Between Q1 2020 and Q4 2022, "available for sale" securities decreased from $3.24 trillion to $3.07 trillion, whilst "held to maturity" securities increased from $950 billion to $2.8trillion (See Fig 5), meaning that unless banks were forced to sell before maturity, no recognition of loss on over $1 trillion of securities recategorized was now required.

Fig.5 | US Bank Accounting Classification of Securities (since 2020)



Source: FDIC, Argonaut, March 2023

Holding to maturity is, however, dependent on a bank's ability to continue to fund the asset, which is reliant on the confidence of its creditors, including its depositors, that the bank is solvent. On March 1st, Silicon Valley Bank released its 10-K disclosure to the SEC, which revealed $15.2bn of unrealised losses on its held-to-maturity securities portfolio. This compared with just $11.8bn of tangible shareholder equity. In other words, the 16th biggest bank in the United States was already technically insolvent. On March 8th, the bank announced that it had sold $21bn of previously designated held-to-maturity securities to raise liquidity, but in doing so would be forced to recognise a $1.8bn loss to shareholders. Since by now investors realised there was also another $13bn of further unrealised losses, the proposed $2.25bn new equity raise failed. The next day as its share price fell 60% there was a run on the bank which threatened to wipe out its entire deposit base. On Friday 10th March, the FDIC announced that the bank had failed.[2]

Liquidity Risk

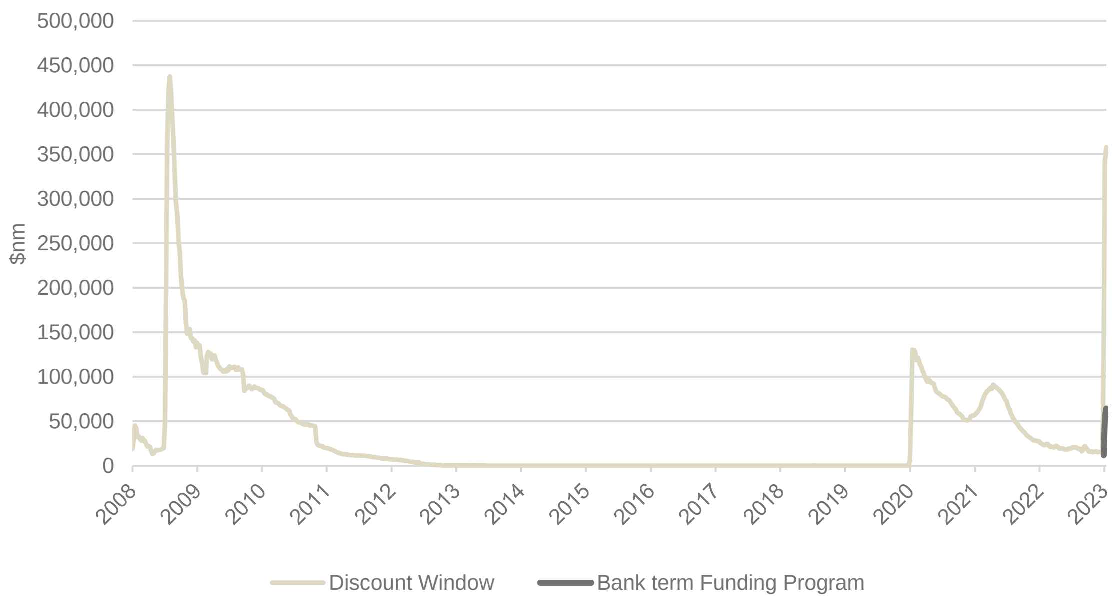
Banks are vulnerable to liquidity risk since they are predominantly funded by short-term liabilities (demand deposits) to make (or purchase) loans (assets) which are longer term, hence there is always duration risk that cannot be fully hedged away. This makes bank balance sheets inherently stable, particularly considering the typical equity gearing (the US banking system currently has $2.2 trillion of equity capital funding $23.6 trillion of assets. (See Fig 1. & 2.)) which is necessary to magnify a modest return on assets into a respectable return on equity.

Banks can only generate a return on capital if only a fractional amount of their liabilities are held as assets in cash at any time to satisfy withdrawals. This principle of "fractional banking" relies on depositor confidence that other depositors will not demand their cash back at the same time, leaving the depositor who was late joining the run stuck in a bank that is forced to close its doors to further withdrawals. If enough depositors decide collectively to withdraw more cash than the bank has in its vaults, then the bank will have to repo or pawn eligible assets with the central bank for additional liquidity, or if that is not sufficient liquidate enough assets fast enough to meet deposit withdrawals. Once started, bank runs are difficult to stop because of the panic created and the potential for the fire-sale of assets to meet liquidity to realise losses that wouldn't necessarily occur without the urgent need for cash.

[2] https://blog.argonautcapital.co.uk/articles/2023/03/13/dangerously-safe/
https://blog.argonautcapital.co.uk/articles/2023/03/10/silicon-rupture/

Following Walter Bagehot's dictum, that in a financial crisis, central banks, as "lender of last resort", should lend freely, against good collateral, at a penalty rate, on Sunday March 12th, the same evening as New York regulators declared the failure of Signature bank, the Federal Reserve announced a new "Bank Term Funding Program" (BTFP) that allowed banks to pawn their assets at their purchase price, rather than market price via the terms of the previously prevailing repo regime using the Fed Discount Window (See Fig. 6). This should mean that few banks will now fail because of the absence of liquidity. However, since the cost of this cash comes at the key central bank interest rate (5%), which is significantly above the interest rate passed on to savers on their deposits (1.3%), this repo source of funding gradually becomes ruinously expensive for banks, meaning that they now risk going bust not suddenly but gradually.

Fig.6 | Bank borrowing from the Federal Reserve



Source: Argonaut, Bloomberg, April 2023

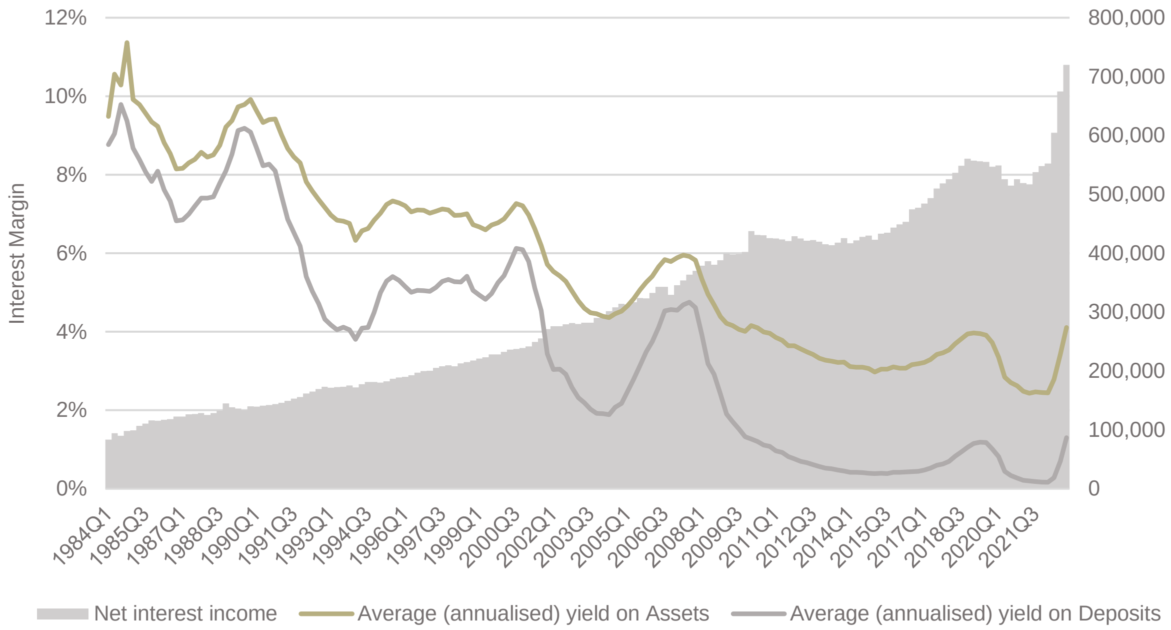
Part 2 | Gradually

Solvency Risk

It is often claimed that banks benefit from higher interest rates, but this is true only if they can increase the yield on their assets faster than the cost of their funding (predominantly deposits) rises, without the increase in the cost of money causing credit losses in their loan books or losses in their securities portfolios. When interest rates rise banks are notoriously slow in raising their deposit rates precisely because they rely on the inertia of savers to fatten their net interest margin.

Banks in the United States currently have $19.2 trillion of deposits (See Fig. 1) on which in Q4 2022 they were paying an average cost of 1.30% ($250bn per annum) which are funding assets of $23.6 trillion (See Fig. 2) that yield an average income of 4.11% ($970bn per annum). This results in annualised net interest income of $720bn (See Fig 7). As the cost of deposits rises with a lag to the Fed Funds rate, bank profitability will now fall, since it is unlikely that banks will be able to pass on higher interest costs to their borrowers without causing defaults, or invest in assets with higher yields, without more default risk.

Fig.7 | US Bank Net Interest Income



Source: FDIC, Argonaut, March 2023

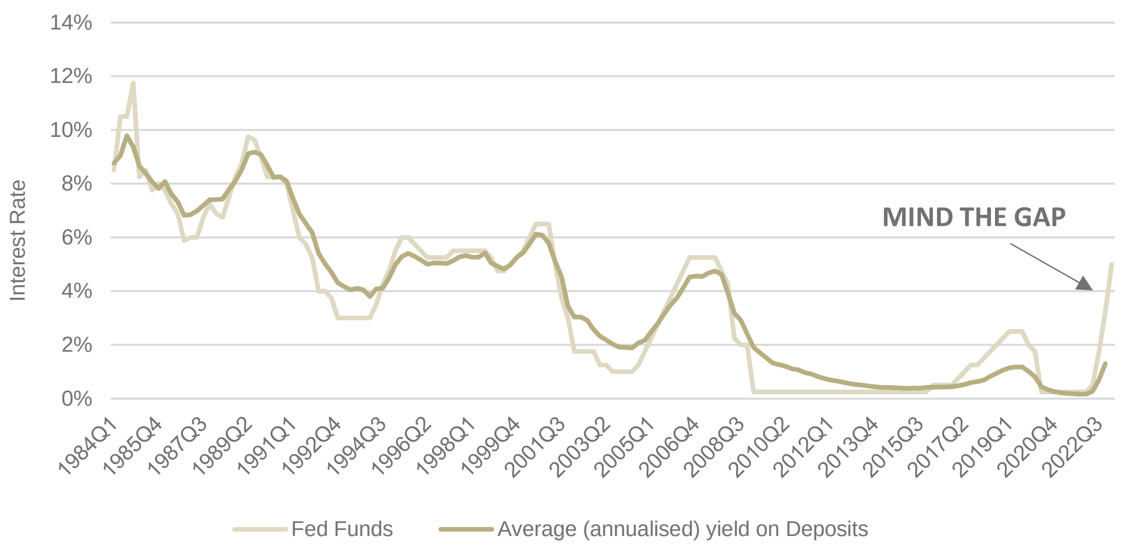
As an illustration, if banks actually paid the current Fed Funds rate of 5% on their deposits it would cost $960bn per annum which would result in only $10bn of annual interest income at current asset yields, which with just $252bn of non-interest income, but $541bn[3] of non-interest expenses, the industry would be loss making to the tune of $279bn at the pre-provision profit level. Although the US banking system is well-capitalised overall with $2.2 trillion of equity, there will be outliers in terms of banks more disadvantaged by the rising costs of deposits, which are less able to weather the net interest income storm. Lack of profitability – rather than lack of ready cash – can still cause more banks to fail.

The best way for banks to manage rising interest rates is to have a high degree of liquidity (either from assets maturing or new deposit inflows) so that more new money can be lent at - or invested in securities - at higher interest rates. Conversely, banks which have fixed their returns on assets at low interest rates either by making long-term loans or through buying long duration securities, will be particularly vulnerable to having their net interest income squeezed, since all banks will have to continue to fund their assets with a higher cost of deposits. If the yield curve is inverted (with long term interest

[3] Source: FDIC, March 2023

rates below short-term) this compounds the problem since most deposits, typically instant in duration, will reprice quickly and yield more than assets that are longer-term and wont reprice to the same degree.

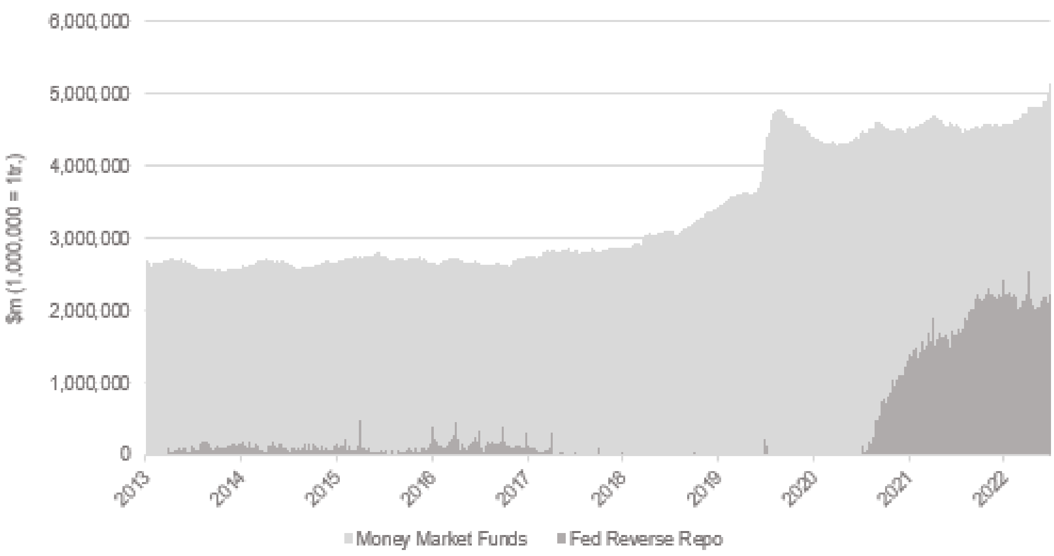
Fig.8 | US Banking Sector Deposit Beta (since 1984)



Source: Argonaut, FDIC March 2023

At the end of 2022 there were $19.5 trillon of deposits in the US banking system receiving an average interest rate of 1.3% at an annualised cost of $180bn (See Fig. 1 & Fig 8). The biggest problem US banks currently face is retaining these deposits since depositors have the option of switching to money-market funds which (by investing in short duration government bonds or depositing at the Federal Reserve in the Reverse Repo Facility (See Fig 9) are able to match the current Fed Funds rate of 5%.

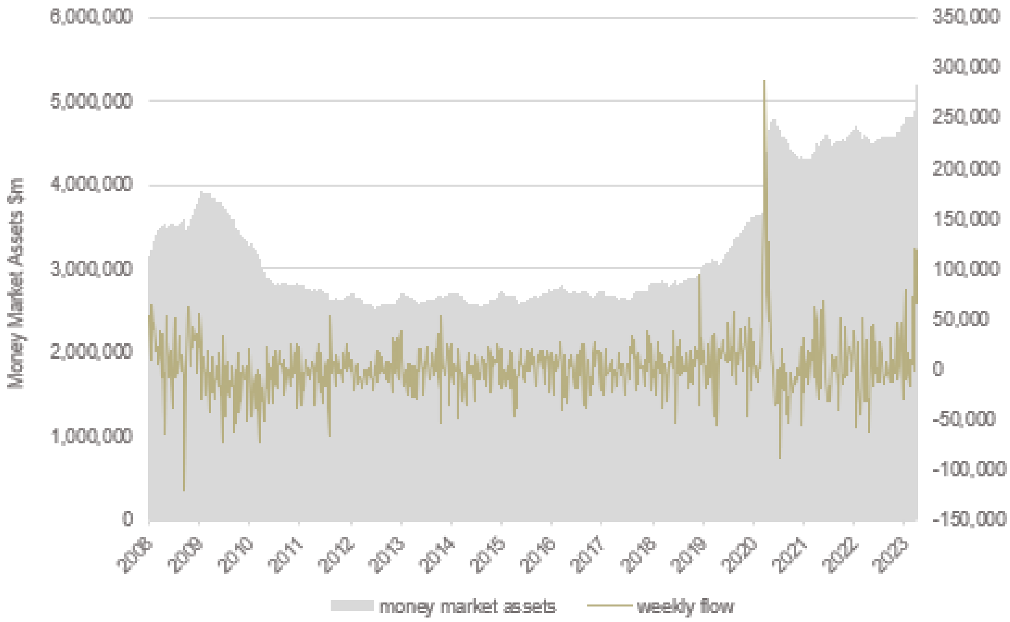
Fig.9 | Where are all the deposits going?



Source: Argonaut, Bloomberg, April 2023

Irrespective of any perceived credit risk by depositors (without which banks with riskier investment strategies would have the same cost of funding as those with low risk, a compelling argument against full deposit insurance) deposits should continue to migrate into money market funds (See Fig. 10). Since there are so few opportunities to safely reinvest at this point of the credit cycle in assets with yields that will offset the higher cost of funding, banks will not pro-actively pay-up for deposits. Nevertheless, as Fig 8. Illustrates, deposit costs always catch up to the Fed Funds rate eventually.

Fig.10 | US Money Market Assets



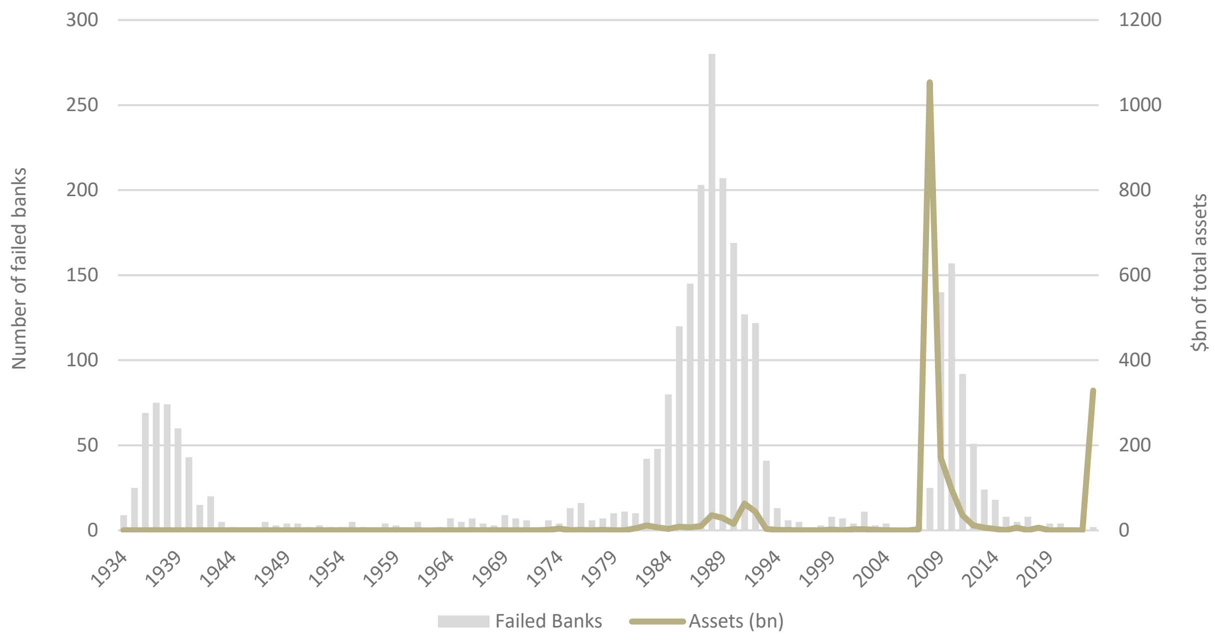
Source: Argonaut, Bloomberg, April 2023

The Savings and Loan Crisis comparable

Although only two banks have officially "failed" so far, 2023 is already the second worst year on record for bust banks in terms of assets. But put into its proper perspective, "failed" banks so far in 2023 account for just 1.4% of system assets compared to 7.8% in 2008, meaning the current crisis is so far more comparable to the Savings and Loan Crisis of the late-1980's, where hundreds of small banks went bust every year (See Fig 11).

From 1982-1991, more than 1,400 banks failed, with the common cause of failure, funding long-term fixed-rate mortgages with short-term deposits in an era where the average Fed Funds rate exceeded the yield on those assets. In other words, the Savings and Loan banks found themselves having to pay more to their depositors than they were making on their mortgages, which as today with Treasuries and MBS, regulators – focusing on credit rather than duration risk - had designated as a low-risk asset. The Savings and Loan crisis played out over a decade since banks like today were not required to mark assets to market, meaning the industry went bust not suddenly but gradually.

Fig.11 | History of Failed US Banks 1934-2023



Source: Source: FDIC, Argonaut, March 2023[4].

US Banks: stuck between a rock and a hard place.

Banks which continue to lose deposits will now attempt to increase their liquidity, which will make less credit available to the real economy. This credit crunch will in turn lead to their customers in the real economy to focus on their own cash-flow, which will constrain economic activity and depress asset prices, meaning it will be more difficult to liquidate assets without realising losses. Gradually this downturn in the credit cycle will lead to more bank failures.

It is likely that this new credit crunch will accelerate the process of disinflation which began in the summer of 2022. Although trending downward, inflation has still been stickier than expected and is unlikely to fall back to the 2% level – that would justify monetary easing - without a significant economic crisis.

After continuing to hike rates in March, central bankers have also made clear through their actions and rhetoric, that any monetary policy U-turn - involving cutting rather than raising interest rates, which would relieve pressure on US bank funding costs- will only take place after a crisis and not before. Therefore, the US banking system looks stuck between a rock, with rising deposit costs eating into net interest margins, and a hard place, of economic crisis causing elevated credit losses. Neither is attractive from an investment perspective.

Barry Norris
April 2023

[4] Note Lehman Brothers bankruptcy ($680bn) is excluded from FDIC data since its bankruptcy was not over-seen by FDIC. We think it appropriate to add this back. Without this the 2008 figure would be $370bn. Note this figure excludes financial institutions not specifically categorized as banks (e.g., AIG) as well as those rescued and therefore not specifically designated as failing (e.g., Bear Sterns, Merrill Lynch).

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