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Analysis of financial services and recent turbulence in the USA banking system

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Abstract: *Very recently, the three USA banks that failed this year 2023, Silicon Valley Bank (SVB), First Republic Bank (FRB) and Signature Bank, accounted for 2.4% of all assets in the banking sector. Still, most economists expect a recession in the second half of this year. They estimate the USA Fed's high interest rates eventually will be felt more profoundly by consumers and businesses. A significant number of steps have been taken by the federal government to boost confidence in the U.S. financial system appears to have contained a potential banking crisis after the collapse of Silicon Valley Bank and Signature Bank. However, turbulence remains over possible spillover effects. It forecasts global finance from increased scrutiny by U.S. regulators and raises questions about the fitness of banks, financial markets around the world (Graeme. Sipa, March 15, 2023). Risk factors imposed on regulators, politicians and the media for confusing the public, supply chain disruptions about the safety of the USA banks and carried out that conditions might have worsened (Hugh. Son, May 06, 2023). The purpose of this paper is to get a better understanding of the turmoil that has affected the U.S. banking system for this year. While the main objective is to analyze the crisis as a whole, which affected several banks as stated previously, an emphasis will be placed on the Silicon Valley Bank (SVB).*

Keywords: Economist, Market, Recession, Turbulence, Bank.

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Introduction. A financial service is a set of global, regional or firm specific institutions and practices used to facilitate the exchange of funds. On the other hand, a financial market is an avenue for the sale and purchase of assets such as bonds, stocks, foreign exchange, and derivatives. Sometimes it is called a capital market. Banking is a subset as well as a gatekeeper of financial services sector. Bank inspects the financial of the company on behalf of the investor before deciding a final investment (Adam Hayes, April 27, 2023). Financial markets fail leads economic disruptions, recession, unemployment etc. This paper focuses on the recent turbulence experienced by the US banking system. In bank-based economic systems banks play a leading role in mobilizing savings, allocating capital, and stock investment decisions of corporate managers, and markets all grow and become more active and efficient as providing risk management vehicles. Financial systems are highly market based in developed countries as well as stock markets are active than the banking system (Aslh Demirgiiu-Kunt, Ross Levine, July 1999).

1. USA banking system and recent economic disruptions

The primary data utilized in this study is sourced from FRED, a widely recognized and reliable provider of economic data. The data collection process is conducted annually. Prior to delving into an analysis of the events that precipitated significant bank runs affecting the US banking system in 2023, with a specific focus on the Silicon Valley Bank, it is essential to provide a brief explanation of the operational procedures of a typical US commercial bank and how they generate profits using funds deposited by their customers. In contrast to other types of companies, banks are frequently highly leveraged, as a significant portion of their assets is acquired through debt or other types of liabilities, such as deposits. This leverage enables them to attain higher return on equity (ROE) ratios for their shareholders.

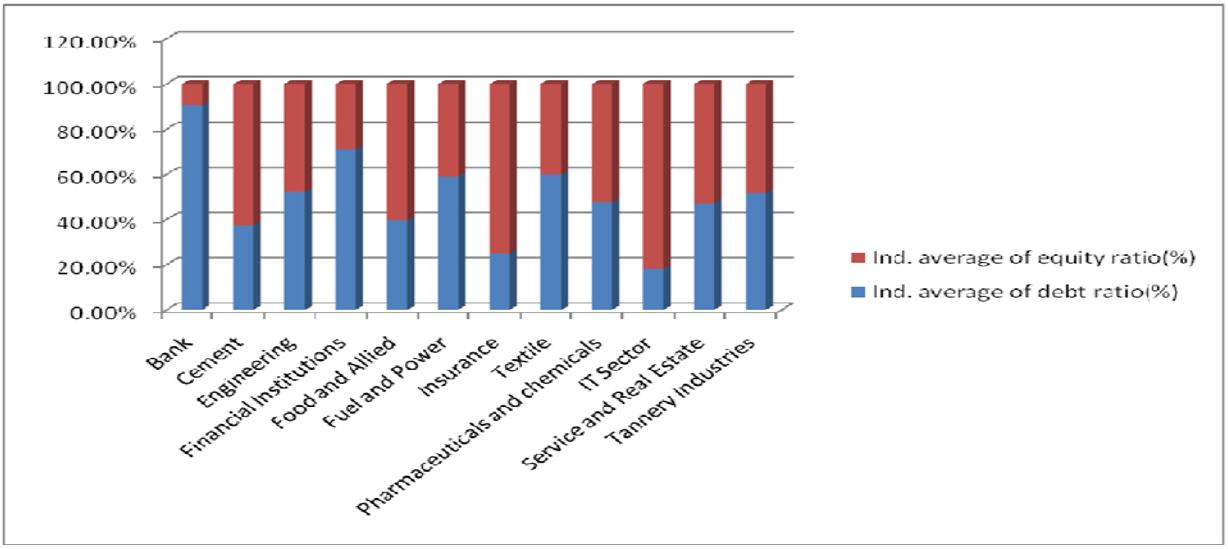

Figure 1.

Source: (Huda, 2015).

However, these higher returns come with a trade-off. Due to a lower equity cushion, which refers to the amount of equity supporting a bank's assets, banks often face the risk of significant fluctuations in asset prices that could potentially lead to insolvency. Insolvency occurs when a company's total liabilities exceed the value of its assets. For a considerable period of time, dating back to the 1863 National Bank Act, U.S. banks were obligated to maintain a specific level of liquid assets, known as the reserve requirement, to withstand adverse economic conditions and safeguard depositors' funds. Nevertheless, in response to the Covid-19 crisis, the Federal Reserve made the decision in March 2020 to reduce the reserve requirements to 0% (Board of Governors of the Federal Reserve System, 2020).

The Federal Deposit Insurance Corporation (FDIC) is another significant entity within the banking sector that plays a crucial role in safeguarding depositors. As a government agency, the FDIC provides protection to depositors of insured banks by offering standard deposit insurance, which covers up to $250,000 per depositor (Federal Reserve Insurance Company, 2023). According to S&P Global, the FDIC insured a total of $9.297 trillion in deposits by the end of 2022, accounting for 54.1% of all deposits held by large U.S. banks (Hayes, 2023).

Over the years, deposits have emerged as the primary source of funding for American commercial banks due to their relatively low cost of capital compared to other funding sources. In fact, the aggregate amount of deposits across all commercial banks in the United States has surged from $1,000 billion in 1980 to a record high of $18,000 billion in mid-2022.

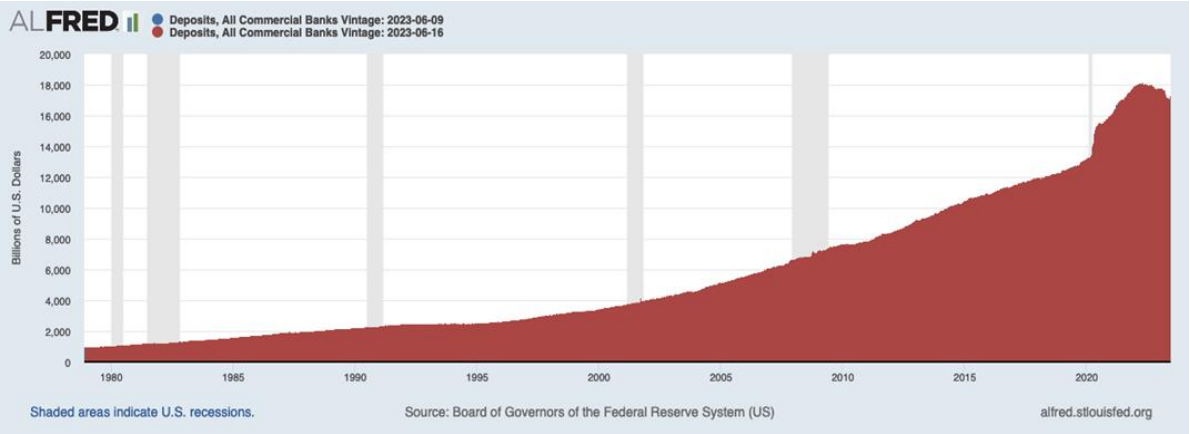

Figure 2.

Source: (FRED, 2023)

Banks generate profits by utilizing a process known as fractional reserve banking to leverage their clients' deposits. Assuming depositors receive an interest rate of r on their deposits, while banks reinvest these funds into assets with a rate of return of x, the banks' profit can be calculated as x - r (excluding transaction costs), which represents the net interest rate spread. The specific assets in which banks choose to invest their deposits vary significantly from one bank to another. Examples include loans to individuals and businesses, treasury bills, or more complex financial instruments like asset-backed securities (MBS, CDOs, etc.).

An important aspect to note, for future reference, is that when a bank decides to purchase an asset, such as a 10-year treasury bill, it is obligated to classify it on its financial statements, particularly its balance sheet, into one of three categories: Held-for-Trading (HFT), Available-for-Sale (AFS), or Held-to-Maturity (HTM). Assets classified under the first two categories are listed at fair value, meaning their value fluctuates with market price changes. On the other hand, HTM assets are listed at their acquisition cost and gradually depreciated over time, with any market price fluctuations not directly recorded on the financial statements but documented in the notes to the financial statements. These classifications played a significant role in the 2023 crisis that impacted the U.S. banking sector, including SVB, as discussed in the upcoming section.

2. The 2023 banking crisis: SVB

Established in 1983, the Silicon Valley Bank was a commercial bank operating under state charter. By 2022, it had gained prominence as the 16th largest bank in the United States (Gobler, 2023). The bank provided a range of services to diverse businesses and clientele, but it earned a notable reputation as the preferred financial institution for start-ups and venture capitalists.

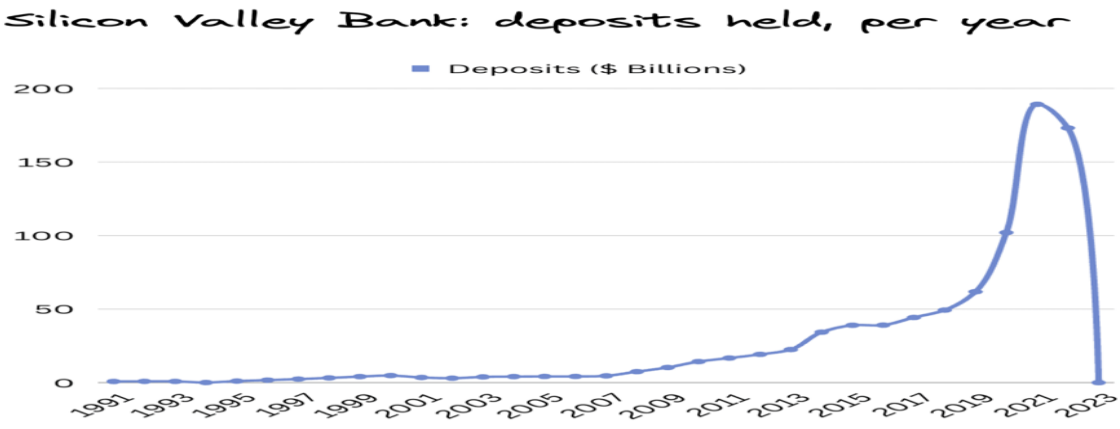

Figure 3.

Source: (Silicon Valley Bank, 2023).

In fact, it boasted a significant market share, with over 44% of all venture-backed technology companies that conducted initial public offerings (IPOs) in 2022 choosing the Silicon Valley Bank as their banking partner (Tobin & Miller, 2023).

In order to comprehend the factors that contributed to the bankruptcy of SVB, it is essential to examine the events of 2020. Figure 3 illustrates a significant development observed between mid-2020 and the beginning of 2022, wherein deposits at the Silicon Valley Bank exhibited exponential growth. Remarkably, deposits at SVB surged by nearly 220% from 2020 to 2022, reaching a peak of $198 billion in the first quarter of 2022 (Silicon Valley Bank, 2023). This noteworthy trend can be largely attributed to the substantial expansion of the technology industry during the Covid-19 pandemic, which resulted in a significant influx of cash being deposited across various banks, with SVB being a primary beneficiary. During this period, while a portion of the deposits were held as cash, SVB opted to consistently invest the surplus into treasury bills and other secure debt instruments (Figure 4 highlights the evolution of HTM securities and warrants attention).

SVB FINANCIAL GROUP AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

(Dollars in thousands, except par value and share data)	December 31, 2020	2019
Assets		
Cash and cash equivalents	$ 17,674,763	$ 6,781,783
Available-for-sale securities, at fair value (cost of $30,244,896 and $13,894,348, respectively)	30,912,438	14,014,919
Held-to-maturity securities, at amortized cost and net of allowance for credit losses of $392 and $0 (fair value of $17,216,871 and $14,115,272, respectively) (1)	16,592,153	13,842,946
Liabilities and total equity		
Liabilities:		
Noninterest-bearing demand deposits	$ 66,519,240	$ 40,841,570
Interest-bearing deposits	35,462,567	20,916,237
Total deposits	101,981,807	61,757,807

(Dollars in millions, except par value and share data)	December 31, 2021	2020
Assets		
Cash and cash equivalents	$ 14,619	$ 17,675
Available-for-sale securities, at fair value (cost of $27,370 and $30,245, respectively)	27,221	30,913
Held-to-maturity securities, at amortized cost and net of allowance for credit losses of $7 and $0 (fair value of $97,227 and $17,217, respectively)	98,195	16,592
Liabilities and total equity		
Liabilities:		
Noninterest-bearing demand deposits	$ 125,851	$ 66,519
Interest-bearing deposits	63,352	35,463
Total deposits	189,203	101,982

Figure 4.

Source: (Silicon Valley Bank, 2023)

However, despite treasury bills being widely regarded as highly secure investments with negligible default risk, they typically offer relatively low rates of return. This was particularly evident in the early months of 2020 when the Federal Funds Effective Rate reached its lowest level since 2015, standing at 50 basis points (bps), as illustrated in Figure 5. Consequently, in an effort to achieve higher returns, SVB made substantial purchases of long-term bonds. By the end of 2022, the bonds classified as Held-to-Maturity (HTM) had an average duration of 5.7 years (Lavier & Nouen, 2023).

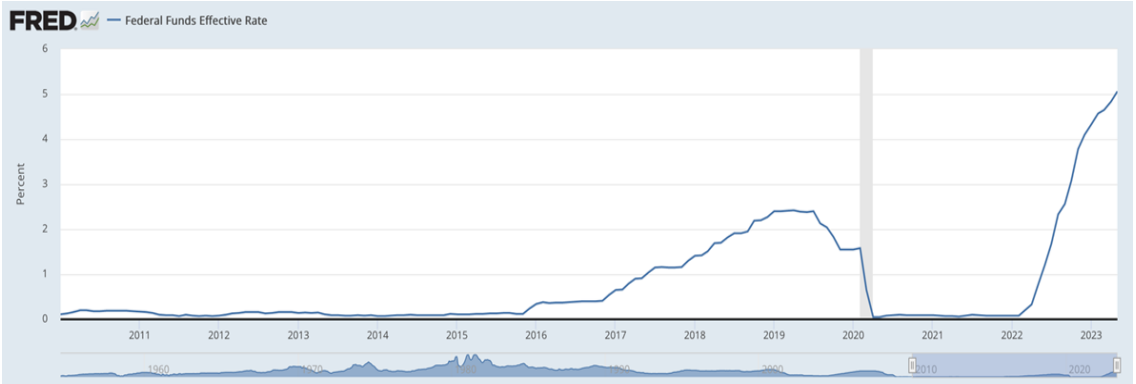

Figure 5.

Source: (FRED, 2023)

3. Risk Management Criteria

In early 2022, the Federal Reserve initiated a prolonged cycle of interest rate hikes as part of its efforts to manage the rapid increase in inflation resulting from the expansionary policies implemented during the Covid-19 crisis. This can be observed in Figure 5, which illustrates the trajectory of interest rates over time. It is important to note the inverse relationship between interest rates and bond prices, as demonstrated by the following equation:

$$\begin{aligned} P &= \left(\frac{C}{1+i} + \frac{C}{(1+i)^2} + \ldots + \frac{C}{(1+i)^N}\right) + \frac{M}{(1+i)^N} \\ &= \left(\sum_{n=1}^{N} \frac{C}{(1+i)^n}\right) + \frac{M}{(1+i)^N} \\ &= C\left(\frac{1-(1+i)^{-N}}{i}\right) + M(1+i)^{-N} \end{aligned} \tag{1}$$

As a result, with the increase in interest rates (i) and the subsequent decline in bond prices (P), the market value of all SVB bonds began to decrease. This trend is evident in SVB's January 2023 earnings report, which revealed substantial unrealized losses of $16 billion in the third quarter of 2022. These losses surpassed their equity cushion of $11.5 billion, highlighting the severity of the situation (Silicon Valley Bank, 2023).

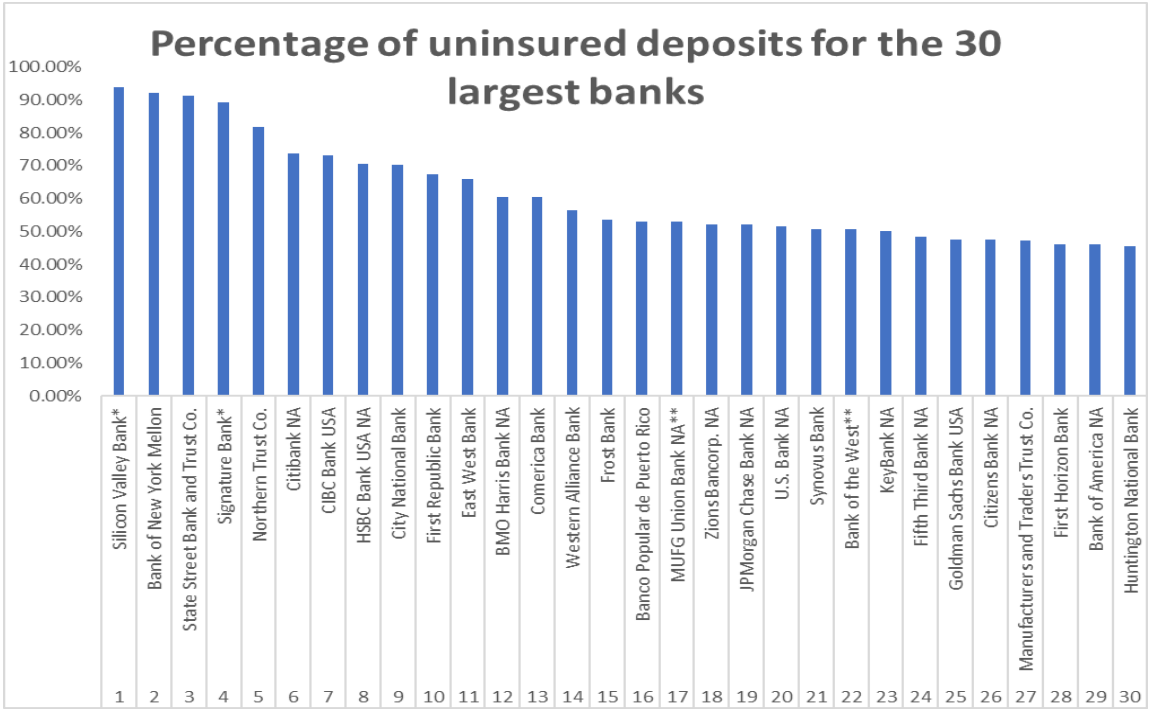

Figure 6.

Source: (Visual Capitalist, 2023).

Adding to the challenge, certain Securities and Exchange Commission (SEC) filings estimated that a significant proportion, ranging from 85% to 95%, of the deposits held at SVB exceeded the $250,000 threshold for insurance coverage. This positioned SVB as the U.S. bank with the highest percentage of uninsured deposits, as depicted in Figure 6 (Chow, 2023).

"The duration of a bond determines its price sensitivity to change in interest rates. For example, for a bond with a duration of 5 years, a 1% increase in interest rates would lead to a decrease of approximately 5% in the bond's price."

Consequently, a significant number of SVB's clients, primarily large venture capital firms, began to withdraw their funds upon realizing the bank's precarious financial situation. To address the growing number of withdrawals, SVB initially utilized its limited cash reserves. However, as the withdrawals persisted, SVB was compelled to sell a substantial portion of its bonds at a loss. The selling began with Available-for-Sale (AFS) bonds and later extended to Held-to-Maturity (HTM) bonds, resulting in a loss exceeding $1.8 billion in early 2023 (Gobler, 2023).

Ultimately, on March 17, 2023, SVB was left with no choice but to file for bankruptcy, marking it as the second-largest bankruptcy in the history of the U.S. banking sector.

4. Comparison to 2008 Crisis

To analyze the similarities between the Great Recession of 2008 and the recent fluctuations in the US banking system. The primary focus of the comparison lies in the decrease in asset values for both banks and individuals. The financial crisis in 2008 was marked by a significant rise in house prices, residential construction, and mortgage debt, ultimately leading to vulnerabilities in the banking system (Gertler, M., & Gilchrist, 2018). This analysis will explore how the rapid increase in asset prices, particularly in the housing market, served as a catalyst for these crises.

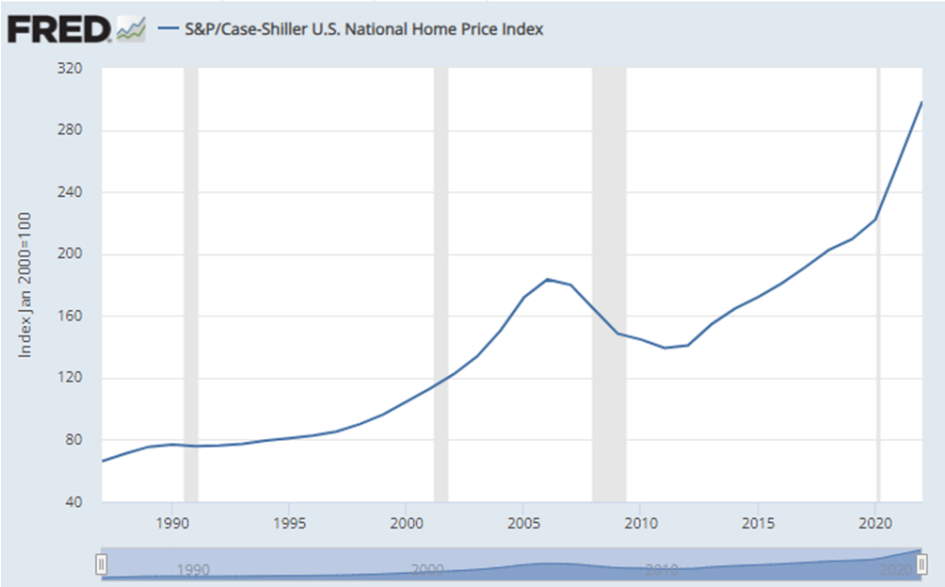

Figure 7.

Source: (FRED, 2023)

The Great Recession of 2008 was preceded by an unprecedented housing boom characterized by soaring house prices, robust residential construction, and a surge in mortgage debt. As housing prices escalated, banks capitalized on the increased value of properties by extending larger amounts of credit using these assets as collateral for mortgages. This is a similar case to increase in bank deposits with the SVB bank which led to increase in lending due to increase in assets. Consequently, a substantial number of individuals who had purchased homes during this period, found it challenging to meet their mortgage obligations, ultimately leading to the sale or foreclosure of their properties. Consequently, this surge in the housing supply exerted downward pressure on house prices.

Drawing parallels to the recent fluctuations in the US banking system, it becomes evident that a comparable pattern emerged. Once again, the banking system experienced a decline in asset values, affecting both banks and individuals. Although the underlying causes and specific triggers may differ, the overall effect on asset values appears to follow a similar trajectory.

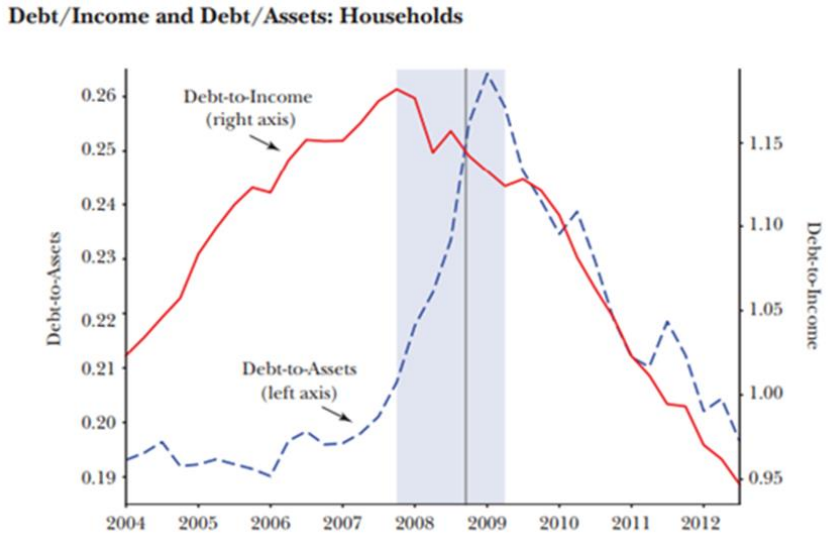

Figure 8.

Source: (Gertler, M., & Gilchrist, 2018)

The occurrence of asset value depreciation in both the Great Recession and the recent fluctuations in the US banking system underscores the vulnerability of the banking sector to economic shocks. The reliance on asset-backed lending, especially in the housing market, exposes banks to significant risks, as fluctuations in asset values can cascade into broader economic turmoil. Consequently, policymakers and financial institutions should remain vigilant, continually assessing the risks associated with asset-backed lending and implementing measures to mitigate potential vulnerabilities.

Conclusions and recommendations

The Federal Reserve System of the USA has a commitment to provide the country with a safe, flexible, and stable monetary and financial system. SVB turbulence might have many causes, such as the length of Held-To-Maturity, duration of the Fed reserves cycle, and asset value depreciation which leads to regulatory, supervisory and financial failures. This could be overcome if it confirmed the right supervisors had been on the right job, the bank had not practised serious risk management, and bank regulations were better directed at reflecting market values and customer satisfaction rather than purchase prices of assets held by banks. Management should not practice sharp increases in interest rates in the country, and the bank must respond just in time and more rapidly to emerging problems. The Fed should practice a couple of instruments to control its monetary system: open market operations, reserve funding, the interest on excess reserves, the discount rate etc. The US banking system should maintain a "currency principle" to keep a stable deposit ratio with alarming rates by overcoming poor management, regulating taxes or printing money, and outright fraud. Overall, asset-to-liability mismatch carried out drained deposits led by the hikes, overexposure to short-term and long-term bonds, and frequent increase in interest rates or decreased interest-based margins for the financial institutions.

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Appendix

Table 1. S&P/Case-Shiller U.S. National Home Price Index

Frequency: Annual	
observation_date	CSUSHPINSA
1987-01-01	66.257250000000000
1988-01-01	71.141000000000000
1989-01-01	75.508083333333300
1990-01-01	76.939833333333300
1991-01-01	75.925333333333300
1992-01-01	76.329250000000000
1993-01-01	77.414583333333300
1994-01-01	79.468750000000000
1995-01-01	80.991666666666700
1996-01-01	82.808666666666700
1997-01-01	85.317000000000000
1998-01-01	90.099166666666700
1999-01-01	96.372583333333300
2000-01-01	104.776583333333000
2001-01-01	113.185166666667000
2002-01-01	122.287500000000000
2003-01-01	133.741250000000000
2004-01-01	150.464000000000000
2005-01-01	171.779250000000000
2006-01-01	183.481500000000000
2007-01-01	179.943000000000000
2008-01-01	164.061833333333000
2009-01-01	148.552833333333000
2010-01-01	144.665750000000000
2011-01-01	139.242083333333000

Table 1 (cont.). S&P/Case-Shiller U.S. National Home Price Index

2012-01-01	140.988750000000000
2013-01-01	154.520750000000000
2014-01-01	164.681000000000000
2015-01-01	172.170333333333000
2016-01-01	180.914750000000000
2017-01-01	191.391666666667000
2018-01-01	202.469750000000000
2019-01-01	209.453083333333000
2020-01-01	222.128916666667000
2021-01-01	260.068000000000000
2022-01-01	298.510000000000000
2023-01-01	#N/A

Source: Compiled by the author.