Group 4

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FIN 334 Group Essay on Silicon Valley Bank and Signature Bank

On March 9th, Silicon Valley Bank collapsed, becoming the second-largest bank failure in the history of the United States. Soon after, on March 12th, Signature Bank collapsed, ranking as the third largest bank failure. This chain of events created a ripple effect on the stocks of small and mid-sized U.S. banks. - Sz-Je Wang

Silicon Valley Bank was one of the biggest commercial banks in the U.S.; it primarily served start-up companies in Silicon Valley for deposit and loan business. According to its Q4 2022 financial results, its clientele included nearly half U.S. venture-backed technology and life science companies. - Sz-Je Wang

In 2020, the pandemic began, prompting the Federal Reserve to cut interest rates and print money, leading to an overstimulated market liquidity surge. This excess liquidity flowed into high-risk, high-yield investments in Silicon Valley start-ups, causing SVB's deposits to increase from $60 billion in 2020 to $190 billion in 2021. - Sz-Je Wang

SVB's primary income is divided into two types: lending and investment. After getting the massive deposit from investors, SVB prioritized investment because it could not control the lending amount due to the rapid increase of deposit volume. During the investment, SVB decided to invest in long-term fixed-income securities. In addition, nearly two-thirds of the new $130 billion deposit went to buy this long-term debt. The longer the debt maturity, the greater the risk to the industry. The interest rate risk of long-term debt is also the risk of Duration is very high.

In 2022, inflation led to liquidity tightening, and the Fed started to raise interest rates to curb inflation. This is when the value of SVB-owned long-term debt begins to fall. Of SBV's $110 billion investment, 14% is in U.S. Treasuries, and 68% is in RMBS and CMBS, which are characterized by negative convexity, meaning their risk increases as interest rates increase (Person, & Mand1, C, 2023). This means that an increase in interest rates by the Fed will lead to an increase in the risk of SVB's RMBS and CMBS. Eventually, SVB's Held to maturity securities will lose up to $15 billion by the end of 2022. Adding to the problem is the wave of layoffs at technology companies and startups and the rapid decline in funding. As a result, these startups have to keep withdrawing from SVB. - Sz-Je Wang

Confronted with potential losses due to falling bond prices and customer withdrawals, SVB initially sought to borrow money from Federal Home Loan Banks. However, high-interest rates forced SVB to adopt a different strategy. On March 8, SVB announced the sale of nearly $21 billion in debt securities, realizing a preliminary estimated loss of $1.8 billion. Moreover, the company also issued common stock worth $1.25 billion and mandatory convertible preferred stock valued at $500 million. Unfortunately, this decision led to a 60% stock plunge and a trading suspension on March 9. In a single day, nearly $42 billion was withdrawn from SVB, resulting in a bank run and eventual collapse. - Sz-Je Wang

The collapse of Signature Bank was more straightforward than that of SVB. Primarily serving cryptocurrency companies and exchanges, Signature Bank's downfall was driven by the dismal cryptocurrency market in 2022 and investor withdrawals following the bankruptcy of FTX, a leading global cryptocurrency exchange (Goldstein, M., & Flitter, E, 2023). On March 12, the New York State financial regulator intervened, declaring that Signature Bank must be regulated and closed to prevent a similar systemic risk scenario. - Sz-Je Wang

The Silicon Valley Bank (SVB) and Signature Bank in 2023 were the main catalyst for the banking panic and deeply affected all financial markets. Both SVB and Signature Bank had a run on their deposits which ultimately resulted in their failure and the creation of bridge banks which were set in place to reestablish trust in the financial system and to help operate the failed/insolvent bank. The events that happened showed the financial sector's vulnerability and had effects on a large number of market participants like investors, borrowers, co-lenders, and regulatory organizations. - *Paul*

The failure of both banks resulted in significant losses for **investors** in those particular companies. Since share prices fell the resulting fear had a ripple effect on the market. This made it so that investors began to worry about the stability of other banks and overall financial institutions which made it so that there was an even greater loss in confidence and the value of other stocks. Also due to higher borrowing costs and the loss of resources like funding, venture capital firms and other private equity firms who relied on SVB for funding had their own operations slowed down. **Borrowers** also encountered confusion in regards to their loan arrangements, especially those that were involved in syndicated credit facilities with SVB or with Signature Bank. The FDIC even had to clarify that the bridge banks that were put in place were not supposed to be regarded as defaulting lenders. The failure of the banks created concerns about the overall status of the bridge banks as “defaulting lenders” in credit agreements. It was also difficult for borrowers to go about the legal and practical ramifications with their loans and the potential impact on their businesses. - *Paul*

There was also the impact on **co-lenders** that took part in syndicated credit agreements with SVB or with Signature Bank. These organizations' failure made it clear how crucial it was to have “defaulting lenders’ clauses in their own credit agreements. Also to make sure better

safeguards were put in place they had to reassess their own risk exposure and had to examine their loan agreements again. The situation that happened served as a warning to lenders to be more attentive to their risk management procedures and even highlighted the possible effects this event could have on the stability of multi-lender financing agreements. **Regulatory bodies** like the FED Reserve, Treasury Departments, and the FDIC had to regain public trust again by making decisions quickly. They needed to find buyers for the assets of the failed banks while also setting up these bridge banks and securing depositors money. All of this would've been easier if there was constant regulatory oversight and stress testing so that there could be more resilience. - *Paul*

One significant consequence of the incidents highlighted, is the potential risks associated with small banks having exposure to high-risk clients, especially in the hedge fund industry. As a result of this exposure, small banks will very likely face greater scrutiny from regulators, and they may become more cautious in lending to high-risk clients. This could have a negative impact on the profitability of small banks, as lending to high-risk clients is often more lucrative than traditional lending. Overall, the incidents at SVB and Signature Bank have raised concerns about the **stability of small banks** and their ability to manage risks associated with high-risk clients. While it's too early to say how this will impact small banks in the long term, experts are quite certain that they will face greater scrutiny from regulators and will become more cautious in lending to high-risk clients, which could impact their profitability and overall lending activity. - *Sean*

Another major impact of the recent banking collapse was an overall **reduction in lending**, but not just to high risk clients, this is especially true for the smaller regional banks. It is very likely that many small regional banks will be more reluctant to lend money out in case some

of their depositors depositors decided very large withdrawals. This is very significant to the economy at large because small and midsize regional banks make up 50% of commercial and industrial lending, 60% of housing related lending, and 80% of commercial real estate lending. Researchers from Goldman Sachs believe that banks on the smaller side, with a low percentage of FDIC insured deposits, will reduce lending by 40%, while small banks with a higher percentage of FDIC insured deposits will reduce lending by 15%. In the end, this would mean a total decrease in lending of about 2.5%, mainly in the form of loans to businesses to finance their spending. While the economists behind this report remain on the more optimistic side, only estimating a reduction of GDP growth by less than 2/10ths of a percentage point, there is still a high probability that reduction in lending confidence will have major consequences down the road. - *Sean*

There was also the impact on the **overall US economy.** The failure of those banks made it so that there was an increase in market volatility and uncertainty which would have an impact on corporate investments, overall economic growth, and also employment losses in other a range of industries. The incident also showed that there needed to be more vigilant systemic risk monitoring and management on the overall financial systems connectivity. Overall the incident had impacts on various market participants, but in general it impacted trust which made it so that banks and other financial institutions became vulnerable. As a result it made it so that investors, co-lenders, borrowers, and regulatory bodies had to navigate the practical, financial, and legal ramifications from the failure of SVB and Signature banks which also highlighted the need for a closer oversight on the general financial industry. - *Paul*

Another impact of this banking crisis, to the **overall US economy**, could come in the form of a reduction in interest rate hikes by the Federal Reserve. Many economists predicted that

the Fed would halt its rate hikes or raise rates by a maximum of a quarter point at the FED meeting following the crisis, rather than the previously expected half-point hike by the market. The market had anticipated the Fed would keep increasing rates until they reached 5.5% to 5.75%, but economists changed these predictions to 4.75% to 5%, and this is exactly what happened as the FED raised the rates by only a quarter of a percentage point. The banking crisis put the FED in a very difficult position because while the job market was remaining strong, and inflation was on a downward trend, likely meaning the FED would want to keep raising rates to keep fighting inflation, the Fed had to make the call to "hit pause" and allow the market to recover from the banking collapses. The Fed is still in a tough spot because this reduction in rate hikes could increase GDP growth by 0.1% this year, but it would only partially offset the 0.3% reduction from stricter bank lending standards, resulting in a net decline of 0.2%. Experts like Michael Feroli of JPMorgan anticipate a more significant impact on growth, with a half to a full percentage point decline over the next year or two due to concerns over increased regulatory scrutiny on lending practices of small and midsize banks in light of the SVB incident. - *Sean*

An interest rate swap is an exchange where a predetermined fixed rate is "swapped" for a floating rate, both applied to the same principal amount. Regular exchanges of money are given throughout the life of the agreement, leading to profits or losses on interest rate swaps. Historically, LIBOR had been used as the reference for floating rates; today, overnight rates have taken LIBOR's place. Swaps can transform a variable-rate liability into a fixed-rate liability, or transform a fixed-rate asset into a floating-rate asset. According to Kyle Campbell, in his *Could the Fed have stopped Silicon Valley Bank from selling hedges?,* SVB owned nearly $15 billion of interest rate hedges at the end of 2021. This number decreased to almost $600 million by 2023.

Seeing as rising interest rates were instrumental in SVB's failure, some argue that the bank would not have failed had it maintained its position in these interest rate swaps. -*CJ*

Interest rates were so important to SVB because it had a tremendous amount of money invested in long-term treasury bonds during the COVID pandemic (a fixed-rate asset). The tech companies SVB served were given large amounts of loans from the government, which they in turn deposited at SVB. When the FED hiked interest rates from almost 0% to 5% over the last year, the value of SVB's long-term treasury bonds plummeted in value, forcing them to sell off the assets at extreme losses. -*CJ*

There are numerous strategies SVB could have engaged in to prevent this. For starters, SVB could have invested in shorter-term assets, leading to less duration (interest-rate) risk. A strategy like this would have also helped SVB, because it had many short-term liabilities (Bary). Matching the maturity of assets and liabilities is a vital step in securing a company's cash flow. This has its obvious drawbacks, however, as shorter-term notes provide smaller yields. SVB alternatively could have maintained its hedge position in interest rate swaps, protecting itself by exchanging a fixed rate for a floating one. The floating rate would have adjusted to the change in the risk free rate, providing SVB with a gain on the interest rate swap. -*CJ*

An interest rate option is an option on an interest rate swap (hence their name, *swaptions*). Swaptions give the right, not an obligation, to enter into a future interest rate swap. SVB could have used swap options in advance for its liabilities to guarantee that they will not be paying above a certain fixed-rate level of interest. The flexibility of being able to participate or let the swaption expire would have greatly benefited SVB; if the given level of interest turned out to be less than what the option provided, SVB could have let it expire. If the given level of interest was higher, however, SVB could have exercised and made a profit off of the swap

option. A put option for a swaption involves giving the right to pay fixed and receive floating, with a *k* principal. A call option gives one the choice to pay floating and receive fixed, with a *k* principal. One's decision to engage in a put or call option depends on whether or not one is receiving or paying money, and whether or not that payment is based on a floating or fixed interest rate. -*CJ*

The average duration of SVB's portfolios in debt were 5.7 years (Scott), indicating that the company held a majority of long-term, fixed-rate debt. This means that many of SVB's portfolios had large durations, which is a measure of how long a holder would have to wait before it receives the present value of cash payments. When the FED somewhat unexpectedly raised interest rates extremely quickly, SVB's assets were very vulnerable. This is reminiscent of the 1994 market downturn, a time period known as the Great Bond Massacre. Greatly affecting Japanese and US real estate, it also resulted from the FED attempting to slow inflation rates. SVB could have analyzed the market conditions of 1994 and compared it to the market state today, to perhaps try and predict the heavy losses the bond market was about to experience. In 1994, the bond market dropped by about $1.5 trillion in value; SVB sold its bonds at a $2 billion loss alone (Weil & Eisen).-*CJ*

There are a variety of other derivatives and strategies that SVB could have used to hedge their portfolio and reduce their sensitivity to increases in interest rates. As detailed above, SVB had a large duration mismatch between their assets and liabilities, which is poor practice in the fixed-income portfolio management industry because when the duration of your assets is approximately equal to the duration of your liabilities, you effectively net out your interest rate risk. However, SVB could have had difficulties with buying and selling a large number of bonds to reconstruct their portfolio and attempting to change the durations of their assets and liabilities

due to the large number of their holdings and worsening condition as the Fed kept raising interest rates. Below, we examine some different financial instruments and strategies that SVB could have used to hedge their portfolio and net out their interest rate risk. -*Carmen Liuzza*

The CME Group operates derivative exchanges and also offers many derivatives that SVB could have used to hedge their portfolio. Specifically, SVB could have used Treasury Futures to shorten the duration of their assets and reduce their exposure to the risk of rising interest rates. A Treasury Future is a derivative offered from the CME Group that is a "standardized contract for the purchase and sale of U.S. government notes or bonds for future delivery" (CME Group, 2023). If a trader takes a long position in a Treasury Futures contract, they would receive a Treasury bond or note at some point in the future, and if a trader takes a short position in a Treasury Futures contract, they would need to deliver a Treasury bond or note to whoever has the long position in the future. The CME Group offers many different bond and note maturities for the futures contracts, such as 2-Year T-Notes futures, 20-Year T-Bonds futures, etc. Each of these contracts has a range of bonds that are deliverable, because if an investor buys a 20-Year Treasury Bond Future, they wouldn't want the short trader to give them a bond that matures in only ten years when they are entitled to receive a bond that matures in less than 20 years. Therefore, each futures contract has a range of acceptable maturities for bonds to be delivered at maturity. For example, if you are long a 20-Year Treasury Bond Futures contract, the bond you are delivered must have a maturity between 19 2/12 and 19 11/12 years. (CME Group, 2023). - *Carmen Liuzza*

SVB's duration of their assets were larger than the duration of their liabilities, so they could have taken a short position in Treasury Futures to decrease their duration. SVB has a number of ways that they could have hedged using Treasury Futures. The first way that SVB

could have hedged their interest rate risk would be by taking short positions in high maturity Treasury Bond Futures, such as the Ultra T-Bond with deliverable bond maturities of 25 to 30 years. When the futures contract reaches its delivery date and SVB is obligated to deliver a Treasury bond with a maturity of 25 to 30 years remaining, SVB could deliver a long maturity bond with a low coupon rate to the long trader. By using these futures contracts and delivering long term bonds with low coupons, SVB could have gotten these high-duration assets off their balance sheet quickly and easily, rather than selling them at a multi-billion dollar loss. The second way that SVB could have hedged their interest rate risk using Treasury Bond Futures would be to short Treasury Bond Futures with a late delivery date when SVB first started buying long term, low coupon, government bonds. This would have been long before the target Federal Funds rate was 475-500bp, so SVB could have shorted these futures contracts when rates were low, and then close out their position later at a profit when rates proved to rise dramatically (Federal Reserve Bank of New York, 2023). Overall, the U.S. Treasury market is very safe considering the small likelihood of the U.S. defaulting on their debt, and the U.S. Treasury Futures have sufficient volume and liquidity for SVB to effectively hedge their interest rate risk. Lastly, this is also a safe way for SVB to hedge their interest rate risk because they take on no credit risk and use a futures contract, rather than hedging using forward contracts and not having predetermined specifications to the contract such as acceptable bond maturities for delivery. - *Carmen Liuzza*

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