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# *Banking Crisis: An Insight from the Collapses of SVB and Credit Suisse*

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***Abstract:*** The financial industry has long been a source of fluctuation and instability, and the recent events have further complicated post-COVID economic performances. This paper generalizes the theory of bank failures, the banking crisis, and the following economic consequences from past literature. It then analyses recent bank collapses and government responses, paying particular attention to Silicon Valley Bank and Credit Suisse. Finally, the conclusion draws on the validity of the theories in terms of being applied to the post-COVID banking system, yet current prudential policies and rescue plans need to be reviewed and upgraded.

***Keywords:*** bank failure, financial crisis, Silicon Valley Bank, Credit Suisse, economic policy

## 1. Introduction

The paper discusses the validity of theoretical predictions of bank failures and financial crises. It first looks into the general theory of bank failure, and then examines two recent failure cases in terms of practical application. It also sheds light on the potential economic consequences of the collapses, which have implications for regulatory authorities and other banks that are still in operation. The context of the discussion principally focuses on a country with monetary policy independence.

A country adopting a flexible or non-fixed exchange rate regime is said to have monetary policy independence. Since its nominal exchange rate is allowed to float along with changes in the demand for and the supply of the currency in the foreign exchange market (henceforward forex market), the nominal interest rate varies accordingly through UIP condition [1] in the very short-term for a given level of real interest rate, which can reflect variations in the within-period inflation rate. Then, an inflation-targeting central bank can change its policy tool -- base rate (a nominal interest rate) -- to affect the real interest rate and interest-sensitive spending, and therefore steer the economy back to the equilibrium position defined by both the inflation rate and the real exchange rate being constant. Furthermore, a country with monetary policy autonomy may not be troubled by sovereign debt issues arising from significant government imbalances. This is because the own CB acts as Lender-of-Last-Resort to the government, apart from its usual role of being LoLR to the banking system. It purchases government bonds to reduce bond yield and the government's borrowing cost, and thereby injects liquidity to prevent the authority from declaring bankruptcy [2].

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## 2. Theory

### 2.1. Risks and Failures

A simple banking system of a country consists of a national central bank and a group of commercial banks. Banks make profit from interest differentials between deposits (savings rate) and loans (borrowing rate). For each base rate chosen by the central bank, the profit-maximising commercial banks determine a markup on the base rate and lend at a higher rate to households and firms. The markup depends on the risk of financial products owned by a bank, the risk tolerance of the bank, and the bank's equity.[3]

Commercial banks are generally exposed to maturity mismatch: lenders of the bank (liability side) usually require deposit withdrawal at short notice, whereas borrowers (asset side) wish to make long-term loans for investment purposes.[4] Since banks earn in the long term but will have to pay in the short-term, liquidity risks occur meaning that they will run short of cash if massive withdrawals occur simultaneously.[5] Apart from liquidity risks, banks also face the risk of being insolvent, which is defined as asset value being less than liability value and hence equity or net worth (asset minus liability) becomes negative.

There are different scenarios that lead to insolvency, yet the final outcome always implies bankruptcy if no rescue plan is offered by authorities. Following a liquidity issue, banks may have to quickly liquidate their assets to meet withdrawal demands. However, this may result in a fall in the value of the assets as supply increases or since the fire sale distorts their value. As the value of financial assets falls, shareholders' capital (equity) acts as a buffer to absorb the loss of asset value, while the liability side barely changes. But when equity gets exhausted, a bank becomes insolvent. Consider another case where a large number of borrowers default, implying that the loans they made will be marked as bad debts and be written off on the bank's balance sheet, which hence reduces its asset value. A large number of defaults can shrink the capital buffer to negative, again pushing the troubled bank into bankruptcy. Since a majority of banks are highly leveraged [6], their equity/asset ratio is low and they can easily fall into insolvency if their asset value plunges.

CB as LoLR to the banking system can provide liquidity to banks running short of cash, however at a penalty interest rate meaning a higher cost of borrowing [7]; whereas government is responsible for bailing out important but insolvent banks and preventing more damaging spillovers ("contagion") from a single bank failure to the whole system. Alternative ways of dealing with bank failures are discussed in Modern Banking Chapter 7, namely: liquidation, merger, and government intervention [8]; some of these applications will be discussed in the following sections.

### 2.2. Economic Impacts of a Banking Crisis

Once a commercial bank is suspected to be falling down, households and firms run the bank to get their savings out before the bank loses its ability to repay. Colleague banks are also worried about the high default risk of a failing bank and may refuse to lend overnight. This behavior accelerates the bank's collapse and spreads fear across the financial market, leading to plummeting confidence for credit creation (credit crunch) and may set off a further series of bank runs and failures.[9] Such an event, as can be referred to as a "banking crisis", especially occurs when the majority of the banking system is subject to a uniform type of risk, for instance, the mortgage-backed securities during the 2008 global financial crisis.

A banking crisis has serious implications for the economy. Households' consumption and firms' investment fall sharply due to negative expectations that erode asset values and shrink balance sheets, which brings huge contractionary effects and slumps the economy into a recession where the inflation rate is negative and unemployment is climbing. Reduced economic activity and hence income level

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also make domestic residents consume fewer imports. However, whether the external trade balance will be improved depends on the relative size of the reduction between import demands and export production. The economy in general experiences a painful curtailment in living standards.

Authorities will have to take measures to boost the economy, such as reducing interest rates and expanding government debt. Bailing out systematically important banks are essential, and solving the banking problems first can imply a quicker recovery as well-functioning credit-making intermediaries allow economic agents to spend beyond their current income. However, CB's base rate is subject to lower-bound issues and may seek unconventional policies such as quantitative easing if the traditional interest-rate tool becomes ineffective [10]. Additionally, governments with no CB acting as their own LoLR which backs up their bonds and securities, such as member countries of the Eurozone, are more vulnerable to debt mismanagement and hence sovereign debt issues in the face of expensive rescue plans [11].

## 3. Cases

This section elaborates on the recent cases of bank failure, particularly focusing on Silicon Valley Bank and Credit Suisse.

### 3.1. Silicon Valley Bank

Silicon Valley Bank (SVB) is a regional bank ranked 16th among all US commercial banks by the end of 2022 [12]. Its major business scope is tech-industry related venture capitals, with 93.9% of its deposit base being uninsured [13].

During the 2020~21 US tech bubble, SVB experienced a boom in its deposits, which was also reflected in its rising share price as investors viewed the deposit boom would largely increase SVB's profitability [14]. It then "locked away" large proportions of its assets (short-term deposits) in illiquid long-term securities for ten years, because these bond yields were low at that time meaning that asset prices were high and there could be potential for capital gain if government policy kept relaxed for post-COVID recovery [15]. SVB enlarged its gap between maturity differences by doing so and put itself more exposed to liquidity issues and bank runs. Furthermore, its loan-to-deposit ratio amounted to the second highest in the US banking system (94.4%) [16]; while the ideal LTD ratio lies in the 80% ~ 90% interval, SVB was more subject to the risk of insolvency.

FDIC deposit insurance enables households and firms to make deposits with confidence at a large number of FDIC-insured banks supported by the US government across the nation, with no additional need to apply for FDIC insurance. The insurance upper limit is $250,000 per depositor per insured bank, which will be fully covered by FDIC once the insured bank fails [17]. Pennacchi concluded the main benefits and costs of deposit insurance: providing a safe place for small-sized investors and preventing bank runs to some extent while complicating the assessment of banks' risks by insurers. It also unveiled that it still has been taxpayer-assisted behind what is known as "banking industry financed insurance" [18].

Following the burst of the tech bubble, SVB failed to meet massive deposit withdrawal requirements as its cash reserves and liquid assets became quickly exhausted, forcing it to start selling its long-term securities [19]. Meanwhile, US post-COVID inflation has reached a 40-year highest level, which was mainly resulted from the rising price of services while the surging price of tangible goods (COVID-led consumption shift), supply-side constraints, rising housing demands, and the Russian-Ukrainian war [20]. Under huge inflationary pressure, the Federal fund's effective rate has gone up quickly from around 0.2% to 4.75% in 12 months (March 2022 ~ February 2023) , and the 10-year Treasury yield also showed a similar trend since 2022 [21]. As bond yield rises, bond value falls, hence does SVB's asset value and the size of its balance sheet. Eventually, on March 10 2023

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SVB declared bankruptcy, marking the second-largest failure in the post-GFC period [22]. It was regarded as a classical failure because it followed the aforementioned theory stream of a bank run, balance sheet shrinkage, and insolvency.

On March 12 2023 Federal Reserve and the FDIC announced that all depositors of SVB would receive all their uninsured deposits back [23]. The authorities were not cutting interest rates as the theory usually does, because meeting the inflation target was considered more essential. The full bail-out of all depositors was regarded as to prevent spillover effects (i.e. forced bankruptcy) into tech-industry firms which banked with SVB. However, such a decision revealed that the government will eventually bail out any deposits with no upper limit, which could lead to greater moral hazard behaviour in the financial sector where banks may take more risks than they should. It was also criticized that banks were realizing their expected outcomes or endpoints as a result of previous lobbying efforts [24].

The collapse of SVB may not be expected to affect key economic indices remarkably as in the 2008 crisis because its size is relatively small and it did not spread systemic risks to the broader banking sector [25]. However, the tech-related firms which have close financial relationships with SVB were dampened as the theory predicts. The national labor market remained robust since 2022 (with an unemployment rate being around 3.5%) [26], while tech labour markets would inevitably be tightened due to the tech-related industry being the main victim of the collapse [27]. The quarterly GDP growth rate was struck by the failure, falling from 2.6% in Q1 2023 to 1.3% in Q2 2023; forecasts for the following months are unclear, but it is expected to accelerate again in 2024 [28]. Federal fund rates will keep rising until inflation gets under control since the conditions to accommodate bank failure were not created via cutting the interest rate.

### 3.2. Credit Suisse

SVB's collapse sent shock waves and rippled across the banking system worldwide, inducing another series of bank failures including Signature Bank, First Republic Bank, and the globally systematically important Credit Suisse.

Being different from SVB, Credit Suisse's collapse essentially originated from investors' concern about a series of scandals, investment failures, and fines in recent years [29]. These scandals have made the bank seem increasingly risky, and clients lose confidence in Credit Suisse. This was then reflected by substantial amounts of withdrawals that could run the bank, and plunges in Credit Suisse's share price [30]. The deposit outflows shrunk the size of Credit Suisse's balance sheet [31], which spoiled the bank's ability to create loans and its profitability. Swiss National Bank (SNB) stepped in to provide $54 billion liquidity [32] to Credit Suisse after its biggest financial supporter, Saudi National Bank, refused to inject capital any further into the bank [33]. However, by failing to retrieve its customer base, the bank eventually fell into bankruptcy in mid-March 2023. Despite being triggered by operational mismanagement, Credit Suisse shared a similar overall mechanism of bank failure as SVB.

Credit Suisse ended up being taken over by its larger competitor UBS under a $3.2 billion deal [34], lifting the size of UBS (which has already been the largest bank in Switzerland) up to 200% of the Swiss GDP [35]. Even though it is required to increase its capital buffer as reflecting its gigantic size, huge threats still exist in the potential failure of UBS: it is not only "too big to fail" but also "too big to save". Once UBS collapses, the dampening effect on the Swiss economy can be disastrous. The authorities will find it hard to cover all potential losses and no other bank in Switzerland is large enough to buy it out.

While announcing a "shotgun marriage" between UBS and Credit Suisse, the SNB also wiped out $17 billion in Additional Tier-one (AT1) bonds issued by Credit Suisse [36]. AT1 bonds (also known as "contingent convertibles" or “CoCos”) are the riskiest type of bonds a bank can issue and carry a

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high return. When a bank's capital levels fall below a certain threshold, they are designed to absorb losses by being converted into equity or written-off, hence preventing balance sheet issues (insolvency) and risk spillovers. Furthermore, AT1 bondholders generally rank higher than shareholders, meaning that the former will get money back before the latter if a bank goes into trouble.[37]

Despite the fact that the bail-in of AT1s can be justified and it eased the pressure on taxpayers for rescuing the bank, the bondholders were notably provoked as it seemed to be a violation of bail-in priority [38]: the whole AT1 section was written-down while shareholders' capital has not yet been completely cleared away [39]. The action of SNB brought about a sold-off in the AT1 bond market, and the bond yield surged to around 13.5% (approaching the COVID yield peak) [40]. The higher yield increased banks' cost of borrowing, which made banks more difficult to raise money in bond markets to meet both regulatory and private requirements in a time of financial turmoil. A mini shock was triggered in the European financial market: the UK [41] and the EU [42] quickly responded that they would respect the normal hierarchy in capital structure.

Contrary to the theory, the Swiss economy did not seem to be shocked so far by now: the unemployment rate is falling up to March 2023 [43], the GDP growth rate is expected to be positive [44], increasing policy interest rate [45] steers inflation to 2% target [46], and its exchange rate remains stable from the beginning of 2023 [47]. This is probably due to the fact that the bail-in accounts for only 0.02% (17/807.23) of the country's 2022 GDP [48], and that the major cause of the collapse was bank-specific as being distinct from the systematic risks as in global financial crisis. Nevertheless, the deal between the Swiss government and UBS in terms of the merger also mentioned a $108.4 billion liquidity offer to UBS [49], which might pressure on inflation control in the future. In addition, the collapse of a G-SIB as well as the bail-in of AT1 bonds prior to ordinary shares has affected Switzerland as a reliable country for banking, which could lead to serious economic consequences such as diminishing strength of comparative advantage.

## 4. Lessons from the Collapses

In the context of higher proportions of bank deposits being uninsured, the current deposit insurance scheme has revealed its vulnerabilities. Vuillemey related deposit insurance scheme with distributive issues and financial inequality: a higher upper limit of insurance coverage enhances savings security when shock occurs, however, this may act as a subsidy to wealthy agents at the expense of general taxpayers [50]. Ozili questioned the credit of complete bail-outs concerning the government's limited budget. It additionally mentioned the problem of only applying full deposit insurance to too-big-to-fail banks: households and firms may make deposits at giant banks only, making smaller banks more difficult to survive and the banking industry more concentrated [51].

However, if authorities are concerned about limited budget and public opinion towards inequality, such that it only bails out insured deposits, it may lead to firms going bankrupt in the short-run which damages the employment rate, and asset outflow in longer terms as expropriation risk is regarded to be high and investment environment seems undesirable. Furthermore, the action of full insurance in SVB’s case can trigger more moral hazard behavior as aforementioned.

Furthermore, banks are advised to efficiently diversify across both sides of their balance sheets in terms of maturity structures and carefully manage their operations to avoid financial scandals, which could secure clients' trust and prevent bank failure more effectively. Regulatory agencies should also build closer relationships with financial intermediaries for better supervision of banks’ capital structures and responses to monetary policies. Despite its unsuccessful management of maturity, Dinh criticized that SVB's failure was largely attributed to the Federal Reserve lifting interest rates too aggressively that undermined bonds' value, and its supervisor allowing it to expand too rapidly during the tech bubble and end up with 93.9% uninsured deposits [52].

Last but not least, authorities worldwide have to focus on refining the system of micro-prudential and macro-prudential policies, such as counter-cyclical loan-to-value and capital ratios, and regular inspections of banks' balance sheet structures. In particular, the design of "CoCos" should be carefully reviewed, because they act as a cushion that allows recapitalization before failure occurs, and SNB's written-down of AT1 bonds has typically brought negative effects to the market and Swiss economy. The resolution plan for systematically important banks needs to be scrutinized and then improved, as proposed by Bolton et al., since the current "too-big-to-fail" plans may still induce considerable economic damages.[53].

## 5. Conclusion

This paper was inspired by the recent news of failing important banks. It discusses the theories of the mechanism of bank failures and economic impacts. The former turns out to be almost exactly matching in SVB's and Credit Suisse's cases, while the latter gives good general guidance but the aftermath is usually case-specific. Particularly, SVB's failure with its bail-out solution can be regarded as a classical application; whereas Credit Suisse and SNB have introduced new possibilities to future financial institutions. However, this paper only uses commonly published economic data and lacks quantitative analysis of empirical evidence. Further studies may concentrate on working out a more desirable system of financial regulations with specific implementing mechanisms.

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