JIA (Jurnal Ilmiah Akuntansi) • 9 (1), 265-272 • 2024

The Impact of the Collapse of Silicon Valley Bank on the Volatility of Sectoral Stock Indices on the Indonesian Stock Exchange

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CITATION:
Yudiaatmaja, F. & Trianasari. (2024). The Impact of the Collapse of Silicon Valley Bank on the Volatility of Sectoral Stock Indices on the Indonesian Stock Exchange. *JIA (Jurnal Ilmiah Akuntansi),* 9 (1), 265-272.

ARTICLE HISTORY:
Received:
November 30, 2023
Revised:
June 22, 2024
Accepted:
June 22, 2024

DOI: 10.23887/jia.v9i1.70976

Abstract

The aim of this research is to determine the impact of the collapse of Silicon Valley Bank (SVB) on the volatility of sectoral stock indices on the Indonesian Stock Exchange. The data collection technique used in this research is documentation. Secondary data were collected from the ten sectors on the Indonesian Stock Exchange, namely agricultural, mining, basic industry, various industries, consumer goods, property, infrastructure, finance, trade and services, and manufacturing, obtained from the Indonesian Stock Exchange website. The data were analyzed using an Android-based t-test application called the Difference Test to compare sectoral stock index volatility before and after the collapse of Silicon Valley Bank. The research results show that almost all sectors were significantly affected by the collapse of SVB, except for companies operating in the industrial sector. The sectors most affected by this incident were companies operating in the technology sector, followed by the raw goods sector. These findings highlight the interconnectedness of global financial events and their ripple effects on different sectors of the Indonesian stock market. This research provides valuable insights for investors and policymakers regarding sectoral vulnerabilities and the importance of monitoring global financial stability.

Keywords: Silicon Valley Bank; sectoral stock indexes; Indonesian Stock Exchange

INTRODUCTION

After reorganizing the banking sector as a result of the 1997/1998 financial crisis, ten years later, namely in 2008, the Indonesian nation was again hit by a financial crisis as a result of the global financial crisis. The financial crisis that first hit the US was marked by the collapse of the largest financial institution in the world from America, namely Lehman Brothers, as a result of the widespread issuance of derivative instruments using

subprime mortgages as the basic asset for investment instruments (Kevin, 2018).

On March 10, 2023, the banking sector in America was shocked again by the collapse of Silicon Valley Bank (SVB). SVB was founded in 1983 and specializes in financing, especially for technology startups and health services in the United States (US). Silicon Valley Bank experienced a sudden collapse after its customers made massive withdrawals of funds on Friday (10/3/2023) local time (Prakoso, 2023). This situation is the largest case of bank failure since 2008.

SVB is among the top 20 American commercial banks with total assets of US$209 billion at the end of 2022. The collapse of SVB was the impact of the Fed's aggressive increase in interest rates. The Federal Reserve has been raising interest rates since a year ago to tame inflation. Rising interest rates and high borrowing costs have increased the momentum of technology company shares. Higher interest rates also led to a decline in the value of long-term bonds held by SVB and other banks during the ultra-low era. SVB's $21 billion bond portfolio yields an average of 1.79 percent, compared with the current 10-year Treasury yield of about 3.9 percent. At the same time, venture capital began to dry up, forcing startups to withdraw funding at SVB. So, the company faced losses from bonds and at the same time there was a massive withdrawal of funds.

Several researchers and economists have studied the correlation between bank failures and the stock market, particularly in the context of financial crises. While significant progress has been made in understanding the relationship between bank failures and stock market reactions, addressing these research gaps can lead to a more comprehensive and nuanced understanding. Filling these gaps requires interdisciplinary approaches, combining insights from finance, economics, psychology, and technology studies.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In Indonesia, the financial crisis occurred in the 1997/1998 period. The crisis did not originate from Indonesia, but began on July 2 1997 when Thailand declared its inability to pay its foreign debt (Gischa, 2020). During the 1997/1998 crisis, the banking capital adequacy ratio (CAR) reached -15.7% and non-performing loans (NPL) reached 48.6% in 1998 (Nurdiana, 2020). The financial crisis

has had such a severe impact on the Indonesian economy that more than 70 percent of companies listed on the capital market suddenly became insolvent, aka bankrupt (Hasan, 2018). During the crisis there was inflation as high as 70% (Anggraeni, 2019). Economic growth during the crisis experienced a contraction of -13.1% (Kevin, 2018). The Governor of BI for the 2013-2018 period, Agus Martowardojo, stated that the severity of the situation during the crisis led to the creation of a Presidential Decree guaranteeing Third Party Funds (DPK) in Indonesian banking (Laucereno, 2019).

To overcome the 1997/1998 crisis, the Indonesian government through the minister of finance and the governor of Bank Indonesia requested a stand-by arrangement from the International Monetary Fund (IMF). The IMF is known as the International Lender of Last Resort which was formed in 1944 at the Bretton Woods conference in America. The rescue package provided by the IMF for Indonesia was 43 billion USD (Robison & Rosser, 1998). The rescue package provided by the IMF was fully refundable by the Indonesian government on October 12 2006 (Bank Indonesia, 2006).

There are several economic and financial theories that discuss the correlation between the collapse of a bank and the stock market. These theories address the mechanisms through which a bank failure can impact financial markets and the broader economy. Some of the key theories and concepts include:

Financial Contagion Theory

Financial contagion refers to the spread of market disturbances – primarily on the downside – from one country to others, a process observed through co-movements in exchange rates, stock prices, sovereign spreads, and capital flows. The collapse of a bank can trigger contagion effects, where the failure of one financial institution leads to a loss of confidence in other banks and financial markets, causing widespread panic and selling.

Systemic Risk Theory

Systemic risk is the risk of collapse of an entire financial system or entire market, potentially leading to a crisis when a single entity or cluster of entities fails. Banks are interconnected through various channels, such as interbank lending, payment systems, and derivative contracts. The failure of a major bank can thus pose systemic risks, leading to broader financial instability and

significant negative impacts on the stock market.

Liquidity Preference Theory

Proposed by John Maynard Keynes, this theory suggests that investors prefer liquidity (cash or assets that can quickly be converted to cash) in times of uncertainty. During a bank collapse, the heightened uncertainty and risk aversion can lead to a flight to liquidity, causing investors to sell off stocks and other assets, driving down prices in the stock market.

Credit Channel Theory

The credit channel of monetary policy transmission emphasizes the role of banks in the supply of credit. When a bank collapses, the disruption in the credit supply can adversely affect businesses and consumers' ability to obtain loans, leading to reduced spending and investment, which in turn can depress stock prices. This theory highlights how banking sector health directly influences economic activity and stock market performance.

Efficient Market Hypothesis (EMH)

While not directly addressing bank collapses, the Efficient Market Hypothesis posits that financial markets are informationally efficient, meaning that asset prices reflect all available information. According to EMH, the collapse of a bank would be rapidly incorporated into stock prices as investors process the implications for the economy and other financial institutions. However, the hypothesis is debated, especially in the context of financial crises when markets may not always reflect fundamental values accurately.

Behavioral Finance

Behavioral finance examines how psychological factors influence market behavior. During a bank collapse, investor sentiment, fear, and herd behavior can exacerbate market reactions, leading to more severe and prolonged declines in stock prices than would be justified by fundamentals alone. This theory helps explain the often irrational and extreme market reactions during financial crises.

METHOD

This research used a quantitative descriptive research design because the data used was quantitative data to observe and describe the impact of an event that occurred. The variable in this research was basically sectoral capital market performance which was proxied or measured using sectoral

indices. This research variable was a univariate variable because there was only one research variable. The condition of the research variable was observed several periods before and after the collapsed of Silicon Valley Bank. The comparative results of these periods are then analyzed with the aim of obtaining information regarding the sectors affected by the collapsed of Silicon Valley Bank.

The secondary data used in this research was collected from Indonesia Stock Exchange website. The data consist of index data of ten sectors namely the agricultural, mining, basic industry, various industries, consumer goods, property, infrastructure, finance, trade and services, and manufacturing. From all of the sectoral index data, the t-value was calculated before and after the collapse of SVB bank.

RESULTS AND DISCUSSION

The SVB collapsed on March 10 2023. To determine the impact of this event, 60 sectoral stock index data were used, consisting of 30 sectoral stock index data before the collapsed and 30 sectoral stock index data after the collapsed. In general, the collapsed of SVB resulted in a decline in sectoral stock indices in the observation period except for the Primary Consumer Goods Sector, the Non-Primary Consumer Goods Sector, and the Property & Real Estate Sector. The third sector was initially affected by the pandemic, but at the end, it was recovered more quickly than other sectors.

To determine the significance impact of the collapsed of SVB, a paired t-test was carried out on the value of the sectoral stock index in the observation period. The t-test in this research was assisted by using the application namely Uji Beda which was developed by Krishta Jaya. The application was downloaded from the Google Play Store and then installed on an Android-based smart phone.

Before carrying out the t-test, the first step was to carry out a normality test on the data before and after the collapsed of SVB on March 10th, 2023. The method used in the data normality test was the Kolgomorov-Smirnov (K-S) Test method. The results of the normality test for all sectors on the stock exchange are as shown in Table 1.

From the results of the K-S test, it was concluded that all sectors, both data before (A) and after (B), were declared normally distributed because the Sig value of each sector was greater than the

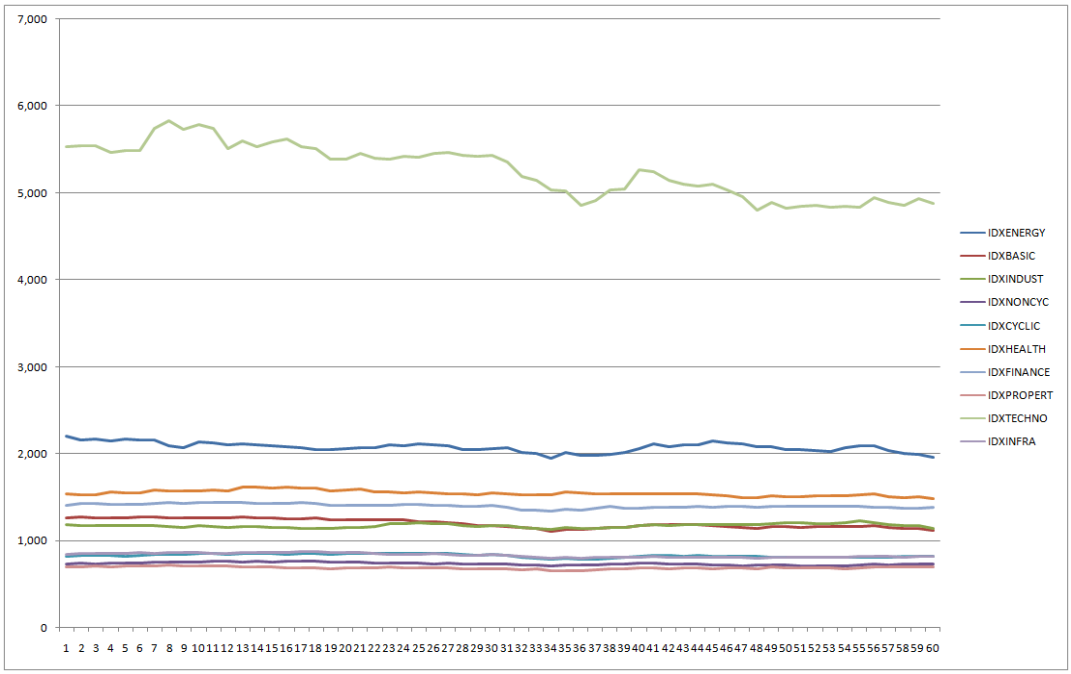

Figure 1. Sectoral Stock Index Volatility

Table 1. Sectoral Index Normality Test

Index	Before		After	
	D Statistic	Sig	D Statistic	Sig
IDXENERGY	0.119	0.742	0.104	0.870
IDXBASIC	0.203	0.147	0.121	0.729
IDXCYCLIC	0.230	0.070	0.113	0.802
IDXNONCYC	0.148	0.479	0.129	0.653
IDXHEALTH	0.107	0.846	0.160	0.388
IDXFINANCE	0.116	0.775	0.215	0.106
IDXINDUST	0.097	0.914	0.111	0.812
IDXINFRA	0.100	0.897	0.123	0.709
IDXPROPERT	0.125	0.692	0.109	0.830
IDXTECHNO	0.182	0.242	0.143	0.527

Table 2. Paired t-Test Sectoral Index

Index	t	df	Sig	Mean Diff.
IDXENERGY	4.220	29	0.000	57.574
IDXBASIC	17.775	29	0.000	91.395
IDXCYCLIC	13.805	29	0.000	28.955
IDXNONCYC	9.657	29	0.000	25.826
IDXHEALTH	7.558	29	0.000	44.811
IDXFINANCE	10.455	29	0.000	37.060
IDXINDUST	-1.418	29	0.167	-7.245
IDXINFRA	14.819	29	0.000	44.719
IDXPROPERT	3.387	29	0.000	12.722
IDXTECHNO	22.726	29	0.002	538.362

significance level used, namely 0.01. Therefore, data before and after the pandemic can be analyzed using a paired t-test to test the impact of the collapsed of SVB.

From the results of the paired t-test of sectoral stock indices on the Indonesia Stock Exchange, assuming other variables were constant, it was found that almost all sectors were significantly affected by the SBV collapse except for companies operating in the industrial sector. The sectors most affected by this incident were companies operating in the Technology sector with an index decline of -9.7% followed by the Raw Goods sector with an index decline of -7.3%.

The collapse of Silicon Valley Bank had a profound impact on the technology sector due to its deep involvement in the tech ecosystem, providing critical financial services and support to a large number of tech companies and startups. The immediate disruptions in cash flow, funding, and operational support, combined with a broader loss of investor confidence and potential tightening of credit conditions, created significant challenges for the sector.

CONCLUSION, IMPLICATION AND LIMITATION

Apart from its impact on the United States and other countries around the world, the collapsed of SVB (the 20 largest commercial bank), also had an impact on Indonesia. Many of the world's leading technology companies are headquartered outside the United States and these companies rely on SVB for critical financial services. The impact of the collapsed of SVB also resulted in the Technology sector in Indonesia becoming the sector that was worst affected compared to other sectors on the Indonesian Stock Exchange.

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