The Failure of Silicon Valley Bank: A Test of Market Efficiency

Frank Bacon
Longwood University

Luis Fernando Dos Reis
Longwood University

The unexpected collapse of Silicon Valley Bank (SVB) on March 10, 2023, sent shockwaves through the tech industry. SVB, a long-standing financial institution serving tech startups for nearly four decades, suddenly shifted from solvency to insolvency within 48 hours, marking the second-largest bank failure in U.S. history. This event provides an excellent opportunity to test the Efficient Market Hypothesis (EMH), particularly its semi-strong form, which posits that rapid information absorption prevents significant stock price gains in response to new information. This research uses the standard event study methodology in the finance literature to investigate SVB's collapse and its impact on the stock prices of 30 banks traded on the New York Stock Exchange. The study aims to discern whether stock returns exhibited reactions prior to, on, or after the public announcement of SVB's failure, thereby assessing market efficiency. Using historical stock and S&P 500 index data, the study analyzes holding period returns, performs regression analyses for pre-event periods, and calculates average excess returns. Results indicate statistically significant negative impacts on stock prices surrounding and on the event date. Furthermore, consistent with behavioral finance theory, a decline in adjusted stock prices approximately 7 days before the event suggests anticipatory market behavior, in line with semi-strong market efficiency. SVB's case emphasizes the role of external factors, regulatory changes, and industry concentrations in shaping market responses. This research contributes empirical evidence to the discourse on market efficiency, highlighting the need for a nuanced understanding of market behaviors during crises. Lessons from SVB's collapse will inform regulatory and risk management strategies, impacting future discussions on market efficiency. Likewise, the study results support the semi-strong form efficient market hypothesis and suggest the possibility of trading on this information up to 7 days prior to the announcement consistent with the behavioral finance literature (Bacon & Howell 2021). This study provides valuable insights into market dynamics during unprecedented events, influencing future discussions on regulation, risk management, and market efficiency.

Keywords: bank failure, market efficiency, event study, stock prices, regulatory framework

INTRODUCTION

The collapse of Silicon Valley Bank (SVB) on March 10, 2023, sent shockwaves through the epicenter of the tech industry. SVB, a stalwart financial institution that had served tech startups for almost four decades, had earned the distinction of being the largest bank by deposits in Silicon Valley. However, within a mere 48 hours, SVB transitioned from solvency to insolvency, leading federal regulators to intervene and

permanently close its doors. This seismic event marked the second-largest bank failure in the history of the United States offers an excellent opportunity to test the efficient market hypothesis (EMH).

The EMH, specifically its semi-strong form, postulates that in a market where information is rapidly absorbed, occurrences like the SVB collapse should not trigger significant stock price returns. This theory argues that stock prices adjust so promptly to new information that no investor can exploit public knowledge to gain abnormally high returns. SVB's abrupt downfall allows an excellent opportunity to test the semi-strong form EMH.

In finance literature, event studies are instrumental in assessing the impact of public announcements on stock returns. These studies encompass a broad spectrum of events, ranging from highly anticipated to entirely unforeseen, each capable of exerting substantial influence on the financial market. Nevertheless, the timing of the market's response to new information is provides a test of market efficiency. How quickly did stock returns react to the new information? The timing hinges on the extent to which investors had insights into the event before its public disclosure and whether previous experiences with analogous events within a similar timeframe allowed some degree of anticipation.

This study examines a series of fundamental questions arising from SVB's collapse. It aims to determine whether stock returns exhibited reactions prior to, on, or after the public announcement of SVB's failure. Moreover, it endeavors to evaluate the stock market's efficiency in assimilating this new public information. Does the market's response align more closely with the weak form or the semi-strong form of market efficiency, as per the EMH? Particularly, are distinct variations observed in the market's reaction among different categories of banks, such as savings and loan institutions versus money center banks?

The purpose of this event study is to empirically evaluate the semi-strong form of the Efficient Market Hypothesis by assessing the consequences of SVB's collapse on the stock price returns of other financial institutions. This study investigates whether SVB's failure challenges or reaffirms the principles of market efficiency. An essential premise guiding this study asserts that no investor can earn an above normal risk adjusted return by acting on the bank failure announcement since stock prices should already reflect all available historical and public information related to this event. To fulfill this objective this study randomly selects on a sample of 30 banks traded on the New York Stock Exchange (NYSE). The sample represents a cross-section of the financial industry, allowing for the examination of variations in the market's response to this diverse group of banks. The study seeks to shed light on the applicability of market efficiency theories in the face of extraordinary banking failures, their responses to significant events, and the challenges posed by behavioral finance. (Ross, 2016)

LITERATURE REVIEW

Bank Failures

Bank failures, while not uncommon in the annals of financial history, have consistently punctuated the stability of financial markets. They underscore the vulnerability of even the most prominent financial institutions, particularly when economic conditions are adverse. The 2008 global financial crisis, marked by the collapse of Lehman Brothers and the acquisition of Washington Mutual, the largest bank failure in U.S. history at the time, exemplified the vulnerabilities of financial institutions. (Bacon and Pichardo 2009) These events highlighted the perils of excessive risk-taking and asset mismanagement, left unregulated and unchecked. However, SVB's dramatic collapse in 2023 evoked parallels with these previous financial crises, demanding a nuanced examination of its unique attributes.

In response to the 2008 global financial crisis, regulators undertook significant efforts to bolster the regulatory framework aimed at safeguarding the banking sector. These reforms encompassed stricter capital requirements, stress tests, and enhanced supervision to ensure financial institutions maintained a sufficient cushion to withstand economic shocks. The subsequent years witnessed the introduction of safeguards aimed at preventing a recurrence of the 2008 crisis. Nonetheless, one of the prevailing questions arising from SVB's collapse is whether the deregulatory measures of 2018 played a role in the bank's failure. This regulatory rollback aimed to ease restrictions on banks, potentially relaxing the reins on banking practices

and risk management. As such, a critical need arises to ascertain the extent to which deregulation may have contributed to SVB's downfall. (Demos, 2023; Giang, 2023; Gobler, 2023)

SVB's role as a financial cornerstone in Silicon Valley's tech ecosystem introduces an additional layer of complexity. The concentration of funds and economic interdependencies within a specific industry sector raises questions about systemic risk. When a financial institution caters extensively to one sector, as was the case with SVB in the tech industry, it amplifies systemic vulnerabilities. This situation underlines the importance of diversification and risk management in banking, especially when financial institutions serve sectors that are subject to rapid fluctuations. One of the inherent challenges of the financial system is the potential for contagion or systemic risk. Banks are interconnected, and a crisis at one institution can lead to a contagion effect and loss of confidence in the broader market, triggering runs on other banks. The risk of contagion became apparent in the aftermath of SVB's collapse. Signature Bank, another financial institution, faced difficulties and needed assistance from the Federal Deposit Insurance Corporation (FDIC). The specter of systemic risk and contagion raises critical questions about the interlinkages between banks and their collective impact on financial stability. (Demos, 2023; Giang, 2023; Gobler,2023)

The case of SVB provides a wealth of challenges and lessons in the realm of bank failures. Predicting and preventing these crises remain intricate endeavors, even with an array of safeguards in place. The unique dynamics of the financial ecosystem, coupled with external economic forces, can create vulnerabilities that are challenging to foresee. The role of regulation and the potential impact of deregulation continue to be subjects of debate. The SVB case raises questions about the effectiveness of regulatory mechanisms and the role of regulators in ensuring financial institutions' stability. It underscores the importance of a careful balance between regulation and fostering a healthy financial environment. (Demos, 2023; Giang, 2023; Gobler 2023)

The concentration of funds and the risks of over-exposure to specific sectors and industries are critical issues, particularly for banks that cater to niche markets. In a rapidly evolving economic landscape, diversification and risk management remain fundamental to stability. Contagion and systemic risk, as illustrated by the challenges faced by Signature Bank in the wake of SVB's collapse, highlight the need for comprehensive monitoring of financial institutions' interlinkages and their collective impact on the financial system. As the financial industry continues to evolve and face new challenges, lessons from the SVB case and other significant bank failures will guide future regulatory approaches, risk management practices, and the understanding of market efficiency in the context of extraordinary events. (Demos, 2023; Giang, 2023; Gobler 2023)

This review provides a comprehensive landscape of the challenges and dynamics surrounding bank failures, offering valuable context for the examination of the SVB case. The subsequent analysis will delve into the empirical data of stock returns and market efficiency, aiming to elucidate the extent to which SVB's collapse aligns with or diverges from the principles of market efficiency as per the Efficient Market Hypothesis.

Market Efficiency

This study tests market efficiency on and around the SVB bank failure. Fama (1970, 1976) defined market efficiency in three forms: weak-form, semi-strong-form and strong-form. Under weak-form efficiency no investor can earn an above normal return by making investment decisions based on past information. Numerous studies support the random walk theory in support of the weak form market efficiency hypothesis (Fama, 1965; Alexander, 1961; Fama and Blume, 1966; Granger and Morgenstern, 1970).According to weak form efficiency, stock price reacts so fast to past information that no investor can earn an above normal risk adjusted return (i.e., higher than the risk adjusted return using the S&P 500 index) by acting on this information. For example, if an investor reviews a firm's annual report, discovers strong positive earnings results for the past year, and buys the firm's stock and the stock price remains constant, the market is said to be weak form efficient based on to past information (Bacon & Howell, 2021; Bacon & Cannon, 2018; Bacon & Gobran, 2017; Bacon & Spradlin, 2019; Bacon & George, 2023).

According to the semi-strong-form market efficiency hypothesis, no investor can earn an above normal, risk adjusted return by acting on publicly available information. Tests of semi-strong form efficiency (Fama,

Fisher, Jensen, & Roll, 1969; Ball & Brown, 1968; Aharony & Swary, 1980; Joy, Litzenberger, & McEnally, 1977; Watts, 1978; Patell & Wolfson 1979; Scholes, 1972; Kraus & Stoll, 1972; Mikkelson & Partch, 1985; Dann, Mayers, & Raab, 1977) support the semi-strong-form market efficiency hypothesis that no investor can earn an above normal risk adjusted return using public information such as dividend announcements, sale of stock announcements, repurchase of stock announcements, accounting statements, stock split announcements, block trades, and earnings announcements. If the market is semi-strong form efficient, then stock price reacts so fast to all public information that no investor can earn an above normal risk adjusted return by acting on the public announcement. If one buys the stock on the announcement and still does not make an above normal risk adjusted return, the market is semi-strong form efficient (Bacon & Spradlin, 2019; Bacon & Gobran, 2017, Bacon & Hutchinson, 2020; Bacon & George, 2023). Tung & Marsden (1998) discovered a positive relationship between information quality and market trading profits in support of semi-strong form efficiency.

Strong-form efficiency theory hypothesizes that no investor can earn an above normal risk adjusted return using past, public or private information. Studies testing strong form efficiency (Jaffe, 1974; Finnerty, 1976; Givoly & Palmon, 1985; Friend, Blume, & Crockett, 1970; Jensen, 1968) show mixed results. The market reacts to an event even before it is made public. Basically, investors must act on insider information, an illegal act. If an investor uses inside information and buys the stock on the event, and earns no above normal risk adjusted return, the market is strong form efficient (Bacon & Hutchinson, 2021; Bacon & Spradlin, 2019; Bacon & Gobran, 2017; Bacon & George, 2023).

Market Efficiency and Investment Advice

This study tests the semi-strong market efficiency theory by using the standard event study methodology in the finance literature (Bacon &Greis, 2008; Bacon & Gobran, 2017; Bacon & George, 2023). If the market is semi-strong form efficient, then two popular methods of stock valuation become useless. Investors pay billions of dollars annually to analysts for investment advice based on these valuation models. If the market is efficient, these investors are wasting dollars on useless investment advice. Efforts to determine the "correct" value of stock are useless if the market is semi-strong form efficient since the "correct" price is the market price that instantly responds to all available information (Bacon & Howell, 2021; Bacon & Cannon, 2018; Bacon & George, 2023).

Stock Analysis Valuation Models

A popular finance valuation model that is questioned by efficient market theory is technical stock analysis. Technical analysis uses historical stock prices to determine the future price. Technical analysts identify buy and sell targets based on past price movements with charts and graphs. Often called chartists, they closely examine factors such as demand, popular opinion trends, and investor moods (Gitman & Joehnk, 2002; Bodie, Kane., & Marcus, 2007). Technical analysis disregards the minor short-term fluctuation in the market and rather focus on how prices tend to move in long-run trends. Trend movements are identified by changes in supply and demand relationships and are detected in the market (Levy, 1966). Critics claim that the past price behavior is not related to future prices and that the market moves like a drunk man in a random pattern. The market reacts to information, and since information arrives randomly, the market responds randomly. Critics also argue that if technical analysis was successful, the influx of many technical traders would economically bid away whatever profit potential that exists (Levy, 1966; Bacon & Howell, 2021; Bacon & Cannon, 2018; Bacon & George, 2023).

Fundamental stock analysis is the other stock valuation model used by analysts to determine the "right" market value. Fundamental stock analysis assumes that each security's intrinsic value is the present value of expected future cash flows of the underlying firm. Therefore, stock value is defined by the firm's profit potential and the economic and financial factors that cause actual market prices to move toward intrinsic values (Levy, 1966; Bacon & Howell, 2021; Bacon & Cannon, 2018; Madura, 2020; Bacon & George, 2023). If the intrinsic value is below the market value, the analyst recommends a sell signal and the opposite for a buy signal when the fundamental value is above the market value. Critics argue that the market reacts quickly to information making it impossible to maximize profit since the investor has to wait for

information to be publicly available which is hard to collect, costly, and not reliable. A fundamental investor may be heavily invested in a security for a long period of time before the market comes around to his estimated intrinsic value (Levy, 1966; Bacon & Howell, 2021; Bacon & Cannon, 2018; Bacon & George, 2023).

Semi-Strong Form Efficiency

In market that is semi-strong form efficient, investors are wasting billions of dollars on technical and fundamental analyst fees for worthless advice. This study tests the semi-strong form EMH claiming that stock prices reflect all public information making it impossible to earn an abnormal risk adjusted return by investing in public information rendering technical and fundamental stock analysis useless. This information includes historical stock prices and published accounting statements of a firm (Ross et. al., 2016). This study tested the semi-strong form EMH by examining the risk-adjusted returns of 30 firms' stock prices from thirty trading days before the March 10, 2023, SVB bank failure announcement to thirty days after. Ross defines an efficient market response as an immediate stock price adjustment to new information. There is no tendency for subsequent increases and decreases (Ross et. al., 2016; Bacon & Howell, 2021; Bacon & Cannon, 2018; Bacon & George, 2023).

METHODOLOGY AND STUDY SAMPLES

This study examined a sample of 30 banks to test the impact of the announcement of Silicon Valley Bank's failure on stock price returns. Table 1 provides a description of the study sample of banks. The study event date was the SVB failure on March 10, 2023. Using the standard event study methodology from the finance literature this study analyzed the sample of banks returns against the corresponding S&P 500 Index with around 6,510 observations to test the semi-strong form efficient market hypothesis with respect to the announcement of the Silicon Valley bank failure. The announcement date of the SVB failure is day 0. Historical stock and corresponding S&P 500 prices used in this event study were obtained from the Yahoo Finance website (http://finance.yahoo.com). The following steps were taken to conduct the event study test.

The historical stock prices for the sample of banks as well as the S&P 500 index were obtained for the event period from -180 days to +30 days from the event date. Days -30 through +30 define the event period and day 0 is the announcement date of March 10, 2023. Next, the holding period returns of the banks and the corresponding S&P index were calculated for each day in this study period using the following formula: HPR = (Current day's closing price – Previous day's closing price) / Previous day's closing price. Then, a regression analysis was performed for the pre-event period from day -180 through day -31 using the actual daily return for each of the banks as the dependent variable and the corresponding S&P 500 daily return as the independent variable. Table 2 shows the alphas and betas for each bank. Next, the risk adjusted method was used to calculate the normal expected returns as follows: E(R) = alpha + (beta*Rm), where Rm is the return of the market (S&P 500 index). After that, the excess return was calculated as follows: ER = Actual Return (R) – Expected Return E(R). The Average excess returns (AER) were calculated for each day during the event period (from -30 through +30) as follows: AER = Sum of all excess returns for each day / N where: N equal the number of banks. Then, the Cumulative AER (CAER) was calculated for the event period by adding the AERs for each day for the sampled banks. After that, graphs of the AER and CAER were plotted for the event period and are included in Figure 1 and Figure 2.

TABLE 1
DESCRIPTION OF STUDY SAMPLE

TICKER	FIRM NAME	TRADED INDEX
BAC	BANK OF AMERICA CORPORATION	NYSE
BBVA	Banco Bilbao Vizcaya Argentaria SA	NYSE
BK	THE BANK OF NEW YORK MELLON CORPORATION	NYSE
BMO	BANK OF MONTREAL	NYSE
BSBR	Banco Santander Brasil SA	NYSE
BNS	THE BANK OF NOVA SCOTIA	NYSE
C	CITIGROUP INC.	NYSE
CM	CANADIAN IMPERIAL BANK OF COMMERCE	NYSE
DB	Deutsche Bank AG	NYSE
GS	THE GOLDMAN SACHS GROUP, INC.	NYSE
HDB	HDFC BANK LIMITED	NYSE
HSBC	HSBC HOLDINGS PLC	NYSE
IBN	ICICI BANK LIMITED	NYSE
ING	ING Groep NV	NYSE
ITUB	Itau Unibanco Holding SA	NYSE
JPM	JPMORGAN CHASE & CO.	NYSE
KEY	KEYCORP	NYSE
MS	MORGAN STANLEY	NYSE
MUFG	Mitsubishi UFJ Financial Group, Inc.	NYSE
NU	Nu Holdings Ltd	NYSE
PNC	THE PNC FINANCIAL SERVICES GROUP, INC.	NYSE
OFG	OFG Bancorp	NYSE
RY	ROYAL BANK OF CANADA	NYSE
SCHW	THE CHARLES SCHWAB CORPORATION	NYSE
SMFG	Sumitomo Mitsui Financial Group, Inc.	NYSE
TD	THE TORONTO-DOMINION BANK	NYSE
TFC	Truist Financial Corporation	NYSE
UBS	UBS Group Inc.	NYSE
USB	U.S. BANCORP	NYSE
WFC	WELLS FARGO & COMPANY	NYSE

TABLE 2
ALPHAS AND BETAS OF THE STUDY SAMPLE

TICKER	FIRM NAME	ALPHA(α)	BETA(β)
BAC	BANK OF AMERICA CORPORATION	0.000102086	0.969027164
BBVA	Banco Bilbao Vizcaya Argentaria SA	0.002416155	1.022756376
BK	THE BANK OF NEW YORK MELLON CORPORATION	0.000783139	0.931768683
BMO	BANK OF MONTREAL	-0.000139658	0.882700726
BSBR	Banco Santander Brasil SA	-8.67976E-05	0.43559944
BNS	THE BANK OF NOVA SCOTIA	-0.001236195	0.78626234
C	CITIGROUP INC.	0.000260214	1.075076595
CM	CANADIAN IMPERIAL BANK OF COMMERCE	-0.00116093	0.827962183
DB	Deutsche Bank AG	0.001462468	1.005220303
GS	THE GOLDMAN SACHS GROUP, INC.	0.001035219	0.936854411
HDB	HDFC BANK LIMITED	0.001004989	0.695984586
HSBC	HSBC HOLDINGS PLC	0.000715002	0.57676605
IBN	ICICI BANK LIMITED	0.000834042	0.64361866
ING	ING Groep NV	0.001635917	0.847903131
ITUB	Itau Unibanco Holding SA	0.000778682	0.378546471
JPM	JPMORGAN CHASE & CO.	0.000927478	0.895117003
KEY	KEYCORP	-5.64682E-05	1.211821599
MS	MORGAN STANLEY	0.001290795	1.036266142
MUFG	Mitsubishi UFJ Financial Group, Inc.	0.001912829	0.653713424
NU	Nu Holdings Ltd	0.00055832	1.508867249
PNC	THE PNC FINANCIAL SERVICES GROUP, INC.	-0.000243217	1.096645133
OFG	OFG Bancorp	-9.52076E-05	0.708323997
RY	ROYAL BANK OF CANADA	-8.90152E-05	0.736099999
SCHW	THE CHARLES SCHWAB CORPORATION	0.001346616	0.804027777
SMFG	Sumitomo Mitsui Financial Group, Inc.	0.00248254	0.583324291
TD	THE TORONTO-DOMINION BANK	-0.000261002	0.750420192
TFC	Truist Financial Corporation	-0.00018826	1.131558627
UBS	UBS Group Inc.	0.001577426	1.076735847
USB	U.S. BANCORP	7.64492E-05	0.846133666
WFC	WELLS FARGO & COMPANY	0.000752404	0.920926025

To test for semi-strong market efficiency on the SVB failure announcement, the following null and alternative hypotheses are used for the bank sample:

$H1_0$: *The risk adjusted return of the stock price of the sample of banks is not significantly affected by this type of information on the announcement date.*

$H1_1$: *The risk adjusted return of the stock price of the sample of banks is significantly negatively affected by this type of information on the announcement date.*

$H2_0$: *The risk adjusted return of the stock price of the sample of banks is not significantly affected by this type of information around the announcement date as defined by the event period.*

$H2_1$: *The risk adjusted return of the stock price of the sample of banks is significantly negatively affected around the announcement date as defined by the event period.*

QUANTITATIVE TESTS AD RESULTS

In evaluating the impact of the SVB collapse on the market, the examination focused on discerning whether the associated information carried significance and provoked a notable market reaction. A critical element of this assessment involved scrutinizing the average excess daily returns depicted in Graph 1. If the information surrounding the event introduced new and substantial insights, the average excess daily returns would exhibit a statistically significant departure from zero. Additionally, this departure would manifest in variance from the cumulative average excess returns. Employing a paired t-test to scrutinize the statistical distinction between risk-adjusted daily average excess returns and cumulative average excess daily returns over the event period (day -30 to +30), the findings substantiated alternative hypotheses $H1_1$ and $H2_1$. T-tests of AER and CAER indicate a difference at the 5% significance level. The implications suggest a significant negative impact on the stock prices of the sample firms surrounding and on the event date.

Further analysis gauged the efficiency of the market in processing and reflecting this information. A pivotal aspect of this assessment involved the examination of the Cumulative Average Excess Returns (CAER) to determine its statistical deviation from zero. Analysis of the graphical representation mapping time against CAER presented in GRAPH 2 indicates a discernible decline in the risk adjusted rate of return of stock prices approximately 7 days before the event date possibly signaling insider trading. Consistent with market efficiency and behavioral finance theories (Fama, 1997), the observed pattern aligns with the tenets of the semi-strong market efficiency theory, signifying that the market anticipated the bankruptcy event, evident in the negative decline in stock prices. Likewise, a negative overreaction (day +7 to day +17) followed by a return to equilibrium (+day 24) is observed.

FIGURE 1
TIME VS. AVERAGE EXPECTED RETURN

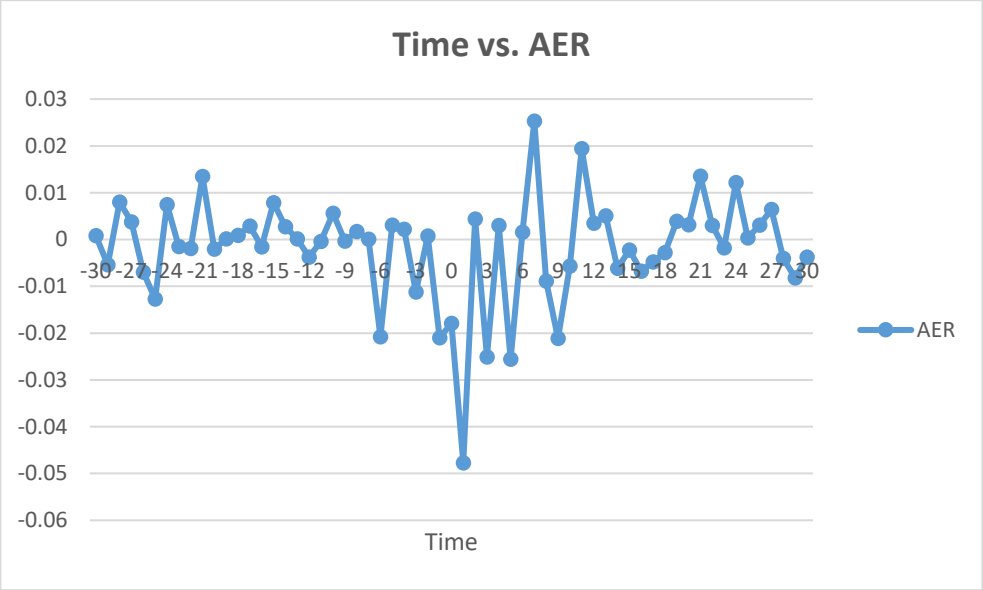
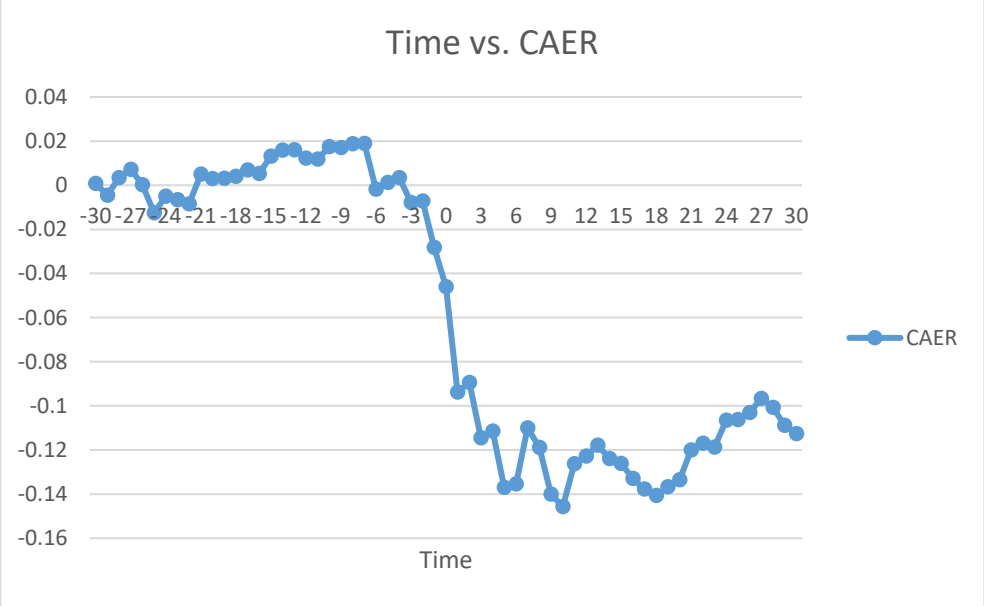


FIGURE 2
TIME VS. CUMULATIVE AVERAGE EXCESS RETURN



CONCLUSION

The collapse of SVB on March 10, 2023, is a pivotal event allowing a test of market efficiency. This study examined the implications arising from SVB's failure, to ascertain its impact on the broader financial market along with the test of market efficiency theory. By conducting an event study encompassing a diverse sample of 30 banks traded on the New York Stock Exchange, this research analyzed the reactions of stock returns before, during, and after the announcement of SVB's collapse. The assessment of average

excess daily returns, coupled with a paired t-test, corroborated alternative hypotheses $H1_1$ and $H2_1$, indicating a statistically significant negative impact on the stock prices of the sampled firms surrounding and on the event date. This outcome underscores the substantial effect of SVB's collapse on the market and supports the semi-strong form of the EMH.

Moreover, consistent with the behavioral finance literature, a comprehensive evaluation of Cumulative Average Excess Returns reinforced the notion of insider trading and the market's anticipatory behavior approximately 7 days before the event date. Specifically, the discernible decline in the risk adjusted stock price returns aligns with the principles of semi-strong market efficiency, suggesting that the market anticipated SVB's bankruptcy, resulting in the observed negative trends in stock prices. Likewise, a negative overreaction followed by a return to equilibrium is observed.

The SVB case underscores the complexities inherent in the financial market, emphasizing the role of external factors, regulatory changes, and systemic interlinkages in shaping market responses. It also emphasizes the importance of considering unique industry concentrations, such as SVB's dominance in the tech sector, and their potential systemic implications. This research contributes valuable empirical evidence to the ongoing discourse on market efficiency, emphasizing the need for a nuanced understanding of market behaviors in response to extraordinary events. As the financial landscape continues to evolve, lessons from SVB's collapse will inform future regulatory approaches, risk management strategies, and further discussions on market efficiency in times of crisis.

REFERENCES

Aharony, J., & Swary, I. (1980, March). Quarterly dividend and earning announcements and stockholders' returns: An empirical analysis. *Journal of Finance*, pp. 1–12.

Alexander, S. (1961, May). Price movements in speculative markets: Trends or random walks. *Industrial Management Review*, pp. 7–26.

Bacon, F.W., & Cagigas, G. (2022). Merger announcements, financial performance and stock price: A test of market efficiency. *Journal of Applied Business and Economics*, *24*(4), 215–225.

Bacon, F.W., & Cannon, C. (2018). Brexit announcement: A test of market efficiency. *Journal of Applied Business and Economics*, *20*(8), 19–25.

Bacon, F.W., & George, D. (2023). The Covid-19 pandemic and the consumer staples sector: A test of market efficiency. *Journal of Applied Business and Economics*, *25*(6), 127–135.

Bacon, F.W., & Gobran, P. (2017). Presidential elections and industry stock returns: A test of market efficiency. *Journal of Business and Behavioral Sciences*, *29*(2), 21–31.

Bacon, F.W., & Greis, J. (2008). Stock split announcements: A test of market efficiency. *Journal of Business and Behavioral Sciences*, *18*(1), 18–27.

Bacon, F.W., & Howell, W.N. (2021). COVID-19 and the health industry: A test of market efficiency. *Journal of Applied Business and Economics*, *23*(6), 60–67.

Bacon, F.W., & Hutchinson, J.A. (2020). Corporate sponsorship of the 2008, 2012, and 2016 Summer Olympics: A test of market efficiency. *Journal of Applied Business and Economics*, *22*(10), 13–25.

Bacon, F.W., & Pichardo, C. (2009). The Lehman Brother's bankruptcy: A test of market efficiency. *Proceedings of the Allied Academies International, USA*, *14*(1), 43–48.

Bacon, F.W., & Spradlin, K.M. (2019). Forward and reverse stock splits: A test of market efficiency. *Journal of Applied Business and Economics*, *21*(5), 18–28.

Ball, R., & Brown, P. (1968, Autumn). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, pp. 159–178.

Bodie, Z., Kane, A., & Marcus, A. (2007). Essentials of investing. In *The McGraw-Hill Irwin Series in Finance* (6th Ed.). United States: McGraw-Hill Irwin.

Dann, L., Mayers, D., & Raab, R. (1977, January). Trading rules, large blocks and the speed of adjustment. *Journal of Financial Economics*, pp. 3–22.

Demos, T. (2023, March 14). What happened with Silicon Valley Bank? *Wall Street Journal*. Retrieved from https://www.wsj.com/articles/silicon-valley-bank-svb-financial-what-is-happening-299e9b65. Accessed November 9, 2023.
Fama, E.F. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34–105.
Fama, E.F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383–417.
Fama, E.F. (1976). *Foundations of finance*. New York: Basic Books.
Fama, E.F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics*, *39*(3), 283–306.
Fama, E.F., & Blume, M. (1966). Filter rules and stock market trading profits. *Journal of Business*, *39*, 226–241.
Fama, E.F., Fisher, L., Jensen, M., & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, *10*(1), 1–21.
Finnerty, J.E. (1976). Insiders and market efficiency. *Journal of Finance*, *31*, 1141–1148.
Friend, I., Blume, M., & Crockett, J. (1970). *Mutual funds and other institutional investors*. New York: McGraw-Hill.
Giang, V. (2023, March 15). Banking turmoil: What we know. *New York Times*. Retrieved November 9, 2023, from https://www.nytimes.com/article/svb-silicon-valley-bank-explainer.html
Gitman, L., & Joehnk, M. (2002). Fundamentals of investing. In *The Addison-Wesley Series in Finance* (8th Ed.). United States: Addison-Wesley.
Givoly, D., & Palmon, D. (1985). Insider trading and the exploitation of inside information: Some empirical evidence. *Journal of Business*, *69*(1), 69–87.
Gobler, E. (2023, September 28). What happened to Silicon Valley Bank? *Investopedia*. Retrieved November 10, 2023, from https://www.investopedia.com/what-happened-to-silicon-valley-bank-7368676
Granger, C.W.J., & Morgenstern, O. (1970). *Predictability of stock market prices*. Lexington, Mass.: Heath Lexington Books.
Jaffe, J. (1974, Spring). The effect of regulation changes on insider trading. *Bell Journal of Economics and Management Science*, pp. 93–121.
Jensen, M. (1968, May). The performance of mutual funds in the period 1945–64. *Journal of Finance*, pp. 389–416.
Joy, M., Litzenberger, R., & McEnally, R. (1977, Autumn). The adjustment of stock prices to announcements of unanticipated changes in quarterly earnings. *Journal of Accounting Research*, pp. 207–225.
Keely, P., & Bacon, F.W. (2023). Terrorist attacks on September 11, 2001: A test of market efficiency in the insurance industry. *Journal of Business and Behavioral Sciences*, *35*(1), 84–91.
Kraus, A., & Stoll, H.R. (1972, June). Price impacts of block trading on the New York Stock Exchange. *Journal of Finance*, pp. 569–588.
Levy, R. (1966). Conceptual foundations of technical analysis. *Financial Analysts Journal*, *22*(4), 83–89.
Madura, J. (2020). *Financial markets and institutions* (J.W. Calhoun, & A. McGuire, Eds., 12th Ed.). United States: Thomson South Western.
Mikkelson, W., & Partch, M. (1985, June). Stock price effects and the costs of secondary distribution. *Journal of Financial Economics*, pp. 165–194.
Patell, J., & Wolfson, M. (1979, August). Anticipated information releases reflected in call option prices. *Journal of Accounting and Economics*, pp. 117–140.
Rosenberg, E. (2022). 5 recession resistant industries. *Investopedia*. Retrieved from https://www.investopedia.com/5-recession-resistant-industries-7368676
Ross, S. (2008). *Corporate finance* (S.A. Ross, R.W. Westerfield, & J. Jaffe, 13th Ed.). United States: McGraw-Hill Companies.
Ross, S.A., Westerfield, R., Jaffe, J., & Jordan, B. (2016). *Corporate finance* (11th Ed.). McGraw-Hill Education.

Scholes, M. (1972, April). The market for securities: Substitution vs. price pressure and the effects of information on share prices. *Journal of Business*, pp. 179–211.
Summers, L.H. (1985). Does the stock market rationally reflect fundamental values? *The Journal of Finance*, *41*(3), 591–601.
Tung, Y.A., & Marsden, J.R. (1998). Test of market efficiencies using experimental electronic markets. *Journal of Business Research*, *41*(2), 145–154.
Watts, R. (1978, June/September). Systematic 'abnormal' returns after quarterly earnings announcements. *Journal of Financial Economics*, pp. 127–150.
Yahoo Finance. (2020). *S&P 500 (^GSPC) historical data*.