CEO risk-culture, bank stability and the case of the Silicon Valley Bank

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A R T I C L E   I N F O

A B S T R A C T

We examine the link between CEO risk-culture and bank stability. Using textual analysis, we construct novel bank CEO risk-culture indicators by analysing Earning Calls transcripts (EC) of 160 US Bank Holding Companies (BHC) for the period between 2002 and 2023. We illustrate and discuss our findings using the case of the recently collapsed Silicon Valley Bank (SVB). We observe a weaker emphasis on governance by SVB in comparison to the benchmark sample. We also show an alignment between CEO risk-culture of SVB and other banks' CEOs with the highest uninsured deposits, including the later collapsed First Republic Bank. Finally, our regression analysis shows that negative metrics of the CEO risk-culture decrease bank stability.

1. Introduction

The collapse of Silicon Valley Bank (SVB), attributed to poor risk management, fuelled fears about the financial stability ([17]). Poor risk-culture is a catalyst for bank failure, leading to financial crisis and loss of a public trust in the financial system [9,15]. For example, it is well-documented that banks' reckless risk-taking behaviour was the main culprit of the 2007–08 Global Financial Crisis (GFC) [5].

Risk-culture and its role within financial institutions have recently attracted notable attention in the literature.[1] Furthermore, availability of the machine-based approaches for quantified textual analysis prompted researchers to develop new measures of risk-culture [1,2]. A particular challenge in measuring risk-culture using text is whether senior executives' abode by the values promoted in formal and public documents in order to fulfil expectations of regulators and stakeholders. Capturing top management's attitude towards risk is critical as *tone set from the top* (TSFT), particularly by CEOs, significantly influences the banks approach to risk management [6].

In this paper, we examine the link between CEO risk-culture and bank stability. Specifically, we aim to answer the research question: Does risk-culture TSFT by CEOs influence bank stability? We hypothesize that a negative CEO risk-culture increases bank risk-taking and, therefore, reduces bank stability. We contribute to the literature by using novel indicators to capture CEO and bank risk-culture via textual

analysis utilising ECs [1,2,13]. The information content of ECs offers advantages in comparison to official documents, filings and press releases. ECs often contain Q&A sessions that allow capturing CEOs' views in an unscripted manner as they provide limited opportunities to choose discussion topics or pre-prepare for questions. Our method is particularly novel in capturing the risk-culture TSFT by CEOs. We primarily illustrate and discuss our measures using the case of the recently collapsed SVB. We also conduct a parsimonious regression analysis to establish the link between CEO risk-culture and bank stability.

Our analysis shows that SVB lagged in governance and its CEO was aware of the portfolio problems since 2020. However, we also find that SVB's CEO was extremely positive towards regulatory requirements and bank's risk strategy. We interpret this optimistic CEO tone as indications that SVB's regulatory compliance and risk strategy were expected to maintain its stability. We also observe that banks with the highest uninsured deposits and some of the G-SIBs show a similar risk-culture to that of SVB in years prior to its collapse. Finally, our regression results indicate that more negative TSFT decreases bank stability while more positive metrics characterising bank CEO risk-culture do not offer predictive value. Our findings imply that more negative TSFT can serve as an early warning indicator for regulators.

[1] See for example, Boubakri et al. [3], Bianchi et al., [2] and Ghafoori et al. [9].

Table 1

BHC list January 2002 – February 2023 and Bank CEO Risk-Culture Clusters January 2020 – December 2022.

BHC	C	L	X	BHC	C	L	X	BHC	C	L	X	BHC	C	L	X
Arlington Asset Investment Corp	2	-	-	CVB Financial Corp	1	-	-	Howard Bancorp Inc	1	-	-	Raymond James Financial Inc	2	-	-
Anchor BanCorp Wisconsin Inc		-	-	City National Corp		-	-	Heritage Oaks Bancorp		-	-	Sandy Spring Bancorp Inc	1	-	-
Astoria Financial Corp		-	-	Dime Community Bancshares Inc	3	-	-	HF Financial Corp		-	-	Santander Bancorp		-	-
American International Group Inc	2	-	-	Dime Community Bancshares Inc (Pre-merger)	1	-	-	Home BancShares Inc	1	-	-	Sterling Bancorp Inc	4	-	-
Ally Financial Inc	1	-	-	Discover Financial Services	1	-	-	Hilltop Holdings Inc	2	-	-	Charles Schwab Corp		-	-
Alerus Financial Corp	5	-	-	Doral Financial Corp		-	-	Heartland Financial USA Inc	2	-	-	Stifel Financial Corp	4	-	-
Altabancorp	2	-	-	Eastern Bankshares Inc	2	-	-	Hudson Valley Holding Corp		-	-	ServisFirst Bancshares Inc	1	-	-
Ameriprise Financial Inc	2	-	-	Enterprise Financial Services Corp	2	-	-	IBERIABANK Corp		-	-	Southwest Georgia Financial Corp		-	-
American River Bankshares	1	-	-	Eagle Bancorp Inc	4	-	-	Impac Mortgage Holdings Inc	4	-	-	Stonegate Mortgage Corp		-	-
Access National Corp		-	-	Entegra Financial Corp		-	-	Investors Bancorp Inc	3	-	-	Silvergate Capital Corp	1	-	-
Associated Banc-Corp	1	-	-	Community Bankers Trust Corp	2	-	-	Invesco Ltd		-	-	SVB Financial Group	2	v	v
Atlantic Union Bankshares Corp	1	-	-	Eaton Vance Corp	2	-	-	JPMorgan Chase & Co	1	v	-	SmartFinancial Inc	2	-	-
Axos Financial Inc	1	-	-	Evans Bancorp Inc	1	-	-	KeyCorp	1	v	-	Synovus Financial Corp	2	v	v
Bank of America Corp	1	v	-	TIAA FSB Holdings Inc		-	-	Live Oak Bancshares Inc	1	-	-	SouthState Corp	1	-	-
Banc of California Inc	1	-	-	First American Financial Corp	1	-	-	LegacyTexas Financial Group Inc		-	-	State Bank Financial Corp		-	-
Bridge Capital Holdings		-	-	Flagstar Bancorp Inc	2	-	-	Merchants Bancshares Inc		-	-	SunTrust Banks Inc		-	-
Franklin Resources Inc	2	-	-	FB Financial Corp	1	-	-	MetLife Inc	3	-	-	Sterling Bancorp	1	-	-
Berkshire Hills Bancorp Inc	2	-	-	First Connecticut Bancorp Inc		-	-	Marshall & Ilsley Corp		-	-	State Street Corp	2	v	v
Bank of New York Mellon Corp	2	v	v	First Bancorp	1	-	-	Morgan Stanley	2	-	-	Susquehanna Bancshares Inc		-	-
BankUnited Inc	1	-	-	FCB Financial Holdings Inc		-	-	M&T Bank Corp	1	v	-	SWS Group Inc		-	-
Bank of Marin Bancorp	1	-	-	First Commonwealth Financial Corp	2	-	-	Newalliance Bancshares Inc		-	-	Synchrony Financial	2	-	-
C2 Financial Inc		-	-	First-Citizens Bank & Trust Co	2	-	-	National Bank Holdings Corp	2	-	-	TCF Financial Corp (Pre-Merger)	2	-	-
Bank of Hawaii Corp	1	-	-	First Foundation Inc	1	-	-	National Commerce Corp		-	-	Truist Financial Corp	3	-	-
Boston Private Financial Holdings Inc	2	-	-	First Hawaiian Inc	1	-	-	National Penn Bancshares Inc		-	-	Talmer Bancorp Inc		-	-
Popular Inc	4	v	-	First Horizon Corp	2	v	v	Nationstar Mortgage Holdings Inc		-	-	South Financial Group Inc		-	-
Byline Bancorp Inc	3	-	-	First of Long Island Corp	1	-	-	New York Community Bancorp Inc	1	-	-	United Financial Bancorp Inc		-	-
Camden National Corp	2	-	-	First Midwest Bancorp Inc	2	-	-	OFG Bancorp	1	-	-	United Bankshares Inc		-	-
Cadence Bank	1	-	-	Cognition Financial Corp		-	-	Old National Bancorp	2	-	-	US Bancorp	1	v	-
Cadence Bancorp	3	-	-	FirstMerit Corp		-	-	PAB Bankshares Inc		-	-	Valley National Bancorp	2	-	-
Carolina Financial Corp		-	-	FNB Corp	2	-	-	Prosperity Bancshares Inc	1	-	-	Vineyard National Bancorp		-	-
Cambridge Bancorp	4	-	-	First Niagara Financial Group Inc		-	-	People's United Financial Inc		-	-	Vantagesouth Bancshares Inc		-	-
Capital Bank Financial Corp		-	-	First Republic Bank	2	v	v	Principal Financial Group Inc	2	-	-	Western Alliance Bancorp	1	v	-
Community Bank System Inc	1	-	-	Franklin Financial Network Inc		-	-	Provident Financial Services Inc	3	-	-	Webster Financial Corp		-	-
Citizens Financial Group Inc	1	v	-	2st United Bancorp Inc		-	-	Pacific Mercantile Bancorp (Pre-Merger)	4	-	-	Wells Fargo & Co	1	-	-
Cullen/Frost Bankers Inc	1	v	-	First National Corp	1	-	-	PNC Financial Services Group Inc	1	-	-	W Holding Company Inc		-	-
Civista Bancshares Inc		-	-	Glacier Bancorp Inc	1	-	-	Pacific Premier Bancorp Inc		-	-	Wilmington Trust Corp		-	-
Comerica Inc	2	v	v	Guaranty Bancshares Inc	1	-	-	Park Sterling Corp		-	-	WesBanco Inc	3	-	-
Capital One Financial Corp	3	-	-	Goldman Sachs Group Inc	3	v	-	PrivateBancorp Inc		-	-	Xenith Bankshares Inc		-	-
CenterState Bank Corp		-	-	Great Western Bancorp Inc	3	-	-	Reliant Bancorp Inc	1	-	-	Yadkin Financial Corp		-	-
Customers Bancorp Inc	2	-	-	Huntington Bancshares Inc	3	v	-	Regions Financial Corp	3	-	-	Zions Bancorporation NA	4	v	-

Notes: *Column C indicates BHC cluster, Column L if BHC is listed in Hayes [10], and Column X if BHC is in the same cluster with SVB. BHC names are obtained through Refinitiv Application Programming Interface (API) for their respective RI.*

1.1. Data and risk-culture measures construction

We utilise ECs for 160 US BHCs from 01 to 01–2002 until 28–02–2023 and extract text of bank CEOs' answers to analysts' questions. We obtain 6643 ECs from Refinitiv for BHCs listed in Table 1.[2]

We follow several steps to measure risk-culture. First, we adopt Agarwal et al.'s [1] framework of seven risk-culture dimensions. Second, strictly following Li et al.'s [13][3] approach, we create an expanded dictionary using the risk-culture words and terms (phrases) provided by Agarwal et al. [1]. Finally, we utilise Huang et al.'s [11] FinBERT model to account for positive and negative sentences.[4] To score risk-culture we define:

$$TF_{j,t,i}^{(unadj)} = N_{t,i}^{j}, \tag{1}$$

where $N_{t,i}^{j}$ is the total number risk-culture terms for dimension j are mentioned in the EC at the time t for the BHC i. Next:

$$TF_{j,t,i}^{(adj)} = \left(\frac{TF_{j,t,i}^{(unadj)}}{D_{t,i}} \right) \cdot 100, \tag{2}$$

where $D_{t,i}$ is the length of the EC. Since there can be more than one EC per year, we compute:

$$\overline{TF}_{j,T,i}^{(adj)} = T^{-1} \sum_{t=1}^{T} TF_{j,t,i}^{(adj)}, \tag{3}$$

where T is total number of EC in a year. Measures in (2) and (3) are consistent with Bianchi et al. [2].[5] We compute (1), (2), and (3) at both bank and CEO levels, with the CEO level measures further decomposition to positive, negative, and neutral indicators. We define:

$$CEO\_TF_{j,t,i}^{(unadj)} = CEO\_TF_{j,t,i}^{(unadj-pos)} + CEO\_TF_{j,t,i}^{(unadj-neg)} + CEO\_TF_{j,t,i}^{(unadj-neu)}, \tag{4}$$

where $CEO\_TF_{j,t,i}^{(unadj-sentiment)}$ are versions of the function in (1) that ac-

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[2] There are 768 BHCs listed in Refinitiv, however, ECs are available only for 172 banks. For these BHCs we obtain 7,290 ECs from the 1st January 2002 until the 28th February 2023. We drop ECs transcripts without a Q&A session.

[3] This includes ECs' Q&A section inclusion criteria, expanded dictionary cleaning criteria and *word2vec* model training parameters. For the original source code see the *github* repo available at https://github.com/MS 20190155/Measuring-Corporate-Culture-Using-Machine-Learning.

[4] While Li et al. [13] exclude sentences with positive and negative sentiment as one of the robustness measures to score corporate culture, Agarwal et al. [1] insist on the importance of the sentence sentiment risk culture keywords and phrases appear in. We take the view of Agarwal et al. [1] and highlight that this is especially valuable to capture in the context bank CEOs' unprepared answers to the EC participants questions, unlike bank produced documents in Bianchi et al. [2]. FinBERT is specifically trained on the ECs transcript and is the most appropriate for our investigation.

[5] Our measures are different from Agarwal et al. [1] who simply rely on (1) but decomposed by the sentence sentiment classification.
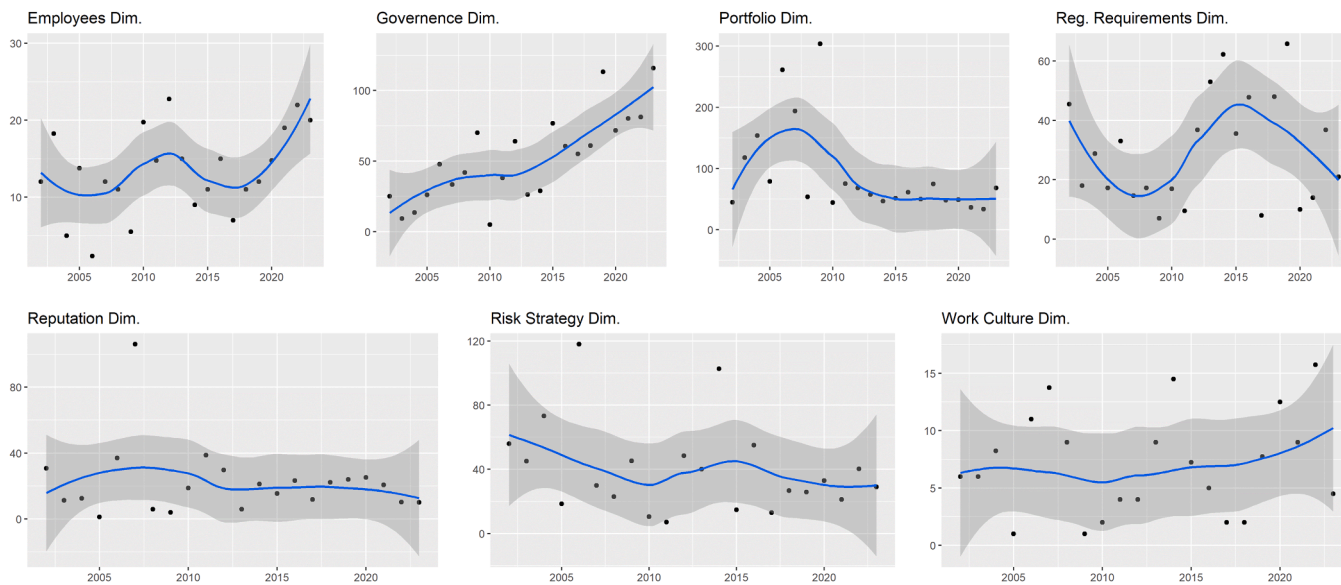
Fig. 1. Risk-Culture Dimensions Raw Frequency for the Highest Ranked BHC (Year Average).

Notes: BHCs are ranked using measure in (3) and the actual (raw) frequency as in (1) per dimension is visualized. Different BHCs may be ranked the highest for different dimensions in the same year.
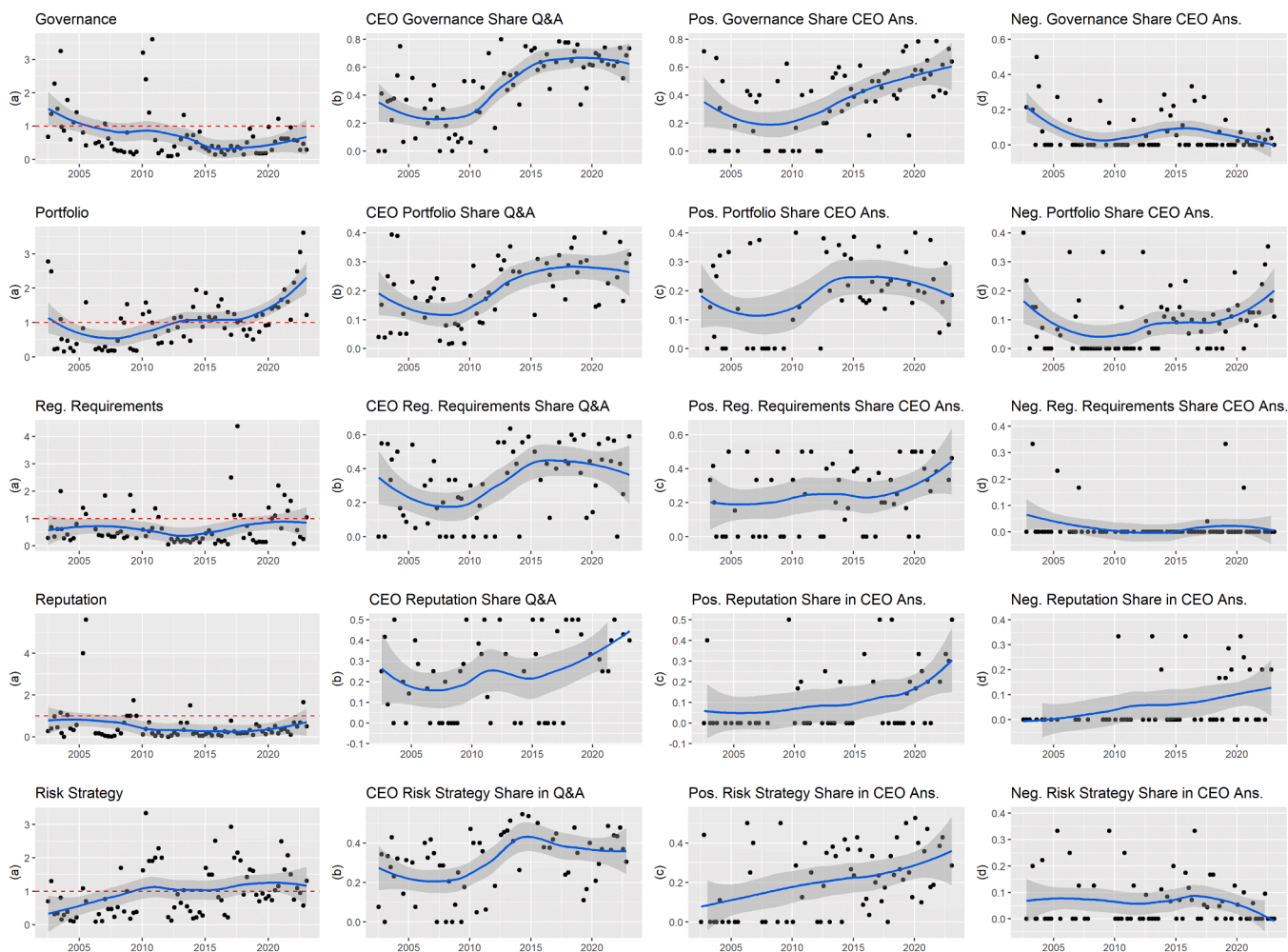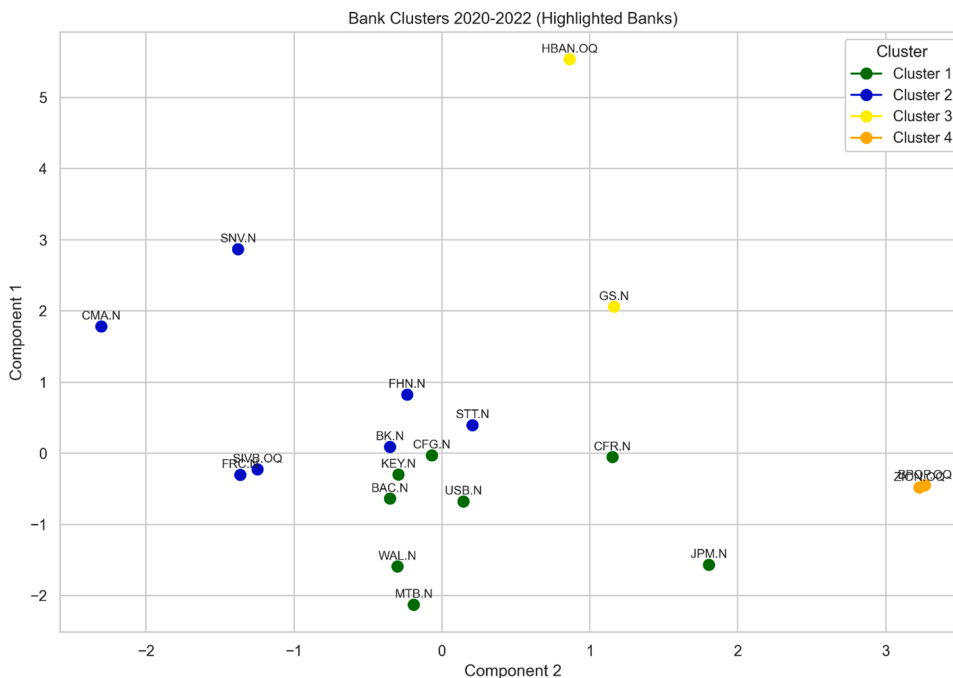

Fig. 2. SVB CEO Risk-Culture.

Notes: Panel (a) of each row is SVB ratio to the highest ranked BHC dimension frequency as in Fig. 1, Panel (b) is the share of SVB CEO answers per dimension, Panels (c) and (d) are the CEO shares of the positive and negative frequencies respectively.

Fig. 3. Bank CEO Risk-Culture Clusters January 2020 – December 2022 (Highlighted Banks).
Notes: BHCs are labelled with their Refinitiv Identification Code (RIC). For clear bank CEO risk culture cluster visualization, we use first 2 PCA components that capture the highest portion of variation in bank CEO risk culture and illustrate only BHCs highlighted in Hayes [10].

count for sentence sentiment in which risk-culture terms appear in, and use elements in (4) to construct bank CEO risk-culture indicators that also account for sentiment with (2) and (3) respectively.

2. Results: bank stability, SVB and bank CEO risk-culture clusters

Given the significance of the SVB's collapse [16], we illustrate quantified text with a specific focus on the SVB. First, similar to Li et al. [13], we compute measures in (3) for every BHC at the bank level and select banks with the highest obtained values for each risk-culture dimension. In Fig. 1 we visualise yearly average values for measure in (1) for these banks. This provides a simple benchmark that indicates yearly average raw risk-culture dimension frequency where this dimension was the most important part of the Q&A session.

We observe several noteworthy and expected patterns for the sector. For example, *portfolio* is the most frequently discussed during the GFC. In contrast, *regulatory requirements* are least mentioned prior to and during the GFC, picking up in its aftermath with tightening of banking regulation. *Risk strategy* dimension follows a similar pattern to the *regulatory requirements* with some spikes before the GFC, and in 2014 around the end of the last QE round in the US. *Governance* demonstrates a steady upward trend and matches with an overall stronger emphasis on better governance in banking [12]. *Reputation* dimension average year frequency is the most stable, and, while there are recent upticks in *work culture* and in *employees'* average frequencies, the latter two seem to be the least frequent.

Having constructed benchmark frequencies for risk-culture, we visualise five most frequent for SVB in Fig. 2.

Panels (a) in Fig. 2 present SVB ratio to the benchmark bank frequency at the bank level as follows:

$$TF_{j,t,SVB}^{(unadj)} \Big/ \overline{TF}_{j,T,Benchmark}^{(unadj)},$$

for $t \in T$, panels (b) demonstrate share of the CEO in the Q&A session as:

$$CEO\_TF_{j,t,SVB}^{(unadj)} \Big/ TF_{j,t,SVB}^{(unadj)},$$

Panels (c) and (d) display share of positive and negative CEO answers given by:

$$CEO\_TF_{j,t,SVB}^{(unadj-sentiment)} \Big/ CEO\_TF_{j,t,SVB}^{(unadj)}$$

respectively. With the simple composition above, we can systematically investigate SVB CEO risk-culture. We observe that SVB is behind the benchmarks (Panels a) for *governance* since 2011. *Reputation* follows the same pattern. In contrast, SVB is above the benchmark for *portfolio* and *risk strategy*, particularly since 2018, and largely in line with the benchmark for *regulatory requirements*.

We observe that CEO share for each dimension (Panels b, c, and d) follows a similar pattern, with a notable and steady increase after 2011, when the new and last CEO was appointed. Increased CEO shares across all dimensions signals a different and dominant CEO personality. This may point towards less room for alternative views within the SVB. In Fig. 1, we observe that *portfolio* receives the most attention in turbulent times. The sentiment decomposition in Fig. 2 demonstrates that higher frequency for *portfolio* is fuelled by the negative outlook of SVB portfolio, and this is visibly recognised by the top management as the CEO speaks in a more negative tone about it. In contrast, strictly positive CEO attitude towards *regulatory requirements* and dominantly positive CEO views towards *risk strategy* suggests that SVB's CEO viewed bank's compliance with regulation and risk strategy as sufficient measures to protect the bank's position from the potential negative impact of the portfolio problems. Alongside the lower score on *governance,* our observations for SVB bank CEO's risk-culture are in line with the explanations in relation to bank's downfall covered in the media.[6] However, our evidence is robustly based on the quantified ECs text information.

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[6] See https://www.ft.com/content/d60bd40a-ee57-4675-afd0-0d55e59f6bab and https://www.ft.com/content/1795b4a7-65b0-4053-a328-3c46c525ad71.

Table 2

Bank CEO Risk-Culture and Bank Stability Panel Regressions.

	(1) log(Z-Score$_1$)	(2) log(Z-Score$_2$)	(3) log(Z-Score$_3$)	(4) log(Z-Score$_4$)
Negative CEO Risk Culture$_{t-1}$	−0.120**	−0.097*	−0.115**	−0.016
	(0.059)	(0.056)	(0.059)	(0.067)
Positive CEO Risk Culture$_{t-1}$	0.007	0.000	0.005	−0.019
	(0.021)	(0.021)	(0.021)	(0.025)
log(TA)$_{t-1}$	−0.053	−0.101*	−0.058	0.097
	(0.064)	(0.061)	(0.063)	(0.095)
TL/TA$_{t-1}$	0.595*	0.542	0.614*	0.504
	(0.361)	(0.402)	(0.361)	(0.552)
E/TA$_{t-1}$	0.024*	0.038***	0.024*	0.019
	(0.013)	(0.012)	(0.013)	(0.017)
NPL/TL$_{t-1}$	−0.136***	−0.200***	−0.137***	−0.122***
	(0.022)	(0.028)	(0.022)	(0.025)
LIQ/TA$_{t-1}$	−0.018***	−0.011*	−0.018***	0.008
	(0.007)	(0.007)	(0.007)	(0.009)
CO/INC$_{t-1}$	−1.532***	−2.686***	−1.517***	−0.224
	(0.289)	(0.308)	(0.288)	(0.427)
Bank Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	1771	1780	1769	1093
R^2	0.520	0.574	0.521	0.452

Notes: dependant variables are the natural logarithms of the Z-scores as in Del Gaudio et al. [4], log(TA) denotes the natural logarithm of total assets, TL /TA gross loans on total assets, E/TA is equity on total assets, NPL/TL is nonperforming loans on gross loans, LIQ/TA liquid assets on total assets, and CO /INC the cost-to-income ratio. Two-way clustered standard errors are in parentheses and *, ** and ** denote corresponding 10%, 5%, and 1% significance levels. All variables are winsorised at the 1st and 99th percentile.

From the analysis we observe that positive tone does not necessarily identify bank stability as suggested by Del Gaudio et al. [4], and it is evident that context of tone may be also important. Therefore, we identify other BHCs whose CEOs demonstrated similar patterns of risk-culture to SVB. We use *k-means* clustering from *gensim* package to achieve this. Given that SVB portfolio problems are recognised at the CEO level around 2020, we present results for bank CEO risk-culture clusters for the period between 01 and 01–2020 and 31–12–2022 in Table 1 and for selected BHCs in Fig. 3.[7,8] We standardise risk-culture and use principal component analysis (PCA) to reduce the number of dimensions in our data [1]. We focus only on the positive and negative components of measure in (3) at the CEO level since Agarwal et al. [1] define strong risk-culture based on these components and select PCAs that capture about 60% of the variation across the fourteen dimensions.

We observe four distinct clusters for the selected BHCs in Fig. 3. It is important to point out that the majority of highlighted BHCs within our sample fall into two main clusters. These can be also separated by the highest and lower uninsured deposit ratio at around 60%, as outlined in Hayes [10]. We observe very close positions of bank CEO risk-culture for SVB and FRB demonstrating that the TSFT by the CEOs of the two failed banks were very similar between 2020 and 2022. Majority of BHCs which fall short of the 60% share for uninsured deposits are in a separate cluster with just a few exceptions.

Furthermore, out of the FSB's [7] list of G-SIBs, only Goldman Sachs is located in a separate cluster with a distinctive CEO risk-culture in recent years. Surprisingly, Bank of New York Mellon (BNYM) falls in the same cluster as SVB. Bank of America (BA) is closely positioned to BNYM, albeit located in a different cluster. These findings indicate a relatively similar TSFT set by CEOs in these two G-SIBs. FSB [7] sets higher supervisory and governance expectations from the G-SIBs;

however, we find that at least two of the US G-SIBs demonstrate a close TSFT patterns to recently collapsed or under pressure banks.

Having illustrated obtained risk-culture indicators, we proceed to the regression analysis and investigate the link between CEO risk-culture and bank stability. Similar to Goetz [8], we adopt Z-score as a measure of bank stability. Following Del Gaudio et al. [4], we use four variations of Z-score to conduct our empirical analysis.[9] We include a standard set of controls variables, similar to Bianchi et al. [2], as bank size (total assets), loan portfolio size (gross loans on total assets), capitalization (equity on total assets), loan portfolio quality (nonperforming loans on gross loans), liquidity (trading assets plus loans and advances with maturity less than 3 months on total assets), and efficiency (cost-to-income ratio) in our panel regressions. We obtain the annual bank financial data from FitchConnect over the 2002–2022 period and estimate the following regression:

$$Z - score_{i,t} = \beta_1 RC_{i,t-1}^{(neg)} + \beta_2 RC_{i,t-1}^{(pos)} + \sum_{k=3}^{K} \beta_k m_{k,i,t-1} + \alpha_t + \alpha_i + \epsilon_{i,t}, \quad (5)$$

where β_1 and β_2 are coefficients measuring the link of negative and positive risk-culture dimensions with the Z-scores, $RC^{(neg)}$ and $RC^{(pos)}$ are total sums over negative and positive CEO risk-culture dimensions in (3) similar to Li et al. [13] and Bianchi et al. [2], m is bank level controls, α_t and α_i are year and bank fixed effects, and $\epsilon_{i,t}$ is white noise residuals.

We report results in Table 2 in Columns 1 to 4. We find a negative and statistically significant coefficient for negative risk-culture components and Z-score in three out of four regressions, indicating that higher scores in negative CEO risk-culture decreases bank stability. Components of positive CEO risk-culture are insignificant in all regressions. In Model 4

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[7] Following Metrick & Schmelzing [14] on uninsured deposits of SVB, we visualise BHC listed in Hayes [10] and available in our sample to avoid figure overcrowding.

[8] While risk culture may vary over time, 3-year window, given our sample span is an optimal choice that is also used by Agarwal et al. [1] for risk-culture cluster detection and by Bianchi et al. [2] to standardise measures as in (3) for regression analysis.

[9] Z-score$_1$ is return on assets (ROA) plus capital-asset ratio divided by the standard deviation (SD) of ROA over a 3-year rolling window. Z-score$_2$ is sum of the 3-year moving average of equity to total assets (ETA) and the 3-year moving return on average assets (ROAA) over the 3-year SD of the 3-year moving ROAA. Z-score$_3$ is the sum of the 3-year moving average ETA and the current values of the ROAA over the 3-year SD of ROAA. Z-score$_4$ is the sum of the Tier 1 Ratio and the return on risk of weighted assets (RWA) over the 3-year SD of the return on RWA.

we lose 40% of the observations due to limited data availability for the risk weighted assets required to calculate the Z-score$_4$, which potentially contributes to the insignificant result there. Regression results confirm our SVB discussion and contribute to the findings in the relevant literature. In particular, Del Gaudio et al. [4] show that overall tone of the mandatory disclosures helps explaining bank risk taking while Bianchi et al. [2] demonstrate the value of bank risk-culture for bank profitability. Advancing this literature, we demonstrate that when it comes to the TSFT, it is more valuable to track statements characterising CEO risk-culture only in the negative context. Coming back to the SVB in Fig. 2, it is common, and may be important, for the bank CEO to be positive, neutral and reassuring; however, it is the negative tone that impacts on financial stability.

3. Conclusion

We examine the link between CEO risk-culture and bank stability utilising unique risk-culture indicators derived from ECs. Our findings indicate a weaker emphasis on risk governance by SVB and an environment where the CEO became more dominant in influencing risk-culture. We show that despite recognition of the portfolio problems, SVB's CEO's tone indicated that regulatory compliance and risk strategy of the bank would mitigate these risks. We observe an alignment between the risk-culture of SVB and other banks with the highest uninsured deposits as well as with two US G-SIBs. Supporting these findings, our regression analysis show that negative metrics of the CEO risk-culture decreases bank stability.

Overall, our findings imply that the TSFT can offer predictive insights into a bank's financial stability and be a valuable early-warning indicator of potential distress. We also show the value of information and importance of tracking for unscripted management tone, not commonly detected in the reports [4] or other formal disclosures [2], in order to maintain financial stability.

Data availability

Data will be made available on request.

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