Banks' Risk-Taking, Stability, and Competition

evidence from GCC

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ABSTRACT

The paper uses the Z-score, the standard deviation of return on assets, the impaired non-performing loans, and the risk-weighted assets to measure risk-taking while using the growth of the bank deposit ratio, the capital adequacy ratio, the assets quality measure, and the loan loss provision to measure stability. Using a two-step system GMM dynamic estimator and two proxies for competition, the HHI and the Lerner indices, the study tests the impact of competition on banks' risk-taking and stability. I find that higher competition increases the probability of banks engaging in risk-taking behavior and reduces the likelihood of their stability.

Introduction

Banks' risk-taking and stability are closely linked. While risk-taking can potentially enhance profitability, it needs to be managed prudently to ensure the stability and resilience of the bank. Achieving an optimal balance between risk-taking and stability is crucial for banks to thrive in a competitive environment while safeguarding against systemic risks and financial crises.

Literature Review

In banking risk literature, risk-taking and stability have been extensively used as indicators for bank financial risk exposure (e.g., Saif-Alyousfi et al., 2020; Dalwai et al., 2021; Kasman and Kasman, 2015; Tabak et al., 2016; Ashraf et al., 2016). A huge number of previous studies have used the Z-score as a proxy for both risk-taking and stability. In the literature, different proxies are used to measure banks' risk-taking. First, a huge number of previous studies (e.g., Nguyen, 2020, 2021; Phan et al. 2022; Dwumfour 2017; Bai et al. 2020; Marcelin et al. 2022; Tabak et al. 2016; Zhang and Wu 2020; and Wang et al. 2024), measure Z-score as (ROA + E/A)/ σ(ROA), where ROA is the return on assets, σ(ROA) is the standard deviation of ROA and E/A is the equity on assets ratio. Second, some studies (e.g., Saif-Alyousfi et al., 2020; and Dalwai et al., 2021) measure Z-score as the standard deviation of return on assets (σROA). According to this definition, the Z-score reflects the variability of ROA.

Hypothesis

H: There is a positive (negative) association between banks' competition and their risk-taking (stability).

Methods and Data

The study includes banks listed in the GCC Stock Exchanges. After excluding banks with incomplete data, the sample comprises a regression analysis involving 42 banks over the period 2014 to 2021, totaling 336 bank-year observations. The regression analysis used the two-step system GMM dynamic estimator to regress risk-taking and stability (dependent variables) on the lag of the dependent variables, competition variables (HHI index and Lerner index), regulation variable (REG), financial variables (CIR, EAR, LIQ), bank-specific variable (Size), and other economic control variables (GDP and INF). The GMM is more efficient for heteroskedasticity and helps to solve the endogeneity problem between risk-taking, stability, and competition measures. The Z-score, SDROA, GDR, HHI, and Lerner index were calculated, The CAR, NPL, RWA, AQM, LLP, CIR, EAR, LIQ, and Size were extracted from the Arbis Bank Focus database banks, the COMPUSTAT Global, the banks' annual reports, or the banks' websites, the GDP, INF, and REG variables were extracted from the World Bank

Table 1: Summary statistics

Variable	N	Mean	St. dev.	Minimum	Maximum
Z-score	336	1.803	1.923	0.004	13.65
SDROA	336	.0169	0.137	0.010	0.936
GDR	336	0.583	0.083	-0.254	0.377
CAR	336	0.188	0.432	0.107	0.462
NPL	336	0.024	0.027	0.003	0.431
RWA	336	16.66	0.968	13.84	18.55
AQM	336	0.627	0.106	0.164	0.844
LLP	336	0.027	0.025	0.001	0.420
HHI	336	3.348	0.178	3.135	3.653
Lerner	336	0.336	0.144	-0.040	0.650
REG	336	99.57	6.308	93.00	111.0
Size	336	7.286	0.860	1.143	8.516
CIR	336	0.409	o.124	0.189	0.986
GDP	336	10.37	0.439	9.724	11.44
EAR	336	0.130	0.025	0.735	0.222
LIQ	336	0.235	0.098	0.0483	0.668
INF	336	0.013	0.017	-0.025	0.041

Empirical Results

The findings from the two-step system GMM dynamic estimator are presented in Table 4. All lagged variables estimators are positive and significant, confirming persistence in risk-taking and stability. Panel A of Table 4 shows that HHI (as a proxy for competition) is positively associated with Z-score and negatively associated with SDROA (as proxies for risk-taking). This result shows that higher competition increases the likelihood of risk-taking. In a highly competitive market, banks face pressure to generate higher profits to remain competitive. This pressure can lead banks to seek out riskier investments or lending opportunities that offer higher returns, even if they come with higher levels of risk. This finding agrees with Saif-Alyousfi et al. (2020) and Dalwai et al. (2021) which indicates that higher competition signals a higher level of risk-taking.

Panel B of Table 4 shows that HHI is positively associated with GDR and CAR as proxies for bank stability. This means that higher competition (lower HHI) decreases the likelihood of stability. Higher competition among banks increases the pressure on profit margins as banks may engage in aggressive pricing strategies to attract customers. To undercut competitors, banks may lower interest rates on loans and deposits, reducing their net interest margins and overall profitability. This can weaken banks' financial performance and erode their ability to absorb losses, potentially compromising their stability.

In summary, the results in Table 4 support the hypothesis regarding the positive (negative) association between competition and risk-taking (stability).

Table 4:

Variables	Panel A				Panel B			
	Z-score		SDROA		GDR		CAR	
	Coef.	z-values	Coef.	z-values	Coef.	z-values	Coef.	z-values
Lag Z-score	.244	2.57***						
Lag SDROA			.189	1.71*				
Lag GDR					.227	1.98**		
Lag CAR							.438	2.64***
HHI	5.28	2.37**	-.945	-2.59***	.167	1.72*	.084	2.61***
REG	.039	0.78	-.019	-1.00	.007	1.84*	.001	1.25
Size	.997	1.97**	-.085	-2.05**	.024	1.66*	.015	3.40***
CIR	-3.36	-0.76	-.188	-0.62	-.153	-1.42	.075	2.38**
GDP	-1.21	-1.39	.063	0.30	-.074	-1.15	-.002	-0.16
EAR	37.9	2.47**	-5.10	-2.27**	.658	1.12	.120	1.76*
LIQ	7.09	2.17**	-.262	-1.33	-.593	-3.28***	-.058	-1.15
INF	22.5	3.08***	-1.26	-2.32**	-.029	-0.09	.083	1.08
Constant	-20.5	-1.81*	5.29	2.66***	.096	0.22	-.205	-1.65*
Country dummies	Yes		Yes		Yes		Yes	
Year Dummies	Yes		Yes		Yes		Yes	
Observations	336		336		336		336	
Wald-test	P-value = .000		P-value = .000		P-value = .000		P-value = .000	
Hansen	P-valu = .670		P-valu = .227		P-valu = .310		P-valu = 1.00	
AR(2)	P-valu = .264		P-valu = .895		P-valu = .268		P-valu = .178	

Robustness check

I run two robustness tests to corroborate the research findings and test the sustainability of its results. First, I replaced the Z-score, SDROA with NPL and RWA, and the GDR, CAR with AQM and LLP. In the second robustness test, I replaced the Herfindahl–Hirschman index (HHI) with the Lerner index. Lerner index focuses on individual bank market power rather than the overall concentration (as in the HHI index).

Conclusion:

The findings indicate that increased competition heightens the probability of banks engaging in risk-taking behavior and reduces their stability. Furthermore, the results reveal that banks with higher (lower) cost-to-income ratios, liquidity, and inflation rates (regulation, size, and GDP growth) are associated with higher (lower) risk-taking, whereas banks with higher (lower) levels of regulation, size, equity-to-assets ratios, and liquidity (cost-to-income ratios) are linked to greater stability.