

RELATION BETWEEN CYCLICAL BEHAVIOR, BANK LENDING AND FINANCIAL STABILITY FOR CONVENTIONAL BANKS IN GOLF COOPERATION COUNTRIES

Amara Tijani, Assistant Professor, Hight Institute of Business Administration, Gafsa University, Tunisia

Adresse mail: (tijani_amara@yahoo.fr)

Wissem Ben Ali, Assistant, Hight Institute of Business Administration, Gafsa University, Tunisia

Adresse mail: wissembenali11@gmail.com

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Abstract

This study aims to test the cyclical behavior of banking stability using panel dynamic data in GMM estimator on a comprehensive dataset of 73 banks, from selected Golf Cooperation Countries for the period of 2000-2019, we find that cyclicity and banking risk have a negative impact, demonstrating that financial stability is procyclical. Furthermore, our results document that credit activities rises bank risk while also increasing bank equity to maintain banking stability. Our results shows that the relationship of conventional banks cyclicity's with capital regulation and credit activities may vary with bank size. As a result, small bank credits and capital are procyclical by banks reducing their credit activities and equity requirements, unlike large bank, which are anticyclical.

Keywords : financial stability , procyclical , bank capital , bank lending, size

1. Introduction

The Subprime crisis demonstrates a high link with markets capitalization and economic growth. Amisano and Tristani (2011) point out, has highlighted one of the most salient characteristics of sovereign debt in the eurozone crisis, owing to its progressive spread across several countries. The most crucial pressing attention on financial stability. If financial crisis lead to bankruptcy of European banks, the banking instability that would ensue might affect the economy. This sort of sign emphasizes the exigence of identifying and comprehending the cyclicity of banking risks. We look at the procyclicality of banking stability, which is identified as taking risk of banks, from 2000 to 2019. Over the business cycle, we analyze whether bank risk-taking is procyclical or countercyclical. We look at whether Golf Cooperation Countries commercial banks' financial stability is procyclical or not during economic growth. The link relates cyclicity behaviour with bank risk is referred to as bank stability cyclicity. A positive association indicates financial stability that is countercyclical, whereas a negative relationship indicates financial instability that is procyclical. This resaerch adds the existent literature many contributions. Hence, it makes use of the most comprehensive set of data available from 73 commercial banks in 6 golf zone. Through out

the financial crisis, Gulf Cooperation Countries banks considered as risky sources for international markets, and attention on GCC banking sector grew in crisis periods. Furthermore, the recent global financial crisis, as well as significant output losses in some GCC countries, has reduced bank refinancing expenses. These expenses have a significant influence on the economy, necessitating a comprehensive identification for cyclical banking risk. We are focusing on the GCC since they need a coordination on their economic and budgetary requirement than other country. According to Poghosyan and Ihak (2011), one of the most compelling arguments of banking requirement is the belief that the in the banking risks sectors for GCC are becoming increasingly homogeneous. For supervisors concerns of supporting related to the GCC new banking regulation, a better understanding of bank risk swings throughout the course of the business cycle in the GCC zone is critical. The second addition of this research it broadens the studies has hitherto focused on the impact of cyclical nature of bank credit and bank equity on banking stability, as well as the cyclical nature of bank risk and equity. Bank failure (Z-score) worldwide risk's is identified in this study as a proxy of banking stability at the bank level. To exhaust all of the bank's own capital, the cote Z is the number of type differences by which the returns should be reduced relative to the average. As a result, higher Z-score values show a higher level of banking stability and lower risk level. The Z-score has been widely identified in many studies about the proxies and factors of financial institution security and stability (Amara and Mabrouki., 2019 ;Angkinand et Wihlborg, 2010; Beck et coll., 2012).

In this research, we differentiate between the inverse of the Z-score for asset return (ZA) and the inverse of the Z-score for capital return (ZE). Given that banks (particularly commercial banks) must take risks in order to make a profit, they frequently face bankruptcy when taking risks. The third addition is the regression of dynamic panel data GMM approach for in order to evaluate the financial stability cyclicalities of. The final addition is that, in contrast to other paper, we will conduct two fractionation experiments to see if the cyclical nature of banking stability varies depending on bank size.

Our results demonstrates the procyclicality behavior of banking stability in the GCC zone banks. According to Amara and Najjar (2021) ,this result stands up to a variety of panel and test specifications. Hence, for economic growth, conventional banks' risk-taking for GCC zone reduces, while for ralentissements period, bank executives are take more risk. The GCC zone's banks are implicitly insured by deposit guarantee, which causes higher risk level. Bouheni et al, (2017) proposed the perspective theory, which might explain such behavior. As a result, it is acceptable to claim that executives are motivated to boost taking risk while the bank is in trouble (Zhang et al., 2016). Second, our findings document that bank lending rises bankruptcies and banking instability, whereas equity obligation maintain financial stability. This result is similar to that of Schularick and Taylor (2012), who examines the long-term currency's cyclical nature and macroeconomic indicators using a historical data set for 14 developed countries from 1870 to 2008. They search the recurring instability causes in emergent economies, and they conclude that the effect of lending in banking sector has risen dramatically in recent century. Furthermore, they find that credit expansion, according to Schularick and Taylor (2012), is a strong indicator of financial crises. Furthermore, we see

significant link with economic cycle and credit, as well as with equity, showing that procyclicality of bank credit and equity motivates bank risk while negatively affecting the commercial banks stability's. These bank equity cyclical conclusion are in line with those of Behr et al.(2017) , they found that capital buffer maintain positive relationship. Andrieş and al. (2021), on the other hand, finds negative link of cyclical behavior with volatility assets, for data from American bank portfolio management companies for the period 1992:T1-2011:Q3.

Furthermore, we would like to point out that the requirements for bank capital and loans associated with conventional banks cyclicalities are dependent on bank size. As a result, small bank leverage and bank equity are procyclical, whereas large bank are anticyclical. We came to the conclusion that bank capital and lending behavior are both influenced by bank size. As a result, small banks have a tendency to engage in activities that are similar to those seen in the real economy. As a result, they decrease their lending and equity requirements,during recessions. However, large banks run differently: during economic downturns, they reduce their leverage activities and need more cash, whereas during economic upturns, they increase their cash requirements. According to Andrieş and al. (2021), large banks may discourage people from taking excessive risks in order to keep their charte or growth. Bertay et al. (2015) believe that size of banks determines bank's status influence, which is too big to fail. Large banks may concerned in riskier credits activities, if information asyetric may arise for them as a result of a government's security file, which is implemented by implicit policies that are too big to fail.Indeed, the banking stability for six major countries that have received renflouements in the GCC zone (Oman , Kuwait,Quatar , Saudia, Bahrain and Emirates) is anticyclical, indicating that they are able of the economic cycle and continue to have difficulties. However, financial stability is procyclical for European countries without Troka assistance, explaining that economic growth, European conventional banks decrease their risk by anticipating higher bankruptcy.This research is designed as follows. Data and methodology are presented in section 2 .The main results are shown in section 3 and section 4 conclude.

2. Methodology and hypothesis development

2.1 Model:

we will proceed to regression models and we use specific data for it. For our sample we use the estimation's techniques of dynamic models in panel by applying the method of the generalized moments (GMM). Thus, the generalized Moments method (GMM) was introduced by Holtz-Eakin, Newey and Robsen (1988), Arrelando et al . (1991,1995). This method has several advantages at the level of the data panel namely the control of simultaneous bias, causalities and the omission of variables. In addition the GMM method allows to control both the specific and temporal effects and to compensate for the endogeneity biases of the variables especially in the presence of several delays of the dependent variable as explanatory variable.

We therefore estimate the following models equations:

$$\text{Financial stability}_{i,t} = \alpha_0 + \beta_1 \text{Business cycle}_{i,t} + \beta_2 \text{Bank capital}_{i,t} + \beta_3 \text{Bank Lending}_{i,t} + \beta_4 \text{Performance}_{i,t} + \beta_5 \text{Bank characteristics}_{i,t} + \beta_6 \text{Bank Macro}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\text{Financial stability}_{i,t} = \alpha_0 + \beta_1 \text{Business cycle}_{i,t} + \beta_2 \text{Bank capital}_{i,t} + \beta_3 \text{Bank Lending}_{i,t} + \beta_4 \text{Performance}_{i,t} + \beta_5 \text{Interaction term}_{i,t} + \beta_6 \text{Bank characteristics}_{i,t} + \beta_7 \text{Bank Macro}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where each variable is defined below:

Financial stability

It's referring to insolvency risk, identified by two proxies ZA and ZE.

H1: Financial stability affects business cycle negatively.

Business Cycle :

It designs the real economic activity, measured by Gross Domestic Product Growth and Gross Domestic Product Growth per capita.

H2: Cyclicalitly affects bank stability negatively.

Bank Capital

It proxied by CAR TA, ETA, and TRG

H3: Capital ratio affects negatively bank stability

Bank Lending

It indicates lending activities and proxied by LA and LLP.

H4: Bank Lending affect bank stability positively

Bank performance:

It measured by ROA and ROE.

H5: Bank performance affects bank stability negatively.

Bank characteristics

It's a vector of variable such as Bank size (SIZE), Bank deposits (DTA), Bank liquid (LIQ).

Macro-variable

we use annual inflation rate (INF).

H6: inflation ratio has a negative impact on bank stability

2.2 Data

Our data comprises annual observations of 73 conventional banks for GCC region banks between 2000 to 2019. Bank financial data is taken from Bankscope and Bureau van Dijk database. Macroeconomic data such as, inflation rate, are taken from World Bank. Table 1 provides variable's definition and its source.

Table 1. Variable measures and data sources.

Variables	Acronym	Measures	Sources
Main variables			
Financial stability	ZA	The inverse of Z_Score for $ROA=(ROA+ETA)/\sigma ROA$.	Bureau Van Dijk and author's measures
	ZE	The inverse of Z_Score for $ROE=(ROE+ETA)/\sigma ROE$.	Bureau Van Dijk and author's measures
Independent variables :			
Cyclicality	GDP_G	log of annual GDP growth	World bank
	GDP_PC	log of annual GDP per capita growth	World bank
Bank capital	ETA	ratio of equity to total assets.	Bureau Van Dijk and author's measures
	CAR	Tier-1 capital ratio divided by total risk-weighted assets	Bureau Van Dijk and author's measures
	TRG	Total regulatory capital ratio	Bureau Van Dijk and author's measures
Bank lending	LA	Net loans to total assets.	Bureau Van Dijk and author's measures
	LLP	Total loan loss provision to total assets.	Bureau Van Dijk and author's measures
Interaction terms	BC*L	The interaction between business cycle (BC) and lending (L)	Bureau Van Dijk and author's

			measures
	BC*C	interaction of business cycle (BC) with banking capital (C)	Bureau Van Dijk and author's measures
Performance	ROE	Return on equity	Bureau Van Dijk and author's measures
	ROA	Return on assets	Bureau Van Dijk and author's measures
Control variables			
Bank size	SIZE	Log of total assets	Bureau Van Dijk and author's measures
Bank deposits	DTA	The ratio of total deposits to total assets	Bureau Van Dijk and author's measures
Bank liquid	LIQ	The ratio of liquid assets to total assets.	Bureau Van Dijk and author's measures
Country macro specific indicator			
Inflation	INF	Annual inflation rate	World bank

Source: by authors

Table 2. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ZA	1.819	25.54623	513.8585	-3480.43	20979.9
ZE	1.819	3.327758	91.9588	-3480.43	514.417
GDP_G	1.819	5.042413	3.95441	-7.07586	26.1702
GDP_PC	1.819	4.412958	.216045	3.92819	4.92981
ETA	1.819	32.25416	26.0046	-51.55	99.819
CAR	1.819	22.61711	18.8931	-10	223.12

TRG	1.819	26.66114	20.5717	-13.1	223.12
LA	1.819	47.67282	25.80639	0.064	99.506
LLP	1.819	0.0021811	0.23954	-5.5	2.66667
ROE	1.819	8.932261	25.76916	-519.149	95.593
ROA	1.819	2.488875	6.30734	-55.487	80.5
SIZE	1.819	3.466981	0.923775	1.05596	6.21066
DTA	1.819	0.60368	0.477216	0.00045	16.7173
LIQ	1.819	-0.00047	0.22682	-5.5	0.71428
INF	1.819	2.94471	2.8889	-4.9	15.1

Source : stata 15

Table 2 summarizes statistics on banking risk factors, explanation variables, and control variables. The average financial performance value indicates that the bank is profitable and efficient. The average **ZA** of 25.54623 ranges from -3480.43 to 20979.9. The **GDP_G** has a mean value of 5.042413, with a range of values from -7.07586 to 26.1702, which is higher than the average **ZE** of 3.327758, with a range of values from -3480.43 to 514.417; the average value of **GDP_PC** is 4.412958, with a range of values from 3.92819 to 4.92981. The average **ETA** is 32.25416, ranging from -51.55 to 99.819. **LA** has a range of values ranging from 0.064 to 99.506, with a mean of 47.67282; **ROE** range from -519.149 to 95.593, with a mean of 8.932261; and **ROA** has a range of values ranging from -55.487 to 95.593, with a mean of 2.488875.

Table 3: Correlation matrix

ZA	ZE	GDP_G	GDP_PC	ETA	CAR	TRG	LA	LLP	ROE	ROA	SIZE	DTA	LIQ
1.0000													
0.1160	1.0000												
0.000													
-0.027	-0.022	1.0000											
0.238	0.331												
0.011	-0.024	0.148	1.0000										
0.624	0.293	0.000											
0.053	-0.010	-0.050	0.007	1.0000									
0.021	0.642	0.032	0.749										
0.019	0.071	-0.090	-0.053	0.822	1.0000								
0.547	0.024	0.004	0.092	0.000									
0.024	0.088	-0.087	-0.110	0.820	0.981	1.0000							
0.400	0.002	0.002	0.000	0.000	0.000								
-0.023	-0.006	0.017	-0.040	-0.380	-0.183	-0.134	1.0000						
0.331	0.780	0.483	0.093	0.000	0.000	0.000							
-0.000	0.007	-0.010	-0.039	-0.084	0.004	-0.006	0.085	1.0000					
0.987	0.776	0.689	0.135	0.001	0.901	0.842	0.001						
-0.010	0.004	0.128	-0.070	-0.095	-0.101	-0.107	0.198	-0.129	1.0000				
0.670	0.834	0.000	0.002	0.000	0.001	0.000	0.000	0.000					
0.008	0.019	0.197	-0.065	0.194	-0.005	0.086	0.026	-0.016	0.473	1.0000			
0.705	0.404	0.000	0.005	0.000	0.87	0.003	0.274	0.53	0.000				

						2			1					
-0.019	-0.019	-0.000	0.111	-0.334	-0.191	-0.242	0.369	0.042	0.109	-0.123	1.0000			
0.395	0.409	0.998	0.000	0.000	0.000	0.000	0.000	0.104	0.000	0.000				
-0.034	-0.053	0.058	-0.008	-0.498	-0.716	-0.344	0.168	0.053	0.078	-0.101	0.237	1.0000		
0.155	0.027	0.017	0.738	0.000	0.000	0.000	0.000	0.045	0.001	0.000	0.000			
0.004	0.009	-0.007	-0.030	-0.079	0.103	0.074	0.106	0.962	-0.003	0.023	0.058	0.051	1.0000	
0.851	0.719	0.766	0.238	0.002	0.001	0.014	0.000	0.000	0.889	0.378	0.025	0.050		
-0.004	-0.058	0.193	0.394	-0.002	-0.107	-0.083	0.007	-0.015	-0.007	-0.020	0.065	-0.001	-0.008	
0.839	0.014	0.000	0.000	0.923	0.000	0.005	0.763	0.574	0.749	0.404	0.006	0.962	0.763	

Source:

Stata

Outputs

Table 3 shows the Pearson correlation coefficients between the variables in the model. The coefficients of correlation are usually less than 0.8, indicating a low level of correlation between the variables. When the correlation is more than 0.8, according to Kennedy (2008), multicollinearity is a serious problem. Indeed, the results suggest that problems of multicollinearity may be safely ignored in our regressions. In addition, the matrix provides some intriguing preliminary findings. In fact, the correlation between financial stability indicators (ZE, ZA and the business cycle (GDP-G and GDP-PC) is often negative, indicating that financial stability is procyclical.

3. Estimation results

3.1 Base model: cyclical impact on financial stability

Table 4 :Effect of cyclical behavior on financial stability

	(1)	(2)
	ZA	ZE
L.ZA	-0.0101***	
	(-96.84)	
L.ZE		0.0221***
		(94.04)
GDP-G	-0.362***	-0.0148***
	(-8.28)	(-5.05)
GDP-PC	-45.50***	-8.267***
	(-40.55)	(-43.45)
ROA	0.542***	-0.0613**
	(4.17)	(-2.27)
ROE	-0.889***	-0.141***
	(-59.43)	(-19.60)
LA	1.415***	0.143***
	(56.83)	(46.75)
LLP	150.5***	24.34***
	(-37.25)	(-15.77)
ETA	-1.316***	0.467***

	(18.53)	(62.94)
CAR	-1.967***	-0.164***
	(-44.04)	(14.87)
TRG	-0.413***	-0.121***
	(6.65)	(-8.55)
DTA	195.1***	5.316***
	(-51.25)	(18.19)
LIQ	189.1***	-5.699***
	(29.56)	(-3.04)
SIZE	83.63***	6.220***
	(114.95)	(32.29)
INF	-1.286***	-0.0189***
	(-16.00)	(-3.10)
AR(2)(p-value)	0.2844	0.2974
Sargan(p-value)	1.0000	1.0000
Instruments	202	202
N	838	838
<p>Notes : ZA, ZE, GDP-G, GDP-PC , LA, LLP, CAR, ETA,TR , ROA , ROE , LIQ, SIZE, DTA, INF : are the inverse of Z_Score of ROA ,the inverse of the Z_Score of ROE, GDP growth natural, log of GDP per capita growth.</p> <p>Logarithm of total assets, total deposits to total assets, logarithm of consumer price index. T-values are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively</p>		

We consider two different forms of estimation. We call Equation (1): "base model", Equation (2): "extensible model." Table 4 shows the estimation of the first equation, that evaluates business cycle impact on bank stability to determine if it's procyclical or not. We discovered that risk coefficients are negatively significant. When the two measures of business cycle are taken into account, the impact of business cycles on banking risk are, for the most part, negative. When we compare ZE and ZA proxies of bank risk, we find a statistically significant negative coefficient of business cycle, indicating procyclicality of bank stability. In both estimations, a rise of 1% in the two measures of business cycle is associated with a reduction of 0.1% to 3.62 percent in the risk of bankruptcy. This finding is consistent with Andrieș's and al. (2021) empirical study, which found that the macroeconomic environment has an impact on bank risk profiles. Saying differently, for economic growth, commercial banks in the GCC take less risk, while during periods of retrenchment, bank executives are less risk averse. The GCC banks are implicitly insured by deposit guarantee, causing a high risk level. Bank directors are capable of taking excessive risks since their losses and gains are limited. Bouheni et al. (2017) proposed the perspective theory, which might explain such behavior. As a result, Zhang et al., 2016 document that it's reasonable to believe that bank executives are motivated to increase risk-taking in a difficult circumstance. The activity of lending has a positive sign, indicating that bank credits rise with bank risk, implying that more concentration on credit activities are less stable; their range from 1,415 to 150,5. According to Baron and Xiong (2016), after the subprime crisis, a powerful point of view supports the idea that lending growth reflects banks' more risk-taking due to asymmetrical information with investors (Allen et al., 2000; Bebchuk et al., 2010).

In contrast, bank equity measures, namely ETA, CAR and TRG impact negatively bank risk indicators (ZA) at a 1% significance level. The range of their coefficients from 0.121 to 0.467. Our findings suggest that banks with more capital are more stable. This is in line with Köhler's conclusions (2014). These are consistent with those of Carvallo et al. (2015), who looked at the variation of capital buffer throughout the course of the business cycle in 13 Latin American countries. They discovered that equity affects GDP growth negatively and significantly. They explain that bank equity volatilities are more likely to fluctuate in a procyclical manner than banks that maintain a high level of equity adjustment.

For bank-specific control variables, the LIQ affects banking risk positively for 1% significance level, showing that high liquid assets are much more contributive to banking risk. As a result, banks offer liquidity by transforming illiquid assets to liquid assets, but this led to illiquidity risk if depositors demand massive withdrawals for assets they hold. Furthermore, we monitor bank size measured by log of total assets. The findings document that the bank size affects significantly and positively bank risk. If the bank risk increases by 1%, the estimated SIZE coefficients range from 6,220 to 83, 63. This agrees with Andrieș and al. (2021) who maintain that large banks take higher risk investments, given that large-sized banks are much more involved in diversification activities and enhanced to invest in different markets than small ones.

3.2 Base model: relation among cyclical, banking stability, equity, and credit activities

Our results of the banking risk implications of the link relate the cyclical behavior, capital, and credit activities are shown in Table 5. The negative link relates cyclical with bank risk of GCC zone conventional banks confirms that banking procyclicality is. Hence, interaction terms indicate a significant links of cyclical with bank lending activities and banking equity (BC*L, BC*C). As a result, the cyclical behavior of bank credit activities and equity raises default risk and has negative consequences for banking stability in the GCC zone. Guidara et al. (2013) found that capital buffer in Canada move in lock step with economic cycles, indicating a positive correlation. This contradicts Andrieş and al. (2021) concluding the non-cyclical of capital buffer, based on data from American bank portfolio management companies from 1992:T1 to the third quarter of 2011. He document that Basel Accords III show that countercyclical flow capital buffer into banks is required for enhancing economy perform.

ROA and ROE coefficients are both negative, as one might expect. This indicates that the ROA and ROE help to reduce risk, which meant that banks are more motivated to expand their balance sheets by trusting on debt rather than their own capital. In the risk equation, a higher liquid asset is associated with lower non-performing loan ratio, which showing by the significant and negative liquidity ratio (LIQ).

Table 5: relation among cyclical, banking stability, equity, and credit activities

	(1)	(2)
	ZA	ZE
L.ZA	-0.0230***	
	(-155.90)	
L.ZE		0.0131***
		(38.80)
GDPG	-0.324***	-0.0179**
	(-9.69)	(2.31)
BC*L	4.051***	0.666***
	(50.51)	(82.17)
BC*C	3.997***	0.806***
	(-13.13)	(-38.59)
ROA	-0.765***	-0.293***

	(-6.15)	(-10.12)
ROE	-0.803***	-0.134***
	(-35.97)	(-28.49)
LA	-16.84***	-2.752***
	(-47.12)	(-75.68)
LLP	-137.3***	-23.69***
	(-29.23)	(-24.52)
ETA	16.98***	3.858***
	(12.71)	(39.05)
CAR	-2.946***	0.0842***
	(-25.95)	(5.30)
TRG	2.214***	0.0659***
	(18.18)	(4.50)
DTA	-168.5***	5.108***
	(-52.66)	(7.99)
LIQ	-158.0***	-8.491***
	(17.26)	(-5.74)
SIZE	35.82***	-3.208***
	(63.36)	(-17.18)
INF	3.362***	0.389***
	(-40.87)	(-34.27)
AR(2)(p-value)	0.2766	0.2996
Sargan(p-value)	1.0000	1.0000
Instruments	203	203
N	838	838
Notes : ZA, ZE, GDP-G, BC*L, BC*C , LA, LLP, CAR, ETA,TR , ROA , ROE , LIQ, SIZE, DTA, INF : is the inverse of Z_Score of ROA ,the inverse of the Z_Score of ROE, GDP growth natural logarithm, interaction of business cycle (BC) with lending (L), interaction of		

business cycle (BC) with bank capital (C)

Logarithm of consumer price index . T-values are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively

Source: stata15

Size banks (Size) has positive impact. Co-movements of cyclicity, credit, and capital, as presented in Table 4, showing the influence evolution of liquidity in relation with table 4 findings. As consequence, bank's cyclicity credits activities and bank capital has decreased banks incentives having liquid assets to participate in high riskier activities. The adaption of the DTA creates direct-mixed effects with deposits and bank risk, as noted in recent findings.

Finally, the effect of inflation (INF) on banking risk are positive, implying that banking stability tend to decline.

In conclusion, we document a negative sign relates cyclicity behavior and bank risk, suggesting that banking stability is procyclical, based on extended model which confirm our hypothesis. Furthermore, our results maintain positive correlations with cyclicity behaviour, bank credit, and bank equity, implying that procyclicality of bank credit activities and equity rises bank riskiness and decrease bank stability for CCG zone.

3.3 Robustness check

Several robustness tests are being considered to assess the sensitivity of our findings. To begin, we divided our sample into two sub-samples following Mkhair et al.(2021), we distinguish into banks size by classifying large and small ones as those whose total assets exceed the mean and other whose total assets are under the mean.

Table 6 and 7 show how cyclicity behavior affects significantly and negatively bank risk at 1% level depending on bank size showing that a 1% increase in a country's GDP results in a 1% reduction in banking risk. Our results support the procyclical behavior of banking stability in both banks size. The large banks maintain negative correlations with bussiness cycle and bank credit, as well as with bussiness cycle and bank necessities. In contrast, for small size, the associated interaction (BC*L, BC*C) for cyclicity persist positively significant. This explains that capital cyclicity and bank credits are depending on different size of bank. Andrieş and al. (2021), large banks are more involved than small banks to participate in risky behavior because they are engaged in diversified activities and improved to invest in different markets. As a result, credit activities and capitalization enhance cyclicity for small sized banks, but loans and capitalization for large ones are anticyclical. Likewise, Mkhair et al.(2021) show that capital buffer for large banks maintain negative sign, unlike small ones show a positive sign, using a non-equilibrated sample of European banks. This results is consistent with the negative co-movement of capital buffer intensifies bank cyclicity.

Table 6: Cyclical behavior of large banks

	(1)	(2)
	ZA	ZE
L.ZA	-0.0305***	
	(-106.59)	
L.ZE		0.00783***
		(50.57)
GDPG	-0.446***	-0.000422
	(-9.50)	(0.04)
BC*L	-4.865***	-0.686***
	(51.55)	(78.43)
BC*C	-4.552***	-0.724***
	(-12.97)	(-31.31)
ROA	-1.876***	-0.256***
	(-12.93)	(-16.01)
ROE	-0.891***	-0.155***
	(-20.75)	(-51.66)
LA	-19.98***	-2.829***
	(-49.18)	(-73.65)
LLP	-710.8***	-28.64**
	(-9.00)	(-2.17)
ETA	18.55***	3.262***
	(11.76)	(32.15)
CAR	-3.988***	0.0954***
	(-40.47)	(6.23)
TRG	3.498***	0.165***
	(35.67)	(9.42)

DTA	-290.6***	-3.524***
	(-73.55)	(-7.31)
LIQ	811.9***	-16.47
	(8.32)	(-1.02)
SIZE	57.82***	-1.247***
	(94.40)	(-14.58)
INF	-3.914***	-0.487***
	(-26.83)	(-43.19)
AR(2)(p-value)	0.2784	0.3015
Sargan(p-value)	1.0000	1.0000
Instruments	203	203
N	599	599

Notes : ZA, ZE, GDP-G, BC*L, BC*C , LA, LLP, CAR, ETA,TR , ROA , ROE , LIQ, SIZE, DTA, INF : is the inverse of Z_Score of ROA ,the inverse of the Z_Score of ROE, GDP growth natural logarithm, interaction of business cycle (BC) with lending (L), interaction of business cycle (BC) with bank capital (C).

Logarithm of total assets, total deposits to total assets, logarithm of consumer price index .T-values are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively

Source: stata15

As a result, small banks are mostly responsible for our findings, which show positive correlations with cyclical behavior, credit activities and capital needs (Table 4). As a result, small banks are "followers" of business cycle, which they monitor the general direction of the economy. During economic upturns, small size banks raise their credit activities and equity, whereas in downturns periods, they reduce credit and capital. Large banks are "drivers" for business cycle. They reduce their equity and credit activities in economic growth periods, but boost them in downturns periods. In accordance with Basel III rules, usage in times of financial difficulty is required. In downturns, capital's countercyclical behavior is essential to absorb negative capital shocks.

Table 7: Cyclical behavior of small banks

	(1)	(2)
	ZA	ZE
L.ZA	-0.132***	
	(-11.48)	
L.ZE		0.326***
		(5.23)
GDP-G	-0.0552	-0.00957
	(1.25)	(0.83)
BC*L	0.199	0.0507**
	(-1.57)	(-2.02)
BC*C	0.503	0.166*
	(1.44)	(1.71)
ROA	-0.237	-0.462**
	(-0.43)	(-2.11)
ROE	-0.312***	0.0342
	(-2.82)	(0.85)
LA	0.891	0.224**
	(1.53)	(1.98)
LLP	-77.93***	3.086
	(-4.16)	(0.39)
ETA	-1.985	-0.640
	(-1.27)	(-1.46)
CAR	0.120	0.0108
	(0.50)	(0.31)
TRG	-0.0773	-0.0211
	(-0.36)	(-0.60)

DTA	6.753*	-0.684
	(1.68)	(-0.51)
LIQ	163.4***	10.51
	(5.28)	(0.73)
SIZE	1.860***	0.428
	(2.68)	(1.13)
INF	-0.0432	-0.00595
	(-0.64)	(-0.28)
AR(2)(p-value)	0.6112	0.1249
Sargan(p-value)	1.0000	1.0000
Instruments	192	192
N	239	239

Notes : ZA, ZE, GDP-G, BC*L, BC*C , LA, LLP, CAR, ETA,TR , ROA , ROE , LIQ, SIZE, DTA, INF : is the inverse of Z_Score of ROA ,the inverse of the Z_Score of ROE, GDP growth natural logarithm, interaction of business cycle (BC) with lending (L), interaction of business cycle (BC) with bank capital (C), equity to total assets ratio, log of total regulatory capital ratio return on assets, return on equity, liquid assets to total assets, logarithm of total assets, total deposits to total assets, logarithm of consumer price index . T-values are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively

Source : stata15

4. Conclusion

Our study, adopt the GMM method by dynamic panel over the period 2000 to 2019 aiming to examine cyclicity behavior for banking stability of 73 banks of GCC zone, also the impact of bank credits activities and equity exigence. We discovered that financial stability of GCC zone banks is procyclical, showing that commercial bank risk reduces in economic recovery periods and increases during recession. Furthermore, a credit activity raises bank risk and reduces banking stability; nonetheless, the need for capital requirement stimulates financial stability. Furthermore, we see positive sign of business cycle with bank credits as well as it with bank equity, showing the procyclicality of credits activities and bank equity motivates bank risk and negatively affects banking stability. Furthermore, a bank equity cyclicity and commercial bank credit is dependent on banking size. As a result, small bank lending and capital are procyclical, unlike large bank are anticyclical. Hence, bank size is a determinant of cyclicity. As a result, because they are procyclical by nature, small banks have a tendency to run business cycle in financial market. Consequently, in recovery periods,

small banks raise their credit activities and equity requirements. Unlike, in recession period they decrease their credit activities and equity exigence.

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