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Capital Adequacy Ratio and Financing Behavior in Iran's Banking System

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For Iran as an oil exporter country, heavy reliance on the extractive sector to generate fiscal revenues from export earnings, means increased vulnerabilities to oil price shocks. The structure of the economy and the banking system make macroprudential policy a relevant tool for Iran. The capital adequacy is a macroprudential instrument that can be used to maintain the stability of financial system taking into account the conditions of bank's capital. This paper examines the impact of the capital adequacy on financing behavior of Iran's banking system. The paper analyzes the reaction of bank financing behavior toward capital adequacy ratio by using the Generalized Method of Moment estimation (GMM) technique and by employing bank-level data for both public and private banks covering the period 2003-2016. The findings indicate that capital adequacy ratio is observed to be effective in curtailing financing behavior of banking system. Furthermore, the results reveal that the impact of capital adequacy in managing credit expansion of private banks is greater than public banks. Moreover, for both private and public banks, larger banks are more responsive to the CAR policy as compared to smaller banks.

Keywords: Macroprudential, Banking System, Financing Behavior, Iran, GMM.
JEL Classification: E59, E69, G29

1 Introduction

The global financial crisis not only triggered major changes to financial regulation, but it also led to the recognition that financial stability is important to ensure macroeconomic stability. The crisis highlighted the need for a better understanding of macro financial linkages and emphasized the importance of macroprudential policies, in addition to microprudential regulation and supervision and strong fiscal and monetary policy frameworks. Macroprudential policies aim to increase the overall resilience of the financial system, contain the buildup of systemic risk over time, and address

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vulnerabilities stemming from structural relationships between financial intermediaries.

Macroprudential instruments have become a part of the policy paradigm in many countries. Although the fundamental rationales behind such policies is not always clearly articulated, but it arises from key externalities and market failures associated with activities of financial intermediaries and markets. It can lead to excessive pro-cyclicality and the buildup of systemic risk, resulting in financial crises and the worst economic outcomes.

While pro-cyclicality and systemic risks can arise from many factors, including aggregate shocks to economic fundamentals, the risks that remain need to be addressed by macroprudential policies, even when the conduct of policies is adequate. Conversely, even though macroprudential instruments can mitigate financial or business cycles and discipline large financial institutions, only externalities or market failures justify a macroprudential approach.

While the precise sources of externalities are through the financial system, and the corresponding appropriate macroprudential policies remain to be determined, most analyses (Brunnermeier et al., 2009; De Nicolò et al., 2012), classify the known externalities as follows: First, those related to strategic complementarities i.e., that arise from the strategic interactions of banks and other financial institutions and agents, and which cause the build-up of vulnerabilities during the expansionary phase of a financial cycle.

Second, those related to fire sales and credit crunches, i.e., that arise from a generalized sell-off of assets causing a decline in asset prices, a deterioration of balance sheets of intermediaries and investors, and a drying up of financing, especially during the contractionary phase of a financial (and business) cycle; and third, those related to interconnectedness, caused by the propagation of shocks from systemic institutions or through financial markets or networks ("contagion").

Many macroprudential tools have been proposed, and some have been used even before the recent crisis, to address these various externalities. The prevalent approaches to overcome financial vulnerabilities in the banking system has led to a call for macroprudential policies.

Capital Adequacy Ratio (CAR) as a macroprudential instrument is the ratio propounded by the regulatory authority in the banking sector to judge the health of the banking system and to ensure that banks can take up a reasonable level of losses arising from operational losses. It is the ratio which determines banks capacity to meet the time liabilities and other risks such as credit risk, market risk, operational risk, etc., also it reveals the internal strength of the

bank to bear up losses during the period of crisis. A strong banking infrastructure plays a major role in supporting economic activity and meeting the financial needs of all the sections of society and thus contributes to the overall growth of the country.

Regulation of capital assumes significant importance so as to reduce bank failures, to promote stability, safety and soundness of the banking system, to prevent systemic disaster and to ultimately reduce losses to the bank depositors. In 1988 Basel Capital Accord propounded the definition of capital and distinguished it between core elements (Tier 1 Capital) and supplementary elements (Tier 2 Capital). Basel Committee introduced capital adequacy regulation in 1988, which requires globally active banks to maintain a minimum capital equal to 8% of risk adjusted assets.

Several characteristics of the structure of Iran's economy, their economic policy framework, and their banking systems make macroprudential instruments a particularly relevant tool. The importance of macroprudential instruments to limit systemic risk in the financial system is underlined by the high dependence of the economy on oil revenues in fostering economic growth, which makes Iran's economy especially vulnerable to fluctuations in global oil prices. Volatility in the oil sector spills over to the rest of the economy, and in many cases is amplified by the financial sector. Given the vulnerability of Iran to credit and asset price cycles, the limited monetary policy, macroprudential instruments can also have an important role to limit systemic risk and restrict the pro-cyclical behavior of banks in the financial system.

The objective of this research is to compare the effectiveness (the pro-cyclical behavior) of the Capital Adequacy Ratio (CAR) in public and private banks in Iran.

From methodological point of view, it seems relevant to use the Generalized Method of Moments (GMM) approach. We combine the bank-level data on Iran's banking system and the CAR as a macroprudential policy covering the period of 2003-2016.

The rest of the paper is organized as follows. Section 2 discusses the relevant literature on macroprudential instruments and bank lending and the overview of macroprudential instruments and its design in Iran. Section 3 provides the data and model estimation, section 4 presents the discussion of the empirical findings. Finally, section 5 concludes the analysis.

2 Literature Review

2.1 Macroprudential Policies

"Recent events have emphasized the costs of financial instability, and therefore, due to policy and research efforts, this highlighted the need for dedicated macroprudential policies (Bernanke et al., 2011; Hanson et al. 2010; Jiménez et al., 2012). There is not, however, a clear definition of macroprudential policies, like other policies, such as monetary and fiscal policy.

According to ESRB, the ultimate objective of macroprudential policy is to contribute to the safeguarding of the financial system as a whole, which includes the resilience of the financial system against adverse shock in the economy and decreasing the build-up of financial systemic risk, thereby ensuring a sustainable contribution of the financial sector to economic growth (Hadian, 2016).The G30 Working Group (2010) defines macroprudential policy comprehensively with four components:

First, macroprudential policy seeks to develop and deliver appropriate policy response to the financial system as a whole rather than focusing on individual institutions or certain economic measures in isolation. Second, macroprudential policy aims to enhance the resilience of the financial system and to dampen systemic risks that spread through the financial system via the interconnectedness of institutions, their common exposure to shocks, and the tendency of financial institutions to act in pro-cyclical ways that magnify the volatility of the financial cycle.

Third, macroprudential policy should use variable and fixed tools and apply them with the goal of reducing systemic risk and increasing the resilience of the financial system to absorb such risk. Fourth, the institutions charged with implementing macroprudential policy must inform and be informed by monetary, fiscal, and other government policies and give due regard to the primary responsibilities of other agencies.

Several empirical studies have examined the effect of macroprudential policies on credit growth or financing. Arnold et al. (2012) analyzes some of the challenges of how best to monitor financial systems and the broader economy in order to detect signs of vulnerability that might lead to future bouts of financial instability and of how to set prudential policy accordingly. Their paper discusses the evolution of capital adequacy standards and the new emphasis on liquidity standards in international regulation. Cerutti et al. (2015) document the use of macroprudential policies for 119 countries over the 2000–2013 period, covering many instruments. They find that emerging

economies use macroprudential policies most frequently; especially policies related to foreign exchange while advanced countries use borrower-based policies more. Its practice is generally associated with lower growth in credit, notably in household credit. The effects are less in financially developed and open economies, however, its practice comes with greater cross-border borrowing, suggesting some avoidance. While macroprudential policies can help manage financial cycles, they work less well in busts.

Kara (2016) provides a brief account of macroprudential policy approach adopted in Turkey for 2011-2015. His analysis shows that macroprudential policies have improved external balances, dampened financial amplification channels, and reduced the sensitivity of the Turkish economy to capital flows. Gambacorta et al. (2017) use meta-analysis techniques and summarize the results of a research project for five Latin American countries. They conclude that macroprudential policies have been effective in stabilizing credit cycle. The propagation of the effects to credit growth is more rapid for policies aimed at curbing the cycle than for policies aimed at fostering resilience. In addition, they analyze the impact of macroprudential policies on credit growth and find that a tightened policy is associated with a reduction in annual credit growth.

Altunbas et al (2017) investigate the effects of macroprudential policies on bank risk through a large panel of banks operating in 61 advanced and emerging market economies. There are three main findings. First, there is evidence suggesting that macroprudential tools have a significant impact on bank risk. Second, the responses to changes in macroprudential tools differ among banks, depending on their specific balance sheet characteristics. In particular, banks that are small, weakly capitalized with a higher share of wholesale funding react more strongly to changes in macroprudential tools. Third, controlling for bank-specific characteristics, macroprudential policies are more effective in a tightening than in an easing episode.

Mahmoudvand and Mohammadi (2006) investigate the credit risk in Iran's banking system by using a simple model. Moreover, they have determined the appropriate scopes for the bank's capital adequacy and the individual borrower. By measuring credit risk, concentration and capital adequacy of individual banks, the results of their study show that when the probability of default or concentration in a sector is high, the bank must adjust its capital ratio. Khoshnoud and Esfandiari (2014) have studied the effect of capital adequacy on bank lending channel using panel data of public and private banks in Iran for the period of 1386:1-1392:2. The results confirm the effectiveness of adequacy ratio on bank's capital lending decisions in both public and private banks.

Salgi and Talebi (2017) attempt to investigate the causal relationship between Capital Adequacy Ratio (CAR) and risk. By using panel data of banks in Iran for the period of 2010-2015 and Simultaneous Equation Model (SEM), they find a mutual causal relationship between risk and capital adequacy ratio. Furthermore, the results show that besides the regulatory pressure, market discipline affect the capital ratio. Finally, the tendency to adjustment in low-capitalized bank compare to others is slow.

2.2 Overview of Capital Adequacy Ratio in Iran

In Iran, banking system has a dominant role in the financial sector where it supplies about 90 percent of financing. Moreover, the macro-financial data shows that during the past decade the credit in balance sheet of banking system has extended averagely 28 percent annually, but GDP has grown only 4 percent. Therefore, the growth of financial sector has not been in accordance with that of the real sector.

As we can see, there is an average inflation rate of 14 percent and highly fluctuations price in housing market and foreign exchange rate during this period. As a consequence, the ratio of non-performing loans has reached to an unacceptable level which jeopardizes not only the financial stance of individual banks, but also the resilience and robustness of financial system as a whole, leading to systematic risk. It indicates that the implementation of economic agents' decisions is highly affected by the situations and bank performances. In spite of this significance, data of individual banks and also overall banking system performance indicate the weak soundness and inappropriate financial stance of the banking system. Looking at the financial ratios of major banks, it is shown that the banking system suffers from capital inadequacy, asset inferiority, and liquidity mismanagement (Hadian, 2016).

Table 1 shows the capital ratio for both public and private banks in Iran. It shows that in private banks the capital ratio is more than in public banks. Figure 1 shows that the average capital adequacy ratio of private banks in Iran was 16 percent in 2006 which declined to 7.7 percent in 2016. While the ratio for the public banks declined from 11.7 % to 7.6 % in this period.

Capital inadequacy increase banking vulnerabilities and, due to bank interconnectedness and imposed systemic risks to the financial sector, it is harmful for the real sector. The evidences reveal the vulnerability and instability of major banks in Iran.

Table 1
Capital Adequacy Ratio in Iran Banking System 2006-2016

types of banks	Capital adequacy ratio of Iranian banks for 2006-2016										
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Private	0.168	0.111	0.274	0.222	0.253	0.230	0.175	0.117	0.091	0.085	0.077
Public	0.117	0.148	0.137	0.131	0.111	0.099	0.095	0.107	0.096	0.080	0.076

Source: The Central Bank of Iran and Monetary and Banking Research Institution

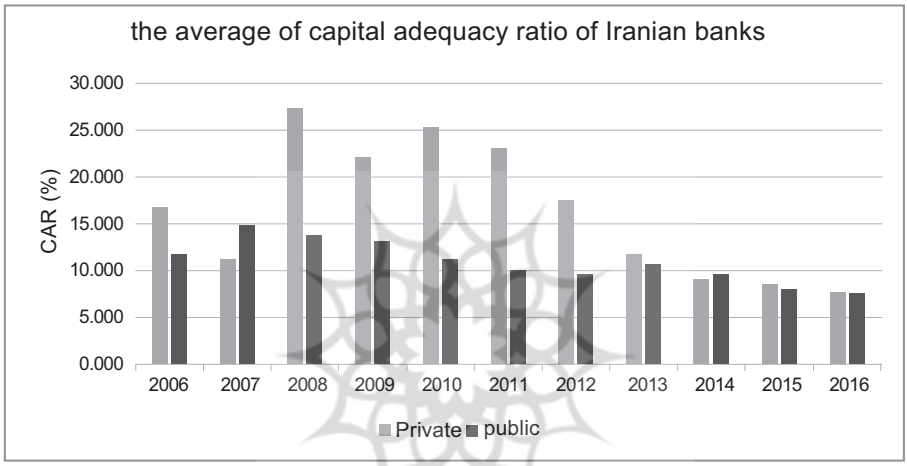

Figure 1. Capital adequacy ratio in Iran banking system - 2006-2016.
Source: The Central Bank of Iran and Monetary and Banking Research Institution

3 Data and Estimation Method

All data are obtained from the Central Bank database and balance sheets of banks. We include 30 banks covering both public and private banks including 12 public banks and 18 private banks.[1] The Generalized Method of Moments (GMM) estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998), is used which is viewed to be superior in dealing with dynamic panel modelling. In this study a one-way error component model is developed as follows:

[1] Due to differences in the bank establishment, the number of observations in public banks decreased from 168 to 159 and private banks decline to159 from 162 respectively.

$$\Delta FIN_{it}=\alpha_i+\beta_1\Delta CAR_{it-1}+ \beta_2 SIZE_{it-1}+ \beta_3 LIQ_{it-1}+ \beta_4\Delta CAR^* SIZE_{it-1}+ B_5\Delta CAR^* LIQ_{it-1}+ \beta_6\Delta GDP_{it-1}+ \beta_7\Delta INF_{it-1}+\varepsilon_{it-1} \quad (1)$$

$$\varepsilon_{it} = \mu_{it}+\nu_{it} \quad (2)$$

where

- FIN_{it} : The financing of bank (logarithm of the volume of facilities granted) *i* in period *t*
- FIN_{it-1} : The lagged of bank financing
- α : Scalar
- CAR_{it} : Capital adequacy ratio of bank i in period t
- $SIZE_{it}$: Natural logarithm of bank total assets
- LIQ_{it} : Bank Liquidity, calculated as: ratio of liquid assets to total assets
- GDP_{it} : Natural logarithm of real GDP
- INF_{it} : Natural logarithm of consumer price index (CPI)
- ε_{it} : Random error term which consists of two components
- μ_{it} : The unobservable time-invariant individual or bank specific effects
- ν_{it} : The remainder disturbance

4 Empirical Findings

4.1 Descriptive Statistics

Table 2 exhibits descriptive statistics of bank financing, CAR, and bank-specific characteristics, such as size and liquidity ratio for both public and private banks. It is apparent that public banks are significantly larger than private banks, as indicated by size and loans. But, the lending channel of private banks and their capital adequacy ratio are greater than public banks over the period under consideration.

The private banks are better capitalized as indicated by higher capital adequacy - ratio of 15% relative to 12% for public banks. Moreover, the liquidity ratio, as indicated by ratio of liquid assets to total assets, is relatively higher for private banks.

Table 2
Descriptive Statistics

Variable	Public Bank					Private Bank				
	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
Financing	159	11.43	1.53	6.61	13.82	162	10.37	1.75	3.96	13.27
SIZE	159	18.94	1.50	14.64	22.67	162	17.99	1.42	14	20.48
CAR	159	0.12	0.17	0.003	1.77	162	0.15	0.19	0.001	0.96
LIQ	159	0.01	0.08	0.0004	0.9	162	0.015	0.051	8.20e	0.6
GDP	159	15.57	0.08	15.36	15.71	162	15.6	0.06	15.36	15.71
Inflation	159	0.69	0.26	3.40	5.41	162	4.72	0.62	3.40	5.4

Note: Financing, Size, GDP, and Inflation are in logarithm forms, Liquidity is defined as ratio of liquid assets to total assets; CAR is capital adequacy ratio
Source: research result

Table 3
The Pairwise Correlation Coefficients among the Variables

Panel A. The Public Banks

	Financing	**CAR ratio**	**Size**	**Liq**	**GDP**	**Inf**
Financing	1					
Capital Adequacy	-0.266	1				
SIZE	0.961	-0.379	1			
LIQ	-0.159	0.07	-0.138	1		
GDP	0.490	0.022	0.440	0.011	1	
Inf	0.556	-0.025	0.517	-0.016	0.750	1

Panel B. The Private Banks

	Financing	**CAR Ratio**	**Size**	**Liq**	**GDP**	**Inf**
Financing	1					
Capital adequacy	-0.724	1				
SIZE	0.948	-0.635	1			
LIQ	0.071	-0.078	0,062	1		
GDP	0.336	-0.066	0.425	-0.070	1	
Inf	0.501	-0.251	0.601	-0.008	0.616	1

Source: Research Findings.

4.2 Correlation Analysis

Table 3 presents the pairwise correlation coefficients among the variables. Panel A, highlight the correlation of selected variables for public banks, while panel B reports the correlation matrix for private banks. Based on the pairwise correlation matrix, there are both positive and negative correlations between

bank financing, macroprudential variables, and bank-specific characteristics (i.e. SIZE, LIQ) for both public and private banks.

According to Panel A of Table 3, the CAR has a negative correlation with bank financing of public banks. Subsequently, when we examine the association of bank-specific characteristics, the result indicates that financing has a significant positive correlation with SIZE. On the other hand, LIQ ratio has a significant and negative correlation with the bank financing.

As for the private banks (Panel B), the correlation between bank loans and bank-specific characteristics is in line with public banks. The results indicate that there is a significant negative correlation between CAR and bank financing. Similar to its public banks counterpart, the correlation between bank loans and bank-specific characteristics reveals mixed results. As we expected, SIZE has a significant positive correlation with bank loans, but in contrast with public banks, LIQ is significant and positively correlated with bank loans for private banks.

4.3 The Impact of Bank-Specific Characteristics on Bank Financing

Table 4 presents the results for the public banks. Model (1) and Model (2) are estimated using first-difference GMM, while Model (3) and Model (4) are using system GMM. Model (1) and Model (3) incorporate only bank-specific variables without controlling variables. While, Model (2) and Model (4) add the control variables (GDP and inflation). The specification tests show the appropriation of the GMM estimators in all models. The Sargan test of over-identification restrictions examines the validity of instruments. For all cases, the validity of instruments is not rejected indicating that the models are well specified. Moreover, the serial correlation test (autocorrelation test) does not reject the null of second-order autocorrelation (AR 2).

As table 4 shows, the impact of changes on Capital Adequacy Ratio (CAR) on financing of public bank is significant and negative. The negative sign of estimated coefficient of the CAR, suggests that an increase in the CAR decreases the public bank financing. In this regard, CAR is observed to be effective in limiting pro-cyclical lending behavior of public banks in Iran. This result confirms the basic theoretical prediction that capital adequacy is one of the most crucial macroprudential tools in managing lending channels (Ghosh, 2016).

Subsequently, the lagged coefficient of public bank financing is positive and significant for both difference and system GMM estimations, which means that the past behavior of public bank financing influence the current

financing behavior. The higher financing supply in previous year may lead to higher financing supply of the subsequent year. Meaning that the past financial situation of the public bank is important in providing more financing to the real sector in the current year.

Table 4
Baseline Results: Public Bank Lending with Bank-Specific Characteristics

Variables	**Difference GMM**		**System GMM**	
	(1)	**(2)**	**(3)**	**(4)**
$\Delta FINANCE_{it-1}$	0.65	0.42	0.89	0.72
	(0.08)	(0.09)	(0.16)	(0.20)
ΔCAR_{it-1}	-0.52	-0.97	-3.11	-3.14
	(0.54)	(0.49)	(1.17)	(1.42)
$SIZE_{it-1}$	0.28	0.12	0.03	0.17
	(0.09)	(0.08)	(0.16)	(0.18)
LIQ_{it-1}	-6.01	-5.01	-3.77	-8.20
	(1.08)	(0.98)	(4.27)	(18.40)
Impact of Macroprudential				
ΔCAR x SIZE	0.002	0.004	0.02	0.022
	(0.17)	(0.01)	(0.01)	(0.01)
ΔCAR x LIQ	15.97	13.57	1.64	3.12
	(3.15)	(2.83)	(1.85)	(2.42)
Control Variables				
ΔGDP_t	-	0.67	-	-0.008
	-	(0.42)	-	(0.7)
ΔINF_t		0.45		0.03
		(0.10)		(0.2)
Sargan test	80.04	87.27	3.93	2.42
AR(1)	-5.01	-4.91	-1.69	-1.91
AR(2)	-0.071	-0.24	1.03	1.05

Note: Estimated coefficient by difference and system GMM estimator using one-step method proposed by Arellano and Bond (1991). Number in parentheses ( ) are standard error. The *i* denotes bank and *t* denotes time, where t =2003-2016. Financing, SIZE, GDP, and Inflation are in logarithm forms. LIQ is defined as ratio of liquid assets to total assets; CAR is a proxy of macro prudential instrument: capital adequacy ratio.
Source: Research Findings.

Moreover, Table 4 shows the importance of bank-specific characteristics in financing behavior of the public banks. The variable of SIZE is positive and significant with the coefficient range from 0.12 to 0.28. Since the large banks are expected to have less asymmetric information problems compared to smaller banks, they can easily substitute their financing sources.

The bank liquidity, LIQ, is negatively related to the bank financing. The fact suggests that the public banks with less liquidity response negatively to bank financing. Therefore, they are more likely to cut financing in the face of policy changes.

We add the macroeconomic variables in the models to control the demand side effect. Model (2) and (4) reveal that the coefficient of inflation is positive and significant .The real GDP has a positive sign and is significant in difference estimation. It implies that the economic activity is important in public banks' financing decision. These results support the results of some related studies, i.e. Momeni (2014), Khoshnoud and Esfandiari (2014), Kazerooni et al. (2018).

Table 5
Baseline Results: Private Bank Lending with Bank-Specific Characteristics

Variables	**Difference GMM**		**System GMM**	
	(1)	(2)	(3)	(4)
$\Delta FINANCE_{it-1}$	0.104	0.122	0.423	0.36
	(0.11)	(0.10)	(0.08)	(0.10)
$\Delta\ CAR_{it-1}$	-5.48	-5.67	4.73	1.85
	(3.74)	(1.82)	(2.76)	(3.7)
$SIZE_{it-1}$	0.66	0.37	0.36	0.39
	(0.12)	(0.12)	(0.05)	(0.06)
LIQ_{it-1}	-6.042	-5.67	0.23	-0.64
	(1.88)	(1.82)	(1.05)	(1.51)
Impact of Macroprudential				
ΔCAR x SIZE	0.30	0.25	-0.28	-0.06
	(0.25)	(0.23)	(0.18)	(0.25)
ΔCAR x LIQ	89.87	83.09	1.81	3.34
	(24.21)	(23.2)	(7.40)	(10.15)
Control Variables				
ΔGDP_t	-	-0.25	-	-0.19
		(0.7)		(0.24)
ΔINF_t	-	0.57	-	0.13
		(0.12)		(0. 07)
Sargan test	96.51	115.86	14.22	12.17
AR(1)	-1.52	-1.53	-1.25	-1.23
AR(2)	-0.73	-1.10	1.15	0.97

Note: Estimated coefficient by difference and system GMM estimator using one-step method proposed by Arellano and Bond (1991). Number in parentheses ( ) are standard error. The *i* denotes bank and *t* denotes time, where t =2003-2016. Financing, SIZE, GDP, and Inflation are in logarithm forms. LIQ is defined as ratio of liquid assets to total assets; CAR is capital adequacy ratio.
Source: Research Findings.

To have a clear picture of a macroprudential policy, we have interacted the CAR ratio with the bank-specific characteristics. The estimated coefficient of ΔCAR x SIZE and ΔCAR x LIQ are positive and significant across most of GMM estimations. The results suggest that bank financing and their ability to generate sources of funding are influenced indirectly through bank-specific characteristics.

4.4 Impact of Bank-Specific Characteristics on Private Bank Financing

Table 5 shows the results for the baseline specification with and without macroeconomic variables for private banks. Apparently, most of preceding results in private banks prevail the estimation results of public banks.

Similar with baseline results of public banks, the specification tests also show the appropriation of the GMM estimators in all groups. The Sargan test fails to reject the over-identification restrictions, indicating that the Sargan test supports the GMM procedure. The results show that the impact of changes in CAR on bank financing in private banks (similar to public banks) is negative and significant. Greater coefficient for CAR in private banks suggest that compare to public banks, applying CAR is more effective in limiting pro-cyclical behavior of banks.

Moreover, the positive and significant lagged coefficient of bank lending indicates that the past behavior of private bank lending channel affects the current lending behavior.

As for bank-specific characteristics, the result from Table 5 confirms that SIZE and LIQ are significant in most of the estimations. In all models, the SIZE is positively correlated with bank financing. The SIZE is important factor in channeling credit for private banks. Moreover, the coefficient of LIQ is negatively correlated with bank lending. As we expected, the coefficient of macroeconomic variables is similar to public banks. In contrast to public banks, the GDP variable has a negative sign and insignificant across all estimations. These results support the findings of previous studies.

We also interact the CAR ratio with the bank-specific characteristics. The coefficients of ΔCAR x SIZE and ΔCAR x LIQ are positive and significant across most of the GMM estimations. This indicates that bank lending are affected indirectly via bank-specific characteristic.

5 Conclusions

This paper examines the impact of the Capital Adequacy Ratio (CAR) as a macroprudential on financing behavior of both public and private banks by

using a dynamic GMM panel model, for the period of 2003–2016. In order to improve the results of macroprudential policies and examine the effectiveness of CAR policy in Iran banking system, bank-level dataset are used.

The results indicate that CAR framework is effective in lowering financial risks of banking system. The results suggest that CAR is more successful to managing the pro-cyclical behavior of private banks than the public banks. Further analysis to capture the impact of different categories of bank-specific characteristics and type of institutions shows that different groups of banks react to CAR policy. For both private and public banks, larger banks are more responsive to the CAR policy as compared to smaller banks.

Given the vulnerability of Iran's economy to credit and asset price cycles, the limited monetary policy independence, i.e. bank's capital-based tools such as capital adequacy ratio can play an important role in limiting systemic risk in the financial system. However, capital adequacy ratio as macroprudential instruments cannot be a substitute for structural reforms - including financial sector reforms - which needed to reduce medium and long term vulnerabilities and imbalances.

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