Bank lending procyclicality: A comparative study of conventional and Islamic banks

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Abstract:
The paper examines the bank lending procyclicality of the dual banking system in Pakistan with the aim to ascertain if conventional or Islamic banks have role in stabilizing credit. For the purpose, quarterly banking and macroeconomic data is gathered covering mostly a business cycle from 2006:Q1 to 2016:Q4. For analysis purpose, system GMM estimators are applied on the dynamic panel data model used in the study. Results obtained confirm the procyclical lending behavior of the dual banking system as suggested in existing literature. However, the lending behavior of Islamic banks is observed to be more procyclical when compared with the conventional peers. It implies that Islamic banks are more exposed to external economic down turns and would experience an intense decrease in lending if the economy contracts. These results are found to be robust to an alternative estimation technique. Hence, our findings are against the "stability" view of Islamic banks and necessitate further investigations of the subject.
Key Words: Islamic Banks; Conventional Banks; Bank Lending; Business Cycle; Pakistan

1. Introduction
Existing literature discusses various bank-specific operational measures, variables, standards, and policy regulations that play a vital role in strengthening banking institutions and provide a cushion to tackle any type of minor or major distresses. Among others, bank lending behavior is considered crucial bank specific variables in determining the resilience capacity and stability of a banking system (Bouheni & Hasnaoui, 2017; Belke, Haskamp, & Setzer, 2016). In times of financial and economic disruptions, with stagnating banking system efficiency, a procyclical bank lending behavior would intensify the liquidity crunch and severe the crisis. Gulati and Kumar (2016) ascertain that performance of Indian banks was declining during the financial crisis, however, its long lasting adverse effects on the economy were avoided by

utilizing different macroeconomic tools for injecting substantial liquidity into the economy. Thus, a less procyclical or anticyclical bank lending behavior would signify its ability to stabilize credit and avoid crisis intensifying tendency during cyclical downturns.

The advent of Islamic banking industry has opened a new avenue for comparative financial research studies. Further, the relatively stable performance by Islamic banks during the 2007-09 financial crisis has further strengthened the need to investigate the "stability" view of Islamic banks (Ibrahim, 2016; Farooq & Zaheer, 2015). Different studies using different bank stability measures in different jurisdictions have found varying results. Some established conventional banks to be more stable to economic crisis (Alqahtani, Mayes, & Brown, 2017; Miah & Uddin, 2017) while others witnessed better resiliency of Islamic banks (Berger, Boubakri, Guedhami, & Li, 2019; Saeed & Izzeldin, 2016; Farooq & Zaheer, 2015). The current study intends to re-assess the subject after it has obtained mixed results in existing literature. The study will analyze the bank lending procyclicality of the dual banking system in Paksitan over a complete business cycle to ascertain the resilience capabilities of Islamic and conventional banks through sustaining credit in time of economic crisis. Thus, it will assess how bank lending is affected by the surrounded economic conditions. The resilience and stability view of Islamic banks needs to be based on solid grounds before being presented as a superior alternate to conventional banks.

The research contributes to the existing finance literature in several ways. It is adding the *Shari'ah* compliance feature of Islamic banks to the thread of researches taking into account different basic attributes, presumed to be the reasons behind the various types of banks responding heterogeneously to the external economic conditions, like ownership of the bank, fundamental philosophy etc. (Bertay, Demirguc-Kunt & Huizinga, 2015; Merilainen, 2016). Further, several studies on the subject like Ibrahim and Rizvi (2017) are based on cross country analyses, which create hurdles in reaching reliable results, particularly in countries with varying social, financial and infrastructural levels (Huang, Fang, Miller, & Yeh, 2015). Therefore, the current study is incorporating data from only one developing country with dual banking system, Pakistan. Since the 1980s, efforts were made for Islamization of the banking system in Pakistan, which was further spurred by favorable regulatory reforms in 1990s. As a result of decades of struggle, the first fully-fledged Islamic bank was awarded banking license by the State Bank of Pakistan in 2002. Since then, Islamic banking sector is flourishing in the country. The current asset share of the sector in the overall banking industry have reached to 14.6 percent and have gained an YoY growth rate of 23.5 percent as on December, 2019 (SBP published Islamic banking bulletin, 2019). Lastly, Bank lending has not been examined as a measure of financial stability in Pakistan nor been used to compare between the resilience capacity of the two banking systems. Further, whatever research is being done on the subject has not taken a complete business cycle in their analysis (Farooq & Zaheer, 2015; Rosman *et al.*, 2014). The current study is taking a complete business cycle from 2006 to 2016 in order incorporate different lending behaviors exhibited by the dual banking system in varying external economic conditions.

Literature relevant to the subject is reviewed in the next chapter. Afterwards research methodology is discussed in section 3. Section 4 will talk about the study results and section 5 will discuss the study limitations, policy suggestions and future research directions.

2. Literature review and development of hypotheses

According to Farooq and Zaheer (2015) Islamic banks avoid uncertainty (*Gharar*), interest, speculation and objective less rapid selling of financial contracts in their transactions, and comply with a legal system that prohibits them from being engaged in any sort of financial bubble creation, non-real and uncertain activities. They reported that the lending decisions of Islamic banking branches from September to October 2008 in Pakistan were less vulnerable to widespread financial panic. Meanwhile, they were even able to generate extra deposits. Religion oriented depositors are less sensitive to profits on their deposits, hence, to the earnings of their banks. This avoids unfavorable deposit withdrawals that may adversely affect Islamic banks financing sustainability and help them to operate and behave in a way that may not be highly sensitive to conditions in the external economic and financial atmosphere.

Banks follow an anticyclical approach while assessing different possible advances and lending opportunities to different clients approaching in varying financial and economic conditions. They usually maintain a low level of credit standards for financing opportunities that approach in times of expansion. Such loose credit analysis and risk management sometimes lead to shocking unexpected defaults (Thakor, 2016). Henceforth, banks would tighten their financings and set irrationally high level of standards and tough financing criteria purely based on anticipating negative future outcomes. This anticyclical standardization approach in times of downfall widens the credit spread and triggers credit crisis (Thakor, 2016). Caporale, Colli and Lopez (2014) ascertain that credit quality is inversely related to the business cycle. Loans tend to increase, however, credit quality tends to decrease when economy prospers and vice versa when it contracts.

Islamic banks are expected to not follow this economically and financially disastrous mechanism. It is pertinent to note that Islamic banks normally generate deposits in two ways, first, *qard* (Debt) based and the second is *mudaraba* (Investment) based (Ayub, 2007, p. 194). In *qard* based, the bank assumes the sole responsibility to return the customer his principal amount even in case of losses. However, a large portion of deposits held with Islamic banks are *mudaraba* based. *Mudaraba* is a profit and loss sharing partnership arrangement, where capital is provided by one partner (depositor) and business is managed by the other (bank). In case of loss, the manager will be losing his services and the actual financial losses will be wholly born by the capital provider. Since the fund manager in *mudaraba* partnership is further granted the capacity of *amin* (trustworthy) with respect to the capital entrusted to him, he is bound not only to professional responsibilities but also strict religious obligations (Ayub, 2007, p. 322). *Mudarib* is required to maintain high quality rational standards in utilizing the fund in all types of financial and economic conditions. Thus, Islamic banks are bound to manage the *mudaraba* fund in the best possible ways with best practices to earn

maximum possible profits for their depositors. Such responsible financing behavior prevents Islamic banks from developing ill-fated loose credit standards in times of economic expansion and irrational tight lending standards when it contracts.

According to Ibrahim (2016), the overall lending of the Malaysian dual banking system was found to be procyclical. However, when results for Islamic and conventional banks' lending were distinct, the procyclical financing behavior was found to be limited to the conventional banks. Islamic banks were noticed for even behaving anticyclically in terms of financings. Caporale, Lodh and Nandy (2017) find that domestic banks in the MENA region had out performed foreign banks during the global financial crisis, reason being domestic banks in the said region mostly contain world's largest Islamic banks, which resisted the crisis and showed a stabilizing behavior. Most recently, a study conducted by Ibrahim and Rizvi (2017) examined the financing sustaining capacity and its growth in Islamic and conventional banks of 10 dual banking economies during the financial crisis. Unlike the observed decline in the conventional banks' financing, Islamic banks were sustaining their credit supply during the period. This stability oriented Islamic financing was confirmed of not being influenced by additional deposits or assuming extra risks. Hassan, Khan and Paltrinieri (2018) find Islamic banks to be having better credit risk management and hence, lower loan losses during and after the financial crisis. Similarly, there are many other studies advocating the dominant stability view of Islamic banks including Hasan and Dridi (2011), Farooq and Zaheer (2015) and Saeed and Izzeldin (2016).

Despite the above mentioned facts in support of the credit sustaining and resilient view of Islamic banking system, the subject remains to be a continuous issue. In fact, evidence in support of a similar or less stable and resilient nature of Islamic banking system is not difficult to find. Islamic banks are so much similar in their operations to the conventional banks. The modes considered ideal for Islamic banking are still rarely practiced by Islamic financial institutions. Further, instead of opting for profit-and-loss sharing (PLS) mechanisms, Islamic banks are intensely inclined towards debt based products and fixed profit generating modes. Thus, In spite of innovating financial products in compliance with the form and spirit of the fundamental philosophy of Islamic finance, Islamic banks are concentrating on imitating and replicating existing conventional financial products, and are far away from the theoretical Islamic banking business model (Hassan, & Aliyu 2018; Ayub, 2016; Azmat, Skully, & Brown, 2015; Khan, 2010; Mirza, Rahat, & Reddy, 2015). Therefore, according to these studies, the overall financial impact of Islamic banking system on the economy and the prevalent financial and economic conditions on Islamic banking system may not be mentionably different from its conventional peer, if not worse. These findings have added further suspicion to the stability view of Islamic banks and justified the need for further research in this particular area. The above discussion leads to the below given hypotheses:

H1A: Financing growth of conventional banks is procyclical over the business cycle.
H1B: Financing growth of Islamic banks is procyclical over the business cycle.
H1C: Financing growth of Islamic banks is less procyclical as compared to conventional banks over the business cycle.

3. Research method
3.1. Sample and data description
The study gathers both banking and economic quarterly panel data for most of the 2006:Q1 to 2016:Q2 period. Banking data sources are available financial statements of the commercial banks and periodic reports of the central bank in Pakistan. A twofold screening criteria is being set and data of only qualifying banks was incorporated in the study. Banks should have been operational for at least 4 years of our total study period and for the crisis years of 2009-10. Further, in case of banks providing both conventional and Islamic financial services, data of only those banks are included that report separate financial details for their Islamic and conventional banking practices. As a result, data of 4 conventional banks, 4 Islamic banking divisions of conventional banks and 4 full fledge Islamic banks qualifying the screening phase were selected for the study. GDP growth data at market price with constant prices (1999-2000) was collected from the study of Hanif, Iqbal and Malik (2013). Inflation and discount rate data was obtained from the webpages of central bank in Paksitan and International Monetary Fund respectively.

3.2. Estimation strategy and empirical models
Following Bertay *et al.,* (2015), the appended econometric equations are developed to examine the procyclicality of lending behavior of the dual banking system over a complete business cycle.

Model for bank lending behavior of conventional banks
$$C\Delta L_{i,t} = \beta_\circ + \beta_1 \Delta L_{i,t-1} + \beta_2 Y_t + \beta_3 X_{i,t-1} + \beta_4 inf_t + \mu_{i,t} \qquad (1)$$
Model for bank lending behavior of Islamic banks
$$I\Delta L_{i,t} = \beta_\circ + \beta_1 \Delta L_{i,t-1} + \beta_2 Y_t + \beta_3 X_{i,t-1} + \beta_4 inf_t + \mu_{i,t} \qquad (2)$$

In eq. 1 and 2 "C" and "I" are used for conventional and Islamic banks respectively. "ΔL" signifies gross loans growth. Real GDP growth rate is symbolized by "Y". "μ" and "inf" represents population error term and inflation rate respectively. "X" represents the three bank specific control variables namely funding ratio, bank size and capitalization ratio. Number of banks and time are symbolized by "i" and "t".

A lag value of the dependent variable (ΔL) is included in the model as an independent variable to take into account any potential dynamics due to lending targets assigned by the bank management. Further, four control variables with lag values are introduced to the estimation model. One is inflation to cope for any macroeconomic variations while the rest are the most appropriate bank specific control variables, including Bank size (equity to assets ratio), funding ratio (deposits to total liability) and bank capitalization (total assets) (Sufian, 2006 & 2007; Ibrahim & Rizvi, 2017; Batir *et al.,* 2017). The limited number of control variables and their lag values would avoid any possibility of endogeneity and multicollinearity. Moreover, to tackle with the issue of endogeneity in the independent variable (ΔGDP) the study takes into account lag values of four instrumental variables including total lending, discount rate, total deposits and inflation rate, which serve as determinants of ΔGDP. In addition, to ensure reliable results, autocorrelation of order 1 and 2 is checked for both of our equations. Besides, Validity

of our instrumental variables is also being confirmed by the Sargan test of over identifying restrictions.

Based on our aforementioned discussion, we have come up with a dynamic panel data model. According to Bun and Kleibergen (2010), Generalized Method of Moments (GMM) is the best estimation technique when it comes to dynamic models, as it copes with many issues associated with them. Arellano and Bond (1991) proposed the first difference GMM estimator, where differencing is used to alleviate the individual specific effects and then take lag level of the variables as instruments to resolve the issue of correlation between the explanatory variables and the error terms. Later on, Arellano and Bover (1995) and Blundell and Bond (1998) suggested an upgraded form of GMM called the system GMM, whereby both the level and first difference regressions are used as a system. It combines both of the moments, the model moments in first differencing with the moments of the model in levels. In this way, the relationship information obtained by level GMM is not filtered out and the biases and deviation in the first difference regression could be minimized. Therefore, the study is opting for dynamic GMM estimators for analysis of the data.

4. Results
4.1. Regression analysis
Table 5 presents results for our study models obtained using one step system GMM as suggested by Arellano and Bover (1995) and Blundell and Bond (1998). Results for Sargan test and autocorrelation test are given in table 6. The significant p values of autocorrelation test show the non presence of autocorrelation of order 1 and 2 in our equations (see table 6). Further, the validity of our instrumental variables stand confirmed by the non-rejection of the null hypothesis (see table 6). Hence, outcomes obtained from the analysis our suggested equations and instrumental variables would be consistent and reliable (see table 5).

Bank lending growth rate of both conventional and Islamic banks is found to be having positive significant relationship with real GDP growth rate (see table 5). Hence, hypotheses H1A and H1B are accepted by not accepting the null hypothesis. However, hypothesis H1C is not accepted, which states that Islamic banks are less procyclical than conventional banks over the business cycle. The coefficient for conventional banks' lending behavior has a value of 0.34 while unexpectedly Islamic banks emerge to be more procyclical with a beta value of 0.45 (see table 5). This means that a one percent decline in real GDP growth rate would cause Islamic banks to reduce lending by 0.45 percent, which is 11 percent more than the decline in lending by conventional banks (see table 5).

Table 1

Descriptive statistics.

Variables	Conventional banks				
	Mean	SD	Min	Max	Obs.
Lending Growth rate	0.05977	0.3484	-0.3404	3.8433	154
GDP Growth rate	0.02287	0.1670	-0.2120	0.2650	152
Size	19.29	1.488	15.80	21.16	157
Equity-asset ratio	0.09372	0.0396	0.0006	0.1879	156
Deposit-liability ratio	0.88172	0.0462	0.7233	0.9620	156
Inflation rate	0.0075	0.0060	-0.0044	0.026	176

Table 2

Descriptive statistics.

Variables	Islamic banks and Islamic banking branches				
	Mean	SD	Min	Max	Obs.
Lending Growth rate	0.2131	1.0837	-0.8398	14.1999	200
GDP Growth rate	0.0229	0.1667	-0.2120	0.2650	266
Size	17.17	1.532	10.84	20.30	215
Equity-asset ratio	0.1275	0.1266	0.0236	0.9803	211
Deposit-liability ratio	0.8557	0.1646	0.1540	1.1087	212
Inflation rate	0.0075	0.0060	-0.0044	0.0260	308

Table 3

Correlation matrix.			Conventional banks				
Variables	1	2	3	4	5	6	7
ΔL	1						
L.ΔL	-0.095	1					
ΔGDP	0.0142	-0.0975	1				
L.SIZE	-0.1424***	-0.0425	0.0033	1			
L.E-ASST	0.0232	-0.0682	0.014	-0.0504	1		
L.D-LIB	0.0566	0.0143	-0.2141**	0.2663***	-0.039	1	
INF	-0.0011	0.097	-0.3915***	-0.0025	-0.0431	0.1128	1

For significance level at 1 percent ***   For significance level at 5 percent**   For significance level at 10 percent*

Table 4

Correlation matrix.			Islamic banks and IBBs				
Variables	1	2	3	4	5	6	7
ΔL	1						
L.ΔL	0.24***	1					
ΔGDP	0.0412	-0.0545	1				
L.SIZE	-0.1779**	-0.1563**	0.0278	1			
L.E-ASST	0.27***	0.51***	-0.0355	-0.5489***	1		
L.D-LIB	0.1048	-0.0251	-0.0450	0.2744***	-0.0177	1	
INF	-0.0726	-0.0326	-0.39***	-0.1975***	0.21***	-0.0698	1

For significance level at 1 percent *** For significance level at 5 percent** For significance level at 10 percent*

Table 5
One-step system GMM

Variables	ΔGDP=GDP growth rate	ΔL =Lending growth rate
	Conventional banks	Islamic banks and Islamic banking branches
	ΔL	ΔL
L.ΔL	-0.3867***	-0.1265
	(0.0010)	(0.1030)
ΔGDP	0.34012**	0.4521*
	(0.0190)	(0.0590)
L.SIZE	-0.0573***	-0.0760**
	(0.0030)	(0.0120)
L.E-ASST	10.4314***	0.1110
	(0.0020)	(0.6794)
L.D-LIB	-0.1628	0.5996***
	(0.9030)	(0.0070)
INF	0.2272***	-0.0155
	0.0010	(0.8160)
CONST	(0.1630)	0.8726*
	(0.9020)	(0.0870)

Significance level at 1 percent ***   Significance level at 5 percent**   Significance level at 10 percent*

Table 6
Sargan and autocorrelation test

Statistic	Conventional banks	Islamic banks and Islamic banking branches
	ΔL	ΔL
AR(1)	0.003	0.000
AR(2)	0.736	0.222
Sargan	0.229	0.292

4.2. Robustness Check:

Robustness of our study results is confirmed with the help of an alternate estimation technique in the form of two-stage least squares (2SLS) given in table 7. Consistent with our prior results, bank lending of Islamic banks is found to be roughly two fold more procyclical than conventional banks. These results add credence to our findings that indicate a relatively less stable and more volatile behavior of Islamic banks in times of economic disruptions as compared to the conventional ones. The study could not find any hint for Islamic banks to be responding anti cyclically or less procyclically to the worsening economic conditions in terms of stabilizing credit when compared with conventional banks.

Table 7 Two-stage least squares (2SLS)	ΔGDP=GDP growth rate	ΔL =Lending growth rate
Variables	Conventional banks	Islamic banks and Islamic banking branches
	ΔL	ΔL
L.ΔL	-0.2857***	-0.0840
	0.0020	0.3140
ΔGDP	0.3328**	0.6770**
	0.0250	0.0370
SIZE	-0.0292**	-0.0621**
	0.0130	0.0490
E-ASST	-0.0079	0.5703
	0.9850	0.2720
D-LIB	-0.0216	0.3776*
	0.9550	0.0980
INF	0.0630**	-0.0020
	0.0420	0.9790
CONST	0.5692	0.8292
	0.2000	0.1210

Significance level at 1 percent *** Significance level at 5 percent** Significance level at 10 percent*

5. Discussion and conclusion

Using dynamic system GMM estimators, results of the study witness procyclical bank lending behavior by both Islamic and conventional banks. It finds a positive relationship between the GDP growth rate and lending behavior of dual banking system over the business cycle, a fact aligned with existing literature (Caporale *et al.,* 2017; Ibrahim, 2016). However, comparison of Islamic and conventional banks revealed the former to be more conforming to the external economic conditions and would respond with a relatively intense decline in lending as the economy shrinks. Though, some studies like Farooq and Zaheer (2015), Rosman *et al.,* (2014) and Abbas *et al.,* (2016) have reported less procyclical and anti cyclical behavior of Islamic banks. However, these studies have not taken a complete business cycle in their analysis. They have either focused on a short particular crisis period or concentrated on a particular segment of the business cycle. Therefore, the argued relative stability of Islamic banking institutions in

times of financial and economic panics in different studies may not be because of their distinguished business model or their highly regulated products. Instead, it may be due to the fact that the industry is very much small in size, locally oriented and less prone to cross border transactions.

Islamic banking industry is rarely following its ideal modes of financing and investments. Further, instead of opting for profit-and-loss sharing (PLS) mechanisms, Islamic banks are intensely inclined towards debt based products and fixed profit generating modes. Thus, they are far away from the theoretical Islamic banking business model (Ayub, 2016; Azmat *et al.*, 2015; Khan, 2010; Mirza *et al.* 2015). Therefore, the overall financial impact of Islamic banking system on the economy and the effect of prevalent financial and economic conditions on Islamic banking system may not be mentionably different from its conventional peer.

The present study recommends for central banks supervising dual banking systems to ensure extra vigilance and close monitoring of the overall procyclical bank lending behavior in general, and lending of Islamic banks in specific when the economy is shrinking. Results of the study may be applied with caution due to the limited number of available sample banks. Future studies may perform a similar research in countries with higher number of Islamic banks using different measures of stability and resilience. Further, besides empirical investigations, there is a need for theoretical, critical and technical research in the area. It will help to identify reasons and logics behind the current highly procyclical behavior of Islamic banks and a relatively stable and resilient behavior of conventional banks, a fact against the claims and predictions of some practitioners and academicians.

References
Abbas, M., Azid, T., & Besar, M. H. (2016). Efficiency, effectiveness and performance profile of Islamic and conventional banks in Pakistan. *Humanomics , 32* (1), 2-18.
Alqahtani, F., Mayes, D. G., & Brown, K. (2017). Islamic bank efficiency compared to conventional banks during the global crisis in the GCC region. *Journal of International Financial Markets, Institutions & Money , 51*, 58-74.
Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies , 58* (2), 277-297.
Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics , 68* (1), 29-51.
Ayub, M. (2016). 'Running Musharakah' by Islamic banks in Pakistan: Running from musharakah or moving back to square one. *Journal of Islamic Business and Management , 6* (1).
Ayub, M. (2007). *Understanding Islamic Finance.* John Wiley & Sons, Ltd.
Azmat, S., Skully, M., & Brown, K. (2015). Can Islamic banking ever become Islamic. *Pacific-Basin Finance Journal , 34*, 253-272.
Batir, T. E., Volkman, D. A., & Gungor, B. (2017). Determinants of bank efficiency in Turkey: Participation banks versus conventional banks. *Borsa Istanbul Review , 17* (2), 86-96.

Belanes, A., Ftiti, Z., & Regaieg, R. (2015). What can we learn about Islamic banks efficiency under the subprime crisis? Evidence from GCC region. *Pacific-Basin Finance Journal , 33*, 81-92.

Belke, A., Haskamp, U., & Setzer, R. (2016). Regional bank efficiency and its effects on regional growth "normal" and "bad" times. *Economic Modelling , 58*, 413-426.

Berger, A. N., Boubakri, N., Guedhami, O., & Li, X. (2019). Liquidity creation performance and financial stability consequences of Islamic banking: Evidence from a multinational study. *Journal of Financial Stability , 44*.

Bertay, A. C., Demirguc-Kunt, A., & Huizinga, H. (2015). Bank ownership and credit over the business cycle: Is lending by state bank less procyclical? *Journal of Banking & Finance , 50*, 326-339.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics , 87* (1), 115-143.

Bouheni, F. B., & Hasnaoui, A. (2017). Cyclical behavior of the financial stability of eurozone commercial banks. *Economic Modelling , 67*, 392-408.

Bun, M. J., & Kleibergen, F. (2010). GMM based inference for panel data models.

Caporale, G. M., Colli, D. S., & Lopez, J. S. (2014). Bank lending procyclicality and credit quality during financial crises. *Economic Modelling , 43*, 142-157.

Caporale, G. M., Lodh, S., & Nandy, M. (2017). The performance of banks in the MENA region during the global financial crisis. *Research in International Business and Finance , 42*, 583-590.

Farooq, M., & Zaheer, S. (2015). Are Islamic banks more resilient during financial panics. *Pacific Economic Review , 20* (1), 101-124.

Gulati, R., & Kumar, S. (2016). Assessing the impact of the global financial crisis on the profit efficiency of Indian banks. *Economic Modelling , 58*, 167-181.

Hanif, M. N., Iqbal, J., & Malik, M. J. (2013). Quarterisation of national income accounts of Pakistan. *SBP Research Bulletin , 9* (1).

Hasan, M. M., & Dridi, J. (2011). The effects of the global crisis on Islamic and conventional banks: A comparative study. *IMF Working Paper , 10/201*.

Hassan, M. K., & Aliyu, S. (2018). A contemporary survey of islamic banking literature. *Journal of Financial Stability , 34*, 12-43.

Hassan, M. K., Khan, A., & Paltrinieri, A. (2018). Liquidity risk, credit risk and stability in Islamic and conventional banks. *Research in International Business and Finance* .

Huang, H.-C. (., Fang, W., Miller, S. M., & Yeh, C.-C. (2015). The effect of growth volatility on income inequality. *Ecnonmic Modelling , 45*, 212-222.

Ibrahim, M. H. (2016). Business cycle and bank lending procyclicality in a dual banking system. *Economic Modelling , 55*, 127-134.

Ibrahim, M. H., & Rizvi, S. A. (2017). Bank lending, deposits and risk-taking in times of crisis: A panel analysis of Islamic and conventional banks. *Emerging Markets Review* .

Islamic banking bulletin. (2017). *Islamic Banking Department, State Bank of Pakistan* .

Khan, F. (2010). How 'Islamic' is Islamic banking? *Journal of Economic Behavior & Organization , 76* (3), 805-820.

Merilainen, J.-M. (2016). Lending growth during the financial crisis and the sovereigndebt crisis: The role of bank ownership type. *Journal of International Financial Markets, Institutions & Money , 41*, 168-182.

Miah, M. D., & Uddin, H. (2017). Efficiency and stability: Acomparative study between Islamic and conventional banks in GCC countries. *Future Business Journal , 3*, 172-185.

Mirza, N., Rahat, B., & Reddy, K. (2015). Business dynamics, efficiency, asset quality and stability: The case of financial intermediaries in Pakistan. *Economic Modelling , 46*, 358-363.

Rosman, R., Abd Wahab, N., & Zainol, Z. (2014). Efficiency of Islamic banks during the financial crisis: An analysis of Middle Eastern and Asian countries. *Pacific-Basin Finance Journal , 28*, 76-90.

Saeed, M., & Izzeldin, M. (2016). Examining the relationship between default risk andefficiency in Islamic and conventional banks. *Journal of Economic Behavior & Organization , 132*, 127-154.

Sufian, F. (2006 & 2007). The efficiency of Islamic banking industry: A non-parametric analysis with non-discretionary input variable. *Islamic Economic Studies , 14* (1 & 2).

Sulaiman, M. (2003). The influence of riba and zakat on Islamic accounting. *Indonesian Management and Accounting Review , 2* (2), 149-167.

Thakor, A. V. (2016). The highs and the lows: A theory of credit risk assessment and pricing through the business cycle. *Journal of Financial Intermediation , 25*, 1-29.