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Business orientation, efficiency, and credit quality across business cycle: Islamic versus conventional banking. Are there any lessons for Europe and Baltic States?

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ABSTRACT
This paper empirically investigates the difference between Islamic and conventional banks in terms of business dynamics, cost structure, credit quality, and stability. It also examines the difference in the response of two types of banks during peak and trough phases of the business cycle. The analysis is carried out for a sample of 280 banks in 20 countries over the 1995–2014 period. The results reveal that Islamic banks are more involved in fee-based business, are less cost-efficient, have higher credit quality, and have higher capitalization than conventional banks. We also find that Islamic banks outperformed conventional banks with regard to their credit quality and stability indicators during the trough phase of the business cycle. The improved performance seems to be due to the differences in the provisioning strategies of the two types of banks, the non-aggressive lending profile of Islamic banks, and investment in real assets. Finally, based on the empirical findings, the paper also highlights potential lessons that conventional banks in Baltic States, which were severely hit by the 2007–2008 global financial crisis, can draw from Islamic banking principles.

1. Introduction

Increased volatility in the global financial system as a result of the recent financial crisis paves the way for a strong and resilient financial system less influenced by volatility and external exposure. Islamic banking due to linkages with the real economy helps reduce the uncertainty in the financial system. Apart from its popularity among people desirous of products consistent with their religious beliefs, Islamic banking is also adopted by non-Muslims. Undoubtedly, it is currently the fastest growing banking industry. According to Islamic Financial Services Industry Stability Report (IFSB), the total Islamic banking assets increased to USD 1.5 trillion in 2017. Shariah-based banking is present in 31 countries having a dual financial system, and the number of jurisdictions where Islamic banking is systemically important (market share of more than 15% of total banking assets) increased to 12. About 88% of the Islamic banking assets are held in these 12 countries (IFSB, 2017).

This paper examines the difference in the behaviour of Islamic and conventional banks during peak and trough phases of the business cycle. Specifically, it examines the impact of the business cycle on business orientation, efficiency, credit quality, and stability of Islamic and conventional banks in a sample of 20 countries with Islamic and conventional banks operating side by side. Moreover, we examine the difference between the two banking systems by investigating their behaviour and resilience towards the changing external environment. The analysis of the paper has been conducted with a specific reference to Baltic States (Estonia, Latvia, and Lithuania) that were significantly affected by the recent global financial crisis. Stability and assets quality of the Baltic banking system both were suffered due to aggressive lending of conventional banks during the recent sub-prime crisis. Although the empirical analysis of this paper is carried out by using a panel data from the countries having dual banking system, it draws several lessons for the Baltic States to protect their banking system, particularly, during economic downturns.

Theoretically, Islamic and conventional banking systems are based on different sets of principles. Proponents of Islamic banking devise a clear distinction between Islamic and conventional business models and argue that Islamic banks are more stable and cost-efficient. However, the practice of Islamic banks has raised many questions regarding its similarity with conventional banking. The form of the Islamic contracts is in accordance with the Islamic principles, but in substance, Islamic banks are mimicking conventional banking practices. This has led to conflicting views regarding the practices of Islamic banks (Baele, Farroq, & Ongena, 2012; Chong & Liu, 2009; Dar & Presley, 2000; Greuning & Iqbal, 2008; Obaidullah, 2005). According to Zarrouk, Jedidia, and Moualhi (2016), Islamic banks, in order to circumvent interest, replace the interest rate element and discounting with fee and commission-based services. Venardos (2005) is also of the view that 'Islamic and conventional banks take different paths toward the same goal'.

The understanding of the link between business cycle fluctuations and the behaviour of Islamic banks and their conventional peers is important in order to assess the characteristics and the resilience of the two types of banks. Considering the difference in underlying principles of Islamic and conventional banks, their response to the business cycle fluctuations is assumed to be different. The two types of banks operate under different business models, have different cost structures due to different operational activities, and their ability to withstand shocks also differs due to their inherent characteristics.

Shariah-compliant finance is based on six distinct principles, which include the prohibition of Ribah (interest), the prohibition of Gharar (uncertainty), the prohibition of Maysir (Gambling), and the investment and financing of halal activities (prohibition of activities such as weapons, drugs, wine, and selling pork). Furthermore, it requires risk sharing between the provider and user of funds, i.e. the concept of profit and loss sharing (PLS) on assets and liabilities side. Lastly, all transactions should be linked to the real economy and backed by tangible assets (Mohieldin, 2012). The central difference between interest and non-interest-based banking is that conventional banking is debt-based and banks' assets are largely structured as debt instruments. Further, most risk is transferred to the other party instead of sharing. In contrast, the assets and liabilities of Islamic banks consist mostly of equity-based instruments. Islamic banking is asset-based and focuses on risk sharing. Islamic banks are not allowed to undertake collateral or guarantee in order to reduce their credit risk. Furthermore, they are not allowed to undertake hedging activities or invest in interest-based money markets and government

securities in order to meet their liquidity needs. Conventional banks have no such restrictions.

On the liabilities side, Islamic banks maintain non-remunerating deposits (*Qard Hasana* or *Amanah*), resembling demand deposits in which a bank is responsible for the funds of depositors and no interest is paid thereon. Saving deposits are like the demand deposits as they do not carry fixed payments but the profit on these accounts is shared with the depositors. The third type of deposits is the investment accounts in which profit and loss are shared between Islamic banks and depositors. In current and saving accounts, capital is guaranteed. However, in investment accounts, capital is not guaranteed. Islamic banks maintain investment accounts on the basis of Mudarabah and Musharakah as two of its most important PLS modes. In Mudarabah, the profit is shared in a predetermined ratio between banks and the depositors, while the losses are borne by the owner of the funds, which in this case are the depositors. In Musharakah accounts, a bank acts as the partner with the depositors and profits are shared between both the bank and the depositors in a predetermined ratio. However, losses are borne by the partners in proportion to their capital contribution. On the assets side, non-profit sharing known as fixed income or sale-based modes are used which include Murabahah (sale contract/ markup), Ijara (lease), Salam (forward sale), and Istisna (contract manufacturing).

Now the question is what does the different theoretical background of Islamic and conventional banks indicate for their relative business orientation, efficiency, asset quality, and stability? Theory does not predict whether Islamic banks are more efficient or stable than their conventional counterparts. According to Beck, Demirguc-kunt, and Merrouche (2013),

> the equity-like nature of savings and investment deposits might increase depositors' incentives to monitor and discipline the bank. At the same token, the equity-like nature of deposits might distort the bank's incentives to monitor and discipline borrowers as they do not face a threat by depositors of immediate withdrawal, while it increases the overall riskiness of assets.

Consider first the business orientation. Islamic banking is governed by Shariah principles, which require a different business model. We considered two aspects of the business model, i.e. the relative share of interest and non-interest revenues and the loan to deposits ratio. The relative share of non-interest revenues such as fee and commission might be higher in Islamic banks as they need to compensate for lack of interest revenues. However, the difference across bank types is unclear. Similarly, the loan to deposits ratio across both types of banks is unclear as Islamic banks neither take loans nor do they lend explicitly. They do not state loans in their balance sheet. On the assets side, the sales-based modes are not loans but a tailored form of loans as Islamic banks are limited by Shariah to invest in non-real assets. Due to this limitation, they are involved in a lending like business.

Regarding efficiency, the difference between the two types of banks is unclear. Due to lower agency problems, monitoring and screening costs might be lower for Islamic banks. On the other hand, the complexities involved in Islamic banking instruments contribute towards their higher costs. Moreover, short history and diseconomies of scale might lead to cost inefficiency.

In terms of assets quality, it is a priori ambiguous whether Islamic or conventional banks are more adequately able to assess and monitor risk and more able to discipline

borrowers. The financing instruments such as Murabahah, Ijara, Salam, Istisna are structured in a way that they have in-built stability. Due to the nature of these instruments, a bank can monitor the flow of funds to the agreed sector and chances of diversion to unproductive sectors can be minimized. In these modes, Islamic banks can monitor the usage of loans by the borrower, which might reduce the chance of default. Islamic banks in order to avoid the withdrawal risk and deterioration of investment tend to be more cautious. Similarly, due to the limitation on excessive speculation, default risk is also minimized. At the same time, as mentioned earlier, Islamic banks cannot demand collateral or undertake guarantees as their conventional equivalents undertake in order to avoid credit risk. This inability on part of Islamic banks may increase the chance of default by the counterparty. Shariah prohibits Islamic banks to charge penalties in case of delayed repayments, which may affect Islamic banks assets quality.

In terms of stability, the difference is also vague. On the one hand, Islamic banks are not allowed to invest in interest-based activities, which contributes towards their resilience (Miah & Uddin, 2017). The risk-sharing feature also mitigates credit risk as a shock on the assets side can be shared with the depositors. Due to the added advantage of monitoring by the depositors, agency problem, adverse selection and moral hazard might be minimized in Islamic banks. The Shariah's limits in terms of investment in risky activities might also help increase the stability of Islamic banks. On the other hand, Islamic banks lack the necessary risk management techniques applied by conventional banks, which might expose them to interest rate risks. Further, applying the PLS mechanism on the assets side could expose them to agency problem and the need to exercise additional control over the borrowers. This might lead Islamic banks to operational risk. Lastly, the restriction on Islamic banks in terms of using hedging instruments and lack of a Shariah-compliant money market exposes Islamic banks to liquidity risk. Islamic banks collect the majority of funds from demand deposits and are expected to be more stable as higher levels of mandatory reserves are to be maintained against these deposits (Khan, 1986). However, this stability could render Islamic banks inefficient. As a result, Islamic banks are left with fewer funds at their disposal for investment. The risk-sharing mechanism of Islamic banking also protects Islamic banks as the borrowers share profit and losses with banks, which, in turn, share profits and losses with the depositors (Chong & Liu, 2009).

In a nutshell, theory does not provide clear evidence as to how Islamic banks and conventional banks are different in terms of business orientation, efficiency, asset quality, and stability. This difference prevails possibly due to the ambiguity regarding the practices of Islamic banks, or due to the difference in size or governance mechanism.

Given these issues, we empirically investigate the difference between Islamic and conventional banks in terms of business orientation, efficiency, asset quality, and stability. We also investigate the response of Islamic and conventional banks during peak and trough phases of the business cycle. The business cycle represents fluctuations in the long-term growth of an economy. During the trough phase, interest rates are high. Economic activities and investments are at their lowest level. Thus, a credit crunch occurs due to the increased cost of borrowing and shortage of funds. While in the expansion stage, the interest rate is reduced gradually to increase investment and banks start expanding credit. This increase in credit reaches a maximum level at a peak phase. A peak is characterized by the highest level of output wherein banks expand their credit and make it available at low cost.

In a contraction stage, the rate of interest is increased in the aftermath of rising inflation during the peak stage. As a result, investments decrease, and banks reduce credit. Like lending, banks earnings tend to increase during expansion and peak stages due to strong demands for credit and banking services (Claessens, Kose, & Terrones, 2011; Lown & Morgan, 2006; Yang & Tsatsaronis, 2012). We can expect some differences in their behaviour based on the difference in their basic business dynamics.

We find that Islamic banks are more involved in fee-based business, are less cost-efficient, have higher credit quality and better capitalization than conventional banks. Furthermore, we find that Islamic banks outperformed conventional banks with regard to their credit quality and stability during the trough phase of the business cycle. The better performance of Islamic banks might be attributed to the difference in their provisioning strategies, the non-aggressive lending profile, and investments in real assets.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature. Section 3 presents data and variable construction. Section 4 discusses the empirical framework. Section 5 provides the empirical findings and presents some lessons for Baltic States, and Section 6 concludes the paper.

2. Literature review

The comparison of Islamic and conventional banks has been a key area of research after the global financial crisis. The resilience of Islamic banks during the crisis has diverted the attention towards investigating the features inherent in Islamic banking that contributed towards their relative resilience to the global economic shocks. A review of the literature reveals contradictory results regarding the difference between Islamic and conventional banks in terms of business orientation, efficiency, assets quality and stability. Regarding business orientation, Aggarwal and Yousef (2000), Chong and Liu (2009), Khan (2010), Ariff and Rosly (2011), and Suzuki, Miah, Wanniarachchige, and Sohrab (2017) found that Islamic banking activities are similar to conventional banks. Furthermore, Shahimi, Ismail, and Ahmad (2006), Beck et al. (2013), and Hardianto and Wulandari (2016) advocated that Islamic banks have higher intermediation ratios and fee-based revenues. Additionally, Miah and Uddin (2017) found that the Islamic banking model differs considerably from the conventional model. With regards to cost efficiency, Hassan (2006), Srairi (2010), Abdul-Majid, Saal, and Battisti (2010), Beck et al. (2013), Miah and Sharmeen (2015), Hardianto and Wulandari (2016), Aman, Sharif, and Arif (2016), and Miah and Uddin (2017) found that Islamic banks are relatively less cost-efficient. In contrast, Brown, Hassan, and Skully (2007) and Pradiknas and Faturohman (2015) found that Islamic banks are more cost-efficient. However, Bader, Mohamad, Ariff, and Hassan (2008) found no significant difference between Islamic and conventional banks in terms of cost efficiency. Regarding assets quality, we find a unanimous interpretation that Islamic banks have better assets quality as compared to conventional banks as documented by Baele et al. (2012), Rahim and Zakaria (2013), Beck et al. (2013), and Aman et al. (2016). Similarly, Erol, Baklaci, Aydogan, and Tunc (2014) found that Islamic banks surpass conventional banks in terms of asset quality, liquidity, and earnings. In contrast, Wasiuzzaman and Gunasegavan (2013) found better assets quality for conventional banks as compared to Islamic banks in Malaysia. There is also an evident difference between the stability of Islamic and conventional banks. Rosly and Bakar (2003) and Wasiuzzaman and Gunasegavan (2013) reported

a higher profitability for Islamic banks. Samad (2004) and Abedifar, Molyneux, and Tarazi (2013) found that Islamic banks are less exposed to credit risk. Abedifar et al. (2013) further reported that Islamic banks are more stable than conventional banks. Furthermore, Kassim, Majid, and Shabri (2009) and Beck et al. (2013) found that Islamic banks are better able to sustain financial shocks as compared to conventional banks. Ariss (2010) and Beck et al. (2013) established that Islamic banks are better capitalized. On the same lines, Cihak and Hesse (2010) found that small Islamic banks are more stable than small conventional banks, large conventional banks are more stable than large Islamic banks, and small Islamic banks are more stable than large Islamic banks. Rahim and Zakaria (2013) reported similar findings of higher stability of Islamic banks. Additionally, Rahim and Zakaria (2013) and Zarrouk et al. (2016) demonstrated that Islamic banks perform better in environments where economic growth is high. Khediri, Charfeddine, and Youssef (2015) showed that Islamic banks are superior to conventional banks in terms of having more profitability, more liquidity, better capitalization and lower credit risk. Likewise, Mirza, Rahat, and Reddy (2015) and Aman et al. (2016) established that Islamic banks are better capitalized and more stable than conventional banks in Pakistan.

With regards to the stability during crisis period, Hasan and Dridi (2010) found that Islamic banks' higher profitability reduced the adverse impact of the crisis. Islamic banks with better credit quality and assets growth contribute positively towards financial stability. On the same lines, Olson and Zoubi (2016) found that Islamic banks were more profitable and stable than conventional banks prior to the financial crisis. They sustained the initial phase of the crisis better than their conventional counterparts. However, as the crisis spread to the real economy, Islamic banks underperformed conventional banks. Miah and Uddin (2017) found that Islamic banks are more stable than conventional bank during crisis periods. In contrast, Kabir and Worthington (2017) found that conventional banks are more stable than Islamic banks, while Bourkhis and Nabi (2013) found no significant difference between both types of banks in terms of soundness during the crisis period.

Numerous studies examined the impact of the business cycle on banks' behaviour. Albertazzi and Gambacorta (2009) found a positive relationship between bank profitability and business cycle fluctuations, while Ozili (2015) reported an inverse relationship. Different researchers advocated that during an economic downturn, banks' provisioning tends to be high (Adzis, Anuar, & Mohd Hishamuddin, 2015; Arpa, Giulini, Ittner, & Pauer, 2001; Bikker & Hu, 2002; Bikker & Metzemakers, 2005; Cavallo & Majnoni, 2002; Glen & Velez, 2011; Laeven & Majnoni, 2003; Pain, 2003; Isa, Choong, Fie, & Rashid, 2015). Contrary to these findings, Anandarajan, Hasan, and McCarthy (2007) found a positive relationship between loan loss provision and GDP. Some authors also documented a negative relationship between GDP growth and non-performing loans (NPL) such as Khemraj and Pasha (2009), Jordan and Tucker (2013), Messai and Jouini (2013), and Skarica (2014). We also find several studies that examine the impact of GDP growth on Islamic banks' behaviour. For instance, Bashir (2003), Hassan and Bashir (2003), Zeitun (2012) and Almanaseer (2014) documented that a favourable macroeconomic environment stimulates higher profitability of Islamic banks. Masood and Ashraf (2012) showed that the loan losses provision of Islamic banks is lower than that of conventional banks, and GDP growth contributes negatively to the bank's profitability. In contrast, Abdullah, Bujang, and Ahmad (2015) observed a negative relationship between the business cycle

and loan loss provisions. Recently, Rashid and Jabeen (2016) also showed a negative impact of GDP on the performance of both Islamic and conventional banks. However, more recently, Rashid, Yousaf, and Khaleequzzaman (2017) documented that GDP has a positive and significant impact on the financial stability of both Islamic and conventional banks in Pakistan.

There is a considerable gap in the literature as previous studies investigated the effects of GDP and other macroeconomic indicators on Islamic and conventional banks, but failed to study the behaviour of Islamic banks with respect to different business cycle phases. This study differs from the literature mentioned earlier as it investigates the difference in the behaviour of Islamic and conventional banking business orientation, cost efficiency, assets quality, and stability during changes in the business cycle. What we know from the previous literature is that Islamic banks performed better than conventional banks during the global financial crisis. This inherent resilience has paved the way for further research, which requires comparing their resilience during the changing macroeconomic environment. In this sense, a study on the impact of the business cycle on Islamic and conventional banks is expected to fill the gap in the literature and contributes by providing new inferences and evidence for policymakers and regulators. It helps to capture the sensitivity of both types of banking in response to economic fluctuations.

3. Data and variable construction

3.1. Data and sample sources

For the empirical investigation, we used a dataset comprising of countries having both conventional and Islamic banks operating side by side. We use annual panel dataset for the period from 1995 to 2014. Specifically, we collected data from 62 Islamic and 218 conventional banks across 20 countries.[1] The dataset consists of full-fledged Islamic and conventional banks. We used the Datastream and Bankscope database for bank-level data, and data on country-level variables are taken from the World Bank, IMF database (International Financial Statistics) and Datastream.

3.2. Variables construction

To compare Islamic and conventional banks, we use a large set of variables selected in adherence to the previous literature (Table 1). Both types of banks are compared regarding their business dynamics, cost efficiency, quality of credit, and stability. First, business orientation shows the business model of the banks upon which their business activities and operations are based. The Shariah-compliant nature of the Islamic banks implies a different business model than the conventional banks, which can be assessed by studying their fee-based business and funding allocation. Two indicators suggested by Demirguc-Kunt and Huizinga (2010) and Beck et al. (2013) are employed to measure business orientation. The source of funds is measured using the fee-income ratio, which is the ratio of fee-income to total operating income. It is the proxy used to measure the relative extent of interest and non-interest revenues. It shows the extent to which the banks are involved in non-interest-based sources of earnings revenues, e.g. fees and commission etc. To measure the funding allocation, we use the loans to deposit ratio (also referred

Table 1. Construction of variables.

Variable categories	Name of Variables	Description	Symbol
Dependent variables			
Business orientation	Fee-Income Ratio (FIR)	The ratio of fee-income to total operating income	$BANK_{ijt}$
	Loans to Deposits Ratio (LDR)	Loans given by the banks as the percentage of the total deposits	
Efficiency	Overhead Cost (OHR)	The ratio of total operating costs divided by total assets	
	Cost Income Ratio (CIR)	Overhead costs divided by gross revenues	
Credit quality	Loan Loss Reserves (LLR)	Loan loss reserves to total gross loans	
	Loan Loss Provisions (LLP)	Loan loss provisions to total gross loans	
	Non-Performing Loans (NPL)	Non-performing loans to total gross loans	
Stability	Maturity mismatch (MM)	Ratio of liquid assets to deposits and short-term funding	
	Z-score	The ratio of sum of the bank's return on assets and equity to assets ratio to the standard deviation of ROA. $Z = (\mu + K)/\sigma$	
	Return on assets (ROA)	The ratio of net income of the bank by its total assets.	
	Equity assets ratio (EAR)	Equity capital as percentage of total assets	
Independent variables			
Controlled variables	Size	Log of total assets	X_{ijt}
	Fixed Assets Ratio (FAR)	Ratio of fixed assets to total assets	
Dummies	Islamic Bank Dummy	Dummy variables equal to 1 if the bank i in country j is an Islamic bank and 0 otherwise	$D_{ij}^{Islamic}$
	Conventional Bank Dummy	Dummy variables equal to 1 if the bank i in country j is a conventional bank and 0 otherwise	$D_{ij}^{Conventional}$
	Peak Phase Dummy	Dummy variables equal to 1 if the year corresponds to a Peak phase of the business cycle in a given year and 0 otherwise	$Phase_{jt}$
	Trough Phase Dummy	Dummy variables equal to 1 if the year corresponds to a Trough phase of the business cycle in a given year and 0 otherwise	$Phase_{jt}$

to intermediation ratio), which shows the extent of loans given, by the banks as the percentage of the total deposits. It measures the deposit allocation towards advances. Second, we compare the cost efficiency of both types of banks using two variables as suggested by Beck et al. (2013).

Efficiency measures the cost structure of banks and shows the ability of the bank to keep its costs to a minim. The proxies used to measure efficiency include overhead cost which is the ratio of total operating costs to total assets and cost income ratio given by overhead costs divided by gross revenues.

Further, we compare the credit quality of Islamic and conventional banks using three measures suggested by Beck et al. (2013). Credit quality shows the ability of the bank to manage its credit, adequately assess and monitor risk and discipline borrowers. The three measures are loan loss reserves to total gross loans which measure the quality of loans of the banks whereby the higher the ratio, the more problematic the loans. Loan loss reserves indicate the stability of a bank's lending base. The second measure is the ratio of loan loss provisions to total gross loans. Loan loss provisions (LLP) is an expense set aside as an allowance for bad loans. The amount of provisions needed depends on the likelihood of the loan not being repaid, the quality of the loan collateral or bank regulation. The third measure is the ratio of non-performing loans to total gross loans. An NPL is a loan either in default or close to being in default.

Lastly, we measure stability using four indicators. Stability measures the ability of the banks to withstand adverse circumstances. First, the maturity mismatch given by the

ratio of liquid assets to deposits and short-term funding. This measure assesses the banks' sensitivity to the bank runs. It shows the ability of a bank to remain solvent in the short-term. Second, z-score is widely used in the literature as a stability indicator (Beck et al., 2013; Cihak & Hesse, 2010; Kabir, Worthington, & Gupta, 2015). Z-score represents the number of standard deviations by which the return on asset has to fall in order to incur a loss (negative return). Z-score is inversely related to the probability of a bank's solvency, i.e. the probability that the value of its assets becomes lower than the value of debt (i.e. the losses exceed equity). It is defined by the formula; $Z = (\mu + K)/\sigma$, where μ denotes the bank's ROA, K is the equity capital and reserves as a percentage of total assets, and σ is the standard deviation of ROA as a proxy for return volatility. A higher z-score implies a lower probability of insolvency risk. Third, ROA is the basic measure of bank profitability, which divides the net income of the bank by its total assets. It indicates how well a bank's assets are being used to generate profits. Fourth, equity assets ratio is the equity capital as a percentage of total assets. It represents the measure of bank capitalization. A high equity assets ratio is positively associated with bank stability.

We study the impact of business cycle phases (peak and trough) on Islamic and conventional banks while controlling for certain bank-specific variables in order to account for bank-level differences. Specifically, we use two control variables as suggested by the literature (Beck et al., 2013). First, the log of total assets is used to control for bank size. The second one is the ratio of fixed assets to total assets, which is included in the specification in order to control for the opportunity costs that arise from having non-earnings assets on the balance sheet.

To identify the peak and trough phases of the business cycle, we first divide the GDP of each country included in the sample into three quartiles (Q1, Q2, and Q3) over the sample period. We then, for any given year and for the underlying country, define the peak (trough) phase of the business cycle if the GDP of the country lies in the third (Q3) (first (Q1)) quartile. The dummy for peak (trough) phase takes a value of 1 for the country-year observations in which the peak (trough) phase occurs and otherwise 0. It is worth noting that multiple peak and trough phases of the business cycle can occur for a country over the sample period. It should be also noted that we do not consider the contraction and expansion phases of the business cycle, as the objective of our study is to compare Islamic and conventional banking in the peak and trough phases of the business cycle.

4. Econometric framework

4.1. Empirical models

To examine the impact of business cycle phases on Islamic and conventional banks, we extend the empirical framework proposed by Beck et al. (2013) by incorporating business cycle phases. Business cycle phases have been incorporated into our model following the procedure used by Akhtar (2012) in his capital structure study. The conceptual framework consists of six equations. First, the baseline model is formulated whereby we investigate the difference in both types of banks in terms of business orientation, efficiency, credit quality, and stability by controlling the size and fixed assets ratio. In the next step, we introduce phase dummies to examine the differential impact of peak and trough phase on Islamic and conventional banks.

4.1.1. Specification of the baseline empirical model: comparing Islamic and conventional banks

To carry out our investigation, we estimate the baseline empirical model for Islamic and conventional banks in terms of differences in business model, efficiency, asset quality, and stability across the two bank types. Specifically, we estimate the following regression:

$$BANK_{ijt} = \alpha\, BANK_{ijt-1} + \beta_1 D_{ij}^{Islamic} + \beta_2 D_{ij}^{Conventional} + C_j + B_i + Y_t + \varepsilon_{ijt}. \tag{1}$$

Next, we examine the same relationship by controlling for a set of variables that include size, and share of fixed assets in total assets.

$$BANK_{ijt} = \alpha\, BANK_{ijt-1} + \beta_1 D_{ij}^{Islamic} + \beta_2 D_{ij}^{Conventional} + \sum_{n=1}^{N} \beta_{3,n} X_{n,ijt}$$
$$+ C_j + B_i + Y_t + \varepsilon_{ijt}, \tag{2}$$

where $BANK_{ijt}$ is one of the measures of business orientation, efficiency, credit quality and stability of bank i in country j at time t. $D_{ij}^{Islamic}$ is the dummy variables equal to 1 if the bank i in country j is an Islamic bank and 0 otherwise. $D_{ij}^{Conventional}$ is the dummy variables equal to 1 if the bank i in country j is a conventional bank and 0 otherwise. X_{ijt} is the vector of bank-specific variables of bank i in country j at time t. It includes size and share of fixed assets in total assets. C_j, B_i, and Y_t measure country, bank, and time fixed effects, respectively.

4.1.2. Business cycle phases and their differential effect on Islamic and conventional banks

We next estimate a more complicated model in which business cycle phases and inter-action terms are introduced to test whether the impact of peak and trough phases on Islamic banks is statistically different from that of conventional banks. As discussed earlier, it is assumed that the concept of Shariah-compliant products and the structure of Islamic banking enable them to behave differently as compared to conventional banks in response to changing macroeconomic conditions. We ascertain the impact of business cycle phases by introducing phase dummies. Then, we interact phase dummies with Islamic and conventional bank dummy to investigate the differential impact of these phases on two types of banks.

The impact of business cycle phases on different measure of business orientation, efficiency, credit quality, and stability is given by the following equation:

$$BANK_{ijt} = \alpha\, BANK_{ijt-1} + \beta_1 D_{ij}^{Islamic} + \beta_2 D_{ij}^{Conventional} + \sum_{n=1}^{N} \beta_{3,n} X_{n,ijt} \times D_{ij}^{Islamic}$$
$$+ \sum_{n=1}^{N} \beta_{4,n} X_{n,ijt} \times D_{ij}^{Conventional} + \beta_5 Phase_{jt} + C_j + B_i + Y_t + \varepsilon_{ijt}. \tag{3}$$

In Equation (3), $Phase_{jt}$ is for peak, and trough phase in country j at time t, $Peak_{jt}$ is a dummy variable equal to 1 if the year corresponds to a peak phase and 0 otherwise. $Trough_{jt}$ is a dummy variable which takes the value equal to 1 if the year corresponds to a trough phase and 0 otherwise. We estimate separate model for the peak and trough phase. $X_{ijt} \times D_{ij}^{Islamic}$ and $X_{ijt} \times D_{ij}^{Conventional}$ represent bank characteristics interacted with Islamic and conventional bank dummy, respectively. Interaction terms of Islamic and conventional with control variables is introduced to ascertain the differential impact of

bank-specific variables on different measures of business orientation, efficiency, credit quality and stability between the two types of banks using tests for differential effects. In Equation (3), the estimator of key interest is β_5, which shows a change in business orientation, efficiency, credit quality, and stability during each phase.

Next, in Equation (4) and Equation (5) we interact the phase dummy with bank dummy to investigate differential impact of peak and trough phase on Islamic and conventional banks respectively.

$$
\begin{aligned}
BANK_{ijt} = {} & \alpha \, BANK_{ijt-1} + \beta_1 D_{ij}^{Islamic} + \beta_2 D_{ij}^{Conventional} + \sum_{n=1}^{N} \beta_{3,n} X_{n,ijt} \times D_{ij}^{Islamic} \\
& + \sum_{n=1}^{N} \beta_{4,n} X_{n,ijt} \times D_{ij}^{Conventional} + \beta_5 Peak_{jt} \times D_{ij}^{Islamic} \\
& + \beta_6 Peak_{jt} \times D_{ij}^{Conventional} + C_j + B_i + Y_t + \varepsilon_{ijt}.
\end{aligned}
\tag{4}
$$

In Equation (4), $Peak_{jt} \times D_{ij}^{Islamic}$ and $Peak_{jt} \times D_{ij}^{Conventional}$ represent the interaction of the peak dummy with Islamic and conventional bank dummy, respectively, to ascertain the differential impact of peak phase between Islamic and conventional banks. β_5 and β_6 show the impact of peak phase on business orientation, efficiency, credit quality and stability for Islamic and conventional banking, respectively.

$$
\begin{aligned}
BANK_{ijt} = {} & \alpha \, BANK_{ijt-1} + \beta_1 D_{ij}^{Islamic} + \beta_2 D_{ij}^{Conventional} + \sum_{n=1}^{N} \beta_{3,n} X_{n,ijt} \times D_{ij}^{Islamic} \\
& + \sum_{n=1}^{N} \beta_{4,n} X_{n,ijt} \times D_{ij}^{Conventional} + \beta_5 Trough_{jt} \times D_{ij}^{Islamic} + \beta_6 Trough_{jt} \\
& \times D_{ij}^{Conventional} + C_j + B_i + Y_t + \varepsilon_{ijt}.
\end{aligned}
\tag{5}
$$

In Equation (5), $Trough_{jt} \times D_{ij}^{Islamic}$ and $Trough_{jt} \times D_{ij}^{Conventional}$ represent the interaction of the trough dummy with Islamic and conventional bank dummy, respectively, to ascertain the differential impact of trough phase between Islamic and conventional banks. β_5 and β_6 show the impact of trough phase of the business cycle on business orientation, efficiency, credit quality and stability for Islamic and conventional banking, respectively.

In both Equations (4) and (5) the test of differential effect is also performed where we test whether the impact of $Peak_{jt}$ and $Trough_{jt}$ on business orientation, efficiency, credit quality and stability is the same for Islamic and conventional banking ($\beta_5 = \beta_6$).

4.2. Estimation technique

To estimate the proposed empirical models, we use the robust two-step system-Generalized Method of Moments (GMM) estimation technique developed by Arellano and Bover (1995) and Blundell and Bond (1998). The system-GMM requires a system of equations in both first-differences and levels, where the instruments used in the levels equations are lagged first-differences of the series. The system-GMM technique controls for heterogeneity across individual banks and removes the time-invariant unobservable bank-specific and country-specific effects by taking the first difference of each underlying variable effectively controlling for the correlation between the regressors and the residuals. Another advantage of the system-GMM estimator is that it mitigates potential endogeneity in the regressors by using appropriate lags of the independent variables as instrumental

variables (by instrumenting differenced equations with lagged levels of the variables and equations in levels with the lags of the first-differences of the variables).

5. Empirical findings

5.1. The validity of the instruments

Tests of overidentifying restriction and second-order serial correlation are performed to ensure that system-GMM process is correctly specified. The J-statistic of Hansen (1982), the test of overidentifying restrictions, is asymptotically distributed as chi-square with a degree of freedom equal to the number of overidentifying restrictions. The null hypothesis of the J-test is that the instruments are orthogonal to the residuals. The J-statistics reveal that the instruments used for the system-GMM estimator are valid and satisfy the orthogonality conditions. In addition, Arellano and Bond's (1991) AR(2) test is performed to examine the presence of second-order serial correlation in the residuals. The null hypothesis of AR(2) is that there is no serial correlation in the residuals. Although the model is likely to exhibit the first-order serial correlation as the model is dynamic, the second-order serial correlation should not be present in the residuals. The estimates of the serial correlation test provide strong evidence of the absence of second-order serial correlation in the residuals. The estimates from the above diagnostic tests are reported in Panel B of each table presented in the results section.

5.2. Results

5.2.1. Descriptive statistics

Table 2 provides descriptive statistics for the full sample as well as Islamic and conventional banks. First, when we compare business orientation, we observe that FIR has an average of 17.75%; the mean value is higher for the conventional banks as compared to Islamic banks. LDR has a mean of 127.9%. The mean value of LDR is 220.471% and 107.09% for Islamic and conventional banks respectively. There is a significant difference between Islamic and conventional banks in terms of LDR. Our findings suggest that Islamic banks intermediate more of the deposits they receive and invest more in advances with the majority of funds mobilized through deposits as confirmed by Beck et al. (2013). Second, with regards to efficiency, we find that the mean value of OHR is significantly lower for Islamic banks. Third, comparing credit quality, we find that the mean value of LLR is lower for Islamic banks and LLP is higher for Islamic banks.

While examining stability, we observe that the mean value of MM, z-score and EAR is significantly higher for Islamic banks, which is in line with the results presented in Beck et al. (2013) and Bourkhis and Nabi (2013). Islamic banks have significantly higher MM of 58.2% as compared to conventional banks. Z-score has an average of 16.75 with the mean value of 21.71% for Islamic and 15.6% for conventional banks. The difference is statistically significant. ROA has an average of 1.6%, but there is no significant difference between the two types of banking in terms of ROA. The EAR has an average of 13.37% with a significantly higher mean value for Islamic banks as compared to conventional banks. Our findings suggest that Islamic banks are more able to avoid bank runs, are more stable, and are better capitalized as compared to conventional banks. Lastly,

Table 2. Descriptive statistics Islamic banks and conventional banks.

	Business orientation		Efficiency		Credit quality			Stability				Control variables	
	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR	SIZE	FAR
Observation	2721	3126	2909	3202	2681	2666	2140	1792	3123	2667	3224	3230	3209
Mean	17.75	127.9	54.77	6.833	6.803	2.965	8.381	49.42	16.75	1.647	13.37	14.46	2.190
Standard Deviation	81.14	922.0	159.4	6.941	9.598	29.62	11.41	56.32	29.01	3.910	11.34	1.863	2.570
Islamic	14.204	220.471	52.686	4.573	6.620	9.982	9.227	58.260	21.706	1.500	18.089	14.120	2.341
Conventional	18.563	107.093	55.277	7.385	6.840	1.486	8.224	46.373	15.604	1.683	12.237	14.548	2.154
Difference t-test (p-value)	0.2745	0.008***	0.7290	0.0000***	0.6542	0.000***	0.1392	0.001***	0.000***	0.339	0.00***	0.0000***	0.103

Note: Mean values of variables for full sample, Islamic and conventional Banks.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

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concerning bank-specific variables, we find that Islamic banks are significantly smaller in size and have higher fixed assets ratio. However, there is no significant difference between both types of banking in terms of fixed assets ratio.

5.2.2. Regression results and discussion

5.2.2.1. Comparing Islamic and conventional banks. Table 3 compares Islamic and conventional banks in terms of business orientation, efficiency, credit quality and stability while controlling for country-year specific effects. We observe that Islamic banks have a higher fee-income ratio, higher intermediation efficiency, lower cost efficiency, higher credit quality, and are higher capitalized. Examining business orientation, we find higher FIR and LDR for Islamic banks in line with the findings of Beck et al. (2013), Faye, Triki, and Kangoye (2013), and Hardianto and Wulandari (2016). Shariah restriction on lending money and yielding interest cause Islamic banks to seek alternative revenue sources by increasing service income. Higher LDR for Islamic banks implies that they lend more of the deposits they receive. When we compare cost efficiency, we find that CIR and OHR are higher for Islamic banks as suggested by Hardianto and Wulandari (2016), Aman et al. (2016), and Miah and Uddin (2017). Islamic banks are relatively young and small in size and do not have enough customers to achieve economies of scale. The complexity of the contracts and the high cost of Shariah supervisory boards and product development experts also contribute towards lower efficiency. Examining credit quality, Islamic banks have less LLR and less NPL consistent with the findings of Rahim and Zakaria (2013), Mirza et al. (2015), and Aman et al. (2016). Islamic banks cater to the financial needs of religiously motivated clients and usually target low-risk investment projects. They adopt moderate lending patterns and have less probability of default. They cannot shift the credit risk of their trade contracts (e.g. Murabaha) to the third party by using any of the risk-mitigating tools such as credit default swaps (CDS) or securitization. This fact persuades Islamic banks to perform a vigilant evaluation of risk resulting in better asset quality. Islamic banks are more stable in terms of having higher liquidity, Z-score, and EAR as proposed by Bourkhis and Nabi (2013), Rahim and Zakaria (2013), and Mirza et al. (2015). ROA of Islamic bank is lower than a conventional bank as stated by Beck et al. (2013). Islamic banks are significantly more liquid and in a better position to avoid bank runs. A possible reason is that they are forbidden to invest in risky trading activities. Furthermore, risk-sharing arrangements in Islamic banks proves to be a risk-reducing factor.

Next, we estimate the difference between the two banking groups by considering the difference in size and asset structure as shown by Equation (2). The results in Table 4 support the findings of Table 3 of higher FIR, higher CIR, lower LLR and lower NPL, higher MM and higher EAR of Islamic banks. Examining the impact of size, we observe that larger banks have a lower fee-income ratio as suggested by Damankah, Anku-Tsede, and Amankwaa (2014). As the size of the bank increases, they have increased access to diversified financial markets and instruments that reduce their dependence on service-based sources of revenue generation. Increases in the size of bank decrease CIR and OHR. Larger banks have economies of scale, which enables them to get financial services in bulk at low cost. According to Beck et al. (2013), the impact of cost inefficiency is greater in the case of smaller Islamic banks as scale economies are required in designing of Shariah-compliant products. As for credit quality, we find that large banks

Table 3. Comparing Islamic and conventional banks.

	Model 1										
	Business orientation		Efficiency		Credit quality			Stability			
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: *estimation results*											
$BANK_{ijt-1}$	0.00968**	0.261	0.0865	0.385***	0.741***	0.373***	0.358**	0.712***	0.589***	0.226***	0.573***
	(0.00470)	(0.165)	(0.0582)	(0.0522)	(0.0764)	(0.00611)	(0.143)	(0.0410)	(0.0692)	(0.0272)	(0.134)
$Islamic_{ij}$	27.82***	78.98**	49.08***	7.765***	1.813***	6.078	5.135***	19.81**	13.75**	0.0384	9.179**
	(5.594)	(30.54)	(4.509)	(1.042)	(0.536)	(5.150)	(1.391)	(8.545)	(6.479)	(3.031)	(3.846)
$Conventional_{ij}$	19.89***	60.21***	46.68***	4.297***	3.134***	4.507***	9.388***	9.478***	7.500***	1.356***	5.411***
	(1.305)	(12.92)	(3.267)	(0.459)	(0.995)	(1.673)	(2.341)	(2.857)	(1.031)	(0.125)	(1.692)
Panel B: *diagnostic tests*											
Observations	1921	1369	2069	2345	1954	1447	1254	1302	2316	2351	2375
Banks	209	244	219	262	209	209	172	141	247	237	262
AR(2)	0.48	0.89	0.82	−0.56	−0.96	0.85	1.22	−0.25	−0.15	−0.69	1.19
p-Value	0.634	0.374	0.414	0.575	0.336	0.395	0.222	0.806	0.881	0.492	0.232
J-statistic	190.24	16.47	202.32	239.53	185.22	174.60	152.76	127.45	185.07	207.82	162.11
p-Value	0.887	0.225	0.672	0.622	0.482	0.123	0.513	0.994	0.161	0.774	0.219

Notes: The *J*-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the first-differenced residuals. Standard errors in parentheses.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

Table 4. Comparing Islamic and conventional banks – controlling for bank characteristics.

	Model 2										
	Business orientation		Efficiency		Credit quality			Stability			
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: estimation results											
$BANK_{ijt-1}$	0.357***	0.0883***	0.263***	0.766***	0.764***	0.209	0.770***	0.669***	0.774***	0.619***	0.581***
	(0.121)	(0.0135)	(0.0810)	(0.0547)	(0.0703)	(0.141)	(0.0719)	(0.0694)	(0.0886)	(0.0530)	(0.0775)
$Islamic_{ij}$	29.55***	105.0***	63.35***	4.133**	10.06**	8.900**	12.94**	58.26***	36.81***	3.288***	11.03***
	(9.899)	(33.67)	(10.43)	(1.844)	(4.064)	(4.284)	(5.778)	(12.50)	(13.10)	(1.254)	(3.525)
$Conventional_{ij}$	27.78***	78.95**	61.22***	4.441**	13.04***	9.009**	13.21**	56.90***	38.25***	3.363***	10.19***
	(9.055)	(30.78)	(10.44)	(1.928)	(4.582)	(4.169)	(5.363)	(11.69)	(13.29)	(1.262)	(3.304)
$SIZE_{ijt}$	−1.049**	0.864	−2.089***	−0.224**	−0.736***	−0.508**	−0.734**	−2.972***	−2.264***	−0.161**	−0.356**
	(0.523)	(1.737)	(0.614)	(0.103)	(0.270)	(0.254)	(0.318)	(0.693)	(0.779)	(0.0733)	(0.173)
FA_{ijt}	−0.0423	−10.29***	3.686**	0.0764**	0.0746	0.00267	−0.0217	−0.556*	−0.432*	−0.0820	0.0705
	(0.274)	(3.493)	(1.495)	(0.0385)	(0.0680)	(0.0755)	(0.178)	(0.325)	(0.251)	(0.0513)	(0.133)
Panel B: diagnostic tests											
Observations	1156	175	1325	264	1946	945	532	1282	2316	1006	1813
Banks	184	175	175	101	209	151	109	139	246	155	233
AR(2)	0.61	1.03	0.96	−0.29	−1.00	0.44	1.00	−0.25	−0.05	1.55	0.86
p-Value	0.541	0.301	0.337	0.769	0.316	0.660	0.315	0.800	0.957	0.120	0.390
J-statistic	155.00	49.23	149.07	36.16	181.35	136.88	103.98	120.54	230.96	105.91	179.03
p-Value	0.920	0.177	0.193	0.368	0.298	0.279	0.999	0.319	0.277	0.121	0.506

Notes: The *J*-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the first-differenced residuals. Standard errors in parentheses.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

have lower LLR, LLP, and NPL. The inverse relationship means that large banks have better risk management strategies that enable them to exercise extensive monitoring and control over risk and borrowers.

5.2.2.2. Business cycle phases and their differential effect on Islamic and conventional banks.

Table 5 shows the impact of peak phase on different measures of business orientation, cost efficiency, credit quality and stability. Our results show that Islamic banks are more involved in the fee-based business; they have high CIR and high EAR. We find that during the peak phase of the business cycle, FIR decreases as banks have more opportunities to make income instead of charging fees and commission as stated by Hahm (2008) and Ruzickova and Teply (2015). LDR increases during the peak phase as stated by Alqahtani, Mayes, and Brown (2016) and Park, Jun, and Lee (2015). During the economic boom, the demand for credit increases, so banks usually opt for wholesale funding instead of deposit funding. As a result, banks increase their loan-deposit ratio. When we examine cost efficiency, we find that CIR and OHR decrease during the boom period. Mirza et al. (2015) reported similar findings. With economic upturn, the variables like LLR, LLP and NPL show decreasing patterns as explained by Alqahtani, Mayes, and Brown (2016), Mirza et al. (2015) and Abdullah et al. (2015). This negative behaviour of LLP has two perspectives. Either loan loss provision decreases as a result of high economic growth, which is referred to as non-discretionary, or LLP is deliberately set low by banks during economic expansion. It provides a cushion against future expected and unexpected losses to safeguard banks against financial risk and bankruptcy. Higher levels of GDP growth increase borrowers' income, improve the debt servicing capacity of the borrower and reduce non-performing loans. The stability of banks increases during the peak phase consistent with the findings of Mirza et al. (2015), Alqahtani et al. (2016) and Ashraf, Rizwan, and L'Huillier (2016). During the economic boom, banks adopt better risk management practices and are better equipped to sustain unexpected shocks, which improved their stability. Banks through diversification of their assets significantly enhance their financial stability. Building up of capital during prosperity helps banks remain solvent and better able to sustain negative shocks during an economic downturn.

When we examine the behaviour of Islamic and conventional banks during the peak phase (Table 6), we find that Islamic and conventional banks behave differently. For instance, during an economic upturn, the FIR of Islamic banks increases according to Alqahtani et al. (2016). In contrast, the impact of the peak on the fee-income ratio is negative for conventional banks. According to DeYoung and Rice (2004), banks operating in strong economies and with high market power are able to generate more fee-based revenues. Islamic and conventional banks both increase their LDR during the peak phase. The size of the coefficient is greater is the case of Islamic banks. Islamic banks intermediate more of their deposits as compared to conventional banks as stated by Beck et al. (2013). Examining the impact of peak phase on the cost efficiency of Islamic and conventional banks we find that CIR of both banks decreases during expansion. The CIR of Islamic banks decreases to a greater extent compared to conventional banks, and the difference is statistically significant. Turning to credit quality, Islamic and conventional banks decrease their LLR and LLP, and NPL when the economy is growing. The profitable opportunities increase during the peak and banks find it more profitable to invest idle funds. According to Beck et al. (2013), the risk-sharing feature of Islamic banks reduces the mismatch of

Table 5. Impact of the peak phase of the business cycle.

| | Model 3 | | | | | | | | | | |
| | Business orientation | | Efficiency | | Credit quality | | | Stability | | | |
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: estimation results											
$BANK_{ijt-1}$	0.197***	0.501***	0.131***	0.585***	0.779***	0.151	0.656***	0.655***	0.745***	0.588***	0.709***
	(0.00638)	(0.00035)	(0.00031)	(0.0767)	(0.0665)	(0.0950)	(0.00234)	(0.00967)	(0.0357)	(0.00318)	(0.0171)
$Islamic_{ij}$	30.52***	49.11***	95.29***	18.39***	6.188	0.409	0.113	60.65***	10.81*	1.130***	23.10**
	(3.948)	(4.996)	(0.632)	(6.177)	(6.428)	(2.346)	(0.541)	(10.55)	(6.105)	(0.171)	(9.895)
$Conventional_{ij}$	6.074***	−0.290	64.75***	1.703	12.23***	7.318**	18.56***	78.99***	31.46**	−0.0712	1.557*
	(1.730)	(1.117)	(0.492)	(2.494)	(4.369)	(3.350)	(0.315)	(3.761)	(15.62)	(0.158)	(0.793)
$SIZE_{ijt} \times D_{ij}^{Islamic}$	−1.215***	−0.474	−3.443***	−1.014**	−0.322	0.0526	0.131***	−3.207***	−0.576	0.000366	−1.013*
	(0.267)	(0.364)	(0.0255)	(0.400)	(0.433)	(0.144)	(0.0345)	(0.679)	(0.357)	(0.0120)	(0.583)
$SIZE_{ijt} \times D_{ij}^{Conventional}$	0.536***	2.754***	−2.115***	0.0258	−0.692**	−0.407**	−1.023***	−4.298***	−1.524*	0.0445***	0.104***
	(0.107)	(0.0634)	(0.0310)	(0.158)	(0.268)	(0.200)	(0.0212)	(0.233)	(0.913)	(0.0101)	(0.0377)
$FA_{ijt} \times D_{ij}^{Islamic}$	1.405***	1.651***	1.418***	−0.0525	−0.0399	−0.156	−0.249***	0.00117	0.278*	−0.258***	−2.227**
	(0.0692)	(0.0663)	(0.0704)	(0.169)	(0.299)	(0.102)	(0.0487)	(0.591)	(0.149)	(0.00843)	(0.928)
$FA_{ijt} \times D_{ij}^{Conventional}$	−0.00776	−0.295***	5.443***	0.417*	0.0522	0.169	0.0730***	−1.126***	−1.262	0.0550***	0.0387***
	(0.0126)	(0.00750)	(0.0160)	(0.248)	(0.0709)	(0.194)	(0.0257)	(0.202)	(1.038)	(0.000627)	(0.0123)
$Peak_{jt}$	−0.964***	0.858***	−1.484***	−0.776***	−1.197***	−0.417***	−0.219***	−2.335***	1.034**	0.0923***	0.666***
	(0.0221)	(0.0430)	(0.0215)	(0.196)	(0.191)	(0.101)	(0.0329)	(0.507)	(0.470)	(0.00614)	(0.0559)
Panel B: diagnostic tests											
Observations	990	257	1314	2228	1946	806	532	1290	1206	1013	1082
Banks	200	101	174	273	209	135	109	139	239	156	230
AR(2)	0.47	1.55	0.61	−0.59	−0.92	0.61	0.99	−0.28	0.00	1.53	0.84
p-Value	0.639	0.121	0.544	0.556	0.358	0.543	0.324	0.778	0.996	0.125	0.403
J-statistic	175.37	110.39	147.83	170.35	201.42	104.92	89.46	90.05	47.55	101.27	88.32
p-Value	0.114	0.766	0.957	0.986	0.998	0.997	0.977	0.147	0.532	0.966	0.140

Notes: The J-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the first-differenced residuals. Standard errors in parentheses.

***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

Table 6. Differential impact of the peak phase of the business cycle.

	Model 4										
	Business orientation		Efficiency		Credit quality			Stability			
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: estimation results											
$BANK_{ijt-1}$	0.17***	0.509***	0.134***	0.571***	0.791***	0.107***	0.511***	0.697***	0.654***	0.595***	0.595***
	(0.0020)	(5.63e−05)	(0.00071)	(0.0007)	(0.00186)	(0.0123)	(0.00394)	(0.00844)	(0.0324)	(0.0091)	(0.0495)
$Islamic_{ij}$	35.7***	61.80***	89.33***	20.69***	4.849***	6.503***	7.479***	109.5***	14.65**	−0.231	25.76
	(1.884)	(0.714)	(3.682)	(0.158)	(0.166)	(0.634)	(1.719)	(5.960)	(6.600)	(0.577)	(20.23)
$Conventional_{ij}$	18.4***	27.55***	72.46***	0.282***	5.968***	11.37***	23.71***	42.79***	48.05**	−0.289	10.36***
	(0.0746)	(1.892)	(1.010)	(0.0590)	(0.404)	(0.712)	(1.519)	(0.391)	(19.61)	(0.286)	(2.295)
$SIZE_{ijt} \times D_{ij}^{Islamic}$	−1.52***	−1.28***	−2.970***	−1.149***	−0.139***	−0.289***	−0.29***	−4.905***	−0.722*	0.0483	−1.396
	(0.122)	(0.0508)	(0.239)	(0.0117)	(0.0135)	(0.0474)	(0.102)	(0.402)	(0.385)	(0.0314)	(1.237)
$SIZE_{ijt} \times D_{ij}^{Conventional}$	−0.22***	0.975***	−2.620***	0.117***	−0.322***	−0.630***	−1.29***	−2.106***	−2.446**	0.0582***	−0.328***
	(0.0048)	(0.120)	(0.0597)	(0.00352)	(0.0249)	(0.0432)	(0.0902)	(0.0353)	(1.152)	(0.0169)	(0.121)
$FA_{ijt} \times D_{ij}^{Islamic}$	1.36***	1.710***	1.482***	−0.106***	−0.363***	−0.291***	−0.09***	−11.31***	0.260*	−0.0251	0.137
	(0.0408)	(0.0353)	(0.0702)	(0.0106)	(0.0114)	(0.0181)	(0.0129)	(0.663)	(0.141)	(0.0406)	(1.136)
$FA_{ijt} \times D_{ij}^{Conventional}$	−0.48***	−0.39***	5.547***	0.447***	0.242***	−0.0916*	0.176***	−0.00817	−1.702	0.0789***	−0.258
	(0.0037)	(0.00312)	(0.0638)	(0.00192)	(0.0177)	(0.0517)	(0.0544)	(0.0575)	(1.290)	(0.0225)	(0.189)
$Peak_{jt} \times Islamic_{ij}$	0.35***	7.652***	−8.448***	0.140***	−0.381***	−0.918***	−0.49***	−4.381***	0.115	0.732***	1.006
	(0.116)	(0.388)	(0.183)	(0.0333)	(0.0106)	(0.0386)	(0.0920)	(0.819)	(1.357)	(0.0157)	(2.000)
$Peak_{jt} \times Conventional_{ij}$	−0.74***	3.543***	−2.506***	−0.383***	−1.561***	−0.422***	−0.71***	−2.583***	1.391**	−0.166***	0.404**
	(0.0028)	(0.0472)	(0.0858)	(0.00182)	(0.0425)	(0.0541)	(0.124)	(0.122)	(0.572)	(0.0295)	(0.174)
Panel B: tests for differential effects of peak phase of business cycle											
$\beta_{Peak}^{Islamic} = \beta_{Peak}^{Conventional}$	87.98	93.48	953.90	234.56	755.56	57.72	1.66	5.14	0.69	568.24	0.09
p-Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2008	0.0249	0.4057	0.0000	0.7645
Panel C: diagnostic tests											
Observations	990	235	1314	2228	1592	806	493	1290	1206	1013	1082
Banks	200	100	174	273	208	135	109	139	239	156	230
AR(2)	0.38	1.21	0.62	−0.66	0.87	0.48	1.15	0.02	−0.50	1.61	0.89
p-Value	0.708	0.228	0.533	0.509	0.384	0.633	0.248	0.986	0.619	0.107	0.374
J-statistic	187.95	79.74	140.39	177.79	179.19	78.65	63.81	110.58	53.63	72.68	30.88
p-Value	0.991	0.981	0.546	0.958	0.263	0.177	0.999	0.311	0.267	0.999	0.193

Notes: The *J*-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the first-differenced residuals. Standard errors in parentheses.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

assets and liabilities and improves financial stability. *Z*-score for both types of banks increases. During the peak phase, the ROA of conventional banks decreases as suggested by Alqahtani et al. (2016), Ozili (2015) and Beck et al. (2013). In a favourable macroeconomic environment, corporate firms, businesses and households might have substantial internally generated funds and could have less reliance on bank borrowing. Therefore, banks find it difficult to lend at favourable terms and conditions, which could affect their performance negatively. These results are in contrast with the studies showing a positive relationship such as Demirguc-Kunt and Huizinga (1999) and Bikker and Hu (2002). However, in the case of Islamic banks, we observe increased profitability during peak phase according to Zeitun (2012) and Mirza et al. (2015). Bashir (2003) suggested that a favourable macroeconomic environment tends to stimulate higher profits of Islamic banks. As most of the Islamic banks' loans are in the form of PLS, they provide more PLS loans during the peak phase as the default rates on PLS is low. The differential impact of the peak on ROA is statistically significant. The peak phase has a positive impact on the EAR of conventional banks consistent with the literature.

Next, we examine changes that occur in the business orientation, cost structure, assets quality and stability during the trough phase (Table 7). We find that when the economy is declining, banks tend to adopt non-traditional banking activities to remain solvent and profitable. LDR decreases as banks make fewer advances due to a reduction in demand for credit. Efficiency measure shows increases in CIR. LLR, LLP, and NPL increase when the economy is volatile as chances of default increases consistent with the previous studies. According to Bikker and Metzemakers (2005), when the economy is in a downturn, and default risk is high, banks tend to increase LLR as a buffer to absorb losses in the portfolio. LLP also increases as banks set low provisions during good times when chances of default are low but are forced to adjust it during downturns as a cushion to absorb shocks. Increase in banks provisioning during the bad times and reduction during good times is referred to as pro-cyclicality. Capital crunch theory indicates that banks with less timely LLP reduce lending activities more during recession periods compared to normal economic growth. NPL increases during the economic downturn when there is unemployment, depreciation in the exchange rate and period of high inflation, i.e. when borrowers find it difficult to repay their loans. During the economic downturn, banks hold higher levels of liquid assets as a result of poor lending opportunities and to avoid the bank runs. The decrease in capital ratio implies higher leverage, higher risk, and higher borrowing costs, which trigger financial instability.

The behaviour of Islamic and conventional banks during the crisis period (Table 8) shows that the FIR of Islamic banks decreases as stated by Alqahtani et al. (2016) and that of conventional banks increases according to Ruzickova and Teply (2015). LDR for both Islamic and conventional banks decreases consistently with previous literature. LDR of Islamic banks decreases to a greater extent as compared to conventional banks. Islamic banks cut back their lending/financing to a greater extent during crisis periods as compared to conventional banks. When we compare cost efficiency, we find that CIR increases for both Islamic and conventional banks but the increase is greater in the case of Islamic banks. The differential impact of the trough phase on Islamic and conventional banks is statistically significant. This negative impact reflects a lack of competence in expense management because of the limited experience of Islamic banks and the lack of qualified personnel. Asset quality shows that LLR, LLP and NPL increase. Moreover, the

Table 7. Impact of the trough phase of the business cycle.

	Model 3										
	Business orientation		Efficiency		Credit quality			Stability			
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: estimation results											
$BANK_{ijt-1}$	0.197***	0.558***	0.0811***	0.586***	0.756***	0.139	0.817***	0.229***	0.755***	0.643***	0.517***
	(0.0356)	(0.00442)	(0.000639)	(0.000699)	(0.0601)	(0.0882)	(0.00623)	(0.00514)	(0.0204)	(0.00657)	(0.00127)
$Islamic_{ij}$	38.07***	54.15***	58.22***	18.59***	10.14	−0.305	−4.746	126.4***	−10.75	−11.87***	27.68***
	(11.04)	(19.01)	(1.913)	(0.362)	(6.304)	(2.365)	(3.056)	(13.76)	(16.69)	(0.666)	(0.495)
$Conventional_{ij}$	11.93	−69.77***	58.24***	−0.598***	14.75***	8.913**	4.369***	133.3***	18.74**	−0.0660	9.156***
	(8.548)	(5.565)	(0.621)	(0.0709)	(4.848)	(3.421)	(1.187)	(7.483)	(7.857)	(0.232)	(0.0642)
$SIZE_{ijt} \times D_{ij}^{Islamic}$	−1.711***	−1.789	−0.869***	−1.030***	−0.468	0.0919	0.260	−6.605***	0.876	0.766***	−1.461***
	(0.644)	(1.098)	(0.116)	(0.0212)	(0.424)	(0.144)	(0.188)	(0.925)	(1.066)	(0.0404)	(0.0294)
$SIZE_{ijt} \times D_{ij}^{Conventional}$	0.00481	6.820***	−1.085***	0.158***	−0.876***	−0.516**	−0.257***	−7.014***	−1.011**	0.0409***	−0.211***
	(0.504)	(0.356)	(0.0359)	(0.00403)	(0.293)	(0.206)	(0.0681)	(0.459)	(0.473)	(0.0134)	(0.00408)
$FA_{ijt} \times D_{ij}^{Islamic}$	−0.408	6.365***	1.476***	−0.0454***	−0.484	−0.172*	0.177	2.454***	0.377*	0.124***	0.405***
	(0.462)	(1.213)	(0.0204)	(0.00378)	(0.385)	(0.101)	(0.135)	(0.714)	(0.224)	(0.0188)	(0.0246)
$FA_{ijt} \times D_{ij}^{Conventional}$	0.273	0.211***	2.125***	0.497***	−0.0118	0.182	0.138	−0.767	0.965**	0.0523***	0.0148***
	(0.382)	(0.0180)	(0.0186)	(0.00194)	(0.164)	(0.150)	(0.117)	(0.550)	(0.443)	(0.0102)	(0.000789)
$Trough_{jt}$	1.348***	−2.558***	8.224***	−0.167***	0.704***	0.278***	1.811***	1.450***	−1.164**	−0.0226**	−0.181***
	(0.414)	(0.231)	(0.0523)	(0.00116)	(0.234)	(0.106)	(0.127)	(0.536)	(0.537)	(0.00911)	(0.00425)
Panel D: diagnostic tests											
Observations	408	260	1037	2228	1946	806	532	346	1206	569	1675
Banks	101	101	173	273	209	135	109	82	239	155	233
AR(2)	−0.59	1.65	−0.01	−0.68	−0.89	0.60	0.99	0.22	0.85	1.08	0.79
p-Value	0.556	0.100	0.992	0.495	0.372	0.546	0.324	0.826	0.395	0.280	0.432
J-statistic	44.48	72.43	135.46	180.56	198.76	101.71	52.99	50.53	40.80	115.22	193.20
p-Value	0.157	0.997	0.973	0.948	0.994	0.998	0.119	0.201	0.524	0.835	0.583

Notes: The *J*-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the differenced residuals. Standard errors in parentheses.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

Table 8. Differential impact of the trough phase of the business cycle.

	Model 5										
	Business orientation		Efficiency		Credit quality			Stability			
REGRESSORS	FIR	LDR	CIR	OHR	LLR	LLP	NPL	MM	Z-SCORE	ROA	EAR
Panel A: estimation results											
$BANK_{ijt-1}$	0.203***	0.460***	0.0557***	0.584***	0.600***	0.111***	0.833***	0.670***	0.552***	0.618***	0.553***
	(0.0358)	(0.00366)	(0.00356)	(0.0845)	(0.000205)	(0.0217)	(0.00542)	(0.0128)	(0.00960)	(0.0216)	(0.00396)
$Islamic_{ij}$	35.29**	163.2***	−8.630	21.60***	17.47***	−2.043**	−16.27***	−2.903	82.08***	−2.598	37.58***
	(14.24)	(18.62)	(7.283)	(7.965)	(0.0642)	(0.972)	(3.156)	(11.97)	(11.53)	(1.907)	(3.112)
$Conventional_{ij}$	8.425	−74.70***	26.78***	−0.141	18.25***	9.611***	1.313	33.32***	107.8***	0.0789	7.531***
	(9.030)	(7.035)	(10.26)	(2.451)	(0.116)	(1.449)	(1.382)	(8.483)	(8.098)	(0.696)	(0.270)
$SIZE_{ijt} \times D_{ij}^{Islamic}$	−1.497*	−7.457***	2.447***	−1.199**	−0.888***	0.201***	0.988***	0.0370	−4.874***	0.187	−2.055***
	(0.870)	(1.072)	(0.369)	(0.469)	(0.00371)	(0.0581)	(0.179)	(0.666)	(0.744)	(0.120)	(0.202)
$SIZE_{ijt} \times D_{ij}^{Conventional}$	0.226	7.693***	1.650**	0.127	−1.150***	−0.578***	−0.0902	−1.641***	−6.069***	0.0327	−0.165***
	(0.545)	(0.441)	(0.652)	(0.163)	(0.00708)	(0.0882)	(0.0751)	(0.475)	(0.509)	(0.0390)	(0.0158)
$FA_{ijt} \times D_{ij}^{Islamic}$	−0.405	2.581	5.696***	0.0301	−0.336***	−0.201***	0.228	3.739***	−0.174	0.0857***	−0.0292
	(0.503)	(1.852)	(0.622)	(0.196)	(0.00202)	(0.0395)	(0.242)	(0.414)	(0.211)	(0.0324)	(0.0942)
$FA_{ijt} \times D_{ij}^{Conventional}$	0.183	0.145	1.267***	0.416	0.688***	0.225**	−0.0386	−0.0759	−3.050***	−0.0496	0.163***
	(0.399)	(0.0896)	(0.137)	(0.264)	(0.00583)	(0.0973)	(0.137)	(0.607)	(0.381)	(0.0576)	(0.00590)
$Trough_{jt} \times Islamic_{ij}$	−0.170	−8.692***	21.31***	−2.208**	0.115***	0.881***	0.754***	4.962***	−4.817***	−0.221***	−2.492***
	(1.544)	(1.440)	(1.843)	(0.932)	(0.00281)	(0.103)	(0.239)	(0.641)	(0.656)	(0.0674)	(0.155)
$Trough_{jt} \times Conventional_{ij}$	1.562***	−6.199***	10.47***	0.684***	2.299***	1.071***	3.647***	3.001***	−2.293***	0.546***	−0.099***
	(0.434)	(0.200)	(0.282)	(0.259)	(0.00168)	(0.140)	(0.160)	(0.715)	(0.444)	(0.132)	(0.0228)
Panel B: tests for differential effects of trough phase of business cycle											
$\beta_{Trough}^{Islamic} = \beta_{Trough}^{Conventional}$	1.15	3.02	34.96	8.03	5.9	1.26	107.12	3.89	10.38	28.60	213.57
p-Value	0.2860	0.0855	0.0000	0.0049	0.0000	0.2628	0.0000	0.0517	0.0015	0.0000	0.0000
Panel C: diagnostic tests											
Observations	408	260	1037	2228	1699	806	532	376	1206	569	1675
Banks	101	101	173	273	208	135	109	84	239	155	233
AR(2)	−0.61	1.25	−0.26	−0.51	0.05	0.65	0.93	0.08	−1.37	0.93	0.79
p-Value	0.540	0.210	0.797	0.608	0.964	0.519	0.351	0.933	0.170	0.351	0.427
J-statistic	45.29	60.72	82.11	175.65	175.96	49.60	46.50	70.08	93.65	44.28	162.31
p-Value	0.114	0.937	0.996	0.967	0.857	0.984	0.996	0.441	0.159	0.965	0.117

Notes: The *J*-statistics is a test of the overidentifying restrictions and distributed as chi-squared under the null of instrument validity and AR(2) Arellano–Bond is the test of second-order auto-correlation in the first-differenced residuals. Standard errors in parentheses.

***$p < 0.01$.

**$p < 0.05$.

*$p < 0.1$.

increase in LLR, LLP, and NPL is less in the case of Islamic banks as compared to conventional banks, which is consistent with the findings of Beck et al. (2013). This shows the better credit quality of Islamic banks during the crisis. The chances of default are less in Islamic banks, which enables them to have less NPL even during a crisis. Similarly, Islamic banks undertake less aggressive lending. Secondly, the majority of depositors maintain their accounts in Islamic banks mainly due to faith-based reasons, and on these grounds, the chances of defaults are minimized. Turning to the stability of Islamic and conventional banks we find that the maturity match for both bank types increases during crisis but magnitude of increase is greater in case of Islamic banks according to Beck et al. (2013). Although z-score for both types of banks decreases, the decrease is greater in the case of Islamic banks. ROA for Islamic banks decreases during the crisis and that of conventional banks increases. The capitalization of both banks decreases during the crisis with Islamic banks more capitalized even during crisis periods. The differential impact is also statistically significant.

Islamic banks are more stable than conventional banks firstly due to the strong liquidity position. Secondly, their activities are based on risk sharing and equity participation. Thirdly, Islamic banks have higher asset quality as they are prohibited from indulging in speculative practices and excessive leveraging, which enables them to channel their funds to less risky investment projects. The equity-like structure of liabilities provides an extra layer of protection to Islamic banks, especially during market downturns.

6. Potential lessons for Europe and Baltic States

6.1. Islamic banking in Europe

We studied the behaviour of Islamic and conventional banks during business cycle phases in a sample of 20 countries having dual banking system. When we examine the countries in which Islamic banking is present we find that there are only 35 countries out of which there is only one European country, namely, the U.K. Out of these 35 countries, there are only 12 countries where Islamic banking is systemically important (IFSB, 2017). It is noteworthy that the U.K. is only country in Europe where Islamic banking is present and accounts for almost 1% of the total banking assets (Figure 1).

However, one should note that Europe was the region that was severely hurt by the sub-prime mortgage crisis that occurred in 2007–2008. Specifically, with reference to the Baltic countries, the 2007–2008 financial crisis severely hits stability and assets quality of the banking system. Partially due to substantial losses of conventional banks, non-interest-based banking became much more popular after the financial crisis. According to Islamic finance development 'Resilient Growth' report, Islamic finance assets are expected to reach US 3.5 trillion by year 2021 (Thomson Reuters, 2016). Recognizing this greater potential in Islamic banking growth, the global financial sector has shown increased interest in Islamic banking industry. Currently, there are 823 institutions offering Islamic finance education worldwide. Europe has shown increased interest in Islamic finance education. In Europe, there are 109 institutions that offer Islamic finance education, out of which 63% are in the U.K., the main hub of Islamic finance in Europe. European countries, mainly the U.K., Germany, Italy, France, and Luxemburg, have adopted Islamic finance but Spain is only country in Europe with no Islamic banking
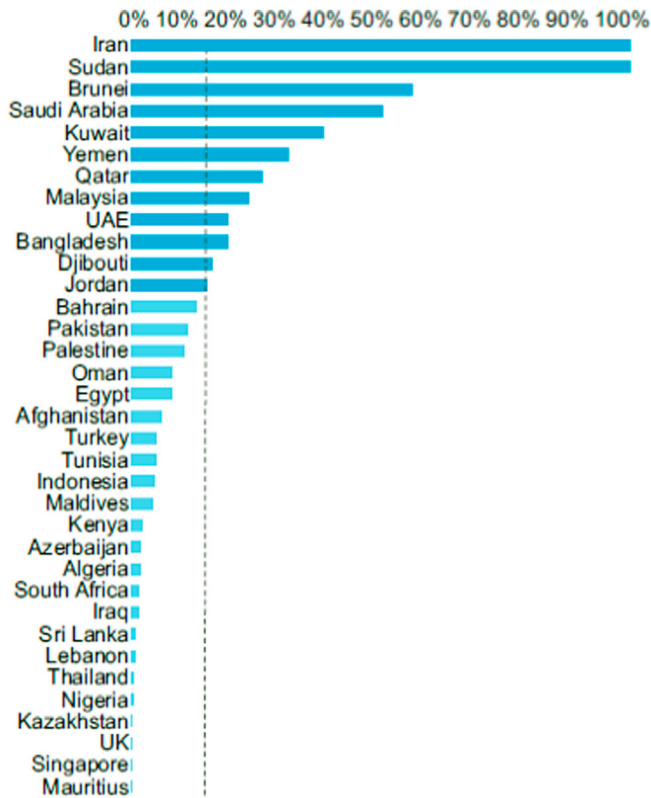
Figure 1. Islamic banking share in total banking assets by jurisdiction. Source: Islamic Financial Services Industry Stability Report 2017.

but has growing number of institutions offering Islamic finance education. Islamic finance in Europe has got prompt attention after the first Islamic bond Sukuk issuance by the U.K. and Luxembourg in 2014.

6.2. Potential advantage of Islamic banking principles for Baltics States

As already mentioned, global financial crisis severely hit the banking sector of the Baltic States which came under great pressure after the crisis. The situation became worst in Latvia, when Parex Bank, the second largest bank in Latvia, faced bankruptcy in 2008 as whole of the Latvian banking system was deteriorating due to extremely illiquid international and domestic capital markets. Later in 2012, Snoras Bank and Ukio Bankas also went bankrupt in Lithuania. According to Gallizo, Moreno, and Salvador (2018), the profitability of the Baltic banking system reduced due to economic downturns, higher cost of financing, illiquid markets, deterioration in loan portfolio growth, and large provisions for doubtful debts. Profitability measures such as average return on assets (ROA), in Estonia reduced to 1.4% in 2008 and −2.7% in 2009. In Latvia, losses in 2009 and 2010 equal the overall profit of the banks since 2000 (Latvijas Banka, 2010). In Lithuania, ROA dropped to −4.23% in 2009. With regards to asset quality, in Estonia, non-performing loans (NPL) increased to 5.7% in 2008 which further increased to 7% in 2009. In Latvia,

NPL measured 3.6% in 2008 and increased to 16.4% and 19% in 2009 and 2010 respectively. In Lithuania, NPL increased to 4.55% in 2008 and 19.3% in 2009.

On the contrary, according to IMF (2010) report, Islamic banks on average showed more resilience as compared to conventional banks during global financial crisis. They showed that Islamic banks were more profitable in the run up to the crisis. Initial crisis impact revealed that Islamic banks had just a minor impact on profitability in early stages of the crisis, while credit and assets growth remained strong. Adherence to Shariah principles protected Islamic banks from financing or investing in the kind of instruments that have adversely affected their conventional competitors, which includes toxic assets, derivatives, and conventional financial institution securities. However, in 2009, when crisis moved to the real economy, Islamic banks suffered a sharp decline in profitability due to weakness in their risk management practices. Nonetheless, their credit quality and assets growth remained higher than conventional banks. Similarly, Hasan and Dridi (2010) found that Islamic banking business model protected them from the negative impact of crisis. Recently, Rashid et al. (2017) provided strong empirical evidence that compared to conventional banks; Islamic banks perform better and contribute more effectively in the stability of financial sector.

Our analysis also confirmed that Islamic banks included in our sample, on average, behave better than conventional banks with respect to their credit quality and stability during economic downturns. Our analysis suggests that Islamic banks are involved less in aggressive lending and remained more capitalized during crisis periods. Islamic banks' activities are asset-based and hence, the clients associated with them are less likely to default. Better liquidity position, risk-sharing nature, and avoidance of speculative activities and excessive leveraging provide Islamic banks more resilience during economic downturns.

Although there is a growing popularity in Islamic banking in some European countries after the crisis, the introduction of Islamic banking in Baltics is currently very unlikely as the population of Muslims is around 22,000 and the demand for the independent Islamic banks is very small. Still, conventional banks in Baltic States can pay attention to some features of the Islamic banking, namely: closer link to real economy, assets based financing and risk and return sharing features, non-participation in derivatives and speculative activities. Furthermore, loans/credits should not be granted to those firms highly involved in speculative activities and in excessive use of financial derivatives such as interest and currency derivatives just for the seek of monetary gains rather than hedging purposes. Further, the banks in Baltic States can do more focus on social welfare and ethical and socially responsible investments to promote justice and equality in the society, which will definitely help win the trust of customers and other stakeholders. Of course, the fundamental differences between conventional and Islamic banking should be kept in mind while potential adaption of the abovementioned features.

7. Conclusions

This paper compared Islamic and conventional banks in terms of business dynamic, cost efficiency, credit quality, and stability. We also examined the differential impact of peak and trough phases of the business cycle on Islamic and conventional banks. Our results show that Islamic banks have a diversified business model as they are more involved in

fee-based business and have higher LDR than conventional banks. Second, Islamic banks are less cost-efficient. Third, Islamic banks have better assets quality. Fourth, Islamic banks are more stable than conventional banks. Examining the impact of peak phase, Islamic banks increase their fee-based revenues, and LDR. Islamic banks decrease LLP to a greater extent compared to conventional banks. Moreover, during the trough phase, we find that Islamic banks tend to move to traditional banking business and LDR of Islamic banks decreases to a greater extent than conventional banks. The costs of Islamic banks increase more than conventional banks. Asset quality of Islamic banks deteriorates, but they are still able to maintain better assets quality than conventional banks during a declining economy.

These findings lead us to conclude that Islamic banks outperformed conventional banks with regard to their credit quality and stability indicators during the trough phase. Islamic banks tried to maintain their assets quality and stability even during economic fluctuations. As mentioned earlier, the practices of Islamic banks are similar to conventional banking. However, they are different in some respects, and this better performance seems to be due to the difference in their provisioning strategies, the non-aggressive lending profile, and investment in real assets.

This study has important policy implications for the regulators. It helps regulators to devise strategies considering the difference in the business model of these two types of banks. It is noteworthy that both these banks should be treated differently while devising and implementing bank regulations due to differences in their underlying principles. In addition, policy formulation should consider the difference in the behaviour of the two banking systems towards business cycle fluctuations. This study helps bank management to efficiently manage their costs during economic upturn and downturns. It further provides insights into differences in assets quality and stability between interest and non-interest-based banks in policymaking. Banks should consider the situation of the economy while investing or extending loans.

From the perspective of Islamic banking regulators, these findings provide a thorough understanding of the various aspects of Islamic banking that need to be addressed and managed. Islamic banks should improve and properly execute fee-based instruments in order to enhance non-interest-based revenues. Islamic banks, while applying PLS arrangements in financing activities, should ensure that expertise has been utilized in selecting, evaluating, managing and monitoring projects. They should emphasize on increasing their size to reap the benefits of economies of scale, which ultimately leads to lower costs, increased market share and better performance. Islamic banks should ensure that their practices are in line with the Maqasid al-Shariah to boost the effectiveness of the Islamic financial system.

Results in this study are based on a sample of 20 Islamic countries having dual banking system. Islamic banking is an emerging market with varying growth prospects in different regions. There is a growing popularity in Islamic banking in some European countries after the 2007–2008 financial crisis. We cannot expect this in Baltics States; nevertheless, few elements of Islamic banking such as PLS financing, asset-based financing, avoiding speculative activities, ethical and socially responsible investments, and linkages to the real economy could be useful for banks operating in Europe and in particular in Baltics States.

We hope that this analysis paves the way for more research in this area. First, future research could consider the impact of contraction and expansion phases of the business

cycle. Second, Islamic and conventional banks can be studied more extensively by incorporating more dimensions. The impact of the global financial crisis can also be incorporated for a more accurate picture of the stability and resilience of Islamic banks. The sample size could also be increased to for more generalizable results.

Note

1. Countries with dual banking system: (No. of Conventional Banks, No. of Islamic Banks). Egypt (10, 2), Indonesia (37, 1), Palestine (3, 2), Pakistan (19, 2), Turkey (12, 1), Bangladesh (22, 7), Jordan (11, 3), Kuwait (5, 5),Oman (6, 1), Qatar (7, 3), Saudi Arabia (8, 4), United Arab Emirates (17, 7), Bahrain (12, 6), Brunei Darussalam (1, 1), Maldives (1, 1), Gambia (8, 1), Yemen (5, 4), Iraq (12, 7), Syria (13, 2), Mauritania (9, 2). One should note that we consider only those countries that have dual banking system. Our sample does not include Malaysia because of unavailability of the required data.

Disclosure statement

No potential conflict of interest was reported by the authors.

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