Accepted Manuscript

Does Islamic Banking Offer a Natural Hedge for Business Cycles? Evidence from a Dual Banking System

Ahmet F. Aysan [*]   Huseyin Ozturk [†]

February 6, 2018

Abstract

We examine the lending patterns in the Turkish Islamic banking over business cycles. We find that, similar to conventional banks, Islamic banks in Turkey exhibit procyclical lending pattern. We also find that Islamic bank lending does not show significant difference from conventional bank lending. The results conflict with some of the findings that indicate Islamic banks as natural stabilizers in the banking systems. We emphasize that regulatory amendments of the last decade that are effective on Islamic banks could induce these banks to lend procyclically. To test the validity of this conjecture, we empirically examine how the state of competition in the Turkish banking system affects bank lending across business cycles by disentangling the effects separately for Islamic and conventional banks. The results suggest that the degree of competition spur bank lending procyclicality at the same magnitude, confirming the convergence between Islamic and conventional banks in their lending patterns. We also discuss several other issues in Islamic banking which may lead to the procyclicality of lending.

[*]Istanbul Sehir University, Orhantepe Mahallesi Turgut Özal Bulvarı No:21 34865 Dragos Kartal İstanbul, ahmetaysan@sehir.edu.tr

[†]Central Bank of the Republic of Turkey, Türkiye Cumhuriyet Merkez Bankası Anafartalar Mahallesi İstiklal Caddesi No:10 06050 Ulus Altndağ Ankara, huseyin.ozturk@tcmb.gov.tr

1

1 Introduction

The impacts of the recent global crisis are gradually disappearing while stagnant economies are still far from revival. Acknowledging that disruptions in real economies are devastating, the academic debate about identifying bank specific characteristics that help economic recovery has re–emerged. The literature suggests certain bank characteristics, e.g. bank capital, asset quality, bank ownership etc., that explain different lending patterns within a banking system. Whilst several macroprudential measures, including procyclical capital requirements, are set to enhance bank capital and asset quality during economic downturns (García-Suaza et al., 2012; Repullo and Saurina, 2011; Stolz and Wedow, 2011), the impact of bank ownership still keeps its efficacy in stabilizing bank lending. It is widely known that many countries opted to nationalize their needy banks as an initial response to the recent global crisis (Beccalli and Frantz, 2016; At-Sahalia et al., 2012). Even in high–income advanced countries, state–owned banks had a clear mandate to stabilize loan market over business cycles (see World Bank, 2012, for a comprehensive overview). In line with this debate, a slim literature examines the role of Islamic banking in alleviating the effects of the recent global crisis, as Islamic banks are naturally considered to have a similar mandate (see e.g. Beck et al., 2013; Farooq and Zaheer, 2015; Hasan and Dridi, 2011; Soedarmono et al., 2017).

One of the fundamental differences between Islamic and conventional banking relies on their objectives. A widespread belief suggests that Islamic banking has an ultimate objective of promoting social wealth and justice (Tlemsani and Matthews, 2002; Aribi and Arun, 2015; Mansour et al., 2015). Islamic banks also claim that their banking decisions rest on considerations beyond profit maximization. To attain certain social objectives, Islamic banking proposes certain tools. Islamic banks, for instance, praise equity financing rather than debt financing to preserve distributive justice, poverty alleviation, and social equity (see e.g. Venardos, 2012), even though the expected returns from equity financing is lower than alternative financing methods (Kuran, 1995). Although the designation of Islamic banking

2

prioritizes social objectives, empirical evidence on the success of Islamic banks' fulfilling these objectives is rather scant. The lack of adequate empirical evidence motivate us to investigate whether Islamic banks mitigate the repercussions of business cycles by lending[1] against the cycles.

Unique to Islamic banking, the declaration of interest prohibition presents an ideal form of risk sharing. Instead of interest–based banking that charges predetermined interest on transactions, the profit–loss–sharing (PLS) mechanism distributes risk between creditors and debtors at a pre–agreed ratio. The swings in business cycles is thus contained smoothly between banks and customers. Given the logic of the PLS mechanism and the Islamic banks' ultimate goal of social welfare, Islamic bank lending can be considered as having different patterns. At a time of economic downturn, for instance, the shortage of available credit is expected to be overcome by Islamic banks that are ready to finance businesses which have sound projects but have funding squeeze. The functioning of the PLS may relieve fear of loss, since upon completion, projects would offer ample profits that will be distributed between project owners and banks. Confirming the view that the PLS reduces risk aversion during crises, the recent empirical evidence suggests that Islamic banks are less likely to disintermediate during these episodes (Beck et al., 2013).

Although Islamic banks are more conducive to lending during downswings, there appears to be a number of reasons that can reinforce Islamic banks to lend through the cycle. From a grand perspective, the PLS mechanism as an antidote to business cycles is less operational in the current practice of Islamic banking as the share of PLS mode of financing constitutes merely a small share of overall Islamic financing (Khan, 2010). The small share of PLS financing hardly supports the view that Islamic banks lend against the business cycles. Saibal (2013) also finds that Islamic banks which are reliant on wholesale funding obstruct lending more severely during crises as they are faced with tougher funding constraints. Moreover,

---

[1]The appropriate name for the intermediary facilities of Islamic banking may not be "lending" as it is argued that Islamic banking services are different from those of conventional banking based on its unique foundations. However, the use of term "lending" provides quite ease to compare Islamic and conventional banks in the context of business cycles.

3

Islamic banks in dual banking systems are under strong competitive pressure that could stimulate these banks to mimic conventional lending practices (Khan, 2010; Weill, 2011; Khatat, 2016). Much harsher criticisms even put forward that Islamic banks are just like conventional counterparts, without having significant differences (Kuran, 1995, 2004; Khan, 2010). All these concerns, at least, shed doubt on the uniqueness of Islamic banks in their lending behavior.

This paper examines the role of Islamic banks in stabilizing loan market by testing the procyclicality of Islamic bank lending. The main contribution of this study is to reveal different structures of bank lending since the objectives of different banking schemes may vary. The importance of bank ownership is well examined in the literature (Micco and Panizza, 2006; Bertay et al., 2015; Cull and Martínez Pería, 2013; Ferri et al., 2014; Brei and Schclarek, 2013), however how Islamic banks add to lending stability is scantly investigated. Notable exceptions are Ibrahim (2016) and Ascarya et al. (2016) who study procyclicality in the Malaysian and Indonesian Islamic banking, respectively. The results conflict with each other, while the previous finds countercyclical lending for Malaysian Islamic banks, the latter suggests even more procyclical lending for Indonesian Islamic banks. Bearing in mind that different jurisdictions and regulatory environments create different lending incentives for Islamic banks, we provide unique evidence from the Turkish banking system.

Turkey is an interesting country for this study as the dual banking experience goes back to 1980s, but the status of Islamic banks[2] as a "bank" is recently adopted. This statutory change along with many other regulations that introduce equal treatments to Islamic banks is worth examining. Turkey also stands as a unique testing ground to study the cyclicality of bank lending. The Islamic banking in Turkey, as Aysan et al. (2017a) argue, is an interesting form of a hybrid structure where customers successfully blend religious codes with rational free market practices. This unique characteristics may reinforce Islamic banks to adopt a

---

[2]Islamic banks in Turkey are named as participation banks. Since the operations of these banks are in resemblance with their global peers, we prefer using "Islamic" instead of "participation" to avoid any confusion.

similar hybrid structure and find pragmatic solutions to customer demands without losing the soul of religion. To this end, the findings of this study will be novel since, to the best of authors' knowledge, such a unique dual banking system has not been studied from the lens of procyclicality of lending. Not only do this research highlight whether Islamic banks in the country have stabilized the loan market, it also sheds some light on potential reasons behind different lending motivations in dual banking systems.

In a nutshell, we find that Islamic bank lending does not show significant difference from conventional bank lending. Similar to conventional banks, Islamic banks in Turkey present procyclical lending pattern. To explain our basic findings, we underline various regulatory amendments of the last decade which lifted certain discrimination against Islamic banks. Since the regulations have become uniform for Islamic and conventional banks in Turkey for more than a decade, we hypothesized that competition in the banking system could have encouraged the convergence between Islamic and conventional banks. An extension to the main analysis yields that rising competition adds to higher lending irrespective of the bank type. The lending at Islamic and conventional banks respond similarly to competition shocks. This finding motivates us to examine the impact of competition on the procyclicality of bank lending, as the lending behaviors of both groups are found to be similar. Once the impact of competition across business cycles are considered, we find that competition spurs procyclicality of bank lending, yet to be differentiating Islamic and conventional banks. The argument that regulations of the dual banking system have been a motive for the convergence between Islamic and conventional banks is confirmed by the evidence that procyclicality of bank lending at both bank groups are similarly affected by the state of competition. All these results suggest that, while Islamic banks bear the mandate for stabilizing loan market, the Turkish banking does not exhibit a successful experience.

The remainder of the paper is structured as follows. The next section provides brief literature survey and motivation to the basic arguments of the paper. Then, Section 3 describes empirical models and data. Section 4 presents the estimation results of various

5

models and approaches. Section 5 explores the potential reasons for the findings. Section 6 concludes with a summary of the main findings and their implications.

2 Motivation and Brief Literature Survey

Islamic banking seems to be attaining a significant foothold in global finance by not only meeting some unfulfilled needs but also offering distinct innovative financial products. Under the lead of Islamic rules, Islamic banking is a case of ethical finance which is claimed to raise positive externalities of the projects rather than merely appraising the creditworthiness of borrowers. Once ethical finance is considered, it is usually acknowledged that it promotes the well–being of societies. Islamic banking, by its nature, suggests that Islamic banks must take into account the impact of their financing on the society and take investment decisions accordingly. Besides their standard intermediary operations, Islamic banks are thus expected to contribute to sustainable economic development, reduction of social inequalities, sustainable use of natural resources, and alleviation of pollution (Mansour et al., 2015).

In the ideal mode of Islamic banking, the long term impact of a project is an important factor in addition to its owner's creditworthiness. Islamic banks are expected to support those projects that have decent long–term prospects but lengthy gestation periods. These banks are also known to be the supporters of entrepreneurs who merely lack a track record but have long–term ideas to promote social welfare. The ideal end result of what Islamic banking offers is faster development with entrepreneurs who find it easier to finance their projects, and fair PLS between banks and their depositors.

From the Islamic point of view, financing with guaranteed return and using collateral is considered to be unjust and irrational. Based on the PLS principles, Islamic banks are better able to consider the needs of agents than conventional banks. The PLS makes all parties better–off relative to the standard debt contracts by joining all the parties in risk sharing (Al-Suwailem, 2005). In Islamic banking, fixing interest rates on loan agreements

6

is deemed to be discriminatory and unfair. The borrower has to carry the total risk of the project while the lender receives the fixed return no matter how the project performs. On the other hand, when the profitability of the project is relatively higher, the borrower can get the major stake of the profit by only paying a fixed and minimal interest rate to the lender. From Islamic finance view, this business mechanism is deemed to be discriminatory and conducive to instability (Abdelsalam et al., 2014).

While the very foundations of Islamic banking emphasize risk sharing and social welfare, the evidence regarding the success of Islamic banking achieving these objectives are mixed. Islamic banks are found to be resilient to the recent global crisis and in fact significantly diverged from conventional banks in that sense (Beck et al., 2013; Čihák and Hesse, 2010; Hasan and Dridi, 2011; Farooq and Zaheer, 2015). The resilience of Islamic banks has been a hope for global finance whether the PLS mechanism could offer some remedies to excessive risk taking and sudden deposit withdrawals (Hussain et al., 2016; Farooq and Zaheer, 2015). Although some encouraging features remain, Islamic banking operations are still far away from the ideal mode of Islamic banking, and in many aspects resembling conventional banking. The cynics argue that there are substantial divergences between the ideals and current practices of Islamic banks which makes these banks functionally indistinguishable from conventional banks (see e.g. Khan, 2010).

With regards to sustainable development, it is often acknowledged that the composition of banking assets is crucial. Banks that are heavily engaged in securities trading and/or having less exposure to smaller businesses are expected to be less supportive for development. The evidence on the composition of Islamic banking assets seems to be suggesting that Islamic banks' assets do not differ significantly from that of conventional commercial banks. Kuran (1995) argues that Islamic bank clients tend to be established producers and merchants, as opposed to newcomers having innovative projects but carrying high risk. Islamic banks have shown no tendency to favor labor–intensive firms but rather they have favored safe short–term projects over long–term projects (Moore, 1990). Whilst there is some evidence

7

on their financing small businesses, the findings suggest that this is the end result of using *Murabaha* contracts that relieve collateral burden on small businesses (Aysan et al., 2017b; Shaban et al., 2016; Aysan et al., 2016; Shaban et al., 2014). Empirical evidence suggests that Islamic banks' tendency toward small businesses is real, nonetheless this might be in function of the type of contracts rather than banks' objective to finance sound projects having high financing needs. Moreover, it is argued that the tendency toward SMEs creates adverse selection problem since Islamic banks often lend to risky projects with higher costs (Kuran, 1995, 2004).

Based on two conflicting views on the characteristics of Islamic banking, an important question that needs further evidence is to find out to what extent Islamic banks differ from conventional banks in lending behavior over business cycles. Lending especially in bad times might have some social objectives (World Bank, 2012; Chen et al., 2016). The aftershocks of the recent global financial crisis, for instance, severely affected the livelihoods of the millions in advanced and developing countries. The crisis and its aftershocks prompted many government interventions to alleviate the impacts of the crisis. State–owned banks emerged as important toolkits to revitalize the loan market that had been stuck with increased household debt and intensified firm defaults. World Bank (2012) documents that state–owned banks are at least less procyclical in bank lending, if not countercyclical, by restoring favorable conditions in socially key markets. However, World Bank (2012) notes several weaknesses of state–ownership in banking, specifically in terms of efficiency and corruption. As the report highlights, the countercyclical benefits of state–owned banks often came at the expense of misallocation of government resources and poor intermediation. Islamic banks emerges as a natural toolkit for this purpose as the *raison d'être* of Islamic banking is argued to promote social benefits. At this juncture, it is relevant to empirically investigate whether lending practices of the Islamic banks are different from conventional banks through business cycles.

8

3 Data and Methodology

This section describes the data and methodology. For this purpose, we first summarize the data set. Then, we introduce a panel–VAR model to examine lending responses to GDP shocks. Finally, we design an empirical specification to examine lending patterns across business cycles at Islamic and conventional banks.

3.1 Data Description

The analysis employs quarterly data over the period from 2005Q1 to 2012Q4. Table 1 displays the description, definition and short summary of data. Bank–level data are compiled from the balance sheets published by the Banks Association of Turkey for 21 conventional banks and 4 Islamic banks. The macroeconomic and policy–related variables are obtained from the Central Bank of the Republic of Turkey.

[INSERT TABLE 1 ABOUT HERE]

Table 1 briefly summarizes the data separately for Islamic and conventional banks. Since we focus on the differences between Islamic and conventional banks, we provide mean test results between these two bank groups. The test results reveal that, during the sample period, conventional banks are more liquid and better capitalized compared to Islamic banks. Islamic banks have poor credit quality but comparable profitability rates compared to conventional banks. As the core of this study is the lending growth, it is worth noting that, on average, the lending growth rates are similar for both bank groups.

3.2 Bank Lending Responses to GDP Shocks

We first estimate a panel–VAR model and then obtain impulse response functions (IRFs) to examine lending responses to gross domestic product (GDP) shocks. We are motivated from the fact that the panel of a VAR system gets rid of heterogeneity effects where heterogeneity can markedly impact lending behavior among banks.

9

We use GDP (GDP) and total credits ($Credits$) in a VAR system to estimate lending responses to GDP shocks. In the analysis, we log–transform these variables (GDP and $Credits$).

Panel–VAR methodology extends traditional VAR approach to a panel setting to control for heterogeneity. As in traditional VAR approach, the variables in the system are treated as endogenous. We specify our model of order s as follows:

$$Z_{i,t} = \Gamma_0 + f_i + \Gamma_1 Z_{i,t-1} + \Gamma_2 Z_{i,t-2} + ... + \Gamma_s Z_{i,t-s} + \varepsilon_{i,t}. \tag{1}$$

In this specification, Z is a vector of all the variables in the VAR system for bank i at time t. We estimate a one–lag panel–VAR to investigate the credits' response to GDP changes with the guidance of various information criteria. Bank level heterogeneity is controlled for by incorporating f_i in the estimations (Holtz-Eakin et al., 1988). Fixed effects (f_i) are eliminated by the Helmert transformation that applies forward differencing.

Let $\bar{z}_{im}^k = \frac{\sum_{s=m+1}^{T_i} z_{is}^k}{T_i - m}$ denotes the means obtained from the future values of a variable z_i^k, a variable in the p–variable vector $Z_i = (z_i^1, z_i^2, ..., z_i^k, ..., z_i^p)'$, at $t = m$. T_i denotes the last period of data available for a given bank series. Let $\bar{\varepsilon}_{im}^k$ denotes the same transformation for ε_{im}^k, where $\varepsilon_i = (\varepsilon_i^1, \varepsilon_i^2, ..., \varepsilon_i^k, ..., \varepsilon_i^p)'$. Hence we get following variables after Helmert transformation, $\tilde{z}_{im}^k = \delta_{it}(z_{im}^k - \bar{z}_{im}^k)$ and $\tilde{\varepsilon}_{im}^k = \delta_{it}(\varepsilon_{im}^k - \bar{\varepsilon}_{im}^k)$ where $\delta_{it} = \sqrt{\frac{T_i - m}{T_i - m + 1}}$. The final transformed model is thus given by:

$$\tilde{Z}_{i,t} = \Gamma_0 + f_i + \Gamma_1 \tilde{Z}_{i,t-1} + \Gamma_2 \tilde{Z}_{i,t-2} + ... + \Gamma_s \tilde{Z}_{i,t-s} + \tilde{\varepsilon}_{i,t}. \tag{2}$$

Helmert transformation satisfies the orthogonality assumption between transformed variables and lagged regressors. Panel–VAR relies on GMM estimation which uses lagged dependent variables as instruments and estimate the coefficients by system GMM (Love and Zicchino, 2006). To analyze credits' responses to GDP shocks, we generate impulse response

10

functions (IRFs) that are illustrative for the magnitude of certain responses to specific shocks.

3.3   Is Islamic Bank Lending Different?

In the second step, we try to find out whether Islamic bank lending is somehow different from conventional bank lending. The model we estimate is similar to those of Micco and Panizza (2006), (Bertay et al., 2015), and Ibrahim (2016) and is specified as:

$$\Delta Credits_{i,t} = \alpha_i + \beta \Delta GDP_{i,t-1} + \theta X_{i,t-1} + \varepsilon_{i,t} \tag{3}$$

where Δ is the first difference operator, $Credits$ is the natural logarithm of gross loans, GDP is the natural logarithm of real GDP, X is a vector of bank–specific variables and inflation, α_i is a coefficient representing bank–specific effects and inflation, and ε is the error term. We consider the following bank–specific variables: the natural logarithm of total assets to proxy for bank size, a liquidity indicator that is calculated by $\frac{total\_assets-total\_credits-fixed\_assets}{deposits}$, a capitalization measure calculated by $\frac{shareholders\_equity}{total\_assets}$, $\frac{nonperforming\_loans}{total\_credits}$ to measure credit quality, a profitability measure proxied by return on assets (ROA), $\frac{1000*personnel}{total\_assets}$ to proxy relationship banking, and consumer price index to represent inflation.

To estimate the impact of being an Islamic bank on the procyclicality of bank lending, we introduce an Islamic bank dummy variable, $Islamic$, that is equal to one if the bank is an Islamic bank and zero otherwise. This dummy variable is interacted with the GDP shock, ΔGDP, and bank–specific variables, X, in a nested model to investigate the differential lending responses across Islamic and conventional banks. The nested model we estimate is:

$$\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i) \times \Delta GDP_{i,t-1} + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}. \tag{4}$$

11

4 Main Findings

4.1 Panel–VAR Results

This paper first explores the presence of any difference between Islamic and conventional banks in their lending responses to GDP shocks. Employing a panel–VAR model, we investigate the effects of an initial shock across periods.[3] We study a bivariate panel–VAR model to estimate how credits respond to GDP shocks. In this model, we estimate IRFs to the variables included in the panel–VAR. We then display credits' responses to GDP shocks separately for Islamic and conventional banks across periods.

We use Monte Carlo simulations to generate confidence intervals for the estimated coefficients. Since the IRFs are constructed from the estimated coefficients in panel–VAR models, the standard errors of estimated coefficients are used to comment on statistical significance of the responses. We draw the 5th and 95th percentiles of the estimations to interpret whether the impulse responses are significant at 5 percent significance level. The significant responses are achieved once the confidence intervals do not span the zero line which statistically rejects the hypothesis that impulse responses are zero.

[INSERT FIGURE 1 ABOUT HERE]

[INSERT FIGURE 2 ABOUT HERE]

[INSERT FIGURE 3 ABOUT HERE]

The key observation emerging from the results depicted in Figures 1, 2 and 3 is that, in line with expectations, credits at the banking system and separately at Islamic and conventional banks respond positively to the positive GDP shocks. Figure 1 plots the credits' responses to positive GDP shocks in the banking system, as a whole. The positive and significant response suggests a procyclical lending in the Turkish banking system. A similar

---

[3]Ahead of the analysis, we conduct unit–root tests to identify the stationarity of the variables. Since we study an unbalanced panel, we use Fishers test statistics which allows for unbalanced panels (see e.g. Maddala and Wu, 1999), unlike several others which require balanced panels, e.g. the Im–Paseran–Shin test proposed by Im et al. (2003). According to our test results, the null hypothesis of unit roots is rejected at different significance levels. We do not report the results for the unit root test, which are available upon request.

positive response to positive GDP shocks seen in Figure 1 is also observed in Figure 2 and 3. From the levels depicted in Figures 2 and 3, the responses are quantifiable across the time horizon as GDP shocks are identical (non–bank–specific) for both bank groups. The IRFs in Figures 2 and 3 at first hand suggest that credits at both bank groups respond quite comparably to GDP shocks, yet any statistical differences are not clear. To this end, we provide a comprehensive discussion on the potential differences between Islamic and conventional banks in the following sections.

4.2 Regression Results

This section mainly compares and discusses the degree of procyclicality among Islamic and conventional banks. As an initial analysis, we re–examine the cyclicality of lending in the banking system. We specify a model where the dependent variable is the credit growth and the explanatory variables include GDP growth, bank–specific variables and inflation. The coefficient of the GDP growth informs us about the cyclicality of lending, i.e. positive and negative estimates signal procyclicality and countercyclicality, respectively.

[INSERT TABLE 2 ABOUT HERE]

Table 2 reports the regression results of the models with GDP growth and various other explanatory variables. GDP growth enters with positive coefficients that are significant at conventional levels in all estimations, indicating that an average Turkish bank lend procyclically. $Bank\_size$, proxied by the natural logarithm of total assets, carries negative coefficients confirming the findings of Bertay et al. (2015), Brei and Schclarek (2013) and Ibrahim (2016) who assert that banks with increasing bank size tend to have non–intermediary activities. $Capital$ enters into equation with negative coefficients suggesting that under–capitalized banks fulfill their lending activities at higher pace. This is interesting since higher capital ratios often mean higher funds available for banks to lend. However, our results are indicative for the risk–taking channel especially after the 2008 crisis, during when the link between capitalization and bank performance weakened (see e.g. Martynova et al., 2015).

13

Credit quality can be a severe constraint for the banks which suffer from significant volumes of non–performing loans. The coefficients of $Credit\_quality$ in our results are insignificant which might be the end result of relatively successful risk management practices. This particularly shows that, during the sample period, the changes in credit quality are not that much severe to obstruct bank lending. $Liquidity$ is positively associated with bank lending which verifies that high liquidity often assists banks to sustain higher lending activities. $Profitability$, which is measured by return on assets, is not significant. Higher profitability points higher intermediation margins but for a banking system where profitability creates certain cost of funding benefits. Turkish banks during the sample period, however, were relatively profitable on average, which could make profitability an insignificant parameter for lending. Once we define relationship banking as the number of personnel to total assets, we receive negative estimates for $Relationship\_banking$. Relationship banking is expected to have positive impact on bank lending since, with intense relationship, banks are able to gather more information which ease monitoring costs. The results however indicate to the opposite, implying some degree of inefficiency in the Turkish banking system. The increasing number of personnel in the Turkish banking system does not lead to any increase in bank lending. Inflation that proxies uncertainties and future expectations about the future state of economy is not significant in the estimations. This can be due partly to relatively moderate inflation levels, around 5 percent during the sample period.

[INSERT TABLE 3 ABOUT HERE]

To explore any difference between Islamic and conventional banks in the lending behavior, we introduce a dummy for Islamic banks, $Islamic$, and create interactions for GDP growth, ΔGDP, and bank–specific variables including inflation, X, and estimate the Equation 4. The interaction in the regressions yield how differently Islamic bank lending responds to bank–specific variables and inflation, and particularly to GDP growth. Table 3 presents the estimation results for alternative specifications of the Equation 4. The cyclicality of lending for Islamic banks is calculated by $\beta_0 + \beta_1$ of the Equation 4. Having found that the lending is

14

procyclical in the Turkish banking system, we specifically comment on β_1. The negative sign of β_1 would imply that Islamic banks are less procyclical or even countercyclical. The results in Table 3 suggest that Islamic banks are not significantly different from conventional banks in terms of lending over the business cycles. The results taken together demonstrate that Islamic banks do not create significant difference in the Turkish banking system when bank lending patterns are considered. The results tend to conflict with some of the findings in the literature about the countercyclicality of bank lending. In brief, we conclude that Islamic bank lending in Turkey is not in line with the "stability" view which suggests Islamic banks do not abstain from extending loans in economic downturns.

The differential effects of the bank–specific variables on Islamic bank lending are summarized by the coefficients in vector θ_1. The results suggest that, except for $Capital \times Islamic$ and $Liquidity \times Islamic$, the coefficients of all the interaction terms are insignificant. The significant estimates for the interaction terms $Capital \times Islamic$ and $Liquidity \times Islamic$ suggest that the liquidity and capitalization effects are more pronounced among Islamic banks. This may stem from the fact that, on average, Islamic banks are less capitalized and have less liquidity (see Table 1). An interesting result is that the negative effect of capitalization for an average Turkish bank is reversed by the positive and significant estimate of $Capital \times Islamic$ for an average Islamic bank.

5 What Explains Procyclicality?

5.1 The Role of Competition

We presented substantial evidence that both Islamic and conventional bank lending are equally procyclical in the Turkish banking system. However, previous country evidence for Islamic bank lending over business cycles offers different lending patterns. Ibrahim (2016) finds countercyclical lending for Malaysian Islamic banks, whereas, Ascarya et al. (2016) argue that Indonesian Islamic banks lend even more procyclically. We propose that the

15

differences in cross–country regulations may be one of the reasons why Islamic banks tend to exhibit different lending cycles.

The regulations that treat all the banks in a dual banking system equally might create similar incentives for Islamic banks. In such an environment, Islamic banks are tempted to compete with their conventional counterparts and tend to converge. In a regulatory environment where Islamic banks have distinct mandates compatible with their social objectives, however, Islamic bank lending could follow independent paths. It would be then arguable that Islamic bank lending remains unresponsive to competition. We propose in this dichotomy that almost single regulatory regime in the Turkish banking system creates similar motivations for Islamic and conventional banks. This particularly implies that the state of competition in the Turkish banking system impacts Islamic and conventional bank lending reminiscently. In this section, we test whether competition is a source of bank lending procyclicality. If all the arguments presented here is valid, we would find that Islamic and conventional bank lending yield unidirectional responses to the variations in competition.

The competition in a dual banking system may seem at odds, since it could be considered that Islamic and conventional banks serve different segments of customers. Islamic banks might serve to a closed client base whose economic choices are strictly driven by religious commitments (Weill, 2011). In such a strict distinction, Islamic banks may exhibit different lending behaviors because the motivation for Islamic banks and their customers may be different compared to conventional ones. In reality, however, loan customers may have multiple business relations with both banks. This situation suggests that loan customers feel some flexibility and consider Islamic bank loans as alternatives to conventional bank loans. This case creates certain competition between Islamic and conventional banks to capture those customers who have multiple bank relations (Nienhaus, 1983).

On the outset of Islamic banking in Turkey, as Moore (1990) argues, potential threats emerged for Islamic banks in an interest–based banking system. Despite their success in collecting deposits, Islamic banks had significant disadvantages in funding lucrative projects.

16

Although Turkey suffered from similar disadvantages, a number of regulatory changes in the last decade lifted certain disadvantages and provided equal opportunities to both banks in the system (Aysan et al., 2013).[4] The rise of Islamic banking in international scale combined with domestic regulatory modifications might have spurred euphoria in a more competitive market that in turn led Islamic banks to follow conventional banks in their lending patterns.

To verify the conjecture that the competition could be a factor converging Islamic banks to conventional banks in their lending patterns, we first estimate a trivariate panel–VAR model which extends the above–mentioned bivariate panel–VAR by incorporating a competition measure. In doing so, we jointly estimate how credits respond to GDP and competition shocks. Additionally, we plug the same competition measure into the Equation 4 and estimate the following equation:

$$\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i) \times \Delta GDP_{i,t-1}$$
$$+ (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}. \quad (5)$$

The Equation 5 measures the impact of competition on bank lending by differentiating the impacts on Islamic and conventional banks. To disentangle Islamic and conventional banks in the relation between competition and procyclicality of bank lending, we introduce a triple interaction term, $\Delta GDP \times Competition \times Islamic$, and estimate:

---

[4]Islamic banks in Turkey till 2005 were not restricted solely by Islamic principles but also by the unfavorable regulations in the country. Besides their deprivation from investing in profitable fixed income securities, these banks were not covered by the same deposit insurance scheme that was only open to conventional banks. The lack of interbank market for Islamic banks also worsened their liquidity requirements especially during fragile times. Substantial reforms over the last decade supported Turkish Islamic banks who suffered weak performance and low profitability. Recent regulatory reforms at least dealt with the drawbacks in the sector by eliminating certain inequalities between Islamic banks and conventional banks. Among those regulatory changes, maybe the most important one was that the status of "special finance house" was changed to "bank". The brand change brought equal treatment to all the banks without discriminating Islamic banks. Receiving further support from many governmental encouragements, e.g. opening of fixed income market, namely *sukuk*, new state–owned Islamic banks etc., Islamic banks steadily grew and became the renowned players, holding the roughly 6 percent of the banking system. A more detailed discussion on the Turkish banking system with a historical background can be found in Appendix A.

17

$$\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i + \beta_2 Islamic_i \times Competition) \times \Delta GDP_{i,t-1}$$

$$+ (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}. \quad (6)$$

To measure competition, we use a widely used profit–elasticity indicator, also called the Boone indicator (Boone, 2008; Bikker and Van Leuvensteijn, 2008). The Boone indicator can be interpreted as the measure of the banking sector's sensitivity to marginal cost. Basically, this indicator measures the impact of productivity on banks' profits. The Boone indicator is an estimate of the percentage decrease in profits resulting from a 1 percent increase in the marginal cost. It is determined by the parameter $\partial ln\pi(\cdot)/\partial lnmc(\cdot)$, given by the following equation:

$$ln\pi_{i,t} = \alpha + \sum_{t=1,...,T} \beta_t d_t lnMC_{it} + \sum_{t=1,...,T-1} \gamma_t d_t + \mu_{it} \quad (7)$$

where π is the profit for each bank i at time t, MC is the marginal cost for each bank i at time t, d_t is a time dummy and μ_{it} is the error term. In this representation, the coefficient β_t is the profit–elasticity index. The index should be negative, as profit and marginal cost have a negative relation. The competition, that is defined as $\partial ln\pi(\cdot)/\partial lnmc(\cdot)$, rises proportionately with the absolute value of β_t.

[INSERT FIGURE 7 ABOUT HERE]

Figure 7 plots the estimated Boone indicator, $\mid \beta_t \mid$, for the Turkish banking system for the sample period. The Boone indicator suggests that the competition declines till the first quarter of 2006 and then bounces back till 2007. This could be the end result of the 2006 market turbulence in the country. As the markets calmed down and funding constraints of the banks were partly relieved, the competition surged again. The competition has fallen steadily till 2012. This was somewhat surprising, since the decline in competition after 2008 coincided with the surging capital flows to the banking system. This might be due to

18

disproportionate foreign funds available to the banks in the Turkish banking system when capital flows to emerging economies heightened after the 2008 financial crisis. While larger and well–connected banks tend to receive the largest stake, smaller banks have disadvantage in attracting foreign funds.

[INSERT FIGURE 4 ABOUT HERE]

[INSERT FIGURE 5 ABOUT HERE]

[INSERT FIGURE 6 ABOUT HERE]

Having hypothesized that competition could play a role in converging lending activities of Islamic and conventional banks, we first explore how GDP and competition shocks affect bank lending for all the banks in the system and separately for Islamic and conventional banks. We display credits' response to GDP and competition shocks across periods. The key observation emerging from the results depicted in Figures 4, 5 and 6 is that, credits at Islamic and conventional banks respond positively to the positive competition shocks. The trivariate panel–VAR model also confirms that these banks' responses to GDP shocks are positive and significant.

We explore whether the relation between competition and bank lending differs across bank type through the Equations 5 and 6. We test the resemblance between Islamic and conventional banks over the parameter estimate of γ_1 of both equations. Given that Islamic banks are better–equipped in smoothing macro shocks to lending, as their social objectives would suggest, we expect negative values for γ_1. In a reverse scenario, however, if Islamic banks are just like conventional banks and fail to accommodate their social objectives, then the coefficient would be non–negative, suggesting that Islamic banks fail to smooth the lending cycles.

[INSERT TABLE 4 ABOUT HERE]

Table 4 presents the results for the estimates of the Equation 5. The results suggest that, in a nutshell, the rising competition is associated with increasing lending activity (positive γ_0 of the Equation 5 at conventional significance level). The results also suggest that

19

parameter estimates for the interaction term $Competition \times Islamic$, γ_1 of the Equation 5, are insignificant. These results indicate that Islamic banks are not significantly different from conventional banks in their responses to competition in the banking system. The expectation that Islamic banks at least relieve the competition shocks on their lending (negative γ_1) is proven to be invalid in the Turkish case. Therefore, we argue that the level of competition may partly explain why bank lending is procyclical among Turkish Islamic banks, as rising competition stimulates the convergence between Islamic and conventional banks in their lending behavior.

[INSERT TABLE 5 ABOUT HERE]

This first piece of evidence regarding the impact of competition shows that competition affects lending at bank groups in the same way, but does not give any hint about their magnitudes. To reach a complete understanding on the relation between competition and lending patterns, we estimate variants of regressions specified in the Equation 6. The Equation 6 incorporates a triple interaction term, $\Delta GDP \times Competition \times Islamic$, to the Equation 5. Since this interaction term contains two continuous variables, $Competition$ and ΔGDP, interpreting it can be confusing as the marginal effect of a continuous variable is conditional on the values of the other. Effects can be made more interpretable by demeaning the continuous variables. In our case, for instance, by demeaning the continuous variables, the parameter estimates for the triple interaction term, β_2 of the Equation 6, gives the effect of competition on the procyclicality of bank lending for Islamic banks, when ΔGDP is on its average value. Table 5 tabulates the regression results for the variants of the Equation 6. The results corroborate what Table 4 suggested, that competition positively impacts bank lending. The results in Table 5 further indicate that competition gives rise to the procyclicality of lending as the parameter estimates for $\Delta GDP^{demeaned} \times Competition^{demeaned}$, β_1 of the Equation 6, is significantly positive. This should be interpreted such that, an average Turkish bank increase its lending against rising competition on average GDP growth. When the effect of competition is separated for Islamic and conventional banks, we find that Islamic

20

banks do not differentiate significantly from conventional banks. The parameter estimate for $\Delta GDP^{demeaned} \times Competition^{demeaned} \times Islamic$, β_2 of the Equation 6, is insignificant.

Overall, we find significant evidence that an average Islamic bank do not differentiate from an average conventional bank in lending when the effect of competition is considered. These results, combined with the previous findings of Islamic banks' insignificant responses to GDP growth, suggest similar lending motives for both banks. Particularly, this section provided that the state of competition did not have distinct effects on Islamic and conventional banks. The variations in the degree of competition give similar rise to bank lending procyclicality. The point of departure to examine the relation between competition and bank lending with a comparison between Islamic and conventional banks was that similar regulations could have led to some degree of convergence between these banks. The results confirmed this hypothesis by the evidence that Islamic banks are not different in terms of their lending cyclicality.

5.2 Further Discussion

We initially explain the procyclicality of Islamic bank lending through the lens of competition in the Turkish banking system. There are, however, potential other issues in Islamic banking that are interrelated but should not be ignored in explaining the procyclicality of Islamic bank lending. These issues are primarily structural and have the potential to drive procyclicality in Islamic bank lending.

When the banking system is hit by various macroeconomic shocks, Islamic banks are susceptible to these shocks at least equally compared to conventional banks. Islamic banking predominantly relies on *ex–post* return distribution by which the incurred returns or losses are distributed to customers instead of a pre–set interest rate. This has a smoothing role in business cycles, as comparably higher returns accrued during good times are distributed at economic downturns. The dominance of mark–up instruments (*Murabaha* contracts), however, may impede the smoothing role of Islamic banks as the functioning of these contracts

imitates the conventional ones.

Next, several regulatory attempts in Islamic banks, including but not limited to loan loss provisioning, net stable funding ratios and liquidity coverage ratios (Soedarmono et al., 2017; Ashraf et al., 2016) could be motivating lending procyclicality. It is widely admitted that, as adopting incurred loan loss models, banks are forced to hold higher provisions against risen non–performing loans during economic busts. This tends to exacerbate the cyclical effects of lending since the allocation of banking sources as provisions reduces the capacity of lending. Instead of an incurred loan loss model, recent regulatory approaches propose Islamic banks to follow expected loan loss models to reduce the procyclicality of loan loss provisioning. As Soedarmono et al. (2017) find, however, the encouragement of expected loan loss models did not have intended outcomes, as loan loss provisioning policies at Islamic banks are still subject to opportunistic capital management practices. Finally, Ashraf et al. (2016) stress the need for liquidity coverage ratio and net stable funding ratio regulations to stabilize the long–term funding stability of Islamic banks through higher credit and asset growth during economic downturns. While these regulations are decisively set for conventional banks, Islamic banks face several restrictions that constrain its adoption of the mentioned regulations (Ahmed, 2015). The most visible one, maybe, is the lack of liquid *sukuk* markets that could make active liquidity management achievable.

6   Robustness Checks

In this section, we present several robustness checks. The first robustness check is a more reliable panel–VAR specification, that allows for an augmented channel originating from external shocks (VIX), affecting GDP levels, (GDP), and triggering monetary policy (Ir) and then permeating banking variables–credits ($Credits$), respectively. We use overnight money market rate of the Central Bank of Turkey as the policy rate ($Interest\_rate$), and the VIX index (VIX) as an index to proxy for global uncertainty. We use quarterly averages

22

of the daily policy rate and the VIX index (see Table 1 that presents the summary statistics for the variables used in our analysis.). The sequence of the variables creating the channel is enforced by the Cholesky decomposition that assumes more "exogenous" variables impact the more "endogenous" variables in a sequential manner. The results pertaining to the augmented model, which is not reported but available upon request, confirm the bivariate model results suggesting that lending in both banks are typically procyclical.

[INSERT TABLE 6 ABOUT HERE]

[INSERT TABLE 7 ABOUT HERE]

The second robustness check involves using alternative measures in the regressions. Table 6 and 7 present results for the regressions that employ different liquidity and capitalization measures that could be used alternatively in the main regressions. For the sake of brevity, we report those models introduced in the Equation 6. Table 6 presents the results when only alternative liquidity measures are used, whereas, Table 7 presents the results when alternative liquidity and capitalization measures are both employed. Table 7 also introduces a measure for the provisions for non–performing loans, *Provisions*, to test whether the allocation of provisions impacts bank intermediation. When alternative liquidity and capitalization measures are used, the main results for the procyclicality of bank lending do not change. The results yield significant and positive for alternative liquidity measures but some insignificant results for capitalization measures. As expected, higher levels of provisions increase bank lending for an average Turkish bank, but Islamic banks do not respond differently to the variations in the provisions measure.

7 Conclusion

We investigate Turkish Islamic banking in their lending at different economic conditions. Employing panel data approaches, this study shows that Islamic bank lending in Turkey was procyclical during the period of 2005Q1–2012Q4. Upon exploring whether procyclicality

23

differs between Islamic and conventional banks, we find no significant difference. These conclusions hold under a variety of empirical settings including fixed effects regressions and panel–VAR methodology and alternative specifications.

Upon exploring the motivations of similar procyclicality at Islamic and conventional banks, we empirically found that procyclicality of lending is spurred by the competition in the Turkish banking system as a result of risen convergence between Islamic and conventional banks. As emerged in the early stages of Islamic banking in Turkey (Moore, 1990), Islamic banks might have engaged in enduring competition with conventional banks to grow in a dual banking system. The pressure of competition may lead Islamic banks to converge to conventional bank practices even highly, given the impetus created by the recent amendments in the banking regulations of the country.

We further argue, but not empirically investigate in this paper, that several structural aspects of Islamic banking may lead to procyclicality of Islamic bank lending. The *ex–post* return distribution of Islamic banks could indeed play a significant role in relieving the impact of economic downturns but we emphasized that the dominance of mark–up instruments in Islamic banking is one of the reason why Islamic banks often fail to absorb economic declines or business shocks. Moreover, we emphasized that loan loss provisioning models of Islamic banks are generally unable to smooth the adverse effects of business cycles. The recent dynamic provisioning models based on expected loan losses have been inadequate to curb the procyclicality of loan loss provisioning and thus procyclical lending. Likewise, there remain certain restrictions in the application of liquidity regulations that could increase asset and loan growth during economic recessions. Next to the impact of competition, these themes are worth examining but we leave them to other researches.

From these findings we conclude that, as opposed to the ideal objectives, Islamic banks may add to the procyclicality of lending in a dual banking system. This conflicts with the stabilizing role of Islamic banks during the time of economic downturns and shed doubts on the "stability" view of the Islamic banks.

24

The procyclicality of Islamic bank lending suggests that Islamic banks may not be suitable toolkits to alleviate the adverse impact of the crisis or economic downturns. Procyclical lending can be considered to exacerbate the downturns or amplify the heating economy. Conversely, countercyclical lending can reduce the social adversities during economic downturns but the cost of alleviating these adversities should also be taken seriously. At this juncture, the pros and cons of cycles in lending should be assessed meticulously by the policymaker. Recently, Kumru and Sarntisart (2016) find positive impact of Islamic banking on economic growth where religious concerns hinder some depositors investing in conventional banks. An alternative welfare analysis could be useful to unravel the costs and benefits of cycles in Islamic bank lending.

8   Figures and Tables
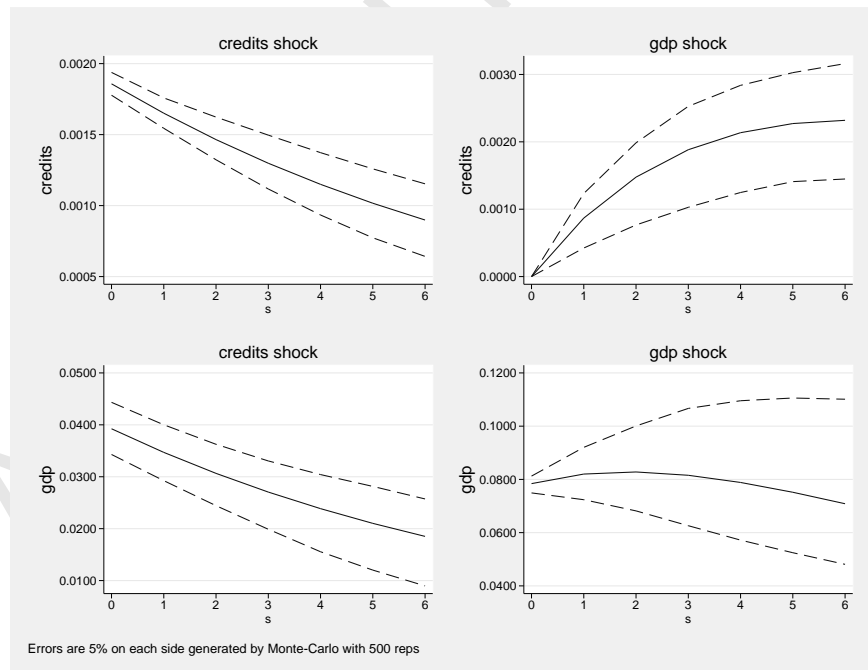
Figure 1: Impulse Responses of Credits to GDP Shocks–Banking System

25
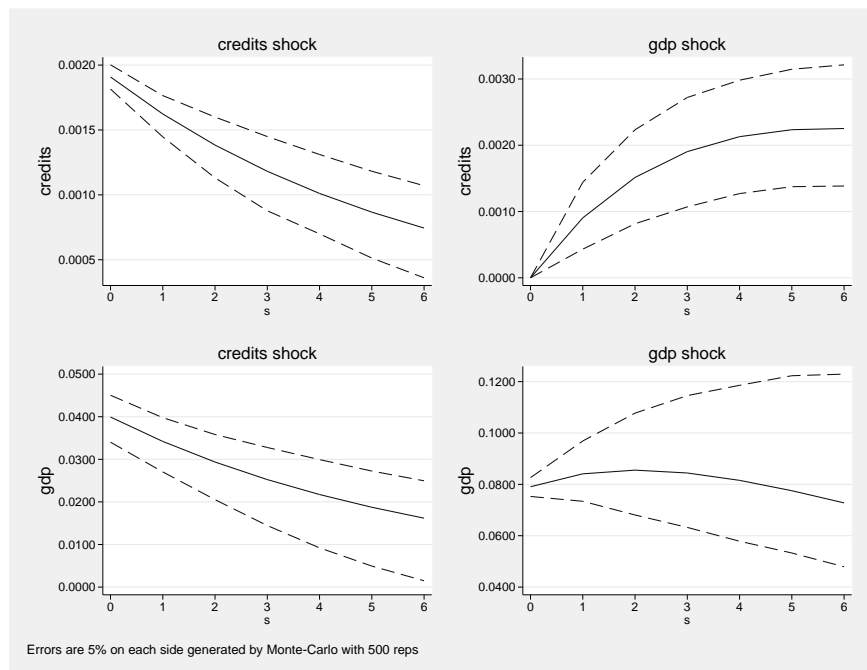
Figure 2: Impulse Responses of Credits to GDP Shocks–Conventional Banks

Figure 3: Impulse Responses of Credits to GDP Shocks–Islamic Banks

26

Figure 4: Impulse Responses of Credits to GDP and Competition Shocks–Banking System

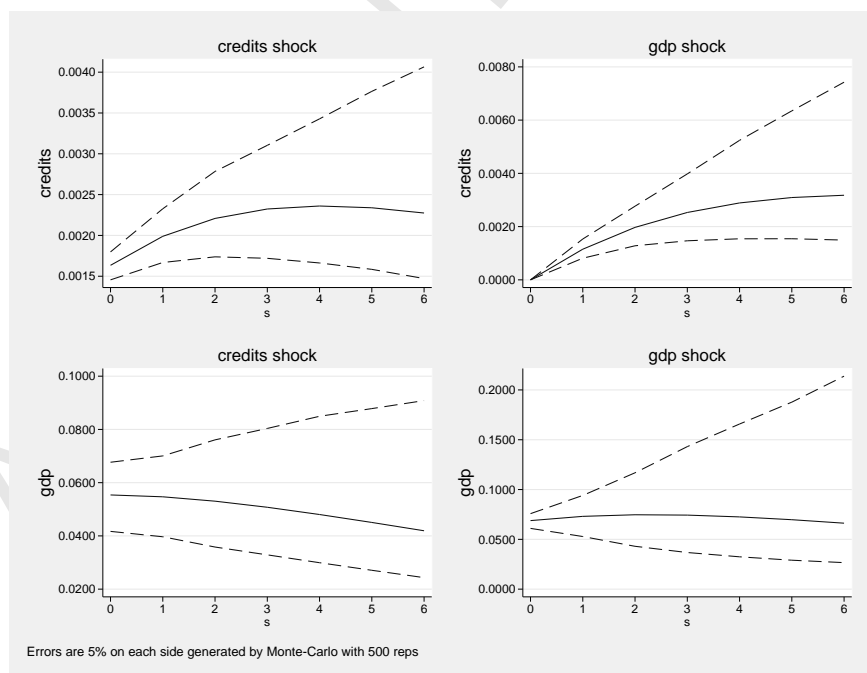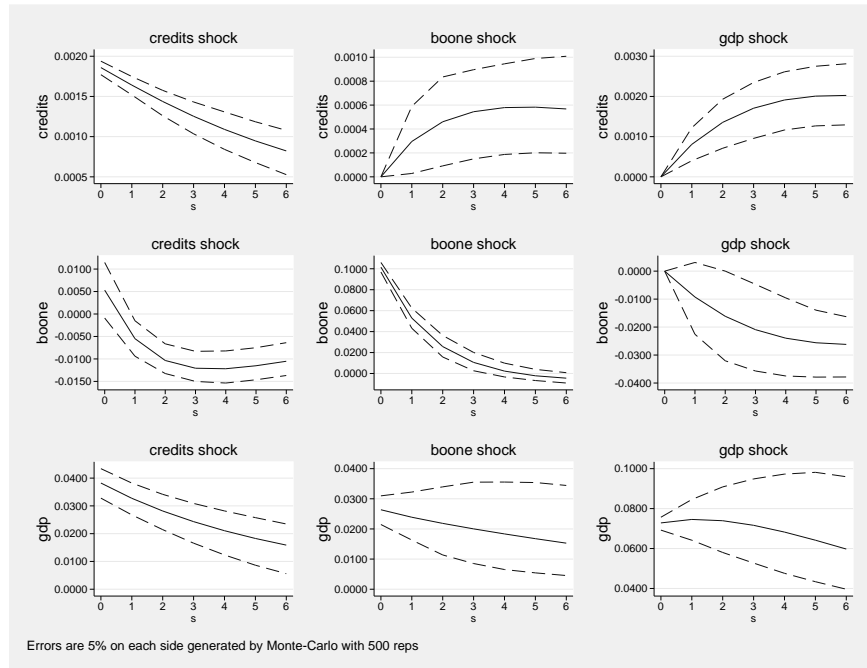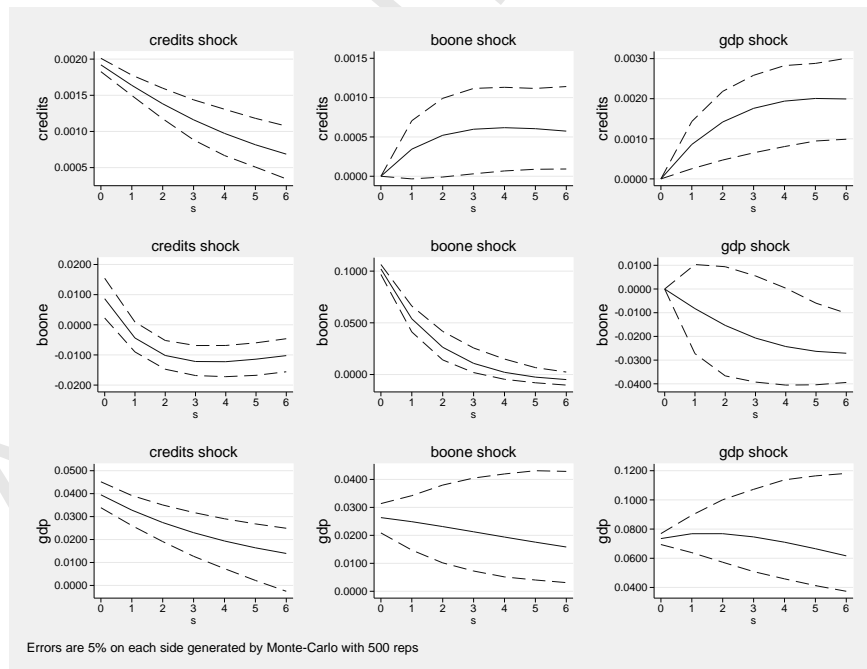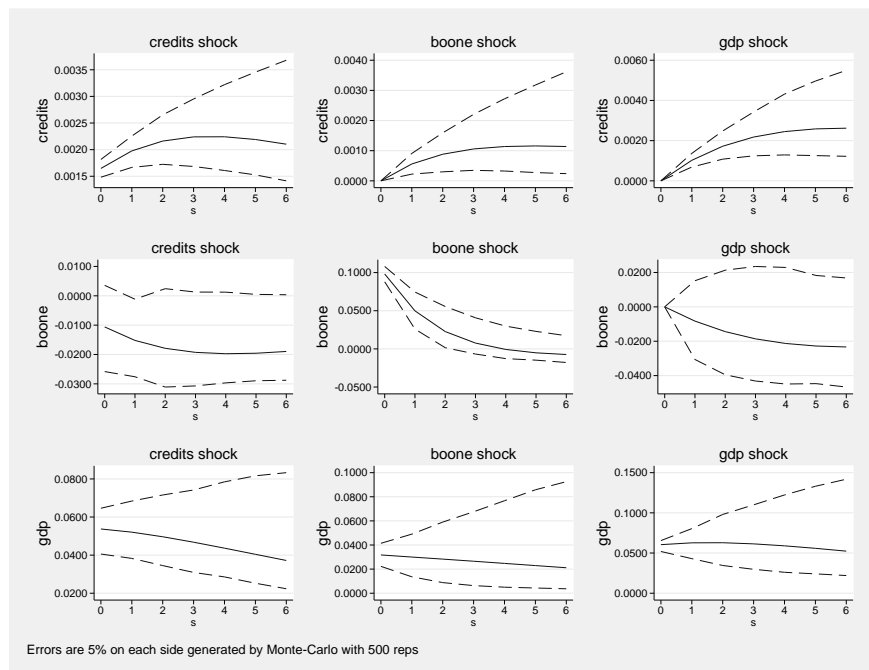Figure 5: Impulse Responses of Credits to GDP and Competition Shocks–Conventional Banks

27

Figure 6: Impulse Responses of Credits to GDP and Competition Shocks–Islamic Banks
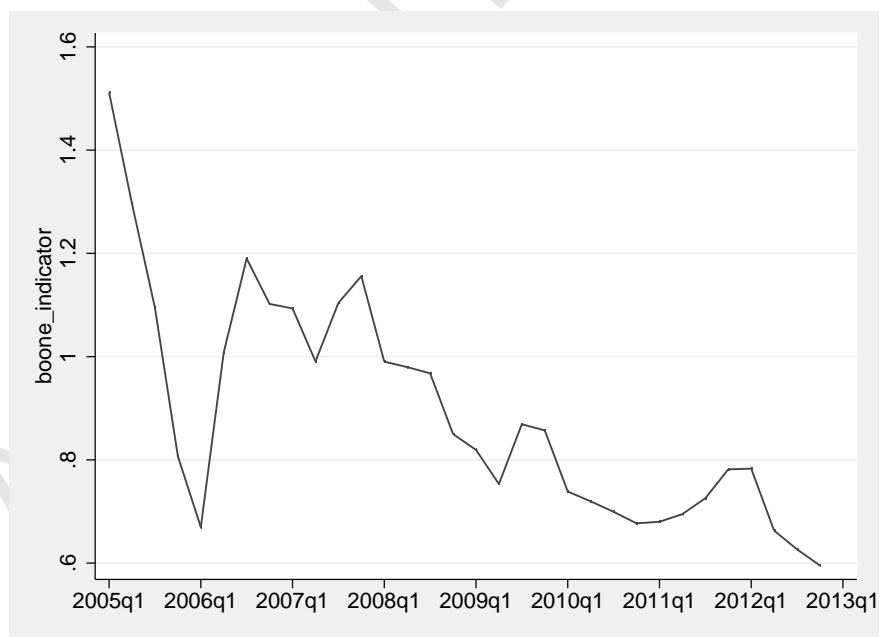
Figure 7: The Level of Competition in the Turkish Banking System

28

Table 1: Summary Statistics

Variables	Definition	All Banks					Conventional Banks					Islamic Banks					Difference
		Obs	Mean	Std. Dev.	Min.	Max.	Obs	Mean	Std. Dev.	Min.	Max.	Obs	Mean	Std. Dev.	Min.	Max.	
$\Delta Credits$	Quarterly change in log-transformed credits	733	0.06650	0.09428	-0.81222	0.74624	609	0.06476	0.10051	-0.81222	0.74624	124	0.07507	0.05357	-0.07147	0.30142	-0.01031
ΔGDP	Quarterly change in log-transformed nominal GDP	733	0.00082	0.08603	-0.26283	0.13607	609	0.00098	0.08625	-0.26283	0.13607	124	0.00000	0.08532	-0.14823	0.13607	-
Competition	Boone indicator	758	0.89461	0.21813	0.59533	1.51200	630	0.89545	0.21859	0.59533	1.51200	128	0.89046	0.21667	0.59533	1.51200	-
Bank size	$log(total\_assets)$	758	16.39836	1.38716	12.61442	19.00847	630	16.55418	1.44074	12.61442	19.00847	128	15.63142	0.68962	14.24519	16.87844	0.92276***
Liquidity(1)	$\frac{total\_assets-total\_credits-fixed\_assets}{deposits}$	758	1.17784	3.45375	0.23532	55.96127	630	1.34136	3.76780	0.35273	55.96127	128	0.37298	0.06652	0.23532	0.57198	0.96839***
Liquidity(2)	$\frac{total\_assets-total\_credits-fixed\_assets}{total\_assets}$	758	0.43821	0.15563	0.18040	0.96522	630	0.46938	0.15151	0.20395	0.96522	128	0.28479	0.04617	0.18040	0.41355	0.18460***
Liquidity(3)	$\frac{total\_credits}{deposits}$	758	0.93106	0.29729	0.22494	3.97590	630	0.93458	0.32304	0.22494	3.97590	128	0.91375	0.09794	0.71174	1.13488	0.02082
Capital(1)	$\frac{shareholders\_equity}{total\_assets}$	758	0.12456	0.04018	0.05927	0.49213	630	0.12627	0.04275	0.05927	0.49213	128	0.11614	0.02204	0.06298	0.17331	0.01013***
Capital(2)	$\frac{shareholders\_equity}{shareholders\_equity+deposits}$	758	0.18253	0.11097	0.06771	0.92013	630	0.19285	0.11860	0.07198	0.92013	128	0.13176	0.02461	0.06771	0.19552	0.06109***
Credit quality	$\frac{nonperforming\_loans}{total\_credits}$	758	0.01039	0.01049	0.00000	0.06991	630	0.00934	0.01012	0.00000	0.06991	128	0.01559	0.01076	0.00005	0.05081	-0.00625***
Provisions	$\frac{provisions}{total\_credits}$	758	0.00208	0.00215	0.00000	0.02727	630	0.00211	0.00230	0.00000	0.02727	128	0.00194	0.00108	0.00000	0.00451	0.00018
Profitability	Return on assets (ROA)	758	0.01546	0.01376	-0.13273	0.11991	630	0.01531	0.01453	-0.13273	0.11991	128	0.01617	0.00910	0.00344	0.04671	-0.00086
Relationship banking	$\frac{100*personnel}{total\_assets}$	758	0.34143	0.17918	0.00555	1.09265	630	0.32761	0.18368	0.00555	1.09265	128	0.40948	0.13656	0.20526	0.80119	-0.08188
Inflation	Consumer price index (CPI)	758	5.05790	0.18429	4.74328	5.36237											
VIX	Chicago Board Options Exchange Volatility Index	758	21.19880	9.69577	11.03000	58.49000											
Interest rate	Quarterly averages of the daily policy rate	758	10.91459	5.48838	1.50000	17.50000											

Note: Credits, GDP and total assets are the log transformed values of the original figures that are in thousand Liras. The difference of the variables are tested between Islamic and conventional banks. *** denotes that difference is significance at 1 percent level.

29

Table 2: Banking System Response to GDP Shock

	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
ΔGDP	0.2233**	0.2306**	0.2361***	0.2375***	0.2454***	0.2422***	0.2408***	0.1954*
	(2.568)	(2.559)	(2.635)	(2.653)	(2.766)	(2.659)	(2.648)	(1.782)
Bank size		-0.0093	-0.0322*	-0.0325*	-0.0438**	-0.0435**	-0.0561***	-0.0539***
		(-0.541)	(-1.723)	(-1.745)	(-2.338)	(-2.313)	(-2.800)	(-2.657)
Capital			-0.3833***	-0.3945***	-0.2908**	-0.2816**	-0.2894**	-0.2973**
			(-3.053)	(-3.140)	(-2.278)	(-2.006)	(-2.064)	(-2.114)
Credit quality				0.7295	0.6045	0.5975	0.3486	0.4370
				(1.518)	(1.267)	(1.246)	(0.699)	(0.852)
Liquidity					0.0051***	0.0051***	0.0052***	0.0049***
					(3.660)	(3.660)	(3.741)	(3.455)
Profitability						-0.0498	-0.0614	-0.0421
						(-0.157)	(-0.194)	(-0.133)
Relationship banking							-0.0825*	-0.0869*
							(-1.801)	(-1.881)
Inflation								-0.4593
								(-0.741)
Constant	0.0590***	0.2178	0.6565**	0.6580**	0.8333**	0.8284**	1.0633***	3.4879
	(2.693)	(0.738)	(2.011)	(2.018)	(2.551)	(2.523)	(3.013)	(1.060)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	733	725	725	725	725	725	725	725
R-squared	0.219	0.216	0.226	0.229	0.244	0.244	0.248	0.249
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + \beta \Delta GDP_{i,t-1} + \theta X_{i,t-1} + \varepsilon_{i,t}$. The definition of the variables are in Table 1. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

30

Table 3: Responses to GDP Shock: Conventional versus Islamic Banks

	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
ΔGDP	0.2248**	0.2322**	0.2411***	0.2424***	0.2523***	0.2590***	0.2573***	0.2508**
	(2.564)	(2.547)	(2.674)	(2.693)	(2.840)	(2.841)	(2.824)	(2.251)
Bank size		-0.0118	-0.0504**	-0.0581***	-0.0717***	-0.0727***	-0.0844***	-0.0826***
		(-0.624)	(-2.359)	(-2.665)	(-3.296)	(-3.306)	(-3.677)	(-3.454)
Capital			-0.5198***	-0.5561***	-0.4627***	-0.4841***	-0.4868***	-0.4812***
			(-3.849)	(-4.058)	(-3.320)	(-3.126)	(-3.146)	(-3.097)
Credit quality				0.9630*	0.8707	0.8846	0.6003	0.6004
				(1.760)	(1.606)	(1.618)	(1.054)	(1.038)
Liquidity					0.0048***	0.0048***	0.0049***	0.0048***
					(3.465)	(3.437)	(3.519)	(3.387)
Profitability						0.0999	0.0825	0.0753
						(0.311)	(0.257)	(0.234)
Relationship banking							-0.0819*	-0.0830*
							(-1.768)	(-1.772)
Inflation								-0.0657
								(-0.102)
$\Delta GDP \times$Islamic	-0.0141	-0.0167	0.0011	-0.0075	-0.0176	-0.0690	-0.0620	-0.0503
	(-0.141)	(-0.167)	(0.012)	(-0.075)	(-0.179)	(-0.488)	(-0.430)	(-0.344)
Bank size$\times$Islamic		0.0044	0.0088	0.0222	0.0158	0.0123	0.0157	-0.0250
		(0.305)	(0.574)	(1.305)	(0.933)	(0.662)	(0.327)	(-0.250)
Capital$\times$Islamic			1.1540**	1.0685**	1.0137**	1.1230**	1.0949**	1.1030**
			(2.561)	(2.261)	(2.160)	(2.208)	(2.113)	(2.125)
Credit quality$\times$Islamic				0.4490	0.2741	0.1386	0.3318	0.2939
				(0.375)	(0.231)	(0.114)	(0.271)	(0.238)
Liquidity$\times$Islamic					0.3947***	0.3995***	0.3961***	0.4144***
					(2.834)	(2.859)	(2.825)	(2.834)
Profitability$\times$Islamic						-0.7499	-0.6287	-0.6055
						(-0.526)	(-0.421)	(-0.405)
Relationship banking$\times$Islamic							0.0156	0.0359
							(0.062)	(0.140)
Inflation$\times$Islamic								0.1591
								(0.464)
Constant	0.0588***	0.2480	0.9410***	1.0304***	1.2372***	1.2662***	1.4751***	1.7631
	(2.682)	(0.801)	(2.643)	(2.848)	(3.436)	(3.463)	(3.679)	(0.524)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	733	725	725	725	725	725	725	725
R-squared	0.220	0.216	0.236	0.241	0.263	0.263	0.267	0.267
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i) \times \Delta GDP_{i,t-1} + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}$. The definition of the variables are in Table 1). Islamic is a dummy that takes one if the bank is an Islamic bank and zero otherwise. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

31

Table 4: The Impact of Competition on Bank Lending: Conventional versus Islamic Banks

	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
ΔGDP	0.2412***	0.2555***	0.2626***	0.2651***	0.2725***	0.2788***	0.2773***	0.3003***
	(2.754)	(2.788)	(2.897)	(2.930)	(3.050)	(3.044)	(3.030)	(2.631)
Competition	0.4005***	0.3346**	0.3100**	0.3268**	0.2905*	0.2915*	0.2931*	0.3029*
	(2.658)	(2.119)	(1.983)	(2.090)	(1.876)	(1.879)	(1.891)	(1.897)
Bank size		-0.0106	-0.0485**	-0.0566***	-0.0699***	-0.0709***	-0.0827***	-0.0835***
		(-0.561)	(-2.270)	(-2.596)	(-3.217)	(-3.223)	(-3.603)	(-3.495)
Capital			-0.5094***	-0.5473***	-0.4607***	-0.4802***	-0.4836***	-0.4791***
			(-3.767)	(-3.995)	(-3.307)	(-3.100)	(-3.125)	(-3.085)
Credit quality				1.0202*	0.9218*	0.9290*	0.6401	0.5988
				(1.860)	(1.695)	(1.695)	(1.121)	(1.035)
Liquidity					0.0046***	0.0046***	0.0047***	0.0048***
					(3.320)	(3.299)	(3.382)	(3.365)
Profitability						0.0880	0.0715	0.0571
						(0.274)	(0.223)	(0.177)
Relationship banking							-0.0828*	-0.0810*
							(-1.790)	(-1.732)
Inflation								0.2225
								(0.338)
$\Delta GDP \times$Islamic	0.0005	-0.0078	0.0079	0.0004	-0.0153	-0.0816	-0.0742	-0.0639
	(0.005)	(-0.076)	(0.077)	(0.004)	(-0.151)	(-0.558)	(-0.502)	(-0.428)
Competition$\times$Islamic	0.0112	0.0158	0.0191	0.0174	0.0282	0.0344	0.0401	0.0432
	(0.244)	(0.227)	(0.276)	(0.251)	(0.412)	(0.496)	(0.570)	(0.610)
Bank size$\times$Islamic		0.0061	0.0111	0.0245	0.0207	0.0176	0.0170	-0.0209
		(0.294)	(0.510)	(1.056)	(0.900)	(0.741)	(0.349)	(-0.210)
Capital$\times$Islamic			1.1430**	1.0593**	1.0020**	1.1279**	1.0849**	1.0892**
			(2.530)	(2.229)	(2.123)	(2.216)	(2.087)	(2.092)
Credit quality$\times$Islamic				0.4289	0.2725	0.1163	0.3280	0.3518
				(0.356)	(0.228)	(0.095)	(0.267)	(0.285)
Liquidity$\times$Islamic					0.3993***	0.4057***	0.4043***	0.4248***
					(2.869)	(2.904)	(2.882)	(2.899)
Profitability$\times$Islamic						-0.9242	-0.7647	-0.7263
						(-0.643)	(-0.511)	(-0.485)
Relationship banking$\times$Islamic							-0.0141	-0.0030
							(-0.055)	(-0.012)
Inflation$\times$Islamic								0.1525
								(0.442)
Constant	-0.1782*	0.0243	0.7160*	0.8013**	1.0191***	1.0437***	1.2656***	0.0458
	(-1.947)	(0.074)	(1.918)	(2.117)	(2.702)	(2.731)	(3.059)	(0.013)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	733	725	725	725	725	725	725	725
R-squared	0.228	0.221	0.241	0.246	0.267	0.268	0.271	0.272
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i) \times \Delta GDP_{i,t-1} + (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}$.. The definition of the variables are in Table 1. Islamic is a dummy that takes one if the bank is an Islamic bank and zero otherwise. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

32

Table 5: The Impact of Competition on the Procyclicality of Bank Lending: Conventional versus Islamic Banks

	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
$\Delta GDP^{demeaned}$	0.4458***	0.4839***	0.5257***	0.5307***	0.5488***	0.5534***	0.5439***	0.5728***
	(3.164)	(3.071)	(3.369)	(3.407)	(3.569)	(3.583)	(3.522)	(3.369)
$Competition^{demeaned}$	0.3431**	0.2929*	0.2595	0.2760*	0.2422	0.2443	0.2484	0.2602
	(2.233)	(1.837)	(1.645)	(1.751)	(1.551)	(1.562)	(1.590)	(1.619)
$\Delta GDP^{demeaned} \times Competition^{demeaned}$	1.8593*	1.9341*	2.2080**	2.2299**	2.3568**	2.3691**	2.3042**	2.3242**
	(1.853)	(1.779)	(2.049)	(2.073)	(2.219)	(2.222)	(2.161)	(2.176)
Bank size		-0.0116	-0.0513**	-0.0595***	-0.0727***	-0.0732***	-0.0843***	-0.0855***
		(-0.613)	(-2.398)	(-2.730)	(-3.348)	(-3.331)	(-3.682)	(-3.586)
Capital			-0.5278***	-0.5671***	-0.4800***	-0.4877***	-0.4900***	-0.4856***
			(-3.909)	(-4.142)	(-3.450)	(-3.160)	(-3.177)	(-3.136)
Credit quality				1.0396*	0.9423*	0.9426*	0.6690	0.6252
				(1.905)	(1.742)	(1.729)	(1.177)	(1.085)
Liquidity					0.0046***	0.0046***	0.0047***	0.0049***
					(3.355)	(3.344)	(3.419)	(3.413)
Profitability						0.0340	0.0187	0.0027
						(0.106)	(0.058)	(0.008)
Relationship banking							-0.0790*	-0.0769
							(-1.711)	(-1.645)
Inflation								0.2571
								(0.391)
$\Delta GDP^{demeaned} \times Islamic$	0.0027	-0.0058	0.0080	0.0004	-0.0070	-0.0701	-0.0611	-0.0497
	(0.027)	(-0.058)	(0.080)	(0.004)	(-0.071)	(-0.495)	(-0.424)	(-0.340)
$\Delta GDP^{demeaned} \times Competition^{demeaned} \times Islamic$	-0.0010	0.0172	0.1753	0.1657	-0.1415	-0.1239	-0.1516	-0.1508
	(-0.002)	(0.028)	(0.290)	(0.274)	(-0.233)	(-0.203)	(-0.249)	(-0.247)
Bank size×Islamic		0.0039	0.0098	0.0236	0.0154	0.0109	0.0121	-0.0246
		(0.259)	(0.622)	(1.358)	(0.883)	(0.575)	(0.252)	(-0.247)
Capital×Islamic			1.1797***	1.0984**	1.0104**	1.1330**	1.0977**	1.1039**
			(2.595)	(2.302)	(2.135)	(2.208)	(2.101)	(2.110)
Credit quality×Islamic				0.3890	0.2379	0.0733	0.2649	0.2907
				(0.325)	(0.201)	(0.060)	(0.217)	(0.236)
Liquidity×Islamic					0.4080***	0.4129***	0.4112***	0.4310***
					(2.886)	(2.913)	(2.892)	(2.909)
Profitability×Islamic						-0.8907	-0.7500	-0.7057
						(-0.626)	(-0.504)	(-0.473)
Relationship banking×Islamic							0.0043	0.0158
							(0.017)	(0.062)
Inflation×Islamic								0.1466
								(0.429)
Constant	0.1419**	0.3142	1.0066***	1.1085***	1.3058***	1.3265***	1.5348***	0.1477
	(2.521)	(1.007)	(2.826)	(3.061)	(3.626)	(3.628)	(3.828)	(0.043)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	733	725	725	725	725	725	725	725
R-squared	0.232	0.225	0.245	0.251	0.272	0.273	0.276	0.277
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i + \beta_2 Islamic_i \times Competition) \times \Delta GDP_{i,t-1} + (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}$. The definition of the variables are in Table 1. $\Delta GDP^{demeaned}$ and $Competition^{demeaned}$ are the values that are subtracted from the mean of respective variables, GDP shock and Competition. Islamic is a dummy that takes one if the bank is an Islamic bank and zero otherwise. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

33

ACCEPTED MANUSCRIPT

Table 6: The Impact of Alternative Liquidity Measures

	Liquidity(2)				Liquidity(3)			
	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
$\Delta GDP^{demeaned}$	0.5263***	0.5309***	0.5309***	0.5040***	0.5249***	0.5331***	0.5248***	0.4954***
	(3.404)	(3.458)	(3.416)	(2.962)	(3.369)	(3.410)	(3.355)	(2.890)
$Competition^{demeaned}$	0.2749*	0.2747*	0.2793*	0.2618	0.2910*	0.2924*	0.2962*	0.2781*
	(1.756)	(1.751)	(1.779)	(1.618)	(1.847)	(1.853)	(1.876)	(1.710)
$\Delta GDP^{demeaned} \times Competition^{demeaned}$	2.2446**	2.2135**	2.1729**	2.1770**	2.1560**	2.1270**	2.0724*	2.0698*
	(2.103)	(2.066)	(2.026)	(2.026)	(2.004)	(1.967)	(1.916)	(1.910)
Bank size	-0.0735***	-0.0763***	-0.0828***	-0.0795***	-0.0630***	-0.0649***	-0.0745***	-0.0714***
	(-3.333)	(-3.402)	(-3.577)	(-3.326)	(-2.879)	(-2.930)	(-3.231)	(-2.997)
Capital	-0.5418***	-0.5845***	-0.5900***	-0.5813***	-0.5735***	-0.6087***	-0.6126***	-0.6043***
	(-3.941)	(-3.871)	(-3.904)	(-3.823)	(-4.189)	(-4.012)	(-4.038)	(-3.958)
Credit quality	0.9161*	0.9423*	0.7758	0.7990	1.1300**	1.1575**	0.9158	0.9448
	(1.664)	(1.704)	(1.355)	(1.383)	(2.063)	(2.099)	(1.593)	(1.629)
Liquidity	0.1414**	0.1472**	0.1349**	0.1337**	-0.0131	-0.0147	-0.0139	-0.0142
	(2.266)	(2.334)	(2.104)	(2.080)	(-0.851)	(-0.935)	(-0.886)	(-0.900)
Profitability		0.2172	0.1992	0.1953		0.1732	0.1574	0.1575
		(0.670)	(0.613)	(0.598)		(0.524)	(0.477)	(0.475)
Relationship banking			-0.0537	-0.0571			-0.0698	-0.0730
			(-1.140)	(-1.197)			(-1.493)	(-1.543)
Inflation				-0.2640				-0.2826
				(-0.410)				(-0.436)
$\Delta GDP^{demeaned} \times$ Islamic	-0.0112	-0.0763	-0.0680	-0.0577	-0.0084	-0.0707	-0.0653	-0.0574
	(-0.112)	(-0.536)	(-0.469)	(-0.392)	(-0.084)	(-0.492)	(-0.447)	(-0.387)
$\Delta GDP^{demeaned} \times Competition^{demeaned} \times$ Islamic	-0.0922	-0.0752	-0.0936	-0.1029	0.0768	0.0944	0.0683	0.0646
	(-0.152)	(-0.123)	(-0.153)	(-0.168)	(0.127)	(0.155)	(0.112)	(0.106)
Bank size×Islamic	0.0212	0.0172	0.0157	-0.0243	0.0377**	0.0343*	0.0402	0.0071
	(1.220)	(0.914)	(0.328)	(-0.244)	(1.966)	(1.690)	(0.832)	(0.072)
Capital×Islamic	1.1519**	1.3027**	1.2779**	1.2860**	1.2449**	1.3899***	1.3684**	1.3799**
	(2.419)	(2.521)	(2.426)	(2.435)	(2.581)	(2.646)	(2.559)	(2.567)
Credit quality×Islamic	0.0586	-0.1114	0.0039	-0.0848	-0.2210	-0.3989	-0.2253	-0.3293
	(0.048)	(-0.090)	(0.003)	(-0.067)	(-0.178)	(-0.312)	(-0.175)	(-0.253)
Liquidity×Islamic	0.4144**	0.4200**	0.4254**	0.4519**	-0.2059*	-0.2119*	-0.2062*	-0.2205*
	(2.107)	(2.127)	(2.152)	(2.160)	(-1.771)	(-1.813)	(-1.763)	(-1.748)
Profitability×Islamic		-0.9718	-0.8429	-0.8387		-0.9173	-0.8389	-0.8466
		(-0.679)	(-0.562)	(-0.558)		(-0.636)	(-0.555)	(-0.559)
Relationship banking×Islamic			-0.0119	0.0143			0.0338	0.0574
			(-0.047)	(0.056)			(0.134)	(0.222)
Inflation×Islamic				0.1575				0.1328
				(0.451)				(0.372)
Constant	1.2786***	1.3365***	1.4728***	2.7923	1.1828***	1.2297***	1.3931***	2.8214
	(3.521)	(3.611)	(3.651)	(0.827)	(3.254)	(3.325)	(3.442)	(0.830)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	725	725	725	725	725	725	725	725
R-squared	0.265	0.266	0.267	0.268	0.256	0.256	0.259	0.259
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i + \beta_2 Islamic_i \times Competition) \times \Delta GDP_{i,t-1} + (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}$. The definition of the variables are in Table 1. $\Delta GDP^{demeaned}$ and $Competition^{demeaned}$ are the values that are subtracted from the mean of respective variables, GDP shock and Competition. Islamic is a dummy that takes one if the bank is an Islamic bank and zero otherwise. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

34

Page 34 of 43

Table 7: The Impact of Alternative Liquidity and Capitalization Measures

	Liquidity(2)&Capital(2)				Liquidity(3)&Capital(2)			
	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$	$\Delta Credits$
$\Delta GDP^{demeaned}$	0.5130***	0.5130***	0.5074***	0.4772***	0.5009***	0.4983***	0.4896***	0.4638***
	(3.295)	(3.282)	(3.240)	(2.784)	(3.196)	(3.169)	(3.109)	(2.692)
$Competition^{demeaned}$	0.2567	0.2589	0.2633*	0.2424	0.2776*	0.2810*	0.2855*	0.2665
	(1.620)	(1.631)	(1.656)	(1.481)	(1.743)	(1.763)	(1.790)	(1.623)
$\Delta GDP^{demeaned} \times Competition^{demeaned}$	1.8058*	1.8664*	1.8480*	1.8587*	1.6104	1.7376	1.7034	1.7146
	(1.681)	(1.715)	(1.696)	(1.703)	(1.487)	(1.584)	(1.552)	(1.560)
Bank size	-0.0357*	-0.0358*	-0.0403**	-0.0369*	-0.0171	-0.0182	-0.0264	-0.0235
	(-1.812)	(-1.811)	(-1.965)	(-1.747)	(-0.899)	(-0.952)	(-1.308)	(-1.131)
Capital	0.1582	0.1639	0.1650	0.1586	0.2903**	0.2995**	0.3006**	0.2943**
	(1.505)	(1.527)	(1.535)	(1.459)	(2.170)	(2.224)	(2.232)	(2.163)
Credit quality	0.3036	0.2913	0.1650	0.2038	0.4414	0.4199	0.2057	0.2446
	(0.549)	(0.526)	(0.287)	(0.349)	(0.794)	(0.753)	(0.354)	(0.414)
Provisions	4.3659**	4.1272**	3.9767**	3.9585**	4.3845**	3.8179*	3.6256*	3.5992*
	(2.479)	(2.092)	(2.004)	(1.992)	(2.466)	(1.922)	(1.819)	(1.804)
Liquidity	0.1947***	0.1911***	0.1815***	0.1789***	-0.0425**	-0.0410**	-0.0403**	-0.0399**
	(3.093)	(2.972)	(2.773)	(2.724)	(-2.149)	(-2.057)	(-2.018)	(-1.996)
Profitability		-0.0871	-0.1157	-0.1096		-0.2106	-0.2425	-0.2379
		(-0.255)	(-0.336)	(-0.316)		(-0.620)	(-0.712)	(-0.694)
Relationship banking			-0.0398	-0.0441			-0.0610	-0.0644
			(-0.834)	(-0.912)			(-1.293)	(-1.349)
Inflation				-0.3080				-0.2704
				(-0.471)				(-0.411)
$\Delta GDP^{demeaned} \times$ Islamic	-0.0632	-0.0981	-0.0869	-0.0702	-0.0552	-0.0973	-0.0891	-0.0717
	(-0.550)	(-0.681)	(-0.591)	(-0.469)	(-0.478)	(-0.670)	(-0.601)	(-0.476)
$\Delta GDP^{demeaned} \times Competition^{demeaned} \times$ Islamic	-0.0107	-0.0264	-0.0453	-0.0668	0.1435	0.1225	0.0969	0.0855
	(-0.017)	(-0.043)	(-0.073)	(-0.108)	(0.234)	(0.199)	(0.158)	(0.139)
Bank size×Islamic	0.0023	-0.0017	-0.0089	-0.0662	0.0158	0.0115	0.0137	-0.0506
	(0.124)	(-0.082)	(-0.173)	(-0.647)	(0.805)	(0.541)	(0.268)	(-0.493)
Capital×Islamic	0.4965	0.5587	0.5306	0.5432	0.5338	0.6270	0.6032	0.6442
	(1.057)	(1.137)	(1.059)	(1.083)	(1.085)	(1.209)	(1.145)	(1.216)
Credit quality×Islamic	0.6937	0.6193	0.7189	0.6109	0.4731	0.3416	0.5004	0.3344
	(0.571)	(0.505)	(0.583)	(0.491)	(0.375)	(0.267)	(0.389)	(0.256)
Provisions×Islamic	-6.5587	-4.1938	-3.1130	-2.4939	-5.6638	-2.3721	-1.7588	-0.8864
	(-0.703)	(-0.397)	(-0.283)	(-0.226)	(-0.603)	(-0.222)	(-0.158)	(-0.079)
Liquidity×Islamic	0.3497*	0.3612*	0.3676*	0.4081*	-0.1957	-0.2103*	-0.2056*	-0.2395*
	(1.765)	(1.809)	(1.835)	(1.923)	(-1.621)	(-1.711)	(-1.670)	(-1.797)
Profitability×Islamic		-0.6694	-0.5875	-0.6018		-0.8241	-0.7577	-0.8099
		(-0.416)	(-0.361)	(-0.369)		(-0.503)	(-0.458)	(-0.489)
Relationship banking×Islamic			-0.0413	-0.0111			0.0138	0.0466
			(-0.157)	(-0.042)			(0.052)	(0.174)
Inflation×Islamic				0.2236				0.2573
				(0.637)				(0.714)
Constant	0.5784*	0.5903*	0.7036*	2.2469	0.3757	0.4066	0.5543	1.8989
	(1.812)	(1.842)	(1.955)	(0.653)	(1.197)	(1.285)	(1.545)	(0.549)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	725	725	725	725	725	725	725	725
R-squared	0.257	0.257	0.258	0.259	0.248	0.249	0.251	0.251
Number of banks	25	25	25	25	25	25	25	25

Note: The estimated model is $\Delta Credits_{i,t} = \alpha_i + (\beta_0 + \beta_1 Islamic_i + \beta_2 Islamic_i \times Competition) \times \Delta GDP_{i,t-1} + (\gamma_0 + \gamma_1 Islamic_i) \times Competition + (\theta_0 + \theta_1 Islamic_i) \times X_{i,t-1} + \varepsilon_{i,t}$. The definition of the variables are in Table 1. $\Delta GDP^{demeaned}$ and $Competition^{demeaned}$ are the values that are subtracted from the mean of respective variables, GDP shock and Competition. Islamic is a dummy that takes one if the bank is an Islamic bank and zero otherwise. T-statistics are in parentheses. *** significance at 1 percent, ** significance at 5 percent, * significance at 10 percent.

35

Page 35 of 43

Appendices

A Turkish Banking System

Banking systems in emerging market economies experienced similar transformation in its short history. The necessity of rapid industrialization after the world wars instigated less developed countries to seek sustainable pathways to development. In these economies, due partly to the scarcity of capital, state emerged as the sole device to implement sustainable industrialization policies. Although development discourse ahead of the 1980s rationalized state intervention in all segments of economy, the role of state in financial sector gradually diminished by leaving its role to free market dynamics and extensive liberalization. Certain achievements in efficiency, productivity and competitiveness in the banking systems of emerging market countries were well welcomed, nonetheless, identical structural weaknesses of emerging market countries led to chronic economic crises, e.g. Russia, Asia, Latin America, and Turkey.

The experience of the Turkish banking system is the reminiscent of many others. The economy benefited from the global economic boom under the presence of state in the economy, before the 1980s. The banking system fulfilled its intermediary role in close cooperation with the state which was regarded as the promoter of the growth. The role of state in the national economy was reduced considerably after the liberalisation policies of the 1980s, however the functioning of the banking system was interrupted by the various banking crises the last of which happened in 2001.

Saltoglu (2013) argues that, after 2001, the Turkish banking system has shown a successful transformation with steady growth and controllable financial risk. The successful transformation was achieved by various government institutions who cooperated diligently to reduce government debt stock, capitalize banking system, tame inflation and stabilize capital flows (Macovei, 2009). The measures were effective to bolster the banking system

36

as the 2008 financial crisis has mildly affected the domestic economy. Banks Association of Turkey (2009) indicates high capital adequacy ratios, high asset quality, low currency and liquidity risk, and good management of the interest, counterparty and maturity risks in mitigating the 2008 financial crisis.

The outlook of the Turkish banking system changed considerably after the liberalization of the market in the form of new entries, privatizations and merger and acquisitions. The dynamism of this change has continued as the past crises have resulted in new failures and new entries. The positive momentum in the banking system after 2001 created new opportunities in the system as the lucrative banking attracts foreign shareholders. As of September 2017, there are 12 deposit–collecting conventional banks 3 of which are state–owned and the remaining are private. 20 conventional banks are foreign and 13 conventional banks are development and investment banks which are not allowed to collect deposits. In the banking system, there are 5 participation banks which provide banking services in compliance with *Shariah* rules. As Saltoglu (2013) documents, the financial ratios indicate that Turkish banking system is growing in size, recording promising profits, increasing its asset quality steadily. Once a burden on the domestic economy, the Turkish banking system proves to be the bright spot of the overall Turkish economy. Despite all the merits, there is still necessity for further improvement. Quality of deposits, limited domestic funding sources and dependence on foreign funding could be seen among the top hurdles to be removed.

Regarding the duality of Turkish banking system, Islamic banks in Turkey have long time existed with conventional banks. Aysan et al. (2013) report that, after the enactment of a governmental decree, *Albaraka Türk Finans Kurumu* (Albaraka Turk Finance House) and *Faisal Finans Kurumu* (Faisal Finance House) entered the Turkish banking system in 1984. These were followed by *Kuveyt Türk Finans Kurumu* (Kuwait Turkish Finance House). Lastly, *Anadolu Finans Kurumu* (Anadolu Finance House), *İhlas Finans Kurumu* (Ihlas Finance House), and *Asya Finans Kurumu* (Asya Finance House) were opened with 100 percent domestic capital. As the name "*Finans Kurumu*" (Finance House) suggests, these

37

institutions were not regarded as a proper bank but functioned as an intermediary. Until late 2005, these banks remained subject to different statutory and regulatory arrangements that led to different rights, which covered solely conventional banks but not the others. Among many others, for instance, Islamic banks were not covered by the same deposit guarantee scheme that used to cover conventional deposits only. In 2005, Turkish authority has removed certain deprivations to Islamic banks and equalized the regulatory treatment to Islamic and conventional banks. Lately, *Asya Finans Kurumu* was closed and two government–owned Islamic banks, Ziraat and Vakif Participation banks (*Ziraat Katılım Bankası* and *Vakıf Katılım Bankası* in Turkish, respectively) have been authorized for operation.

References

Abdelsalam, O., Fethi, M. D., Matallin, J. C., and Tortosa-Ausina, E. (2014). On the Comparative Performance of Socially Responsible and Islamic Mutual Funds . *Journal of Economic Behavior & Organization*, 103, Supplement:S108 – S128.

Ahmed, H. (2015). Basel III Liquidity Requirement Ratios and Islamic Banking. *Journal of Banking Regulation*, 16(4):251–264.

Al-Suwailem, S. (2005). Optimal Sharing Contracts: Properties and Evolution. *Financial Engineering and Islamic Contracts, Palgrave McMillan*, pages 146–176.

Aribi, Z. A. and Arun, T. (2015). Corporate Social Responsibility and Islamic Financial Institutions IFIs: Management Perceptions from IFIs in Bahrain. *Journal of Business Ethics*, 129(4):785–794.

Ascarya, Rahmawati, S., and Karim, A. A. (2016). *Testing of the Procyclicality of Islamic and Conventional Banks in Indonesia*, pages 133–152. Springer International Publishing, Cham.

38

Ashraf, D., Rizwan, M. S., and L'Huillier, B. (2016). A Net Stable Funding Ratio for Islamic Banks and Its Impact on Financial Stability: An International Investigation. *Journal of Financial Stability*, 25(C):47–57.

At-Sahalia, Y., Andritzky, J., Jobst, A., Nowak, S., and Tamirisa, N. (2012). Market Response to Policy Initiatives During the Global Financial Crisis. *Journal of International Economics*, 87(1):162–177.

Aysan, A. F., Disli, M., Duygun, M., and Ozturk, H. (2017a). Religiosity versus Rationality: Depositor Behaviour in Islamic and Conventional Banks. *Journal of Comparative Economics*, page not assigned.

Aysan, A. F., Disli, M., Ng, A., and Ozturk, H. (2016). Is Small the New Big? Islamic Banking for SMEs in Turkey. *Economic Modelling*, 54(C):187–194.

Aysan, A. F., Disli, M., and Ozturk, H. (2013). Integration of the Participation Banking Legislations to the Banking Law and its Influence on Competition. *Afro Euroasian Studies*, 2(1-2):91–110.

Aysan, A. F., Disli, M., and Ozturk, H. (2017b). Bank Lending Channel in a Dual Banking System: Why Are Islamic Banks So Responsive? *The World Economy*, page not assigned.

Banks Association of Turkey (2009). The Financial System and Banking Sector in Turkey. Technical report, Banks Association of Turkey.

Beccalli, E. and Frantz, P. (2016). Why are Some Banks Recapitalized and Others Taken Over? . *Journal of International Financial Markets, Institutions and Money*, 45:79 – 95.

Beck, T., Demirgüç-Kunt, A., and Merrouche, O. (2013). Islamic vs. Conventional Banking: Business Model, Efficiency and Stability. *Journal of Banking & Finance*, 37(2):433–447.

Bertay, A. C., Demirgüç-Kunt, A., and Huizinga, H. (2015). Bank Ownership and Credit

39

Over the Business Cycle: Is Lending by State Banks Less Procyclical? *Journal of Banking & Finance*, 50(C):326–339.

Bikker, J. A. and Van Leuvensteijn, M. (2008). Competition and Efficiency in the Dutch Life Insurance Industry. *Applied Economics*, 40(16):2063–2084.

Boone, J. (2008). A New Way to Measure Competition. *Economic Journal*, 118(531):1245–1261.

Brei, M. and Schclarek, A. (2013). Public Bank Lending in Times of Crisis. *Journal of Financial Stability*, 9(4):820–830.

Chen, Y.-S., Chen, Y., Lin, C.-Y., and Sharma, Z. (2016). Is There a Bright Side to Government Banks? Evidence from the Global Financial Crisis. *Journal of Financial Stability*, 26(C):128–143.

Čihák, M. and Hesse, H. (2010). Islamic Banks and Financial Stability: An Empirical Analysis. *Journal of Financial Services Research*, 38(2):95–113.

Cull, R. and Martínez Pería, M. S. (2013). Bank Ownership and Lending Patterns During the 20082009 Financial Crisis: Evidence from Latin America and Eastern Europe. *Journal of Banking & Finance*, 37(12):4861–4878.

Farooq, M. and Zaheer, S. (2015). Are Islamic Banks More Resilient During Financial Panics? *Pacific Economic Review*, 20(1):101–124.

Ferri, G., Kalmi, P., and Kerola, E. (2014). Does Bank Ownership Affect Lending Behavior? Evidence from the Euro Area. *Journal of Banking & Finance*, 48(C):194–209.

García-Suaza, A. F., Gómez-González, J. E., Pabón, A. M., and Tenjo-Galarza, F. (2012). The Cyclical Behavior of Bank Capital Buffers in an Emerging Economy: Size Does Matter. *Economic Modelling*, 29(5):1612–1617.

40

Hasan, M. and Dridi, J. (2011). The Effects of The Global Crisis on Islamic and Conventional Banks: A Comparative Study. *Journal of International Commerce, Economics and Policy*, 2(02):163–200.

Holtz-Eakin, D., Newey, W., and Rosen, H. S. (1988). Estimating Vector Autoregressions with Panel Data. *Econometrica*, 56(6):1371–1395.

Hussain, M., Shahmoradi, A., and Turk, R. (2016). An Overview of Islamic Finance. *Journal of International Commerce, Economics and Policy*, 7(01):1650003–01.

Ibrahim, M. H. (2016). Business Cycle and Bank Lending Procyclicality in a Dual Banking System. *Economic Modelling*, 55:127 – 134.

Im, K. S., Pesaran, M. H., and Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, 115(1):53–74.

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

Khatat, M. E. H. (2016). Monetary Policy in the Presence of Islamic Banking. IMF Working Papers 16/72, International Monetary Fund.

Kumru, C. S. and Sarntisart, S. (2016). Banking for Those Unwilling to Bank: Implications of Islamic Banking Systems. *Economic Modelling*, 54(C):1–12.

Kuran, T. (1995). Islamic Economics and the Islamic Subeconomy. *The Journal of Economic Perspectives*, 9(4):155–173.

Kuran, T. (2004). *Islam and Mammon: The Economic Predicaments of Islamism*. Princeton University Press.

Love, I. and Zicchino, L. (2006). Financial Development and Dynamic Investment Behavior: Evidence from Panel VAR. *Quarterly Review of Economics and Finance*, 46(2):190–210.

41

Macovei, M. (2009). Growth and Economic Crises in Turkey: Leaving Behind a Turbulent Past? European Economy - Economic Papers 2008 - 2015 386, Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.

Maddala, G. S. and Wu, S. (1999). A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics*, 61(S1):631–652.

Mansour, W., Ben Jedidia, K., and Majdoub, J. (2015). How Ethical is Islamic Banking in the Light of the Objectives of Islamic Law? *Journal of Religious Ethics*, 43(1):51–77.

Martynova, N., Ratnovski, L., and Vlahu, R. (2015). Bank Profitability and Risk-Taking. IMF Working Papers 15/249, International Monetary Fund.

Micco, A. and Panizza, U. (2006). Bank Ownership and Lending Behavior. *Economics Letters*, 93(2):248–254.

Moore, C. H. (1990). Islamic Banks and Competitive Politics in the Arab World and Turkey. *Middle East Journal*, 44(2):234–255.

Nienhaus, V. (1983). Profitability of Islamic PLS Banks Competing with Interest Banks: Problems and Prospects. *Journal of Research in Islamic Economics*, 1(1):37–47.

Repullo, R. and Saurina, J. (2011). The Countercyclical Capital Buffer of Basel III: A Critical Assessment. CEPR Discussion Papers 8304, C.E.P.R. Discussion Papers.

Saibal, G. (2013). Funding Structure, Procyclicality and Lending: Evidence from GCC Banks. *Review of Middle East Economics and Finance*, 9(2):241–270.

Saltoglu, B. (2013). Turkish Banking Sector Current Status and the Future Challenges. *Atlantic Economic Journal*, 41(1):75–86.

Shaban, M., Duygun, M., Anwar, M., and Akbar, B. (2014). Diversification and Banks Willingness to Lend to Small Businesses: Evidence from Islamic and Conventional Banks in Indonesia. *Journal of Economic Behavior & Organization*, 103, Supplement:S39 – S55.

42

Shaban, M., Duygun, M., and Fry, J. (2016). SME's Lending and Islamic Finance. Is It a Win Win Situation? *Economic Modelling*, 55(C):1–5.

Soedarmono, W., Pramono, S. E., and Tarazi, A. (2017). The Procyclicality of Loan Loss Provisions in Islamic Banks. *Research in International Business and Finance*, 39:911–919.

Stolz, S. and Wedow, M. (2011). Banks' Regulatory Capital Buffer and the Business Cycle: Evidence for Germany. *Journal of Financial Stability*, 7(2):98–110.

Tlemsani, I. and Matthews, R. (2002). Ethical Banking: the Islamic View. *Business Research Yearbook*, 9:146–151.

Venardos, A. M. (2012). *Islamic Banking and Finance in South-East Asia: Its Development & Future*, volume 6. World Scientific.

Weill, L. (2011). Do Islamic Banks Have Greater Market Power? *Comparative Economic Studies*, 53(2):291–306.

World Bank (2012). *Global Financial Development Report 2013 : Rethinking the Role of the State in Finance*. Number 11848 in World Bank Publications. The World Bank.

43