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Cross-Country Evidence

Alexandra Zins & Laurent Weill

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Université de Strasbourg
Pôle Européen de Gestion et d'Economie
61 avenue de la Forêt Noire
67085 Strasbourg Cedex
http://large.em-strasbourg.eu/

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Laurent Weill[*]
EM Strasbourg Business School, University of Strasbourg

Alexandra Zins [+]
LaRGE, University of Strasbourg

Abstract

This paper investigates cyclicality of Islamic banking relative to conventional banking. We examine whether loan growth and profitability have a different sensitivity to economic growth for Islamic banks and for conventional banks. We use panel data from 525 banks covering 16 countries with dual banking systems spanning the period from 2008 to 2018. We find no difference in lending cyclicality: Islamic banks and conventional banks have both a procyclical lending behavior. Profitability is procyclical for Islamic banks but not for conventional banks. Our findings support the view that Islamic banking presence does not contribute to strengthen economic stability.

JEL Codes: G21.

Keywords: Islamic banking, loan growth, financial stability, bank profitability, business cycles, procyclicality.

[*] Corresponding author. Sciences Po Strasbourg, Université de Strasbourg, 7 rue de l'Ecarlate, CS 20024, 67082 Strasbourg, France. Email: laurent.weill@unistra.fr
[+] Email: alexandrazins19@gmail.com.

1. Introduction

Islamic banking has considerably expanded in the last two decades, with Islamic banking assets increasing from $660 billion in 2008 to $1.57 trillion in 2018 (Islamic Financial Services Board, 2019). A large amount of research has therefore been devoted to examine how Islamic banking development generates macroeconomic effects on economic growth (Gheeraert and Weill, 2015; Imam and Kpodar, 2016) and microeconomic effects on financial stability (Abedifar, Molyneux and Tarazi, 2013; Beck, Demirgüç-Kunt and Merrouche, 2013).

A major question regarding the economic effects of the expansion of Islamic banking deals with the cyclicality of Islamic banking relative to conventional banking. Differences in the reaction to business cycles between both types of banks would be associated with key consequences for economic growth and for financial stability.

The objective of this paper is to investigate the cyclicality of Islamic banking. By doing so, we provide new evidence on the macroeconomic and microeconomic effects of Islamic banking development.

First, we analyze the macroeconomic impact of bank cyclicality by considering cyclicality of bank lending. Cyclicality of bank lending concerns the link between bank lending behavior and GDP growth. It refers to the fact that banks would grant in excess loans during economic booms and cut too much lending during economic downturns. A cyclical lending behavior thus has undesirable effects by amplifying recessions and by launching excessive credit expansion, generating an overheating of the economy.

Second, we examine the microeconomic impact of bank cyclicality through the sensitivity of bank profitability to GDP growth. A bunch of papers has shown cyclical movements in bank profitability, supporting the positive relation between GDP growth and bank profits (Albertazzi and Gambacorta, 2009; Bolt et al., 2012). The link comes from the fact that economic conditions affect the quality of the loan portfolio. Pro-cyclicality of bank profitability means that recessions can hamper financial stability by deteriorating bank profits.

To perform this analysis, we use panel data from 525 commercial banks covering 16 countries with dual banking systems spanning the period from 2008 to 2018. We

measure lending cyclicality by estimating the sensitivity of loan growth to GDP per capita growth, while profit cyclicality is assessed through the sensitivity of bank profitability to GDP per capita growth.

The unique characteristics of Islamic banks give foundations for hypotheses on the cyclicality of behavior of Islamic banks relative to conventional banks. We have conflicting predictions concerning the cyclicality of Islamic banks relative to conventional banks, both for lending and profitability.

For cyclicality of lending, the differences in funding sources for Islamic banks and conventional banks suggest greater cyclicality for Islamic banks for two reasons. First, Islamic banks collect funds from depositors through PLS (Profit and Loss Sharing) accounts. Such accounts are associated with higher uncertainty on depositors' returns, resulting in depositors more concerned with the return of projects financed by banks. Depositors of Islamic banks are then expected to withdraw more their deposits than those of conventional banks in troubled times, and symmetrically we can expect them to bring more money in boom times. In line with this idea, Beck, Demirgüç-Kunt and Merrouche (2013) suggest a greater likelihood of bank runs for Islamic banks. Islamic banks would then be more affected than conventional banks by business cycles in their lending behavior because of greater sensitivity of deposits to economic changes. Second, Islamic banks do not have the same access to alternative sources of funding than conventional banks since the Islamic law prevents them to be involved in activities that include interest. Even if Islamic financial markets operate in many countries, they are less developed than conventional ones and thus restrict the ability for Islamic banks to raise funds.

However, one argument is in favor of the opposing view: the different objectives of Islamic banks. As stressed by Hasan (2004) and Chapra (2007)[1], Islamic banks should contribute to establish a world governed by social justice. Therefore Islamic banks should not overreact to business cycles to attain their social objectives since profit is not their ultimate objective. They should stabilize the economy by moderating the reduction in credit supply in troubled times so that individuals in need would not suffer from a credit

[1] Muhammad Chapra, a leading scholar in Islamic economics, observes that the Islamic financial system may "not be able to be a genuine reflection of Islamic teachings if it fails to realize the vision of Islam by actualizing justice, which is one of the primary objectives of Islam" (2007, p. 325).

crunch, and by moderating the increase in credit supply during booms to avoid creating the overheating of the economy. The behavior of Islamic banks could therefore be relied to the one of state-owned banks which has been found to be less procyclical in lending than private banks, because they consider macroeconomic stabilization in their objectives (Bertay, Demirguc-Kunt and Huizinga, 2015).

For cyclicality of profitability, the characteristics of Islamic banks similarly lead to opposing hypotheses. On the one hand, financings granted by Islamic banks have more sensitive returns to business cycles. Islamic banks use partnership contracts (Mudaraba, Musharaka) based on the PLS principle. The return for the banks is therefore related to the outcome of the financed project and as such is positively related to the economic cycle. Even if the ideals of Islamic banks diverge from their practice in the sense that the partnership contracts do not represent the majority of their financings, they still remain a share of their assets and as thus contribute to enhance the sensitivity of the revenues from financings for Islamic banks to the business cycle. We can then expect a more procyclical profitability for Islamic banks, resulting from the procyclicality of their revenues.

On the other hand, the use of PLS accounts should stabilize profitability of Islamic banks. These accounts allow Islamic banks to pass fluctuations in their income to depositors in the form of fluctuating returns for these creditors. During recessions, Islamic banks can then benefit from lower returns to pay to their depositors, while expansions are accompanied with greater returns for the depositors. In other words, thanks to the use of PLS accounts, financial costs for banks are countercyclical for Islamic banks, leading to countercyclical profitability for these banks.

Our paper therefore contributes to the literature on Islamic banking by examining the sensitivity of Islamic banks relative to conventional banks to GDP per capita growth, hence providing insights on how Islamic banking can affect economic growth and financial stability. Two single-country studies have analyzed cyclicality in Islamic banking and found opposing results. Ibrahim (2016) investigates cyclicality of lending in Malaysia and concludes that Islamic banks adopt a counter-cyclical lending behavior. In opposition, Aysan and Ozturk (2018) consider the same question in Turkey and find no significant difference in lending cyclicality between Islamic banks and conventional banks.

Our paper supplements both studies in two aspects. First, we have a cross-country perspective. It makes the findings not influenced by the characteristics of one specific country, allowing a greater generalization of our conclusions. It furthermore brings more variation in the business cycle, which strengthens the investigation. Second, we provide a broad analysis of cyclicality of Islamic banking by considering macro-level effects with cyclicality of bank lending and micro-level consequences with cyclicality of bank profitability. We therefore bring further information about the comparison of cyclicality between Islamic banks and conventional banks. We can thus contribute to clarify the debate about cyclicality of lending behavior of Islamic banks relative to conventional banks, and we bring information on the differences in cyclicality of profitability between Islamic banks and conventional banks.

The remainder of this paper is organized as follows. Section 2 presents the data and the empirical methodology. Section 3 presents our empirical findings. Section 4 concludes.

2. Data and methodology

2.1. Data and sample description

Our analysis is based on an unbalanced panel of 525 commercial banks covering 16 dual economies.[2] The sample includes 111 Islamic banks and 414 conventional banks over the period going from 2008 to 2018. Table 1 reports the overview of the sample of banks. We extract unconsolidated accounting level data from Bureau van Dijk's BankFocus database and macroeconomic data from World Development Indicators database from the World Bank.

Our aim is to assess the sensitivity of bank loan growth and of bank profitability to the business cycle. We thus consider alternatively the two following variables as the dependent variable. The first is *Credit growth*, defined as the real growth rate of net loans. This variable is in line with former works on lending cyclicality (e.g., Bertay,

[2] Iran and Sudan have fully-fledged Islamic financial systems. Since we want to compare Islamic banks to conventional banks in dual economies, we do not include both these countries in our dataset.

Demirgüc-Kunt and Huizinga, 2015). The second is *ROA*, which is the log of pre-tax profits divided by total assets+1. This transformation is commonly used to take into account the large differences across banks but also the fact that pre-tax profits divided by assets can be negative.

All banking variables have been winsorized at the 1% and 99% percentile in order to remove the outliers in line with Behr, Foos and Norden (2017) and Zins and Weill (2018).

Our aim is to check whether a difference exists between Islamic and conventional banks' reactions to the business cycle in terms of credit growth and of profitability. Hence, we consider the dummy *Islamic bank* which is equal to one if the bank is Islamic and to zero elsewise.

Three bank-level control variables are included in line with former literature (Ferri, Kalmi and Kerola, 2014; Zins and Weill, 2018). *Size* is the logarithm of total assets of a given bank. *Bank soundness* is the ratio of equity to total assets. *Loans to assets* is the ratio of loans to total assets, which takes into account the asset portfolio. In our model, all bank-level control variables are lagged one year to face a possible endogeneity problem.

Two country-level variables are included in the model: *GDP per capita*, and *Inflation*. Both variables have been log-transformed in order to deal with the issue of extreme values.

While Table 2 displays descriptive statistics for the whole sample, Table 3 provides separate descriptive statistics for Islamic and conventional banks and Wilcoxon tests for each variable. On average, the credit growth rate is significantly higher for Islamic banks (12.3%) than for conventional banks (8.8%) while Islamic banks are significantly smaller than their conventional counterparts regarding total assets. Islamic banks are less profitable on average but have a higher ratio of equity to total assets.

2.2. Methodology

To examine the cyclicality of credit growth, we follow the literature on lending cyclicality (Bertay, Demirgüc-Kunt and Huizinga, 2015; Ibrahim, 2016; Behr, Foos and Norden, 2017; Allen et al., 2017; Zins and Weill, 2018) and estimate the following model:

$$\begin{aligned} Credit\ growth_{i,j,t} = {} & \alpha + \gamma\, Credit\ growth_{i,j,t-1} + \beta_1\, GDP\ per\ capita\ growth_{j,t} \\ & + \beta_2\, Islamic\ bank_{i,j,t} + \beta_3\, (Islamic\ bank \times GDP\ per\ capita\ growth)_{i,j,t} \\ & + \sigma\, B_{i,j,t-1} + \delta\, W_{j,t} + Year\ dummies + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

Where i is the bank, j the country, t the year, B the set of bank-level control variables, W the set of country-level variables. Year dummies are included in all estimations to control for year-specific economic conditions.

The credit growth rate is regressed on the real GDP per capita growth rate. In order to capture differences in the cyclicality of Islamic banks' and conventional banks' credit growth rate, we interact the dummy variable Islamic bank with the real GDP per capita growth rate. The hypothesis that Islamic banks and conventional banks have differences in lending cyclicality is therefore supported if we find a significant β_3.

To investigate cyclicality in profitability, we estimate the same model by replacing credit growth by profitability as follows:

$$\begin{aligned} ROA_{i,j,t} = {} & \alpha + \gamma\, ROA_{i,j,t-1} + \beta_1\, GDP\ per\ capita\ growth_{j,t} \\ & + \beta_2\, Islamic\ bank_{i,j,t} + \beta_3\, (Islamic\ bank \times GDP\ per\ capita\ growth)_{i,j,t} \\ & + \sigma\, B_{i,j,t-1} + \delta\, W_{j,t} + Year\ dummies + \varepsilon_{i,j,t} \end{aligned} \quad (2)$$

We perform regressions of profitability on the real GDP per capita growth rate. We obtain support for the hypothesis of differences in profitability cyclicality between Islamic banks and conventional banks if we observe a significant β_3.

For both dependent variables, we include the one-period lagged dependent variable to control for second-order autocorrelation. We employ a dynamic System-GMM panel estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) using lagged first differences as instruments in order to address endogeneity issues and fixed effects problems. Moreover, we use two-step GMM estimation and the Windmeijer (2005) correction to minimize the downward bias in standard errors. The Hansen test of over-identifying restrictions and the Arellano-Bond tests for error autocorrelation (Arellano and Bond, 1991) are used to assess the appropriateness of our GMM estimations and of

our instruments. In our results, the First order Arellano-Bond and the Second order Arellano-Bond tests detect no second-order serial correlation while the Hansen test confirms the appropriateness of the instruments used.

Our second range of estimations aims at testing the symmetry of banks' reaction by separating the GDP per capita growth rate into positive and negative GDP per capita growth. In our additional estimations, we test the symmetry of banks' reaction by separating the GDP per capita growth rate into two new variables, namely *Positive GDP per capita growth* and *Negative GDP per capita growth*. *Positive GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is positive and equal to zero elsewise. *Negative GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is negative and equal to zero elsewise. We interact each of both these variables with the dummy variable *Islamic bank* to create the following interactions: *Islamic bank* × *Positive GDP per capita growth* and *Islamic bank* × *Negative GDP per capita growth*. We use the following regressions:

$$\begin{aligned} \textit{Credit growth}_{i,j,t} = {} & \alpha + \gamma\, \textit{Credit growth}_{i,j,t-1} + \beta_1\, \textit{Islamic bank}_{i,j,t} \\ & + \beta_2\, \textit{Positive GDP per capita growth}_{j,t} \\ & + \beta_3\, (\textit{Islamic bank} \times \textit{Positive GDP per capita growth})_{i,j,t} \\ & + \beta_4\, \textit{Negative GDP per capita growth}_{j,t} \\ & + \beta_5\, (\textit{Islamic bank} \times \textit{Negative GDP per capita growth})_{i,j,t} \\ & + \sigma\, B_{i,j,t-1} + \delta\, W_{j,t} + \textit{Year dummies} + \varepsilon_{i,j,t} \end{aligned} \quad (3)$$

$$\begin{aligned} \textit{ROA}_{i,j,t} = {} & \alpha + \gamma\, \textit{ROA}_{i,j,t-1} + \beta_1\, \textit{Islamic bank}_{i,j,t} + \beta_2\, \textit{Positive GDP per capita growth}_{j,t} \\ & + \beta_3\, (\textit{Islamic bank} \times \textit{Positive GDP per capita growth})_{i,j,t} \\ & + \beta_4\, \textit{Negative GDP per capita growth}_{j,t} \\ & + \beta_5\, (\textit{Islamic bank} \times \textit{Negative GDP per capita growth})_{i,j,t} \\ & + \sigma\, B_{i,j,t-1} + \delta\, W_{j,t} + \textit{Year dummies} + \varepsilon_{i,j,t} \end{aligned} \quad (4)$$

3. Results

3.1 Cyclicality of lending

We first examine the lending cyclicality of Islamic banks relative to conventional banks. We perform four regressions to consider several sets of control variables to test the sensitivity of the results. Table 4 reports the estimations. In column (1), we only include *GDP per capita growth*, *Islamic bank*, the interaction term between both variables, and the lagged credit growth. In columns (2) to (4), we respectively add bank-level control variables, country-level control variables, and all control variables.

We first obtain evidence of procyclicality of lending for all banks: *GDP per capita growth* is significantly positive in all estimations. This supports the view that loan growth positively evolves with the business cycle for our sample of emerging countries.

We observe no differences between Islamic banks and conventional banks in loan growth: *Islamic bank* is not significant in all estimations. This result means that Islamic banks do not differ in loan growth over the whole business cycle from conventional banks.

The key finding is the fact that there is no difference in lending cyclicality between Islamic banks and conventional banks. The interaction term *Islamic bank* × *GDP per capita growth* is not significant in all estimations. Therefore, our main conclusion is that Islamic banks do not differ in lending behavior from conventional banks.

We explained above that the characteristics of Islamic banks can lead to differences in lending cyclicality. Differences in funding sources could generate greater procyclicality for Islamic banks while differences in objectives could create lower procyclicality for Islamic banks. Our finding suggests that the differences between Islamic banks and conventional banks do not generate differences in lending cyclicality, either because they are not strong enough or because the differences favoring greater procyclicality and those favoring lower procyclicality offset themselves.

Our conclusions are in line with Aysan and Ozturk (2018) who also find no significant difference in lending cyclicality between Islamic banks and conventional banks in Turkey. They differ from those from Ibrahim (2016) who finds countercyclical lending behavior of Islamic banks in Malaysia. The geographic scope of our analysis can

explain the different results since we consider a cross-country sample which does not restrict our study to one country.

With respect to the control variables, we observe a negative and significant sign for bank size, supporting the view that a large bank size is associated with lower credit growth. This result accords with the findings of Bertay, Demirgüç-Kunt and Huizinga (2015), Ibrahim (2016), and Zins and Weill (2018) examining lending cyclicality for other geographic samples. We also observe a significantly negative coefficient for the ratio of loans to assets, meaning that higher share of loans in total assets is associated with lower lending cyclicality. Inflation tends to reduce lending cyclicality, as seen with its negative and significant coefficient. It accords with what Bertay, Demirgüç-Kunt and Huizinga (2015), and Zins and Weill (2018) have found.

A natural question that emerges is the possible asymmetry of lending cyclicality. Banks can react differently to economic growth during periods of booms and busts. We can then distinguish between episodes of positive and negative economic growth to examine whether the cyclicality of lending is symmetric or asymmetric through the business cycle. To this end, we perform estimations including the two variables *Positive GDP per capita growth* and *Negative GDP per capita growth* in Table 5.

We observe that lending cyclicality for all banks is not symmetric. While *Positive GDP per capita growth* is significantly positive, *Negative GDP per capita growth* is not significant. Therefore, banks have a procyclical lending behavior during economic upturns, but do not have a cyclical lending behavior during economic downturns.

However the conclusions do not change for the comparison between Islamic banks and conventional banks. *Islamic bank* × *Positive GDP per capita growth* and *Islamic bank* × *Negative GDP per capita growth* are not significant in all estimations. This finding means that no differences in lending cyclicality are observed in periods of booms or in periods of busts. The results for all the other variables remain unchanged.

Thus, our first conclusion is that Islamic banks do not differ from conventional banks in lending cyclicality. They are not more or less procyclical than conventional banks. Our findings then support the view that the expansion of Islamic banks does not

have a detrimental or beneficial macroeconomic impact through distinctive lending cyclicality.

3.2 Cyclicality of profitability

We turn to the cyclicality of profitability of Islamic banks relative to conventional banks. We want to examine whether profitability evolves differently with the business cycle between both types of banks. We perform the same four regressions than for lending cyclicality and report the estimations in Table 6. We obtain three striking results.

First, the coefficient of *GDP per capita growth* is not significant in all estimations, which indicates no cyclicality of profitability. In other words, profitability of conventional banks does not vary with the business cycle for our sample of emerging countries. This result is hard to compare with former studies since most works showing a link between bank profitability and economic growth have been done for developed countries (e.g., Albertazzi and Gambacorta, 2009; Bolt et al., 2012).

Second, profitability is procyclical for Islamic banks while it is not for conventional banks: the interaction term *Islamic bank* × *GDP per capita growth* is significantly positive in all estimations. We can explain this finding by the fact that financings provided by Islamic banks have returns more dependent on the economic situation. Islamic banks utilize partnership contracts based on the PLS principle which link their returns to the economic cycle. Islamic banks receive a share of the profits generated by these financings, and as such have their income fluctuating with the business cycle. This result is of major importance since it suggests that the expansion of Islamic banks could be detrimental for financial stability by hampering the financial situation of banks.

Third, we find evidence that the gap in profitability between Islamic and conventional banks evolves with the business cycle. In addition to the significantly positive coefficient for *Islamic bank* × *GDP per capita growth*, we observe a significantly negative coefficient for *Islamic bank*. The total effect of Islamic bank on bank profitability is the sum of the coefficient for *Islamic bank* and the coefficient for the interaction term *Islamic bank* × *GDP per capita growth* multiplied by the value of *GDP per capita growth*. Thus Islamic banks are less profitable than conventional banks when growth is low but relative profitability of Islamic banks rises as growth increases.

If we consider the estimation (4) including all control variables, the computation of the threshold for GDP per capita growth such that Islamic banks are more or less profitable than conventional banks leads to a value of 7.9%.

Hence Islamic banks are less profitable than conventional banks when GDP per capita growth is lower than 7.9% and more profitable otherwise. The descriptive statistics for GDP per capita growth show that the median is 1.95% with a maximal value of 9.424%. We therefore observe that Islamic banks are less profitable than conventional banks for most country-year observations, but the negative relation between Islamic banking and profitability can be turned into a positive one in several cases.

This finding is of utmost interest since it helps understanding the contrasting conclusions of the literature on the differences in profitability between Islamic banks and conventional banks.

This strand of literature finds ambiguous results through a bunch of cross-country works. Olson and Zoubi (2008, 2011) provide two works supporting the view that Islamic banks are more profitable than conventional banks. In opposition, Alexakis et al. (2019) find higher profitability for conventional banks. Finally, Beck, Demirgüç-Kunt and Merrouche (2013) find no significant difference in profitability between Islamic banks and conventional banks.

Our finding can help explaining these contrasting results. For instance, the result of higher profitability for conventional banks from Alexakis et al. (2019) has been found for a period including the global financial crisis. In line with our conclusion, this result can come from the low economic growth during that period. Reversely, the finding of higher profitability for Islamic banks from Olson and Zoubi (2011) has been obtained during the more prosperous period from 2000 to 2008. Finally the result of no significant difference in profitability from Beck, Demirgüç-Kunt and Merrouche (2013) may come from their use of a long period from 1995 to 2009 mixing episodes of high and of low growth.

The control variables are mostly not significant. We however observe a significant positive coefficient for bank size, meaning that larger banks would be more profitable. This is in line with the view that larger banks have higher market power.

Here again we can question whether the cyclicality of profitability is symmetric through the business cycle. The findings of procyclicality for Islamic banks and no cyclicality for conventional banks may not stand for episodes of economic upturns and episodes of economic downturns considered separately. We therefore redo the estimations by adding the two variables *Positive GDP per capita growth* and *Negative GDP per capita growth*. Table 7 displays the estimations.

We find confirmation that profitability is not cyclical for conventional banks: the coefficients of *Positive GDP per capita growth* and *Negative GDP per capita growth* are not significant. Thus there is no difference between economic upturns and downturns for the reaction of bank profitability to the business cycle for conventional banks.

However the conclusions change for the cyclicality of Islamic banks. We find that *Islamic bank* × *Positive GDP per capita growth* is not significant while *Islamic bank* × *Negative GDP per capita growth* is significantly positive in all estimations. In other words, Islamic banks have procyclical profitability only during economic downturns. During economic upturns, profitability of Islamic banks would not evolve with economic growth.

Hence our conclusion that profitability of Islamic banks is affected by economic conditions only stands for economic busts. It however does not change at all the concerns for financial stability since procyclicality of profitability is of particular importance during economic downturns: economic recessions contribute to reduce profitability of Islamic banks while they do not exert an impact on the profitability of conventional banks.

To sum it up, our second conclusion is that Islamic banks differ from conventional banks in profitability cyclicality. Profitability is procyclical for Islamic banks while it is not cyclical for conventional banks. For Islamic banks, the procyclicality of profitability is in fact observed during economic downturns but not during economic upturns. This suggests that the Islamic banking development would have a detrimental microeconomic impact through the deterioration of bank profits during recessions, leading to financial instability.

4.3 Alternative estimation technique

All our results have been found by using GMM estimations. One could argue that the results do not stand when using panel estimations. To this end, we redo our main estimations by using now regressions with random effects[3]. All results are displayed for both dependent variables in Table 8.

The estimations with random effects regressions confirm our main results. First, we find evidence of procyclicality of lending for all banks with the significantly positive coefficient for *GDP per capita growth* when explaining loan growth. Second, we observe no difference in lending cyclicality between Islamic banks and conventional banks: *Islamic bank* × *GDP per capita growth* is not significant when explaining loan growth. Third, we obtain no evidence of cyclicality of profitability for conventional banks: *GDP per capita growth* is not significant when explaining profitability. Fourth, we find that profitability is procyclical for Islamic banks while it is not for conventional banks with the significantly positive coefficient for *Islamic bank* × *GDP per capita growth*. Fifth, the gap in profitability between Islamic and conventional banks is influenced by economic growth. Higher economic growth enhances the relative profitability of Islamic banks in comparison to conventional banks.

Our results have thus been confirmed by the use of an alternative estimation technique, strengthening their relevance.

4. Conclusion

In this paper, we investigate the cyclicality of Islamic banks. We examine whether loan growth and profitability have a different sensitivity to economic growth for Islamic banks and for conventional banks. These questions provide information about the economic consequences of the expansion of Islamic banks.

We obtain two major findings. First, we show no difference in lending cyclicality for Islamic banks and for conventional banks: all banks have a procyclical lending

[3] Random effects are required since we have a dummy variable (*Islamic bank*) in our estimations.

behavior. Cyclicality of lending is not symmetric since loan growth is only significantly related to economic growth during economic upturns.

Second, profitability is procyclical for Islamic banks while it is not for conventional banks. Procyclicality of profitability for Islamic banks is not symmetric: the relation between economic growth and profitability is only positive during economic downturns.

The implications of our findings are numerous. From a normative perspective, we support the view that Islamic banking presence does not contribute to strengthen economic stability. At the macro-level, it does not contribute to reduce lending cyclicality and as such does not moderate recessions or episodes of excessive credit expansion. At the micro-level, it amplifies the sensitivity of bank profitability to economic cycles and as such contributes to weaken financial stability during episodes of economic downturns. From a positive perspective, our work helps to understand the gap in profitability between Islamic banks and conventional banks. Differences in cyclicality of profitability between both types of banks lead to the fact that the gap in profitability is conditional to economic growth. As a consequence, studies can obtain higher or lower profitability for Islamic banks relative to conventional banks, based on the level of economic growth in the country. This opens avenues for further research to better understand the ambiguous results from the literature on the differences in performance between Islamic and conventional banks.

References

Abedifar, P., Molyneux, P. and A. Tarazi, 2013. Risk in Islamic Banking. Review of Finance 17, 2035-2096.

Albertazzi, U., Gambacorta, L., 2009. Bank Profitability and the Business Cycle. Journal of Financial Stability 5, 393-409.

Alexakis, C., Izzeldin, M., Johnes, J., Pappas, V., 2019. Performance and Productivity in Islamic and Conventional Banks: Evidence from the Global Financial Crisis. Economic Modelling 79, 1-14.

Allen, F., Jackowicz, K., Kowalewski, O., Kozłowski, Ł., 2017. Bank Lending, Crises, and Changing Ownership Structure in Central and Eastern European Countries. Journal of Corporate Finance. 42, 494–515.

Arellano, M., Bond, S., 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. Review of Economic Studies. 58, 277–297.

Arellano, M., Bover, O., 1995. Another Look at the Instrumental-Variable Estimation of Error-Components. Journal of Econometrics. 68, 29–52.

Aysan, A., Ozturk, H., 2018. Does Islamic Banking Offer a Natural Hedge for Business Cycles? Evidence from a Dual Banking System. Journal of Financial Stability 36, 22-38.

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

Behr, P., Foos, D., Norden, L., 2017. Cyclicality of SME Lending and Government Involvement in Banks. Journal of Banking and Finance. 77, 64–77.

Bertay, A.C., Demirgüç-Kunt, A., Huizinga, H., 2015. Bank Ownership and Credit over the Business Cycle: Is Lending by State Banks Less Procyclical? Journal of Banking and Finance. 50, 326–339.

Blundell, R., Bond, S., 1998. Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. Journal of Econometrics. 87, 115–143.

Bolt, W., de Haan, L., Hoeberichts, M., van Oordt, M., Swank, J., 2012. Bank Profitability during Recession. Journal of Banking and Finance 36, 9, 2552-2564.

Chapra, M.U., 2007. Challenges facing the Islamic Financial Industry. In Handbook of Islamic Banking (edited by M. Kabir Hassan and M. Lewis), Edward Elgar, 325-357.

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

Gheeraert, L., Weill, L., 2015. Does Islamic Banking Development Favor Macroeconomic Efficiency? Economic Modelling 47, 32-39.

Hasan, Z. 2004. Measuring the Efficiency of Islamic Banks: Criteria, Methods and Social Priorities. Review of Islamic Economics 8, 2, 5-30.

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

Imam, P., Kpodar, K., 2016. Islamic Banking: Good for Growth? Economic Modelling 59, 387-401.

Islamic Financial Services Board, 2019. Industry Stability Report, Islamic Financial Services Board.

Olson, D., Zoubi, T., 2008. Using Accounting Ratios to Distinguish between Islamic and Conventional Banks in the GCC Region. International Journal of Accounting 43, 1, 45-65.

Olson, D., Zoubi, T., 2011. Efficiency and Bank Profitability in MENA Countries. Emerging Markets Review 12, 2, 94-110.

Windmeijer, F., 2005. A Finite Sample Correction for the Variance of Linear Efficient Two-Step GMM Estimators. Journal of Econometrics. 126, 25–51.

Zins, A., Weill, L., 2018. Cyclicality of Lending in Africa: The Influence of Bank Ownership. Emerging Markets Review 37, 164-180.

Table 1.
Overview of the sample

This table shows the number of banks for each bank type and each country.

Country	All banks	Islamic banks	Conventional banks
Bahrain	28	18	10
Bangladesh	48	8	40
Egypt	28	3	25
Indonesia	121	11	110
Jordan	19	4	15
Kuwait	14	9	5
Lebanon	42	3	39
Malaysia	48	18	30
Mauritania	9	1	8
Oman	10	2	8
Pakistan	33	10	23
Qatar	13	4	9
Saudi Arabia	14	4	10
Tunisia	20	2	18
Turkey	47	4	43
United Arab Emirates	31	10	21
Total	525	111	414

Table 2.
Descriptive statistics

This table indicates the mean values, standard deviations, minimum and maximum values for the variables used in our empirical work for the full sample. All statistics are computed for observations over the period 2008-2018. Balance sheet indicators are in thousand USD.

	Obs	Mean	Std. Dev.	Min	Max
Credit growth (%)	3,949	9.540	41.454	-61.232	290.385
ROA (ln)	3,941	0.010	0.020	-0.102	0.068
Total Assets	3,949	1.08E+07	2.16E+07	1 033	2.37E+08
Equity	3,949	1,278,243	2,676,843	-173,047	3,47E+07
Real loans	3,945	4,557,697	9,980,955	0.630	1,36E+08
Lagged size	3,408	14.822	1.803	9.963	18.445
Lagged bank soundness (%)	3,408	15.368	13.137	1.841	83.590
Lagged loans to assets (%)	3,408	54.212	20.024	0.884	94.487
Islamic bank	3,949	0.215	0.411	0	1
GDP per capita growth (%)	3,949	1.950	3.607	-15.151	9.424
GDP growth (%)	3,949	4.380	2.809	-7.076	19.592
GDP per capita	3,949	12,079	15,228	634.987	85,076
GDP	3,949	3.97E+11	3.45E+11	3.66E+09	1.04E+12
Inflation (%)	3,949	5.201	4.282	-4.863	29.502
Positive GDP per capita growth	2,848	3.737	1.798	0.014	9.424
Negative GDP per capita growth	1,101	-2.675	2.941	-15.151	-0.013

Table 3.
Statistics by bank type

The table provides the descriptive statistics by bank type.

	Islamic banks			Conventional banks			Wilcoxon test
	N	Mean	Std. Dev	N	Mean	Std. Dev.	
Credit growth (%)	850	12.302	50.702	3,099	8.782	38.506	-1.722*
ROA (ln)	850	0.005	0.027	3,091	0.012	0.017	8.791***
Total Assets	850	7,271,483	1,24E+07	3,099	1,17E+07	2,34E+07	2.780***
Equity	850	891,105	1,678,450	3,099	1,384,428	2,882,193	1,323
Real loans	847	3,530,254	6124642	3,098	4,84E+06	1,08E+07	0,737
Lagged size	734	14.566	1.863	2,674	14.892	1.779	2.781***
Lagged bank soundness (%)	734	19.482	19.386	2,674	14.239	10.535	-2.260**
Lagged loans to assets (%)	734	56.736	22.219	2,674	53.519	19.324	-5.875***

Table 4.
Cyclicality of lending

The table shows the results of two-step system GMM panel regressions with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of loans. Standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

	(1)	(2)	(3)	(4)
Lagged credit growth	0.154***	0.121***	0.154***	0.124***
	(3.69)	(3.04)	(3.76)	(3.18)
GDP per capita growth	0.792***	0.981***	0.836***	1.108***
	(3.40)	(4.15)	(3.41)	(4.46)
Islamic bank	0.005	-0.003	-0.001	-0.014
	(0.29)	(-0.11)	(-0.06)	(-0.54)
Islamic bank × GDP per capita growth	-0.217	0.228	-0.251	0.196
	(-0.51)	(0.46)	(-0.60)	(0.40)
Lagged size		-0.011*		-0.014*
		(-1.93)		(-1.73)
Lagged bank soundness		0.342**		0.271
		(2.05)		(1.58)
Lagged loans to assets		-0.426***		-0.452***
		(-5.43)		(-5.73)
GDP per capita			-0.016***	-0.006
			(-2.71)	(-0.53)
Inflation			-1.184***	-1.279***
			(-8.61)	(-8.10)
Constant	-0.055***	0.295***	0.154***	0.480***
	(-4.32)	(2.88)	(2.58)	(5.10)
Nb of observations	3,408	3,408	3,408	3,408
Nb of banks	525	525	525	525
Nb of instruments	23	26	25	28
Year dummies	Yes	Yes	Yes	Yes
First order AR test	0.000	0.000	0.000	0.000
Second order AR test	0.312	0.251	0.305	0.252
Hansen test	0.340	0.456	0.413	0.575

Table 5.
Cyclicality of lending: positive and negative growth

The table shows the results of two-step system GMM panel regressions with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of loans. *Positive GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is positive and equal to zero elsewise. *Negative GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is negative and equal to zero elsewise. Standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

	(1)	(2)	(3)	(4)
Lagged credit growth	0.153***	0.118***	0.153***	0.121***
	(3.64)	(2.89)	(3.72)	(3.05)
Islamic bank	0.039*	0.011	0.026	-0.009
	(1.69)	(0.31)	(1.12)	(-0.29)
Positive GDP per capita growth	1.501***	1.953***	1.352***	1.867***
	(3.71)	(4.74)	(3.32)	(4.55)
Islamic bank × Positive GDP per capita growth	-1.237	-0.021	-1.050	0.220
	(-1.64)	(-0.02)	(-1.39)	(0.25)
Negative GDP per capita growth	-0.221	-0.400	0.084	0.017
	(-0.54)	(-0.98)	(0.21)	(0.04)
Islamic bank × Negative GDP per capita growth	0.977	0.906	0.668	0.552
	(1.53)	(1.25)	(1.08)	(0.78)
Lagged size		-0.011*		-0.013*
		(-1.89)		(-1.69)
Lagged bank soundness		0.345**		0.278
		(2.02)		(1.59)
Lagged loans to assets		-0.435***		-0.460***
		(-5.42)		(-5.70)
GDP per capita			-0.017***	-0.006
			(-2.73)	(-0.52)
Inflation			-1.155***	-1.242***
			(-8.44)	(-7.92)
Constant	-0.076***	0.271***	0.139**	0.456***
	(-4.82)	(2.61)	(2.26)	(4.78)
Nb of observations	3,408	3,408	3,408	3,408
Nb of banks	525	525	525	525
Nb of instruments	25	28	27	30
Year dummies	Yes	Yes	Yes	Yes
First order AR test	0.000	0.000	0.000	0.000
Second order AR test	0.314	0.256	0.308	0.259

Hansen test	0.309	0.371	0.390	0.508

Table 6.
Cyclicality of profitability

The table shows the results of two-step system GMM panel regressions with Windmeijer (2005) correction. The dependent variable is *ROA*, which is the log of pre-tax profits divided by total assets+1. Standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

	(1)	(2)	(3)	(4)
Lagged ROA	0.338***	0.343***	0.339***	0.341***
	(4.70)	(4.84)	(4.75)	(4.80)
GDP per capita growth	-0.003	0.001	0.002	0.000
	(-0.30)	(0.13)	(0.23)	(-0.02)
Islamic bank	-0.005***	-0.006***	-0.006***	-0.005***
	(-3.33)	(-3.73)	(-3.45)	(-3.52)
Islamic bank × GDP per capita growth	0.058*	0.063**	0.060*	0.063**
	(1.83)	(2.09)	(1.90)	(2.08)
Lagged size		0.001***		0.001***
		(3.60)		-3,18
Lagged bank soundness		0.009		0.010
		(1.21)		(1.20)
Lagged loans to assets		0,002		0,002
		(0.81)		-0,9
GDP per capita			0.001*	0,000
			(1.96)	(-0.09)
Inflation			0.011	0.009
			(1.22)	-1,04
Constant	0.008***	-0.011**	-0.001	-0.012**
	(7.27)	(-2.31)	(-0.27)	(-2.25)
Nb of observations	3,395	3,395	3,395	3,395
Nb of banks	525	525	525	525
Nb of instruments	23	26	25	28
Year dummies	Yes	Yes	Yes	Yes
First order AR test	0.000	0.000	0.000	0.000
Second order AR test	0.658	0.637	0.656	0.634
Hansen test	0.269	0.283	0.298	0.297

Table 7.
Cyclicality of profitability: positive and negative growth

The table shows the results of two-step system GMM panel regressions with Windmeijer (2005) correction. The dependent variable is *ROA*, which is the log of the sum of return of assets and unity. *Positive GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is positive and equal to zero elsewise. *Negative GDP per capita growth* is equal to the GDP per capita growth rate if the GDP per capita growth rate is negative and equal to zero elsewise. Standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

	(1)	(2)	(3)	(4)
Lagged ROA	0.337***	0.343***	0.338***	0.341***
	(4.66)	(4.81)	(4.72)	(4.77)
Islamic bank	-0.003	-0.003	-0.003	-0.003
	(-1.39)	(-1.62)	(-1.52)	(-1.50)
Positive GDP per capita growth	0.005	0.006	0.011	0.006
	(0.24)	(0.32)	(0.56)	(0.33)
Islamic bank × Positive GDP per capita growth	-0.014	-0.005	-0.010	-0.006
	(-0.28)	(-0.11)	(-0.21)	(-0.13)
Negative GDP per capita growth	-0,013	-0.006	-0.011	-0,010
	(-0.81)	(-0.38)	(-0.65)	(-0.61)
Islamic bank × Negative GDP per capita growth	0.126**	0.127**	0.127**	0.128**
	(2.07)	(2.13)	(2.08)	(2.15)
Lagged size		0.001***		0.001***
		(3.58)		(3.18)
Lagged bank soundness		0.008		0.009
		(1.08)		(1.09)
Lagged loans to assets		0.002		0.003
		(0.87)		(0.96)
GDP per capita			0.001*	-0.000
			(1.90)	(-0.13)
Inflation			0.011	0.010
			(1.28)	(1.07)
Constant	0.008***	-0.011**	-0.001	-0.012**
	(6.38)	(-2.32)	(-0.29)	(-2.25)
Nb of observations	3,395	3,395	3,395	3,395
Nb of banks	525	525	525	525
Nb of instruments	25	28	27	30
Year dummies	Yes	Yes	Yes	Yes
First order AR test	0.000	0.000	0.000	0.000
Second order AR test	0.639	0.622	0.638	0.619
Hansen test	0.283	0.300	0.310	0.313

Table 8.
Robustness check: random effects regressions

The table shows the results of random effects regressions. In columns (1) to (4), the dependent variable is *Credit growth*, which is the growth rate of loans. In columns (5) to (8), the dependent variable is *ROA*, which is the log of the sum of return of assets and unity. Standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

	Credit growth				ROA			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged dependent variable	0.171***	0.133***	0.160***	0.123***	0.473***	0.471***	0.468***	0.470***
	(5.57)	(4.44)	(5.15)	(4.08)	(7.51)	(7.34)	(7.37)	(7.33)
GDP per capita growth	0.805***	0.926***	0.943***	1.124***	-0.006	-0.001	0.000	-0.003
	(4.42)	(4.77)	(4.97)	(5.49)	(-0.83)	(-0.18)	(-0.05)	(-0.34)
Islamic bank	-0.003	-0.022	-0.010	-0.032	-0.006***	-0.006***	-0.006***	-0.006***
	(-0.19)	(-0.89)	(-0.56)	(-1.30)	(-4.35)	(-4.55)	(-4.45)	(-4.40)
Islamic bank × GDP per capita growth	0.111	0.622	0.030	0.559	0.080***	0.076***	0.084***	0.078***
	(0.28)	(1.28)	(0.08)	(1.15)	(2.84)	(2.80)	(2.94)	(2.83)
Lagged size		-0.014**		-0.016**		0.001***		0.001***
		(-2.40)		(-2.04)		(4.15)		(3.68)
Lagged bank soundness		0.279*		0.232		0.003		0.003
		(1.95)		(1.55)		(0.46)		(0.45)
Lagged loans to assets		-0.300***		-0.325***		0.003		0.003
		(-4.77)		(-5.04)		(1.22)		(1.37)
GDP per capita			-0.013*	-0.002			0.010**	0.000
			(-1.94)	(-0.23)			(2.32)	(0.46)
Inflation			-1.232***	-1.257***			0.015**	0.014*
			(-8.93)	(-7.86)			(2.12)	(1.93)
Constant	-0.060***	0.275***	0.118*	0.420***	0.006***	-0.010***	-0.003	-0.013***

	(-4.73)	(2.86)	(1.90)	(4.91)	(5.11)	(-2.88)	(-0.83)	(-3.01)
Nb of observations	3,408	3,408	3,408	3,408	3,395	3,395	3,395	3,395
Nb of banks	525	525	525	525	525	525	525	525
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.080	0.106	0.100	0.125	0.309	0.317	0.312	0.317

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Université de Strasbourg
Pôle Européen de Gestion et d'Economie
61 avenue de la Forêt Noire
67085 Strasbourg Cedex

http://large.em-strasbourg.eu/