

equity financing at islamic banks: do competition and bank fundamentals matter?

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3 Equity Financing at Islamic Banks: Do Competition and Bank Fundamentals Matter?

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ABSTRACT: This article investigates the effects of market competition and Islamic banks' fundamental conditions on Islamic banks' equity (profit and loss sharing [PLS]) financing. We use a monthly data set on nine Indonesian Islamic banks from 2009 to 2014. Our empirical results show that competition significantly increases Islamic banks' PLS financing activities, suggesting that Islamic banks use this mode of financing to attract more entrepreneurs. This argument is also strengthened by the negative association between bank fundamentals and equity financing. In addition, we also find that the effects of competition on equity financing decrease when Islamic banks are more stable. Our results call on policymakers to monitor the practices in Islamic banks' equity financing because of the risk embedded in that mechanism and Islamic banks' tendency to use such instruments in poor fundamental conditions.

KEY WORDS: bank fundamentals, competition, equity financing, Islamic banks, profit-and-loss sharing

JEL CLASSIFICATIONS: G21, G32, L16

Introduction

The development of Islamic banks has attracted much attention, especially since the 2008 global financial crisis. Muslims in Muslim-dominated countries now have Islamic banks as an alternative institution offering financial services. Policymakers in countries practicing Islamic banking have also developed some rules governing Islamic banks' offerings for their customers. Academia has also paid attention to many aspects of these religion-based banks. Empirical research is still debating the characteristics and performance comparisons between Islamic and conventional banks. In fact, most empirical studies find no major differences between Islamic banks and their conventional peers (Abedifar et al., 2015; Doumpos, Hasan, and Pasiouras, 2017). This evidence might suggest that Islamic banks are quite resilient and able to compete side by side with conventional banks in the current banking environment. This argument is supported by recent works reporting that, compared to conventional banks, during a financial crisis Islamic banks are more efficient (Alqahtani, Mayes, and Brown 2017; Asmild et al. 2018; Belanès, Ftiti, and Regaïeg 2015), have higher financing growth (Ibrahim and Rizvi 2018), are on par with regard to revenue performance (Alexakis et al. 2018), demonstrate better handling of an economic downturn especially small-scale Islamic banks (Alqahtani and Mayes 2018), and have similar stability (Bourkhis and Nabi 2013).

An Islamic bank operates based on sharia (Islamic law). One of the applications of sharia in Islamic banking is the prohibition on transactions that involve gambling and speculation. Islamic banks are also prohibited from interacting with businesses in sectors deemed illicit, such as those linked with pork, weapons, alcoholic beverages, or prostitution. Although the sharia practice may be wide ranging, covering many aspects of Muslims' daily life, the most apparent difference between Islamic and conventional banking is the prohibition on interest in Islamic banking operations. Islamic

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banks cannot charge interest to their clients because it is categorized as *riba* (any predetermined or fixed return in financial transactions), which is not permissible. Instead, to make money, Islamic banks finance entrepreneurs and obtain a share of those entrepreneurs' business profits. This mechanism is widely known as profit and loss sharing (PLS), implying that the funding given to Islamic banks' clients takes the form of equity financing and not a debt arrangement as in conventional banks. Because in this way Islamic banks differ from their conventional peers, according to prevailing interpretation of sharia, Islamic financial instruments should emphasize PLS-related contracts, rather than other contracts (Aggarwal and Yousef 2000).

Unfortunately, despite more than three decades of Islamic banking operations, the PLS principle is not practiced successfully in banking transactions. Only 0.5% of Islamic financing worldwide is based on the PLS paradigm (Chong and Liu 2009; Khan 2010). Islamic banks rarely use equity financing, possibly because this feature is not as simple in practice as in theory. Islamic banks should put more effort into distinguishing "good" and "bad" customers (Chong and Liu 2009), which is difficult because client characteristics usually are opaque and unobservable, especially for clients who own a small business (Aysan, Disli, and Ozturk 2017). This issue is especially important because, according to Shaban et al. (2014), Islamic banks have a greater proportion of small business financing than their conventional rivals. Another reason for Islamic banks to avoid using equity financing is that by doing so Islamic banks' stability could deteriorate because of the volatility of their clients' business profitability (Hamza and Saadaoui 2013). Islamic banks should also monitor their clients' businesses regularly to avoid the moral hazard problem and to ensure that the entrepreneur's business remains consistent with the bank's expectation (Daher, Masih, and Ibrahim 2015).

In this study, we investigate PLS features at Indonesian Islamic banks. We choose Indonesia for our sample because, although PLS contracts are not popular among Islamic banks in most parts of the world, Indonesian Islamic banks have a considerable proportion of equity financing compared with other countries. Abedifar, Molyneux, and Tarazi (2013) highlight that in Indonesia the PLS mode of finance accounts for more than 30% of total financing by Islamic banks. Wolters (2005) in Visser (2009) also documents that Bank Muamalat Indonesia, the first Islamic bank established in Indonesia, provides approximately 30% of lending for its clients in equity form.

We also chose Indonesia because it is difficult to obtain a cross-country data set about equity financing. Because their proportion of equity financing is deficient in most countries, Islamic banks often do not provide information about it. Although there is a standard-setting organization focused on accounting harmonization in Islamic banks (Accounting and Auditing Organization for Islamic Financial Institutions), there is still a lack of regulatory harmonization across countries that engage in Islamic banking (Kammer et al. 2015). Another standard-setting body in Islamic financial institutions, the Islamic Financial and Service Board, which compiles aggregate balance-sheet data from its member countries, also does not provide detailed data on the financing portfolio (most data are missing). Our data set, however, enables us to analyze equity financing practiced by Indonesian Islamic banks on a monthly basis.

The main purpose of this study is to investigate how equity financing is affected by market competition as well as by bank fundamentals. Competition could be the primary determinant of equity financing because Islamic banks operate in areas with a high degree of competition (Belanès, Ftiti, and Regaieg 2015). It is widely known that Islamic banks mostly operate in the dual banking system. Islamic banks in this system compete for clients not only with other Islamic banks but also with conventional banks. In this case, one might expect competition to positively affect equity financing. Because the nature of equity financing is very risky for Islamic banks compared with other types of contracts, Islamic banks might not use it unless it is really needed to attract customers. Islamic banks' clients, conversely, might be more eager to obtain financing with the PLS mechanism because it will ease their loan repayments. They can worry less because the "fixed interest" has been replaced by profit sharing that will depend on business conditions. Therefore, a positive association between equity financing and competition could be expected because Islamic banks could use this mode of financing in response to competitive pressure from the banking market, to attract more clients.

A study by Alam and Parinduri (2017), to the best of our knowledge, is the only research to investigate equity financing and its determinants, especially in a country-level context. Prior literature also finds that equity financing is unpopular because it is not supported by a good contract environment. When the environment improves, PLS activities in Islamic banks might increase as well. Alam and Parinduri (2017) focus on this area and analyze the effects of the contract environment on equity financing. We complement their work by providing a broad analysis, particularly how bank fundamentals affect equity financing. Islamic banks' clients not only prefer equity financing but also are eager to obtain such financing from large or well-known Islamic banks with strong performance. In this case, poor Islamic banks might need to increase equity financing in order to attract more entrepreneurs. We then expect a positive impact of bank fundamental conditions on the proportion of equity financing at Islamic banks.

Using a sample of nine Islamic banks from January 2009 to December 2014, we find that market competition positively affects equity financing. To attract more clients, Islamic banks use equity financing because entrepreneurs prefer this mode of financing. We also find that Islamic banks use more equity financing to attract customers when the bank's financial condition is poor. This empirical evidence has great implications for policymakers. Islamic banks' use of PLS financing should be monitored carefully because the nature of this contract is very risky, and our empirical evidence shows that Islamic banks engage in excessive risk-taking by using equity financing in unfavorable financial conditions.

This article contributes to the literature in several respects. To the best of our knowledge, this is the first study to specifically examine the effects of market competition on equity financing. Most of the existing literature brings together competition with Islamic banks' stability and risk (González et al. 2017; Kabir and Worthington 2017), deposits (Meslier, Risfandy, and Tarazi 2017), capital adequacy (Louati, Gargouri Abida, and Boujelbene 2015), efficiency (Al-Gasaymeh 2016; Mokhtar, Abdullah, and Alhabshi 2008), and performance (Beck, Demirgüç-Kunt, and Merrouche 2013; Johnes, Izzeldin, and Pappas 2014). Our work also complements prior work on Islamic banks' financing by exploring the association between Islamic banks' fundamental condition and equity financing. Most prior studies in equity financing are theoretical and lack empirical evidence (Abdul-Rahman et al. 2014; Aggarwal and Yousef 2000). Third, this article provides empirical evidence on the development of equity financing in the country that may have the world's largest share of such financing. Fourth, this study complements prior literature investigating the behavior and characteristics of Islamic banks in a single country (Akhatova, Zainal, and Ibrahim 2016; Aysan et al. 2016; Baele, Farooq, and Ongena 2014; Risfandy et al. 2017; Trinugroho et al. 2017). A cross-country study could be more interesting because it could capture the phenomenon from a global perspective. A single-country study, however, can usually capture some specific issues that cross-country data sets fail to highlight.

The rest of the article is organized as follows. The section "A Short Review of Financing Modes at Islamic Banks" reviews the financing modes at Islamic banks. The section "Research Methodology" focuses on the methodology. The section "Empirical Results" discusses the results. The section "Conclusion" concludes.

A Short Review of Financing Modes at Islamic Banks

Islamic banks in general have two modes of financing: PLS financing and non-PLS financing. PLS financing is often referred to as equity financing because of the nature of its contract. Equity financing can be subdivided into two Islamic terms: *mudaraba* (profit sharing) and *musharaka* (partnership or profit-and-loss sharing).

In *mudaraba*, the bank acts as a fund provider to a client who is an entrepreneur willing to use the funds for business. Before they grant financing, banks should carefully examine applicants' profiles.

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The main point of this instrument is that Islamic banks are entirely entrusting the money to be used by entrepreneurs. Therefore, any loss incurred by the business, if not the client's fault (e.g., through misconduct, negligence, or contract violation), will be fully borne by the lender.

Musharaka financing typically works similarly to *mudaraba*. The principal difference is that in *musharaka* the entrepreneur and the bank work together in a project or business. In other words, an Islamic bank is not the only party providing funding. Any losses will be shared between client and bank in proportion to the share given to the project.

Viewed from this perspective, PLS financing through either *mudaraba* or *musharaka* is very risky for Islamic banks. Islamic banks bear all (*mudaraba*) or partial (*musharaka*) losses when a project fails. One might argue that bearing losses is part of lending risk. In the case of Islamic banks, however, according to sharia, Islamic banks are not allowed to include data about collateral in their financing requirements (Visser 2009). Therefore, their losses predictably will be higher than those of conventional banks. In addition, Islamic banks must also extensively monitor the progress of clients' business conditions to avoid the potential for moral hazard. This need for oversight increases Islamic banks' operational costs for monitoring. All of this highlights the fact that equity financing is difficult in practice, is costly, and could jeopardize banks' financial stability.

The second mode of financing for Islamic banks is the non-PLS mode. There are many Islamic contracts in the non-PLS mode, but *murabaha* (cost-plus or markup financing) is the one most practiced by Islamic banks. For most Islamic banks, *murabaha* dominates the asset portfolio and can exceed 80% (Khan 2010). In the *murabaha* type of financing, Islamic banks act as a trader. They sell the product to the clients at a markup, and then they receive monthly installment payments. Indeed, both clients and Islamic banks previously have agreed on some related attributes such as the products that clients are willing to buy, the banks' selling price, and the clients' monthly payment. From the clients' viewpoint, such a contract is very practical because clients do not need to provide any collateral to obtain the product they desire. From a banking perspective, banks are eager to use this instrument rather than others because the banks retain ownership of the product until the payments are complete, so that this mechanism enables them to liquidate the product in the case of default on payment by the clients. Moreover, Shaban et al. (2014) argue that the "collateral by contract" in the *murabaha* agreement could be a competitive advantage for Islamic banks because this mode of financing—despite being criticized as a back door to interest—does not exist at conventional banks. Other important points for the banks are that they will have less concern about clients' profile before the loan agreement, and they will not need to monitor clients after the desired product has been bought.

Research Methodology

Data

In this study, we extract all bank-level data from the website of Bank Indonesia (the country's central bank). The website provides monthly financial reports (balance sheets and income statements) for all Indonesian full-fledged Islamic banks and their conventional peers. We use only Islamic banks in our empirical investigation (PLS financing exists only at Islamic banks), but we use both Islamic and conventional banks when we calculate the Lerner index. This is because both Islamic and conventional banks compete in a similar market. After extreme values are winsorized at the 1% and 99% percentiles, our final sample consists of 482 observations from nine Islamic banks in Indonesia for the period between January 2009 and December 2014.

Econometric Strategy and Variable Explanation

To investigate the effects of market competition and bank fundamentals on equity financing, we construct the following equation:

$$EqFin_{it} = \alpha + \beta_1 Lerner_{it-1} + \beta_2 LnZ_{it-1} + \beta_3 ROA_{it-1} + \beta_4 EqDep_{it-1} + \beta_5 OpEff_{it-1} + \beta_6 oLnTA_{jt-1} + \varepsilon_{it} \quad (1)$$

where subscripts i and t refer to the bank and time dimensions. $EqFin$ is the proportion of equity financing. We use two measurements of equity financing: $EqFin1$ and $EqFin2$. $EqFin1$ is a ratio of equity financing to total financing, and $EqFin2$ is a ratio of equity financing to total assets. Our measurements of equity financing are consistent with Alam and Parinduri (2017). All our independent variables are lagged to eliminate endogeneity issues.

$Lerner$ represents the Lerner index, a popular measure of market power and market competition. It measures the markup of the banking product price over marginal cost. Algebraically, we compute the Lerner index as follows:

$$Lerner_{it} = \frac{Price_{it} - MarginalCost_{it}}{Price_{it}} \quad (2)$$

Price is the ratio of total income to total assets, whereas marginal cost is derived from the following trans-logarithm cost functions:

$$Marginal\ Cost_{it} = \left(\beta_1 + \beta_2 \ln TA_{it} + \sum_{j=1}^2 \beta_{2j} \ln W_{j,it} \right) \frac{TC_{it}}{TA_{it}} \quad (3)$$

$$\begin{aligned} \ln TC_{it} = & \alpha_0 + \sum_{j=1}^2 \alpha_j \ln W_{j,it} + \frac{1}{2} \sum_{j=1}^2 \sum_{k=1}^2 \beta_{jk} \ln W_{j,it} \ln W_{k,it} + \beta_1 \ln TA_{it} + \frac{1}{2} \beta_2 (\ln TA_{it})^2 \\ & + \sum_{j=1}^2 \beta_{2j} \ln TA_{it} \ln W_{j,it} + \varepsilon \end{aligned} \quad (4)$$

TC is banks' total cost, defined as the sum of interest expense and non-interest expenses. TA is total assets. We follow Soedarmono, Machrouh, and Tarazi (2011), Fu, Lin, and Molyneux (2014), and Risfandy et al. (2017) in using a trans-logarithm cost function with a two-input cost: the cost of purchased fund (W_1) and the cost of labor and physical capital (W_2). W_1 is the ratio of total interest expenses to total customer deposits, and W_2 is calculated by the ratio of total non-interest expenses to fixed assets. We use this cost function because according to Fu, Lin, and Molyneux (2014) the two-input cost function is the most applicable in emerging market studies because of data availability.

The Lerner index ranges between zero and one, with a higher index level indicating greater market power. Banks with strong market power could be associated with low competition in the banking market because essentially a bank cannot set high pricing relative to its marginal cost in the competitive market. Therefore, a relatively high Lerner index also indicates lower market competition.

We predict that the Lerner index will be negatively associated with the proportion of equity financing. A lower Lerner index (hence, higher market competition) will encourage Islamic banks to use more financing with PLS contracts. Indeed, PLS contracts are riskier for Islamic banks, but it might generate more profit for the banks to have more entrepreneurs to come asking for financing.

How bank fundamentals affect equity financing is another important issue in this work. Bank fundamentals relate to the internal or bank-level performance compared to other banks. Lin and Yang (2016) explain that bank fundamentals include capital adequacy, asset quality, management, profitability, and liquidity. In this article, we use five variables related to bank fundamental conditions: LnZ , ROA , $EqDep$, $OpEff$, and $oLnTA$. LnZ is a natural logarithm of the Z-score. The Z-score is widely known in the banking literature as a proxy for bank risk or stability. Following Beck,

Demirgüç-Kunt, and Merrouche (2013) and Fu, Lin, and Molyneux (2014), we calculate our Z-score as follows:

$$Z_{it} = \frac{ROA_{it} + EQTA_{it}}{SDROA} \quad (5)$$

¹¹ where *ROA* is return on assets, *EQTA* is the ratio of equity to total assets, and *SDROA* is the standard deviation of *ROA*.

In addition to using it in computing the Z-score, we also use *ROA* as a driver of equity financing to proxy profitability. The Z-score measures a standard deviation that bank returns have to fall below its expected value in order to deplete equity and make the bank insolvent. A higher Z-score means greater stability and lower risk of insolvency.

EqDep represents equity deposits. It is the proportion of Islamic banks' deposits using a PLS contract over total deposits. We expect that Islamic banks allocate more financing in PLS form if they have a greater share of equity deposits.

²⁴ *OpEff* is operational efficiency. Following Efthymiou and Yildirim (2014), we calculate *OpEff* by dividing total profit-sharing expenses by the sum of profit-sharing and non-profit-sharing income.

oLnTA is the orthogonalized logarithm of banks' total assets. We expect larger banks to have greater PLS activity than smaller banks. Smaller banks might prefer low-risk investment and fee income, whereas larger banks can use PLS financing as part of their financing portfolio (Alandejani, Kutan, and Samargandi 2017; Cihak and Hesse 2010).

As mentioned earlier, we lag all our independent variables (including Lerner) to avoid endogeneity issues. We do so because one might argue that, for instance, it is equity financing (*EqFin*) that influences banks' market power (*Lerner*), not the reverse. When Islamic banks have a high proportion of equity financing, they can raise prices (because of higher risk inherent in this contract), which could therefore result in greater market power. Risfandy et al. (2017) also find that equity financing influences banks' market power. They also observe that this impact is negative, however, possibly suggesting that Islamic banks' behavior in decreasing loan default probability increases their monitoring costs, which then reduces their interest margins.

Lagging other independent variables in our model is also important. For instance, banks' profitability (*ROA*) could also benefit from equity financing because the risky nature of equity financing requires the entrepreneur to pay a higher rate than markup or other contracts. It means that *EqFin* affects *ROA*, not the other way around. If the clients' business is doing well and earns a high profit, Islamic banks' profitability will increase as well. We lag all independent variables to avoid such reverse-causality issues.

Equation (1) is estimated using ordinary least squares (OLS) with robust standard errors to eliminate the heteroskedasticity problem. For a robustness check, we also use fixed-effect and random-effect regressions. Arguably, from an econometrics point of view, panel data regression is more suitable for data with both an individual and a time index.

Descriptive Statistics

Table 1 presents a summary of all variables mentioned in the previous subsection as well as their descriptive statistics. The mean of equity financing in Indonesia is 31% and 21%, respectively, for the two proxy variables. These values could be the highest among countries with Islamic banks. These statistics are also in line with Abedifar, Molyneux, and Tarazi (2013). In Table 2, we provide the statistics (mean) for each bank in our sample.

To understand how equity financing evolved in Indonesia from 2009 to 2014, we also provide an illustration in Figure 1. It shows a positive trend in equity financing in Indonesia during the observation period. Although the average value of *EqFin1* in January 2009 was 0.3, by the end of

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Table 1. Descriptive statistics and variable descriptions.

Variable	Description	Obs.	Mean	SD	Min	Max
<i>EqFin1</i>	First proxy for equity financing: total equity financing divided by total customer deposits	482	0.313	0.203	0.004	0.867
<i>EqFin2</i>	Second proxy for equity financing: total equity financing divided by total assets	482	0.207	0.138	0.004	0.671
<i>Lerner</i>	Lerner index to measure market competition (trend is excluded from the translog cost function)	482	0.369	0.208	-0.503	0.779
<i>Lerner2</i>	Lerner index to measure market competition (trend is included in the translog cost function)	482	0.428	0.224	-0.836	0.722
<i>LnZ</i>	Log of Z-score to proxy for bank stability	482	2.695	0.429	2.038	3.886
<i>ROA</i>	Return on assets to proxy for profitability	482	0.021	0.013	-0.005	0.036
<i>EqDep</i>	Equity deposit: total equity deposits divided by total deposits	482	0.846	0.081	0.468	0.989
<i>OpEff</i>	Operational efficiency: total profit-sharing expense divided by sum of total profit-sharing income and non-profit-sharing income	482	0.398	0.107	0.186	0.634
<i>oLnTA</i>	Orthogonalized logarithm of banks' total assets	482	-0.010	0.473	-0.986	1.014
<i>Ramadan</i>	Dummy equals 1 if our time index coincides with Ramadan	482	0.180	0.385	0.000	1.000

Table 2. Average statistics for individual Islamic banks.

Bank name	<i>EqFin1</i>	<i>EqFin2</i>	<i>Lerner</i>	<i>LnZ</i>	<i>ROA</i>	<i>EqDep</i>	<i>OpEff</i>	<i>oLnTA</i>
Bank BCA Syariah	0.409	0.256	0.343	3.227	0.011	0.822	0.344	-0.328
Bank BNI Syariah	0.182	0.124	0.423	2.597	0.015	0.828	0.428	0.134
Bank BRI Syariah	0.464	0.201	0.319	2.507	0.003	0.814	0.464	-0.066
Bank BJB Syariah	0.425	0.332	0.373	3.123	0.009	0.886	0.331	-0.044
Bank Muamalat	0.493	0.377	0.373	2.297	0.027	0.888	0.372	0.399
Bank Syariah Mandiri	0.298	0.231	0.421	2.393	0.036	0.860	0.371	0.688
Bank Maybank Syariah	0.175	0.100	0.621	3.884	0.036	0.632	0.363	0.507
Bank Mega Syariah	0.028	0.021	0.392	2.445	0.025	0.742	0.507	-0.345
Bank Victoria Syariah	0.218	0.120	0.263	3.230	0.035	0.966	0.347	-0.745

Notes: See Table 1 for description of variables. All values are averaged from January 2009 to December 2014.

2014 it jumped to 0.5. This means that approximately half the financing by Indonesian Islamic banks used PLS contracts at that time.

Empirical Results

Main Results

We estimate Equation (1) using the OLS method and provide the results in Table 3. We provide estimation results using both *EqFin1* and *EqFin2* to check consistency. In columns 1 and 2, we do not incorporate the time-fixed effect and do not consider robust standard errors in the estimation. In columns 3 and 4, we incorporate the time effect but still relax the non-robust standard error. In the last two columns, we consider both the time-fixed effect and robust standard error.

We can see from Table 3 that *Lerner* is negatively associated with equity financing in all columns. The results are significant across different estimation models and dependent variables. This result could suggest that greater market competition encourages Islamic banks to

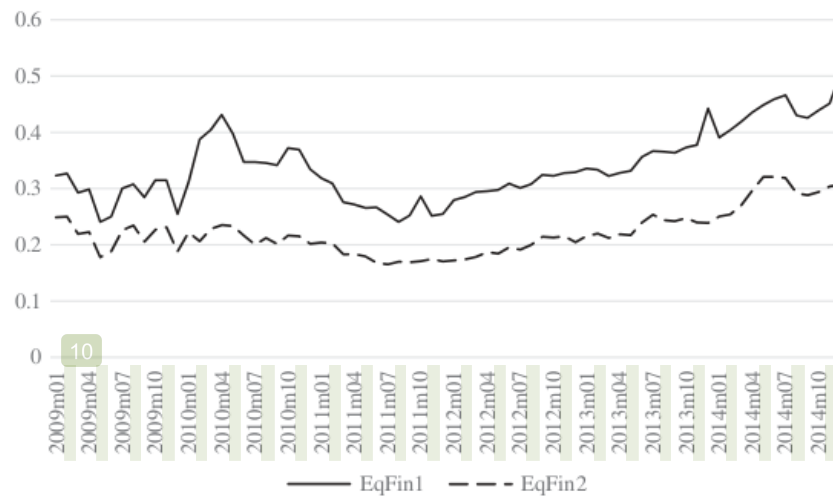


Figure 1. Equity financing in Indonesia, 2009–2014.

Table 3. Equity financing, market competition, and bank fundamentals.

	EqFin1	EqFin2	EqFin1	EqFin2	EqFin1	EqFin2
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lerner</i>	-0.286*** (-6.22)	-0.179*** (-6.10)	-0.434*** (-8.20)	-0.273*** (-8.25)	-0.434*** (-7.15)	-0.273*** (-7.17)
<i>LnZ</i>	-0.120*** (-5.46)	-0.0765*** (-5.48)	-0.101*** (-4.23)	-0.0628*** (-4.19)	-0.101*** (-4.32)	-0.0628*** (-4.13)
<i>ROA</i>	-4.583*** (-7.68)	-2.465*** (-6.50)	-4.925*** (-8.13)	-2.702*** (-7.13)	-4.925*** (-8.58)	-2.702*** (-7.69)
<i>EqDep</i>	0.117 (1.10)	0.214*** (3.15)	-0.00569 (-0.05)	0.142** (2.07)	-0.00569 (-0.05)	0.142** (2.07)
<i>OpEff</i>	-1.029*** (-10.66)	-0.734*** (-11.97)	-1.206*** (-11.42)	-0.865*** (-13.11)	-1.206*** (-10.04)	-0.865*** (-10.91)
<i>oLnTA</i>	0.0850*** (4.49)	0.0816*** (6.79)	0.0894*** (4.60)	0.0896*** (7.37)	0.0894*** (5.69)	0.0896*** (8.30)
Constant	1.149*** (8.47)	0.642*** (7.45)	1.386*** (7.56)	0.818*** (7.13)	1.386*** (7.90)	0.818*** (7.01)
Time FE	No	No	Yes	Yes	Yes	Yes
Robust SE	No	No	No	No	Yes	Yes
<i>N</i>	482	482	482	482	482	482
<i>R</i> ²	0.317	0.401	0.431	0.517	0.431	0.517

Notes: See Table 1 for descriptions of variables.

*** and ** indicate significance at the 1% and 5% levels, respectively.

The values in parentheses indicate *t*-values.

use PLS financing to attract more entrepreneurs as clients. The fact that Islamic banks in Indonesia allocate more financing for small businesses also strengthens our result (Shaban et al. 2014). PLS financing could be more attractive for a small business than non-PLS financing because a small business usually has high risk and high return volatility (Khan 1995). The nature of equity contracts gives small businesses more flexibility regarding loan repayment. The amount that they share with the banks will depend on the ex post return that they obtain from the business. In adverse business conditions, entrepreneurial borrowers are

also allowed not to share any profit with the bank if they cannot obtain a positive business return. Moreover, in the case of *mudaraba* lending, if the business goes into default, all the loss is borne by Islamic banks unless it is caused by the entrepreneurs' misconduct or negligence.

Our findings in bank-fundamental variables also strengthen the result that equity financing is used by Islamic banks to deal with market competition pressure. First, we find that LnZ negatively influences equity financing, suggesting that when Islamic banks have less stability (low LnZ) they are more likely to increase PLS lending activities. To obtain a loan, entrepreneurs prioritize working with banks that have a well-known reputation. Entrepreneurs expect that such a bank could not only provide sufficient funding to run the business but also offer some advice or consultation. In the case of *musharaka* (partnership), this client–bank relationship is more apparent because both parties have a share in the business or project. Entrepreneurs provide not only the skills to run the business but also some of the funds. Banks, in addition to providing funds, should also discuss with their partner (the entrepreneur) how the business should be run. In this kind of relationship, of course, entrepreneurs will choose the “right” bank to be a business partner. On the banks' side, unquestionably, not all sound banks will accept an entrepreneur's proposal. Therefore, it makes sense that banks with less stability are more likely to offer more PLS financing in order to invite more entrepreneurs who might have been rejected previously by other banks.

Second, we also find negative signs for ROA and $OpEff$. Islamic banks with better profitability and operating efficiency have a lower proportion of equity financing. Because they have good profitability and efficiency, such banks are not eager to use PLS financing because its level of risk could harm their current situation.

Third, consistent with our expectation, we find a positive sign for $EqDep$. Islamic banks with a greater proportion of PLS deposits tend to offer more PLS lending, possibly to balance the lending side with the funding side.

Finally, the positive sign for $oLnTA$ indicates that larger banks use equity financing more frequently than smaller banks, possibly because larger banks can diversify their loan portfolios whereas smaller banks focus on low-risk investment and fee-based income. Small banks are reluctant to engage in PLS activity because it is too risky for them. This finding is consistent with Alandejani, Kutun, and Samargandi (2017) and Cihak and Hesse (2010).

Market competition and fundamental bank conditions play a significant role in Islamic banks' PLS activities, especially in equity financing. Islamic banks are more willing to use equity financing in a competitive market than in a noncompetitive environment. Similarly, banks in a weak financial condition tend to use PLS financing more than those with stronger bank fundamentals. We therefore investigate the potential interaction between competition and fundamental bank conditions using the following interactions: $Lerner \times oLnTA$, $Lerner \times LnZ$, and $Lerner \times ROA$. We present the results in Table 4.

We also incorporated marginal test results in the table to see how $Lerner$ affects equity financing for banks at different levels of size, stability, and profitability. Our results in columns 1 and 2 suggest that the effect of competition on equity financing is unaffected by banks' size. The marginal test results show that Lerner significantly affects equity financing at banks of all sizes. In columns 3 and 4, we find that the effect of competition on PLS financing activities is altered by bank stability. Specifically, the negative impact of competition regarding bank risk-taking behavior can be reduced when Islamic banks have better stability. When Islamic banks have better stability, they can engage in less financing through PLS. Lastly, in columns 5 and 6, we observe that profitability partially moderates the relation between Lerner and $EqFin$. In column 6 in particular, the effect of competition on Islamic banks' willingness to use equity financing decreases when those banks are more profitable.

Table 4. Interaction effect of banks' size, profitability, and risk.

	EqFin1	EqFin2	EqFin1	EqFin2	EqFin1	EqFin2
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lerner</i> × <i>oLnTA</i>	0.148 (1.50)	-0.00762 (-0.12)				
<i>Lerner</i> × <i>LnZ</i>			0.199** (2.38)	0.182*** (3.40)		
<i>Lerner</i> × <i>ROA</i>					2.679 (0.79)	4.379** (2.19)
<i>Lerner</i>	-0.424*** (-7.05)	-0.273*** (-7.15)	-1.021*** (-4.10)	-0.811*** (-4.98)	-0.486*** (-4.62)	-0.358*** (-5.55)
<i>LnZ</i>	-0.108*** (-4.48)	-0.0624*** (-3.97)	-0.167*** (-4.90)	-0.123*** (-6.03)	-0.102*** (-4.34)	-0.0633*** (-4.22)
<i>ROA</i>	-5.120*** (-8.80)	-2.692*** (-7.41)	-4.656*** (-7.94)	-2.456*** (-6.84)	-5.885*** (-4.51)	-4.271*** (-6.06)
<i>EqDep</i>	-0.00717 (-0.07)	0.142** (2.08)	0.0119 (0.12)	0.158** (2.50)	-0.00477 (-0.04)	0.143** (2.04)
<i>OpEff</i>	-1.229*** (-9.79)	-0.864*** (-10.64)	-1.202*** (-10.43)	-0.862*** (-11.63)	-1.221*** (-9.74)	-0.890*** (-10.96)
<i>oLnTA</i>	0.0308 (0.70)	0.0926*** (3.33)	0.0904*** (5.85)	0.0905*** (8.67)	0.0866*** (5.49)	0.0851*** (7.83)
Constant	1.418*** (7.83)	0.816*** (6.90)	1.551*** (8.89)	0.968*** (8.19)	1.413*** (7.65)	0.861*** (7.10)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	482	482	482	482	482	482
<i>R</i> ²	0.434	0.517	0.439	0.532	0.432	0.524
Marginal tests: the impact of Lerner when oLnTA or LnZ or ROA						
Low (25th percentile)	-0.542*** (-5.65)	-0.267*** (-4.34)	-0.552*** (-7.64)	-0.381*** (-7.88)	-0.481*** (-4.80)	-0.350*** (-5.68)
Med (50th percentile)	-0.451*** (-7.31)	-0.272*** (-6.94)	-0.502*** (-8.19)	-0.335*** (-8.27)	-0.471*** (-5.24)	-0.333*** (-5.97)
High (75th percentile)	-0.332*** (-3.74)	-0.278*** (-4.85)	-0.426*** (-7.50)	-0.265*** (-7.40)	-0.454*** (-6.07)	-0.305*** (-6.43)

Notes: See Table 1 for descriptions of variables.

*** and ** indicate significance at the 1% and 5% levels, respectively.

The values in parentheses indicate *t*-values.

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Robustness Checks

We also conduct several robustness tests to check the validity of our results. First, in calculating the Lerner index—specifically, in estimating the translog cost function—we also consider the technological changes that could lead to shifts in the cost function over time. We therefore follow Maudos and de Guevara (2007), Solís and Maudos (2008), and Fu, Lin, and Molyneux (2014) in introducing *Trend* in the model. Our translog cost function and the computation of marginal cost thus are augmented as follows:

$$\text{Marginal Cost}_{it} = \left(\beta_1 + \beta_2 \ln TA_{it} + \sum_{j=1}^2 \beta_{2j} \ln W_{j,it} + \gamma_4 \text{Trend} \right) \frac{TC_{it}}{TA_{it}} \quad (6)$$

$$\begin{aligned}
\ln TC_{it} = & \alpha_0 + \sum_{j=1}^2 \alpha_1 \ln W_{j,it} + \frac{1}{2} \sum_{j=1}^2 \sum_{k=1}^2 \beta_{jk} \ln W_{j,it} \ln W_{k,it} + \beta_1 \ln TA_{it} + \frac{1}{2} \beta_2 (\ln TA_{it})^2 \\
& + \sum_{j=1}^2 \beta_{2j} \ln TA_{it} \ln W_{j,it} + \gamma_1 \text{Trend} + \frac{1}{2} \gamma_2 \text{Trend}^2 + \sum_{j=1}^2 \gamma_3 \text{Trend} \ln W_{j,it} \\
& + \gamma_4 \text{Trend} \ln TA_{it} + \varepsilon_{it}
\end{aligned} \tag{7}$$

We present the results in Tables 5 and 6. Table 5 shows that *Lerner2* is significantly and negatively associated with equity financing in columns 1–6, indicating the proxy's consistency. Table 5 also indicates that the significance of *Lerner2* does not change. The results in Table 5 are generally similar to those in Table 2. This similarity indicates that after the Lerner index calculation method is changed our result still holds. The results in Table 6 are also generally the same. The stability at Islamic banks moderates the effect of competition on their equity financing activities.

Risfandy et al. (2017) highlight that in a predominantly Muslim country, such as Indonesia, Islamic banks' market power is also affected by Ramadan. During the month of Ramadan, these banks' market power increases, suggesting their ability to increase the price of banking products above the marginal cost during this month, which is holy for Muslims. In the second robustness test, we introduce the variable *Ramadan* into our model. Our findings in Table 7, columns 1 and 2, reveal that the variable *Ramadan* does not alter the effect of market competition on equity financing. This result could suggest that Ramadan significantly affects Islamic banks' market power, as found by Risfandy et al. (2017), but does not alter the impact of this market power

Table 5. Robustness: equity financing, market competition, and bank fundamentals using *Lerner2*.

	EqFin1	EqFin2	EqFin1	EqFin2	EqFin1	EqFin2
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lerner2</i>	-0.262*** (-6.32)	-0.177*** (-6.76)	-0.315*** (-6.62)	-0.218*** (-7.43)	-0.315*** (-5.24)	-0.218*** (-5.58)
<i>LnZ</i>	-0.111*** (-5.14)	-0.0721*** (-5.27)	-0.0871*** (-3.58)	-0.0557*** (-3.70)	-0.0871*** (-3.28)	-0.0557*** (-3.48)
<i>ROA</i>	-4.430*** (-7.44)	-2.371*** (-6.31)	-4.787*** (-7.71)	-2.619*** (-6.82)	-4.787*** (-7.57)	-2.619*** (-7.13)
<i>EqDep</i>	0.147 (1.40)	0.226*** (3.39)	0.0989 (0.90)	0.198*** (2.90)	0.0989 (0.96)	0.198*** (2.91)
<i>OpEff</i>	-0.969*** (-10.65)	-0.711*** (-12.39)	-1.042*** (-10.23)	-0.785*** (-12.46)	-1.042*** (-7.62)	-0.785*** (-8.98)
<i>oLnTA</i>	0.0865*** (4.58)	0.0829*** (6.95)	0.0929*** (4.65)	0.0923*** (7.47)	0.0929*** (5.63)	0.0923*** (8.04)
Constant	1.080*** (8.35)	0.619*** (7.59)	1.227*** (6.63)	0.748*** (6.54)	1.227*** (6.51)	0.748*** (6.31)
Time FE	No	No	Yes	Yes	Yes	Yes
Robust SE	No	No	No	No	Yes	Yes
<i>N</i>	482	482	482	482	482	482
<i>R</i> ² .	0.318	0.411	0.401	0.504	0.401	0.504

Notes: See Table 1 for descriptions of variables. *** indicates significance at the 1% level. The values in parentheses indicate *t*-values.

Table 6. Robustness: interaction effect of banks' size, profitability, and risk using *Lerner2*.

	EqFin1	EqFin2	EqFin1	EqFin2	EqFin1	EqFin2
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lerner2</i> × <i>oLnTA</i>	-0.223 (-1.48)	-0.103 (-1.07)				
<i>Lerner2</i> × <i>LnZ</i>			0.398*** (3.36)	0.206** (2.48)		
<i>Lerner2</i> × <i>ROA</i>					1.551 (0.51)	2.632 (1.30)
<i>Lerner2</i>	-0.370*** (-3.91)	-0.244*** (-4.30)	-1.572*** (-3.94)	-0.869*** (-3.08)	-0.341*** (-3.60)	-0.264*** (-4.29)
<i>LnZ</i>	-0.0853*** (-3.20)	-0.0549*** (-3.42)	-0.268*** (-4.50)	-0.149*** (-3.58)	-0.0871*** (-3.29)	-0.0558*** (-3.52)
<i>ROA</i>	-4.566*** (-7.05)	-2.516*** (-6.55)	-4.494*** (-7.12)	-2.466*** (-6.67)	-5.454*** (-4.01)	-3.749*** (-4.25)
<i>EqDep</i>	0.0970 (0.94)	0.197*** (2.89)	0.0938 (1.05)	0.195*** (3.14)	0.104 (1.01)	0.206*** (3.02)
<i>OpEff</i>	-1.059*** (-7.40)	-0.793*** (-8.75)	-1.152*** (-8.61)	-0.842*** (-9.49)	-1.044*** (-7.56)	-0.788*** (-8.89)
<i>oLnTA</i>	0.194*** (2.63)	0.139*** (2.98)	0.0959*** (5.96)	0.0938*** (8.34)	0.0913*** (5.52)	0.0895*** (7.70)
Constant	1.252*** (6.43)	0.759*** (6.24)	1.840*** (7.00)	1.065*** (5.88)	1.232*** (6.44)	0.758*** (6.23)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	482	482	482	482	482	482
<i>R</i> ²	0.406	0.506	0.433	0.522	0.402	0.506
Marginal tests: the impact of <i>Lerner</i> when <i>oLnTA</i> or <i>LnZ</i> or <i>ROA</i>:						
Low (25th percentile)	-0.194*** (-2.87)	-0.162*** (-3.15)	-0.634*** (-4.94)	-0.383*** (-4.22)	-0.339*** (-3.74)	-0.259*** (-4.42)
Med (50th percentile)	-0.330*** (-4.45)	-0.225*** (-4.96)	-0.534*** (-5.23)	-0.332*** (-4.61)	-0.333*** (-4.08)	-0.249*** (-4.70)
High (75th percentile)	-0.510*** (-2.83)	-0.309*** (-2.82)	-0.381*** (-5.58)	-0.252*** (-5.43)	-0.323*** (-4.70)	-0.232*** (-5.16)

Notes: See Table 1 for descriptions of variables.
*** and ** indicate significance at the 1% and 5% levels, respectively.
The values in parentheses indicate *t*-values.

(competition) on equity financing. Equity financing activities at Islamic banks are negatively (positively) associated with banks' market power (competition), regardless of whether they occur during Ramadan.

Khan, Ahmed, and Gee (2016) investigate the effect of market competition on the bank lending channel. They find that the effect of monetary policy on banks' lending decreases as the level of competition decreases. Unlike most studies investigating bank lending channels, Khan, Ahmed, and Gee (2016) do not consider the lag of independent variables, including the Lerner index. In the next test, we consider the use of non-lagged values as well of the Lerner index in the model. Our result does not change. In Table 7, columns 3 and 4, we see that Lerner (non-lag) still significantly affects equity financing.

Table 7. Robustness: Ramadan effects and non-lag value of *Lerner*.

	EqFin1	EqFin2	EqFin1	EqFin2
	(1)	(2)	(3)	(4)
<i>Lerner</i> × <i>Ramadan</i>	−0.152 (−1.44)	−0.0857 (−1.07)		
<i>Lerner</i>	−0.411*** (−6.55)	−0.260*** (−6.87)		
<i>Ramadan</i>	0.121 (0.90)	0.0348 (0.37)		
<i>Lerner</i> (non-lag)			−0.116*** (−2.80)	−0.0572* (−1.87)
<i>LnZ</i>	−0.102*** (−4.35)	−0.0632*** (−4.16)	−0.0567** (−2.23)	−0.0325* (−1.93)
<i>ROA</i>	−4.930*** (−8.62)	−2.705*** (−7.68)	−4.743*** (−7.51)	−2.688*** (−7.02)
<i>EqDep</i>	−0.0212 (−0.21)	0.133* (1.94)	0.231** (2.56)	0.299*** (4.71)
<i>OpEff</i>	−1.218*** (−10.27)	−0.872*** (−11.04)	−0.733*** (−6.68)	−0.552*** (−7.57)
<i>oLnTA</i>	0.0902*** (5.72)	0.0900*** (8.34)	0.0926*** (5.20)	0.0928*** (7.30)
Constant	1.399*** (8.07)	0.825*** (7.08)	0.804*** (5.51)	0.434*** (4.49)
Time FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
<i>N</i>	482	482	472	472
<i>R</i> ²	0.434	0.519	0.352	0.444

Notes: See Table 1 for descriptions of variables.

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The values in parentheses indicate *t*-values.

Lastly, our data set differs not only at the bank level but also over time. Therefore from an econometric point of view, the use of panel data regression is advised, rather than the OLS method. We re-estimate our model using fixed-effect and random-effect estimators. Table 8 presents these results. In general, our main results still hold.

Conclusion

This article studies the effects of competition on Islamic banks' PLS financing activities. The intensified competition in the Islamic banking market has raised interest about whether competition in the banking market also affects equity financing. Our empirical findings suggest that bank competition increases equity financing. This result might imply that Islamic banks use this mode of financing to attract more entrepreneurs in response to competition in the banking market. We also find that Islamic banks' fundamental conditions are negatively related to equity financing, which supports our primary findings. This empirical evidence suggests that policymakers should carefully monitor PLS financing because of the high risk in that mechanism, especially because Islamic banks use this mode of financing to attract customers.

Table 8. Robustness: panel data regressions.

	Fixed effects		Random effects	
	<i>EqFin1</i>	<i>EqFin2</i>	<i>EqFin1</i>	<i>EqFin2</i>
	(1)	(2)	(3)	(4)
<i>Lerner</i>	-0.139*** (-3.90)	-0.0791*** (-3.68)	-0.434*** (-8.20)	-0.273*** (-8.25)
<i>LnZ</i>	-0.260*** (-4.72)	-0.107*** (-3.22)	-0.101*** (-4.23)	-0.0628*** (-4.19)
<i>ROA</i>	4.806*** (4.83)	0.376 (0.62)	-4.925*** (-8.13)	-2.702*** (-7.13)
<i>EqDep</i>	-0.410*** (-3.62)	-0.300*** (-4.38)	-0.00569 (-0.05)	0.142** (2.07)
<i>OpEff</i>	-0.500*** (-6.59)	-0.316*** (-6.87)	-1.206*** (-11.42)	-0.865*** (-13.11)
<i>oLnTA</i>	0.0589 (0.85)	-0.0580 (-1.38)	0.0894*** (4.60)	0.0896*** (7.37)
Constant	1.583*** (7.02)	0.926*** (6.79)	1.386*** (7.56)	0.818*** (7.13)
Time FE	Yes	Yes	Yes	Yes
Robust SE	Yes	Yes	Yes	Yes
<i>N</i>	482	482	482	482
<i>N</i> banks	9	9	9	9
<i>R</i> ² (within)	0.504	0.522	0.190	0.236
<i>R</i> ² (overall)	0.034	0.055	0.431	0.517

Notes: See Table 1 for descriptions of variables.

*** and ** indicate significance at the 1% and 5% levels, respectively.

The values in parentheses indicate *t*-values.

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