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Article

Bank-firm equity-based relationships and firm's performance: Evidence from Islamic and conventional banks of OIC countries

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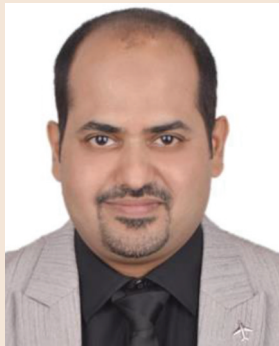
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BANKING & FINANCE | RESEARCH ARTICLE

Bank-firm equity-based relationships and firm's performance: evidence from Islamic and conventional banks of OIC countries

Shahbaz Khan¹, Nida Baig², Shahzad Hussain^{2*}, Muhammad Usman³ and Humera Manzoor⁴

Abstract: We examine the relationship between bank's equity ownership and corporate financial performance based on cross-sectional data through 2SLS estimation model. Our evidence is based on listed 3203 non-financial firms of 16 Organization of Islamic Conference (OIC) member states with dual-banking system (Islamic and Conventional). Consistent with notion of previous empirical studies, we document a positive impact of both Islamic and Conventional bank-firm equity-based relationships on firm's performance. The study suggests that the presence of bank equity ownership mitigates agency cost and information asymmetry problems, which in turn increase the firm's performance. Hence, the market participants such as portfolio managers may consider the role of financial intermediaries during the construction of risk minimization strategies.



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PUBLIC INTEREST STATEMENT

Non-financial firms and banks are vital components of a financial system. Therefore, to tune the economy in more delicate terms, they must maintain their bilateral relationships in a healthy environment. The holistic performance metrics improve inevitably when the mutual interests of banks and firms are aligned, which will pave the way forward for the socio-economic development of the overall society. However, because of the weak legal structure and framework, policy-makers in emerging economies find it difficult to monitor banks and firms' relationships positively. In this study, we suggest that banks' shareholdings in firms' ownerships may serve as a monitoring tool to improve the governance mechanisms and increase firm performance.

Subjects: Banking & Finance Law; Corporate Finance; Business, Management and Accounting

Keywords: Bank-Firm Equity-Based Relationships; Islamic Banks' Equity Shareholdings; Conventional Banks' Equity Shareholdings; Firm's Performance; OIC

JEL Classifications: G24; G32; L25

1. Introduction

Unlike developed nations, banks in emerging economies commonly hold shares in non-financial firms because of the weak government monitoring and control (Luo et al., 2011). Such loose governance can give banks a free hand to exploit the non-financial firm's benefits as they may access the firm's confidential information. Bank's monitoring channel tends to enhance the severity of agency conflicts and information asymmetry problems and may negatively influence the firm's performance (Kroszner & Rajan, 1994; Luo et al., 2011).

On the contrary, Diamond (1984) argued that such oversight role of the banks might assist the firms in improving their governance mechanisms and, hence improving their performance. Empirically, later on, John et al. (1994) has supported Diamond's (1984) point of view.

We focus on bank-firm equity-based relationships because of their significant role in firm performance and for society as a whole (Lai et al., 2020). However, we find limited literature examining such form of bank-firm relationship (BFR), and most of the previous research has focused on lending relationships between banks and firms (Dass & Massa, 2011; Degryse & Van Cayseele, 2000; Fowowe, 2017; Miarka & Tröge, 2005; Petersen & Rajan, 1994; Yildirim, 2020). In terms of bankers' landscape, a BFR is far beyond lending activities (Boot, 2000), and banks associate with firms through multiple interactions (Greenbaum Stuart & Thakor, 1995), which they either impose or grant them (Boot, 2000).

In addition, abundant literature has focused on developed nations, while evidence is limited in terms of emerging economies. However, there exists a complex BFR structure in the developing nations (Ongena & Şendeniz-Yüncü, 2011), which requires further investigation to deduce the factual findings.

Our study focuses to compare between well-known two different schools of thought in banking (Islamic versus conventional banks). Specifically, we aim to report whether the link between a bank's equity ownership and corporate financial performance differs for Islamic and conventional banks. Previous evidence has compared the efficiency (Beck et al., 2013; Parsa, 2020; Yahya et al., 2012), performance (Abdul-Majid et al., 2017; Johnes et al., 2014), market structure, and competitive power (Ariss, 2010; Hakim & Chkir, 2014); risk management techniques (Hanim Tafri et al., 2011) but rarely discuss these two banking orientation from the perspective of relationship banking (Khan et al., 2020; Ongena & Şendeniz-Yüncü, 2011). However, it is definitely possible that non-financial firms takes part or full of its financial decisions on religious grounds (Beck et al., 2019; Hilary & Hui, 2009), which can be reflected further in their corporate performance. For example, Chen et al. (2016) mentioned that a higher degree of religiosity is associated with more cash holdings.

We use a sample from organization of Islamic Conference (OIC) countries to conduct analysis. The motivation to choose OIC involves the following: First, there are fewer restrictions for banks to hold firm equity in these countries (see Table 9, appendix-A). Second, OIC consists of both Islamic - and conventional banks. In addition, in OIC regions, the Islamic banking industry's development remained fast compared to the rest of the world (Doumpos et al., 2017). Finally, using the data from OIC gives us benefit to study multi-structured countries, and both market-based (Malaysia) and bank-based financial systems (Pakistan).

In addition to updating the literature, the study provides a new angle (bank-firm relationship and firm performance) to study the comparison between Islamic and conventional banks. We attempt to figure out the bank's equity ownership data in non-financial firms. Such sort of data can exemplify the relationship in more direct manner (Lin et al., 2009). In this way, the study tries to explore a more unique data set of OIC member states that detects bank-firm equity bond separately for Islamic and conventional banks.

The remainder of the paper is organized as follows: section 2 lays out the literature review and hypotheses development, section 3 presents the research design, and the last section concludes this paper in the light of findings, discussion, limitations, and future recommendations.

2. Literature review and hypotheses development

Bank ownership in non-financial firms is a “double-edged sword” (Lai et al., 2020; Lin et al., 2009). Accordingly, the previous literature on the relationship between bank-firm relationship and firm's performance presents both positive and negative strands. On the one hand, the findings of earlier studies have shown that non-financial firms face fewer liquidity constraints by establishing the main bank relationships (Petersen & Rajan, 1994). On the other hand, we reviewed that firms in close connection with banks have lower profitability levels and growth rates and bear a higher cost of capital (Weinstein & Yafeh, 1998).

Theoretically, Diamond (1984) argued about the benefits of a close relationship for the firm's growth. According to him, when the bank develops a close liaison by holding the owner's equity in a non-financial firm, it assists her in monitoring, which further helps them tackle the information asymmetry hazards. So, bank equity ownership in non-financial firms may relieve the agency conflicts related to the lending process (Prowse, 1990; Sakawa & Watanabel, 2020). Later on, Johnson (1997) found empirical support for Diamond's (1984) arguments in US settings. James (1987) and Mahrt-Smith (2006) argued that banks tend to extract lesser rents from the firms in which they have equity investments, so establishing close bonds with banks will reduce their financial constraints and expenses (Lu et al., 2012; Petersen & Rajan, 1994). Chirinko and Elston (2006) further proposed that the certification effect is an indirect channel that decreases a firm's lending cost via a bank-firm tie. Lummer and McConnell (1989) observed a positive relationship between a new bank loan announcement and a firm's stock price in the US. Agarwal and Elston (2001) further supported that banks' confidential information about non-financial firms reduces agency problems. Hence, firms in close ties with banks perform better than independent ones. Similarly, Nakatani (1984) noticed that close bank-firm liaison steadily enhances a firm's economic performance. Examining the relationship between bank equity ownership and the choice of firms' risky portfolios, John et al. (1994), Kang et al. (2000), and Wang et al. (2020) reported that firms choose less risky portfolios by allowing banks to hold equity stakes.

Given the negative impact of bank-firm equity-based relationships, Burkart et al. (1997), argued that when the large shareholders monitor the firm, they may conflict with performance-based schemes and their tight control may constitute an expropriation threat. Morck et al. (2000) found empirical support for Burkart et al. (1997) supposition and found a negative relationship between equity ownership by a main bank and firm value. Dass and Massa (2011) studied the impact of a panel of U.S. firms over the period 1993–2004. Their study considered three aspects of bank-firm relationship, i.e., proximity, loan significance for the borrower and, equity holdings of the lender to investigate their impact on firm value, and showed that proximity and loan significance are positively related to firm's value (Tobin's Q) and performance while they observed a negative impact of bank's equity holding on firm's value and profitability. Similarly, Gao (2008) found negative support between the close bank-firm relationship and firm's performance. The privileged information that the bank has about the firm is a further source of power that can also allow banks to appropriate surplus from client firms (Mahrt-Smith, 2006). Chirinko and Elston (2006) further proposed and argued that certification effect is an indirect channel that tends to decrease a firm's lending cost via a bank-firm tie, as

a consequence, its influence could be observed on firm's credit worthiness. In short, the bank's ownership may be large enough to influence corporate governance, and the bank's interests could not be aligned with those of the rest of the shareholders, as a result, the benefits from the close relationship between the firm and bank could be appropriated by the bank (Weinstein & Yafeh, 1998).

The evidence for Germany is also mixed. In his work, Cable (1985) provided evidence for bank's equity investments in non-financial firms for West Germany where the banks like to hold larger fraction of firm's shareholdings and tend to influence their controlling rights by keeping positions on the company's boards. He found a positive relationship between bank's equity holdings and firm's performance despite of the fact that the banks try to exercise their controlling power over firms. The results of Cable (1985) study rejected market power hypothesis and supported internal capital market phenomenon. Later on, Edwards and Fischer (1994) criticized that Cable (1985) findings are not strong enough to be generally applicable. Gorton and Schmid (2000) found somewhat mixed results and showed that bank-firm relationship is found to increase firm's performance in 1974 but did not witness the same positive impact in 1985. The study by Kaplan (1997) noticed no significant relationship between bank's equity investments and firm's performance.

The evidence for other European countries is also inconclusive. Franks et al. (1996) found a negative impact of a bank's equity investments on a firm's governance mechanism because, as the firm's shareholders, banks prioritize their interests over the other shareholders. On the contrary, Saa-Requejo (1996) documented the positive impact of bank-firm close relationships on firm's value. He argued that Spanish capital markets are small, so firms rely on banks to fulfill their cash demands. Furthermore, banks have no restrictions to take part in equity investments of non-financial firms. Such exchange of mutual benefits align the banks and firms interests and assist to reduce information asymmetry and agency problems.

Previous empirical evidence from emerging countries further reports both advantages and disadvantages of banks' equity investments in firms. Lin et al. (2009), for example, found negative support for the impact of bank's shareholdings on Chinese listed firms (a leading emerging country). They suggested that bank's equity ownership in the non-financial firms tend to deteriorate firm's performance through their bad investments. Similarly, Luo et al. (2011) confirmed the Lin et al. (2009) findings and reported that bank ownership increases executive compensation that leads the firms' performance to decline. In contrast, Lu et al. (2012) suggested that the non-financial firms having banks as their economic partners can relish the lower cost of financing and healthier loaning conditions through their hard periods. Limpaphayom and Polwitoon (2004) measured the impact of both equity-based and debt-based relationships on firm's performance, capital investment and market performance in Thailand. Their findings showed that bank-firm lending relationships are positively related to capital investment while negatively associated with market performance. Limpaphayom and Polwitoon (2004) found that both short-term and long-term loans influence the firm's performance negatively. Their findings further demonstrated that equity-based relationships put a positive impact on both capital investment and market performance, and there exists a non-linear relationship between equity investment and market performance.

Concisely, literature stood us on two opposite aspects. Hence, we propose two hypotheses based on the discussion as mentioned earlier.

H1a: There exists a positive relationship between conventional banks-firm equity-based relationships and firm's Performance.

H1b: There exists a negative relationship between conventional banks-firm equity-based relationships and firm's Performance.

Islamic banks tend to build close relationships with the non-financial firms that contain high fraction of tangible assets (Beck et al., 2019; Ongena & Şendeniz-Yüncü, 2011). The positive relationship between higher percentage of tangible assets and bank equity shareholdings indicates that debtholder-shareholder conflict is not intense (Barucci & Mattesini, 2008). So, Islamic bank-firm relationship should be characterized by less information asymmetry and moral hazard problems, which further would be reflected in the positive firm's growth and its value. Chong and Liu (2009) showed that in Malaysia, only 0.5% of Islamic bank finance is based on profit and loss sharing (PLS) principles. Loan quality of Islamic banks is less responsive to domestic interest rates compared to conventional banks (Abedifar et al., 2013). The Islamic banks operate in an environment of shariah-law and low levels of investor protection (Athari et al., 2016). Akhtar et al. (2017) found that there are benefits of Islamic stocks during the global financial crises, particularly during the early stage of the crisis because Islamic institutions are prohibited from holding sub-prime mortgage securities and derivatives. The strongest benefits of Islamic stocks have been observed in UK and USA. The previous studies concluded that there are benefits of risk reduction and stability for Islamic stocks during a financial crisis, although not necessarily during a global recession.

Prior work has focused on the efficiency (Beck et al., 2013; Parsa, 2020; Yahya et al., 2012), performance (Abdul-Majid et al., 2017; Johnes et al., 2014), market structure and competitive power (Ariss, 2010; Hakim & Chkir, 2014), and risk management techniques (Hanim Tafri et al., 2011) of the Islamic versus conventional banks. Results from the empirical finance literature, dominated by studies that have focused on the risk/return features of mutual funds, reported that Islamic funds perform as well, if not better, than conventional funds—there is little evidence that they perform worse than standard industry benchmarks. Baele et al. (2014) found robust evidence that default rates of Islamic loans is less than half the default rate of conventional loans and concluded that religion plays a significant role in determining loan defaults. Kumru and Sarntisart (2016) demonstrated a model to exhibit that Islamic banking or finance in an economy with a more considerable %age of Muslims could be an engine for higher productivity and growth.

It is worth mentioning here that the lending procedure of Islamic banking opts for non-PLS principles, as PLS method is exposed to some complications and default risk. Islamic banks require calculating profit and loss ratio of each project under PLS financing method that seems somewhat a difficult task while enumerating the borrower's characteristics and potential business prospects. Moreover, they need an extra effort and struggle to choose and monitor the borrowers to make sure that they do not exploit their inside information. So, it is not suitable for them to choose PLS financing, especially during short-term credit schemes. In addition, under Mudarabah contract Islamic banks are restricted to influence control and intrude in the administration of a project. Aggarwal & Yousef, (2000) stated that Islamic banks primarily practice Non-PLS mechanisms to escape from the moral hazard problem that is associated with PLS financing. Last but not the least, the enterprises in Muslim countries may have better incentives to go for Islamic banking because of the good set environment by Islamic investors to capitalize their investments in Islamic financial institutions (Minhat & Dzolkarnaini, 2017), as a result, we may expect a positive impact on firm's performance. Hence, we posit that:

H2: There exists a positive relationship between Islamic banks -firm equity-based relationships and firm's Performance.

3. Research design

3.1. Data and sample description

We examine and compare the relationship between bank-firm equity-based relationships and firm's performance from the perspective of dual-banking systems. We gather data from 16 OIC member states that contain different geographic and demographic features. We define various bank-specific and firm-specific characteristics in order to achieve our objectives and validate our findings. The countries included in the sample are Pakistan, Bangladesh, Malaysia, Turkey, Nigeria, Qatar, Bahrain, Kuwait, Saudi Arabia, Egypt, Iraq, Oman, Indonesia, Jordan, and United Arab Emirates "whereby" Pakistan, Bangladesh, Nigeria, Egypt, Indonesia, and Tunisia lie in the lower middle-income countries zone; Malaysia, Turkey, Iraq and, Jordan are classified as upper middle income countries and, remaining countries in our sample pertain to high-income level. In addition, we also classify market-based and bank-based economies, for which we collect data from Demircuc-Kunt and Levine (2001), and Mohanty et al. (2016). So, we try to construct a broader and representative data set that would also try to capture various country level indicators along with various banks and non-financial firms' indicators.

After definition of the banks on the basis of their religious orientation, i.e. Islamic and Conventional banks, we collect data on different financial indicators of banks from ORBIS Bank Focus by BVD for the year 2015. The data on variables related to bank-firm equity relationships are collected from OSIRIS by BVD. Rest of the data, i.e., financial statements data of non-financial firms is also collected from OSIRIS by BVD. Any missing data related to our model variables either collected from OSIRIS or from Bankscope is excluded from our sample. Another limitation on data is that it does not contain information on individual loans and deposits by or with a particular individual banking partner. However, we can also get information on whether bank having an equity relationship with a non-financial firm is also its credit lending institution or not which permits us to introduce a dummy to further check the strength of relationship between firm and its banking partner, i.e., it represents a wider scope of bank activities towards that particular firm and hence indicates a close relationship. In addition, the data for different country-level indicators, such as banking market concentration, country's overall Z-score, and country GDP rate is retrieved from financial structure and development data set by World Bank (Beck et al., 2000), and data to represent restrictions on banks to hold equity in non-financial firms is gathered from Lee and Lu (2015) indicators.

3.2. Dependent variables

The description and definition of variables are reported in Table 1. We refer to return on assets using net income (ROA) and Tobin's Q to measure firm's performance, being widely used in the previous studies (e.g., see studies by Limpaphayom & Polwitoon, 2004; Lin et al., 2009; Luo et al., 2011; Robert et al., 2004). We expect a positive relationship for both Islamic and conventional bank equity holdings on firm's performance measures.

3.3. Independent variables

Islamic bank's -and conventional bank's shareholdings in non-financial firms are main variables of interest for this study. We first collect percentage of ownership held by Islamic banks and conventional banks in non-financial firms which are represented by RBI and RBC respectively. Based on the values of RBI and RBC, we further generate two dummies, namely, Islamic bank-firm equity-based relationship dummy (RBID) and conventional bank-firm equity-based relationship dummy (RBCD). RBID is a dummy that takes the value equal to '1' if Islamic banks hold equity in a non-financial firm; otherwise '0'. Similarly, RBCD is a dummy with value a equal to '1' if conventional banks hold equity in a non-financial firm; otherwise '0'.

3.4. Control variables

We further control for the effect of several firm-specific, bank-specific, and country level indicators likely to affect the firm's performance (also see studies by Dass & Massa, 2011; Degryse & Van Cayseele, 2000; Limpaphayom & Polwitoon, 2004).

3.5. Firm size and its performance

Firm size is associated with its market competitiveness (Degryse et al., 2009), and a more competitive firm is likely to perform efficiently and expected to hold a greater market share, which may affect its performance positively. Limpaphayom and Polwitoon (2004) and Margaritis and Psillaki (2010) found a positive relationship between firm size and its performance. According to Evans (1987) there exists an inverted U-shape relationship between firm size and its performance. So, we might also expect a positive relationship of firm size with firm performance, while a negative connection with square of firm size. In this study, firm size is represented by LnA and, is measured by taking natural logarithm of firm total assets as shown in Table 1.

3.6. Firm age and its performance

It is also essential to control the effect of firm age on a firm's performance. Degryse et al. (2009) have stated that mature firms have less probability of default. Luo et al. (2011) found a negative relationship between a firm's age and its performance in China. Lundvall and Battese (2000) did not find any significant link of firm age with its technical efficiency. Evans (1987) observed a negative relationship between a firm's performance and its age and a positive relationship with the square of a firm's age. Accordingly, we may also expect a non-linear relationship (U-Shape relationship) of firm age with its performance. We represent a firm's age by "Age," measured by the number of years since a firm is incorporated, as displayed in Table 1. Based on the year 2015, if the firm's incorporation date is 1980, then the firm's age is to be calculated as $2015 - 1980 = 35$ years. We conduct our regression by using the natural logarithm of the firm's age (LnAge).

3.7. Firm leverage and its performance

Already established empirical work reported mixed evidence on the leverage-performance nexus. It is noteworthy to mention here two famous arguments to elaborate on the relationship between leverage and a firm's performance.

One is the agency cost argument, which states that "firm's larger leverage ratio alleviates the agency conflicts, so increase firm's efficiency and performance." Later on, Margaritis and Psillaki (2010) provided empirical support to the agency-cost argument.

The other is Myers (1984) pecking order concept, which states that the "pattern of firm's financing choices varies by firm's profitability level." Specifically, highly profitable firms prefer debt financing over equity one. Empirically, Booth et al. (2001), Tong and Green (2005), and Qureshi (2009), Giroud et al. (2011), and Vithessonthi and Tongurai (2015) found support for "pecking order theory" in their respective samples.

Following these arguments and empirical evidence, we might also expect a negative or positive relationship between leverage ratio and firm performance. We define leverage as "total debt and liabilities divided by total assets," as shown in Table 1.

3.8. Tangibility and firm performance

On the one hand, Porta et al. (1998) stated that a firm could use its tangible assets to lower the agency cost of debt and increase its operational efficiency and performance. While on the other hand, Margaritis and Psillaki (2010) have found that a firm's tangibility ratio negatively influences a firm's performance. Accordingly, we might also expect positive or negative relationship between a firm's tangibility and performance. We measure the firm's tangibility (Tang) as "firm's fixed tangible assets divided by total assets" as shown in Table 1.

3.9. Bank size and firm performance

Large banks could be capable enough to invest in diversified portfolios than smaller ones (Demsetz & Strahan, 1997). So bank size can be correlated with their pure investment motive, which aligns

Table 1. Description and definitions of variables

Variables	Abbreviations	Definitions	Source
Dependent Variables			
Firm's Performance	ROA _i	Return on Assets of a non-financial firm "i". using net Income	Bureau van Dijk OSIRIS
Firm's Performance (Alternate Proxy)	Tobin's Q	Market Capitalization of a non-financial firm i divided by total number of assets of that firm	Bureau van Dijk OSIRIS
Independent Variables			
Conventional Bank-Firm Relationship Dummy	RBCD _i	If Conventional Banks hold equity in a non-financial firm, RBCD is equal to 1; otherwise = 0	Bureau van Dijk OSIRIS and ORBIS Bank Focus
Islamic Bank-Firm Relationship	RBID _i	If Islamic banks hold equity in a non-financial firm then RBID is equal to 1; otherwise = 0	Bureau van Dijk OSIRIS and ORBIS Bank Focus
Number of Islamic bank-firm equity relationships	NIB	Total number of Islamic banks that hold equity in a non-financial firm i	Bureau van Dijk OSIRIS and ORBIS Bank Focus
Number of conventional bank-firm equity relationships	NCB	Total number of conventional banks that hold equity in a non-financial firm "i".	Bureau van Dijk OSIRIS and ORBIS Bank Focus
Control Variables			
Firm's Age (Alternate Proxy)	LnAge	Natural Logarithm of firm's total number of years since its data of incorporation	Bureau van Dijk OSIRIS
Age square	LnAgesqr	Square of LnAge	Bureau van Dijk OSIRIS
Firm's Size	LnA	Natural Logarithm of firm's total assets	Bureau van Dijk OSIRIS
Firm's Size square	LnAsqr	Square of Natural Logarithm of firm's total assets	Bureau van Dijk OSIRIS
Debt Ratio	Leverage	(Total Debt and Liabilities divided by total assets)*100	Bureau van Dijk OSIRIS
Tangible Fixed Assets Ratio	Tangibility	(Total Tangible Fixed Assets divided by Total Assets of a non-financial firm "i")	Bureau van Dijk OSIRIS
Bank Size	BS	A dummy variable that takes the value = 1 if Bank is among the top ten largest banks of a country; otherwise = 0	Author's Own Computation
Bank Performance	BP	Bank's Total Capital divided by total assets	Bureau van Dijk ORBIS Bank Focus
Country Level Indicators			
Banking market concentration	BMC	Assets of three largest banks as a share of assets of all commercial banks.	Financial Structure and Development Data set by World Bank
Country's Financial Stability	ZScore	(ROA+equity/assets)/sd(ROA); sd(ROA) is the standard deviation of ROA.	Financial Structure and Development Data set by World Bank.
GDP growth rate	GDP	Real Gross Domestic Product growth rate of a particular country for Year 2015.	World Development Indicators
Restriction on banks to hold equity	Rest	The closer the value to 4, the higher a bank will be restriction to hold equity i.e., 4 = Highly restricted, 3 = Restricted, 2 = Less Restricted, 1 = Unrestricted	Lee and Lu (2015) indicators

the bank and firm's interests. As a result, we may expect a positive relationship between bank size and firm performance.

3.10. Bank quality and firm performance

Bank's reputation can also be considered as an important determinant of firm's performance as it tends to put a positive certification effect on firm's good will (Robert et al., 2004). We represent bank quality by "BP" which is measured by "bank's total capital divided by total assets." Since the certification role by a better quality bank is likely to be more attractive for a less-profitable firm, so we may expect a negative relationship between bank's quality and firm's performance.

3.11. Banking market concentration and firm performance

We represent "banking market concentration" by BMC. It is an important component of financial system quality and likely to put a positive influence on firm's performance in emerging economies (Chauvet & Jacolin, 2017). In view of this, we also expect a positive relationship between banking market concentration and firm performance.

3.12. Industry dummy

Industry dummy variables are used to control for the influence of particular industries on bank-firm relationships. A firm's industry determine and affect its borrowing demand, capability to offer collateral, and various other aspects related to its loan-acquiring ability (Berger & Udell, 1998; Ongena & Şendeniz-Yüncü, 2011; Petersen & Rajan, 1994; Saporito et al., 2013).

3.13. Country dummy

Country dummies are included to control the effect of a specific country. The tax rates and business exposure may vary across countries, thereby, may affect the overall country's financial environment, which later on could influence firms as well banks (Booth et al., 2001).

4. Model specification and data analysis

We estimate equations (1)-(4) using 2SLS regression. Equations 1 & 2 show the relationship between Islamic bank-firm equity-based relationships and firm performance, and equations 3 & 4 describe the association between conventional bank-firm equity-based relationships and firm performance.

$$FROA_i = \beta_0 + \beta_1 RBID_i + \beta_2 FSC_{ij} + \beta_3 BSC_{ij} + \beta_4 CSC_{ik} + \beta_5 ID_i + \beta_6 CD_{ik} + \mu_i \quad (1)$$

$$FTobinQ_i = \beta_0 + \beta_1 RBID_i + \beta_2 FSC_{ij} + \beta_3 BSC_{ij} + \beta_4 CSC_{ik} + \beta_5 ID_i + \beta_6 CD_{ik} + \mu_i \quad (2)$$

$$FROA_i = \beta_0 + \beta_1 RBCD_i + \beta_2 FSC_{ij} + \beta_3 BSC_{ij} + \beta_4 CSC_{ik} + \beta_5 ID_i + \beta_6 CD_{ik} + \mu_i \quad (3)$$

$$FTobinQ_i = \beta_0 + \beta_1 RBCD_i + \beta_2 FSC_{ij} + \beta_3 BSC_{ij} + \beta_4 CSC_{ik} + \beta_5 ID_i + \beta_6 CD_{ik} + \mu_i \quad (4)$$

Where, $FROA_i$ and $FTobinQ_i$ represents non-financial firm's "i" performance in which banks (either Islamic or/and conventional) have equity ownership. $RBID_i$ represents equity relationship between Islamic banks and its non-financial partner "i", which is defined by a dummy that takes the value = 1 if Islamic banks have equity ownership in a non-financial firm; otherwise = 0. $RBCD_i$ denotes equity relationships between conventional banks, and its non-financial partner "i", which is measured by another dummy with value = 1 if conventional banks contain an equity ownership in a non-financial firm "i"; else = 0. Rest of the control variables are BSC_{ij} , FSC_{ij} , CSC_{ijk} , ID_{ij} , CD_{ij} which represent bank-specific characteristics, firm-specific characteristics, country-specific characteristics, industry dummies, and country dummies, respectively, for a non-financial firm "i" which is in close liaison with a bank "j" and operating in a country "k".

4.1. Endogeneity

Our primary dependent variable, i.e., firm's performance (ROA), could somewhat be endogenously determined by the firm's affiliated Islamic -or conventional banks. Instead, we control for several firm's -and bank's characteristics; still, it is necessary to deal with the endogeneity of the remaining country indicators such as its financial stability, restrictions on banks to hold equity and country GDP growth rate. Hence, to address the endogeneity issue, we consider the following instruments:

4.2. Interaction between equity ownership dummies and restrictions on bank's to hold equity

We multiply bank's equity ownership dummy with nationwide restrictions on banks to hold a certain fraction of equity in non-financial firms as an instrumental variable. So, it could be endogenously determined and likely to affect bank's activities and via bank's activities firm's performance and value is likely to be exaggerated. We use index of Lee and Lu (2015) and Barth et al. (2013) to gauge variations in restrictions on banks regarding different operations to perform in a country¹. They investigated the impact of bank regulations and supervision on bank development, efficiency, and fragility by taking a sample of 180 countries. The index of overall restrictions on bank activities can potentially range from 4 to 16, with higher numbers indicating greater restrictiveness.

4.3. Interaction between equity ownership dummies and financial stability

Mirzaei et al. (2013) showed that financial stability negatively influences bank's performance in emerging countries, while a positive impact could be observed in developed economies. We use Z-score to measure financial stability, being extensively used in the previous studies (e.g., see studies by Berger et al., 2009; Fiordelisi & Mare, 2014). In addition, several authors (e.g., Bourkhis & Nabi, 2013; Louati & Boujelbene, 2015) account for Z-score to make a comparison between the efficiency of Islamic—and conventional banks. Compared to other measures, one more reason for Z-score to be widely used is that it can be calculated for listed—and unlisted banks. Mathematically, it can be calculated as follows:

4.4. Z-Score = (Return on Assets + Total Equity/Total Assets)/SD of ROA over a three year period

We use financial structure and development data set of World bank to collect data for Z-Scores of different countries. After data collection, we multiply Z-score with our bank's equity ownership dummies to generate our instrument variable.

4.5. Gross domestic product

Due to the fact that increasing GDP suggests an improvement in the general income in an economy, some studies have found GDP growth as profit-enhancing and by extension stability-enhancing (Kosmidou & Zopounidis, 2008). On the other hand, growth in GDP is associated with a reduction in profitability, and by extension, a reduction in bank stability (Tan & Floros, 2012). The intuition is that an improvement in economic growth results in an improvement in the business environment and lowers bank entry barriers. This promotes competition in the banking industry which reduces bank profitability (Tan & Floros, 2012). A reduction in bank profitability implies a reduction in its stability. It is obvious from the above that there are two contrasting positions on the effect of GDP on bank stability (positive and negative).

4.6. Empirical findings and discussion

4.6.1. Descriptive statistics

The study displays the summary statistics in Table 2. We notice that the minimum value of ROA is -99.28, and the maximum value is 65.25, with a mean of 2.23. The alternate proxy for a firm's performance is Tobin's Q which varies between -0.69 and 37.19. The mean value of the Islamic bank-firm equity-based relationship dummy (RBID) is 0.12, less than 0.17, the mean value of the conventional bank-firm equity-based relationship dummy (RBCD). We further notice that the mean value of number of conventional bank-firm equity-based relationships (NCB) is 0.25, which is

Table 2. Descriptive statistics of the variables

Variable	Mean	Std. Dev.	Min	Max
ROA	2.23	11.73	-99.28	65.25
Tobin's Q	1.00	1.73	-0.69	37.19
RBID	0.12	0.33	0.00	1.00
RBCD	0.17	0.38	0.00	1.00
NIB	0.15	0.45	0.00	5.00
NCB	0.25	0.67	0.00	11.00
Lev	0.47	0.36	0.00	4.20
Tang	0.33	0.25	0.00	1.75
LnA	11.43	1.88	4.57	18.37
LnAsqr	134.2	43.75	20.88	337.4
LnAge	3.16	0.70	0.00	7.6
LnAgesqr	10.53	4.18	0.00	57.76
BS	0.36	0.70	0.00	2.00
BP	2.66	9.00	-12.077	82.7
BMC	53.7	13.47	28.48	86.05

Notes: ROA represents firm's performance which is measured by return on assets using net income. Tobin's Q is also used to denote firm's performance which is defined as "market capitalization divided by total assets". RBID denotes Islamic bank-firm equity-based relationship dummy, RBCD represents Conventional bank-firm equity-based relationship dummy. NIB indicates number of Islamic bank-firm equity-based relationships, and NCB denotes number of conventional bank-firm equity-based relationships. Lev denotes firm's leverage which is defined as "total debt and liability divided by total assets". Tang represents firm's tangibility that is measured as "tangible fixed assets divided by firm's assets. LnA is also used to represent firm's size which is defined as 'natural logarithm of firm's assets'. LnAge refers to firm's age that is measured as "taking natural logarithm of number of years since the firm is incorporated". BS represents bank size. BP denotes bank performance which is defined as "bank's capital divided by total assets". Finally, BMC is banking market concentration. All data is cross-sectional in nature and collected from OSIRIS by BVD except for BMC for which the data is collected from financial structure and development dataset of World banks

greater than 0.15, the mean value of Islamic bank-firm equity-based relationships (NIB). We observe that the average value of banking concentration is 53.7%, which is relatively high and indicates less banking competition in OIC member states.

4.6.2. Univariate analysis of firms with or without bank-firm relationship

Table 3 reports the results for univariate analysis of firms with banking partners (either Islamic or conventional) and without banking associates. We observe that firms with bank equity stakes have comparatively higher values of firm's age, firm's size, firm's profitability, firm's value, market performance, growth in total assets, increase in total equity, the fraction of largest shareholder equity holdings, and controlling shareholders than firms without bank's equity holdings. It may indicate that banks in OIC member states like to involve in relationships with old, large, and more profitable firms. In addition, their inclination is more towards firms in which the largest shareholder's equity holdings are higher. We do not notice any significant differences in the firm's leverage and tangibility. These pilot results point towards the positive role of banks in the microeconomic development of firms. Finally, we observe a more concentrated ownership structure of firms in our sample countries, indicating more controlled firms in the organization of Islamic Conference (OIC) member nations.

4.6.3. Correlation analysis

We report the pairwise correlation analysis in Table 4. We notice that all the correlation coefficients values between the explanatory variables are well below the threshold limit of 0.80 (Gunst & Webster, 1975), confirming the absence of multicollinearity in our model. We find that both Islamic bank-firm equity-based relationship dummy (RBID) and conventional bank-firm equity-based relationship dummy (RBCD) are positively correlated to ROA, as indicated by their positive and

Table 3. Univariate analysis of firms with -vs. without bank-firm relationship

Variables	Mean Comparison		Pr. (t-stat. Value)
	With BFR	Without BFR	
Age	30.04	28.81	0.032
LnS	11.50	10.00	0.000
LnA	12.34	10.91	0.000
ROA	4.440	0.947	0.000
Tobin Q	1.182	0.926	0.000
MVBV	2.036	1.454	0.000
GTA	4.154	4.071	0.000
GTE	4.062	3.997	0.000
Lev	0.466	0.477	0.218
Tang	0.327	0.321	0.042
Lsrh	40.53	30.14	0.054
Csrh	0.643	0.581	0.000

Notes: Pr.(t-stat. value) represents probability of t-statistics which tells us how significantly the mean values of both the samples are different from each other. Age refers to firm's age that is measured as "number of years since the firm is incorporated". LnS define firm's size that is measured as "natural logarithm of firm's sales". LnA is also used to represent firm's size which is defined as "natural logarithm of firm's assets". ROA, ROE, GTA, GTE represent firm's performance where ROA is return on assets using net income, ROE is return on equity using net income, GTA is growth in total assets, and GTE is growth in total equity. TobinQ is used to denote firm's value which is defined as "market capitalization divided by total assets". MVBV is used to indicate market performance and is measured as "market capitalization divided by shareholder's equity". Lev denotes firm's leverage which is defined as "total debt and liability divided by total assets". Tang represents firm's tangibility that is measured as "tangible fixed assets divided by firm's assets". Lsrh represents largest shareholder equity holding. Csrh is used to denote controlling shareholder that is defined by a dummy that takes the value = 1 if Lsrh \geq 30; else = 0. All data is cross-sectional in nature and collected from OSIRIS.

significant correlation coefficients of 0.103 and 0.108, respectively. Similarly, we find that both RBID and RBCD positively correlate to the alternate firm's performance measure Tobin's Q.

4.6.4. Regression results

We conduct 2SLS regression on two separate samples and present the results in [Tables 5 and 6](#).

[Table 5](#) reveals the findings of the relationship between Islamic bank-firm equity-based relationships and firm performance. In the first two models, we conduct regression without excluding extreme values of ROA and notice that the coefficients of RBID and NIC are positive and significant at 1% level. In models 3 and 4, we winsorize ROA and find that results remain unchanged except absolute values of RBID and NIC reduce slightly. The findings indicate the positive impact of Islamic bank-firm equity-based relationships on the firm's performance.

[Table 6](#) reports the results of the regression between conventional bank-firm equity-based relationships and firm performance. In models 1 and 2 (without winsorizing ROA), the coefficients of RBCD and NCB are positive and significant at 5% and 1% levels, indicating that conventional banks shareholdings also has a positive impact on firm performance. In models 3 and 4, we exclude the extreme values from ROA and notice that results remain robust.

We observed in the preliminary univariate analysis ([Table 2](#)) of our full sample that firms having bank-firm equity-based relationships contain higher values of ROA and Tobin's Q than firms with no bank-firm equity-based relationships. Consistent to our preliminary analysis, we find positive relationship between bank-firm equity-based relationships and firm performance both for Islamic and conventional banks.

Table 4. Pairwise correlation analysis

	ROA	TobinQ	RBID	RBCD	NIB	NCB	Lev	Tang	LnA	LnAge	BS	BP	BMC
ROA	1												
TobinQ	0.239*	1											
	0.000												
RBID	0.103*	0.044*	1										
	0.000	0.013											
RBCD	0.108*	0.045*	0.314*	1									
	0.000	0.011	0.000										
NIB	0.095*	0.049*	0.881*	0.337*	1								
	0.000	0.006	0.000	0.000									
NCB	0.099*	0.053*	0.313*	0.797*	0.374*	1							
	0.000	0.003	0.000	0.000	0.000								
Lev	-0.327*	-0.092*	-0.014	-0.048*	-0.001	-0.021	1						
	0.000	0.000	0.427	0.006	0.964	0.226							
Tang	-0.059*	-0.013	-0.038*	-0.028*	-0.039*	-0.030*	0.139*	1					
	0.001	0.477	0.035	0.112	0.029	0.096	0.000						
LnA	0.174*	-0.078*	0.195*	0.186*	0.208*	0.185*	0.060*	0.034*	1				
	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.059					
LnAge	0.005*	0.007	-0.049*	-0.042*	-0.052*	-0.007	0.114*	0.078*	0.094*	1			
	0.788	0.701	0.006	0.017	0.003	0.694	0.000	0.000	0.000				
BS	0.097*	0.002	0.583*	0.732*	0.520*	0.592*	-0.027	-0.016	0.184*	-0.013	1		
	0.000	0.906	0.000	0.000	0.000	0.000	0.129*	0.355	0.000	0.470			
BP	0.020*	0.013	0.507*	0.396*	0.493*	0.385*	-0.007	-0.021	0.113*	-0.073*	0.542*	1	
	0.258	0.485	0.000	0.000	0.000	0.000	0.674	0.250	0.000	0.000	0.000		
BMC	-0.040*	-0.142*	0.109*	0.073*	0.090*	0.047*	-0.155*	-0.141*	0.035*	-0.137*	0.132*	-0.006	1
	0.022	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.048	0.000	0.000	0.748	

Notes: * denotes statistical significance up-to 10% confidence level.

Table 5. Islamic bank-firm equity-based relationships and firm performance (ROA)

	Model 1	Model 2	Model 3	Model 4
Variables	ROA	ROA	Winsor ROA	Winsor ROA
RBID	2.942*** (4.31)		2.24*** (4.93)	
LnA	7.942*** (6.60)	8.033*** (6.66)	2.39*** (4.65)	7.19*** (6.34)
LnAsqr	-0.289*** (-5.93)	-0.293*** (-6.01)	-0.10*** (-4.97)	-0.27*** (-5.79)
LnAge	-3.429*** (-3.13)	-3.413*** (-3.12)	-2.63*** (-3.51)	-3.05*** (-2.80)
LnAge2	0.492*** (2.68)	0.489*** (2.66)	0.42*** (3.31)	0.45** (2.47)
Lev	-0.001 (-0.30)	-0.001 (-0.31)	-0.00 (-0.13)	-0.00 (-0.21)
Tang	-0.048*** (-4.84)	-0.048*** (-4.82)	-0.02*** (-4.38)	-0.03*** (3.32)
BS	0.916*** (3.03)	1.079*** (3.65)	0.79*** (4.04)	1.41*** (4.97)
BP	-0.109*** (-4.27)	-0.107*** (-4.12)	-0.07*** (-5.45)	-0.10*** (-3.94)
BMC	0.017 (0.25)	0.007 (0.10)	-0.05*** (-5.63)	-0.06*** (-4.34)
NIB		1.904*** (4.17)		1.76*** (3.94)
Industry Effects	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes
Income Effects	Yes	Yes	Yes	Yes
_cons	-44.466*** (-5.23)	-44.304*** (-5.21)	-3.07 (-0.96)	-35.67*** (-5.14)
N	3203	3203	2,852	3,203
R ²	0.102	0.102	0.05	0.07
F	9.112	8.861	12.60	17.62
P	0.000.	0.000	0.000	0.000
J	0.367	0.344	0.23	0.22

Notes: z statistics in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. ROA is our main dependent variable which represents firm's performance and is measured by "return on assets using net income". RBID is our main variable of interest which represents Islamic bank-firm equity based relationship and is defined by a dummy that takes the value = 1 if an Islamic bank hold a part of equity holdings in a non-financial firm; otherwise = 0. LnA denotes firm size which is measured by "taking natural logarithm of firm total assets". Age refers to firm's age which is calculated as "subtracting the base year 20,115 from firm's date of incorporation". Leverage represents firm's leverage ratio which is defined by "total debt divided by total assets". Tang denotes tangibility that is defined by "firm's tangible fixed assets divided by total assets". BS denotes bank size which is defined as "if bank is among the 10 largest banks of a country then it is categorized as a larger bank; otherwise a smaller one". BP refers to bank quality which is defined by "total bank capital divided by total assets". BMC is a measure of banking market concentration for which we use financial structure and development dataset by World bank. Model 2 uses NIB (number of Islamic bank-firm relationships) as an alternate measure of Islamic bank-firm equity-based relationships. In model 3 and model 4, we run regressions after Winsorizing ROA.

Table 6. Conventional Bank-Firm Equity-Based Relationships and Firm Performance (ROA)

	Model 1	Model 2	Model 3	Model 4
Variables	ROA	ROA	Winsor ROA	Winsor ROA
RBCD	1.633** (2.20)		0.98** (2.14)	
LnA	7.796*** (6.46)	7.793*** (6.47)	2.26*** (4.53)	2.27*** (4.55)
LnAsqr	-0.282*** (-5.78)	-0.282*** (-5.80)	-0.09*** (-4.40)	-0.09*** (-4.43)
LnAge	-3.384*** (-3.05)	-3.476*** (-3.15)	-2.64*** (-3.42)	-2.69*** (-3.51)
LnAge2	0.481*** (2.59)	0.491*** (2.66)	0.42*** (3.27)	0.43*** (3.34)
Lev	-0.001 (-0.27)	-0.001 (-0.26)	-0.001 (-0.01)	-0.001 (-0.01)
Tang	-0.049*** (-4.92)	-0.049*** (-4.88)	-0.02*** (-4.45)	-0.02*** (-4.44)
BS	0.829** (2.00)	1.044*** (3.07)	0.83*** (3.14)	1.01*** (-4.43)
BP	-0.078*** (-3.23)	-0.084*** (-3.40)	-0.05*** (-4.23)	-0.05*** (-4.44)
BMC	0.036 (0.53)	0.035 (0.53)	-0.04*** (-5.22)	-0.04*** (-5.26)
NCB		0.858*** (2.59)		0.40* (1.84)
Industry Effects	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes
Income Effects	Yes	Yes	Yes	Yes
_cons	-44.713*** (-5.26)	-44.382*** (-5.23)	-2.59 (-0.81)	-2.54 (-0.80)
N	3203	3203	2852	2852
R ²	0.100	0.100	0.04	0.04
F	8.742	8.727	11.39	11.38
P	0.000.	0.000.	0.000	0.000

J-Statistics(Probability)

0.367

0.344

0.131

0.111

Notes: z statistics in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. ROA is our main dependent variable which represents firm's performance and is measured by "return on assets using net income". RBCD is our main variable of interest which represents conventional bank-firm equity based relationship and is defined by a dummy that takes the value = 1 if a conventional bank hold a part of equity holdings in a non-financial firm; otherwise = 0. LnA denotes firm size which is measured by "taking natural logarithm of firm total assets". Age refers to firm's age which is calculated as "subtracting the base year 20,115 from firm's date of incorporation". Leverage represents firm's leverage ratio which is defined by "total debt divided by total assets". Tang denotes tangibility that is defined by "firm's tangible fixed assets divided by total assets". BS denotes bank size which is defined as "if bank is among the 10 largest banks of a country then it is categorized as a larger bank; otherwise a smaller one". BP refers to bank quality which is defined by "total bank capital divided by total assets". BMC is a measure of banking market concentration for which we use financial structure and development dataset by World bank. Model 2 uses NCB (number of conventional bank-firm relationships) as an alternate measure of conventional bank-firm equity-based relationships. In model 3 and model 4, we run regressions after Winsorizing ROA

These findings indicate the marginal benefits of bank-firm equity-based relationships for Islamic and conventional banks, as Diamond (1984) argued. Our empirical results align with some other emerging market studies (Lai et al., 2020; Limpaphayom & Polwitoon, 2004; H. Wang et al., 2020). Meanwhile, our results contrast with some other empirical work in emerging economies (Lin et al., 2009; Luo et al., 2011).

4.6.5. Robustness checks

To further check the reliability of our baseline results, we use Tobin's Q, an alternate measure for the firm's performance. We report the results for Islamic bank-firm equity-based relationships in Tables 7 and 8 for conventional bank-firm equity-based relationships. The results show that all the independent variables (RBID, NIB, RBCD, NCB) positively impact Tobin's Q.

5. Summary and conclusion

Bank-firm equity-based relationship is generally conjectured to influence a positive impact on firm's performance in developed economies (Agarwal & Elston, 2001; Saa-Requejo, 1996), while negatively related to firm's profitability in developing or emerging economies (Lin et al., 2009). The discussion on the relationship between bank's equity ownership in non-financial firms and firm's performance is scarce in the case of emerging nations, especially for the Muslim countries, where there exists a dual banking system. In fact, the well-documented flaws in the governance mechanisms and institutional framework of emerging economies tend to affect the relative cost and benefits associated with bank-firm equity-based relationships, which in turn make it more complex to deduce the true findings (Lin et al., 2009). Ongena and Şendeniz-Yüncü (2011), for example, reported a very complex pattern for a bank-firm relationship in Turkey, so suggested that further empirical work is essential. In view of this, we attempt to add some further empirical evidence while taking a unique sample of 16 Muslim emerging countries from OIC. To the best of our knowledge, this study is first to compare and examine the impact of bank-firm equity-based relationships on firm's performance within the settings of some dual-banking systems. To provide empirical evidence, the sample consists of 16 OIC member states, which satisfy the conditions that: existence of both Islamic and conventional banks; banks are allowed to hold equity in non-financial firms; and both Islamic and conventional banks should own equity ownership. The previous literature, logical arguments, and our primary univariate analysis of firms with-or without bank-firm liaison led us to build hypothesis that there exists a positive relationship between bank-firm equity-based relationships and firm's performance for both Islamic and conventional banks.

To explore the subjected relationship, we conducted empirical analysis by 2SLS regression. Univariate analysis of firms with-or without bank-firm relationships (see Table 2) reported that banks in OIC member countries tend to hold considerable portion of equity ownership. These pilot observations are further confirmed by regression analysis, which showed that both Islamic bank-firm equity-based and conventional bank-firm equity-based relationships put a positive influence on firm's performance. The results might confirm the marginal benefits of equity ownership as argued by (Diamond, 1984; Mahrt-Smith, 2006), suggesting that bank's monitoring channel is likely to mitigate relationship cost and information asymmetry problem. Normally, there exists a mismatch between the lenders'-borrowers' goals, but bank's considerable equity ownership may align both parties interests, which can be observed in a positive impact of bank's equity holding on firm's performance (Kang et al., 2000; Limpaphayom & Polwitoon, 2004).

The results of our study are in line with some other emerging country studies, e.g., see studies by Limpaphayom and Polwitoon (2004) and Lu et al. (2012) but in contrast to Lin et al. (2009), and Luo et al. (2011). Instead, the findings of our study give some new understandings of the advantages of bank-firm equity-based relationship, specifically within the context of the dual-banking systems. Still we cannot suggest some concrete conclusion in that: (1) Bank's participation in ownership of non-financial firms is one of the contentious phenomenon in the banking regulations (Fang et al., 2013; Tröge, 2001); (2) country-specific features perform a vital chunk for the

Table 7. Islamic bank-firm equity-based relationships and firm performance (Tobin's Q)

	(Robust Check)	(Robust Check)
	"TobinQ"	"TobinQ"
RBID	0.574*** (4.23)	
LnA	-0.556*** (-3.64)	-0.537*** (-3.50)
LnAsqr	0.020*** (3.08)	0.019*** (2.92)
LnAge	-0.745*** (-3.76)	-0.740*** (-3.77)
LnAge2	0.131*** (3.61)	0.130*** (3.60)
Leverage	-0.001* (-1.68)	-0.001* (-1.75)
Tangibility	-0.007*** (-4.50)	-0.007*** (-4.44)
BS	-0.019 (-0.43)	0.012 (0.30)
BP	-0.006* (-1.77)	-0.006* (-1.82)
BMC	-0.002 (-0.26)	-0.004 (-0.54)
NIB		0.379*** (4.21)
Industry Effects	Yes	Yes
Country Effects	Yes	Yes
Income Effects	Yes	Yes
_cons	5.642*** (5.82)	5.671*** (5.82)
N	3117	3117
R ²	0.127	0.127
F	8.272	8.268
P	0.000	0.000
J	0.359	0.165

Notes: z statistics in parentheses *p < 0.1, **p < 0.05, ***p < 0.01. TobinQ is an alternate measure of our main dependent variable which represents firm's performance and is measured by "Market Capitalization of a non-financial firm i divided by total number of assets of that firm". RBID is our main variable of interest which represents Islamic bank-firm equity based relationship and is defined by a dummy that takes the value = 1 if an Islamic bank hold a part of equity holdings in a non-financial firm; otherwise = 0. LnA denotes firm size which is measured by " taking natural logarithm of firm total assets". Age refers to firm's age which is calculated as" subtracting the base year 20,115 from firm's date of incorporation". Leverage represents firm's leverage ratio which is defined by" total debt divided by total assets". Tang denotes tangibility that is defined by "firm's tangible fixed assets divided by total assets". BS denotes bank size which is defined as " if bank is among the 10 largest banks of a country then it is categorized as a larger bank; otherwise a smaller one". BP refers to bank quality which is defined by "total bank capital divided by total assets". BMC is a measure of banking market concentration for which we use financial structure and development dataset by World bank. NCB represents number of conventional bank-firm relationships which we used as an alternate measure of conventional bank-firm equity-based relationships.

Table 8. Conventional bank-firm equity-based relationships and firm performance (Tobin's Q)

	(Robust Check)	(Robust Check)
	Tobin's Q	Tobin's Q
RBCD	0.404*** (3.19)	
LnA	-0.587*** (-3.80)	-0.589*** (-3.81)
LnAsqr	0.022*** (3.25)	0.022*** (3.25)
LnAge	-0.756*** (-3.78)	-0.779*** (-3.91)
LnAge2	0.132*** (3.62)	0.134*** (3.69)
Lev	-0.001* (-1.75)	-0.001* (-1.71)
Tang	-0.007*** (-4.52)	-0.007*** (-4.49)
BS	-0.068 (-1.02)	-0.010 (-0.20)
BP	0.000 (0.16)	-0.001 (-0.34)
BMC	0.002 (0.35)	0.002 (0.32)
NCB		0.202*** (3.04)
Industry Effects	Yes	Yes
Country Effects	Yes	Yes
Income Effects	Yes	Yes
_cons	5.622*** (5.77)	5.710*** (5.88)
N	3117	3117
R ²	0.124	0.125
F	8.421	8.403
P	0.000	0.000
J-Statistics(Probability)	0.359	0.165

Notes: z statistics in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. TobinQ is an alternate measure of our main dependent variable which represents firm's performance and is measured by "Market Capitalization of a non-financial firm i divided by total number of assets of that firm". RBCD is our main variable of interest which represents conventional bank-firm equity based relationship and is defined by a dummy that takes the value = 1 if a conventional bank hold a part of equity holdings in a non-financial firm; otherwise = 0. LnA denotes firm size which is measured by "taking natural logarithm of firm total assets". Age refers to firm's age which is calculated as "subtracting the base year 20,115 from firm's date of incorporation". Lev represents firm's leverage ratio which is defined by "total debt divided by total assets". Tang denotes tangibility that is defined by "firm's tangible fixed assets divided by total assets". BS denotes bank size which is defined as "if bank is among the 10 largest banks of a country then it is categorized as a larger bank; otherwise a smaller one". BP refers to bank quality which is defined by "total bank capital divided by total assets". BMC is a measure of banking market concentration for which we use financial structure and development dataset by World bank. NCB represents number of conventional bank-firm relationships which we used as an alternate measure of conventional bank-firm equity-based relationships.

ownership concentration, so likely to influence the nature of bank-firm relationships (Kuznetsov et al., 2008); (3) the general influence of a bank on a firm depends upon the nature of bank-firm relationships and the extent of available substitute financial options (Miarka & Tröge, 2005).

Our findings oppose the general perception that weak legal frameworks and governance mechanisms in emerging economies enhance the severity of agency conflicts and negatively affect the firms' performance. Instead, our results may suggest that in emerging countries, especially in Muslim regions, banks support obligors. We observe that banks (both Islamic and conventional) tend to hold large portions of equity, which may align banks' interests with firms. As a result, we notice a positive impact of a bank's equity ownership on a firm's performance.

Given the dual-banking features in most Muslim countries, the non-financial firms operating there maintain relationships with both Islamic and conventional banks. Therefore, they need to know that how these two forms of banks deal with them. This study does not report any differences between the behaviour of Islamic and conventional banks towards their non-financial partners, so we recommend that regulators may monitor both Islamic and conventional banks under the same roof of standards.

The study has several caveats, which are noteworthy to disclose here. As mentioned earlier, we can measure a bank-firm relationship on several bases, including deposit, lending, and equity. However, this study has only focused on bank-firm equity-based relationships because we cannot get data on credit-based and deposit-based connections. In addition, we use cross-sectional data to conduct our analysis because of the unavailability of the panel data. However, the cross-sectional method has its benefits. DeFond and Subramanyam (1998), and Dargenidou et al. (2014), for example, mentioned that cross-sectional methodology helps to increase the sample size and mitigates the problem of survivorship bias, which is commonly associated with the time-series data. In addition, cross-sectional style consists of more degrees of freedom, so its probability of calculating correct parameter estimates is higher. Therefore, future studies may consider the duration of bank-firm equity-based relationships to check the potential benefits of equity ownership by banks. Studies at each individual country level are also recommended to disclose more interesting insights with their discrete country-specific features.

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Note

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Appendix-A (Sample Selection Criteria)

No.	Country Name	Dual Banking System		Banks Hold Equity		Included Sample	Overall Restrictions on Banks	Restriction To Hold Equity	Market Based/ Bank Based
		Yes/No	Yes/No	Yes/No	Yes/No				
1	Azerbaijan	No	N.A	No	N.A	No	N.A	N.A	N.A
2	Jordan	Yes	Yes	Yes	8	Yes	3	Bank Based	Bank Based
3	Afghanistan	No	N.A	No	N.A	No	N.A	N.A	N.A
4	Albania	No	N.A	No	N.A	No	N.A	N.A	N.A
5	UAE	Yes	Yes	Yes	8	Yes	3	Bank Based	Bank Based
6	Indonesia	Yes	Yes	Yes	8	Yes	3-5	Bank Based	Bank Based
7	Uzbekistan	No	N.A	No	N.A	No	N.A	N.A	N.A
8	Uganda	No	N.A	No	N.A	No	N.A	N.A	N.A
9	Iran	No	N.A	No	N.A	No	N.A	N.A	N.A
10	Pakistan	Yes	Yes	Yes	8	Yes	3	Bank Based	Bank Based
11	Bahrain	Yes	Yes	Yes	6	Yes	1	Bank Based	Bank Based
12	Brunei-Darussalam	Yes	No	No	N.A	No	N.A	N.A	N.A
13	Bangladesh	Yes	Yes	Yes	9	Yes	3	Bank Based	Bank Based
14	BURKINA-FASO	No	N.A	No	N.A	No	N.A	N.A	N.A
15	Benin	No	N.A	No	N.A	No	N.A	N.A	N.A
16	Tajikistan	No	N.A	No	N.A	No	N.A	N.A	N.A
17	Turkey	Yes	Yes	Yes	3	Yes	3	Market Based	Market Based
18	Turkmenistan	No	N.A	No	N.A	No	N.A	N.A	N.A
19	Togo	No	N.A	No	N.A	No	N.A	N.A	N.A

(Continued)

(Continued)		No.	Country Name	Dual Banking System		Banks Hold Equity		Included Sample		Overall Restrictions on Banks	Restriction To Hold Equity	Market Based/ Bank Based
				Yes/No	Yes/No	Yes/No	Yes/No					
		20	Chad	No	N.A	No	N.A					
		21	Tunisia	Yes	Yes	Yes	9					
		22	Djibouti	No	N.A	No	N.A					
		23	Algeria	Yes	No	No	N.A					
		24	Saudi Arabia	Yes	Yes	Yes	9					
		25	Senegal	Yes	No	No	N.A					
		26	Sudan	Yes	No	No	N.A					
		27	Syria	Yes	No	No	N.A					
		28	Suriname	No	N.A	No	N.A					
		29	Leone	No	N.A	No	N.A					
		30	Somalia	No	N.A	No	N.A					
		31	Iraq	Yes	Yes	Yes	10					
		32	Oman	Yes	Yes	Yes	8					
		33	Gabon	No	N.A	No	N.A					
		34	Gambia	Yes	No	No	N.A					
		35	Guyana	No	N.A	No	N.A					
		36	Guinea	No	N.A	No	N.A					
		37	Guinea-Bissau	No	N.A	No	N.A					
		38	Palestine	Yes	Yes	Yes	5					
		39	Comoros	No	N.A	No	N.A					
		40	Kyrgyz	No	N.A	No	N.A					
		41	Kazakhstan	No	N.A	No	N.A					
		42	Qatar	Yes	Yes	Yes	8					
		43	Cote Divoir	No	N.A	No	N.A					

(Continued)

(Continued)

No.	Country Name	Dual Banking System		Banks Hold Equity		Included Sample		Overall Restrictions on Banks	Restriction To Hold Equity	Market Based/ Bank Based
		Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No			
44	Cameroon	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
45	Kuwait	Yes	Yes	Yes	Yes	Yes	4	2	Bank Based	Bank Based
46	Lebanon	Yes	No	No	No	No	N.A	N.A	N.A	N.A
47	Libya	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
48	Maldives	Yes	No	No	No	No	N.A	N.A	N.A	N.A
49	Mali	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
50	Malaysia	Yes	Yes	Yes	Yes	Yes	8	3	Market Based	Market Based
51	Egypt	Yes	Yes	Yes	Yes	Yes	4	3	Bank Based	Bank Based
52	Morocco	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
53	Mauritania	Yes	No	No	No	No	N.A	N.A	N.A	N.A
54	MOZAMBIQUE	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
55	Niger	No	N.A	No	N.A	No	N.A	N.A	N.A	N.A
56	Nigeria	Yes	Yes	Yes	Yes	Yes	7	3	Market Based	Market Based
57	Yemen	Yes	No	No	No	No	N.A	N.A	N.A	N.A

Sources and Definitions: 1. <http://www.oicun.org/3/28/>; 2. We use ORBIS Bank Focus by BVD to collect data for Islamic Banks and Conventional of OIC Member countries, 3. We gather data of bank's equity holding in non-financial firms from OSIRIS, 4. <http://www.globalbanking.org/globalbanking.tar?section=data-set&set=global-banking-regulation-2015>, 6. We classify bank-based and market-based economies from the studies by Demircuc-Kunt and Levine (2001), and Mohanty et al. (2016), 7. N. A = Not-applicable for our sample as the country either has not dual-banking system or we could not find banking holding equity in non-financial firms, 8. IBs = Islamic Banks, CBs = Conventional Banks, 9. Overall Restrictions on Banks = The closer the value to 12, the higher the overall restrictions on banks, 10. Restriction to Hold Equity = The closer the value to 4, the higher a bank will be restriction to hold equity and 11. Syracuse University http://insct.syr.edu/wp-content/uploads/2014/08/OIC_Member_States.pdf

Appendix-B (Additional Summary Statistics)

S.No.	Country	No. of Firms	Percent	Cum.
1	Bahrain	21	0.65	0.65
2	Bangladesh	162	5.01	5.66
3	Egypt	211	6.52	12.18
4	Indonesia	429	13.27	25.45
5	Iraq	44	1.36	26.81
6	Jordan	184	5.69	32.5
7	Kuwait	157	4.85	37.35
8	Malaysia	841	26	63.36
9	Nigeria	104	3.22	66.57
10	Oman	108	3.34	69.91
11	Pakistan	357	11.04	80.95
12	Qatar	29	0.9	81.85
13	Saudi Arabia	127	3.93	85.78
14	Tunisia	51	1.58	87.35
15	Turkey	346	10.7	98.05
16	UAE	63	1.95	100

Data Source: Bureau van Dijk OSIRIS. **Computation Source:** Author's own computation in Stata 13.

S.No.	Region	No. of Firms	Percent	Cum.
1	East Asia & Pacific	1,270	39.27	39.27
2	Europe & Central Asia	346	10.7	49.97
3	MENA	995	30.77	80.74
4	South Asia	519	16.05	96.78
5	Sub Saharan Africa	104	3.22	100

Data Source: Financial Structure and Development Data set by World Bank. **Computation Source:** Author's own computation in Stata-13

S.No.	Income	No. of Firms	Percent	Cum.
1	High Income	505	15.62	15.62
2	Lower Middle	1,314	40.63	56.25
3	Upper Middle	1,415	43.75	100

Data Source: Financial Structure and Development Data set by World Bank. **Computation Source:** Author's own computation in Stata-13

S. No.	Industry	No. of Firms	Percent	Cum.
1	Consumer Discretionary	642	19.85	19.85
2	Consumer Staples	394	12.18	32.03
3	Energy	136	4.21	36.24
4	Manufacturing	261	8.07	44.31
5	Health Care	113	3.49	47.8
6	Industrial	556	17.19	65
7	Information Technology	146	4.51	69.51
8	Materials	525	16.23	85.75
9	Real Estate	338	10.45	96.2
10	Telecommunication Services	58	1.79	97.99
11	Utilities	65	2.01	100

Data Source: Bureau van Dijk OSIRIS. **Computation Source:** Author's own computation in Stata-13.



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