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The impact of capital structure on Islamic Finance Development Indicador (IFDI): A cross-country analysis

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ABSTRACT

The aim of this paper is to examine the effect of the capital structure on the financial development of Islamic banks. To measure Islamic financial development, we use the country-level Refinitiv Islamic Finance Development Indicator® (IFDI) during the years 2014 to 2019. The global or combined IFDI score is made up of five performance dimensions that are considered by Islamic investors: Quantitative Development, Governance, Corporate Social Responsibility, Awareness and Knowledge. Using a sample of 105 banks, covering banking systems in 19 Muslim-majority countries, the study uses a Two-Stage least squares (2SLS) regression to examine the banks' financial development determinants to control IFDI's reverse causality for capital structure. After controlling the macroeconomic environment, financial market structure and taxation, the results indicate that the development of banks responds positively to an increase in equity (capital ratio). The result is consistent with the signaling theory, which predicts that the best performing banks will reliably transmit this information through higher capital. The non-monotonic relationship found between financial development on shareholders 'equity and banks' capital ratios suggests that issues of shares with low capital ratios (less than 48.42%) are expensive and have a negative effect on their equity indicator. development. On the other hand, well-capitalized bank managers are advised to trust equity when faced with the decision to raise capital, as the capital ratio begins to positively affect their financial development. This study aimed to fill the gap between the capital structure of Islamic banks and their relationship with a five-dimensional indicator. Future research, however, could confront the capital structure of banks with their profitability or profitability (conventional measures and used by Western banks), as well as analyze the effect of each of the dimensions that make up the IFDI, by bank or by country on decision of their structures.

Keywords: Islamic Finance, Capital Structure, Islamic Banks, IFDI.

1. INTRODUCTION

Probably the field that generates more controversy within financial management is the study of cost and capital structure (Eid Junior, 1996), which has been the subject of theoretical and empirical studies for decades to understand the determinants that affect the choice between debt and equity liquid, which would lead to the ideal choice to maximize the company's value (Bajaj, Kashiramka & Singh, 2020). The determinants of the capital structure are not restricted only to the specific factors of the firms. Specific factors of the firm include, among others, level of tangibility, size, profitability, risk, growth opportunities, level of income tax, tax

benefits (Bastos, Nakamura & Basso, 2009). Each of these factors can be considered a determinant of the capital structure, but its behavior may vary according to the theoretical framework addressed. However, other factors can or should influence the level of indebtedness of firms, such as the environment in which the company operates, cultural and even religious factors, as in the case of Islamic Banks, which are part of an ecosystem called Islamic Finance.

During the past few decades, Islamic Finance has experienced tremendous growth and innovation in the global (conventional) financial industry. The Islamic financial sector experienced an annual growth rate of 28% during the years 2006-2009 (despite the global financial crisis of 2007-2008), in addition to an average growth rate of approximately 10% per year, with a total of assets under management of around $ 2 trillion in 2015 and $ 3.75 trillion in 2019 (Thomson Reuters, 2020). Islamic finance mainly covers Islamic banks, Islamic insurance (Takaful) and Islamic capital markets. According to the Islamic Financial Services Council (IFSB, 2020) stability report, more than 70% of the participation in the Islamic financial services industry or Islamic Financial Services Industry (IFSI) consists of Islamic banking institutions, followed by the capital market Islamic with 27% (combined with Islamic funds). The Takaful industry is still in its early stages and contributes only 1.3% to the overall IFSI.

The notion of Islamic finance was born during the tumultuous years of political identity in the mid-twentieth century (Costa, 2016). Indian, Pakistani and Arab thinkers contemplated independence from Britain and Pakistan's independence from India, within a context of Islamic society (Kamali, 2000; Chapra, 2001). Islam was supposed to inspire political, economic and financial systems that are distinct and independent from the Western (capitalist) and Eastern (socialist) models of the time. The term Islamic economy was coined by Abu al-A`la AlMawdudi, whose students and followers worked to develop an ostensible Islamic social science (Kuran, 2004). Mawdudi's influence on Arab Islamists began with the writings of Sayid Qutb, the father of modern Arab political Islam, whose almost exegesis under the shadow of the Koran (Holy Book for Islamists) referred exclusively to Mawdudi's writings on economic issues. Mawdudi's migration from the majority Hindu Indian society to the Pakistani Muslim majority has become a prototype of Islamic migration away from secular political and economic systems (Mohiuddin, 2007).

In the first decades of its existence, the Islamic economy focused on comparative economic systems, as well as on neoclassical and Keynesian modeling with a highly stylized Homo islamicus (a moral and ethical individual who avoids excessive greed and consumerism) in place of Homo economicus of the dominant economy (a selfish and profit-maximizing utility) (Haneef, 1995). As a by-product, the Islamic banking system emerged in the literature of Islamic economists as a financial system based exclusively on Profit and Loss Sharing, which was considered more equitable, stable and socially responsible (Siddiqi, 1983; Chapra, 1996). In the process, Islamic economists focused on the Islamic ban on usury (Riba), which they interpreted as a ban on all interest-based lending, according to previous interpretations of the Judeo-Christian canon (Ayub, 1999; Chapra, 2000).

The preferred financial model in the Islamic system is based on the old model of silent partnership known in Islamic writings as Mudaraba, corresponding to Jewish Heter Iska and European Christian commendations (Udovich, 1970). An Islamic bank was conceived as a two-tier passive partnership. Thus, deposits that seek return (as opposed to fiduciary deposits, for which 100% reserves are required) would not be guaranteed loans to the bank, but rather passive partnership investments in the bank's portfolio. In turn, the bank's investments in these funds would not consist of loans and the acquisition of debt instruments, but of profit-sharing investments in other passive companies. Thus, the Islamic bank would fulfill its function of financial intermediation (grouping of savings that seek return and diversification of investments) through the division of profits and losses. This idea continues to serve as the cornerstone of the current Islamic banking system (Tantawi 2001; El-Gamal, 2003).

In each country's financial system, whether Islamic or non-Islamic, banks are one of the most important financial institutions. Over time, their role changed and they became “financial supermarkets” and one of the main drivers of sustainable development. One side of the banks' contribution to the sustainable economy is in the form of financing financial activities, considering the social and environmental effects. In other words, finance and implement mainly activities that will incorporate Environmental, Social and Governance criteria (Environmental, Social and Corporate Governance). In this regard, banks have adopted a set of codes of conduct, mainly on a voluntary basis, on the environment and sustainability (Weber, Diaz & Schwegler, 2014) and this is equally valid for Islamic banks, which have their own structures for disclosing aspects social, environmental and knowledge. One such structure is the Islamic Finance Development Indicator (IFDI), a weighted composite index that measures the overall development and integrity of the Islamic financial sector, based on instrumental factors grouped into five broad domains, including Knowledge, Governance, Accountability Corporate Social and Awareness that is taken into account by the Islamic investor when evaluating the performance of financial institutions (Paltrinieri, Dreassi, Migliavacca & Pisera, 2020).

Considering that the performance of Islamic banks, according to the specific dimensions presented, is measured by IFDI, this study presents the following Research Question (RQ):

RQ: Is there a relationship between the Development of the Islamic Financial Industry, as measured by IFDI, and the capital structure of Islamic Banks?

2. THEORETICAL PLATFORM AND DEVELOPMENT OF HYPHOTESES

The capital structure is a mix of debt and equity held by a company. The determination of the capital structure was one of the most important researches in finance and was published after the theory of irrelevance in the capital structure (Modigliani & Miller, 1958). In fact, the MM theorem states that, in certain circumstances (no taxation, no transaction costs, no bankruptcy costs, efficient market), the company's value is independent of its financing decisions. In order to address the irrelevance hypothesis, the "non-taxation" assumption was relaxed since debts are tax deductible and lead to an increase in the company's value (Modigliani & Miller, 1963), but also to an increase in probability of bankruptcy. Therefore, the optimal capital structure reflects a

level of indebtedness that balances between the benefits of debt financing and the costs of bankruptcy. The capital structure was examined by several theories: Agency Theory, Signaling Theory, Trade-off Theory and Pecking Order Theories.

In the context of the countries of the Gulf Cooperation Council (GCC), Sbeiti (2010) investigated the determinants of the capital structure in the context of three (Oman, Saudi Arabia and Kuwait) examining the development of the stock market in the financing options of companies listed during the 1998-2005 period. The results show that the leverage ratio of listed companies is negatively related to liquidity, tangibility and profitability, while size has a positive effect on leverage. The results also show that the development of the stock market is negatively related to leverage. Al-Mutairi and Naser (2015) sought to identify the determinants of the capital structure of CCG's commercial banks and listed on stock exchanges. The study used data from 47 banks for the period between 2001 and 2010. The results showed a negative relationship between leverage and profitability, tangibility and size; and found a positive relationship with growth and age. The data used in this study are bank data extracted from the balance sheets of 105 Islamic Banks in 19 countries, with an Islamic majority, for each year from 2014 to 2019. The coverage of the periods 2014-2019 is due to the availability of data, in particular, related to the IFDI Score. Macroeconomic and financial market data are collected from the Global Market Information Database (GMID), which gathers this data from Euromonitor International, International Monetary Fund (IMF), International Financial Statistics (IFS) and World Economic Outlook / UN / National Statistics.

Sample banks were also chosen based on data availability. The 19 countries covered in this study are: Saudi Arabia, Bahrain, Qatar, Bangladesh, Egypt, United Arab Emirates, Yemen, Indonesia, Iran, Iraq, Jordan, Kuwait, Lebanon, Malaysia, Mauritania, Pakistan, Sudan, Tunisia and Turkey.

2.1 Development of Hyphoteses

The study uses a set of internal and external banking characteristics to examine the effect of the capital structure on the IFDI indicator. While internal characteristics are formulated based on financial and non-financial ratios, external factors are accounted for by controlling the macroeconomic environment, financial market structure and taxation. The bank's internal characteristics include capital, liquidity, management of the use of funds, size and risk indexes, as discussed below.

2.2 Islamic Banks Characteristics

2.2.1 Capital Ratio

This is perhaps the most important index, especially for financial institutions, as it reflects the strength of a bank and its ability to meet its obligations in a crisis (Iqbal, 2001). Debt is seen as a less expensive source of capital because the interest paid on the debt is tax deductible, reducing the amount of tax paid by companies and thus achieving higher performances.

For conventional banks, interest paid on deposits and bonds is tax-deductible. Islamic Banks, however, do not pay fixed interest on either deposits or Islamic bonds (Sukuk). However, the returns paid to depositors of investments, holders of Sukuk and even rewards that are sometimes paid to depositors of savings accounts are tax deductible. Therefore, an argument is that Islamic banks have an incentive to issue the least expensive form of capital to increase performance. The hypotheses are formed as follows:

H1. There is no statistically significant relationship between the capital index and the IFDI.

2.2.2 Liquidity and fund source management ratio

For a ratio of liquidity and management of sources of funds, the customer financing and short-term index on total assets (CSTFTA) is used. It is an indicator of liquidity from the liability side and consists of demand deposits, savings deposits, investment deposits and other short-term funds. Conventional banking theory postulates that an increase in financing is followed by an increase in profits and, therefore, predicts a positive relationship between CSTFTA and performance (Haron, 2004).

H2. There is no statistically significant relationship between short-term customer financing for total assets and IFDI.

2.2.3 Fund use management

For conventional banks, the ratio of unpaid assets to total assets (NIEATA) is expected to have a negative impact on performance because they do not generate any revenue for the bank and the money could be used for other more profitable investments (Naceur , 2003). Since Islamic Banks do not charge interest on loans, the terms "revenue-generating assets" and "non-profit assets" are used instead of "interest-generating assets" and "noninterest-generating assets" to avoid any confusion. The relationship between general expenses and total assets (OVRHD) is also included to capture the variation in operating costs across the banking system, as it reflects employment, the total value of wages and salaries and the cost of operating branches. This index is also expected to negatively impact profits, as efficient banks must operate at lower costs.

H3. There is no statistically significant relationship between non-profitable assets and total assets and IFDI.

H4. There is no statistically significant relationship between overheads and indirect costs and total assets and the IFDI.

2.2.4 Size

The size of the bank must be controlled to capture differences in competitive conditions, markets and product offerings that differ with the size of the bank. The size variable also controls the scale efficiencies. Banks with large assets can provide the lender with more security; in other words, the perceived risk of large companies is less than that of small Islamic banks, which allows them to raise capital at a lower cost. In addition, large

banks are more diversified and less vulnerable to bankruptcy. Larger Islamic banks are expected to benefit from greater performance due to greater access to cheaper sources of funds.
Therefore, the null and alternative hypotheses are declared as:

H5. There is no statistically significant relationship between size and IFDI.

2.2.5 Risk

Adding the ratio of total loans to total assets as a measure of risk increases the depth of understanding of the risks that a bank takes when trying to obtain higher returns (AbdelHameed, 2003). When a bank chooses to take on more capital risk (assuming this is allowed by regulators), its leverage multiplier and return on invested capital, all other conditions maintained, are higher.

H6. There is no statistically significant relationship between risk and the IFDI.

2.3 Control variables

Other factors that have been proposed in the literature as possible determinants of financial and non-financial performance must be controlled to isolate the effects of the bank's characteristics on performance (Kabir & Abdel-Hameed, 2003). Macroeconomic factors, financial market structure and taxation are controlled as described below.

2.3.1 Macroeconomic factors

The bank's performance must be sensitive to macroeconomic conditions, and the impact of macroeconomic variables on the bank's performance is generally highlighted in the literature (Abdel-Hameed, 2003; Kabir & Abdel-Hameed, 2003; Flamini et al., 2009). GDP growth is accounted for as a control of the cyclical effects of the product, in which favorable macroeconomic conditions are expected to have a positive influence on the performance of banks. As GDP growth slows down, however, as in times of recession, credit quality deteriorates, defaults increase and, therefore, the bank's return decreases (Flamini et al., 2009). The hypotheses, therefore, are as follows:

H7. There is no statistically significant relationship between real GDP growth and IFDI.

Inflation is also controlled to account for macroeconomic risk. The degree to which inflation affects banks 'performance depends on whether future movements in inflation are fully anticipated and this, in turn, depends on the banks' ability to accurately predict their future movements. A fully predicted inflation rate is expected to increase bank profits, as banks can adjust interest rates to increase revenues, while unexpected changes can increase costs due to imperfect interest rate adjustments (Flamini et al ., 2009). In the case of Islamic Banks, the predicted changes in inflation could be used to adjust the rents of Murabaha contracts and the profit

distribution rates of Musharaka and Mudaraba contracts. Thus, assuming that Islamic Banks fully anticipate inflation, the hypotheses are:

H8. There is no statistically significant relationship between antecipated inflation and the IFDI.

2.3.2 Finance Market Structure

Since competition from other financial service providers and the stock market can influence bank operations, the ratio of deposit banks' total assets to GDP (BNK) and the ratio of stock market capitalization to GDP (MCAP) will be used to measure the influence of the financial market. The size of the banking system (BNK) is used to measure the importance of bank financing in the economy and the size of the economy that is monetized. MCAP and BNK reflect the complementarity or substitution between bank and stock market financing. Following the conclusions of Abdel-Hameed (2003) who showed that stock markets are complementary to bank financing, both variables are expected to positively impact performance:

H9. There is no statistically significant relationship between the financial market structure factors (MCAP and BNK) and IFDI.

2.3.3 Taxation and regulation Tributation

The required reserves of the banking system (RES) and the tax rate (TAX) are used as proxies for financial regulation. Mandatory reserves do not generate any income for the bank and are considered implicit taxes, defined by the government for monetary policy reasons. Implicit and explicit taxes are expected to negatively impact profits and therefore affect IFDI.

H10. There is no statistically significant relationship between the taxation indicators (RES and TAX) and the IFDI.

2.3.4 Local Market Effects

To control the effects of the local market, three variables are used: the Herfindahl market concentration index (HERF), the bank's market share (SHARE) and the growth of market deposits (MKTGROW). These variables must be controlled to avoid spurious associations between performance and capital structure. Banks that operate in countries with a high concentration of deposits and a high share of the deposit market can benefit from higher performance, regardless of their capital structure. In addition, the growth of market deposits helps to control changes in profit opportunities in the local market. Those in high-growth markets may be able to make high profits, not because of their capital structure, but because of increased profit opportunities (Berger, 1995).

H11. There is no statistically significant relationship between the effects of the local market (HERF, SHARE and MKTGROW) and IFDI.

2.3.5 Dummy

The regression includes time dummy variables for each period in the sample to control any systematic variation over time or between banks that may be related to performance and create a spurious relationship (Berger, 1995). The four time models will control all temporal changes that are not being modeled.

2.4 Model specification

There are five dimensions to the Islamic Financial Development Indicator (IFDI). The global or combined IFDI score, as well as the Quantitative Development, Governance, Corporate Social Responsibility, Awareness and Knowledge scores. For Islamic investors, this indicator shows banks' financial and non-financial performance. To measure Islamic financial development, we use the ICD Thomson Reuters IFDI® at the country level. The index ranges from 0 to 100 and is calculated using publicly available information for Islamic and non-Islamic countries. Table 1 below details the dimensions of the IFDI:

Table 1

IFDI Dimension

Dimension	Deffinition
Quantitative Development	Measures the financial and economic performance (using volume of transactions combined with financial performance) of the five main sectors of the industry: Islamic bank, takaful, other Islamic financial institutions, sukuk and Islamic funds
Governance	Composed of three sub-indicators: regulations, Shariah governance and corporate governance
Corporate Social Responsibility	Obtained through the amount of CSR funds disbursed, such as Zakat and Qardh, along with the disclosure of 11 CSR activities, including employee welfare, Zakat policy and Waqf policy.
Awareness	It evaluates the degrees, qualifications and courses provided by Islamic financial education educational providers, as well as the number and works and research produced and published.
Knowledge	Measured through news, events, seminars and conferences produced on Islamic finance.

Source: *ICD Thomson Reuters IFDI Report (2020).*

A linear equation that links performance measures (financial and non-financial represented by IFDI) to a variety of financial indicators is specified below:

$$IFDI_{ijt} = \alpha_0 + \beta_i X_{jt} + \gamma_t M_{jt} + \partial R_{jt} + \theta LM_{jt} + \delta dT_t + {}_{ijt} \quad (1)$$

$IFDI_{ijt}$ is a measure of financial and non-financial performance, for bank *i* in country *j* at time *t*; $\beta_i X_{jt}$ are bank variables for bank *i* in country *j* at time *t*; X_{jt} are macroeconomic variables for country at time *t*,

includes real GDP growth and inflation; M_{jt} are the financial Market structure variables in country *j* at time *t* [ratio of total assets of the deposit Money banks divided by GDP (BNK), and the ratio of stock Market capitalization to GDP (MCAP)] R_{jt} are the taxation indicators which include the required reserves of the banking system (RES) for country *j* at time *t* and the tax rate (TAX) for each bank *i* in country *j* at time *t*; LM_{jt} are the local Market effects in country *j* at time *t* (HERF, SHARE e MKTGROW); dT_t are the (0,1) time dummy variables for each year *t* (except for the base year 2014) and $_{ijt}$ is random error term for bank *i* in country *j* at time *t*.

The capital index is an endogenous variable; therefore, the following instrumental variables are used:

$$CR_{ijt} = \alpha_0 + \alpha_i B_{ijt} + \beta_j X_{jt} + \delta dT_t + {}_{ijt} \quad (2)$$

CR_{ijt} is capital ratio for bank *i* in country *j* at time *t*; B_{ijt} are bank variables [measures by global IFDI)], growth opportunities (GROW) is measured as the change in total assets over total book value of assets (Sharpe, 1995), risk is measured as loan to asset ratio (LONTA) and collateral (Coll) is measured as ratio of tangible assets over total assets, where tangible assets include total securities, treasury bills, other bills, bonds, CDs, investments in other entities, cash and due from banks, land and other buildings and other tangible assets (Gropp & Heider, 2009). These variables are lagged to account for possible time-lagged temporal effects. SIZE uses dummy variables for small group and medium group, where large group is excluded because it is the base; X_{jt} are macroeconomic variables for country *j* at time *t*, it includes real GDP growth and inflation These variables are contemporaneous in the equation because their effect is synchronous; *dTt* are the (0,1) time dummy variables for each year t, except for the base year; and s_{ijt} is random error term for individual bank *i* in country *j* at time *t*.

3.5 Data analysis techniques

In this research, the method of ordinary least squares of two stages (Two-Stage least squares (2SLS)) will be used, since the capital structure factors are endogenous and are simultaneous functions of the profitability factors, investment opportunities and other exogenous factors used in the research, such as, for example, the five dimensions of the IFDI. Hausman (1978) suggested making a direct comparison of the OLS and 2SLS estimates and determining whether the differences are statistically significant. Panel data were used in this research. Although panel data methods solve the problem of variables omitted from time constants, they by themselves do not solve the problem of variables omitted from time variation that are correlated with explanatory variables. The 2SLS approach is used to overcome this problem (Hausman, 1978). In addition, one can reasonably expect that there is heteroscedasticity in terms of the bank in the estimation process. Therefore, the covariance estimator consistent with White's heteroscedasticity is used to produce robust results. As the frequency of data in the study is annual, period heteroscedasticity can be ignored. In this study, the covariance estimator consistent with White's cross-sectional heteroscedasticity is used to generate standard errors that are robust to cross-sectional heteroscedasticity.

Table 2 below shows the variables to be studied:

Table 2

Variables definition and measurement

Variable	Notation	Definition	Measurement	Symbol in the Model
Endogenous variables				
Islamic Financial Development Indicator	IFDI	Measures the financial, economic and social performance of Islamic financial institutions	Volume of transactions combined with financial performance of the five main sectors of the industry: Islamic bank, takaful, other Islamic financial institutions, sukuk and Islamic funds.	$IFDI_{ijt}$
Exogenous variables				
Bank characteristic indicators				
			Book value of total	

	Capital Ratio	CR	shareholders' equity over total assets	TE/TA	
	Loan to asset ratio	LONTA	Ratio of total loans (net) divided by total assets	Net Loans/TA	
B_{ijt}	Consumer and short-term funds to total assets	CSTFTA	Ratio of consumer and short-term funds to total assets	CSTF/TA	Small: 1 if less than US $ 1 billion; 0, otherwise
	Overhead	OVRHD	Ratio of overhead to total assets	OVRHD/TA	
Size	SIZE	Three size classes (dummy variables)	Medium: 1 if it is between US $ 1 billion and US $ 10 billion; 0, otherwise Large: 1 if it exceeds US $ 10 billion; 0, otherwise		
Macroeconomic variables					
GDP Growth rate	GDPGR[a]	Annual growth rate of real GDP	annual real GDPl. GDP =		
			$(GDP_{t+1} - GDP_t) / GDP_t$	X^{jt}	
Inflation	INF[b]	Annual inflation rate	consumer price index (CPI) $= (CPI_{t+1} - CPI_t) / CPI_t$		
Financial structure variables					
Banks' assets BNK over GDP		Ratio of total assets of the deposit money banks divided by GDP	Total assets of deposit banks/GDP	M_{jt}	
Stock market Ratio of stock market capitalization to GDP	MCAP	Market capitalization/GDP capitalization to GDP			
Taxation variables					
Reserves of banking Reserves	RES	Reserves of the banking system over deposits of the banking system	banking system/ Deposits of	R_{jt}	

Herfindahl index of market concentration	HERF	Sum of squared deposit Market share of all banks in the market	$\sum_{i=1}^{N} d_{i2}$	Total taxes paid Taxes TAX divided by before tax TAX/BTP profits for each bank
Bank's market share	SHARE	Ratio of total deposit of each bank divided by total deposits for all banks in the country	$D_i \sum d_{ij}$	
Local market effects				
Growth of market deposits	MKTGROW	Annual change in total deposits for all banks in each country	Δ Deposits/Total Deposits= $(D_{t+1} - D_1) / D_1$	LM_{jt}
Time variables				
For a particular T year. The Time dummies	dT	Time dummies (0,1)	dummy variable $dT_t = 1$ if T; 0 otherwise	dT_t

Notes: [a] Real GDP growth rate as reported by Euromonitor International; [b] Inflation rate as reported by Euromonitor International.

4. EMPIRICAL RESULTS

Table 3 below shows summary statistics for all study variables. The mean and median of each variable are calculated from use for all banks throughout the years of the study period (2014-2019). The columns of maximum and visualization of the highest and lowest values observed for a bank, for variables related to banks, or for a country, for variables related to country in one of the years. The standard deviation of a variable with the dispersion of its suggestions from its mean. The Jarque - Bera statistic tests a hypothesis that a sample is taken from a normal distribution.

Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	SD	Jarque-Bera
IFDI	38,55	22,41	81,25	11,25	23,54	402,112***
CR	23,441	14,740	100	-47,404	24.278	338.846***
LONTA	47,562	52,413	98,917	0,002	24,508	21,998***
CSTFTA	67,521	74,934	131,101	0,118	23,404	78,505***
NEATA	15,413	10,084	100	0,235	16,387	1.429,631
OVRHD	3,906	2,313	94,006	-0,426	6,204	216.113,0
SIZE[a]	3.740.949	1.051,690	43.566,19	0,200	7.179,979	2.568,570***
GROW	39,181	29,342	264,157	-30,708	43,346	504.235,3***

COLL	48,052	42,725	100	1,0830	23,866	24,3733***
GDPGR	6,703	6,2	54,2	0,4	3,5887	95.060,04***
INF	7,755	7,2	53,2	-0,7	5,930	1.949,478***
BNK	25,989	10,985	169,255	0,850	40,897	1.118,887***
MCAP	82,984	89,481	213,912	4,391	52,626	14,920***
RES	9,871	8,098	37,436	1,356	9,435	194,093***
TAX	13,100	3,361	120,554	-118,298	22,645	826,255***
HERF	15,329	12,350	70,923	5,791	12,101	3.482,840***
SHARE	3,841	1,134	82,124	0,000	6,726	38.304,13***
MKTGROW	19,162	19,121	84,889	-67,0530	21,145	321,131***

Table 3

Notes: [a] Size is the book value of assets in million USD; *** denotes rejection of the null at the 1 per cent significance level

The capital ratio averaged 23.44% for the sample banks during the study period. In comparison with the minimum Tier-1 regulatory capital of 4%, Islamic Banks are well capitalized. Due to unreported risk-weighted assets, Tier-1 capital could not be calculated for the sample. However, the 23.44% average indicates that Islamic Banks are well above the regulatory minimum. This value is still underestimated (Level 1 would be greater than CR), since risk-weighted assets, which are used in the denominator to calculate the regulatory capital ratio, are always below the book value of the assets.

4.1 Regression results

The first-diferenced 2SLS is the method used to discuss results instead of random effects, as Hausman's statistic is set to zero or cannot be calculated because the cross-section variance is invalid. That is, for the Hausman statistic to be calculated, the transversal variance must be defined positive. In our case, the variance is negative and the chi-square statistic of the Hausman test could not be calculated. In cases where the Hausman test could not be calculated, the first difference is preferable to random effects, as it allows for an arbitrary correlation between the unobserved effect and the explanatory variables.

R^2 is presented for each model, although it is not very useful in 2SLS regressions. In some of the models, R^2 may appear negative and this is not because the models have a bad fit, but because the sum of the square residues for instrumental variables can actually be greater than the total sum of the squares. Therefore, although it does not really hurt to report R^2 for the estimation of instrumental variables, it is not very useful (Wooldridge, 2009).

Table 4 and Table 6 also show the number of cross sections and the total number of unbalanced observations for each model. Although there are expected to be 630 observations from 105 banks over six years, the actual

observations used in the estimate are much lower because of three main reasons. First, a year of observations is lost due to the first differentiation. Second, the loss due to lagged variables in a period when the observations for the year 2015 are lost. Third, it is due to the lack of data for banks for the variables of bank characteristics and missing data for countries for country-specific variables. The F statistic in the result tables tests the combined significance of all independent variables.

Table 4 indicates that the CR is positively related to the IFDI and is economically and statistically significant at the 1% significance level. A 1% increase in CR increases IFDI by 1.348%. This result is in contrast to the agency cost theory that predicts a decrease in performance when the CR or equity is increased. The theory assumes that an increase in leverage, implying a decrease in equity and, therefore, in the CR, should increase performance or profitability through the discipline of managers. The results, however, do not support this theory.

Table 4

Pooled 2SLS results (dependent variable: IFDI)

Variable	IFDI
CR	1,348*** (3,272)
LONTA	-0,084 (0,921)
CSTFTA	0,354*** (2,727)
NEATA	-0,121*(-1,930)
OVRHD	-2,820*(-1,649)
SIZE (*Small*)	4,223 (1,485)
SIZE (*Medium*)	3,351**(2,150)
GDPGR	0,048 (0,269)
INF	0,263 (0,686)
BNK	0,006 (0,176)
MCAP	0,105 (1,526)
RES	-0,280 (-1,161)
TAX	-0,021 (-0,531)
HERF	-0,087 (-0,107)
SHARE	-0,592***(-3,019)
MKTGROW	0,035 (0,281)
Constant	-2,866 (-1,520)
Time	Fixed
R^2	-0,273
F-Statistic	1,505*
Cross sections included (total panel observations)	47 (150)

Notes: the values in parentheses below the estimates are the t statistics; Standard errors of cross section (white noise) and covariance are used; the variables in the grouped 2SLS are differentiated; list of instruments: IFDI (1) /, GROW (1), Coll (1), LONTA, CSTFTA, NEATA, OVRHD; Small SIZE, medium SIZE, GDPGR, INF, BNK, MCAP, RES, TAX, HERF, SHARE, MKTGROW; *** denotes rejection of the null hypothesis at the 1% significance level; ** denotes rejection of the null at the 5% significance level; * denotes rejection of the null at the significance level of 10%.

There are many explanations for the positive capital-to-financial performance ratio. First, the discovery is in line with the Signaling Theory, according to which banks that hope to perform better transmit this information through greater capital (Paltrinieri, Dreassi, Migliavacca & Pisera, 2020; Baldwin & Alhalboni, 2020). When the bank's management has private information about future cash flows, management can signal this information through its capital decisions. To the extent that management has a share in the bank's value through personal ownership, stock options, etc., it would be less costly for a bank with expectations of better future performance to signal its high quality through capital increase. As far as Islamic banks are concerned, most of their shares are held by governments, government agencies, financial institutions and large individual investors. Therefore, it appears that it is less costly for an Islamic bank with the expectation of better future performance to signal this information through higher capital.

Second, capital increases can increase expected performance, reducing the expected costs of bankruptcy or liquidation (Archer & Karim, 2006). As the 2007-2008 financial crisis showed, when a bank is highly leveraged, even a small decrease in the value of its assets can lead to its difficulty and potential insolvency. Islamic Banks, being more recent when compared to their peers, hold more shares because they cannot allow bankruptcy of a bank, as this would damage the general reputation of the Islamic banking system in general. Third, the higher capital avoids problems of expropriation between shareholders and creditors (Kayed, Zain & Duasa, 2014). Islamic banks may choose to increase their capital ratios to assure creditors that their interests are closely aligned with those of shareholders and that shareholders are unlikely to be involved in expropriation activities and that the bank is safe. Increases in capital ratios by banks are made to avoid creditors' demand for compensation in the form of higher returns on their deposits for the expected expropriation of their claims by shareholders As mentioned earlier, investment deposits in banks have a special feature, because its capital value and rate of return are not guaranteed. This feature increases the potential for moral hazard and creates incentives to take risks. Therefore, dealing with the unique risks of the Islamic banking system requires adequate capital and reserves. Fourth, higher CR can also cause higher performance if higher capital reduces barriers related to the risk of entry or expansion in some profitable product lines (Valdez, 2007); Rasiah, 2010). Banks that increase capital and reduce the risk of insolvency can better take advantage of opportunities to issue off-balance-sheet guarantees, such as commitments and standby letters of credit.

The risk (LONTA) is considered an insignificant factor that does not affect the IFDI, neither economically nor statistically. The CSTFTA positively affects IFDI; a 1% increase in the CSTFTA increases the IFDI by

0.354% and is significant at the 1% level. This is consistent with the hypothesis that an increase in financing is followed by an increase in profits and financial development in general. NEATA and OVRHD have the expected negative signs and are significant at the 10% level; a 1% increase in NEATA decreases IFDI by 0.121% and is consistent with the hypothesis that keeping cash in nonprofit assets negatively impacts banks' performance, as they do not generate any revenue. A 1% increase in OVRHD decreases IFDI by 2.82% and is consistent with the hypothesis that efficient banks are expected to operate at lower costs. Small and medium-sized banks were found to perform better than large banks; the IFDI of small banks is higher than that of large banks. The difference, however, is not statistically significant. The IFDI of medium-sized banks is also higher than the IFDI of large banks by 3.351% and the difference is statistically significant at the 5% level of significance. The results are consistent with the findings of Samad and Hassan (1999) who found superior performance of small and medium-sized banks in Malaysia, considered one of the most developed Islamic financial markets and also with the findings of Sufian (2007), which found slightly superior performances of average Islamic banks when comparing them with their conventional counterparts.

Both macroeconomic indicators (PIBGR and INF) show the expected positive sign, but are not statistically significant. The indicators of the financial market structure (BNK and MCAP) and the regulatory indicators (TAX and RES) show the expected positive and negative signs, respectively, but they are also not statistically significant. The SHARE variable of the effects of the local market is statistically significant at the 1% level, but has an unexpected sign. A 1% increase in SHARE decreases IFDI by 0.592%; which means that as banks increase their share of the deposit market, their IFDI decreases. This indicates that banks underperform when they expand in the markets. HERF and MKTGROW are considered insignificant. The F-statistic of the model shows the combined significance of all variables at a significance level of 10%.

Table 5 below shows the results of the regression when the quadratic function CR^2 is included in the regression. The objective is to calculate the maximum of the function, similar to Hoffman (2011). The turning point is always reached at the coefficient in CR more than twice the absolute value of the coefficient in CR^2:

$$CR^* \left|_{CR}{}^{CR}{}_2\right| \quad (3)$$

Since the coefficient in CR is negative and the coefficient in CR2 is positive, the quadratic is U-shaped. This captures an increasing effect of CR on IFDI. The return value of CR is calculated as:

$$CR^* \quad \frac{3{,}9998}{(0{,}0413*0{,}0413)} \quad || = 48{,}42\% \quad (4)$$

Table 5

Optimal CR (dependente variable: IFDI)

Variable	P2SLS
CR	-3,9998***(-2,9645)
CR^2	0,0413**(2,083)
LONTA	-0,0413 (-1,0503)
CSTFTA	-0,1549 (-1,3074)
NEATA	0,1273 (0,7144)
OVRHD	-2,8556***(-5,027)
SIZE (*Small*)	-2,2573(-0,8069)
SIZE (*Medium*)	-1,3011(-0,6600)
GDPGR	-0,6052***(-7,4620)
INF	0,3258(1,1368)
BNK	0,0840***(2,6589)
MCAP	0,0854(1,4450)
RES	-0,2302(-1,0321)
TAX	0,0596(0,8189)
HERF	0,4253(0,3626)
SHARE	-0,4217(-0,5619)
MKTGROW	0,0542(0,5421)
Constant	-1,8188(-1,5734)
Time	Fixed
R^2	-0,0570
F-Statistic	1,2651
Cross sections included (total panel observations)	47 (150)

Notes: the values in parentheses below the estimates are the t statistics; *** denotes rejection of the null hypothesis at the 1% significance level; ** denotes rejection of the null hypothesis at the 5% significance level; * denotes rejection of the null at the significance level of 10%.

Based on Table 5 above, I have the low CR values (capital ratio less than 48.42%), the additional capital issues have a negative effect on the IFDI. With CR of 48.42% and above, the effect of CR becomes positive. This implies that when the capital ratio of Islamic banks is below this level, equity is expensive; probably because investors demand a higher return to offset the high risk. The risk is high because, at this point, an Islamic bank is highly leveraged. Therefore, the issuance of shares with low capital ratios decreases the IFDI. However, when the bank has a CR of 48.42% or more, the issuance of additional capital increases IFDI, probably because capital becomes a cheaper source of financing due to the lower return required by Islamic investors (Aremu,

2013; AlHunnayan, 2020). The higher capitalization minimizes the bank's risk and the bank is seen as safe and sound. CR and CR^2 are statistically significant at the level of 1% and 5%, respectively.

5. CONCLUSIONS

In this study, we examine the performance determinants of Islamic banks, using IFDI, in order to test the relevance of capital structure decisions. Using a sample of 105 Islamic banks and after controlling the macroeconomic environment, the structure of the financial market and taxation, the results indicate that the performance measures (in the Islamic context, IFDI) of Islamic banks respond positively to capital increases. This indicates that adequate capital ratios play an empirical role in explaining the performance and development of this market.

We conclude that the capital structure decision is relevant for banks. The results of this research indicate that the CR positively affects the IFDI. This indicates that equity is a cheap source of finance for banks. The rotation value found is 48.42%, therefore, issues of shares with low capital ratios (below 48.42%) have a negative effect on their performance (IFDI) because capital would be an expensive source of financing. The reason is because at low capital ratios, the cost of equity outweighs its benefits (the benefits of equity are reducing the required return, reducing the expected costs of bankruptcy or liquidation, thereby reducing the risk). Equity is seen as an expensive form of financing due to the problem of information asymmetry between managers and shareholders. At low CR levels, an Islamic bank is considered risky because of its high leverage, and investors demand a higher rate of return, further increasing the cost of equity.

For well-capitalized banks, equity issues have a positive effect on their performance. Thus, well-capitalized banks must issue shares instead of hybrid capital (Islamic bonds) when faced with the decision to raise capital. The additional issuance of capital increases its performance, as the benefits of capital outweigh its cost and become an inexpensive source of financing. The positive correlation between the capital ratio and performance is in contrast to the Agency Theory, which suggests that debt serves as a disciplinary device to prevent managers from wasting funds and predicts a negative relationship between CR and performance. Instead, the results of this research are consistent with the signaling theory, according to which banks expected to perform better in transmitting this information through greater capital. As the majority of shares in Islamic banks are held by governments, government agencies, financial institutions and large individual investors (Kabir et al., 2003), it is less costly for a bank with expectations of better future performance to signal its high quality through capital increase than for others.

We also concluded that an increase in [customer and short-term financing (CSTFTA)] financing positively impacts bank performance. Islamic banks must control their overheads. Efficient banks operate at lower costs and overheads (OVRHD) that negatively affect their performance. From the results found, larger banks are not taking advantage of access to cheaper sources of funds, while small and medium-sized banks perform better in this regard. The performance of banks, in general, is not affected by risk (LONTA), non-profit assets (NEATA), macroeconomic factors (GDPGR and INF), indicators of the financial market structure (BNK and MCAP), reserves and effects on the local market (HERF, SHARE and MKTGROW). Islamic banks have been

placed in close competition with conventional banks due to the integration of global financial markets. In order for them to compete in the local and global deposit markets, the management of Islamic banks must carefully decide on the appropriate mix of debt and equity, that is, capital structure, to maximize the bank's value.

This study seeks to fill the gap in finance, since it considers its own performance and financial development variable and specifies for this consumer market. Future research can correlate the IFDI with the traditional results of performance measurement such as ROA and ROE and analyze the effect of each of the dimensions of the IFDI on the capital structure. This research uses panel methods for statistical analysis; however, other statistical methods can be used to check the consistency of the results in subsequent surveys.

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