

Investigating the Costs of Religious Observance: Cross-Country Analysis of Islamic Banking

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Abstract

This study regresses key variables that influence the profitability of Conventional and Islamic banks as measured by Return on Average Assets, to determine the impact of Islamicity on the profitability of the banks in a given country. The study compares 36564 banks in 77 countries belonging to both Islamic and non-Islamic countries. We find that Islamic banks have higher operating costs and overall experience lower return on average assets.

JEL classification: F30; G21; Z12

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I. Introduction

Islamic financial assets must comply with Islamic Law (Shariah), which prohibits charging interest and funding businesses involved with products that are forbidden in Islam like pornography, alcohol, pork, and gambling. These restrictions on financial operations can make Islamic banks less competitive than conventional banks. Studies claim that Islamic regulations, or the money spent subverting them, impose higher costs that make Islamic banks less profitable and/or competitive. (El-Gamal, 2006). Meanwhile, studies suggest that to be competitive with conventional banks, Islamic banks manufacture their returns to equal those of conventional banks (El-Gamal 2006, 2008; Kuran, 2004). This implies that the costs of complying with Shariah are not passed on to the consumer, and are instead absorbed by the bank, leading to lower profitability.

In the context of these theories, **this study aims to examine the factors that influence the profitability of Islamic banks compared to conventional banks.** It focuses on the revenues of both types of banks as well as the costs of operation and the fees and commissions charged to customers. The theory is that the lower profitability of Islamic Banks, or lower returns to customers are accepted by Muslims, because they want to comply with Shariah to demonstrate their religious devotion. We expect that majority-Islamic countries with greater religiosity will have a higher tolerance for lower bank performance by Islamic banks. In this study we will examine the profitability of both Islamic and conventional banks in Islamic and non-Islamic countries.

Islamic banks incur two additional types of costs compared with conventional banks. The first is that a series of financial transformations are required to make their financial products

Shariah compliant. The second is the cost of accreditation, including certification and auditing. We expect these costs to be reflected together in the accounting entries within their operating costs.

Historically, the Islamic banking system in the Middle East has been supplanted by foreign banks that have increasingly modern and efficient banking products that, through diversified portfolios and financial instruments such as derivatives and credit default swaps, allowed for greater access to credit, usually at lower total risk. However, since the 1940s when the concept of distinctly Islamic finance emerged, the Islamic finance industry has developed Shariah compliant versions of almost all conventional financial products, including traditional banking (deposits and loans), asset-backed bonds, insurance, credit cards, mutual funds, stock indexes, mortgages and microfinance. Islamic finance “refers to a class of financial transactions that are ostensibly free of interest and compatible with Islamic teachings” (Kuran, 2018).

The first modern Islamic financial product to be conceived was the system of Profit and Loss Sharing (PLS), though it was not widely used until the 1970s. In the PLS model, bank depositors earn a share of the profits that a bank earns on its investments, rather than a predetermined interest rate provided by a conventional bank. This approach is analogous to an investment in a conventional western fund, where investors share in the returns of the fund, but this comes with the investor absorbing the risk associated with future performance.

Islamic banking has spread globally since 1975 (Khan, 2008) and in 2016, Islamic finance was estimated to represent \$2 trillion in financial assets, or 1 percent of the total \$200 trillion global financial assets. Muslims account for 24 percent of the global population and the 57 Muslim-majority countries that comprise the Organization of Islamic Cooperation (OIC)

account for 14.5 percent of global GDP (World Bank, 2016). Comparing the share of global GDP to the level of Islamic financial assets shows that only a small percent of Muslims' funds are invested in Islamic finance. The growth in Islamic financial assets is also expanding beyond Muslim majority countries. Of an estimated 300 Islamic banks and 250 Islamic mutual funds worldwide, there are now approximately 25 Islamic financial institutions in the United States. (CNBC, 2017)

Any financial institution looking to offer Islamic products must seek guidance from a Shariah Supervisory Board (SSB) whose job it is to review, direct and supervise the operations of the financial institution to ensure compliance with Shariah law. The SSB is an essential component of an Islamic bank and has fiduciary responsibilities towards the institution's stakeholders. These Shariah councils will typically consist of a group of three or more scholars who have deep knowledge of both Islamic law as well as modern financial theory.

The decision-making process behind who serves on the SSB varies around the world. For example, in Indonesia the National Sharia Council - Indonesian Ulema Council (DSN-MUI) recruits and allocates the Shariah scholars for each SSB. In other countries minimal regulation exists so a more practical approach is adopted - some countries do not have as many scholars available therefore can not afford to be as stringent in their selection. These experts understand how contracts work in Islam and what are acceptable and unacceptable practices. They also have the authority to issue Fatwas, legal rulings on Islamic law, regarding the products and practices employed by banks or financial institution.

With the assistance of these experts a bank's products are made Shariah compliant, although the process itself is dependent on the kind of financial product being assessed. As the

SSB is one of the most important governance mechanisms of Islamic financial institutions, there are a number of organizations that help maintain and promote Shariah standards and issue guidelines for SSBs like the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and Islamic Financial Services Board(IFSB). However, in practice, the role of Shariah boards vary significantly from one country to another (Abdullah, 2012).

In theory, Shariah restrictions should make Islamic banks less efficient in the market than conventional banks that do not face investment restrictions and higher transaction costs. However, some research has shown that Islamic banks manufacture their PLS portfolio so that the returns (paid to customers) of Islamic banks are statistically indistinguishable from the interest rates returned by conventional banks (Kuran, 2018). However, the cost of this “manufacturing” must be assumed by the bank’s shareholders through lower profitability, or the bank’s customers through either lower returns on investments, higher cost of loans, or higher fees and commissions.

The attraction of an Islamic bank is its compliance with Islamic law, which makes it an appealing alternative for pious Muslims. Based on interviews conducted in the Middle East and North Africa, Demirgüç-Kunt, Klapper, and Randall (2013) found that up to 45 percent of Islamic respondents would choose an Islamic banking product over an otherwise identical conventional alternative even if it required a cost equal to an equivalent additional interest rate of 5 percent. However, only 2 percent of respondents currently use Islamic finance. Kuran suggests that ignorance about Islamic financial opportunities may account for a significant part of this difference. It may also be true that people’s survey responses do not align with their actions. Regardless of the ultimate explanations for the difference, it is understandable why Islamic

respondents would be inclined to claim they would use Islamic banking products even if they came with an extra charge. Although it seems there would also to an upper limit to this statement for most individuals.

Across the Middle East and other parts of the world, consumers face a decision about whether to use an Islamic bank or not. This study provides a comprehensive review of existing literature surrounding the comparison of Islamic and conventional banks and the determinants of a bank's profitability, outlines the data and methodology used in our study and then explores how the Islamicity of a bank affects the ultimate Return on Average Assets (ROAA) of the bank. The most significant conclusion that this paper is able to draw is that purely Islamic banks suffer from a consistently lower expected profitability than their conventional counterparts globally.

II. Literature Review

The literature review is divided into two parts. The first part looks specifically about what has been studied regarding the comparison between Islamic and Conventional banks and the second part looks more generally about banking theory and the more general factors that influence profitability.

1. Literature on Islamic vs. Conventional Banks

Since the 2008 global financial crisis, researchers have written extensively on the risks posed by conventional banking and financial models that they have deemed responsible for the recession. They argue that banks facilitated, among other things, extensive investor risk-taking and issuance of unfeasible debt (Bernanke, 2010; Fidrmuc et al. 2015; Horvath and Weil, 2015).

A number of Islamic scholars claimed pre-, but more increasingly post-recession, that several features of the Islamic banking profit sharing contracts are superior to traditional bank debt issuance because of the higher stability created through sharing risk (Ebrahim and Safadi, 1995). But, Abedifar et al. (2015) note that it was only from the early 2000s that the scholarship on Islamic finance shifted its focus towards quantitative studies. This focus has in turn evolved from investigations into the comparative efficiency, nature of production technologies, and performance features to studies that specifically investigate profit and loss-sharing (PLS) behaviour, competition and comparative risks. Abedifar et al. (2015) and Kuran (2018) both conclude that there remains a lack of consensus in the literature about the relative worth of Islamic banks compared to conventional banks.

According to Jawadi et al. (2015), the principles of Shariah alter the banking model in a number of respects: the banks and their customers notionally become partners in any venture; investments are not optimised because of a number of factors including: religious constraints; a social and development focus encourages value creation from a pluralist perspective; greater importance is placed on tangible assets; and the development of specific Islamic banking services & products, etc. These features should mean that Islamic banks have a lower debt-to-equity ratio than conventional banks because they should have a higher proportion of equity on their balance sheets. This means they can more effectively control and reduce the risk of invested capital losses (Protomo and Ismail, 2006).

As discussed, many recent comparative studies between Islamic and conventional banks relate to the financial crisis. Studies of performance during the financial crisis, particularly related to volatility and stability, are relevant because they identify the differences between

Islamic and conventional banks. By accounting for these factors in our model, we expect the remaining explanatory variable between the two types of banks will be the Islamic piety of their stakeholders.

Beck, Demirgüç-Kunt, and Merrouche (2012) found that Islamic banks are less cost effective and that they performed better during the financial crisis. A hypothesis offered by Abedifar, Molyneux and Tarazi (2013) is that Islamic banks are better capitalised than conventional banks, have less risky lending and investment practices and hold higher reserves. Saupan et al. (2017) argued in support of this idea, using neural networks to demonstrate that likelihood of financial distress for a firm is linked with its levels of credit risk and not with its efficiency ratio. Boumediene and Caby (2009) demonstrate that conventional banks had far greater volatility throughout the recession which leads them to conclude that the structure of Islamic banks made them far more immune to the subprime crisis and more broadly that they are subject to different risks than conventional banks.

The apparent equivalence between Islamic banks and conventional banks is reinforced by Jawadi et al. (2015), who found that Islamic banks are more like competitors to the conventional market than providers of an alternative banking system. A number of studies (Aggarwal and Yousef, 2000; Chong and Lui, 2009; Khan, 2010; Pepinsky, 2013; Abedifar et al., 2015) that specifically analyze the country level difference between Islamic and conventional finance support Jawadi et al. in concluding that the difference in performance is symbolic rather than functional.

That is, while Islamic banks claim to offer innovative and shariah compliant products, the charges they impose on their counter product to traditional loans end up being indistinguishable

in a practical sense from regular interest (Kuran, 2004; Çevik and Charap, 2015). Moreover, various studies indicate that the interest rates of Islamic banks match those of conventional banks (Chong and Liu, 2009; Çevik and Charap, 2015). Therefore, it seems that, while a lot is made of the marketing and Shariah-compliant mechanism, returns are deliberately equivalent. The comparison El-Gamal (2008) offers to explain the nature of this process is to take the equation “ $1+1=2$ ” and write it as “ $(-0.7 + 1.7)^2 + (3 \div 3) = (4)^{1/2}$ ”.

Comparisons between conventional and Islamic banks go beyond demonstrating equivalence and make the stronger claim that Islamic banks incur additional costs constructing the complex banking products and disguising the loopholes used to make a conventional banking product Sharia compliant. Some studies claim that these costs are passed on to the consumers (Çokgezen & Kuran, 2015; El-Gamal, 2008). While El-Gamal’s analogy demonstrates the obfuscation of methodology, existing literature doesn’t demonstrate these explicit costs and where they are levied.

2. Literature on measures of bank profitability

A number of studies, (Miller & Noulas, 1997; Golin, 2001; Athanasoglou et al., 2005; Athanasoglou et al., 2006; Alper & Anbar, 2011; Ganić et al., 2015; Linh, Nguyen Thi My and Bui Ngoc Toan, 2015) utilise either Return on Average Assets (ROAA) or Return on Average Equity (ROAE), or both as metrics for measuring the profitability of a bank.

ROAA reflects a banks capability to generate profits from its assets under management. ROAA captures the net relative profit generated by the bank total assets and is considered a better measure of management efficiency (Petria et al., 2015). An analysis of ROAE disregards

the risks associated with high leverage. For this reason, in their analysis of determinants of profitability for Greek banks, Athanasoglou et al. (2005) employ ROAA as the key ratio for the evaluation of bank profitability.

Measuring the impact of Islamicity on profitability requires accounting for other conditions that influence profitability. Athanasoglou et al., (2006) offer one of the most comprehensive treatment factors that influence ROAA. In their study of bank profitability in the South Eastern European region they find the following bank specific independent variables have a statistically significant impact on ROAA: capital (equity/assets), liquidity (loans/total assets) credit risk (loan loss provisions/loans), productivity growth (rate of change in inflation-adjusted gross total revenue/personnel), cost of operations (costs of operations/assets) and size (log of real assets and log of real assets squared). In our dataset we don't have the personnel data for a sufficient number of the banks in our sample. However, we will be examining the other variables. Moreover, this study notes that a better measure of liquidity is the liquid assets to total assets ratio which they didn't have the data for, but we do in our study. As such we will be using this measure instead.

In regards to the question of bank size, unsurprisingly all studies attempting to explain bank profitability identify bank size as a highly influential factor. However, the direction of the effect is not clear. A larger bank may benefit from economies of scale. As size increases, the average cost decreases, thus promoting its performance. However, at the same time larger institutions are often mired by rigidities and bureaucracy that decrease their effectiveness and hence profitability. Due to the uncertainty of the effect of a bank's growing size on profitability, the size-profitability relationship may be expected to be non-linear (Athanasoglou et al., 2006).

To capture the relationship between a bank's size and its profitability we take the natural logarithm of total bank assets as a proxy for bank size. Additionally, we will take the log of total bank assets squared ($(\log(\text{size}))^2$) to further control for the idea that returns associated with bank size are not linear.

Cost to income ratio is a commonly used metric for operational efficiency that would affect a bank's profitability. If operating costs are high relative to the bank's income, one would expect a lower profitability from the bank and thus overall a negative relationship is expected (Petria et al., 2015). Pasiouras and Kosmidou (2007), in a survey comparing domestic and foreign banks in the EU, emphasize cost efficiency, measured by a ratio of cost to income, as a factor that influences profitability. They found that this ratio impacted both foreign and domestic banks negatively. This seems self-explanatory, for as cost increases relative to income you would expect the bank to be less profitable.

In their research, Demirgüç-Kunt and Huizinga (1998) used bank level data for 80 countries between 1988 and 1995 to examine how banks' characteristics and the overall banking environment affected the functioning of banks. Their research showed a positive relationship between the ratio of banks' loans to total assets and their profitability. Abreu and Mendes (2002), who examined banks in several western European countries, found that the loans-to-assets ratio, as a proxy for risk, has a positive impact on the profitability of a bank.

However, the findings of Košak and Čok (2008) who also considered the impact of a bank's liquidity ratio (loans/assets) and found that this ratio was negatively related to banks' profitability. That is, as banks give out another dollar relative to their underlying assets they become less liquid. As has been discussed above, Islamic banks theoretically have higher

liquidity, which negatively impacts their profitability. The reason for the discrepancy in these findings could rest in the nature of the bank giving out the loans.

The discrepancy in these findings mean that we have instead elected to use a measure of liquid assets to total assets along the lines of the study conducted by Athanasoglou et al. (2006) which attempts to more specifically capture the state of a bank's liquidity. That is, if a bank is able to better monetize profits from their loans then the question of their ultimate liquidity is less of a concern. On the reverse side, liquid assets generate lower returns, which means lower profitability for the bank. Additionally, to capture the full effect of the impact of liquidity we also regress the loan to deposit ratio as a proxy for liquidity risk as is done by Petrua et al. (2015).

III. Data and Methodology

The data source in the analysis conducted is the Bank Focus Data Set produced by the Bureau van Dijk (BvD). BvD is a subsidiary of Moody's, the bond credit rating company, and is a major publisher of business information. The database provides standardized financial information for banks from 2010-2018. BvD has standardized the financial statements by making the reporting compliant with the global standard format that includes 57 line items and 38 key ratios. Information is provided for over 44,000 banks. It has also standardized the currencies to be in USD.

BvD does not code banks as conventional, Islamic or Window (a conventional bank that offers one or more Shariah compliant products). They give some indication relative to whether a bank is an Islamic bank, and while we found that every bank on this list did fall into our ultimate

classification of Islamic banks, the BvD list was not comprehensive. They also provided no information on the Window banks.

As such, in order to classify the banks, the websites of the banking boards of each country, the websites of banks themselves, as well as the websites of the bodies for Shariah compliance were consulted to identify which banks offer some kind of Islamic banking services. While it was relatively easy to find information on whether a bank is Islamic it is more difficult to find whether a bank falls into the “Window” category. Whenever the compliance of a bank was deemed to be clearly compliant with Shariah to some extent but unclear as to what degree, the default was to code the bank as “Window”. That is, if a bank advertised the offering of Islamic banking services but if they offered non-Shariah compliant products or the details of their SSB weren’t made clear, then the bank would receive a Window classification.

Ultimately the data is an unbalanced panel dataset and with observations between 2010-2018 for over 77 countries accounting for 36,564 banks of which are 35,980 conventional, 377 are Islamic and 207 are Window. Overall we have 210,123 observations across all countries, banks and years.

Beyond simply coding the banks, it was also necessary to correct for heteroskedasticity which was accomplished by using robust standard errors. It was also the case that for a few thousand observations the statement units needed to be corrected because they were stated in millions rather than thousands. However, this was simply an issue of multiplying the data accordingly.

IV. Empirical Formulation:

Our aim is to determine the difference in profitability for Islamic and conventional banks in different countries. To this end, our model includes a country variable, to account for differences in macroeconomic conditions between countries, an Islamic variable, to account for worldwide effects of being an Islamic bank, and an interaction term that allows for the aforementioned differences in Islamicity between countries. It is also necessary to control for the other factors that influence ROAA. As determined by the literature review, the variables of interest, including those described above, are summarized in Table 1.

Table 1: Independent Variables of Interest

Variable	Code	Description	Expected Direction of Impact
Bank Size	LOGSIZE	The log of the bank's total assets in USD. This removes the impact of bank size, such as efficiencies of scale, on the return on average assets of a bank.	Positive
Bank Size	(LOGSIZE) ²	The log of the square of bank's total assets in USD. This attempts to capture the effect of bank returns not being linear.	Negative
Cost to Income Ratio	CTI	Provides information on how efficient management is in terms of generating revenue relative to expenses. Expect to a higher cost-income ratios to have a negative effect on bank profitability.	Negative

Equity to Total Assets Ratio	ETA	Captures the amount of the bank that is owned by investors. The higher the ratio the less leveraged a bank is.	Positive
Loan Loss Provisions to Total Loans	LLP	Captures the measures a bank takes to reduce its risk exposure relative to the loans it gives out.	Negative
Operating Expenses to Total Assets Ratio	OPTA	This ratio represents the best proxy for the average cost of non-financial inputs to banks which represent a key determinant of profitability.	Negative
Liquid Assets to Total Assets Ratio	LATA	Serves as a measure for the liquidity of the bank. Liquidity is important because properly structured liquidity increases efficiency of operations and hence profitability (and it can negatively influences profitability if the reverse is true.)	Positive
Loans to Deposit Ratio	LD	Alternative measure of liquidity that focuses more narrowing on the two principle operations of a bank that attempts to capture how well a bank is able to fulfil their debt obligations.	Negative
Islamic Bank Dummy Variable	ISLAMIC BANK	Dummy variable distinguishing between Islamic and conventional banks where: 0 = Conventional banks 1 = Islamic banks 2 = Window banks	Negative

Window Bank Dummy Variable	WINDOW BANK	Dummy variable distinguishing between Window and conventional banks where: 0 = Conventional banks 1 = Window banks	Negative
Islamic Bank and Country Interaction	ISLAMIC BANK COUNTRY	This variable allows for the fact that the impact of bank's Islamicity is different between countries beyond the simple impact of a country on ROAA.	Positive for Window Negative for Islamic
Country	COUNTRY	This is a fixed variable that will account for difference that can be explained purely by the banking environment between countries (including macroeconomic effects).	Mixed
Year	YEAR	This is a fixed variable that will account for difference that can be explained purely by the banking environment between years.	Mixed

General Model:

$$ROAA_{i,t} = \beta_0 + \beta_1 ISLAMIC_i + \beta_2 ISLAMCOUNTRY_i + \sum_{m=3}^{10} \beta_m X_{it}^m + \beta_{11} YEAR_i + \beta_{12} COUNTRY_t + \varepsilon_{it}$$

The dependent variable is the profitability (ROAA) of bank i , at time t , where t is a year between 2010 and 2018. c is a constant term, X_{it} is a vector of the seven explanatory variables in the table above, and ε_{it} is the residual error term. YEAR and COUNTRY are the fixed country and year effects respectively. As above, "ISLAMIC" is a dummy variable equal to 1 for banks that are Islamic, 0 otherwise. "WINDOW" is a dummy variable equal to 1 for Window banks, 0

otherwise. Finally, “ISLAMCOUNTRY” is an interaction term between the Islamic Bank dummy variable and country. The ensuing examination will primarily focus on evaluating the specific influence of the coefficients attached to the Islamic dummy variables.

The null hypothesis is that being Islamic or a Window bank has no effect on the expected profitability of a specific bank. The alternative hypothesis is there is a statistically significant difference in the profitability of an Islamic or Window bank associated with its Islamic observances.

V. Discussion:

The major finding of this paper is that despite changes in the model specifications the purely Islamic banks experience a lower expected profitability even when controlling for the major factors that are likely to have substantial impact.

Table 2: Summary Statistics for 36,564 Banks from 2010 - 2018 in 76 Countries

	<i>Conventional</i>		<i>Islamic</i>		<i>Window</i>	
	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Total Assets	1.63E+09	4.17E+10	6.62E+08	6.41E+09	2.69E+09	1.10E+10
Return on Average Asset (ROAA)	1.47	7.85	.94	3.38	1.42	2.84
Cost to Income Ratio (CTI)	63.48	42.72	63.90	59.78	51.68	37.01
Equity to Total Asset Ratio (ETA)	24.95	38.35	17.84	20.90	14.95	13.97
Loan Loss Provisions (LLP)	1.64	8.18	2.79	9.79	.58	3.34
Operating Expenses to Total Asset Ratio (OPTA)	8.21	16.86	23.18	8.01	8.66	83.45
Liquid Assets to Total Assets Ratio (LATA)	18.06	19.66	25.63	17.92	24.47	19.19
Loans to Deposit Ratio (LD)	73.14	70.24	81.70	75.67	77.14	54.05
logsize	22.21	2.91	19.26	3.55	23.39	3.20
(logsize) ²	501.97	134.44	383.50	154.18	557.40	156.65

If we start by examining the summary statistics (Table 2) it may initially be surprising that the banks classified as Window banks have the highest average total assets measured in dollars. Their average assets sit at \$2.69 billion dollars which is just under twice the average total

assets of conventional banks at \$1.63 billion dollars which in turn are almost double the average total assets of Islamic banks at \$619 million. However, it makes sense that banks deciding to offer Islamic Window services are in fact the largest because only the largest global banks are likely to have the resources or deem it feasible, to venture into the Islamic banking market. These regressions have been run to control for the size of the banks. Still, these differences are noted here to establish the *prima facie* differences between the conventional, Islamic and window banks.

It is also not surprising that across a number of the metrics, the behavior of the Window banks closely mirrors that of the conventional rather than the Islamic banks. Most notably for the purposes of the subsequent research is the ROAA for the three bank classifications. The average ROAA is 1.47%, 0.94%, and 1.42% respectively for conventional, Islamic and Window banks.

Of potentially even greater interest are the summary statistics regarding the operating expenses for each of the bank classifications. The operating expenses of Islamic banks relative to their total assets are almost 3 times greater, at 23.18% than both conventional and window banks which are almost equivalent at 8.21% and 8.66% respectively. These findings support the contentions of El-Gamal (2006) and Kuran (2004), mentioned earlier in this paper, in terms of the higher costs associated with the provision of Islamic banking products compared to conventional bank offerings.

The immediate observable difference may draw into question the validity of our model, because the proposal was to use operating expenses as one of our independent variables. However the literature has us believing that the nature of operating expenses is not only linked to ROAA but also directly to the Islamic character of the bank. As such by using this variable as a

control we may in fact be minimizing the apparent impact of Islamic association on the profitability of the bank. That is, later results demonstrate that the Islamic association is negative and significant but the magnitude of this observations may be even greater. Moreover in testing the banking performance variables for correlation, the highest correlation existed between CTI and ETA at -0.45. The variables suspected of being highly correlated were LATA and LD, both being measures of liquidity, however their correlation was only -0.034.

Table 3: ROAA vs. ROAE

Regression of Banking Variables and Islamic Designation on ROAA and ROAE				
	(1) ROAA	(2) ROAE	(3) ROAA	(4) ROAE
Islamic			-0.212** (0.101)	-0.0635 (0.537)
Window			0.177 (0.114)	1.312** (0.568)
CTI	-0.0240*** (0.00278)	-0.123*** (0.00567)	-0.0240*** (0.00278)	-0.122*** (0.00568)
ETA	0.0504*** (0.00805)	-0.0316*** (0.00833)	0.0504*** (0.00805)	-0.0316*** (0.00833)
LLP	-0.0000462** (0.0000203)	-0.0000385 (0.0000558)	-0.0000459** (0.0000203)	-0.0000384 (0.0000558)
OPTA	-0.0000401*** (0.00000639)	-0.000239*** (0.00000465)	-0.0000400*** (0.00000638)	-0.000239*** (0.00000466)
LATA	0.00620** (0.00297)	0.0197*** (0.00563)	0.00618** (0.00297)	0.0196*** (0.00563)
LD	-0.00139 (0.000860)	0.00348** (0.00141)	-0.00139 (0.000860)	0.00349** (0.00141)
logsize	0.986*** (0.186)	2.613*** (0.264)	0.988*** (0.186)	2.623*** (0.264)
logsize2	-0.0213*** (0.00391)	-0.0475*** (0.00589)	-0.0213*** (0.00391)	-0.0478*** (0.00590)
Country FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Islamic Country	no	no	no	no
Window Country	no	no	no	no
_cons	-10.19*** (2.464)	-23.40*** (3.292)	-10.20*** (2.466)	-23.48*** (3.294)
N	210123	210123	210123	210123
adj. R-sq	0.108	0.053	0.108	0.053

Standard errors in parentheses
* p<0.1 ** p<0.05 *** p<0.01

Defending the specification of the model, Table 3 shows the regression of all the independent variables on ROAA and ROAE, first without the inclusion of the dummy Islamic variable and then with it. While both ratios are commonly used as a metric for profitability, when compared to ROAE, ROAA takes into account the risks derived from leverage. With or without the inclusion of the dummy variable, the coefficients of the variables do not fluctuate greatly against ROAA or ROAE. However there are significant differences in results depending on the choice of dependent variable, ROAA or ROAE. When examining the coefficients in relation to the anticipated signs from Table 1, all of the signs match for ROAA while the signs for ETA and LD regressed against ROAE are opposite to what was anticipated.

The most notable difference rest in the significance and the signs of the dummy variables. When regressed against ROAA Islamic is negative and significant while Window was positive and insignificant. Against ROAE the signs remained the same but the significance flipped. Ultimately, ROAA was selected because it is a better metric for measuring how efficiently management uses its assets to generate a profit. As Islamic banks turn conventional financial products to become Shariah compliant, there would theoretically be inefficiencies involved with that process relative to conventional banks, thus making ROAA the more important metric to examine. Additionally, it also matched the findings of previous studies (particularly Athanasoglou et al., 2006) in terms of the expected directional impact¹ of each of the independent variables against ROAA and also tends to be the more commonly used metric in other bank-profitability literature. From these first four regressions we are seeing an immediate negative relationship between the Islamic character of a bank and its expected profitability.

¹ The expected impacts are summarized earlier in Table 1.

Table 4: ROAA Full Islamic Dummy Variables

Regression of Islamic and Window Country Interaction on ROAA			
	(3)	(6)	(7)
	ROAA	ROAA	ROAA
	BASE	BASE	BASE
Islamic	-0.212** (0.101)	-0.667** (0.303)	-0.667** (0.303)
Window	0.177 (0.114)	0.216* (0.116)	-3.195*** (0.391)
CTI	-0.0240*** (0.00278)	-0.0239*** (0.00280)	-0.0239*** (0.00281)
ETA	0.0504*** (0.00805)	0.0504*** (0.00808)	0.0505*** (0.00809)
LLP	-0.0000459** (0.0000203)	-0.0000433** (0.0000200)	-0.0000433** (0.0000200)
OPTA	-0.0000400*** (0.00000638)	-0.0000400*** (0.00000636)	-0.0000399*** (0.00000637)
LATA	0.00618** (0.00297)	0.00620** (0.00298)	0.00621** (0.00298)
LD	-0.00139 (0.000860)	-0.00136 (0.000865)	-0.00137 (0.000866)
logsize	0.988*** (0.186)	0.989*** (0.187)	0.996*** (0.188)
logsize2	-0.0213*** (0.00391)	-0.0214*** (0.00392)	-0.0215*** (0.00395)
Country FE	yes	yes	yes
Year FE	yes	yes	yes
Islamic Country	no	yes	yes
Window Country	no	no	yes
_cons	-10.20*** (2.466)	-10.22*** (2.473)	-10.28*** (2.480)
N	210123	210123	210123
adj. R-sq	0.108	0.108	0.108
Standard errors in parentheses			
* p<0.1 ** p<0.05 *** p<0.01			

The impact of the Islamic characteristics stands at -0.212%. To put this into context, as has already been mentioned, the average ROAA for a purely Islamic bank is 0.94%. As such the decline by 0.212 is equivalent to 22.6% of the expected ROAA of a specific Islamic bank.

Comparing Table 3 and 4, we narrow our focus to examine just ROAA and included ISLAMCOUNTRY interactional variable. Looking at the results of Table 4 the impact of being an Islamic bank gets quite a bit larger with the inclusion of the ISLAMCOUNTRY interactional variable. The independent impact on Islamic banks when other effects have been controlled for extends from -0.212% to -0.667%. A decline in expected ROAA of 0.667% represents 71.0% of expected ROAA. Moreover adding 0.667% to the expected ROAA of Islamic banks would give them a ROAA of 1.61% which would be higher than the expected ROAA of conventional and Window banks.

Adding in the Islamic interactional variable also makes the Window bank coefficient significant at the 10% level while still leaving the other control variables relatively unchanged. Interestingly this also stands true for the coefficients attached to each of the country effects. Because of this the aggregate country results for regression (7) have been included in Table 5a. and 5b.² The omitted variable in the general regression is the United States because they had the greatest number of the banking institutions and hence provided the most robust comparative pool. For each of the ISLAMCOUNTRY interactions the omitted variables are Yemen and Zambia for Islamic and Window respectively.

The way to interpret the results presented between Tables 4 and 5 is that any bank will get the coefficients attached to the independent variables and the base country coefficient³. If a bank is Islamic, they also lose the additional expected ROAA from the initial dummy variable and gain or lose the dummy variable attached with being an Islamic bank in their specific country. For example an Islamic bank in Lebanon would lose 2.155% and another 0.667%. For

² The fixed year effects are also included in Table 6 in the Appendix.

³ Along with the accompanying year dummy variables which universally increase and are all significant across 2010-2018 but are not in the presentation of results.

its specific association with Islam. The result of the addition of these figures is the aggregate impact of Islamic association on a particular bank.

At this stage there seem to be two key potential criticisms that need addressing. The first is that the effect on window banks seems to fluctuate greatly not only in terms of magnitude but also in terms of sign. The second is that there could be a positive benefit to being an Islamic bank in a majority Muslim country that is being clouded by the current scope of the data that is being surveyed.

Table 7: Removal of Window Banks

Regression run without Window Banks				
	(1)	(8)	(9)	(10)
	ROAA	ROAA	ROAA	ROAA
	BASE	BASE	BASE	BASE
Islamic			-0.194*	-0.667**
			(0.104)	(0.303)
CTI	-0.0240***	-0.0240***	-0.0240***	-0.0239***
	(0.00278)	(0.00280)	(0.00280)	(0.00282)
ETA	0.0504***	0.0504***	0.0504***	0.0504***
	(0.00805)	(0.00807)	(0.00807)	(0.00810)
LLP	-0.0000462**	-0.0000462**	-0.0000459**	-0.0000433**
	(0.0000203)	(0.0000203)	(0.0000203)	(0.0000200)
OPTA	-0.0000401***	-0.0000399***	-0.0000399***	-0.0000399***
	(0.00000639)	(0.00000640)	(0.00000639)	(0.00000637)
LATA	0.00620**	0.00622**	0.00622**	0.00623**
	(0.00297)	(0.00298)	(0.00298)	(0.00299)
LD	-0.00139	-0.00140	-0.00140	-0.00137
	(0.000860)	(0.000862)	(0.000862)	(0.000867)
logsize	0.986***	0.996***	0.996***	0.998***
	(0.186)	(0.187)	(0.187)	(0.188)
logsize2	-0.0213***	-0.0215***	-0.0215***	-0.0216***
	(0.00391)	(0.00395)	(0.00395)	(0.00396)
Country FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Islamic Country	no	no	no	yes
Window Country	no	no	no	no
_cons	-10.19***	-10.28***	-10.28***	-10.30***
	(2.464)	(2.476)	(2.476)	(2.483)
N	210123	208944	208944	208944
adj. R-sq	0.108	0.108	0.108	0.108

Standard errors in parentheses
* p<0.1 ** p<0.05 *** p<0.01

The first concern is addressed by Table 7 which runs the same regression as before except the window banks have been removed from the data. Other than lowering the number of observations there is no notable impact on the impact that is reported for the purely Islamic banks relative to this change. As such it seems that the effect on Islamic banks is meaningfully independent of the inclusion or exclusion of window banks from the sample.

Table 8: Muslims Majority Countries

Regression of banking variables and Islamic designation on ROAA in only Muslim Majority Countries				
	(11)	(12)	(13)	(14)
	ROAA	ROAA	ROAA	ROAA
	BASE	BASE	BASE	BASE
Islamic		-0.0595 (0.122)	-0.650** (0.293)	-0.651** (0.295)
Window		0.330** (0.136)	0.367*** (0.139)	7.933 (5.278)
CTI	-0.0237*** (0.00301)	-0.0237*** (0.00301)	-0.0233*** (0.00309)	-0.0232*** (0.00310)
ETA	0.0555*** (0.0101)	0.0556*** (0.0102)	0.0560*** (0.0103)	0.0561*** (0.0103)
LLP	-0.00138*** (0.000298)	-0.00138*** (0.000297)	-0.00138*** (0.000298)	-0.00138*** (0.000299)
OPTA	-0.0000875 (0.000160)	-0.0000868 (0.000161)	-0.0000707 (0.000168)	-0.0000484 (0.000173)
LATA	-0.00314 (0.00555)	-0.00331 (0.00557)	-0.00290 (0.00555)	-0.00300 (0.00558)
LD	0.00155 (0.00219)	0.00156 (0.00219)	0.00170 (0.00221)	0.00160 (0.00223)
logsize	2.414*** (0.884)	2.444*** (0.887)	2.501*** (0.900)	2.816*** (0.993)
logsize2	-0.0490*** (0.0184)	-0.0499*** (0.0185)	-0.0512*** (0.0188)	-0.0586*** (0.0210)
Country FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Islamic Country	no	no	yes	yes
Window Country	no	no	no	yes
_cons	-26.13** (10.23)	-26.48*** (10.26)	-27.17*** (10.38)	-30.42*** (11.33)
N	9382	9382	9382	9382
adj. R-sq	0.083	0.083	0.082	0.082

Standard errors in parentheses
* p<0.1 ** p<0.05 *** p<0.01

The second concern is addressed in Table 8 which restricts observations to only those in Muslim majority countries⁴. The hypothesis that Islamic banks would do better in Muslims majority countries is not supported by the regressions. Initially the coefficient on window is significant and positive (0.330%) while the coefficient for Islam is negative and insignificant. As the country interactional dummy variables are added into the regression the picture does seem to get better for the specific Islamic character of a bank in particular countries.

That is, while the specific coefficient for Islamic remains negative it starts to become offset when you look at many of the specific country interactional coefficients the impact of Islam begins to be positive. However, while this begins to look positive the negative coefficient of the countries in the BASE regression mean that even though being Islamic in those markets gives a positive impact, these are not necessarily markets that you actually want to be entering into.

It seems that there are two additional questions of interest when analyzing these results and they are (assuming the motive for opening a bank is simply to derive profit):

1. Should someone consider starting an Islamic bank?
2. Should an otherwise conventional bank expand their offerings to include Shariah compliant products?

From the results of this investigation the answer to the first question is no and the answer to the second question is that may be worthy of consideration.

To address the second question first, a potential explanation for the inconsistency of findings is that from the summary statistics it is clear that we are dealing with a different breed of

⁴ Muslim majority countries are defined according to the Pew Research Centre study in 2010 and were classified as Muslim majority if their population was more than 50% Muslim at the time of survey. Ultimately 36 countries were left in the data with 9382 observations.

bank. What we are doing is artificially equating any difference in the bank that is not controlled from by the traditional explanatory variables for profitability along with fixed effects for year and country to being explainable by its Islamic characteristics. While this seems experimentally sound to a point for Islamic banks, the Islamic divisions of these larger banks may be not large enough in many cases to attribute any differences specifically to them.

Regarding the first question, one reason for negative impact of the Islamic association on Islamic banks compared to Window banks could rest on the increased certification necessary for Islamic banking as well as the fact that the predominant markets for these products often remain classed as developing in their dynamics. As was introduced at the beginning of this discussion the Islamic banks also remain significantly smaller than their conventional of Window counterparts.

VI. Conclusion:

These findings seem to depart from existing literature in concluding the ultimate significance of the Islamic character or otherwise of a bank in terms impacting the return on average assets that a bank achieves. That is, there does appear to be a significant difference in expected bank profitability relative to the banks exclusive or selective provision of Islamic banking products.

The ultimate answer to these questions may rest in what you think the strength of expansion in the Muslim world will be in terms of the size of its resulting market opportunities. That is, it may be worth taking the initial hit to ROAA early if you believe the expense of Shariah compliance is one that does not increase with an increase in the size of the bank.

Assuming this to be the case, as the Islamic market grows and the general strength of developing economies expands then the market opportunity may be enormous. The same seems as though it would also apply (and may indeed already be applying) to Window banks, who take the initial hit of Shariah compliance and then are able to deploy their far more extensive resources towards making their Islamic banking products profitable.

We see three possible avenues of interest for future research. First, one may consider doing a deeper dive into the specific bank characteristics of the window banks. The summary statistics for the window bank's appear to be more closely equivalent to conventional banks, but cause the interesting result observed in this paper when considered with the Islamic banks. Secondly, it would also be interesting to do a deeper dive into the differences between conventional and window banks to attempt to isolate more of the differences that may be driving the results found in this investigation. Window banks occupy this hybrid space between conventional and Islamic banks. Realistically different window banks exist at different points on the Islamic-conventional spectrum and parsing through individual characteristics could lead to fascinating findings. Lastly, banks are not the only Islamic institutions that are subjected to Shariah law. Similar to banking products, insurance products also need to be Shariah compliant. It would be fascinating to compare and examine the profitability of Islamic insurance companies with that of conventional insurance companies.

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APPENDIXES:

Table 5a: Country Effects

COUNTRY EFFECTS		(7)		
	ROAA			
	BASE	ISLAMIC	WINDOW	
USA	0 (.)	-1.043*** (0.498)		
AFGHANISTAN	-0.874*** (0.300)	0.751 (0.906)	3.408*** (0.543)	
ALBANIA	-1.640*** (0.224)		5.166*** (1.153)	
ALGERIA	-1.078*** (0.169)	1.038*** (0.378)	4.147*** (0.470)	
AUSTRALIA	-0.684*** (0.163)	0.505 (0.347)	3.334*** (0.424)	
AUSTRIA	-0.0433 (0.0595)		2.494*** (0.557)	
AZERBAIJAN	-2.784*** (0.601)	2.204*** (0.925)	-0.933 (3.406)	
BAHAMAS	-0.581*** (0.292)	-2.517*** (0.644)		
BAHRAIN	-2.531*** (0.654)	1.236 (0.819)	4.461*** (0.827)	
BANGLADESH	-0.896*** (0.0767)	1.252*** (0.450)	4.223*** (0.501)	
BOS. & HERZ.	-1.502*** (0.438)	1.487*** (0.549)		
BRUNEI	-3.398*** (0.845)	3.094*** (0.885)	5.891*** (0.948)	
INDONESIA	-0.179 (0.266)	0.967*** (0.412)	4.870*** (0.479)	
IRAQ	-2.782*** (0.374)	-0.329 (0.656)		
IRAN	0.418 (0.343)	0 (.)		
ITALY	-1.279*** (0.0586)		3.491*** (0.380)	
JAPAN	-0.225 (0.279)	0.0945 (0.435)	2.678*** (0.547)	
JORDAN	-2.029*** (0.463)	1.679*** (0.562)	4.221*** (0.635)	
KAZAKHSTAN	0.303 (1.118)		3.271*** (1.226)	
KENYA	0.279 (0.179)	0.131 (0.508)	3.075*** (0.603)	
KUWAIT	-2.471*** (0.349)	2.070*** (0.445)	4.881*** (0.571)	
KYRGYZSTAN	0.205 (0.204)	-5.791*** (0.511)	2.846*** (0.708)	
LEBANON	-0.406* (0.245)	-2.155*** (0.670)	2.373*** (0.483)	
LIBYA	-2.929*** (0.667)		3.858*** (0.787)	
PAPUA NEW GUINEA	4.179 (2.756)			
PHILIPPINES	-2.253*** (0.117)	-1.454*** (0.469)	2.700*** (0.476)	
POLAND	-0.563*** (0.0454)		3.202*** (0.393)	
QATAR	-1.523*** (0.299)	1.753*** (0.415)	4.036*** (0.538)	
RUSSIA	-1.372*** (0.132)		3.594*** (0.431)	
SAUDI ARABIA	-0.210 (0.269)	0.235 (0.600)	2.922*** (0.479)	
SENEGAL	-1.016*** (0.345)	1.474*** (0.432)	5.237*** (0.534)	
SINGAPORE	-1.592*** (0.205)	-4.796*** (1.672)	2.934*** (0.553)	
SOUTH AFRICA	0.348 (0.357)	-0.0811 (0.464)		
SRI LANKA	0.214* (0.102)	0.968 (1.495)		
SUDAN	1.099*** (0.373)	0.336 (0.512)	2.161*** (0.881)	
SWEDEN	-1.279*** (0.388)	1.022** (0.490)		

Table 5b: Country Effects Continued.

COUNTRY EFFECTS		(7)							
		ROAA							
		BASE	ISLAMIC						
		WINDOW	WINDOW						
BULGARIA	-1.369*** (0.262)	2.346*** (0.654)	MACAO	-1.401*** (0.118)	4.178*** (0.482)	SWITZERLAND	-0.909*** (0.0749)	0.323 (0.337)	3.812*** (0.583)
BURKINA FASO	-0.0848 (0.272)	3.258*** (0.484)	MALAYSIA	-1.001*** (0.139)	2.914*** (0.428)	SYRIA	0.690 (0.541)	2.678** (1.316)	2.978*** (1.014)
CANADA	-0.599*** (0.194)	2.357*** (0.566)	MALDIVES	0.812* (0.476)	-0.124 (0.589)	TAIWAN	-1.003*** (0.108)		3.123*** (0.397)
CHILE	0.330 (0.435)	1.235** (0.523)	MAURITANIA	-1.107*** (0.317)	0.919 (0.661)	THAILAND	-0.147 (0.174)	-2.688** (1.264)	
CHINA	-0.422*** (0.118)	1.954*** (0.390)	MAURITIUS	-0.424 (0.270)	-7.179*** (1.867)	TUNISIA	-0.829*** (0.0805)	0.0438 (0.384)	
CYPRUS	-1.819*** (0.368)	1.454*** (0.491)	MOROCCO	-0.592*** (0.0915)	2.841*** (0.416)	TURKEY	-0.342* (0.198)	-0.0814 (0.385)	3.563*** (0.438)
EGYPT	-0.959*** (0.320)	0.667 (0.482)	MOZAMBIQUE	-1.156** (0.504)	-27.60*** (4.503)	UGANDA	0.294 (0.389)		0.489 (0.708)
FIJI	-0.485* (0.279)	4.859*** (0.564)	NEPAL	0.588*** (0.187)	-1.266 (0.915)	UKRAINE	-3.413*** (0.291)		6.926*** (0.691)
FINLAND	-0.916*** (0.112)	3.038*** (0.442)	NEW ZEALAND	0.604 (2.943)	1.290 (2.968)	UAE	-0.932*** (0.282)	0.822** (0.404)	3.517*** (0.510)
FRANCE	-0.612*** (0.193)	-0.212 (0.709)	NIGER	-0.204 (0.241)	-1.814 (1.894)	UNITED KINGDOM	-1.010*** (0.302)	-0.653 (0.641)	2.462*** (0.535)
GEORGIA	-0.137 (0.389)	3.775** (1.649)	NIGERIA	-0.272 (0.223)	3.689*** (0.481)	UZBEKISTAN	1.040** (0.476)	1.894*** (0.601)	10.13** (5.365)
GERMANY	-0.526*** (0.0855)	-1.723 (1.277)	OMANI	-0.731* (0.441)	3.476*** (0.619)	YEMEN	-0.271 (0.237)	0 (.)	
GHANA	0.817*** (0.169)	5.123*** (0.717)	PAKISTAN	-0.712** (0.312)	-0.645 (1.349)	ZAMBIA	0.169 (0.274)		0 (.)
HONG KONG	-1.814*** (0.332)	3.414*** (0.475)	PALESTINE	-1.027*** (0.268)	1.239*** (0.409)				

Table 6: Fixed Year Effects

Fixed Year Effects			
	(3)	(6)	(7)
	ROAA	ROAA	ROAA
	BASE	BASE	BASE
2010	0 (.)	0 (.)	0 (.)
2011	0.869*** (0.0983)	0.867*** (0.0983)	0.867*** (0.0983)
2012	1.269*** (0.102)	1.268*** (0.102)	1.268*** (0.102)
2013	1.442*** (0.0886)	1.442*** (0.0886)	1.441*** (0.0886)
2014	1.527*** (0.0915)	1.528*** (0.0915)	1.527*** (0.0915)
2015	1.587*** (0.0889)	1.588*** (0.0889)	1.589*** (0.0889)
2016	1.510*** (0.0883)	1.510*** (0.0883)	1.511*** (0.0883)
2017	1.561*** (0.0896)	1.561*** (0.0896)	1.561*** (0.0897)
2018	2.097*** (0.246)	2.082*** (0.246)	2.081*** (0.247)

