

The Financial Performance of Islamic Microfinance Institutions

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1 INTRODUCTION

Microfinance Institutions (MFIs) provide financial services to poor families and microenterprises that have no access to commercial banks because the poor and microentrepreneurs usually ask for small loans and are lack of collateral (CASSELMAN et al., 2015). Enabling the poor to create their own income-generating businesses, MFIs have successfully alleviated poverty in most developing and newly industrialized countries Since the awarding of the Nobel Peace Prize to Mohammad Yunus, the founder of microfinance, MFIs have been recognized as an effective development tool and even as one of the main innovations in the past 25 years (HARTARSKA et al., 2013). The United Nations declared 2005 the International Year of Microcredit and included MFIs in the list of potential contributions to achieve the Millennium Development Goals of halving global poverty in 2015. Outreach by MFIs has grown rapidly, and the 2018 report of the Microcredit Summit reveals that MFIs have reached over 223 million borrowers.

However, MFIs face some difficulty in penetrating regions with substantial Muslim populations, since conventional microfinance is not compatible with the financial principles in Sharia (Islamic Law) (KARIM et al., 2008). A study conducted by the World Bank shows that over 30% of interviewed poor people from Jordan, Syria and Indonesia consider religious reasons the largest obstacle to microfinance. Consequently, a great demand for financing among the Muslim poor remains unmet. According to the records of the United Nations, Muslims accounted for one quarter of the world's population in 2010, and the majority live in low-income countries. Mohieldin et al. (2011) reveal that substantial numbers of microenterprise owners and low-income individuals interviewed in the Middle East and North Africa prefer Sharia-Compliant financial products, even if they are more expensive. Similarly, a survey conducted in Pakistan by the Alhuda Centre of Islamic Banking and Finance documents that 99% of respondents favour financial products that adhere to Islamic principles. This high demand underscores the need to offer religiously suitable products to the underserved Muslim poor, leading to the emergence of Islamic microfinance as a new market niche (CAUDILL et al., 2009; STRØM et al., 2014; BLANCO-OLIVER et al., 2016).

Despite the high demand for and increasing popularity of Islamic Microfinance Institutions (Islamic MFIs) since the last decade, the actual performance or outcome of Islamic MFIs remains a mystery. Compared with conventional MFIs, Islamic MFIs comply with Sharia, which prohibits the charging of interest and promotes profit-and-loss sharing (PLS) schemes. According to Abedifar et al. (2013), Shariah-Compliant financial products lead to the difference in performance and risk between conventional and Islamic banking. Whether this applies to conventional and Islamic MFIs remains unclear. Mersland et al. (2013) also call for microfinance research that take religions into account. Thus, this study aims to assess the performance of Islamic MFIs and then compare it with that of conventional MFIs from two aspects: 1) financial performance and 2) credit risk and.

We have overall two hypotheses. First, we hypothesise that Islamic MFIs are less profitable and financially self-sufficient than conventional MFIs, because the transfer of assets involved in Shariah-Compliant financial products creates much higher operational costs and because the prices of Islamic MFI products are much lower than those of conventional MFIs. Second, we hypothesise that credit risk of Islamic MFIs is different from that of conventional MFIs. On the one hand, the buying and selling of

real products that Islamic financial products involves expose Islamic MFIs to credit risk, due to the fluctuation of commodity prices and the ownership transfer at the end of the repayment period. Islamic MFIs usually do not charge a penalty for defaults. Profit-loss sharing financial products suppresses Islamic MFIs' motivation to monitor borrowers. Hence, Islamic MFIs may have higher credit risk than conventional MFIs. On the other hand, the religious belief of Islamic MFI clients might induce loyalty and stem default, reducing the credit risk of Islamic MFIs (KARIM et al., 2008; ABEDIFAR et al., 2013; BAELE et al., 2014).

We employ data from the *Microfinance Information Exchange Network*®, an international microfinance platform that provides data on individual MFIs. We construct a panel dataset that comprises 1,320 MFIs located in 58 countries within four regions, namely East Asia and Pacific (EAP), South Asia (SA), Middle East and North Africa (MENA), and Eastern Europe and Central Asia (EECA) during the period of 1998 to 2018. A large percentage of the poor in these four regions are practicing Muslims. We manually classify MFIs in the MIX Market as Islamic MFIs if these MFIs partly or fully provide Islamic microcredit products and services, and classify the remaining MFIs as conventional MFIs. There are 38 Islamic MFIs, accounting for around 3% of our total sample. After adjusting for the missing data, our final sample contains 7,919 firm-year observations.

2 BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 Principles of Islamic Finance

Islamic finance law is based on Shariah Law, or “a system of duties that are incumbent upon a Muslim by virtue of his religious belief. Shariah law originates from the Qur'an, Islam's holy book, and from the Hadith. The Hadith is a compilation of validated literal sayings of the Prophet Muhammad that are not present in the Qur'an.

The principles of Islamic finance are laid down in the Shariah, Islamic law. Islamic finance, comprising financial transactions in banks and non-bank financial institutions formal and non-formal financial institutions, is based on the concept of a social order of brotherhood and solidarity. The participants in banking transactions are considered business partners who jointly bear the risks and profits. Islamic financial instruments and products are equity oriented and based on various forms of profit and loss sharing.

As Islamic banks and their clients are partners, both sides of financial intermediation are based on sharing risks and gains: the transfer of funds from clients to the bank (depositing) is based on revenue-sharing and usually calculated ex post on a monthly basis; the transfer of funds from the bank to the clients is based on profit-sharing (lending, financing), either at a mutually agreed-upon ratio as in the case of mudarabah or at a mutually agreed-upon fixed rate. Such ratios and rates vary between institutions and may also vary between contracts within the same institution, contingent upon perceived business prospects and risks. Islamic banking finances only real transactions with underlying assets; speculative investments such as margin trading and derivatives transactions are excluded. Lending, or financing, is backed by collateral; collateral-free lending would normally be considered as containing a speculative element, or moral hazard. Similarly, to avoid speculation and moral hazard, normally only investors with several years of successfully business experience are financed. The paying or taking of riba, interest, is prohibited.

The same principle of partnership is applied to Islamic insurance. It is based on a collective sharing of risk by a group of individuals whose payments are akin to

premiums invested by the Islamic banking institution in a mudarabah arrangement for the benefit of the group.

2.2 Islamic Microfinance

The nonviability of the conventional microfinance model in a significant portion of the Muslim world due to its interest-based profit structure limits its success in promoting financial inclusion. For example, Grameen Bank has been successful in Bangladesh, a country with an 89.7 percent Muslim population, primarily because Bangladesh does not adhere to Shariah finance law. Countries like Pakistan, on the other hand, are left with fewer microfinancing options.

Shariah law provides rules and guidelines for social, political, and economic undertakings in Muslim societies. The degree to which an individual Muslim adheres to it depends on considerations such as his/her home state's laws, the history of the state's Islamic jurisprudence, and its cultural traditions. For example, because of their stricter adherence to Shariah law, Shariah-Compliant banking and finance assets are clustered predominantly among Malaysia, Iran, and the Gulf states, but represent only approximately 15 percent of banking assets in Bangladesh (and then, only due to rapid recent growth over the past ten years). Bangladesh's financial system favors conventional finance products.

2.3 Hypotheses

Compared with conventional MFIs, Islamic MFIs comply with Shariah, which prohibits the charging of interest and promotes profit-and-loss sharing (PLS) schemes. Consequently, conventional MFIs and Islamic MFIs reveal different business models and mission orientations, which might influence their corresponding financial and social performance. However, the extant literature remains unclear about the differences in financial performance, credit risk and social performance between conventional and Islamic MFIs. We formulate our hypotheses in this section.

2.3.1 Financial Performance

The operational costs, particularly administrative costs, of Islamic MFIs may be higher than those of conventional MFIs. Most Islamic MFIs only offer two financial products: Murabaha and Qard-Hassan loans (El-Zoghbi and Tarazi, 2013). As a 'cost plus mark-up' sale contract, Murabaha is employed to finance goods and services needed as working capital. The mark-up is distinct from interest since it remains fixed, even if the repayment is overdue. Murabaha is the most popular and largest Islamic microfinance product, with the broadest outreach. Since Murabaha is tied to a particular asset, such as property, plant and equipment, it is less flexible than the commutable loan payment provided by conventional MFIs. Further, managing the transfer of assets of Islamic MFIs creates much higher operational costs than managing the cash distribution of conventional MFIs. Not tied to assets, Qard-Hassan loans are comparably easy to administer, so these loans have become the second largest Islamic microfinance product after Murabaha. But they are often not priced to cover their administrative costs (such charges are permitted) and default costs.

As to another two Islamic financial products, Musharaka and Mudaraba, underlying PLS schemes, are mostly encouraged by Sharia but are rarely offered by Islamic MFIs. Musharaka and Mudaraba require Islamic MFIs to share profits or losses with both investors and entrepreneurs. Specifically, under Mudarabah financing, the financial institution provides capital and the entrepreneur contributes effort and exercise by entirely controlling the business. If the business suffers a loss, the financial institution obtains no or a negative return on its investment and the entrepreneur earns no compensation for his/her effort. If the business generates a gain, the profits are split based on a pre-negotiated equity percentage.

According to Abedifar et al. (2013) and Beck et al. (2013), the prices of Islamic MFI products are much lower than those of conventional MFIs. Conventional MFIs usually charge their financial products nominal interest rates up to 60%, and even higher interest rates when repayment is overdue as a penalty (Dehejia et al., 2012). However, for the two main Islamic MFI products, Murabaha only charges a fixed mark-up with no penalty for overdue repayment and Qard-Hassan loans do not charge any fees. Mark-up is based on the prevailing interest rates used by the non-Muslim world, such as London Interbank Offered Rates (LIBOR) or Base Lending Rate (BLR). Abedifar et al. (2013) document that Islamic finance does not extract rents (higher loan or lower deposit rates) for providing Islamic financial products. According to Beck et al. (2013), Islamic finance does not charge higher fees and commissions to compensate for the lack of interest revenue.

Since Islamic MFIs have higher operational costs and lower price charges for their products and services than conventional MFI, our hypothesis is:

H1: Islamic MFIs are less profitable and self-sufficient than conventional MFIs

2.3.2 Credit Risk

The difference in credit risk between Islamic and conventional MFIs is ambiguous in theory. On the one hand, the features of Islamic MFIs' financial products and customers could lead to higher credit risk for Islamic MFIs relative to conventional MFIs. Compared with conventional loan contracts, Islamic loan contracts (Murabaha), the largest Islamic microfinance product, are more complex because they involve purchase and resale of products. This characteristic exposes Islamic MFIs to credit risk due to the fluctuation of commodity prices and the ownership transfer at the end of the repayment period. For instance, under a Murabaha contract, an Islamic MFI buys a house on behalf of a family at \$50,000 and the family needs to repay \$500 per month for ten years (\$60,000 in total; mark-up = 20% of the principal). At the beginning of the second year, the price of the house might drop to \$40,000. In this case, if the family defaults on this contract and initiates a new one, the total cost would be \$54,000 ($\$500 \times 12 + \$40,000 + \$40,000 \times 0.2$), lower than the cost of the original one.

Since a default penalty is not compliant with Sharia, Islamic MFIs usually do not charge a penalty for default. In some cases, Islamic MFIs might use rebate to replace default penalty (Khan and Ahmed, 2001). The mark-up attached to the partnership loans (Murabaha and Ijara) implicitly include both the return and a default penalty component of the Islamic MFIs. If the borrower repays the loan in a timely manner, then he/she will obtain the rebate. Thus, Islamic MFIs collect the delayed penalty over the whole financing period, while conventional MFIs calculate default interest payments over the delayed period (ABEDIFAR et al., 2013). The absent or fixed default penalty associated with Islamic MFIs is quite limited compared to the crescent default interest payments of conventional MFIs, resulting in increased credit risk for Islamic MFIs.

PLS financial products directly shift the credit risk of Islamic MFIs to their investment depositors (ČIHÁK; HESSE, 2010). Thus, the equity-like nature of deposits might suppress Islamic MFIs from monitoring and disciplining borrowers, although this characteristic might also increase their investment depositors' incentives to monitor and discipline Islamic MFIs. In contrast, under interest-bearing debt contracts, conventional MFIs need to bear the entire credit risk, so they are highly motivated to scrutinize and monitor borrowers and their projects. This moral hazard problem associated with PLS contracts could increase the credit risk of Islamic MFIs.

Based on the above discussion, our hypothesis is:

H2a: Islamic MFIs have higher credit risk than conventional MFIs

On the other hand, the religious belief of Islamic MFI clients might induce loyalty and stem default, reducing the credit risk of Islamic MFIs (ABEDIFAR et al., 2013; BAELE et al., 2014). For borrowers of Islamic MFIs, taking out Islamic loans means conducting economic activity encouraged by Sharia (i.e. ‘putting your money where your mouth is’). It is unlikely that Muslims take out Islamic loans to conduct arbitrary activities, because Sharia prohibits the misappropriation of other people’s property (i.e. ‘eating other people’s money in an unlawful way’). Thus, Muslim borrowers have a higher propensity to fulfill their obligations under Islamic loan contracts, leading to lower default risk. Additionally, the extant literature reveals a positive relation between religiosity and an individual’s risk aversion (HILARY; HUI, 2009; ABEDIFAR et al., 2013).

Based on users’ religious belief and religious attitude toward risk, our hypothesis is:

H2b: Islamic MFIs have lower credit risk than conventional MFIs

3 DATA, MEASURES AND DESCRIPTIVE STATISTICS

3.1 Data collection and selection

We collect MFI information from the MIX Market database, a worldwide microfinance information platform for MFIs. This database employs information voluntarily reported by individual MFIs about their financial statements and balance sheets. Since most of these financial statements and balance sheets are audited, this database is extensively considered accurate and reliable. However, we should also note that this database does not contain information from all MFIs because many MFIs choose not to report to this data platform. We denominate all financial variables into US dollars and adjust for country-specific inflation. We identify 1,320 MFIs (including 1,282 conventional MFIs and 38 Islamic MFIs) operating in four regions, including East Asia and Pacific, South Asia, Middle East and North Africa, and Eastern Europe and Central Asia, over the period of 1998 to 2018. A large percentage of the poor in these four regions are practicing Muslims. After adjusting for missing data, our final sample contains 7,919 firm-year observations.

We manually classify MFIs in the MIX Market database into two categories, conventional or Islamic, in light of the following procedures. We first identify regions with a presence of Islamic MFIs, and remove the remaining regions from the database. We then distinguish Islamic MFIs from conventional MFIs in these selected regions. Following Abedifar et al. (2013), we define Islamic MFIs as entities that offer Islamic microcredit products and services. Namely, Islamic MFIs are MFIs that fully or partially provide Shariah-compliant products or services.

3.2 Empirical methods and variables

We examine the difference between conventional and Islamic MFIs, and our baseline regression model is presented below:

$$Y_{i,t} = \alpha + \beta_1 * Islamic\ MFI_i + \beta_2 * Controls_i + \beta_3 * Country_i + \beta_4 * Year_t + \varepsilon_{i,t} \quad (1)$$

Where Y represents three groups of dependent variables: Financial Performance and Credit Risk. Financial Performance is a group of variables including Operational Costs, Administrative Costs, ROA and Operational Self-Sufficiency (OSS). Credit Risk is a group of variables including PaR>90days, Write-off Ratio and Loan Loss Rate. Country and Year control for both country and year fixed effects.

Following prior studies, we construct two measures of cost, one measure of profitability and one measure of financial self-sufficiency, respectively: 1) Operational Costs; 2) Administrative Costs; 3) Return on Assets (ROA); and 4) Operational Self-Sufficiency (OSS).¹ Although not-for-profit organizations employ a wide range of measures to represent their cost and profitability, like for-profit organizations, these four measures are the most widely employed. Market performance measures are not applicable since the MFIs in our database are not listed. Operational costs are defined as the operational costs divided by the loan portfolio, and mainly contain wages and administrative costs. Administrative costs are measured as the natural logarithm of total administrative costs on the loan portfolio.

As the traditional for-profit-maximization measure across different institutions, ROA is defined as the ratio of net operating income to total assets. According to the MIX Market definitions of financial and operational self-sufficiency, Operational Self-Sufficiency (OSS) is defined as total financial revenue divided by the sum of financial expense, operating expense and loan loss provision expense. If an MFI's OSS is above 100%, it indicates that this MFI is operationally self-sufficient. If an MFI's OSS is above 110%, it indicates that this MFI is financially self-sufficient. OSS mirrors the MFIs' ability to sustain their operations without subsidies, while ROA mirrors the MFIs' ability to generate profits using their assets.

Following Gutiérrez-Nieto et al. (2009), Mersland and Strøm (2009), González (2010), Bogan (2012) and Blanco-Oliver et al. (2016), we employ three measures of credit risk: 1) Portfolio at Risk >90days (PaR>90days); 2) Write-off Ratio; 3) Loan Loss Rate. For lending institutions, the default possibility (Portfolio at Risk) is a crucial management measure since non-payments result in default losses (Write-off), which might impact their financial feasibility and future survival. PaR>90days is the percentage of the portfolio that is overdue for more than 90 days. Write-off Ratio is the percentage of the total amount of loans written off to gross loan portfolio. Loan Loss Rate is the ratio of the difference between write-offs and loans recovered to gross loan portfolio. A higher proportion of loan delay, write-off and loss imply higher credit risk.

Since information on the income or wealth of individual borrowers to measure their poverty levels is not available, prior studies tend to use the following two indicators as proxies of poverty outreach: 1) No. of Active Borrowers; 2) Average Loan Size to GNI/Capita (CULL et al., 2009; MERSLAND; STRØM, 2009; LOUIS et al., 2013; ROBERTS, 2013). No. of Active Borrowers reflects the total number of individuals that an MFI serves. More active borrowers indicates greater poverty outreach, because, holding the total lending constant, the number of borrowers that an MFI can reach is inversely related to the number of borrowers. Average Loan Size is the average loan size per borrower divided by country group national income per capita. Smaller loans are usually taken by poorer borrowers, indicating greater poverty outreach. Percentage of Female Borrowers is the number of active female borrowers divided by the total number of active borrowers. A higher percentage of female borrowers indicate better approach to female borrowers.

Following D'Espallier et al. (2013), Strøm et al. (2014) and D'Espallier et al. (2017), we control for a battery of variables related to firm performance and MFI characteristics. Size, namely total assets, and Age, classified as new, young and mature

in our case, reflect the competitiveness of an MFI. Leverage, debt-to-equity ratio, shows the financial health of an MFI and Total Assets Growth shows the expansion speed of an MFI. Portfolio Yield, the interest revenue (or mark-up and dividend revenue) divided by gross loan portfolio mirrors an MFI's loan portfolio scale and output. Deposits-to-Assets ratio reflects the importance of deposits in an MFI's operation. Target Market, classified as low-end, high-end, small business and broad, reflects the business strategy of an MFI. Dummy "For_Regulated" shows whether an MFI is regulated or not. Differences in legal status reflect different rights and duties in conducting businesses. Profit-Oriented or Not reflects whether the orientation of an MFI is profit or social mission. Disclosure Ratings by the MIX Market database range from one to five, which implies the increasing disclosure quality. "No. of Loan Officers" and "No. of Offices" indicate firm competitiveness from a personnel perspective.

4 RESULTS

4.1 Descriptive Statistics

We analyzed 58 countries with conventional and Islamic MFIs within the regions of East Asia and Pacific, South Asia, Middle East and North Africa, and Eastern Europe and Central Asia. Islamic MFIs are distributed in 14 countries, including Afghanistan, Bangladesh, Indonesia, Iraq, Jordan, Kosovo, Kyrgyzstan, Lebanon, Malaysia, Pakistan, Palestine, Sudan, Syria and Yemen. Malaysia and Sudan only have Islamic MFIs. Table 1 reports descriptive statistics for all variables. To minimize the impact of outliers, we winsorize the continuous variables at one percentile level. We find that 3.4% of the observations are linked to Islamic MFIs and 96.6% of the observations are related to conventional MFIs.

The last column presents the comparison of conventional and Islamic MFIs in terms of the means of all variables. Islamic MFIs exhibit obviously much higher operational costs than conventional MFIs. This is consistent with the literature that, tied to assets, Islamic financial products face much higher operational costs than conventional financial products. Islamic MFIs witness a negative mean of ROA (-0.029) and conventional MFIs witness a positive mean of ROA (0.012), so overall Islamic MFIs experience losses and conventional MFIs make profits. The median of Islamic MFIs' ROA is 0.011, suggesting that over half of Islamic MFIs also make profits. This evidence is line with our expectation that Islamic MFIs are less profitable and self-sufficient than conventional MFIs, due to higher operational costs and lower prices of their products and services.

On average, female borrowers account for over 50% for both conventional and Islamic MFIs, indicating that both types of MFIs emphasize lending to women, either whether for themselves or on behalf of their families (RAHMAN, 2007; ABDELKADER; SALEM, 2013; D'ESPALLIER et al., 2013; LIU; TAMANNI, 2017). However, Islamic MFIs have a noticeably lower percentage of female borrowers than conventional MFIs. This finding reflects our prediction that Islamic MFIs approach fewer female borrowers than conventional MFIs due to the different target between the two MFIs and the religious restrictions on women. The remaining dependent variables, such as administrative costs, OSS, PaR>90, write-off ratio, loan loss rate, number of active borrowers and average loan size, do not show a significant difference between conventional and Islamic MFIs. Both conventional and Islamic MFIs' mean values of OSS are above 110%, indicating that both types of MFI are operationally and financially self-sufficient.

The average total assets of conventional MFIs are around \$52 million, and for Islamic MFIs around \$20 million. Islamic MFIs are younger than conventional MFIs.

The leverage (debt to equity ratio) of Islamic MFIs (around six) is three times larger than conventional MFIs (around two). Islamic MFIs are less likely to be legally regulated and profit-oriented than conventional MFIs. Islamic MFIs have higher deposits-to-assets ratios, more loan officers and more loan offices, since they are restricted to investing other assets (such as bonds) by Shariah. Islamic MFIs exhibit lower disclosure quality than conventional MFIs because, being relatively smaller and younger, Islamic MFIs have not developed financial reporting systems as qualified as conventional MFIs. Differences between total assets growth, gross loan portfolio, and portfolio yield and target market are insignificant between these two kinds of MFIs.

The next table (Table 1) displays descriptive statistics for all the variables of the total of 1,320 MFIs during the period of 1998 to 2018. Conventional MFIs are the subsample of 1,282 MFIs that only provide traditional financial products and services, and Islamic MFIs are the subsample of 38 MFIs that fully or partly provide Islamic financial products and services.

Table 1 – Summary Statistics

Variables	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean Difference
Explanatory Variables										
Islamic MFI	0.034	0.180	7919							
Dependent Variables										
Operational Costs	0.213	0.187	5962	0.211	0.184	5752	0.300	0.259	210	0.089**
Administrative Costs	1975	9715	4747	2016	10077	4571	923	1289	176	1093
ROA	0.018	0.161	5971	0.012	0.161	5764	-	0.174	207	-0.040***
OSS	1.217	0.588	5785	1.219	0.583	5587	0.029	0.725	198	-0.063
PaR>90days	0.046	0.084	4863	0.046	0.085	4684	0.054	0.048	179	0.008
Write-off Ratio	0.014	0.067	5358	0.014	0.068	5172	0.015	0.053	186	0.001
Loan Loss Rate	0.017	0.041	5511	0.017	0.041	5305	0.015	0.029	206	-0.002
No. of Active Borrowers	88726	52715	7220	90255	50456	6974	45379	116781	246	-44875
Average Loan Size	1.530	0.531	7159	1.582	0.548	6914	0.585	0.050	245	-1.000
Percentage of Female Borrowers	0.605	0.262	5371	0.619	0.263	5180	0.563	0.228	191	-0.056***
Control Variables										
Size	51363	667733	7547	52444	689319	7294	20214	45410	253	-32230***
Age_Mature	0.570	0.495	7612	0.574	0.495	7354	0.465	0.500	258	-0.108***
Age_New	0.204	0.402	7612	0.202	0.401	7354	0.248	0.433	258	0.046*
Leverage	5.845	0.189	7250	5.982	0.173	7008	1.869	0.666	242	-4.113***
Total Assets Growth	0.521	1.049	6056	0.524	1.059	5848	0.450	0.762	208	-0.744
Portfolio Yield	0.295	0.136	4782	0.294	0.136	4601	0.308	0.147	181	0.013
Deposits-to-Assets	0.270	0.346	5574	0.268	0.347	5394	0.315	0.310	180	0.046*
Target Market_Low End	0.336	0.472	7919	0.338	0.473	7653	0.286	0.413	266	-0.052
Target Market_High End	0.053	0.224	7919	0.053	0.223	7653	0.068	0.252	266	0.015
Target Market_Small Business	0.049	0.217	7919	0.050	0.217	7653	0.041	0.199	266	-0.008
Dummy_For Regulated	0.683	0.465	7919	0.689	0.463	7653	0.500	0.501	266	-0.450***
Dummy_For Profit	0.406	0.491	7891	0.408	0.491	7629	0.350	0.478	262	-0.058*
Disclosure Ratings	2.675	1.414	7891	2.681	1.414	7629	2.489	1.427	262	-0.192***
No. of Loan Officers	198	1182	5390	197	1209	5188	234	277	192	37***
No. of Offices	41	185	5275	41	189	5089	56	62	186	14***

On average, female borrowers account for over 50% for both conventional and Islamic MFIs, indicating that both types of MFIs emphasize lending to women, either whether for themselves or on behalf of their families (RAHMAN, 2007; ABDELKADER; SALEM, 2013). However, Islamic MFIs have a noticeably lower percentage of female borrowers than conventional MFIs. This finding reflects our prediction that Islamic MFIs approach fewer female borrowers than conventional MFIs due to the different target between the two MFIs and the religious restrictions on

women. The remaining dependent variables, such as administrative costs, OSS, PaR>90, write-off ratio, loan loss rate, number of active borrowers and average loan size, do not show a significant difference between conventional and Islamic MFIs. Both conventional and Islamic MFIs' mean values of OSS are above 110%, indicating that both types of MFI are operationally and financially self-sufficient.

The average total assets of conventional MFIs are around \$52 million, and for Islamic MFIs around \$20 million. Islamic MFIs are younger than conventional MFIs. The leverage (debt to equity ratio) of Islamic MFIs (around six) is three times larger than conventional MFIs (around two). Islamic MFIs are less likely to be legally regulated and profit-oriented than conventional MFIs. Islamic MFIs have higher deposits-to-assets ratios, more loan officers and more loan offices, since they are restricted to investing other assets (such as bonds) by Shariah. Islamic MFIs exhibit lower disclosure quality than conventional MFIs because, being relatively smaller and younger, Islamic MFIs have not developed financial reporting systems as qualified as conventional MFIs. Differences between total assets growth, gross loan portfolio, and portfolio yield and target market are insignificant between these two kinds of MFIs.

4.2 Empirical Results

4.2.1 Financial Performance

We argue that an MFI has better financial performance, if it shows higher cost efficiency, profitability and financial self-sufficiency. In the 1980s and 1990s, the continuing reliance on subsidies and unsatisfactory outreach performance led to the development of a new microfinance premise: financial self-sufficiency (Louis et al., 2013). Financial self-sufficiency reflects an MFI's ability to continue its operations if it receives no further subsidies. Morduch (1999) states that cost control and efficiency would eventually lower MFIs' dependency on subsidies, thereby enabling MFIs to stay in business in the long run. On the other hand, with no further subsidies, MFIs must endeavor to generate sufficient profits from their core activities to cover their costs. Therefore, to pursue the goal of long-term operations, MFIs tend to reduce their costs, increase their profits and eventually become financially self-sufficient.

Table 2 reports estimates from the baseline regressions. In Columns (1) and (2), Islamic MFI is significantly and positively associated with Operational Costs and Administrative Costs at the 1% level. This evidence reflects the economically significant difference between these two costs for the two types of MFI. For instance, the coefficient of Islamic MFI on Operational Costs (0.143) indicates that the operational costs of Islamic MFIs are 0.143 higher than those of conventional MFIs, which account for 67% of the average operational costs of the total sample (0.213). This result supports our expectation that the assets-involved character of Islamic MFIs' financial products creates much higher operational and administrative costs for them. In Columns (3) and (4), Islamic MFI is negatively and significantly related to ROA and OSS at the 1% level. This evidence reveals the economically significant difference in profitability and financial self-sufficiency between conventional and Islamic MFIs. For instance, the coefficient of Islamic MFI on OSS (-0.157) indicates that Islamic MFIs' OSS is 0.157 lower than that of conventional MFIs, which accounts for 12.9% of the average OSS of the total sample (1.217). Our result hence provides evidence to support our hypothesis (H1) that Islamic MFIs are less profitable and self-sufficient than conventional MFIs.

In terms of control variables, targeting high-end and broad markets, larger, regulated and not new MFIs with higher portfolio yield, lower write-off ratio and more offices have higher ROA. Larger, mature and regulated MFIs with higher write-off ratio, more active borrowers, a not-for-profit orientation and higher disclosure quality

have higher operational and administrative costs. These results regarding control variables are consistent with those reported in D'Espallier et al. (2013).

Table 2 – Financial Performance

Dependent Variables	Operational Costs	Ln (Administrative Costs)	ROA	OSS
	(1)	(2)	(3)	(4)
Islamic MFI	0.143*** (2.59)	0.142** (2.01)	-0.050*** (-2.59)	-0.157*** (-2.77)
Ln(Size)	0.644*** (11.72)	0.721*** (12.92)	0.024** (2.56)	0.029 (0.84)
Age_Mature	-0.226*** (-7.79)	-0.151*** (-4.64)	-0.001 (-0.24)	-0.072 (-1.39)
Age_New	0.058 (1.43)	0.084* (1.71)	-0.046*** (-5.24)	-0.037*** (-4.14)
Leverage	-0.000 (-1.18)	-0.000 (-0.66)	0.000 (-0.13)	0.000 (-0.47)
Total Assets Growth	0.000 (1.11)	0.001*** (8.97)	0.000 (1.39)	0.000 (-1.21)
Portfolio Yield	0.123*** (3.67)	0.102*** (3.12)	0.147*** (3.20)	0.425*** (2.91)
Deposits-to-Assets	0.060 (1.38)	0.046 (0.90)	-0.005 (-0.54)	-0.002 (-0.25)
Write-off Ratio	1.622*** (4.11)	0.802*** (3.01)	-0.226** (-2.29)	-1.300*** (-3.02)
Target Market_Low End	0.004 (1.05)	0.005*** (2.58)	-0.011*** (-3.19)	0.006 (1.56)
Target Market_High End	-0.008 (-1.40)	-0.003 (-1.13)	0.001 (0.12)	-0.006 (1.12)
Target Market_Small Business	-0.025*** (-3.37)	-0.000 (-0.07)	-0.021*** (-2.59)	-0.099** (-2.18)
Dummy_For Regulated	0.082*** (3.00)	0.142** (1.98)	0.051** (2.34)	-0.002 (-0.78)
Dummy_For Profit	-0.035 (-0.92)	-0.090* (-1.95)	-0.004 (-0.58)	-0.004 (-0.82)
Disclosure Ratings	0.061*** (6.19)	0.033*** (2.68)	-0.003 (-1.56)	-0.002 (-1.34)
Ln(No. of Loan Officers)	0.002 (0.16)	0.012 (0.64)	-0.000 (-0.05)	-0.000 (-0.09)
Ln(No. of Offices)	-0.007 (-0.40)	-0.012 (-0.61)	0.006* (1.91)	0.003 (1.05)
Constant	-0.863* (-1.86)	-1.008*** (-4.17)	-0.120*** (-3.09)	-0.293*** (-7.15)

Country Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
N	2560	2543	2564	2498
adj. R ²	0.5575	0.5556	0.357	0.534

Note: This table reports panel regression results of financial performance on Islamic MFIs in the sample period 1998 to 2018. For dependent variables, *Operational Costs* are the operational costs divided by the gross loan portfolio. *Administrative Costs* are the administrative costs on the gross loan portfolio. *Operating Self-Sufficiency (OSS)* is defined as total financial revenue divided by the sum of financial expense, operating expense and loan loss provision expense. *ROA* is the ratio of net operating income to total assets. The independent variable *Islamic MFI* is a dummy variable which equals one if an MFI is Islamic, and 0 if it is conventional. Definitions of all variables are shown in Appendix A. In all columns, country fixed and year fixed effects are further controlled. Figures in parentheses are t-statistics and *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

4.2.2 Credit Risk

We argue that an MFI has lower credit risk if it has fewer loan defaults, i.e. a lower percentage of loans that are overdue more than 90 days, that are written-off and permanently impaired. Modern microfinance was planned as a response to the high default risk in subsidized rural credit during the period of 1950-1985 (HULME; MOSLEY, 1996). Nowadays, MFIs' top management tends to keep loan defaults down; thus, the lower default risk in microfinance is one of the industry's main achievements (MERSLAND et al., 2013).

Table 3 reports estimates from the baseline regressions. Columns (1) to (3) show that Islamic MFI is negatively and significantly associated with PaR>90days, Write-off Ratio and Loan Loss Rate at the 5% level. This result overall reflects the economically significant difference between conventional and Islamic MFIs in credit risk. For instance, the coefficients of Islamic MFI (-0.020) on PaR>90days indicate that the percentage of loans overdue more than 90 days is 0.02 lower than those of conventional MFIs, which accounts for 43.5% of the average value of the total sample (0.046). In accordance with our hypothesis (H2b), our result shows that Islamic MFIs bear a lower credit risk than conventional MFIs. This evidence also suggests that although the design of Islamic financial products is technically prone to credit risk, religious belief encourages Muslim borrowers to fulfill their obligations under Islamic loan contracts, resulting in overall lower credit risk (ABEDIFAR et al., 2013; BAELE et al., 2014).

Table 3 – Credit Risk

Dependent Variables	PaR>90days (1)	Write-off Ratio (2)	Loan Loss Rate (3)
Islamic MFI	-0.020** (-2.28)	-0.005** (-2.27)	-0.008** (-2.27)
Ln(Size)	-0.004 (-0.74)	0.037* (1.79)	0.007** (2.03)
Age_Mature	-0.001 (-0.23)	0.000 (0.09)	0.002 (0.79)
Age_New	0.013* (1.76)	-0.013*** (-3.06)	0.005 (1.40)
Leverage	0.000 (1.57)	-0.000 (-0.56)	0.000*** (3.17)
Total Assets Growth	0.000 (0.84)	0.000** (2.27)	0.000*** (3.17)
Portfolio Yield	-0.004	-0.015	0.009

	(-0.32)	(-0.78)	(1.05)
Deposits-to-Assets	0.054***	0.007	-0.008**
	(5.44)	(1.36)	(-2.28)
ROA	0.006	-0.072***	-0.001
	(0.22)	(-3.58)	(-0.12)
Target Market_Low End	-0.000	0.000	-0.294
	(-0.04)	(0.01)	(-1.03)
Target Market_High End	-0.006	0.011	0.216
	(-0.81)	(0.78)	(0.48)
Target Market_Small Business	-0.019***	-0.001	-0.100
	(-3.56)	(-0.29)	(-0.52)
Dummy_For Regulated	0.007	0.005	0.011***
	(0.59)	(1.27)	(2.91)
Dummy_For Profit	0.008	-0.001	0.006**
	(1.51)	(-0.54)	(2.12)
Disclosure Ratings	-0.001	0.001	-0.001
	(-0.73)	(0.88)	(1.12)
Ln (No. of Loan Officers)	-0.014***	0.000	0.002
	(-4.95)	(0.21)	(1.6)
Ln (No. of Offices)	0.008***	-0.001	-0.001
	(2.82)	(-0.81)	(-0.23)
Constant	0.080***	0.053**	-0.006
	(3.12)	(2.18)	(-0.42)
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
N	2105	2060	2059
adj. R ²	0.161	0.169	0.156

Note: This table reports panel regression results of credit risk on Islamic MFIs in the sample period 1998 to 2014. For dependent variables, *PaR>90days* is the percentage of the portfolio that is overdue for more than 90 days. *Write-off ratio* is the percentage of the total amount of loans written off to gross loan portfolio. *Loan Loss Rate* is the ratio of the difference between write-offs and loans recovered to gross loan portfolio. The independent variable *Islamic MFI* is a dummy variable which equals one if an MFI is Islamic, and 0 if it is conventional. Definitions of all variables are shown in Appendix A. In all columns, country fixed and year fixed effects are further controlled. Figures in parentheses are t- statistics and *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

In terms of control variables, larger and mature MFIs with faster total assets growth and lower ROA have higher a write-off ratio. Larger and regulated MFIs with higher leverage, faster total assets growth, lower deposits-to-assets and for-profit orientation have a higher loan loss rate. New MFIs with higher deposits-to-assets, less loan officers and more offices have more loans overdue for more than 90 days. This evidence regarding control variables is consistent with that reported in Mersland and Strøm (2009), D'espallier et al. (2013) and D'Espallier et al. (2017).

5 CONCLUSIONS

Because they are incompatible with the financial principles in Sharia (Islamic law), it is hard for conventional MFIs to penetrate into regions with a substantial Muslim population (Karim et al., 2008). The high demand for loans highlights the need to provide religiously compatible products to the underserved Muslim poor, resulting in the advent of Islamic microfinance as a new market niche (Karim et al., 2008). Mersland et al. (2013) call for microfinance research that takes religions into consideration, but the actual performance or outcome of Islamic MFIs remains a mystery. Thus, our study intends to evaluate the performance of Islamic MFIs and then

compare it with that of conventional MFIs from two aspects: 1) financial performance and 2) credit risk.

We hypothesize that Islamic MFIs have less profitability, less self-sufficiency and less credit risk. Employing a sample of firms from four regions for the period 1998 to 2018, we find empirical evidence for our hypotheses. Our study sheds light on extant literature from two perspectives. First, our research adds to the limited empirical literature on the role of Islamic finance in the economy and comparative literature between conventional and Islamic finance. Second, our research extends and complements the current literature on microfinance. In response to Mersland et al.'s (2013) call for microfinance research that take religions into consideration, our research is the first study that investigates the impact of Islam on microfinance. This paper helps both practitioners and investors to gain a comprehensive understanding of the difference between conventional and Islamic MFIs.

Our paper provides two contributions to existing literature. First, our research adds to the limited empirical literature regarding the role of Islamic finance in the economy and comparative literature between conventional and Islamic finance. Most extant empirical or comparative studies on Islamic finance focus on the banking industry (AGGARWAL; YOUSEF, 2000; ABEDIFAR et al., 2013; BASSENS et al., 2013; ELNAHASS et al., 2014; GHEERAERT, 2014; JOHNES et al., 2014; MALLIN et al., 2014), and a few focus on financial institutions and mutual funds (POMERANZ, 1997; SAFIEDDINE, 2009; ABDELSALAM et al., 2014; ARIBI; ARUN, 2015). Gheeraert (2014) finds evidence that the development of Islamic banking does not crowd out conventional banking but rather complements conventional banking in Muslim countries.

Second, our research extends and complements the current literature on microfinance. Extant literature has analysed microfinance's characteristics, such as capital structure, ownership and female leadership (STRØM et al., 2014), cost efficiency (CAUDILL et al., 2009; TCHUIGOUA, 2016), financial performance (MERSLAND; STRØM, 2009; HARTARSKA et al., 2013; BLANCO-OLIVER, 2016), sustainability (BOGAN, 2012), technical efficiency (DERIGS; MARZBAN, 2009) and social performance (HARTARSKA; MERSLAND, 2012; CASSELMAN et al., 2015). As the only study examining the impact of religion on microfinance, the evidence of Mersland et al. (2013) shows that compared with conventional MFIs, Christian MFIs have lower funding costs, lower profitability and similar credit risk. Our study sheds light on the impact of Islam, enshrined by a quarter of the world's population, on microfinance.

Compared with conventional banks, Islamic banks benefit more from lending to small businesses price their discretionary component lower (ELNAHASS et al., 2014), and have lower cost-efficiency, higher intermediation ratio, higher asset quality and higher capitalisation (BECK et al., 2013), lower credit risk and lower leverage (ABEDIFAR et al., 2013). Johnes et al. (2014) find that Islamic banks have similar efficiency with conventional banks. To the best of our knowledge, this is the first empirical paper researching Islamic finance and comparing it with conventional finance from the perspective of microfinance. Our findings indicate that the comparative results of conventional and Islamic finance could be different when taking legal status into consideration.

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