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Islamic vs. conventional banking: Business model, efficiency and stability

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ABSTRACT

How different are Islamic banks from conventional banks? Does the recent crisis justify a closer look at the Sharia-compliant business model for banking? When comparing conventional and Islamic banks, controlling for time-variant country-fixed effects, we find few significant differences in business orientation. There is evidence however, that Islamic banks are less cost-effective, but have a higher intermediation ratio, higher asset quality and are better capitalized. We also find large cross-country variation in the differences between conventional and Islamic banks as well as across Islamic banks of different sizes. Furthermore, we find that Islamic banks are better capitalized, have higher asset quality and are less likely to disintermediate during crises. The better stock performance of listed Islamic banks during the recent crisis is also due to their higher capitalization and better asset quality.

1. Introduction

The recent global financial crisis has not only shed doubts on the proper functioning of conventional "Western" banking, but has also increased the attention on Islamic banking, as some observers have pointed to their superior performance during the crisis (Hasan and Dridi, 2010). Academics and policy makers alike point to the advantages of Sharia-compliant financial products, as the mismatch of short-term, on-sight demandable deposit contracts with long-term uncertain loan contracts is mitigated with equity and risk-sharing elements. In addition, Sharia-compliant products are very attractive for segments of the population that demand financial services that are consistent with their religious beliefs. While Sharia-compliant financial assets still constitute only a fraction of total global banking assets (1.5%), their importance has been increasing rapidly, and not only in Islamic countries, as between 2006 and 2011, total assets in Sharia-compliant financial institutions have doubled to USD 900 billion (Financial Times, 2011). In addition, Islamic financial institutions have a relatively high market share in several emerging markets, such as Malaysia and several Middle Eastern countries. However, little academic evidence exists on the functioning of Islamic banks, as of yet.

This paper compares the business model, efficiency, asset quality, and stability of Islamic and conventional banks, using an array of indicators constructed from balance sheet and income statement data across a sample of 22 countries with both Islamic and conventional banks. In addition, we gauge the relative performance of both bank groups during local banking crises and the recent global financial crisis. Our paper thus sheds light on an important debate. While proponents of Sharia-compliant financial services point to clear differences in business models of Islamic and conventional banks and to higher efficiency and stability of Islamic banks, critics argue that (i) conventional and Islamic banks might be different in form but are similar in substance and/or (ii) Islamic banks do not have any advantages in efficiency and stability (Kuran, 2004).

In theory, Islamic finance differs significantly from conventional finance. Specifically, Sharia-compliant finance does not allow for the charging of interest payments (riba), as only goods and services are allowed to carry a price, does not allow for speculation, and prohibits financing of specific illicit activities. At the same time, Sharia-compliant finance relies on the idea of profit- and loss- and thus risk-sharing, on both the liability and asset side and posits that all transactions have to be backed by a real economic transaction that involves a tangible asset. This would suggest clear differences in funding and activity structures of Islamic and conventional banks. In practice, however, Islamic scholars have developed products that resemble conventional banking products, replacing interest rate payments and discounting with fees and

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contingent payment structures. Chong and Liu (2009), for example, find that in Malaysia only a small portion of Islamic bank financing is based on profit-loss sharing and that Islamic deposits are not interest-free, but closely pegged to conventional deposits, a finding confirmed by Khan (2010b) for a sample of large Islamic banks across several countries. In addition, leasing-like products are popular among Islamic banks, as they are directly linked to real-sector transactions. Nevertheless, the residual equity-style risk that Islamic banks and their depositors are taking has implications for the agency relationships on both sides of the balance sheet as we will discuss below. We will test whether differences in the business model are reflected in indicators of income and funding structure as well as intermediation efficiency.

Theory does not make clear predictions whether Islamic banks should be more cost-effective or more stable than conventional banks. On the one hand, the equity-like nature of savings and investment deposits might increase depositors' incentives to monitor and discipline the bank. At the same token, the equity-like nature of deposits might distort the bank's incentives to monitor and discipline borrowers as they do not face the threat by depositors of immediate withdrawal, while it increases the overall riskiness of assets. In addition, Sharia restrictions tend to increase asset concentration and limit the use of hedging instruments for banks. A similar ambiguity relates to the efficiency of Islamic banks. On the one hand, monitoring and screening costs might be lower for Islamic banks given the lower agency problems. On the other hand, the higher complexities of Islamic banking might result in higher costs and thus lower efficiency of Islamic banks. Further, the younger age of Islamic banks compared to most conventional banks might imply higher cost structures.

We use a sample of Islamic and conventional banks over the period 1995 to 2009 to assess whether there are significant differences between conventional and Islamic banks. Focusing on a sample of countries with both types of banks allows us to control for unobserved time-variant country-specific effects, thus a clearer identification of such differences than when comparing banks from different countries. We find no significant differences in business orientation (as measured by the share of fee-based to total income or the share of non-deposit in total funding). In contrast, we find that Islamic banks are less cost-effective than conventional banks, but have a higher intermediation ratio, higher asset quality and higher capital-asset ratios, suggesting a more conservative approach to risk-taking. The differences between Islamic and conventional banks are more prominent for smaller Islamic banks. Further, we find significant cross-country variation, with the differences in intermediation ratio, cost efficiency, asset quality and capitalization between Islamic and conventional banks driven by a few countries. In addition, this variation is partly due to the difference in the market share of Islamic banks in these countries which is likely to reflect the different levels of maturity, sophistication and competitive behavior of these banks. Considering the performance of Islamic and conventional banks during crisis periods, we find that Islamic banks are better capitalized, have higher asset quality and are less likely to disintermediate during crises. We also find a relatively better stock market performance of Islamic banks during the recent crisis, again possibly due to their higher capitalization, and better asset quality.

This paper contributes to a small but growing literature on Islamic finance. While there is a large practitioner literature on Islamic finance, in general, and specifically Islamic banking, there are few academic papers up to now.[1] Cihak and Hesse (2010) find that small Islamic banks are more stable than small conventional banks, with the reserve holding for large banks.[2] Abdull-Majid et al. (2010) find that the relative efficiency of Islamic and conventional banks varies significantly across countries. On the country level, Baele et al. (2012) find lower defaults for Islamic than for conventional loans even among the same borrower and same bank in Pakistan, while Ongena and Sendeniz-Yuncu (2011) find for Turkey that Islamic banks mainly deal with young, multiple-bank, industry-focused and transparent firms. On the deposit side and also using a sample of Pakistani banks, Khan (2010a) finds Islamic banks enjoy substantially higher deposit growth rates than conventional banks and even benefited during the recent crisis in terms of higher deposit inflows. Several authors have explored the relative efficiency of Islamic and conventional banks, such as El-Gamal and Hulusi (2005) for Turkish banks and Srairi (2010) for banks in the Gulf Cooperation Council region.[3] This general dearth of academic work on Islamic finance stands in contrast with the increasing importance that Islamic banking has in many Muslim countries in Asia and in Africa. With this paper we hope to contribute to the emerging literature on this topic. Unlike previous papers, we focus on multiple dimensions along which theory predicts that conventional and Islamic banks differ. Unlike previous papers, we carefully control for omitted variable bias and we explicitly gauge the relative performance of Islamic banks during the recent crisis.

This being one of the first bank-level explorations of Islamic banks, two important caveats are in place. First, anecdotal evidence suggests that there are significant differences across countries in terms of how Sharia-compliant products are exactly structured, with some of the banks basically offering conventional products repackaged as Sharia-compliant products. This implies that we need to exercise caution when interpreting Islamic banking in the context of traditional models of financial intermediation. In addition, there are differences across different Muslim countries in what is considered Sharia-compliant and what is not, which makes it difficult to do cross-country comparisons. Our finding of significant cross-country variation in differences between Islamic and conventional banks supports this assessment. Second, given the different nature of conventional and Sharia-compliant products, as discussed in Section 2, balance sheet and income statement items might not be completely comparable across bank types even within the same country.[4]

The remainder of the paper is structured as follows. Section 2 presents some of the basic Sharia-compliant products and links these products to the theoretical literature on financial intermediation. Section 3 presents data and methodology. Section 4 uses bank-level data to assess the relative business orientation, efficiency, asset quality and stability of Islamic and conventional banks. Section 5 compares the relative performance of conventional and Islamic banks during crisis periods and Section 6 concludes.

2. Sharia-compliant products and agency problems

There are five principles that differentiate Islamic or Sharia[5]-compliant finance from conventional finance. On the one hand, there are the prohibition on *riba* (usury, which is generally defined as

[1] For one of the earliest academic contribution, see Bashir (1983), and for an early survey, see Zaher and Hassan (2001).

[2] Abedifar et al. (2011) confirm these findings for small Islamic banks in a sample of countries with both Islamic and conventional banks. Turk-Ariss (2010) finds for a sample of 13 countries that Islamic banks are better capitalized but less competitive.

[3] Among other papers, Olson and Zoubi (2008) show that financial ratios allow discriminating between conventional and Islamic banks among financial institutions in the Gulf Cooperation Council region.

[4] See Karim (2001) for a discussion on varying accounting practices across countries with Islamic banks.

[5] Sharia is the legal framework within which the public and private aspects of life are regulated for those living in a legal system based on fiqh (Islamic principles of jurisprudence) and for Muslims living outside the domain.

interest or excessive interest), the prohibition on *gharar* (risk or uncertainty, which is generally defined as speculation), and the prohibition on financing for illicit sectors (such as weapons, drugs, alcohol, and pork). On the other hand, there are the profit- and loss-sharing principle and the principle that all transactions have to be backed by a real economic transaction that involves a tangible asset. In order for banks and their clients to comply with Sharia, over the past decades, specific products have been developed that avoid the concept of interest and imply a certain degree of risk-sharing.

One important feature is the pass-through of risk between depositor and borrower.

Among the most common Islamic banking products are partnership loans between bank and borrowers, which are based strictly on profit-loss sharing. Under the *mudaraba* contract, profits are shared at a predetermined ratio, while the losses are borne exclusively by the bank, i.e. the entrepreneur is covered by limited liability provisions. While the entrepreneur has the ultimate control over her business, major investment decisions, including the participation of other investors, have to be approved by the bank. The *Musharaka* contract, on the other hand, has the bank as one of several investors, with profits and losses being shared among all investors. These partnership arrangements are mirrored on the deposit side, with investment accounts or deposits that do not imply a fixed, preset return but profit-loss sharing. Such investment deposits can be either linked to a bank's profit level or to a specific investment account on the asset side of a bank's balance sheet. Depositors thus turn from creditors of the bank to residual claimants.

Other Sharia-complaint financial products are not based on profit-loss sharing, such as the *Murabaha* contract, which resembles a leasing contract in conventional banking. By involving the purchase of goods, it gets around the prohibition to make a return on money lending. As in leasing contracts, the bank buys an investment good on behalf of the client and then on-sells it to the client, with staggered payments and a profit margin in the form of a fee. Similarly, operating leases (*Ijarah*) where the bank keeps ownership of the investment good and rents it to the client for a fee are feasible financial transactions under Sharia-law. While the discounting of IOUs and promissory notes is not allowed under Sharia-law as it would involve indirect interest rate payments, a similar structure can be achieved by splitting such an operation into two contracts, with full payment of the amount of the IOU on the one hand, and a fee or commission for this pre-payment, on the other hand.

On the deposit side, one can distinguish between non-remunerated demand deposits (*amanah* or *qard*), seen as depositors' loans to the bank– thus similar to demand deposits in many conventional banks around the world – and savings deposits that do not carry an interest rate, but participate in the profits of the bank. However, according to some Islamic scholars, banks are allowed to pay regular bonuses on such accounts. Investment accounts, finally, as discussed above, mirror the partnership loans on the asset side, by being fully involved in the profit-loss-risk sharing arrangements of Islamic banks. So, the funding contains both funds for which Islamic banks are directly responsible as well as funds which they manage on behalf of the investors.

In summary, while some of the products offered by Islamic banks are the same as in conventional banks (demand deposits) and others are structured in similar ways as conventional products (leasing products), there is a strong element of risk-sharing in Islamic banking. How do these products fit with the traditional picture of a bank as financial intermediary? Transaction costs and agency problems between savers and entrepreneurs have given rise to banks in the first place, as they can economize on the transaction costs and mitigate agency conflicts. Banks face agency problems on both sides of their balance sheet, with respect to their depositors whose money they invest in loans and other assets and where the bank acts effectively as agent of depositors, and on the asset side where borrowers (as agent) use depositors' resources for investment purposes. The debt contract with deterministic monitoring (in case of default) (Diamond, 1984) or stochastic monitoring (Townsend, 1979) has been shown to be optimal for financial intermediation between a large number of savers and a large number of entrepreneurs. In addition, however, banks face the maturity mismatch between deposits, demandable on sight, and long-term loans, which can result in bank runs and insolvency (Diamond and Dybvig, 1983). Diamond and Rajan (2001) argue that it is exactly the double agency problems banks face, with depositors monitoring banks, that disciplines banks in turn to monitor borrowers, while government interventions such as deposit insurance distort such equilibrium.

How does the risk-sharing component of Islamic banking affect these agency problems? On the one hand, the equity-like nature of savings and investment deposits might increase depositors' incentives to monitor and discipline the bank. At the same token, the equity-like nature of deposits might distort the bank's incentives to monitor and discipline borrowers as it does not face the threat by depositors of immediate withdrawal. Similarly, the equity-like character of partnership loans can reduce the necessary discipline imposed on entrepreneurs by debt contracts (Jensen and Meckling, 1976). On the other hand, the equity character of banks' asset-side of the balance sheet and thus higher risk might also increase the uncertainty on depositors' return and increase the likelihood of both uninformed and informed bank runs. This is exacerbated by the restrictions that banks face on terminating partnership loans or restricting them in their maturity.

Practitioners and academics alike, however, have observed that in reality most Islamic products are not based on profit-loss sharing but resemble very much debt instruments. Aggarwal and Yousef (2000) and Khan (2010b) explain this as a rational response by Islamic banks to the weak contractual framework prevalent in most countries with Islamic banks, which call for debt-like rather than equity-like instruments.

What do the different characteristics of Islamic and conventional banks imply for their relative business orientation, efficiency, asset quality, and stability? Take first business orientation; the Sharia-compliant nature of Islamic bank products implies a different business model for Islamic banks that should become obvious from banks' balance sheets and income statements. We consider three aspects: the relative shares of interest and non-interest revenue, the relative importance of retail and wholesale funding, and the loan-deposit ratio. On the one hand, there might be a higher share of non-interest revenue in Islamic banks as these banks might charge higher fees and commissions to compensate for the lack of interest revenue. On the other hand, the share of revenue related to non-lending and including investment bank activities should be significantly lower for Islamic bank. The overall implications for the relative share of interest and non-interest revenues in total earnings are therefore a priori ambiguous. Similarly, in terms of retail vs. wholesale funding, there is a priori no clear difference, as Islamic banks can rely on market funding as much as conventional banks, as long as it is Sharia-compliant. Similarly, the difference in loan-deposit ratios across bank types is not clear a priori. On the one hand, profit-loss-sharing accounts might not be characterized as loans on Islamic banks' balance sheets; on the other hand, Islamic banks face higher restrictions on investing in non-real sector related securities and thus might focus more on lending or lending-like business.

In terms of efficiency, it is a priori ambiguous whether conventional or Islamic banks should be more efficient. On the one hand, monitoring and screening costs might be lower for Islamic banks given the lower agency problems. On the other hand, the higher

complexities of Islamic banking might result in higher costs and thus lower efficiency of Islamic banks.[6] Further, the younger age of Islamic banks compared to most conventional banks might imply higher cost structures.

Differences in asset quality across Islamic and conventional banks are also, a priori, ambiguous, as it is not clear whether the tendency towards equity-funding in Islamic banks provides stronger incentives to adequately assess and monitor risk and discipline borrowers. Similarly, the relationship between bank type and bank stability is a priori ambiguous. On the one hand, the pass-through role and risk-sharing arrangements of Islamic banks might be a risk-reducing factor. Specifically, interest rate risk – well known feature of any risk management tool and stress test of a conventional bank – should be absent from an Islamic bank. In addition, adverse selection and moral hazard concerns might be reduced in Islamic banks if, as discussed above, depositors have stronger incentives to monitor and discipline. Further, Islamic banks can be assumed to be more stable than conventional banks, as they are not allowed to participate in risky trading activities, as discussed above. This, however, also points to the importance of controlling for the importance of non-lending activities in conventional banks. On the other hand, the profit-loss financing increases the overall risk on banks' balance sheet as they take equity in addition to debt risk. In addition, the equity-like nature of financing contracts might actually undermine a bank's stability as it reduces market discipline (Diamond and Rajan, 2001). Further, operational risk aspects might be higher in Islamic banks stemming from the complexities of Sharia law and including legal and compliance risks. Finally, the restrictions of Islamic banks to certain asset classes, the limited use of hedging instruments and the lack of high-quality liquid assets such as Sharia-compliant government bonds can also increase the riskiness of Sharia-compliant financial institutions. In a nutshell, it is a priori not clear whether Islamic or conventional banks are more or less stable than conventional banks.

Summarizing, theory does not provide clear answers whether and how the business orientation, cost efficiency, asset quality, and stability differ between conventional and Islamic banks. Some of these differences might also vary according to bank size and thus possibilities to exploit scale economies and diversification tools. This ambiguity is exacerbated by lack of clarity whether the products of Islamic banks follow Sharia in form or in substance, an ambiguity which might vary across countries. We therefore turn to empirical analysis to explore differences between the two bank groups. During this analysis we will also explore differences across Islamic banks of different sizes and cross-country variation in the differences between Islamic and conventional banks.

3. Data and methodology

We use data from Bankscope, a global database with data on both listed and non-listed banks, to construct and compare indicators of business orientation, efficiency, asset quality, and stability of both conventional and Islamic banks.[7] We only include banks with at least two observations and countries with data on at least four banks. Finally, we eliminate outliers in all variables by winsorizing at the 1st and 99th percentiles within each country. We also double check the categorization of Islamic banks in Bankscope with information from Islamic Banking Associations and country-specific sources.

We use a sample that comprises only countries with both conventional and Islamic banks, which allows us to control for any unobserved time-variant effect by introducing country-year dummies. Our main analysis over the period 1995–2009 includes 510 banks across 22 countries, out of which 88 are Islamic banks. In addition, we use a sample of 209 listed banks across 21 countries for the period 2005–2009 to assess the impact of the global financial crisis on the relative stock market performance of Islamic and conventional banks. We will discuss this latter sample below in Section 5.

In Table 1, we present data on 22 countries with both conventional and Islamic banks. Specifically, we present the number of conventional and Islamic banks and note crisis periods. Several sample countries suffered banking crises during the sample period, including Indonesia between 1997 and 2001, Malaysia between 1997 and 1999, Turkey in 2000/2001, and Yemen in 1996, in addition to the Global Financial Crisis that started in 2007 and affected the banking system directly in the UK. We also present the market share of Islamic banks for 2007, the last year before the on-set of the Global Financial Crisis. The market share ranges from almost zero in the case of the UK to 41% in Kuwait. Not included in this table are banking systems that are completely Islamic, such as Iran. Almost half of all Islamic banks in these 22 countries are listed, which is a larger share than among conventional banks. Table 2 presents descriptive statistics and univariate comparisons between conventional and Islamic banks. Specifically, we present mean, standard deviation, minimum and maximum as well as average value for conventional and Islamic banks for each variable as well as the p-value of a two-sided *t*-test. We present descriptive statistics for the sample after winsorizing on the country-level, which still leaves us with some large outliers.

We use an array of different variables to compare Islamic and conventional banks. First, we compare the business orientation of conventional and Islamic banks, using two indicators suggested by Demirgüç-Kunt and Huizinga (2010) as well as the traditional loan-deposit ratio. Specifically, we explore to which extent Islamic and conventional banks are involved in fee-based business by using the ratio of fee-based to total operating income. In our sample, the share of fee-based income to total income varies from 5.7% to 68.2%, with an average of 33.4%. We also consider the importance of non-deposit funding to total funding, which ranges from zero to 13.9% in our sample, with an average of 2.2%. The loan-to-deposit ratio varies from 17.8% to 110.6%, with a mean of 62.5%. Islamic banks have a significantly higher share of fee income than conventional banks, rely more on non-deposit funding and have higher loan-deposit ratios. These simple comparisons suggest that Islamic banks are less involved in traditional bank business – which relies heavily on interest-income generating loans and deposit funding – but intermediate more of the deposits they receive.

Second, we use two indicators of bank efficiency. Overhead cost is our first and primary measure of bank efficiency and is computed as total operating costs divided by total assets. Overhead cost varies from less than 1% to 5.0% in our sample, with an average of 2.3%. As alternative efficiency indicator, we use the cost-income ratio, which measures overhead costs relative to gross revenues, with higher ratios indicating lower levels of cost efficiency. This indicator ranges from 1% to 714.3%, with an average of 41.9%. Islamic banks have significantly higher overhead costs than conventional banks, but only marginally higher cost-income ratios.[8]

Third, we use three indicators of asset quality. Specifically, we use (i) loss reserves, (ii) loan loss provisions, and (iii) non-perform-

[6] See, for example, Ebrahim and Rahman (2005) for difficulties in structuring future and forward contracts under Sharia law, and Derigs and Marzban (2009) for difficulties in constructing Shariah-compatible asset portfolios.

[7] We use unconsolidated data when available and consolidated if unconsolidated data are not available, in order not to double count subsidiaries of international banks.

[8] We do not use the net interest margin, a standard indicator of efficiency in the financial intermediation literature (Beck, 2007), as Sharia prohibits the use of interest and Islamic banks should therefore do not show any interest revenue or cost in their financial statements. Nevertheless, Bankscope reports both for Islamic banks.

Table 1
Banking sector structure in sample countries.

	Conventional	Islamic	Dates of systemic banking crises	Islamic banking %	Listed banks	
				2007	Conventional	Islamic
Brahain	11	15		27.68	5	4
Bangladesh	28	5		13.22	22	5
Cayman Islands	11	1		6.53	0	0
Egypt	23	2		4.22	13	2
Gambia	5	1		8.48	0	1
Indonesia	53	1	1997–2001	0.62	24	0
Jordan	7	2		6.20	7	1
Kuwait	5	6		41.33	5	6
Lebanon	27	2		0.33	3	0
Malaysia	29	12	1997–1999	7.26	3	0
Mauritannia	5	1		12.40	0	0
Pakistan	23	10		6.72	21	6
Qatar	7	4		14.02	5	3
Saudi Arabia	9	2		5.92	8	1
Singapore	12	1		0.17	3	0
Sudan	13	9		33.84	7	4
Syria	8	1		1.05	6	1
Tunisia	14	1		1.51	10	0
Turkey	24	3	2000–2001	2.96	12	2
United Arabe Emirates	16	4		12.86	12	4
United Kingdom	88	2	2007–1996	0.01	0	1
Yemen	4	3		51.45	0	0
Total	422	88		9.87	166	41

Laeven, Luc and Valencia, Fabian, 2010, "Resolution of bankingg crises: The Good, the Bad, and the Ugly", IMF wp 10146.

ing loans, all scaled by gross loans. All indicators decrease in asset quality. We note that there might be problems with cross-country comparability, due to different accounting and provisioning standards. Loan loss reserves range from less than zero to 80.5%, with an average of 7.6%. Loan loss provisions range from less than zero to 4.1%, with a mean of 1.3%. Non-performing loans, finally, range for 0.6–29.3%, with an average of 9.3%. Islamic banks have significantly lower loan loss reserves and non-performing loans, while there is no significant difference in loan loss provisions.

Fourth, we use several indicators of bank stability. We use an indicator of maturity matching – the ratio of liquid assets to deposit and short-term funding to assess the sensitivity to bank runs. The liquidity ratio varies from zero to almost 900%, with a mean of 48.9%. We do not find any significant difference between Islamic and conventional banks. Further, we use the *z*-score as measure of bank stability; this indicates the distance from insolvency, combining accounting measures of profitability, leverage and volatility, which has been widely used in the recent literature.[9] Specifically, if we define insolvency as a state where losses surmount equity ($E < -\pi$) (where E is equity, π is profits, A is total assets, ROA = π/A is return on assets and CAR = E/A is the capital-asset ratio) the probability of insolvency can be expressed as prob($-$ROA < CAR). If profits are assumed to follow a normal distribution, it can be shown that z = (ROA + CAR)/SD(ROA) is the inverse of the probability of insolvency.[10] Specifically, *z* indicates the number of standard deviations that a bank's return on assets has to drop below its expected value before equity is depleted and the bank is insolvent (see Roy, 1952; Hannan and Henwick, 1988; Boyd et al., 1993; De Nicoló, 2000). Thus, a higher z-score indicates that the bank is more stable. The z-score varies from four to 75 in our sample, with an average of 29. Islamic banks have a significantly lower z-score, suggesting that they are closer to insolvency than conventional banks.

We also consider two components of the z-score, most notably the return on assets and the capital-asset ratio. Return on assets varies from $-$40% to 30% across banks and over time, with an average of 1.2%, while the capital-asset ratio varies from 3.9% to 27.1% across banks and over the sample period, with an average of 11.9%. Islamic banks are significantly more profitable and better capitalized than conventional banks; however, since their z-scores are still lower, their returns also tend to be much more volatile.

While univariate comparisons show significant differences between Islamic and conventional banks, these differences could be driven by other bank or country characteristics. To assess differences in business model, efficiency, asset quality, and stability across different bank types, we therefore run the following regression:

$$\text{Bank}_{i,j,t} = \alpha + \beta B_{i,j,t} + \gamma C_j * Y_t + \delta I_i + \varepsilon_{i,t} \quad (1)$$

where Bank is one of our measures of business orientation, efficiency, asset quality, and stability of bank i in country j in year t, B is a vector of time-varying bank characteristics, $C_j^* Y_t$ are country-year-fixed effects, I is a dummy taking the value one for Islamic banks and ε is a white-noise error term. We thus compare Islamic and conventional banks within a country and a specific year. Below we also use additional specifications, including interacting the Islamic bank dummy with size dummies and with the market share of Islamic banks. We allow for clustering of the error terms on the bank level, i.e. correlation among the error terms across years within banks. We prefer to cluster on the bank- rather than country-level, as some of the countries in our sample host significantly more banks than others and we have only 22 countries. Simulations have shown that standard errors can be biased downwards in these two cases (Nichols and Schaffer, 2007).

We control for an array of time-variant bank characteristics that might confound the relationship between bank type, on the one hand, and business orientation, asset quality, efficiency, and stability, on the other hand. Specifically, we control for bank size, using the log of total assets. Larger banks might be more efficient due to scale economies, while the theoretical and empirical literature on the relationship between size and stability is ambiguous (Beck et al., 2006; Beck, 2008). They might also be more likely to engage

[9] See, for example, Laeven and Levine (2008), Houston et al. (2010), Demirgüç-Kunt and Huizinga (2010).

[10] We compute the standard deviation of ROA over the entire sample period. In robustness tests, we use a 5-year rolling average of the standard deviation. Our regressions results, however, are not sensitive to this.

Table 2
Descriptive statistics.

	Scaled by	Nber. of obs.	Mean	Standard deviation	Minimum	Maximum	Islamic Banks	Conventional Banks	Difference *t*-test *p*-value*
Fee income (%)	Total operational income	3460	33.373	19.751	5.659	68.231	35.679	33.139	0.045
Non-deposit funding (%)	Total funding	6261	2.217	4.582	0.000	13.927	2.940	2.129	0.000
Loans deposits ratio (%)		6206	62.512	29.296	17.769	110.621	72.468	61.301	0.000
Cost income ratio		5817	57.086	41.867	1.040	714.290	62.860	56.298	0.002
Overheads (%)	Total assets	6013	2.311	1.327	0.785	4.972	2.743	2.250	0.000
Loan Loss reserves (%)	Total gross loans	5090	7.569	9.609	−0.200	80.450	6.381	7.698	0.003
Loan loss provisions (%)	Total gross loans	4959	1.286	1.328	−0.010	4.145	1.248	1.291	0.456
Non-performing loans (%)	Total gross loans	3385	9.283	9.320	0.644	29.345	6.344	9.575	0.000
Maturity match (%)		6354	48.863	56.223	0.020	891.510	50.825	48.622	0.382
Zscore		3403	29.289	22.608	3.891	75.232	26.943	29.563	0.041
Return on assets (%)		6360	1.246	3.758	−40.200	30.180	1.878	1.162	0.000
Equity assets ratio (%)		6496	11.886	7.278	3.940	27.130	16.050	11.341	0.000
Control variables									
ln(total assets)		6496	13.716	1.780	7.699	20.527	13.243	13.778	0.000
Non-loan earnings assets (%)	Total earnings assets	6356	40.324	20.856	12.228	76.746	33.442	41.205	0.000
Fixed assets (%)	Total assets	6201	1.846	3.413	0.000	70.798	3.325	1.645	0.000

* Two sided *p*-value. The test allows for the variance to be different between the two groups.

in fee-based business and have easier access to wholesale markets. We include the ratio of fixed assets to total assets to control for the opportunity costs that arise from having non-earning assets on the balance sheet, as well as the share of non-interest earning assets to control for non-lending business of banks, which previous research has shown to affect both efficiency and stability of banks (Demirgüç-Kunt et al., 2004; Demirgüç-Kunt and Huizinga, 2010). In our large sample, total assets vary from 2.2 million USD to 822 billion USD, with an average of 905 million USD. The share of fixed in total assets varies from close to zero to 70.8%, with an average of 1.8%. The share of non-loan earning assets in total assets ranges from 12% to 77%, with an average of 40%. Islamic banks are significantly smaller than conventional banks, have higher fixed assets, but lower non-interest earning assets.

As discussed above, the concept of Sharia-compliant products and structure of Islamic banking varies significantly across countries. In a second step, we therefore assess for country-specific differences between conventional and Islamic banks by introducing interaction terms between the Islamic bank dummy and the 22 country dummies:

$$\mathrm{Bank}_{i,j,t} = \alpha + \beta \mathrm{B}_{i,j,t} + \gamma \mathrm{C}_j * \mathrm{Y}_t + \Sigma_j \delta_j \mathrm{I}_i * \mathrm{C}_j + \varepsilon_{i,t} \quad (2)$$

where the coefficients δ_j indicate the difference between conventional and Islamic banks for the respective country. We also offer several other sample splits, such as according to size of Islamic banks and according to the market share of Islamic banks, which we will explain in more detail below.

In a third step, we compare Islamic and conventional banks with additional interactions for crisis periods. Specifically, we introduce interaction terms of the Islamic bank dummy with a crisis dummy for local crises (Crisis) and a global financial crisis dummy (Global) that takes on the value one for the period 2007–2009. In addition, we interact the Islamic Bank dummy with a trend variable to distinguish between the effect of the crisis on any difference between Islamic and conventional banks and any longer time trends.

$$\mathrm{Bank}_{i,j,t} = \alpha + \beta \mathrm{B}_{i,j,t} + \gamma \mathrm{C}_i * \mathrm{Y}_t + \delta_1 \mathrm{I}_i + \delta_2 \mathrm{I}_i * \mathrm{Crisis}_{i,t} + \delta_3 \mathrm{I}_i * \mathrm{Global}_t + \delta_4 \mathrm{I}_i * \mathrm{Trend}_t + \varepsilon_{i,t} \quad (3)$$

The coefficient estimates δ_2 and δ_3 will allow us to gauge whether there is any additional difference between Islamic and conventional banks during local banking crises or the global financial crisis and thus test the assertions made by commentators on the relative per-

Table 3
Comparing Islamic and conventional banks.

	Business model			Efficiency			Asset quality			Stability		
	Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Islamic bank dummy	−3.727	−0.272	8.864***	9.871***	0.330**	−1.121	−0.0891	−2.228**	−3.071	−2.439	−0.111	2.898***
	(2.715)	(0.421)	(2.648)	(3.207)	(0.132)	(0.973)	(0.103)	(1.093)	(5.192)	(2.593)	(0.251)	(0.781)
Constant	35.19***	5.266***	66.45***	37.05***	1.250***	9.499***	0.560**	6.336***	56.94***	39.33***	2.009***	16.57***
	(6.742)	(1.767)	(7.086)	(6.015)	(0.181)	(2.193)	(0.263)	(1.678)	(11.81)	(9.137)	(0.335)	(2.120)
Observations	3460	6261	6206	5817	6013	5090	4959	3385	6354	3403	6360	6496
R-squared	0.312	0.397	0.306	0.172	0.390	0.294	0.282	0.321	0.129	0.214	0.199	0.227

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

Table 4
Comparing Islamic and conventional banks – controlling for bank characteristics.

	Business model			Efficiency			Asset quality			Stability		
	Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Islamic bank dummy	−3.090	−0.231	3.487**	6.520**	0.0559	−1.235	−0.0979	−2.129*	0.528	−2.193	−0.0476	1.193*
	(2.715)	(0.417)	(1.648)	(3.245)	(0.110)	(0.871)	(0.101)	(1.088)	(3.742)	(2.614)	(0.198)	(0.638)
ln(total assets)	0.402	−0.0161	−0.627	−1.756**	−0.175***	−0.919***	0.00250	−0.396	−6.322***	−0.383	−0.222***	−2.174***
	(0.568)	(0.0684)	(0.427)	(0.827)	(0.0243)	(0.211)	(0.0227)	(0.241)	(0.944)	(0.710)	(0.0497)	(0.133)
Non-loan earnings assets	0.0172	−0.00317	−1.030***	0.0498	−0.00775***	0.0726***	0.00428*	0.0387**	0.970***	0.0779*	0.00916**	−0.00293
	(0.0396)	(0.00694)	(0.0326)	(0.0546)	(0.00204)	(0.0175)	(0.00239)	(0.0179)	(0.0773)	(0.0429)	(0.00361)	(0.0122)
Fixed assets	0.198	−0.0297*	−1.104***	1.457	0.0666***	0.0170	0.0263**	0.189	0.0799	0.499*	−0.0405	0.244***
	(0.214)	(0.0167)	(0.140)	(0.913)	(0.0242)	(0.162)	(0.0118)	(0.153)	(0.235)	(0.256)	(0.0570)	(0.0766)
Constant	28.63***	5.643***	123.9***	57.64***	3.903***	18.31***	0.315	9.559**	97.00***	24.84**	4.574***	46.10***
	(9.917)	(2.091)	(7.557)	(13.10)	(0.407)	(3.670)	(0.424)	(3.768)	(16.71)	(11.97)	(0.765)	(2.563)
Observations	3269	5940	5971	5500	5663	4984	4855	3341	6004	3228	5965	6089
R-squared	0.330	0.417	0.672	0.189	0.469	0.327	0.293	0.325	0.296	0.227	0.221	0.436

*** Robust standard errors in parentheses $p < 0.01$.
** Robust standard errors in parentheses $p < 0.05$.
* Robust standard errors in parentheses $p < 0.1$.

formance of Islamic banks during crisis periods and as discussed above.

4. Comparing Islamic and conventional banks

The results in Table 3 show that within countries and years, Islamic banks have higher loan-deposit ratios, higher cost-income ratios, higher overhead costs, lower non-performing loans and higher capital-asset ratios than conventional banks. Here, we compare Islamic and conventional banks, while only controlling for country-year specific effects, but not for other bank-level characteristics. So, without taking into account differences in size and asset structure, Islamic banks show higher intermediation efficiency, lower cost efficiency, lower non-performing loans and higher capitalization. The magnitude of these differences is also meaningful, with Islamic banks having an 8.7% point higher loan-deposit ratio, a 9.9% point higher cost-income ratio, 0.3% points higher overhead costs, 2.2% points lower non-performing loans and a 2.9% point higher capital-asset ratio.

The results in Table 4 confirm the findings of Table 3 of higher loan-deposit ratios, lower cost-efficiency, lower non-performing loans and higher capitalization of Islamic banks, though with lower statistical and economic significance. Here, we control for bank size and asset structure of banks, by including the log of total assets, the share of non-loan earning assets in total assets and the

Table 5
Comparing Islamic and conventional banks across different size groups.

		Business model			Efficiency			Asset quality			Stability		
		Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	Large bank * Islamic bank dummy	−0.395	−1.011*	−0.517	13.00**	0.115	−0.656	0.133	0.440	−2.104	−3.259	−0.256	0.442
		(2.985)	(0.606)	(2.263)	(5.623)	(0.139)	(0.614)	(0.139)	(1.284)	(4.740)	(4.291)	(0.275)	(1.219)
(2)	Medium bank * Islamic bank dummy	−4.712	−0.278	4.048**	4.288	−0.0926	−1.048	−0.183	−2.919**	−4.433	−3.613	−0.187	0.444
		(2.955)	(0.475)	(1.996)	(3.877)	(0.132)	(1.234)	(0.139)	(1.480)	(5.146)	(3.036)	(0.252)	(0.686)
(3)	Small bank * Islamic bank dummy	−1.689	0.869	7.179**	2.793	0.318	−3.457	−0.262	−9.058***	15.89**	7.393	0.529	3.825***
		(6.561)	(0.936)	(3.400)	(6.922)	(0.201)	(3.028)	(0.192)	(1.238)	(7.972)	(5.220)	(0.540)	(1.029)
	p-Value test (1) = (3)	0.86	0.09	0.05	0.25	0.39	0.35	0.08	0.00	0.05	0.10	0.17	0.03
	Number of observations	3269	5940	5971	5500	5663	4984	4855	3341	6004	3228	5965	6089
	R-squared	0.330	0.419	0.673	0.190	0.471	0.328	0.294	0.331	0.299	0.229	0.222	0.440

* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

Table 6
Comparing Islamic and conventional banks, testing for cross-country variation.

	Business model			Efficiency			Asset quality			Stability		
	Fee income (1)	Non- deposit funding (2)	Loans deposit ratio (3)	Cost income ratio (4)	Overheads (5)	Loss reserves (6)	Loan loss provisions (7)	Non-performing loans (8)	Maturity match (9)	Zscore (10)	Return on assets (11)	Equity assets ratio (12)
Brahain	1.401	0.124	11.57***	10.86*	1.022***	−0.866	0.472**	−1.825	20.95*	−15.89	1.314	3.578**
	(5.320)	(1.319)	(4.437)	(5.638)	(0.358)	(3.004)	(0.226)	(3.847)	(12.48)	(10.31)	(0.816)	(1.797)
Bangladesh	−12.82	−2.154***	−3.504	−1.437	−0.626***	−1.676	−0.140	−3.037	−1.277	−2.995	−0.962	−1.415
	(8.203)	(0.808)	(2.998)	(15.74)	(0.143)	(1.069)	(0.195)	(2.683)	(8.613)	(6.111)	(0.756)	(1.154)
Cayman Islands				−14.60***	−0.478	−1.163	1.796***		55.45***		1.495***	14.95***
				(5.359)	(0.323)	(2.028)	(0.428)		(7.239)		(0.510)	(1.340)
Egypt	−9.516***	−0.0694	−0.858	−0.0831	−0.757***	0.342	−0.0232	−7.259	−9.979	0.0884	−0.491**	−4.175***
	(3.609)	(0.318)	(3.298)	(7.321)	(0.0889)	(3.375)	(0.762)	(4.928)	(11.87)	(4.709)	(0.232)	(0.592)
Gambia	3.068	−1.473	1.254	90.65***	−0.289*	−0.237	0.411***		−13.71	3.603**	−6.425***	−7.541***
	(2.155)	(1.022)	(2.081)	(3.300)	(0.155)	(2.348)	(0.110)		(10.40)	(1.794)	(1.599)	(2.098)
Indonesia	−4.971**	−0.387*	6.511	8.124**	0.960***	−1.446*	−0.0757	−2.455	6.657	−8.145*	0.00335	−0.582
	(2.381)	(0.205)	(4.384)	(3.474)	(0.170)	(0.814)	(0.214)	(1.935)	(7.114)	(4.891)	(0.286)	(2.781)
Jordan	−10.12***	−1.075	−2.523	−2.488	−1.083***	−5.944**	−0.226	−5.851**	−5.506	1.112	−0.530**	−1.241
	(2.465)	(2.157)	(6.444)	(5.662)	(0.194)	(2.738)	(0.247)	(2.306)	(8.234)	(8.838)	(0.229)	(2.538)
Kuwait	33.01***	−4.773*	4.450	35.63**	1.401**	1.416	0.369	3.050	−11.85*	−12.83	1.865*	4.602***
	(7.797)	(2.764)	(6.574)	(17.58)	(0.607)	(3.219)	(0.235)	(3.951)	(6.744)	(8.443)	(1.090)	(1.494)
Lebanon	47.20***	0.0815	6.309	22.03	2.206***	25.86**	0.602		74.23***	−7.951	−1.628	9.785***
	(4.806)	(0.227)	(11.55)	(17.51)	(0.328)	(10.10)	(0.512)		(7.043)	(5.912)	(1.526)	(2.031)
Malaysia	2.303	0.0947	0.843	14.00***	0.198	−0.789	0.390*	1.749	−11.02*	−7.232	−1.270***	−3.227***
	(6.977)	(0.0900)	(4.842)	(3.781)	(0.202)	(0.672)	(0.215)	(1.757)	(6.232)	(4.926)	(0.315)	(1.240)
Mauritannia	20.32***	0.0250	8.921**	17.33**	0.309*		−2.944***		1.018	28.88***	−0.282	5.314***
	(6.149)	(0.0357)	(4.329)	(6.730)	(0.183)		(0.0561)		(7.123)	(5.208)	(0.304)	(1.811)
Pakistan	6.006	0.0437	3.895	−26.52**	−0.630**	−4.871**	−0.857**	−5.441	4.920	−1.587	1.007	2.728*
	(5.929)	(0.516)	(3.063)	(12.96)	(0.309)	(2.268)	(0.337)	(3.446)	(8.692)	(6.044)	(0.624)	(1.410)
Qatar	−6.732	−0.846	−1.515	−0.0477	−0.0313	−0.431	−0.258	−6.080**	−42.16	−8.679	1.265***	−1.826
	(4.296)	(0.562)	(7.306)	(2.374)	(0.254)	(2.822)	(0.260)	(3.073)	(35.34)	(9.996)	(0.437)	(2.000)
Saudi Arabia	−15.75*	0.406	11.56***	7.806	0.265	−1.074	0.0358	−1.192	38.18	28.69	−0.176	8.424**
	(8.906)	(0.380)	(1.098)	(9.678)	(0.521)	(1.100)	(0.442)	(0.833)	(38.12)	(17.64)	(0.924)	(3.459)
Singapore	−33.54**	1.441	22.52**	7.961	−0.447	−3.296***	1.093***		60.46***		−2.267***	6.746***
	(17.05)	(1.509)	(9.620)	(9.743)	(0.430)	(0.960)	(0.243)		(7.139)		(0.328)	(1.558)
Sudan	−13.84**	−1.850	2.607	11.60	0.301	0.862	−0.335	−3.111	−6.749	4.159	−0.369	0.588
	(6.895)	(2.024)	(9.159)	(10.62)	(0.254)	(1.951)	(0.454)	(2.036)	(13.35)	(3.033)	(0.509)	(1.691)
Syria		−1.748	−0.482	−31.63**	−0.390***	9.582***			64.43***		−1.584***	8.007***
		(1.108)	(5.916)	(16.09)	(0.132)	(0.295)			(7.058)		(0.383)	(2.457)
Tunisia	−5.879***	2.962***	8.676***	−17.44***	−1.075***	−8.321**	−0.610***		−5.181	21.44***	0.211	10.15***
	(0.532)	(0.157)	(2.522)	(5.004)	(0.156)	(3.272)	(0.196)		(3.707)	(3.142)	(0.214)	(1.460)
Turkey	−18.39***	0.422	−1.397	−4.054	−0.606*	0.314	0.125	1.359	−30.71**		0.959	−2.807***
	(6.876)	(2.093)	(5.331)	(8.322)	(0.368)	(1.445)	(0.332)	(2.025)	(14.51)		(0.628)	(0.963)
United Arabe Emirates	2.003	−0.667	0.882	24.39**	0.378	0.639	−0.266	1.980	−2.571	−13.83***	−0.976	−0.142
	(6.029)	(0.611)	(3.121)	(10.79)	(0.291)	(3.369)	(0.180)	(3.997)	(4.051)	(4.965)	(0.664)	(1.807)
United Kingdom		−1.851***	16.30***		3.142***	1.024			83.61***		−3.351**	13.78***
		(0.533)	(3.196)		(0.176)	(3.124)			(29.55)		(1.466)	(0.956)
Yemen	33.46***	10.29***	18.92*	11.91*	−0.160	−15.97***	−0.909	−18.38***	31.51***	−1.975	0.391	4.566**
	(7.393)	(2.091)	(10.44)	(6.252)	(0.382)	(3.660)	(0.721)	(2.010)	(4.940)	(5.500)	(0.508)	(1.967)
ln(total assets)	0.669	−0.00698	−0.559	−1.696**	−0.166***	−0.896***	0.00307	−0.369	−6.081***	−0.431	−0.213***	−2.121***
	(0.564)	(0.0672)	(0.437)	(0.804)	(0.0233)	(0.212)	(0.0226)	(0.242)	(0.942)	(0.715)	(0.0488)	(0.132)
Non-loan earnings assets	0.0163	−0.000255	−1.026***	0.0607	−0.00773***	0.0671***	0.00412*	0.0317*	0.973***	0.0723*	0.00931**	−0.00514
	(0.0387)	(0.00671)	(0.0329)	(0.0544)	(0.00203)	(0.0176)	(0.00239)	(0.0180)	(0.0744)	(0.0431)	(0.00369)	(0.0124)
Fixed assets	0.137	−0.0181	−1.108***	1.627**	0.0661***	−0.0831	0.0220*	0.175	0.00821	0.513**	−0.0492	0.221***

	(0.209)	(0.0181)	(0.144)	(0.782)	(0.0193)	(0.146)	(0.0122)	(0.149)	(0.247)	(0.241)	(0.0554)	(0.0746)
Constant	23.39***	5.260***	120.1***	54.74***	3.464***	18.23***	0.0913	9.438***	86.91***	33.16***	3.917***	44.71***
	(9.724)	(2.112)	(8.251)	(13.06)	(0.470)	(3.903)	(0.397)	(3.899)	(16.03)	(14.42)	(0.812)	(2.615)
Observations	3269	5940	5971	5500	5663	4984	4855	3341	6004	3228	5965	6089
R-squared	0.356	0.444	0.675	0.202	0.498	0.349	0.303	0.340	0.312	0.247	0.230	0.462

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

share of fixed assets in total assets. We find that Islamic banks have a 3.5% point higher loan-deposit ratio and a 6.5% point higher cost-income ratio, while there is no significant difference in overhead costs, once we control for other bank characteristics. Islamic banks have 2.1% points lower non-performing loans, a coefficient estimate, however, that is significant only at the 10%, as is the difference in the capital-asset ratio, which is 1.2% points higher for Islamic banks.

The other bank-level variables enter with the expected signs in the Table 4 regressions. Larger banks have lower overhead costs and cost-income ratios, lower loss reserves, lower liquidity, and lower profitability and capitalization ratios. Banks with higher fixed assets rely more on deposit funding and have lower loan-deposit ratios, higher overhead, higher loan loss provisions, and higher z-scores due to higher capitalization ratios. Banks with a higher share of non-loan earning assets have lower loan-deposit ratios, lower overhead costs, higher loss reserves, loan loss provisions and non-performing loans, higher liquidity reserves, and higher z-scores due to higher ROAs.

We confirm our main findings with several robustness tests. First, we truncate our sample at the 1st and 99th percentiles rather than winsorizing at these thresholds. Results, reported in Appendix Table A1 for this somewhat smaller sample, confirm that Islamic banks have higher cost-income ratios (though significant only at the 10% level), lower loan loss reserves and non-performing loans, and higher capital-asset ratios. Second, we limit the sample to the pre-crisis period 1995–2007 and again confirm several of our findings, including that of higher loan-deposit ratios, higher cost-income ratios, and higher capital-asset ratios for Islamic banks (Appendix Table A2). Third, we drop 18 banks, which are included in our sample both as parent and as subsidiary in different countries. Again, we confirm our findings, though at lower significance levels.

Table 5 shows that there are significant differences between Islamic banks of different sizes and that many of the findings so far on differences between Islamic and conventional banks are driven by smaller Islamic banks. Here we split the sample of Islamic banks according to their asset size. Specifically, we split the sample into banks above the 75th percentile, between the 25th and 75th percentiles and banks below the 25th percentile. As in Table 4, we include country-year fixed effects and bank-level control variables. Islamic banks might vary significantly across different size buckets. Smaller Islamic banks might be more affected by the higher cost inefficiency of Islamic banks as the design of Sharia-compliant products and compliance costs might involve scale economies. Similarly, the absence of risk diversification tools might affect smaller more than larger Islamic banks. Cihak and Hesse (2010) find significant differences in stability between small and large Islamic banks, with the former being more stable and the latter being less stable than conventional banks.

The results in Table 5 show that large Islamic banks have higher cost-income ratios than conventional banks and lower non-deposit funding (significant at the 10% level), while large Islamic banks do not differ from conventional banks along any of the other dimensions. Similarly, we find that mid-sized Islamic banks have higher loan-deposit ratios and lower non-performing loans than conventional banks, while there is no difference between mid-sized Islamic and conventional banks along any of the other dimensions. Small Islamic banks, on the other hand, have higher loan-deposit ratios, lower non-performing loans, higher maturity match, and higher equity-asset ratios than conventional banks. We also find several significant differences between small and large Islamic banks. Specifically, smaller Islamic banks have higher non-deposit funding, higher loan-deposit ratios, lower non-performing loans, higher maturity match and higher equity-asset ratios than large Is-

Table 7
Comparing Islamic and conventional banks – controlling for market shares.

	Business model			Efficiency			Asset quality			Stability		
	Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A												
Islamic bank dummy	−1.303	−0.320	8.670***	8.138*	0.290*	0.267	−0.0781	−0.08	−2.618	−2.842	−0.097	3.681***
	(3.339)	(0.442)	(3.084)	(4.253)	(0.162)	(1.206)	(0.129)	(1.305)	(5.404)	(3.450)	(0.266)	(1.009)
Islamic banking share * Islamic bank dummy	−0.143	0.003	0.011	0.093	0.002	−0.087**	−0.001	−0.158**	−0.0251	0.021	−0.001	−0.044*
	(0.113)	(0.025)	(0.128)	(0.132)	(0.004)	(0.042)	(0.005)	(0.063)	(0.123)	(0.073)	(0.007)	−0.024
Bank level controls	No	No	No	No	No	No	No	No	No	No	No	No
Number of observations	3460	6261	6206	5817	6013	5090	4959	3385	6354	3403	6360	6496
R-squared	0.314	0.397	0.306	0.172	0.390	0.297	0.282	0.324	0.129	0.214	0.199	0.229
Panel B												
High Islamic banking share * Islamic bank dummy	−3.907	−0.331	3.109	10.33***	0.171	−1.960**	−0.127	−2.937**	−0.790	−3.259	0.00669	0.973
	(3.105)	(0.529)	(2.082)	(3.801)	(0.120)	(0.991)	(0.104)	(1.225)	(4.465)	(3.008)	(0.242)	(0.655)
Low Islamic banking share * Islamic bank dummy	−1.024	0.0156	4.427**	−3.458	−0.250	0.698	−0.0270	0.617	3.807	1.999	−0.190	1.761
	(4.912)	(0.432)	(1.780)	(4.046)	(0.191)	(1.754)	(0.213)	(1.259)	(5.707)	(4.682)	(0.221)	(1.301)
Test *p*-value (1) = (2)	0.61	0.58	0.59	0.01	0.05	0.19	0.66	0.03	0.49	0.34	0.49	0.56
Bank level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	3269	5940	5971	5500	5663	4984	4855	3341	6004	3228	5965	6089
R-squared	0.330	0.417	0.672	0.191	0.471	0.328	0.293	0.327	0.297	0.228	0.221	0.436

* Significance at the 10% level.
** Significance at the5% level.
*** Significance at the 1% level.

lamic banks. In summary, most of the differences between Islamic and conventional banks are driven by smaller Islamic banks; in addition, there are significant differences between Islamic banks of different sizes.[11]

While the results so far provide suggestive evidence of differences between Islamic and conventional banks in intermediation efficiency, cost efficiency, asset quality and capitalization, there might be important cross-country differences which we study next. Specifically, Table 6 presents results using regression Eq. (2) where we interact the Islamic bank dummy with country dummies to thus explore whether the differences between conventional and Islamic banks vary across our 22 countries. As we interact the Islamic bank dummy with all 22 country dummies, we drop the Islamic bank dummy itself. For some regressions, the interaction term with Islamic bank dummy is not reported for all countries, as observations might be missing for this specific dependent variable.

The results in Table 6 show a large cross-country variation in the differences between Islamic and conventional banks. The fact that the Islamic bank dummy entered insignificantly in most regressions of Tables 3 and 4 can be explained with the fact that it enters with opposite signs across different countries in Table 6. Take the example of fee income; the Table 6 results suggest that Islamic banks in Egypt, Indonesia, Jordan, Saudi Arabia, Singapore, Sudan, Tunisia and Turkey have lower fee income than conventional banks in these countries, while they have higher fee income in Kuwait, Lebanon, Mauritania and Yemen. On the other hand, few interactions of the Islamic bank dummy with country dummies enter significantly in the regression of non-deposit funding. The positive and significant coefficient on the Islamic bank dummy in the loan-deposit ratio regression of Tables 3 and 4 is driven by Bahrain, Mauritania, Saudi Arabia, Singapore, Tunisia, UK and Yemen. The interaction of the Islamic bank dummy with country dummies is insignificant for all other countries in the sample. There is a large variation in the differences between Islamic and conventional banks in cost efficiency across our sample countries, with Islamic banks having higher cost-income ratios in Bahrain, Gambia, Indonesia, Kuwait, Malaysia, Mauritania, UAE and Yemen, while having lower cost-income ratios in Cayman Islands, Pakistan, Syria and Tunisia. The overhead cost regression shows similar cross-country variation, though not always consistent with differences in cost-income ratios, as most obvious in the case of Gambia, where Islamic banks have higher cost-income ratios but lower overhead costs than conventional banks. The difference in asset quality between Islamic and conventional banks again varies across countries; though in most cases Islamic banks show higher asset quality, the differences are mostly not significant. Where the differences in maturity mismatch between Islamic and conventional banks are significant, Islamic banks are mostly more liquid, with the exception of Kuwait and Turkey where they are significantly less liquid. The differences in Z-scores between Islamic and conventional banks are significant in few countries, while Islamic banks are less profitable than conventional banks in most countries, though often not significantly so. On the other hand, Islamic banks are mostly better capitalized than conventional banks, with the notable exceptions of Egypt, Gambia, Malaysia, and Turkey where they are significantly less capitalized than conventional banks.

In summary, the differences between Islamic and conventional banks vary significantly across countries, though some general trends identified in the previous tables are confirmed; nonetheless, the higher loan-deposit ratios, lower cost efficiency, higher asset quality and higher capitalization are driven by the differences in some of the sample countries and are not consistent across the

[11] In unreported robustness tests, we also split the sample of conventional banks in large, mid-sized and small banks and re-run the Table 5 specification. We find qualitatively similar results. We also dropped banks where both parent and subsidiary are in the sample and one of them is classified as large and the other as small and confirm our findings.

Table 8
Comparing Islamic and conventional banks during crises.

	(1) Return on assets	(2) Equity assets ratio	(3) Z-score	(4) Loans deposit ratio	(5) Maturity match	(6) Non-performing loans	(7) Loss reserves	(8) Loss provisions
Islamic bank dummy	0.407	2.820***	−2.453	4.134*	3.748	−2.412	−1.394	0.0557
	(0.354)	(0.805)	(5.161)	(2.254)	(5.500)	(1.506)	(1.410)	(0.141)
Islamic bank dummy * Local crises	−0.726	6.717***	12.86*	12.36**	40.18*	−8.605**	−3.231	−1.000**
	(0.752)	(2.144)	(7.640)	(6.262)	(20.59)	(3.777)	(2.115)	(0.412)
Islamic bank dummy * Global crisis	−0.189	−0.152	2.447	0.344	2.912	−2.591*	0.790	0.211
	(0.346)	(0.883)	(3.802)	(2.691)	(6.303)	(1.494)	(1.294)	(0.169)
Islamic bank dummy * Trend	−0.0705	−0.317***	−0.0847	−0.187	−0.909	0.242	−0.00451	−0.0351*
	(0.0490)	(0.101)	(0.522)	(0.319)	(0.954)	(0.233)	(0.149)	(0.0193)
ln(total assets)	−0.215***	−2.142***	−0.381	−0.605	−6.225***	−0.411*	−0.920***	0.00603
	(0.0496)	(0.134)	(0.712)	(0.430)	(0.940)	(0.243)	(0.212)	(0.0227)
Non-loan earnings assets	0.00933**	−0.00293	0.0769*	−1.031***	0.967***	0.0397**	0.0724***	0.00424*
	(0.00362)	(0.0123)	(0.0431)	(0.0327)	(0.0770)	(0.0180)	(0.0175)	(0.00238)
Fixed assets	−0.0403	0.245***	0.487*	−1.104***	0.0817	0.194	0.0152	0.0268**
	(0.0559)	(0.0788)	(0.255)	(0.140)	(0.233)	(0.154)	(0.162)	(0.0119)
Constant	4.327***	45.23***	24.05**	123.4***	95.05***	9.728**	18.40***	0.221
	(0.754)	(2.572)	(12.14)	(7.646)	(16.50)	(3.845)	(3.753)	(0.420)
Observations	5965	6089	3228	5971	6004	3341	4984	4855
R-squared	0.222	0.441	0.227	0.672	0.298	0.328	0.327	0.295

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

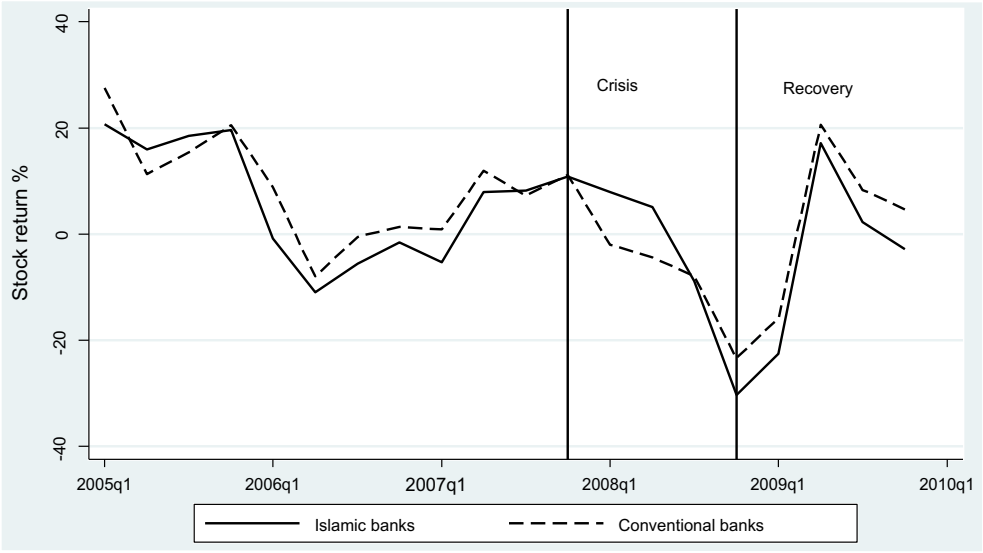

Fig. 1. Average bank stock return by bank type, 2005–2009. This graph shows the average stock return of Islamic and conventional banks across 21 countries hosting both types of banks over the period 2005–2009. The data are from Datastream.

whole sample. In the next part, we therefore explore whether some of these cross-country differences are driven by different market shares of Islamic banks.

The results in Table 7 show significant variation in the differences between conventional and Islamic banks across countries and years with different market shares of Islamic banks. One of the reasons why we observe the large cross-country variation in differences between conventional and Islamic banks might be different relative market shares of conventional and Islamic banks. Higher market shares for Islamic banks might indicate more established Sharia-compliant finance with repercussions for efficiency and regulatory approach but also for competitive responses by conventional banks. In Panel A, we introduce an interaction term between the market share of Islamic banks and the Islamic bank dummy. As we also include country-year dummies, we cannot include the Islamic bank share by itself. In Panel B, we replace the Islamic bank dummy with two interaction terms of the bank dummy with dummies indicating country-year pairs with the Islamic bank share above and below the median market share of Islamic banks. While the Panel A results allow us to gauge the continuous variation of differences between Islamic and conventional banks with different market shares of Islamic banks, Panel B allows us a direct comparison between countries and years with high and with low market shares of Islamic banks.

The Panel A regressions of Table 7 show that Islamic banks have relatively lower loan loss reserves and non-performing loans than conventional banks in countries and years with a higher market share of Islamic banks. While Islamic banks have higher equity-asset ratios than conventional banks, this difference decreases as the market share of Islamic banks increases (significant at the 10% level). We continue to find that Islamic banks have higher loan-deposit ratios, higher cost-income ratios and higher overhead costs

than conventional banks although these differences do not vary significantly with the market share of Islamic banks. The Panel B results suggest that the lower cost efficiency of Islamic banks vis-a-vis conventional banks is driven by markets with higher market shares of Islamic banks, as the Islamic bank dummy only enters significantly for these markets and is significantly higher than the Islamic bank dummy in markets with below-median Islamic bank market share. We also find that Islamic banks have lower loan loss reserves and non-performing loans only in markets with above-median Islamic bank market shares (though not significantly different from markets with below-median Islamic bank market shares in the case of loan loss reserves), while the higher loan deposit ratio holds only for Islamic banks in markets with below-median Islamic bank market shares (though the difference between markets above and below markets is not significant). In summary, some of the cross-country variation in the differences between Islamic and conventional banks, established in Table 6, can be explained with differences in market shares for Islamic banks.

5. Islamic and conventional banks during crisis periods

This section compares the relative performance of conventional and Islamic banks during crisis periods to test whether one bank type is better positioned to withstand large exogenous financial shocks. Unlike in the previous section, we focus on indicators of asset quality and stability since they are more likely to be affected by contagion effects than the business orientation and efficiency of financial institutions. In addition we report results of the loan-deposit ratio regression to gauge (dis-)intermediation trends across conventional and Islamic banks during crises. We first use the previous sample to test for differential performance of Islamic banks during local crises and the global financial crisis that started in 2007. In our sample, Indonesia between 1997 and 2001, Malaysia between 1997 and 1999, Turkey in 2000/2001, and Yemen in 1996 suffered banking crises. In addition, we consider quarterly stock market indicators for a sub-sample of listed banks over the period 2005–2009,[12] thus the period leading up and during the global crisis as well as the early recovery period. Using regression Eq. (3), we test for additional significant differences between conventional and Islamic banks during local and global crises while at the same time controlling for a trend to avoid confounding the effect of crisis periods with trend-driven divergence between conventional and Islamic banks.

The Table 8 results show that the higher capitalization of Islamic banks relative to conventional banks is even stronger during local crisis periods, though it was not higher during the global financial crisis. On the other hand, we find a negative trend in capitalization of Islamic relative to conventional banks. As before, we do not find any significant difference between conventional and Islamic banks in their z-scores, profitability or maturity mis-match, neither in normal times, during local crises or the global financial crisis. However, we find a higher loan-deposit ratio for Islamic banks than for conventional banks and the difference increases significantly during local crises, which suggests that Islamic banks cut back less on lending than conventional banks. Turning to asset quality, finally, we find that Islamic banks have significantly lower non-performing loans and loan loss provisions during local crises, though not in normal times. In addition, the gap between Islamic and conventional banks' NPL ratio seemed to have opened up further during the global crisis though this effect is only significant at the 10% level. In summary, Islamic banks are better capitalized, especially during crises, have higher asset quality during crises and are less likely to disintermediate during crises. In robustness tests, reported in Table A3 we re-ran the regression for a sample of local banks. Specifically, in the absence of detailed data on foreign activities and ownership of each of our sample banks we define local banks as banks whose ROA correlation with world GDP growth is less than the median (15%) and whose ROA correlation with host country's GDP growth is above the median (11%). This leaves us with a sample of 380 banks, of which 65 are Islamic. When using this sample of local banks, our results on differences between Islamic and conventional banks during normal and crisis times are broadly confirmed.

As additional test of different performance of conventional and Islamic banks we gauge their relative stock market performance over the period 2005–2009, with data from Datastream. Since we can only work with listed banks, our sample is reduced to 207

Table 9
Islamic vs. conventional banks: Stock market performance during the crisis.

		(1)	(2)	(3)
(1)	Islamic bank dummy	−3.319**	−1.154	1.704
		[1.352]	[1.301]	[1.475]
(2)	Islamic bank dummy * Crisis	4.951**	4.059*	−2.015
		[2.016]	[2.174]	[2.757]
(3)	Islamic bank dummy * Recovery	1.17	−0.613	−2.888
		[1.684]	[1.852]	[2.190]
	Maturity match		0.088***	0.133***
			[0.025]	[0.048]
	Maturity match * Crisis			0.038
				[0.101]
	Maturity match * Recovery			−0.155
				[0.105]
	Loans-deposits ratio		0.014	0.023*
			[0.008]	[0.012]
	Loans-deposits ratio * Crisis			−0.02
				[0.014]
	Loans deposits ratio * Recovery			0.018
				[0.017]
	Provisions		−0.456	3.279*
			[0.575]	[1.958]
	Provisions * Crisis			−6.443***
				[2.210]
	Provisions * Recovery			−3.889*
				[2.031]
	ln(total assets)		0.37	0.813
			[0.350]	[0.509]
	ln(total assets) * Crisis			0.243
				[0.228]
	ln(total assets) * Recovery			−0.677
				[0.876]
	NonDepositFunding		0.03	0.274*
			[0.047]	[0.143]
	NonDepositFunding * Crisis			−0.391**
				[0.153]
	NonDepositFunding * Recovery			−0.286*
				[0.147]
	Equity capital ratio		−0.005	−0.045
			[0.064]	[0.102]
	Equity capital ratio * Crisis			0.615***
				[0.183]
	Equity capital ratio * Recovery			−0.094
				[0.138]
	Constant	28.630***	20.038***	7.156
		[3.569]	[7.341]	[10.055]
	Tests p-values			
	(1) + (2) = 0	0.208	0.069	0.892
	(1) + (3) = 0	0.085	0.211	0.452
	Country * Year FE	*x*	*x*	*x*
	Number of observations	2016	1636	1387
	R-squared	0.28	0.3	0.31

* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

[12] We start our sample in 2005 because stock return data for Islamic banks are not extensively populated before this date.

banks in 21 countries. Appendix Table A4 provides descriptive statistics on our sample and shows that our sample is not too different from our main sample. However, we also find a large variation in stability and asset quality. The quarterly stock returns vary from −44% to 72% (over the course of a quarter), with a mean of 2.9%. Fig. 1 shows the development of quarterly stock returns of both conventional and Islamic banks between Q1–2005 and Q4–2009 and shows a close co-movement between the two bank types.

The Table 9 results show that while Islamic banks yield lower stock returns for their investors in general, the reverse held during the crisis. Here, we regress quarterly stock returns on an Islamic Bank dummy plus interactions with Crisis (Q4-2007–Q4-2008) and recovery period (Q1–Q4–2009). In column (2), we also include additional bank characteristics that might explain the behavior of stock returns, while in column (3), we add interactions of these bank characteristics with the crisis and recovery dummies. Controlling for other bank characteristics turns the Islamic bank dummy insignificant, while its interaction with Crisis still enters positively, although only at the 10% significance level. The column (3) results confirm this finding and also show that better capitalization, and lower loan loss provisions can explain higher stock returns of Islamic banks in comparison with conventional banks. These effects can thus explain why the Islamic bank dummy and its interaction with crisis and recovery turn insignificant once we control for loan loss provisions, non-deposit funding and capitalization and its interaction with crisis.

Together, the results in Tables 8 and 9 suggest that Islamic banks have higher asset quality than conventional banks during banking crises, as well as higher equity-asset ratios, which might explain that they are less subject to disintermediation and deleveraging as often observed in conventional banks. The higher capitalization and the higher asset quality can also explain the better stock market performance of Islamic banks during the recent global financial crisis.

6. Conclusions

This paper empirically analyzes the differences in business orientation, efficiency, asset quality, and stability of Islamic and conventional banks across a sample of countries with both types of institutions. While theory suggests significant repercussions of the equity-like nature of Islamic banking for business orientation, efficiency, risk-taking, and stability, anecdotal evidence suggests that Islamic banks' business model might not be too different from that of the conventional banks.

Our empirical estimations show few significant differences in business models. However, we find that Islamic banks are less efficient, but have higher intermediation ratios, have higher asset quality, and are better capitalized than conventional banks. We also find that Islamic banks perform better during crises in terms of capitalization and asset quality and are less likely to disintermediate than conventional banks. Furthermore, our results show that this higher capitalization and better asset quality have helped Islamic banks outperform conventional banks during the latest crisis. Behind these cross-country, cross-bank results, however, are important variations across countries and across Islamic banks of different sizes that require further analysis.

We hope that the discussion and the analysis in this paper stimulate more research in this area since much work remains for future research. First, disaggregated data on specific products and business lines are necessary to better understand the differences in financial service provision between conventional and Islamic banks. This would also allow us to include Islamic windows in our analysis, i.e. conventional banks that offer Sharia-compliant products. Second, future work can also assess the impact of growth of Islamic banks on the outreach of the banking system and ultimately the access to and use of banking products by firms and enterprises.

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Table A1
Comparing Islamic and conventional banks – truncated sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Business model			Efficiency			Asset quality			Stability		
	Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
Islamic bank dummy	−4.447	1.475	11.81	5.124*	0.283	−1.566**	8.538	−3.797**	0.867	0.841	0.0445	5.231***
	(6.053)	(1.339)	(8.379)	(2.711)	(0.203)	(0.728)	(8.671)	(1.474)	(3.371)	(6.088)	(0.175)	(1.839)
ln(total assets)	1.118	−0.286	−7.532***	−1.477**	−0.318***	−0.703***	0.0727	−1.342***	−5.503***	−0.513	−0.192***	−3.594***
	(1.026)	(0.224)	(2.189)	(0.710)	(0.0709)	(0.189)	(0.162)	(0.488)	(0.807)	(1.142)	(0.0446)	(0.289)
Non-loan earnings assets	0.0143	−0.0174	−1.360***	0.0178	−0.00565*	0.0597***	0.168	0.111*	0.797***	0.106*	0.00415	0.0207
	(0.0549)	(0.0202)	(0.144)	(0.0439)	(0.00331)	(0.0140)	(0.155)	(0.0657)	(0.0585)	(0.0578)	(0.00253)	(0.0197)
Fixed assets	1.013	−0.0621	−2.186***	1.439	0.319***	0.0581	0.186	0.276	−0.0967	0.124	−0.0631	0.452***
	(0.632)	(0.0572)	(0.517)	(0.875)	(0.0480)	(0.148)	(0.113)	(0.409)	(0.206)	(0.484)	(0.0554)	(0.0871)
Constant	33.89	13.31***	309.5***	55.77***	5.279***	16.15***	−11.19	19.39***	94.09***	24.97	4.394***	70.58***
	(24.37)	(5.120)	(89.48)	(11.81)	(1.019)	(3.344)	(10.90)	(7.184)	(15.57)	(17.95)	(0.701)	(7.133)
Observations	3223	5872	5879	5422	5589	4913	4784	3303	5923	3182	5874	6007
R-squared	0.169	0.286	0.179	0.213	0.423	0.356	0.067	0.226	0.329	0.191	0.213	0.385

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

Table A2
Comparing Islamic and conventional banks – 1995–2007.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Business model			Efficiency			Asset quality			Stability		
	Fee income	Non-deposit funding	Loans deposit ratio	Cost income ratio	Overheads	Loss reserves	Loan loss provisions	Non-performing loans	Maturity match	Zscore	Return on assets	Equity assets ratio
Islamic bank dummy	−2.986	−0.237	3.510**	6.179*	0.0187	−1.400	−0.153	−1.637	1.189	−2.823	0.0985	1.501**
	(3.244)	(0.477)	(1.764)	(3.470)	(0.119)	(0.987)	(0.111)	(1.272)	(3.946)	(2.840)	(0.223)	(0.691)
ln(total assets)	0.311	−0.0137	−0.892**	−1.339	−0.171***	−0.963***	−0.00244	−0.355	−6.212***	−0.212	−0.260***	−2.158***
	(0.574)	(0.0720)	(0.402)	(0.885)	(0.0256)	(0.230)	(0.0235)	(0.263)	(0.954)	(0.744)	(0.0545)	(0.136)
Non-loan earnings assets	−0.0173	−0.00256	−1.040***	0.0633	−0.00736***	0.0739***	0.00487**	0.0432**	0.990***	0.0776*	0.00936**	−0.00154
	(0.0427)	(0.00749)	(0.0323)	(0.0563)	(0.00201)	(0.0190)	(0.00239)	(0.0199)	(0.0802)	(0.0461)	(0.00401)	(0.0128)
Fixed assets	0.167	−0.0111	−1.093***	1.360*	0.0689***	−0.0624	0.0189	0.192	−0.0788	0.378	−0.0414	0.260***
	(0.253)	(0.0192)	(0.148)	(0.725)	(0.0223)	(0.170)	(0.0130)	(0.156)	(0.258)	(0.296)	(0.0473)	(0.0814)
Constant	31.36***	5.564***	127.8***	51.77***	3.847***	18.99***	0.387	8.585**	94.59***	35.65**	5.019***	45.70***
	(10.04)	(2.127)	(7.260)	(13.56)	(0.418)	(3.940)	(0.439)	(4.034)	(16.74)	(14.30)	(0.808)	(2.587)
Observations	2847	5253	5250	4795	4942	4342	4233	2839	5271	2658	5227	5347
R-squared	0.339	0.315	0.680	0.183	0.466	0.322	0.296	0.308	0.312	0.237	0.219	0.429

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

Table A3
Comparing Islamic and conventional banks during crises - restricting the sample to local banks.

	(1) Return on assets	(2) Equity assets ratio	(3) Zscore	(4) Loans deposit ratio	(5) Maturity match	(6) Non-performing loans	(7) Loss reserves	(8) Loss provisions
Islamic bank dummy	0.168	2.916***	−4.808	2.909	3.681	−2.110	−1.159	−0.0367
	(0.346)	(0.861)	(5.515)	(2.386)	(6.487)	(1.732)	(1.533)	(0.149)
Islamic bank dummy * Local crises	−0.848	6.682***	15.23**	12.91**	40.54*	−8.268**	−3.259	−0.792*
	(0.749)	(2.393)	(7.716)	(6.313)	(22.81)	(3.871)	(2.303)	(0.441)
Islamic bank dummy * Global crisis	−0.203	−0.625	2.789	1.574	−1.188	−2.871*	1.261	0.223
	(0.369)	(0.994)	(4.313)	(2.710)	(7.344)	(1.628)	(1.432)	(0.187)
Islamic bank dummy * Trend	−0.0414	−0.219*	0.284	0.0166	−0.198	0.243	−0.0744	−0.0343
	(0.0674)	(0.129)	(0.596)	(0.360)	(1.321)	(0.296)	(0.176)	(0.0253)
ln(total assets)	−0.224***	−2.134***	−0.130	−0.736	−6.007***	−0.318	−0.717***	0.0171
	(0.0524)	(0.141)	(0.787)	(0.466)	(1.023)	(0.263)	(0.197)	(0.0245)
Non-loan earnings assets	0.0105***	−0.00479	0.113**	−1.044***	1.010***	0.0334*	0.0663***	0.00312
	(0.00398)	(0.0134)	(0.0487)	(0.0349)	(0.0796)	(0.0184)	(0.0173)	(0.00252)
Fixed assets	−0.00641	0.246***	0.622***	−1.079***	0.0808	0.137	0.0273	0.0218
	(0.0402)	(0.0879)	(0.221)	(0.129)	(0.220)	(0.150)	(0.153)	(0.0135)
Constant	4.409***	46.98***	19.71	131.5***	96.47***	7.141*	15.77***	0.475
	(0.780)	(2.645)	(14.20)	(8.212)	(22.49)	(4.325)	(4.066)	(0.593)
Observations	5158	5275	2706	5181	5199	2915	4305	4218
R-squared	0.228	0.449	0.230	0.672	0.302	0.350	0.345	0.297

* Robust standard errors in parentheses $p < 0.1$.
** Robust standard errors in parentheses $p < 0.05$.
*** Robust standard errors in parentheses $p < 0.01$.

Table A4
Descriptive statistics – stock return regressions 2005–2009.

	Number of observations	Mean	Standard deviation	Min	Max
Equity assets ratio	2148	12.499	7.044	3.650	25.480
Nondeposits funding	2107	1.773	5.421	0.000	26.742
Loans deposits ratio	2070	64.005	28.104	19.282	110.487
Maturity match	2098	40.834	25.174	7.350	87.110
Provisions	1716	1.217	1.412	−0.008	4.747
ln(total assets)	2148	14.265	1.614	10.959	16.866
Stock returns	2016	2.863	21.658	−43.652	71.592

Appendix A

Tables A1–A4.

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