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The performance of Islamic banks in the MENA region:

Are specific risks a minor attribute?

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The performance of Islamic banks in the MENA region:
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Abstract- Islamic banks face specific risks related to *Sharia*-compliant contracts. We provide an exhaustive literature review addressing the methodological issues of the measurement of performance and document the main stylised facts regarding the performance of Islamic banks (IBs) in the MENA region. We investigate 53 IBs in 11 MENA countries throughout 2007-2014, first using cross-sectional analysis as of year 2013. A panel data model with instrumental variables estimates the impact of risks upon the returns on assets and equity of Islamic banks. Four salient results emerge: *Sharia* compliance exerts an ambiguous effect upon performance; Islamic specificity is a minor attribute according to the insignificant share of profit and loss sharing (PLS) contracts in total assets; there is no relationship between *Sharia* compliance and specific risk; loan loss provisions do not restrict to specific risks (PLS), hedging all risks.
Keywords: Cross-section analysis; Islamic banks; MENA region; Panel data econometrics; Performance; Risks
JEL C67, C41, G21

INTRODUCTION

Islamic banking is governed by a set of rules prohibiting uncertainty (*maysir*), speculation (*gharar*) and charging an interest rate upon loans (*riba*) that are sources of risk, with the obligation to back up transactions to a tangible asset and share profits as well as losses. Transactions must be assessed by *ex-ante* and *ex–post* auditing from a *Sharia* Board. *Sharia*-compliance prevents IBs from granting subprime loans, leverage, acquiring risky structured products and investing in financial vehicles that lack traceability (Asutay, 2010). The remuneration of an Islamic bank is justified by its share, as co-owner, in the profit and loss sharing (PLS) in the case of a venture capital (*Mudarabah*) or a joint venture (*Mucharakah*) and its margin upon the marketing or leasing upon the property of real assets, in the case of a purchase-resale (*Murabahah*) or a lease (*Ijara*). Hence, risk-taking and commercial margin are the only sources of profitability for IBs, whose predominant instrument is *Murabahah*, which substitutes the rate of profit to the interest rate.

Although Islamic Finance assets represent only 1% of the global financial market, Islamic banking (hereafter IB) has been rising, especially since 2009 and Gulf Gulf Cooperation Council (GCC) countries detain the lion's share (Ernst & Young, 2015). Several papers have addressed the performance of IBs, especially comparing with that of conventional banking (CBs). However, the risks specific to IBs, such as non-*Sharia* compliance and Islamic contracts, are scarcely considered, whereas panel data analysis is little used to detect stylised facts. Our article fills the gap, using panel data analysis to address the impact of risks specific to IBs upon their performance in the MENA region.

According to (conventional) finance theory, the norm governing financial decisions is the optimisation of the risk (s)/ return ratio. Hence, our research question tackles the following issue: to what extent the risk(s)-return combination proves challenging for IBs?

Section 1 is devoted to the review of empirical literature, addressing the controversial issue of the risks-performance trade-off for IBs. Section 2 displays the data source, sampling and descriptive statistics. Section 3 exhibits the heterogeneous results of a cluster analysis as for key variables. Section 4 presents the estimates of a panel data analysis using instrumental variables. Conclusion highlights four salient findings: the ambiguity of Sharia-compliance and the non-significance of profit and loss sharing contracts, irrespective of the banking system in the MENA region, the absence of relationship between Sharia-compliance and the Islamic contracts, as well as loss provisions hedging all risks that are not restricted to specific risks.

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1. LITERATURE REVIEW

1.1. Comparative and intrinsic performance of Islamic banks

Our extensive literature review lists 37 papers on the performance of IBs that can be divided into two strands, whereby the conclusions prove controversial: the first strand is benchmarking the performance of IBs *versus* CBs, whereas the second strand is focusing on the intrinsic performance of IBs.

As for benchmarking, according to a set of nine papers, IBs are more profitable, more liquid and better capitalized; more stable, more competitive and more risk-prone; they were less affected during the 2008 recession. This first set of papers covers (at most) the period 1993-2013 and 70 IBs from 13 MENA countries, using various methods: Data Envelopment Analysis – DEA (Al-Muharrami, 2008); Stochastic Frontier Analysis -SFA (Alam, 2012; Amal and Mohamed, 2015; Regaieg and Abidi, 2015), or Discriminant Function Analysis (Olson and Zoubi, 2011; Ben Khediri et al., 2015); financial ratios analysis - FRA(Parashar and Venkatesh, 2010; Siraj and Pillai, 2012) and panel data econometrics (Rajhi and Hassari, 2013).

In contrast, another set of twelve surveys contend that IBs are less profitable; they bear higher operation risk as well as credit and liquidity risks; they were more affected by the 2008 recession; the influence of age (experience) upon the performance of IBs is controversial. This second set spans throughout 1995-2014 with 40 IBs from 14 MENA countries, using SFA (Abdul-Majid et al, 2010; Srairi, 2010, Ferhi and Chkoundali, 2015), Meta Frontier Analysis (Johnes et al, 2013); financial ratios analysis (Elsiefy, 2013; Fayed, 2013; Miniaoui and Gohou, 2013; Ibrahim, 2015, Rashwan and Ehab, 2016) and panel data econometrics (Beck et al., 2013; Kamarudin et al., 2014; Al-Deehani et al., 2015).

The conclusion from a last set of seven papers is that there was no significant difference in performance between IBs and CBs: the impact of the 2008 recession upon financial markets and the real economy did also affect IBs. Performance is negatively correlated to operation and credit risk, not liquidity risk; Size has a positive influence upon bank performance due to economies of scale. This third set covers the period 1990-2014 and 23 IBs from 12 MENA countries, using DEA (Bader et al., 2008; Hassan et al., 2009; Said, 2013), SFA (Sillah et al, 2015), FRA (Meero, 2015) and panel data econometrics (Hidayat and Abduh, 2012; Zeitun, 2012).

Comparative analysis suggests that the best (worst) performance of IBs *versus* CBs does not depend on the methods that are commonly used in the three aforementioned sets of papers. For instance, parametric methods (SFA) do not prove superior to nonparametric method (DEA) and both often provide the same results (Berger and Humphrey, 1997). It is worth mentioning that performance depends primarily on the size and composition of the sample, as well as on the period of time under review. Most surveys on large samples fail to identify a country effect and do not remove outliers that bias the results, Beck et al. (2013) being excepted. Conversely, surveys on a small size sample, particularly upon the GCC or monographs devoted to a single country, reveal the heterogeneity of banks, although results cannot be extended to the overall MENA region. As for comparative analysis, there is mixed evidence among MENA countries. Some IBs were better-off in 2008-2009 than CBs regarding profitability, with the exception of Bahrain, Qatar and especially the United Arab Emirates that count the largest number of banks in the GCC (Hasan and Dridi, 2010). Boukhris and Nabi (2013) point out there is no significant difference as regards the effect of the financial crisis on the soundness of IBs and CBs. With respect to the size of banks, it is open to question whether large IBs or small ones have resisted better (Said, 2012; Abedifar et al., 2013; Ouerghi, 2014).

The other strand of literature tackles the intrinsic performance of IBs and includes nine surveys upon IBs mostly located in the MENA region. Zarrouk (2012) compares 20 IBs throughout 2005-2009, finding that profitability and liquidity declined after the crisis in Bahrain, Kuwait and UAE. Rosman et al. (2014), applying DEA to 79 IBs from MENA and Asian countries throughout 2007-2010, observe that most IBs proved scale inefficient. Mghaieth and Khanchel

(2015), using SFA upon 62 IBs in sixteen countries of the MENA and South-East Asia regions over 2004-2010, conclude that IBs are more efficient for profits than for costs. Unlike Sulfian and Noor (2009), according to Yudistira (2004), Kablan and Yousfi (2013) and Wahidudin et al. (2014) the MENA IBs experience lower performance than their Asian counterparts. IBs operating in high-income countries are more efficient than in other countries (Ahmad et al, 2010).

Among the listed papers, eleven surveys using panel data analysis provide a few stylised facts: IBs are profitable albeit not necessarily more efficient than CBs. IBs are well capitalized, liquid and risk prone, but experience higher transaction costs and do not reach the optimum size to enjoy economies of scale. (Appendix, Table A1). Seven papers compare IBs and CBs with samples mainly covering the MENA countries (except Beck et al., 2013), four of which being exclusively devoted to oil monarchies (Hidayat and Abduh, 2012; Zeitun, 2012; Kamarudin et al., 2014; Al-Deehani et al., 2015). Only three studies focus exclusively on IBs, among which Wahidudin et al. (2014) and Trad et al. (2017) use diverse and large samples.

1.2. Conventional and specific risks

IBs seem to illustrate the positive correlation between risk(s) and return, in line with (conventional) finance theory (Alam, 2012). In as much as IBs face specific risks and well as conventional risks, it remains open to question whether the risk(s)-performance trade-off is comparable for IBs to that of CBs.

Although CBs do not bear the losses and only transfer risks, IBs face the same conventional liquidity risk, credit risk, operational risk and solvency risk. The most important risks for IBs are threefold: credit risk, liquidity risk and operational risk (Hussain and Al-Ajmi, 2012).

Credit risk as well as operational risk are negatively related to performance, while liquidity risk has a non-significant relationship with the efficiency of the MENA IBs (Said, 2013).

Credit risk results from an unforeseen alteration in the credit quality of the issuer or partner and is a source of instability in the banking system (McNeil et al, 2005). Poor cost management goes hand in hand with a higher credit risk (Berger et al, 1997). Ferhi and Chkoundali (2015) suggest that the higher the concentration in IBs, the higher the credit risk. The positive impact of size upon the loan quality is lower for IBs as well as for credit risk.

Liquidity risk is defined as a potential loss and seems to reflect best the genuine characteristics of IBs (Desquilbet and Kalai, 2013). It arises from the inability of IBs to hedge their liabilities or to increase their assets (Idries, 2012), the absence of an Islamic interbank market to refinance and the lack of *Sharia*-compliant financial instruments. Nevertheless, multiple stakeholders imply multiple credit risk, which comes from the issuer of the security, the bank and the entrepreneur when the underlying asset is based on PLS investment, or from the tenant of a lease.

Operation risk creates losses due to inadequate or inconclusive internal practices, personnel and technology, or external events: it influences decision-making (Ray and Cashman, 1999). This risk is significant for IBs and becomes more complicated compared to CBs because of the particular aspects of Islamic contracts and the general legal environment (Marliana et al., 2011). IBs are typically more risk prone than CBs and require more capital to manage their level of risk (Srairi, 2010).

Credit risk as well as operational risk are negatively related to performance, while liquidity risk has a non-significant relationship with the efficiency of MENA IBs (Said, 2013). IBs perform better in credit risk management and solvency maintenance (Muhammad et al., 2012).

In addition to conventional risks, IBs face two main specific risks: risk of non-compliance, risk specific to Islamic contracts. Risk of non-*Sharia* compliance stems from the divergence of interpretation between the members of the *Sharia Board*, which is difficult to circumscribe in the absence of universally recognized religious norms. The specific risk concerns PLS contracts (*Mudharabah* and *Mucharakah*), which require costly monitoring and negotiation of the profit

and loss sharing rates (Khan and Ahmed, 2001), and *Ijara* contracts whereupon the bank has to manage and maintain the property leased to avoid value deterioration.

We do not take into account the displaced commercial risk. This business risk is not a risk per se, but a mechanism that links the market risk to a real asset value and the liquidity risk associated with the potential withdrawal of deposits. It is therefore addressed indirectly through the risk specific to Islamic contracts.

The entanglement of risks is due to the simultaneous existence of the various conventional and specific risks encapsulated within each Islamic contract. The regulatory provisions of the Basel III agreements (liquidity standards, leverage ratio and capital adequacy ratio) did not take into account the case of IBs, whose asset transactions must be treated according to different risk weighting. The Islamic Financial Services Council lists all the contracts proposed by IBs, and designed new recommendations to complement the Basel standards with those of the Islamic Finance Regulation (IFSB, 2015). However, there is no credit rating specific to Islamic banking as for the MENA region so far; in addition, no explicit indicator measures the enforcement of *Sharia* regulation (Zins and Weill, 2017).

2. DATA SOURCE, VARIABLES AND METHODOLOGY

In order to design our sample we used the Bankscope database, removing the banks for which only one single observation (year) was available and those with most of the data missing. Our sample over the period 2007-2014 consists in 53 IBs from 11 MENA countries, including five oil producers (Saudi Arabia, UAE, Iran, Kuwait, and Qatar), among which Iran and allegedly Saudi Arabia apply *Sharia* as a source of law as well as Yemen, a non-oil producer. Other non-oil-producing countries not regulated by *Sharia* are Egypt, Jordan, Tunisia, Bahrain and Syria.

Specific risks are addressed with three indicators: (i) Loan Loss Provisions (*LLP*) in the PLS account; (ii) the share of specific contracts (*Specific contracts*) in total assets, including participation schemes upon which the PLS principle applies (*Mudharabah* and *Mucharak*ah), as well as *Ijara*; (iii) the number of members on the Sharia Board, assuming that a large number of members should ensure Sharia compliance.

Other risks faced by IBs are related to credit, liquidity and solvency. Credit risk (*CR*) is measured by the provision for Non-Performing Loans. Liquidity risk is addressed with two indicators regarding the long-term (*LTLR*) and the short-term (*STLR*) span of time. *Z-score* is expressed in logarithm (Ln-*zscore*) and gauges the solvency risk.

In addition, bank characteristics (*Age*, *Size*, *Concentration* and *Ownership*) and the macroeconomic environment (*Inflation*, *GDP growth* and *Oil-Monarchy*) are the explanatory variables for bank performance (Table 1).

Table 1. Variables

Variables	Definition	Formula	Source
Performance	Return on average assets (*ROAA*)	Net operation income before subsidy/ Total average assets	Bankscope
	Return on average equity (*ROAE*)	Net operation income before subsidy/ Total average equity	Bankscope
Specific risk	Loss Loan Provisions (*LLP*)	Loss Loan Provisions upon *Profit and Loss Sharing* (PLS) accounts/Total Assets	Bankscope
	Sharia Board (*Board*)	Number of members on the *Sharia* Board	Annual reports
	Share of specific contracts in total assets (S*pecific contracts*)	$$\frac{\sum Specific\ contracts(PLS\ and\ Ijara)}{Total\ Assets}$$	Annual reports
Credit risk (CR)		Reserve for Non-Performing Loans/ Outstanding gross loans	Bankscope
Liquidity risk	Short-term liquidity ratio (*STLR*)	Liquid Assets/ Client Deposits and short-term financing	Bankscope

	Long-term liquidity ratio (*LTLR*)	Net loans/Total Assets	Bankscope
Solvency risk	*z-score*	$\ln(Zscore) = \ln \dfrac{E(ROA) + CAR}{\sigma_{ROA}}$ CAR (capital ratio): Equity /Total Assets. ROA standard deviation is calculated for each bank over the period 2007-2014	Bankscope
Bank characteristics	*Age*	Difference between the year of observation and the year of establishment	Bank websites
	Size	Ln(Total Assets)	Bankscope
	Concentration	Bank deposits/Total banks deposits	Bankscope
	Ownership	*Dummy* (Domestic *vs.* Foreign)	
Macroeconomic variables	*Inflation*	Inflation rate	WDI
	GDP growth	GDP growth rate	WDI
	Oil-monarchy	*Dummy* (Oil-producer *vs.* non-oil producer)	OPEC

Source: Authors

We assess the impact of specific risks upon the economic (*ROAA*) and financial (*ROEA*) performance of IBs. As a first step, we examine the relationship between performance and specific risks with a cross-sectional analysis. In the second step, we estimate with a panel data model the impact of all the aforementioned risks upon the performance of IBs throughout the overall period.

3. CROSS-SECTIONAL ANALYSIS

We apply a factor analysis including clusters to a sample of 46 IBs in 11 MENA countries as of year 2013 that gathers the largest sub-sample: Bahrain (10), Egypt (2), Jordan (2), Kuwait (7), Qatar (3), Saudi Arabia (2), Tunisia (1), UAE (8), Syria (3) Yemen (3), and Iran (5). The variables used are performance (*ROAE*) and the three specific risk indicators (*LLP*, *Specific Contracts* and *Sharia Board*).

LLP and *Specific contracts* indicators are broken down into two classes. IBs experience high *(vs.* low) specific risk when the share of provisions and risky assets is below (*vs.* above) median. If the *Sharia* Board is below (*vs.* above) the median of four members, the risk of non-*Sharia* compliance is high (*vs.* low).

The assumption is that a large *Sharia* Board is required to check compliance, which is an opportunity cost affecting profitability. Admittedly, the number of Board members is a loose proxy for *Sharia* compliance, in as much as it does not measure their independence *vis-à-vis* the management of the bank appointing them. In Iran, banks do not have a Board but are all ruled by *Sharia* under the regulation of the Central Bank and are assumed to be compliant. The full sample includes three out of five IBs that comply with *Sharia* (Table 2).

ROEA is used here as the most relevant indicator for IBs, in as much as it encapsulates the shareholders' point of view. It closely correlates with *ROA* (Appendix, Table A2).

Factor analysis is limited here to the most interpretable axes 1-2 that account for 55 per cent of the variance[3] (Appendix: Figure 1). Axis 1 expresses the profitability of banks, displaying a positive relationship between the specific risk and the risk of non-compliance. It contrasts *Board1* and *SP1* with *Board2* and *SP2* oppose IBs whose specific risk and non-compliance are respectively low and high. Axis 2 can be interpreted as the axis of the asset structure; it identifies the relationship between specific risk and profitability, contrasting *ROEA3* and *LLP1* with *ROEA2* and *LLP2*. It thus distinguishes the highly profitable IBs with low loss provisions from those that are less profitable and store high provisions.

Given the absence of CBs in Iran, the banking system is ruled by *Sharia,* without a signifi-

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[3] Detailed cross-sectional analysis is available upon request.

cant number of Board members, and *Specific contracts* are of minor importance. IBs use conventional products more than participation contracts; hence, they seem to be averse to specific risk.

There are almost as many IBs facing low non-compliance risk and / or specific risks as high non-compliance risk alongside high or low performance. Cluster analysis (Appendix, Figure 1) displays very heterogeneous risk configurations.

Table 2. Active variables: specific risks and financial performance (2013)

Code	Variables	IBs	Code	Variables	IBs
	Specific risks variables				
	Specific contracts / total assets (2 classes):			*LLP/ Total assets (2 classes):*	
	Share of risky assets			*Risky assets hedging*	
SP1	*<median* (low *specific risk*)	20	LLP1	< median (deficient risk management*)*	20
SP2	≥ *median (*high *specific risk*)	21	LLP2	≥ median (cautious risk management)	21
	Sharia Board(2 classes)				
Board1	0-1 members (Iran) and 4-10 members (low *risk of non-compliance*)				25
Board2	1-4 members (high *risk of non-compliance*)				16
	Financial performance variable				
	ROEA (3 classes)				
ROAE1	<0% (not profitable)				3
ROAE2	≥0% and< median (cost-effective)				17
ROAE3	≥ median (very profitable)				21

Note: The sample is restricted to 41 IBs, due to missing data.
Source: Authors

Four clusters illustrate a relationship between specific risks and performance that proves either negative (clusters 1 and 3) or positive (clusters 2 and 4).

Cluster 1 gathers six high performing IBs, Saudi Arabia (2), Iran (2) and Egypt (2), whose specific risks (*SP1* and *LLP1*) and non-compliance (*Board1*) are low. These IBs combine high profitability with a small share in specific contracts while complying with *Sharia*.

Cluster 2 includes six less-performing IBs, Iran (2), Bahrain (1), Kuwait (1), Jordan (1) and Syria (1), whose risks are small although they store significant provisions.

Cluster 3 comprises seven low-performing IBs, Bahrain (3), UAE (3) and Syria (1), with a high level of risk (*SP2* and *LLP2)* and non-compliance (*Board2*). IBs combine poor performance with a significant share in specific contracts and significant provisions without complying with *Sharia*.

Cluster 4 includes four performing IBs, Qatar (2), UAE (1) and Jordan (1), with high specific risks and non-compliance. Specific investments are not covered by provisions and profitability is high.

Two other clusters encapsulate an opposite or complementary relationship between specific risk and non-compliance risk. In cluster 5, ten IBs, UAE (4), Kuwait (2), Bahrain (1), Iran (1), Tunisia (1) and Egypt (1), eight of which being highly profitable, combine high specific risk and low non-compliance risk. In cluster 6, five IBs, Yemen (3), Syria (1) and Kuwait (1) combine low specific risk with high non-compliance risk.

4. PANEL DATA ANALYSIS

4.1. Methodology

We designed a panel data model wherein the two performance indicators (*ROAA* and *ROA*E) are the explained variables and all other variables are the explanatory variables. The overall sample consists in 53 banks throughout 2007-2014 (See Table 3).

IBs in the sample are distinct from one another according to intrinsic characteristics that may be either fixed (*Within* fixed effects model) or random (*FGLS* random effects model). Both the Fisher test and the Breusch-Pagan test verify the existence of specific effects (probability below

5%), whereas the Hausman specification test points out whether these effects are fixed or random and makes sure *FGLS* is the efficient estimation method (probability over 5%). The random effect estimator takes care of one issue, namely the existence of time-invariant variables (*Sharia Board*, *Ownership* and *Oil-monarchy*), which a fixed effects model cannot deal with. The other issue is the presence of endogenous variables that we address with the method of instrumental variables (*IV*), using the Hausman-Taylor (*HT*) estimator (Baltagi, 2008). We tested several potential endogenous variables that impact performance and we eventually chose *Size*, *Age* and *lnZ-score*. *Size* allows for economies of scale; *Age* is related to experience and may capture management practices; *lnZ-score* includes capitalisation and *ROA*.

We follow a step by step approach. The first step includes *Specific contracts* (model 1) and then adds *LLP* (model 2) as specific risks. The second step includes the *Sharia* Board variable (model 3) with respect to non-compliance risk. Eventually, all three indicators of specific risks are simultaneously considered (model 4).The model is first estimated upon the full sample and then upon a sub-sample omitting the Iranian banks, in order to avoid the selection bias previously identified in the cross-sectional analysis and to check the robustness of our results.

Table 3. Estimates of performance models: full sample

Dependent variables	ROAA				ROEA			
Models	(1) *FGLS*	(2) *IV*	(3) *IV*	(4) *IV*	(1) *IV*	(2) *FGLS*	(3) *IV*	(4) *IV*
Explanatory variables								
Specific contracts	-0.0002	0.0007		-0.0001	0.0063	-0.0092		0.0158
LLP		-0.8341**		-0.8355**		-5.9438***		-4.9105***
Board			-2.4182**	-2.2206**			-11.4427**	-10.7046**
CR	0.0177	0.0466	0.0400	0.0547	-0.1368	0.0096	-0.0783	0.0189
LTLR	0.0282	-0.0129	-0.0339	-0.0183	-0.0666	0.2141**	-0.1004	-0.0152
STLR	-0.0055	-0.0114*	-0.0111*	-0.0094	-0.0421	-0.0098	-0.0344	-0.0250
lnZscore	0.5333**	3.3443***	3.7102***	3.6099***	14.5435**³	2.6640*	16.6384**³	16.2788***
Ownership	-0.1045	-0.5552	-3.4678	-3.1809	0.9885	2.6819	-12.7316	-11.3312
Age	0.0014	0.0227	-0.0284	-0.0299	0.4565	0.0501	0.0692	-0.0015
Size	-0.0227	0.8100	1.5176**	1.3402**	4.3447	-0.6633	7.6473**	6.9398**
Concentration	1.3226*	1.4099	1.2294	1.2418	8.5017**	7.5074**	7.3036*	7.0866*
GDP growth	0.1226***	0.1036***	0.1184***	0.1088***	0.4139***	0.3647***	0.4369***	0.3871***
Inflation	0.1304***	0.1213***	0.1158**	0.1231***	0.4995***	0.6715***	0.5075***	0.5454***
Oil-monarchy	0.9745**	2.3817	2.7262	2.7707	6.8155	1.4496	7.6996	7.2413
Observations	220	220	220	220	220	220	220	220
Number of Banks	47	47	47	47	47	47	47	47
R-squared	0.2054	0.252	0.267	0.298	0.3017	0.3656	0.3272	0.2935
Fisher	0.0004	0.0001	0.0002	0.0001	0.0001	0.0000	0.0001	0.0000
Wald	34.10	45.17	49.01	59.96	46.41	68.55	55.15	76.56
Breush Pagan	0.0196	0.0556	0.0977	0.1484	0.0000	0.0000	0.0000	0.0000
Hausman FE vs FGLS	0.0028	0.0000	0.0043	0.0002	0.0014	0.0169	0.0000	0.1409
Sargan	0.2308	0.3001	0.3572	0.4409	0.1265	0.1650	0.3641	0.4418
Hausman HT vs FGLS	0.1068	0.0143	0.0123	0.0026	0.0342	0.5236	0.0319	0.0244

Note: The sample is restricted to 47 IBs, due to missing data. *** p< 0.01, ** p<0.5, * p<0.1. T-stats are omitted.
Source: Authors, from Bankscope and bank reports

4.2. Results and robustness

Estimates of the step-by-step model (Table 3) show a significant and negative effect of the specific risk *(LLP)* and non-compliance (*Board*) upon performance (*ROAA* and *ROEA*).

According to model 1, the *Specific contracts* variable proves non-significant. In model 2, the inclusion of the *LLP* variable that proves significant throughout all models changes the sign of the *Specific contracts* variable that remains non-significant; it suggests that these two indicators are not complementary**.** According to model 3, the *Sharia* Board is significant and negative: the larger the Board, the lower the risk of non-compliance and the lower the performance of IBs.

Model 4 shows an inverse relationship between (high) specific risks on the one hand and (low) risk of non-compliance, as well as (low) performance(*ROEA* and *ROAA*) on the other hand. This corroborates the result from cross-sectional analysis and suggests some complementary relationship between specific risks.

The various models estimated confirm the significant negative impact of specific risks (*LLP* and *Board*), whereas *LTLR* is weakly significant or non-significant in most models, *LnZscore* proves positive and very significant, *STLR* being seldom significant or non-significant in most models. As for the characteristics of IBs, *Age* is non-significant, whereas *Size* proves positive and significant, as well as country effect variables (*Concentration*, *Inflation* and *GDP growth*), *Oil-monarchy* being non-significant.

We discuss the results of model 4 based on *IV*, with regard first to the determinants of the full sample (Table 3), then to those of the sub-sample without Iran (Table 4).

As for the full sample, the results show that *LLP* has a negative impact upon performance (both *ROAA* and *ROEA*), in line with conventional finance theory. *LLP* is a risk indicator and not a means of smoothing bank profit as demonstrated by Zoubi and Al-Khazali (2007) and Hassan and Mollah (2014), although IBs may also use loan loss provisions for discretionary managerial actions, when bank capitalization declines. (Soedarmono et al., 2017).

Any increase in the participation contracts portfolio, both on the short-term (*Murabahah*) and the long-term (*Mucharakah*), exerts a positive effect upon profitability in as much as the level of risk remains acceptable (Olson and Zoubi, 2011). We observe that the long-term liquidity ratio (*LTLR*) has little significant impact on *ROAA* and *ROEA*. To mitigate this risk, investment in long-term contracts should decline while maintaining liquidity to cover short-term contracts. However, an excess in liquid assets is detrimental to the profitability and development of IBs (Toumi et al, 2016) due to the opportunity cost of idle money. Hassan and Bashir (2003) conclude that *STLR* has a negative impact upon performance, while we observe a positive impact, although weakly significant.

The risk of bank failure or solvency risk (*LnZscore*) has a positive and significant impact upon performance (*ROAA* and *ROEA*), in line with conventional finance theory. The higher the *LnZscore*, the lower the default risk, the more stable and profitable are IBs. Zehri and Al-Herch (2013) claim that IBs were more stable and profitable during the 2007-2008 crisis, whereas Srairi (2010) asserts there is no difference between IBs and CBs as regards default risk.

Age and *Ownership* prove non-significant, whereas *Size* exerts a positive and significant effect upon performance. *Concentration* is positive and has a significant impact upon *ROEA*. Profitability is the result of significant market power of IBs in the MENA region, which proves oligopolistic and sometimes monopolistic (Kamarudin et al., 2014).

Macroeconomic variables (*GDP growth* and *Inflation*) have a positive and significant effect on performance, whereas *Oil monarchy* is insignificant. Rising demand for deposits and loans positively affects the revenues of IBs, hence their profitability. *Inflation* has a positive impact upon the performance of IBs, if their profits are mainly derived from direct investments, participations and / or other commercial activities (*Murabahah*). This is in line with the conclusion of Olson and Zoubi (2011) and Kamarudin et al. (2014), whereas Wahidudin et al. (2014) find a negative impact on the profitability of the MENA region.

In Table 4, the estimate of the sub-sample of 10 MENA countries, excluding Iran, confirms almost all previous results, with the exception of *Board* becoming non-significant. Provisions for losses in PLS account (*LLP*) and as well as solvency risk (*LnZscore*), *Size* and some macroeconomic variables (*Concentration, GDP growth* and *Inflation*) retain the same signs and remain the determinants of performance. There is no relationship between *Sharia* compliance and the share of specific contracts, which is a minor attribute of IBs. *Age* turns once positive and significant as well as long-term liquidity risk (*LTLR*), while *Size* becomes more significant:

large size IBs detain profitable assets and can benefit both from economies of scale and product diversification (Olson and Zoubi, 2011).

Table 4 Estimates of performance models: sub sample (excluding Iran)

Dependent variables		ROAA				ROEA		
Models	(1) *IV*	(2) *IV*	(3) *IV*	(4) *IV*	(1) *IV*	(2) *IV*	(3) *IV*	(4) *IV*
Explanatory Variables								
Specific contracts	0.0045	0.0064		0.0061	0.0415	0.0556		0.0549
LLP		-0.9711**		-0.9565**		-6.3385***		-6.2931***
Board			-1.2907	-1.1709			-4.0857	-3.2473
CR	0.0568	0.0759	0.0561	0.0769	0.0348	0.1627	0.0116	0.1509
LTLR	0.0568	0.0759	0.0561	0.0769	0.0348	0.1627	0.0116	0.1509
STLR	-0.0311	-0.0167	-0.0332	-0.0197	-0.0938	0.0024	-0.0880	-0.0012
lnZscore	-0.0139**	-0.0125*	-0.0128*	-0.0114	-0.0501*	-0.0409	-0.0464	-0.0377
Ownership	-1.0913	-1.1171	-2.5303	-2.3833	-2.6341	-2.8501	-7.4370	-6.5748
Age	-0.1016	0.6715***	-0.0811	-0.1213	-0.2271	-0.4499	-0.0847	-0.3499
Size	1.9137**	0.3647***	2.1428**	2.1980**	11.3929***	11.4595***	11.2983***	11.5702***
Concentration	1.3226*	1.4099	1.2294	1.2418	8.5017**	7.5074**	7.3036*	7.0866*
GDP growth	0.1582***	0.1443***	0.1572***	0.1464***	0.6790***	0.5890***	0.6563***	0.5928***
Inflation	0.1003*	0.1042*	0.1063**	0.1068*	0.4163*	0.4361**	0.4525**	0.4451**
Oil-monarchy	-1.3145	-1.5126	-0.1716	-0.6337	-13.6698	-15.2365	-8.5188	-11.9243
Observations	193	193	193	193	193	193	193	193
Number of Banks	40	40	40	40	40	40	40	40
R-squared	0.2356	0.2711	0.3080	0.3323	0.3544	0.4140	0.3780	0.4283
Fisher	0.0004	0.0002	0.0002	0.0002	0.0000	0.0000	0.0002	0.0002
Wald	37.30	48.56	70.48	88.57	61.13	88.16	76.34	102.71
Breush Pagan	0.1300	0.2338	0.4581	1.0000	0.1165	0.2138	0.2436	0.3032
Hausman FE vs FGLS	0.1985	0.0000	0.0030	0.0003	0.0001	0.0014	0.0000	0.0003
Sargan	0.3989	0.5309	0.4338	0.6161	0.1960	0.3090	0.2202	0.4014
Hausman HT vs FGLS	0.0493	0.4558	0.0078	0.0259	0.0007	0.0016	0.0001	0.0001

Note: *** p< 0.01, ** p<0.5, * p<0.1. T-stats are omitted.
Source: Authors, from Bankscope and bank reports

There is indeed a selection bias in the overall sample including Iran, which is identified in the sub-sample of 10 MENA countries experiencing a dual Islamic and conventional banking system, which are not affected by the risk of non-*Sharia* compliance. Although being the most mature and following the principles of Islamic finance, Iranian banks are exposed to the risk of non-*Sharia* compliance, which is a hindrance to the development of their products and the diversification of their assets.

CONCLUSION

We explore an aspect of risk that has been little addressed in the literature upon IBs, namely the specific risk relating to provisions for losses in participation contracts, the share of these specific contracts in total assets and non-*Sharia* compliance. We apply first a cross-sectional analysis and then panel data models using instrumental variables upon a sample of 53 IBs in the MENA region throughout 2007-2014.

Loss provisions upon PLS contracts exert a significant negative impact upon performance, whereas the share of these contracts in total assets proves non-significant alongside non *Sharia* compliance. Solvency ratio and, to some extent, liquidity ratios have a positive significant impact, together with some characteristics of IBs and the macroeconomic environment. This pattern corroborates the risk-return combination of conventional finance theory.

Four main outcomes are worth mentioning. First, *Sharia* compliance is ambiguous and is compatible with high or lower performance of IBs operating in a dual Islamic and conventional banking system. Conversely, IBs operating in a fully Islamic banking system (Iran) are risk-averse and nevertheless perform well. Second, whether the banking system is dual or not, the non-significant share of specific contracts in total assets suggests that such contracts are a minor attribute of MENA IBs. Third, there is no relationship between specific risk and the risk of non-compliance, which suggests the absence of specific risk management. Fourth, loss provisions for PLS contracts are used as a means of hedging all risks, not just specific risks. Hence, there is no evidence that the Islamic business model built upon the PLS basic principle, is the core of

banking activity for MENA IBs, which are less unconventional than some scholars claim they are.

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APPENDIX

Table A1. A review of panel data surveys upon IBs in the MENA region

Authors	Sample and coverage	Period	Method	Outcomes
Performance of Islamic banks (IBs) compared to conventional banks (CBs)				
Olson and Zoubi (2011)	80 banks; 10 MENA countries: 14 IBs; 66 CBs	2000-2008	DFA, panel data	IBs are less efficient (cost), more risk-prone and profitable than BC
Zeitun(2012)	51 banks; GCC: 13 IBs; 38 CBs	2002-2009	Panel data	Property and the age of banks do not influence performance: IBs do not differ from CBs. Profitability correlates positively with GDP and negatively with inflation.
Hidayat and Abduh (2012)	37 banks; Bahrain: 23 IBs ; 14 CBs	2005-2010	Panel data	Lag in the impact of recession.
Abedifar et al. (2013)	553 banks; 118 IBs (86 MENA); 354CBs	1999-2009	Panel data (random effects)	Small leveraged IBs have lower credit risk and are more stable than CBs. During the crisis, large IBs are less stable than large CBs.
Beck et al. (2013)	500 banks; one third in the MENA region: 88 IBs ; 422 CBs	1995-2009	Panel data	IBs are better capitalized, more liquid and profitable than CBs, but size effect reduces the advantage.
Rajhi and Hassari (2013)	557 banks; 16 countries (10 MENA): 90 IBs; 467 CBs	2000-2008	Panel data (GMM)	Positive link between stability (*z-score*) and size
Al-Deehani et al. (2015)	25 banks; GCC: 13 IBs; 12 CBs	2001-2012	GLM (General Linear Model - Multivariate)	IBs are more risk prone and less profitable during the recession
Kamarudin et al. (2014)	74 banks; GCC: 27 IBs; 47 CBs	2007-2011	DEA, GLS (Generalized Least Squares)	IBs are less efficient (cost, profit and income) than CBs
Ouerghi (2014)	94 banks;5 Oil monarchies + Malaysia30 IBs ; 60 CBs	2007-2010	GLS (Generalized Least Squares)	IBs are less efficient and profitable, more prone to credit risk than CBs. Large IBs perform better than large CBs
Performance of Islamic banks (IBs) without comparison with conventional banks (CBs)				
Wahidudin et al. (2014)	91 banks; 19 countries (14 MENA): 69 IBs; 21 IBs (including Southeast Asia)	2004-2009	Panel data	Higher operation costs for MENA IBs.
Ben Hassine and Limani (2014)	22 IBs; MENA countries	2005-2009	Panel data	Inefficiency is rather technical or organisational than regulatory or allocative.
Trad et al. (2016)	78 banks; 13 countries: 12 MENA (74 IBs) + Pakistan (4 IBs)	2004-2013	Panel data (GMM)	Profitability (ROA, ROE) and liquidity risk negatively correlated. IBs well capitalized. Ambiguous impact of macroeconomic variables.

Source: Authors
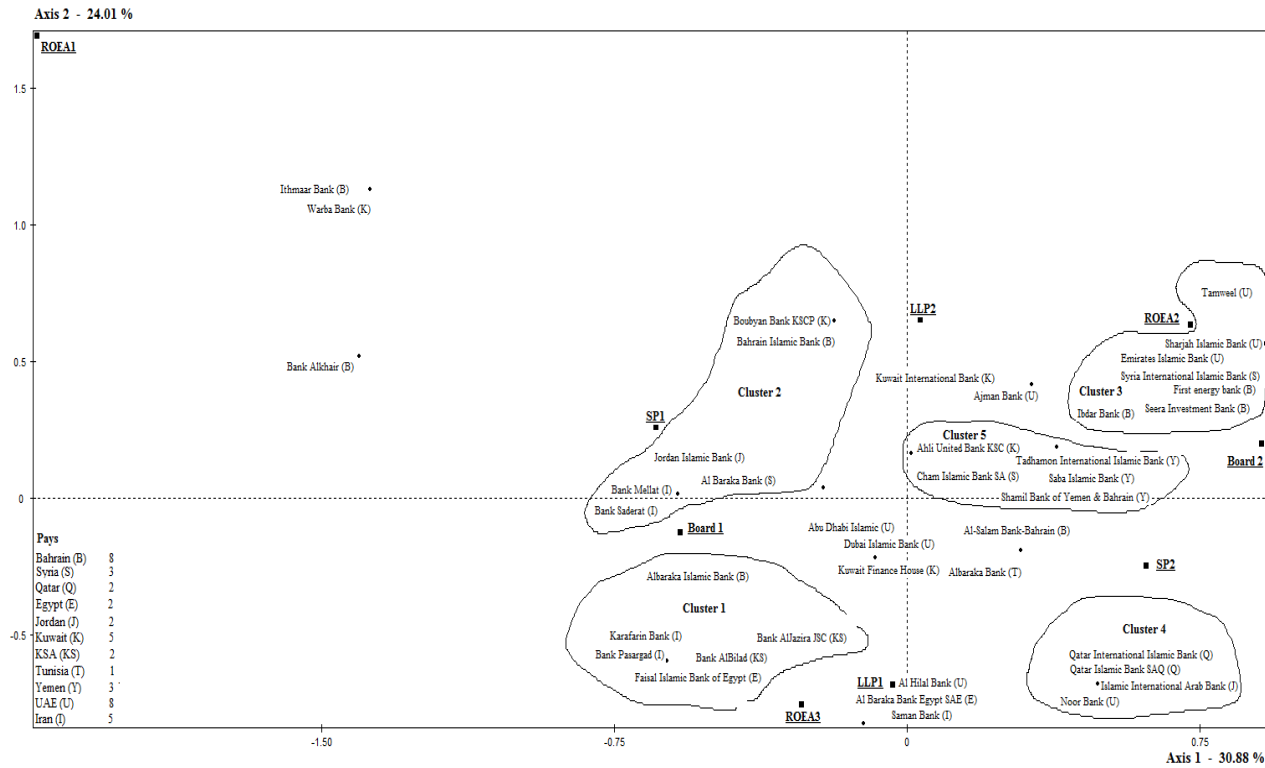
Table A2. Correlation matrix

	ROAA	ROAE	LLP	Sharia Board	Specific contracts	CR	LTLR	STLR	Lnzscore	Size	Concentration	Age	Ownership	Oil-monarchy	Inflation	GDP growth
ROAA	1.00															
ROAE	0.76*	1.00														
LLP	-0.28*	-0.22*	1.00													
Sharia Board	-0.13*	-0.29*	-0.08	1.00												
Specific contracts	0.02	-0.001	0.13*	0.11*	1.00											
CR	-0.17*	-0.17*	0.05	0.07	0.18*	1.00										
LTLR	0.22*	0.30*	-0.07*	-0.17*	0.32*	-0.54*	1.00									
STLR	-0.15*	-0.17*	0.008	0.07	-0.16*	0.02	-0.49*	1.00								
Lnzscore	0.13*	0.16*	-0.1	-0.10*	0.15*	-0.13*	0.16*	-0.01	1.00							
Size	0.02	-0.11*	-0.14*	0.62*	0.26*	-0.16*	0.05	0.003	-0.05	1.00						
Concentration	0.16*	0.19*	-0.11*	0.10*	-0.03	-0.15*	-0.04	-0.05	0.03	0.34*	1.00					
Age	0.01	0.12*	-0.06	-0.24*	0.14*	-0.03	0.10*	-0.25	0.009	-0.23*	-0.06	1.00				
Ownership	0.09	0.09	0.04	-0.20*	0.08	0.02	0.35*	-0.42*	0.06	-0.05	-0.13*	0.07	1.00			
Oil-monarchy	0.02	-0.04	0.006	0.03	0.19*	-0.08	0.33*	-0.1	-0.13*	0.10*	-0.33*	0.07	0.29*	1.00		
Inflation	0.09	0.21*	0.14*	-0.18*	-0.16*	0.23*	-0.20*	0.02	-0.11*	-0.26*	0.09	0.06	-0.23*	-0.39*	1.00	
GDP growth	0.12*	0.06	-0,13*	0.19*	0.07	-0.15*	-0.02	0.11*	-0.002	0.21*	0.12*	-0.12	-0.07	0.06	-0.36*	1.00

* p<0.1

Source: Authors

Figure 1. Clusters according to axes 1-2

Source: Authors, from Bankscope and bank reports