



# Modelling the effect of the geographical environment on Islamic banking performance: A panel quantile regression analysis



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## ARTICLE INFO

### JEL classifications:

C22

G15

### Keywords:

Islamic banking

Geographical environment

Panel data

Quantile regression

Nonlinearity

## ABSTRACT

While studies have focused on Islamic banking, research on the effect of the geographical environment on Islamic banks is scarce. We investigate this issue by using daily data on 12 Islamic banks in four regions (Africa, Asia, Europe, and the United States) from July 2007 to April 2016. We apply different methodological approaches (principal component analysis, panel data tests, and quantile regression). First, the principal component analysis shows that the performance of Islamic banks varies among regions. Second, the linear panel regression highlights that the geographical environment positively and significantly affects Islamic banking, suggesting the importance of externality effects. Finally, the environmental effect seems to vary with quantiles (positive effect for the lowest quantile versus negative effect for the highest quantile). This quantile specification points to nonlinearity in the environment–Islamic bank performance relationship, reflecting a time-varying discipline imposed by the Sharia board (Islamic Law). This finding helps better explain the main difference between Islamic banks in the East (Africa and Asia) and those in the West (Europe and the United States) and also enables investors to adjust their portfolio choices when considering the products of Islamic banks according to regional specificities.

## 1. Introduction

Islamic banking is a system that regulates and operates banking activities under Islamic economics, which is consistent with the principles of Shariah (Islamic Law). Accordingly, Islamic banking is also called Shariah-compliant finance. The application of Shariah rules aims to reduce risk taking and create a more ethical and moral financial system (Lewis and Algaoud, 2001).<sup>1</sup>

Islamic banking was originally developed in the 1970s to protect the proceeds of oil production in Gulf countries; however, it has rapidly increased over recent years, not only in this region but also globally. While some countries have fully adopted Islamic banking as the principal banking system, in other countries Islamic banking has been partially introduced in parallel with conventional banks. To illustrate this rapid growth in Islamic banking, it is important to note that the assets of Islamic banking totaled around \$2 trillion in 2014. Further,

according to the World Islamic Banking Competitiveness Report (2013–2014), Islamic banking is growing faster than banking assets, at an annual rate of 17.6% between 2009 and 2013, and it is projected to grow by an annual average of 19.7% to 2018.

Given these specificities of Islamic banking and its typical rules, it is becoming an interesting alternative to conventional banking. Indeed, since the aftermath of the global financial crisis (2008–2009), conventional banks have experienced large losses and Islamic banking has been considered to be able to hedge investors and systems from losses, risk, and crises.

As such, Islamic banking has become the object of various empirical studies focusing on banking returns, risk, and performance. However, such studies have not drawn unanimous conclusions regarding the influence of Islamic banks (IBs). On the one hand, IBs seem to improve the economic growth and macroeconomic efficiency of a given country (Imam and Kpodar, 2016; Gheeraert and Weill, 2015). IBs have been

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<sup>1</sup> It is important to recall that while Islamic banking has specific principles and rules (i.e., prohibition of interest rates and speculation), it also has specific products and contracts (e.g., Murabaha, Musharaka, and salam insurance contracts) that constitute the main sources of profits. For more details about these IBS4 products, see Aroui et al. (2013). In addition, Lewis and Algaoud (2001) provide an interesting analysis of the principles of Islamic banking, their origins, and their effects.

<http://dx.doi.org/10.1016/j.econmod.2017.01.018>

Received 6 July 2016; Received in revised form 25 January 2017; Accepted 28 January 2017

Available online 09 February 2017

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found to be more efficient, better performing, and less risky than conventional banks because of their adherence to a religious benchmark and ethical rules and the prohibition of risk excess and speculation (Lewis and Algaoud, 2001). Additionally, the recent global financial crisis effect appears to have been less costly for IBs than for conventional banks given the natural risk-aversion characteristics of IBs' products (Fakhfakh et al., 2016). On the other hand, some studies show that IBs differ little from conventional banks, finding that both types of banks are indirectly in competition (Jawadi et al., 2016b). Additionally, IBs have been criticized for not being sufficiently ethical and transparent to provide a typical model with which to lead conventional banks (Jawadi et al., 2016a).

In practice, IBs' products seem a priori to be less risky than those of conventional banks given the application of Shariah principles (e.g., prohibition of speculation and prohibition of interest rates). However, this conclusion is questionable because most standard banks only support banking risk, while IBs support both standard banking risk and an additional specific risk linked to the characteristics of Islamic financial contracts. This adds more ambiguity when considering IBs. For all these reasons, the performance and efficiency levels of Islamic banking remain unclear despite the important number of related empirical studies. Further, the results of these empirical studies vary with the sample data and periods under consideration (Fakhfakh et al., 2016).

Based on the foregoing, Islamic banking requires more investigation given its rapid development over the past two decades in the Middle East as well as in Europe and the United States. In particular, it is important to specify the performance drivers of IBs to better inform investors and policymakers on the specificities, opportunities, and perspectives of Islamic banking globally. The focus on performance is particularly important as it enables us to study both return and financial risk, which are crucial to investors. The performance analysis is also required to improve asset price valuation and rating. Interestingly, the regional investigation of performance helps rigorously specify the regional factors that investors should take into account when investing in an IB's products.

This study focuses on the performance of IBs while clarifying the inconclusive conclusions and mixed findings in the literature on Islamic banking. It does not aim to compare Islamic banking with conventional banking. Rather, we check whether this heterogeneity of findings is associated with the presence of different cultural, geographical, and religious factors that can affect Islamic banking differently.<sup>2</sup>

Interestingly, while previous related studies tend to carry out quantitative analyses, the main contribution of this study relates to the proposition of a hybrid analysis incorporating some qualitative dimensions to evaluate the financial performance of IBs. Accordingly, this study answers the following question: Does the geographical environment affect Islamic banking?

The business associated with IB products in a Muslim country expectedly differs from that in a non-Muslim country. Banking business also varies across Muslim countries because it reaches high levels when only Islamic banking exists in a country, while it is less significant in countries in which conventional banks and IBs coexist. Additionally, Islamic banking shows different performance regionally depending on the presence of an official financial/banking authority (Jawadi et al., 2017). The selection processes of eligible companies with regard to Shariah rules also vary at a regional and a country level. Moreover, other factors such as a lack of transparency, IB image, and the confusion between Islamic finance and Islamist matters can affect Islamic banking differently.

A large stream of the literature covers the theoretical aspects of

Islamic banking, and empirical studies have tested the dynamics of the returns and risk of IBs and compared them with those of conventional banks.<sup>3</sup> However, few studies directly compare the performance of IBs among regions. Imam and Kpodar (2010), using data for IBs for 1992–2006, show that income per capita and oil production are significantly linked with the development of the Islamic financial sector. These two factors might help increase the development and growth in IBs, while the 9/11 shock in the United States can be seen as an exogenous factor that halted the development of Islamic banking. Accordingly, the development of IBs seems to react to different forces and has recently passed through different phases. Zantioti (2009) studies the determinants of IB profitability for different regions over the period 1999–2007. The author shows that the Middle East has the highest profitability, while South Asia has the lowest. In addition, oil price determines profitability but in different ways in North Africa and South Asia, while oil price has no impact in the Middle East. Moreover, IBs react positively to increases in GDP.

Overall, previous studies suggest that IB performance differs among regions, but they lack a thorough investigation. To our knowledge, our study is the first to attempt to bridge this gap by empirically investigating the effect of the geographical environment on Islamic banking and proposing qualitative drivers of the financial performance of IBs. In particular, our study provides an original contribution while developing an empirical specification to account for the effect of the environment on IB performance.

Methodologically, we rely on principal component analysis (PCA), time series tests, panel data econometrics tests, and quantile regression. We use daily data on 12 IBs from four regions (Europe, the United States, the Middle East, and North Africa) from July 2007 to April 2016. This sample enables us to check the performance of IBs at a regional level to understand the opportunities and perspectives. It is of course possible to add conventional banks into the sample and compare them with IBs. However, given the specificities of IBs, we prefer to focus on IBs and leave the topic of conventional banks for future studies.

Our main findings point to three interesting conclusions. First, the PCA shows that the performance of IBs varies among regions and that the IBs under consideration are distributed according to, at least, two important components. The identification of these factors helps specify for each region the most important driver of the financial performance of IBs. Second, the linear panel regression highlights that the geographical environment positively and significantly affects Islamic banking. This finding implies that the consideration of these factors by investors would help them better forecast the expected returns on IB investment for each region and evaluate their perspectives more rigorously. Finally, the environment effect varies among quantiles: it positively affects performance for the lowest quantile and negatively affects performance for the highest quantile. The presence of different quantile environment effects indicates a nonlinear and asymmetrical effect in the environment–IB performance relationship, explaining the main difference between IBs in the East (Africa and Asia) and those in the West (Europe and the United States). Therefore, the consideration of these nonlinear effects would help better specify the performance dynamics that can vary over the time. This would also help consider IBs as an alternative to conventional banks according to the environment effect.

Although our results regarding the geographical environment are not surprising, the main contribution of this study is to focus on an original (qualitative) dimension associated with the environment and to empirically quantify its effect. Further, the quantification of this effect is carried out by using a nonlinear panel data specification, enabling us to capture the environment effect per quantile. In addition,

<sup>2</sup> For example, the culture is homogeneous in the East, while it is heterogeneous in the West. Moreover, the belief is always single in North Africa and the Middle East, but multiple in the West.

<sup>3</sup> See Lewis and Algaoud (2001) and Fakhfakh et al. (2016) for recent literature reviews.

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