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## Credit risk, managerial behaviour and macroeconomic equilibrium within dual banking systems: Interest-free vs. interest-based banking industries

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#### ABSTRACT

In this paper, an attempt has been made to explore the determinants of credit risk in the banking system with a particular interest toward the Islamic banking industry. We analyze the link between credit risk and a set of bank-specific and macroeconomic along with institutional variables using two complementary approaches. First, we investigate the factors of credit risk using one-step generalized method of moments (GMM) system estimator. Then, we explore the feedback between credit risk and its determinants in a panel vector autoregressive (PVAR) model. We have used a sample of Middle Eastern, North African (MENA) and Asian countries to apply our model. The major purpose of this paper is to find factors that could explain credit risk within the interest-free banking system relative to the interest-based one.

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#### 1. Introduction

It is commonly known that bank failure has great adverse effects as it threaten the whole systemic stability. Reinhart and Rogoff (2010) and Castro (2013) gave evidence that credit risk, which takes the form of non-performing loans, is one of the main factors contributing to banking crises. Accordingly, effective risk management is critical deal with and somewhat avoid this failure. However, an adequate risk management framework requires principally the knowledge of the main causes or the factors that lead to this risk.

The objective of this empirical work consists in assessing credit risk factors within the Islamic banking industry compared to the conventional one. The undertaken analysis covers bank-level, macro-environment along with institutionalenvironment factors to ascertain credit risk correlates. The analysis was conducted on a sample of 117 banks operating in the MENA and South-East Asian countries and observed over 8 years (i.e. from 2005 to 2012). We have chosen regions where Islamic banks operate alongside and compete with their conventional counterparts.

Our choice of the Islamic banking industry was not arbitrary. In fact, Islamic banks commonly synonymous with interestfree banks operate in the interest-free system and this is one of the important things which differentiate them from the conventional or the interest-based ones. In particular, and in the recent years, the Islamic banking industry has been liable to protect itself against abuses reported before and during the crisis thanks to its undertaken moral values and sets of ethics.

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#### Table 1

Credit risk relevant to different Islamic banking contracts.

Contract	Associated Credit risk
Mudharabah (Profit-sharing contract)	Credit risk occurs in the case of nonpayment of the bank share (Rabbul-mal) by the entrepreneur (Mudharib) when it is due. In addition, within the Mudharabah contract the bank does not participate in the decision-making process and is not in the position to know, decide or monitor the Mudharib's activities. Consequently, a problem may arise to the banks in case of prevailing high information asymmetry environment, in which they do not dispose of sufficient information on the firm's actual profit
Musharakah (Profit and loss sharing contract)	The relevant credit risk is dubbed " <i>capital impairment risk</i> ", that is, in case of failure, the bank would lose the capital amount it had provided. Accordingly, <b>Boumedienne</b> (2011) has argued that there is usually no credit risk associated with Musharakah, because partners in such a contract type are logically selected according to integrity, honesty and good reputation. Defaulter clients are rejected. On the other hand, Erico and Sundaraajan (2002) have highlighted that Islamic banks are exposed to credit risk due to asymmetric information with the investing partner
Murabahah (A mark-up sale of a merchandise)	In the Murabahah contract, the bank buys and sells a commodity to the client at a mark-up (profit). Credit risks take place whenever the buyer (the client) defaults or delays on payment after a due date. Moreover, this risk further increases if the client cancels his option to buy and abandon the commodity
Ijarah (Financial leasing)	Credit risk involved in the Ijarah contract arises mainly when the customer (lessee) fails to pay the lease rental when it falls due. Besides, within Ijarah, the lessee can, in any time, change his mind and cancel the lease. In such a case, the bank will find itself with an asset purchased with no return
Salam (Forward sale)	Within Salam, credit risk takes place if (i) the customer does not honor payment (ii) the products are not delivered at all, or, are not delivered on time or else are not conforming to specification (iii) the price does not cover the whole Salam capital
Istisna' (Order to manufacture)	The credit risk may consists in a failure to deliver the good, case in which the Istisna' contract can contain a penalty clause to overcome counterpart related risks, unless the failure is due to factors lying beyond the manufacturer's control. In this case, the bank will have to purchase from an
	alternative source usually at a potentially higher price Credit risk may emerge once the purchaser in a parallel Istisna' defaults to pay either the due installment or the price in full. In such a situation, the bank will have the right to retain title of the manufactured good as a security until the last payment installment has been received

Table 2
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Banks by country and region.

Region	Country	Islamic banks	Conventional banks	All banks
MENA & Turkey	United Arab emirates	6	9	15
	Bahrain	5	8	13
	Kuwait	3	9	12
	Saudi Arabia	2	9	11
	Qatar	3	7	10
	Jordan	2	9	11
	Tunisia	1	4	5
	Turkey	3	16	19
Asia	Bangladesh	2	10	12
	Indonesia	3	6	9
Sum		30	87	117

In this context, Causse (2012) argued that "Islamic banks were capable of escaping crises thanks to their very principles". She further affirmed that Islamic banks tend to take place in the global system.

To achieve our purpose, we applied two complementary approaches namely one-step generalized method of moment (GMM) system analysis and panel vector autoregressive (PVAR) framework. In fact, the first method would allow us to explore the various credit risk determinants and whether the Interest-free banks behave differently from the interest-based ones. As for the second approach, it would help test our sample banks' fragility to diverse unexpected exogenous shocks. In particular, and through a PVAR study we will attempt to examine the causal link between credit risk and the bank's managerial behavior (i.e. bank's efficiency) in a first stage. In a second stage, we will try to check the macro-financial links binding credit risk to the different exogenous variables.

Actually, this study is intended to help clarify certain misunderstanding relevant to some analytical aspects, concerning identification of factors likely to affect credit risk and improve risk management in Islamic banking. In fact, the present paper's modest contribution lies in providing bankers with some tools whereby credit risk can be more effectively managed through staff monitoring of the credit risk involved factors. Indeed, bank managers may take advantage of recognizing the possible defects and trying to re-conduct the credit risk management strategies in such a way as to face the imbalances, safeguard or maintain funds or re-invest them. As a matter of fact, the major goal lying behind such a study consists in further promoting the credit risk management related policies with regard to Islamic banks as compared to their conventional counterparts.

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