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## Bank-firm relationship and credit risk: An analysis on Tunisian firms

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### ABSTRACT

This paper analyses the impact of the intensity and length of bank-firm lending relationship on Tunisian banks' credit risk over the period 2001–2012. The sample includes 494 bank-firm relationships for 383 firms. By applying probit and ordered probit models, our results indicate that firms which engage in intense relationships with banks are less likely to encounter a credit default. In addition, these firms exhibit a higher loan quality. However, no evidence has been found for the impact of the relationship length on credit risk. Further, the findings show that private banks, unlike public financial institutions, take advantage of their close lending relationships with borrowers to mitigate information asymmetry and therefore improve their loans portfolio quality.

### 1. Introduction

The recent financial crisis made it clear that excess risk-taking by banks can be an outstanding source of the collapse of the financial system. This crisis has raised the problem of the soundness of the banking system at the forefront of academics and politicians. In this vein, exploring the determinants of the credit risk, considered as a major cause of bank failure (Caprio et al., 1998; Campbell, 2007), is a question of substantial importance for regulatory authorities concerned with financial stability.

The effect of bank governance on the credit risk has been widely investigated in recent years (Pathan, 2009; Shehzad et al., 2010; Azofra and Santamaria, 2011; Wang et al., 2012; Boussaada and Labaronne, 2015). Nevertheless, few studies have examined the impact of bank-firm relationships' features on credit risk. Relationship lending exists if there is a strong, stable and long-term credit relationship between a bank and a firm (Petersen and Rajan, 1994). The theoretical literature suggests that relationship lending play key roles in resolving information problems and mitigating financial market imperfections (Bhattacharya and Thakor, 1993; Boot, 2000; Petersen, 2004). Financial intermediation theory states that banks and other financial intermediaries can reduce information asymmetry and agency costs by developing close and repetitive contacts. The close relationship lending produces informational rents for the bank (Sharpe, 1990; Rajan, 1992) enabling it to assess the borrower's risk more precisely. On the other side, some researchers state that the close bank-borrower relationship boosts the willingness to take more risk and is behind the process of the accumulation of nonperforming loans (Hellwig, 1977; Dewatripont and Maskin, 1995). In the case of financial distress, banks may renew loans to

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insolvent borrowers and, as a consequence, accumulate losses (Hellwig, 1991). They can subsequently offset higher default rates by applying higher interest rates to the surviving firms (Boot, 2000; Freixas, 2005).

In this paper, we investigate the impact of the development of relationship lending on credit risk of Tunisian banks. The Tunisian context is worth studying for several reasons. The financial system remains excessively bank-based despite the reforms undertaken to establish a market-based financial sector. External finance to Tunisian firms is provided mainly by banks. Moreover, according to numerous reports of the World Bank (2004, 2014), the International Monetary Fund (2002, 2010, 2015) and rating agencies (Fitch Ratings, 2006, 2007), the Tunisian banks' credit risk management is inefficient and reckless. Tunisian banks have "high risk appetite" (S & P, 2011). In 1997, the nonperforming loans (NPLs) ratio reached 15% of the GDP and more than 22% of total bank loans (IMF, 1998). Thanks to reforms in the banking system that have aimed at mitigating credit risk, the NPL ratio was reduced to 15% in 2015 (Central Bank of Tunisia-CBT).

Despite the remarkable progress achieved since 1998, the Tunisian banking sector is still characterized by an important credit risk. In comparison to the Arab Mediterranean countries (AMC),<sup>1</sup> Tunisia is notably distinguished by its high level of NPLs ratio which is presented as a major problem of the country's banking system (IMF, 2002, 2010). The NPLs ratio is well beyond the international standards level (IMF, 2010).<sup>2</sup> Under provisioned NPLs increase the cost of bank intermediation and deprive Tunisia from a better access to international capital markets as it affects investors' confidence (World Bank, 2004).

The contribution of this research is twofold. It aims to fill the gap in relationship banking literature by focusing on the banking sector in Tunisia. Although the literature on relationship between banks and firms is particularly wide, there are few studies that examine the relationship between the intensity of relationship banking and credit risk (Ferri and Messori, 2000; La Porta et al., 2003; Jiménez and Saurina, 2004; Menkhoff and Suwanaporn, 2007; Chang et al., 2014; Fiordelisi et al., 2014). The major empirical analyses have prevalently concentrated on the benefits of relationship lending to firms expressed in terms of credit availability (Petersen and Rajan, 1994; Lehmann and Neuberger, 2001; Cenni et al., 2015), better term loans (Berger and Udell, 1995; Elsas and Krahen, 1998; Berger et al., 2007; Bellouma et al., 2009; Matias et al., 2010) and better financing of distressed borrowers (Brunner and Krahen, 2008; Huang and Huang, 2011).

Moreover, very few of the empirical studies on relationship lending are applied to data on emerging countries, where relationship lending may be particularly important because of financial system inadequacies (Berger et al., 2008). The institutional environment of an emerging market seems favorable to the widespread use of relationship lending (Menkhoff and Suwanaporn, 2007).

In this paper, we examine the relationship lending effect on the bank credit risk ex-post using a unique dataset on 383 Tunisian firms. We focus on loan by loan analysis and we conclude that closer relationship with banks decreases the probability of default of Tunisian firms. Its effect is stronger for private banks. However, longer term banking relationship does not seem to be linked to bank's credit risk.

The remainder of this paper is organized as follows. In the second section, we expose an overview of the Tunisian banking sector. In the third section, we review the literature on the topic and present our hypotheses. In the fourth section, we present our methodological approach and provide the descriptive statistics in the fifth one. Section 6 presents and discusses the empirical results. Finally, Section 7 displays the concluding remarks.

## 2. Trend in the Tunisia banking sector structure

Since the 1980s, the Tunisian financial sector has undergone several reforms aiming at increasing the degree of financial liberalization. Although some measures have been taken by the authorities in order to encourage financing through the financial market, the Tunisian financial system remains bank-based. Banks are fundamental partners of Tunisian firms in providing funds. The nonbank financial sector is small and accounts for only about 20 percent of all financial system assets (World Bank, 2014).

Tunisia's banking sector appears overbanked and fragmented (S & P, 2014). Indeed, the banking sector is comprised of 22 banks with the market share of the largest three banks accounting for about one-third of the total assets of banks. Whereas recent privatization efforts have reduced direct state ownership, public banks continue to play a predominant role in the banking sector. The Tunisian state is the main shareholder of three banks: STB (51%), BH (57%), and BNA (65%). These banks are currently representing 37 percent of banking assets and around 28 percent of banking sector deposits (IMF, 2015).

The ability to provide credit to the economy remains weak, especially when compared to banks in neighboring economies such as Morocco (World Bank, 2014). In the Tunisian context the information available to the commercial bank and the customer is often asymmetric (Omri et al., 2005). Tunisia continues to rely only on public registries which restrict the borrowers' right to inspect their credit histories. In addition, this does not allow collecting and distributing detailed data, including from non-bank sources (Ayadi et al., 2011). In this context, the development of bank-firm relationship would play a significant role in providing information on borrowers' quality and repayment capacity.

However, from the perspective of the banking regulation in Tunisia, banks are obliged to maintain diversified loan portfolios which would impede the development of the relationship between banks and Tunisian firms. In fact, the incurred risks on the same borrower should be less than 25% of the bank's net capital stock. In addition, the total of incurred risks on beneficiaries whose

<sup>1</sup> For the period 2000–2009, Tunisia has the highest level of average NPLs ratio (19.7%) among AMCs. The ratio reaches 19.07% in Egypt, 13% in Morocco, 10.56% in Jordan, 9.53% in the United Arab Emirates and 7.58% in Kuwait (IMF, 2007, 2009; WB data, 2000, 2001).

<sup>2</sup> During 2000–2009, the average NPLs ratio stood at 1% in Australia, 1.7% in United States, 2% in Great Britain, 3.88% in France and 4.1% in Germany (IMF, 2007, 2009; WB data, 2000, 2001).

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