

DID FINANCIAL LIBERALIZATION LEAD TO BANK FRAGILITY? EVIDENCE FROM TUNISIA

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ABSTRACT

The aim of this study is to investigate the performance of the Tunisian banking sector following the liberalization of its financial sector. To this end, we collected annual frequency data from nine banks for the period 1980-2009. By using Seemingly Unrelated Regression (SUR), our estimations show that financial liberalization negatively affected the profitability of Tunisian banks and increased the degree of credit risk. However, empirical results reveal that financial liberalization significantly increased the liquidity of banks due to liberalization of deposit interest rates.

JEL: E44, G21, L51, N24

KEYWORDS: Financial Liberalization, Bank Fragility, Tunisian Banks, SUR Regression

INTRODUCTION

Banks play a crucial role in our modern economy. They are a vital part of society because they provide an important channel through which many businesses obtain their financial support. Banks are also the most important channel for money circulation between households, firms and financial markets; they have become the hub of the economic development.

Since several decades ago, banks have received a particular attention by economists. For example, Bagehot in «Lombard Street », published in 1873, argued that banks have played a major role for the industrial revolution of the United Kingdom in the beginning of the 19th century. Schumpeter (1912), in “The Theory of Economic Development” argued that banks play a major role in the economy through the allocation of capital and the creation of wealth. More recently, Merton (1993) states that «a well developed smoothly functioning financial system facilitates the efficient life cycle allocation of household consumption and the efficient allocation of physical capital to its most productive use in the business sector». Nowadays, banks have become instrumental to the economy and their role is more important than before.

In the past two decades, financial markets have emerged spectacularly and financial innovations have been developed at a stunning rate. In more advanced financial services economies, banks have modernized their role and have changed their strategies. Nowadays, banks exercise a more extensive variety of businesses. However, in some developing countries, banking sector is still archaic and it suffers from some anomalies. One of the solutions adopted by some countries to improve the financial sector’s architecture is the liberalization process (Blair, 2007). Broadly, liberalization refers to a basket of policy frameworks to measures directed at diluting or dismantling regulatory control over the institutional structures, instruments and activities of agents in different segments of the financial sector (Ghosh, 2005). Liberalization policy suggests an independent central bank with a strong position in the financial and money market. It also requires the necessity of mitigating financial repression by releasing interest rates, promoting financial innovation, reducing directed and subsidized credit and allowing greater freedom in terms of external flows of capital in diverse forms (Abiad, *et al* 2008 and 2010, Galindo *et al* 2007). These suggestions were strongly recommended by the so called the “Financial Repression School”,

notably by McKinnon (1973) and Shaw (1973). The authors demonstrated that financial liberalization is the key to rapid economic growth of Less Developed Economies (LDEs). However, these recommendations were criticized by the “Neo-Structuralist School”, which argued that liberalization of financial markets might have adverse effects on growth if curb markets are more and more effective than official money market in financing investment (Loizoz, 2006). Furthermore, the problem became serious when the organization and the structure of financial sector became inefficient to control the globalized world economy. Who is right and who is wrong? What should LDEs do?

Since the eighties, many LDCs have adopted the financial liberalization policy. In Tunisia, during 1986-1987, the government adopted an extensive program of financial market reforms to prepare for the implementation of the liberalization frameworks. The general idea of this paper is to investigate the consequences of financial liberalization on Tunisian banks. We have collected annual frequency data relative to nine Tunisians banks for the period of 1980-2009. In the empirical part of this paper, we will use three banking indicators, which are profitability, credit risk and liquidity and then we will analyze the consequence of the liberalization of these three indicators simultaneously. Profitability is the goal of any financial institution to ensure its existence and to avoid external pressure. The level of risk is the second key indicator because credit risk is a threat to the health of the banking system, where special attention was given to the prevention and management of risk. The third indicator is liquidity, which is a necessary pillar for performance of bank intermediation (collection of deposit and lending). The econometric analysis is based on a Seemingly Unrelated Regression (SUR). Overall, results show that financial liberalization negatively affected the profitability of Tunisian banks and increased the degree of credit risk as well as the liquidity of banks.

The remainder of the paper is as follows: the next section examines the related literature and develops the scope of this research study. We then give an overview of the Tunisian banking sector following the liberalization process. The fourth section describes data, assumptions and methodology. In the fourth section, we discuss the results of our empirical tests. The final section concludes.

LITERATURE REVIEW

The financial liberalization policy has been adopted by several less developed countries as a strategy to accelerate the economic development and increase the economic growth through the adoption of some reforms for the financial sector (Abiad, *et al* 2010). The available literature on financial liberalization and bank fragility could be summarized in three axes: the first one analyzes the relationship between liberalization and bank profitability. The second axe focuses on the relationship between financial liberalization and credit risk. Finally, the third one investigates the relationship between financial liberalization and bank liquidity.

Authors of the financial repression school (McKinnon, 1973) and Shaw, 1973) developed the first axe and they underlined the advantages of financial liberalization. According to their recommendations, financial liberalization promotes growth and economic prosperity. Following the liberalization of interest rates and capital account, financial openness becomes beneficial on savings and investment because it allows an increase in liquidity, which will stimulate investment. McKinnon (1973) and Shaw (1973) insist on the fact that financial liberalization is the most effective way to develop banking intermediation, raise capital accumulation and promote economic growth in less developed countries. Following McKinnon (1973) and Shaw's (1973) argument, Galbis (1993), Vogel and Buser (1976), Chari and Henry (2002) have found the same conclusion which is: the financial system should be liberalized to ensure its proper functioning, to increase financial savings, to promote productive investment in technological innovation and to sustain economic growth. Chari and Henry (2002) argue that in short term, and just after the introduction of liberalization programs, banks will record a high profitability. They argue that the globalization of

finance and the disappearance of national borders are followed by an accumulation of liquidity, which in turn promote investment and accelerate economic development and prosperity.

The second axe developed by Gonzalez-Hermosillo and Pazarbasioglu (1997), Demirguç Kunt and Detragiache (1998) and Gurben *et al* (1998 and 1999). Demirguç Kunt and Detragiache (1998) agree with the positive effects of financial liberalization only for short period. They argued that investors could at any time, in an unexpected reason, withdraw their capital, and seek to invest in new activities with higher returns. They conclude that the long-run positive effects of financial liberalization are uncertain and unclear. Several economists have demonstrated their hostilities regarding the liberalization process (Klaus *et al* 1997, Klaus and Chénard 1998, Hermosillo and Pazarbasioglu 1997). They argued that with the deregulation and the absence of control and adequate supervision, banks are becoming more oriented towards operations that are more speculative. Banks take excessive risks by funding projects with poor quality and require high rates of return. This environment will negatively affect the quality of corporate investment as well as the solvency of these banks. This may deteriorate the financial situation of banks. Klaus *et al* (1997) have focused their research on this issue and they emphasized the serious effects of the financial liberalization as a source of banking fragility.

Gurben *et al*, (1999) consider the liberalization as a source of risk appetite. They show that the new liberalized environment gives banks more flexibility to enlarge their expertise and to diversify their activities. Some banks found the diversification as an interesting way to get profit easily and without any control and supervision. As a result, they started the financing of risky projects that requires a high rate of return but a low probability of success. Generally, the financing of such type of projects increases the credit risk. This is what happened with the Japanese banks in 1990's where government encouraged banks to allocate their credits to unproductive firms (the so-called Zombie firms). As a result, the Japanese banking sector has experienced an unprecedented financial crisis.

Another factor that may increase the risk is the fierce competition that engenders the deregulation and the financial openness. In fact, liberalization of finance and deregulation has lead to a high competitive banking market (Hamdi and Sbia, 2008). Competition pressure comes from banks and non-banks alike. Nowadays a wide range of new types of enterprises supply traditional banking services such as transactions deposits, savings accounts and a variety of loans. Such enterprises include supermarkets, utility companies, insurance companies, mutual funds and even car manufacturers. Consequently, banks have lost their traditional monopolistic advantage such as their monopoly in the payments system (Hamdi 2009). This new environment forced banks to diversify their activities and to exercise new riskier non-banking activities.

Authors of the third axe analyzed the relationship between liberalization and banks liquidity (Klaus and Chénard (1998), Furman and Stiglitz (1998), Mongrué and Robert, (2005), and Reinhart and Rogoff (2009)). Mongrué and Robert (2005) argue that with the liberalization of capital account, massive capital inflows will move to LDCs. The decline in restrictions on capital flows has facilitated the transfer and movement of funds from the richest countries to LDCs. Consequently, the liquidity of banks has increased drastically. In their paper, Mongrué and Robert (2005) have shown that capital inflows in the countries of Southeast Asia have risen sharply between 1990 and 1996, from \$ 9 billion (or 3 % of regional GDP) to over 80 billion (14% of regional GDP). Thailand and Malaysia, in particular, have received annual flows of more than 10% of their GDP. These capital inflows have contributed to the overheating of the economy and put pressure on speculative asset markets (real estate).

Following the Asian crisis, among economists has widely spread the view that emerging economies should not liberalize capital flows. Klaus and Chénard (1998) argue that capital inflows are a major factor for prosperity however; they can generate the conditions for increasing economic instability, when

periods of excitement and accelerated growth are followed by deep crisis and stagnation. In addition, the amounts of flows are not durable: they are cyclical and uncertain. Investors may withdraw their capital at any time in case of a major problem: negative macroeconomic shock, political event or also natural disasters. Investors are always looking for safer places with more productive yields. The unexpected withdrawal of capital (outflows) is the source of great difficulties for local countries because they find themselves with insufficient capital to finance the economy. In this context, capital accumulation results in a financial imbalance.

According to literature described above, we build the three following hypotheses, which will be tested in the empirical section:

H₁: Financial liberalization reduces the bank's profitability.

H₂: Financial liberalization increases the credit risk.

H₃: Financial liberalization decreases the liquidity of banks

The results would judge whether financial liberalization is advantageous for Tunisian banks or not.

FINANCIAL SECTOR REFORMS AND POLICIES IN TUNISIA

The Tunisian banking sector has undergone significant structural reforms over the past three decades. This partly reflects the adoption of the structural adjustment program suggested by the International Monetary Fund. In December 1987, the central bank of Tunisia (CBT, henceforth) has changed the rules for granting, monitoring and refinancing loans (circular n°87-47 of 12/23/1987) to give the financial institutions more importance in the Tunisian economy. The progressive liberalization of interest rates gave banks the liberty to make their own decision regarding their credit policy. In 1988, the first Tunisian investment company (CSI) was born to promote the investment activities in the countries and to improve the Tunisian infrastructure. In 1992, the CBT launched several reforms aimed to improve the supervision of the banking sector and to remove a variety of restrictions on participation in the sector and the nature of products and services that could be provided. In 1994, the banking act n°94-25 of 02/07/1994 gave new options for development banks and deposit banks concerning their lending activities. This reform focuses on the liberalization of deposit interest rate, which aims to increase the competition between the two institutions.

The privatization of the public banks in 1997 leads to the increase of the level of competition between banks, and financial services were improved considerably. In the same year, the Tunisian government has undertaken a number of initiatives to promote healthy competition in the banking sector. These include: supporting smaller institutions 'fundraising activities; assisting customers to switch banks; to reduce barriers to entry; and addressing unfair exit fees and other contract terms. In 2001, a new banking act was born suggesting the generalization of the so-called universal bank instead of the specialized banks. This new reform allows banks to widen their expertise and to exercise new financial activities.

In 2005, the organization of the Tunisian banking sector has known three major events: first the creation of a new bank called "Banks of Financing of Small and medium-sized firms", second the privatization of the "Banque de Sud" which gives birth to "Attijari Bank" and third, the change of the statute of some development banks (STUSID, BTL, TQB and BTK) to universal banks. In January 2008 and within the framework of the program of restructuration of the banking system, there was the privatization of the "Tuniso-Koweitienne Bank" by the transfer of 60% of its capital to the profit of financial company «OCEOR», a subsidiary of the French group "Caisse d'Epargne".

In Tunisia, the banking system is mostly made-up of private banks with mixed capital (70%); nevertheless the public banks play a major role in financing the Tunisian economy. Nowadays, the

Tunisian banking system includes 29 banks: 18 universal bank, 8 offshore banks; 2 investment banks and 1 Islamic bank. Among the 29 banks, 11 of them are listed in Tunis Stock Exchange.

DATA AND METHODOLOGY

In this paper, we firstly analyze the link between financial liberalization and bank profitability, then financial liberalization with bank liquidity and finally financial liberalization and the level of risk according to the three axes analyzed in the theoretical section. Our data set covers nine Tunisian banks for the period 1980-2009. We use annual bank-level balance sheet and income statement data retrieved from the Tunisian professional association of banks. In the estimation procedure, we use Seemingly Unrelated Regression (SUR) system. The SUR system comprises several individual relationships that are linked by the fact that their disturbances are correlated (Zellner, 1962). It is also a generalization of multivariate regression using a vectorized parameter model. There are two main motivations for the use of SUR. The first one is to gain efficiency in estimation by combining information on different equations. The second motivation is to impose and/or test restrictions that involve parameters in different equations. The seemingly unrelated regression (SUR) model is denned by the set of regressions:

$$Y_i = X_i\beta_i + u_i \quad i = 1, \dots, G$$

where $X_i \in R^{t \times k_i}$, $Y_i \in R^t$ and the disturbance vector $u_i \in R^t$ has zero mean and variance-covariance matrix $\sigma_{i,i}, I_t$. Furthermore, the disturbances are contemporaneously correlated across the equations, i.e. $E(u_i u_j^t) = \sigma_{i,j} I_t$. In the compact form, the SUR model can be written as follows:

$$\begin{pmatrix} y_1 \\ \cdot \\ \cdot \\ \cdot \\ y_G \end{pmatrix} = \begin{pmatrix} X_1 & & & \\ & \cdot & & \\ & & \cdot & \\ & & & \cdot \\ & & & & X_G \end{pmatrix} \begin{pmatrix} \beta_1 \\ \cdot \\ \cdot \\ \cdot \\ \beta_G \end{pmatrix} + \begin{pmatrix} u_1 \\ \cdot \\ \cdot \\ \cdot \\ u_G \end{pmatrix}$$

Or $vec(Y) = (\bigoplus_{i=1}^G X_i) vec(\{\beta_i\}_G) + vec(U)$

Where: $Y = (y_1, \dots, y_G)$, $U = (u_1, \dots, u_G)$

The direct sum of matrices $\bigoplus_{i=1}^G X_i \equiv \bigoplus_i X_i \equiv diag(X_1, \dots, X_G)$, $\{\beta_i\}_{G_i}$ -Abbreviated to $\{\beta_i\}$ - denotes the set of vectors β_1, \dots, β_G and $vec(.)$ is the column stack operator vector with $vec(\{\beta_i\}) = (\beta_1^T, \dots, \beta_G^T)^T$.

The disturbance term $vec(U)$ has zero mean and dispersion matrix $\sum \bigoplus I_t$, where $\sum = [\sigma_{i,j}] \in R^{G \times G}$ is symmetric and positive semi definite (Srivastava and Giles 1987)
 The SUR system used in this paper is similar to Klaus and Chenard’s model (1997). It is a combination of three equations, expressed as follows:

$$PROF_v = \alpha_1 + \beta_{11}LIBFIN + \beta_{21}RISK_v + \beta_{31}LIQ_v + \sum \beta_{i1}CONTR_{vi} + \varepsilon_1 \quad (1)$$

$$RISK_v = \alpha_2 + \beta_{21}LIBFIN + \beta_{22}PROF_v + \beta_{32}LIQ_v + \sum \beta_{i2}CONTR_{vi} + \varepsilon_2 \quad (2)$$

$$LIQ_v = \alpha_3 + \beta_{31}LIBFIN + \beta_{32}RISK_v + \beta_{33}PROF_v + \sum \beta_{i3}CONTR_{vj} + \varepsilon_3 \quad (3)$$

Where:

PROF measures the profitability of the banks (which is the Net Interest Margin) calculated as follows: PROF = Interest Income/Total Assets. Net interest margin is the best indicator of bank profitability in Tunisia because it reflects the magnitude of traditional activities in Tunisia during the past three decades and the volume of lending and deposit activities.

RISK measures the credit risk: Risk= Total Loans/Total Assets according to Goyeau and Tarazi (1992)
LIQ measures the liquidity; LIQ= Total Loans/Total Deposits

LIBFIN is a binary variable equal to 1 for t=1988 to 2009 (representing the post liberalization period) and zero otherwise.

$$LIB = \begin{cases} 0 & \text{for 1980 - 1987} \\ \text{and} \\ 1 & \text{for 1988 - 2009} \end{cases}$$

In cases where liberalization makes entry easy, we expect lower performance because of actual and potential competition. Consequently, profitability of banks drops.

CONT is the matrix of control variables, which includes ITR, IC and G, where:

ITR refers to Banking Intermediation measured by the value of Deposit Interest Rates/Value Lending interest rates,

IC is the concentration index measured by the IHH index $IC = \sum_{i=1}^n S_i^2$ and

G is the growth rate of Assets = (Total Assets_t – Total Assets_{t-1}) / Total Assets_{t-1}

Based on the theoretical study of section 2, the expected signs of the different variables are summarized in the Table 1. Broadly, we can expect negative effects of financial liberalization if profitability of banks shrinks, then liquidity falls and credit risk increases. On the other hand, we can expect positive impacts of financial liberalization on banks if profitability increases, the liquidity widens and finally credit risk reduces.

Table1: Expected Signs of The Effects of Financial Liberalization

Variables	expected Signs	expected Signs
Profitability	-	+
Liquidity	-	+
Credit Risk	+	-
Results	Increasing the Banking Fragility	Decreasing the Banking Fragility

This table indicates the expected effects of financial liberalization on profitability, liquidity and credit risk.

RESULTS

The results of the effects of financial liberalization on bank fragility are obtained through the estimation of three equations: profitability, liquidity and credit risk. The results of the regression estimates of the first equation: $PROF_v = \alpha_1 + \beta_{11}LIBFIN + \beta_{21}RISK_v + \beta_{31}LIQ_v + \sum \beta_{i1}CONTR_{vi} + \varepsilon_1$ are displayed in Table 2. They show that profitability of Tunisian banks is negatively correlated with financial liberalization. The positive and significant relationship between the two variables shows the consequences of the adoption of the structural reforms on the wealth of Tunisian banks especially on the interest revenue as banking profitability is measured by the net interest income. Following the liberalization, profitability of Tunisian banks was affected for two principal reasons:

First, the freeing of interest rates encouraged households and some firms to save their funds instead of investing them. In this situation, banks were forced to pay higher deposit interest rates than before. In addition, despite an accumulation of funds, banks were not able to use this liquidity for investments projects because most part of saving is short term. Therefore, the cost of deposit increased significantly and lending activities shrank because of the competition; which in turn deteriorated the bank balance sheet and thus their profitability.

Second, with the decline of the supervision on credit, banks were obliged to facilitate the condition of lending to households and enterprises. However, in many occasions customers were unable to reimburse their credits because they did not have enough guaranties to have credits. This situation has negatively affected the return on equity and returns on assets and increased the non-performing loan. Due to this new environment, banks started to take sophisticated risks through the adoption of new activities based on financial innovations to minimize the added costs of interest paid and the cost of customers' non-reimbursements. This behavior has damaged the profitability of many banks.

According to Table 2, liquidity is positively correlated with the dependent variable. In fact, the money market in Tunisia is known as liquid because of the nature of the Tunisian economy which is well diversified (agriculture, tourism, industry and manufactory) and dynamic. During the last decade, the average growth rate of Tunisia was about 5%; banks were obliged to manage their liquidity to satisfy the demand of investors and to boost the country's economy. Therefore, liquidity contributes positively to the profit of banks. The Table 2 illustrates that bank profitability decreases with a high degree of credit risk. Credit risk results when borrowers are unable to honor their commitments. Non-reimbursement is equivalent to a loss, which incontestably reduces profitability.

Table 2: Effect of Financial Liberalization on Bank Profitability

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.1399	0.0088	15.814	0.1890
LIB	-0.0038	0.0004	-9.321	0.0000***
LIQ	0.0223	0.0022	10.174	0.0000***
RISK	-0.0064	0.0007	-9.714	0.0000***
ITR	-0.0796	0.0019	-40.910	0.0000***
IC	-0.5022	0.0575	-8.741	0.0000***
G	0.0029	0.0012	2.489	0.0134**
Log likelihood	1119.63	Mean dependent var		0.0295
R-squared	0.7094	S.D. dependent var		0.0131
Adjusted R-squared	0.7028	Sum squared resid		0.0134
S.E. of regression	0.0071			
Durbin-Watson stat	1.987			

This table shows the regression estimates of the equation $PROF_v = \alpha_1 + \beta_{11}LIBFIN + \beta_{21}RISK_v + \beta_{31}LIQ_v + \sum \beta_{i1}CONTR_{vi} + \varepsilon_1$

**** and ** indicate significance at the 1 and 5 percent levels respectively*

Following this interpretation, we can conclude that financial liberalization leads to a deterioration in the profitability of Tunisian banks. This confirms our basic assumption and leads to accept H₁.

Regarding the consequences of financial liberalization on credit risk, the Table 3 illustrates the main results of the estimation of the equation 2. The Table 3 indicates the result of regression of the equation: $RISK_v = \alpha_2 + \beta_{21}LIBFIN + \beta_{22}PROF_v + \beta_{32}LIQ_v + \sum \beta_{i2}CONTR_{vi} + \varepsilon_2$. We have a positive and significant relation between financial liberalization and credit risk. This means that liberalization has exposed banks to more credit risk due to reforms of the credit conditions and liberalization of lending rates. Eliminating some constraints on access to loans encouraged households to borrow, and consequently, increased the degree of default risk and the level of non-performing loans. Facilitating credits for households and some sectors is dramatic in some cases if it is accorded without enough guaranties. In fact, when an event occurs, the probability of default risk increases significantly and households are unable to reimburse their debts. The recent events that happened in Tunisia are a perfect witness of our argument. The so-called “Jasmine Revolution” has affected the tourism sector, industry and manufactory alike because of the strike and the instability of the post-events period. Consequently, investors, entrepreneurs and households were incapable of paying their debts. Therefore, the financial situation of Tunisians banks degenerated.

Table 3 also shows that profitability of banks is negatively and significantly correlated with the level of credit risk. Banks with a certain level of profitability have no incentive to finance riskier activities that require a significant rate of return. In contrast, the less profitable banks are more encouraged to engage in speculative operations, which expose them to more credit risk.

Table 3: Effects of Financial Liberalization on the Level of Credit Risk

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.7527	0.4687	1.6060	0.1095
LIB	0.5073	0.2024	2.304	0.0023***
LIQ	1.543	0.0915	16.849	0.0000***
PROF	-0.7162	1.408	-0.5086	0.0000***
ITR	-0.4085	0.1302	-3.137	0.0019**
IC	-0.7263	2.876	-0.2526	0.8008
G	0.052	0.0479	1.086	0.2785
Log likelihood	118.66	Mean dependent var	1.092765	
R-squared	0.4637	S.D. dependent var	0.406706	
Adjusted R-squared	0.4515	Sum squared resid	23.86163	
S.E. of regression	0.3012			
Durbin-Watson stat	1.976			

This table indicates the result of regression estimates of the second equation: $RISK_v = \alpha_2 + \beta_{21}LIBFIN + \beta_{22}PROF_v + \beta_{32}LIQ_v + \sum \beta_{i2}CONTR_{vi} + \varepsilon_2$. *** and ** indicate significance at the 1 and 5 percent levels respectively.

In conclusion, financial liberalization exposed banks to credit risk. This result confirms our assumption admitting the negative impact of financial openness on the degree of risk exposure; thus, we accept H₂.

The Table 4 presents the results of regression estimates of the third equation of our model: $LIQ_v = \alpha_3 + \beta_{31}LIBFIN + \beta_{32}RISK_v + \beta_{33}PROF_v + \sum \beta_{i3}CONTR_{vi} + \varepsilon_3$. It shows that bank liquidity is positively correlated with profitability. Indeed, when liquidity is available, banks can satisfy their customers’ needs and hence, increase their profits. Table 4 shows that bank liquidity is positively and significantly correlated with risk. In fact, despite the availability of funds, Tunisian banks were obliged to invest in short term projects because the available liquidity is unfortunately short term. This problem forced local banks to take risk in high return investments with high probability default risk.

The Table 4 also reveals that financial liberalization act positively and significantly on liquidity of banks, contrarily to what we expected in Table 1. In fact, following the reforms of the liberalization of interest

rates, depositors have placed their money into their saving account to benefit from attractive interest rates and to enjoy strong earnings. Consequently, banks have seen their liquidity increase significantly. With this result, we reject hypothesis 3.

Table 4: Effects of Financial Liberalization on Liquidity of Banks

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.15655	0.1247	1.255	0.2104
LIB	0.03270	0.0047	6.900	0.0000***
RISK	0.1399	0.0089	15.658	0.0000***
PROF	2.955	0.5129	5.762	0.0000***
ITR	0.3124	0.04521	6.910	0.0000***
IC	-0.5127	0.6867	-0.7466	0.456
G	0.0306	0.0196	1.564	0.1191***
Log likelihood	396.307	Mean dependent var 0.6051		
R-squared	0.6858	S.D. dependent var 0.1554		
Adjusted R-squared	0.6786	Sum squared resid 2.041		
S.E. of regression	0.0881			
Durbin-Watson stat	1.980			

This table shows results of the regression of equation 3: $LIQ_v = \alpha_3 + \beta_{31}LIBFIN + \beta_{32}RISK_v + \beta_{33}PROF_v + \sum \beta_{i3}CONTR_{ij} + \epsilon_3$. It reveals a positive relationship between financial liberalization and banking liquidity. *** indicate significance at the 1percent level.

To summarize the main finding of this paper, our study shows that financial liberalization negatively affects the profitability of Tunisian banks, increase the level of credit risk and increase the bank liquidity, which remain dependent to the depositor’s decision. Therefore, we can conclude that financial liberalization increases the fragility of the Tunisian banks. Our results are similar to those found by Klaus and Chenard (1997), Plihon and Miotti (2001) and Loayza and Ranciere (2006) and confirm the study of the Tunisian case conducted by Hakimi *et al.* (2011).

CONCLUDING COMMENTS

In 1987, Tunisia has undertaken massive structural reforms to liberalize its financial sector and to boost the economic growth of the country. Our goal in this paper is to investigate the consequences of the adoption of the liberalization policy on the solidity of Tunisian banks. We used three banking indicators, which are profitability, credit risk and liquidity and then we tested the consequences of liberalization on these indicators. We used a sample of nine banks only because long time series data was not available for other banks. Moreover, the selected banks are the most active and the most dynamic in the Tunisian banking system. We performed an econometric model based on *seemingly unrelated regression*). According to the results of the model, we conclude that financial openness eroded the profitability of banks because it reduced the margin of intermediation through the liberalization of interest rates. Flexibility and the decrease of constraints on credits encourage households and enterprises to borrow with insufficient guaranties; consequently non-performing loan ratio increased drastically because many borrowers were incapable of reimbursing their debts. This puts some banks in a difficult situation and pushes them to take sophisticated risks to compensate their credits losses. In Tunisia, financial liberalization increased the liquidity in banks, which is a good point, because of the interest rate liberalization, which increased the deposit interest rates.

All these statements show that financial liberalization has had negative consequences on Tunisian banks. Our results are similar to those found by other previous studies (Klaus and Chenard 1996, Plihon and Miotti 2001), but we should not conclude that financial liberalization is the unique reason of this fragility. In fact, liberalization allowed international companies to invest in Tunisia and to create employment. In

addition, salaries increased significantly due to the need for workforces. Corporate management and governance may have without debt an impact on the fragility of Tunisian banks. This question could be a topic of our future research.

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