

DETERMINANTS OF TUNISIAN BANK PROFITABILITY

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ABSTRACT

The aim of this study is to examine the persistence of profit and the effect of bank-specific determinants of Tunisian bank profitability. To account for profit persistence, we apply a dynamic panel model, using Generalized Methods of Moments (GMM) system for 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2010. The estimates show that the evidence for profit persistence is positive and significant for both deposit and development banks during the period 2005-2010. However, we find that deposit banks are more competitive than development banks. Therefore, abnormal profit persists for Tunisian banks, but development banks enjoy more regulatory protection than deposit banks. We find a positive relationship between capital and profitability. This implies that the capital market is not perfect in the Tunisian banking sector. The liquidity risk management by Tunisian banks shows that the overuse of deposits to finance loans is likely to weigh on the profitability of the banks. Finally, we show that credit risk management is negatively related to bank profitability and that deposit and development banks suffer from the bad quality of their loans and the lack of provisions over the period 1999-2010.

JEL: G21, C23, L25

KEYWORDS: Bank Profitability, Imperfect Markets, Dynamic Panel

INTRODUCTION

The competitive landscape of banking has been transformed over the past three decades by deregulation, technological change and the globalization of goods and financial markets. These developments have impacted the operations, efficiency, productivity, margins and profitability of banks in all countries. Nowadays banks operate in product and geographical markets very different from those that existed thirty years ago, and have adopted a range of conventional and innovative technologies to serve their customers. The Tunisian banking sector provides an interesting context to study determinants of bank profitability. The sector underwent significant changes during the last two decades. Restructuring the commercial banking system in Tunisia began in 1987, and was intended to enhance competition in the banking sector, mobilize savings and lead to a more efficient allocation of resources. Reforms were articulated around five axes: liberalization of interest rates and credit allocation, introduction of new indirect monetary policy, strengthening prudential regulation, opening the financial sector to foreign financial institutions and promotion of the equity market. It is reasonable to assume that all of the above changes pose great challenges to Tunisian Banks as the environment in which they operate has changed rapidly. The Tunisian banking sector passed from a protected and closed to an open, developed and dynamic actor in the Tunisian economy. The banking system liberalization strategy in Tunisia was implemented more effectively since 1987 and also reinforced in the mid 90's.

The decision of financial services liberalization, taken by the economic and monetary authorities, was motivated by concern of investment intensifying and economy diversifying. The change was perceived by the monetary authorities as a strategic choice to increase the capacity of the financial system by mobilizing savings to finance productive investments. Furthermore, the liberalization attempt was expected to create a competitive business environment within the sector. It should be noted that the financial liberalization process was done in concomitance with the liberalization of the transactions exchange. Indeed, Tunisia

issued the current convertibility of the Tunisian Dinar in December 1992. Consequently, as a rational response to the program of the financial sector liberalization, the banking system structure is striving increasingly for the universal banking model in term of size.

To implement the reorganisation of the financial system and the transformation of the banking sector, authorities should reinforce the financial security. Consequently, since 1997, the Tunisian Central Bank (TCB) has launched a vast program of promulgation of the banking law. As regards credit institutions, we emphasize that the TCB has promulgated 2001-65 law, which was supplemented by 2006-19 law. The repercussions of these laws were obvious on the profitability and the banking operations. In July 2001, a banking law relating to the credit institutions was promulgated. This law made it possible to set up a more liberal environment for the banking activities and removed the legal division between the development and deposit banks. Each establishment is approved as a universal bank, able to specialize according to its strategic choices. The May 2006 Law was promulgated to reinforce the Tunisian banking landscape.

This legislation endows the TCB with new prerogatives in the fields of the transparency, the consulting, the control, the follow-up and the publication of financial and economic information. In concrete terms, this law enables the TCB to establish statistics and to carry out investigations into the tendencies and evolutions of the monetary and financial economic situation. Furthermore, the new amendment requires the TCB to stop granting the Treasury credit facilities in the form of overdrafts. In addition, the new legislation affects the shutter of the transparency and banking services. In fact, the banks are obliged to transmit the list of the customers granted loans during the concerned month to the Central Bank at the same time as the declaration of the accounting monthly situation.

The Tunisian banking sector has always been stamped as small and highly concentrated. It currently includes 20 deposit banks. State-owned commercial banks dominate the banking system and account for more than half of market share, which implies state control of the banking sector and is negative for economic growth. In 2005, the structure of the banking sector in Tunisia knew a significant change because of the privatization of “Banque du Sud”, hereafter named “Attijari Bank”, and the change in statute of the development banks, BTK, BTL, STUSID, BTE and TQB in universal banks. Moreover, we highlight the setting up of a new bank called “Financing Bank of small and medium-sized enterprises” in the same year.

This paper follows in the footsteps of Athanasoglou et al, (2008) and Herrero et al (2009) among others. It extends the existing literature for the Tunisian banking sector several ways: using the 1999-2010 period, the paper tests a dynamic panel model (Bennaceur and Goaid, 2008) use only the 1980-2000 period and consider two empirical models: fixed effect models and random effect models). To date, most academic research on competition and its effects on bank performance has been based on theoretical models that are static in nature (Claessens and Laeven, 2004, Shaffer, 2004, Goddard and Wilson, 2009). Static models are useful in identifying causal relationships between key variables when markets are in equilibrium. There is no certainty that conduct on performance measures observed at any point in time represents equilibrium values, and some authors have claimed that the relationship between the explanatory and explained variables is not linear and is not stable (Goddard et al., 2011). On the other hand, it is not easy to design a single model that completely describes bank performance. Therefore, in order to avoid the risk of misspecifying the functional form of the relationship, we use a simple dynamic model to test the hypothesis that competition eliminates any abnormal profit quickly, and bank profit rates converge rapidly towards their long-run equilibrium values.

The aim of this study is to examine the persistence of profit and the effect of bank-specific determinants of Tunisian bank profitability. To account for profit persistence, we apply a dynamic panel model, using Generalized Methods of Moments (GMM) system for 16 Tunisian commercial banks over the period 1999-2010. Financial accounts data (unconsolidated) are obtained from “Association Professionnelle Tunisienne des Banques et des Établissements Financiers (APTBEF)”. The profitability variable is

represented by the return on assets (*ROA*) and a set of internal characteristics is included as determinants of bank profitability. These internal factors include equity (*EQTA*), intermediation margin (*NIM*), operating efficiency (*COEX*), liquidity risk (*LIQ*) and credit risk (*NPLC*). The remainder of the paper is structured as follows: Section 2 reviews the theoretical and empirical literature on the determinants of bank profitability and the persistence of profit. Section 3 describes the data and the model specification. Section 4 presents results of the analysis. Section 5 concludes our study.

LITERATURE REVIEW

There are several important factors that are responsible for affecting bank profitability. The persistence of bank profit is particularly driven by bank-specific and industry characteristics, and macroeconomic conditions. Prior literature related to the present paper can be classified in two broad categories. The first consists of studies that focus on the determinants of bank profitability. The second consists of studies that examine the persistence of bank profit. A number of more recent studies have attempted to identify some of the major determinants of banks' profitability. They consider internal and external factors and examine a single country (Berger, 1987, 1995, 2000, Guorong et al, 2003, Athanasoglou et al, 2008, Bennaceur and Goaid, 2008, and Herrero et al, 2009) or a panel of countries (Demirguc-Kunt and Huizinga, 1999, 2001 and Goddard et al, 2001, 2004).

Banks have responded to rising competitive pressure by offering a wider range of products and services and by conducting a significant proportion of their business off balance sheet (Goddard et al, 2001). The economics of banking literature acknowledges various determinants of bank profitability. These include the size of the bank, the extent to which the bank is diversified, the attitude of the bank owners and managers towards risk, the bank ownership characteristics, and the level of external competition the bank encounters. Goddard et al. (2004) investigated the determinants of profitability in Denmark, France, Germany, Italy, Spain and the UK, for the period 1992–98. They found only weak evidence for any consistent or systematic size–profitability relationship and a positive relationship between capital-assets ratio and profitability. The relationship between the importance of off-balance-sheet business in a bank's portfolio and profitability is positive for the UK, but either neutral or negative elsewhere.

The persistence of profit (POP) approach is based on empirical investigation of the dynamics of firm-level profits. The POP hypothesis consists of all firms profit rates which tend to converge towards the same long-run average value. Thus, abnormal profit rates dissipate quickly and convergence is towards long-run average profit rates that may differ between firms. The alternative hypothesis is that some incumbent firms enjoy regulatory protection, or possess the capability to prevent imitation or block entry. If so, abnormal profit persists from year to year, and convergence is either slow or, in the most extreme case, non-existent.

The evidence for the persistence of profit in banking is developed by Berger et al. (2000) and Goddard et al. (2004). Berger et al. (2000) use non-parametric methods to examine the persistence of bank profit. The strength of persistence is found to differ between banks initially located in the top and bottom deciles of the distribution of banks by performance. Goddard et al. (2004) estimate persistence of profit coefficients for a sample of European banks from six countries, using a model that incorporates bank-specific variables including size, diversification, risk and ownership type. The persistence of profit is higher for mutual (savings and cooperative) banks than for commercial banks. By country, persistence is highest for France, where a strong regulatory tradition may have insulated banks from the full rigors of competition.

Several recent studies are developed by Agostino et al. (2005), Knapp et al. (2006), Bektas (2007), Athanasoglou et al. (2008), Flamini et al. (2009) and Goddard et al. (2011). Agostino et al. (2005) report estimates of persistence of profit coefficients for Italian banks for the period 1997–2000. Persistence is positively associated with ownership concentration. Knapp et al. (2006) report persistence estimates for a sample of US banks, suggesting that profits take about five years to converge towards average industry

norms. Persistence estimates for Turkey and Greece are reported by Bektas (2007) and Athanasoglou et al. (2008), respectively. In a recent cross-country study for Sub-Saharan Africa, Flamini et al. (2009) finds that strong persistence is positively associated with bank size, diversification and private ownership. Finally, Goddard et al. (2011) examine the intensity of competition in 65 national banking industries. Country-level dynamic panel estimates of the persistence of bank profit are reported and compared. Persistence of bank profit is interpreted as an indicator of the intensity of competition, and as such is found to be consistent with traditional structure-based and conduct-based competition indicators. Persistence is negatively related to the rate of growth in GDP per capita, and positively related to the size of entry barriers. Persistence tends to be weaker, and competition stronger, in countries where institutional development is more advanced and external governance mechanisms are strong.

DATA AND METHODOLOGY

The data used in the empirical work is obtained from the “Association Professionnelle Tunisienne des Banques et des Établissements Financiers (APTBEF)”. The sample includes annual financial data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2010. It consists of 12 years observation. Table 1 shows a list of banks examined in our sample. The period is divided into two periods: 1999-2004 and 2005-2010. During 2005-2010 all establishments are approved as a universal bank, being able to specialize according to its strategic choices. We use an unbalanced panel data in our study, since there is missing variables for two banks in our sample that are not observed for the entire period.

Table 1: Some Statistics on the Tunisian Banks in 2010

Bank name	Cryptonym	Total Assets in Thousands of DT	Statute
Société Tunisienne de Banque	STB	6 753	Deposit
Banque Internationale de Tunisie	BIAT	6 521	Deposit
Banque Nationale Agricole	BNA	6 254	Deposit
Banque de l’Habitat	BH	5 295	Deposit
Amen Bank	AB	4 806	Deposit
Arab Tunisian Bank	ATB	4 016	Deposit
Banque Attijari de Tunisie	ATTIJARI	3 864	Deposit
Banque de Tunisie	BT	3 142	Deposit
Union Internationale de Banques	UIB	2 837	Deposit
Union Bancaire pour le Commerce et l’Industrie	UBCI	2 198	Deposit
Banque Tuniso-Koweïtienne	BTK	899	Development
Banque de Tunisie et des Emirats	BTE	566	Development
Stusid Bank	STUSID	521	Development
Banque Tuniso-Libyenne	BTL	405	Development
Banque Franco Tunisienne	BFT	318	Deposit
Tunisian Qatari Bank	TQB	184	Development

This table shows the total assets in thousands of Tunisian Dinars of 16 Banks in 2010. It includes 11 deposit banks and 5 development banks. The data used in this study is obtained from the “Association Professionnelle Tunisienne des Banques et des Établissements Financiers (APTBEF)”. The statute of banks is defined before the adoption of the universal bank statute in 2005 by all banks in our sample.

Bank profits show a tendency to persist over time, reflecting impediments to market competition, informational opacity and/or sensitivity to regional/macroeconomic shocks to the extent that these are serially correlated (Berger et al., 2000). Therefore, we adopt a dynamic specification of the model by including a lagged dependent variable among the regression. Eq. (1) augmented with lagged profitability is:

$$\Pi_{it} = c + \delta \Pi_{it-1} + \sum_{k=1}^K \beta_k X_{it}^k + \varepsilon_{it} \tag{1}$$

Where Π_{it-1} is the one-period lagged profitability, measured by ROA_{it-1} or ROE_{it-1} and X_{it}^k are bank-specific profitability determinants. δ is defined as the speed of adjustment to equilibrium. A value of δ between 0 and 1 implies that profits persist, but they will eventually return to their normal (average) level.

A value close to 0 means that the industry is fairly competitive (high speed of adjustment), while a value of δ close to 1 implies less competitive structure (very slow adjustment).

In static relationships, the literature usually applies least squares methods on fixed effects (FE) or random effects (RE) models. However, in dynamic relationships these methods produce biased and inconsistent estimates. Thus, estimation of the Eq. (1) coefficients is implemented using Arellano and Bover’s (1995) system GMM estimator, including both lagged differences and lagged levels of the dependent variable as instruments. The system GMM estimation reduces, potential biases in finite samples, as well as the asymptotic imprecision that is associated with Arellano and Bond’s (1991) difference GMM estimator (Blundell and Bond, 1998). The consistency of the system GMM estimator depends on both the validity of the assumption that the error term is free of second-order autocorrelation, and the validity of the instruments. Two specification tests are reported: the Hansen test for instrument validity, which is robust to heteroscedasticity in the disturbance term and a test of the null hypothesis of no second-order autocorrelation in the disturbance term.

Table 2: Definitions, Notation and the Expected Effect of the Explanatory Variables of Bank Profitability

Variable	Measure	Notation	Expected Effect
<i>Dependent variable:</i>			
Profitability	Net profits/Assets	<i>ROA</i>	
<i>Bank-specific determinants:</i>			
Capital	Equity/Assets	<i>EQTA</i>	?
Intermediation Margin	Interest margin/Net banking income	<i>NIM</i>	Positive
Operating Efficiency	Operating expenses/Net banking income	<i>COEX</i>	Negative
Liquidity Risk	Deposits/Loans	<i>LIQ</i>	Negative
Credit Risk	Nonperforming loans/Loans	<i>NPLC</i>	Negative

This table lists the variables used in this study. The sample includes annual financial data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2010. The data used in this study is obtained from the “Association Professionnelle Tunisienne des Banques et des Établissements Financiers (APTBEF)”. The measure of performance used is the return of assets. Five bank characteristic indicators are used as internal determinants of performance. They comprise the ratio of equity to total assets (EQTA), the intermediation margin defined as interest margin to net banking income (NIM), the operating efficiency defined as operating expenses to net banking income (COEX), the liquidity risk defined as deposits to loans (LIQ) and the credit risk as the ratio non performing loans to loans (NPLC).

Table 2 lists the variables used in this study. The measure of performance used in the study is the return of assets. *ROA* is a ratio computed by dividing the net income over total assets. *ROA* has been used in most bank performance studies. It measures the profit earned per Dinar of assets and reflects how well bank management uses the banks’ real investment resources to generate profits. Five bank characteristic indicators are used as internal determinants of performance. They comprise the ratio of equity to total assets (*EQTA*), the intermediation margin defined as interest margin to net banking income (*NIM*), the operating efficiency defined as operating expenses to net banking income (*COEX*), the liquidity risk defined as deposits to loans (*LIQ*) and the credit risk as the ratio non performing loans to loans (*NPLC*).

RESULTS AND DISCUSSION

This section provides empirical evidence on the determinants of bank profitability in the Tunisian Banking industry. A broad description of the characteristics of the variables used in the study is given in table 3, which reports their statistical means and standard deviation. Tables 4 and 5 report the results of regression of the return on asset variable. We adopt a dynamic specification of the model by including a lagged dependent variable among the regressors. Eq. (2) augmented with lagged profitability is:

$$ROA_{it} = c + \delta ROA_{it-1} + \beta_1 EQTA_{it} + \beta_2 NIM_{it} + \beta_3 COEX_{it} + \beta_4 LIQ_{it} + \beta_5 NPLC_{it} + \alpha_i + \mu_{it} \quad (2)$$

With i : 1 at 16, $t=1999-2010$

Table 3 presents bank characteristics and financial performance measures. The average value of ROA varies greatly between the two groups, from 0.3% for deposit banks to -0.8% for development banks. This result indicates that deposit banks are more profitable due to their higher resource mobilization and aggressive strategy in deposit collection. This is consolidated by the average value of liquidity ratio, which is equal to 1.03 and 0.31 for deposit and development banks, respectively. Regarding equity, deposit banks have a lower equity-to-asset ratio (8.9%) than development banks (46.9%). Therefore, development banks are more capitalized.

Table 3: Descriptive Statistics

	Deposit Banks		Development Banks	
	Mean	Sd.Dev	Mean	Sd.Dev
ROA	0.003	0.049	-0.008	0.117
EQTA	0.089	0.033	0.469	0.198
COEX	0.766	2.711	0.423	0.146
LIQ	1.030	0.242	0.312	0.275
NIM	0.527	0.719	0.702	0.146
NPLC	0.224	0.125	0.098	0.056

This table shows means and standard deviations of dependent and independent variables used in our analysis. ROA is measured as net profits divided by assets. EQTA is Equity divided by Assets. COEX is measured as operating expenses scaled by net banking income. LIQ is deposits divided by loans. NIM is interest margin divided by net banking income. NPLC is measured as nonperforming loans divided by loans. The sample includes annual financial data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2010. The data used in this study is obtained from the "Association Professionnelle Tunisienne des Banques et des Établissements Financiers (APTBEF)".

Tables 4 and 5 report the empirical results of the estimation of model (2) using ROA as the profitability variable. They report estimates of the short-run persistence of profit coefficient δ and the determinants of the profitability. The Hansen and second-order autocorrelation tests suggest that the estimations reported are, in general, appropriately specified. The model seems to fit the panel data reasonably well, having fairly stable coefficients, while the Sargan-test shows no evidence of over-identifying restrictions. Even though the equations indicate that negative first-order autocorrelation is present, this does not imply that the estimates are inconsistent. Inconsistency would be implied if second order autocorrelation was present (Arellano and Bond, 1991), but this case is rejected by the test for AR (2) errors.

Table 4: GMM Estimation before the Adoption of Universal Bank Statute (1999 – 2004)

	deposit Banks	Development Banks
constant	-0.068 (0.315)	0.728 (0.161)
roa _(t-1)	0.751* (0.088)	0.395 (0.532)
eqta	0.125** (0.042)	0.668* (0.055)
coex	-0.016 (0.631)	-2.203** (0.026)
liq	-0.023** (0.035)	-1.353** (0.042)
nim	0.053 (0.309)	0.527 (0.270)
nplc	-0.145* (0.067)	-0.077 (0.965)
f.stat	13.99***	13.49**
prob	0.001	0.014
sargan test ^a	0.938	0.358
ar(1) ^b	0.510	0.165
ar(2) ^c	0.668	0.466
n. obs	45	25

This table shows the GMM estimation for the profitability determinants during 1999-2004 periods before the adoption of universal statute by deposit and development banks. The sample includes annual financial data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2004. We use an unbalanced panel data. ROA is measured as net profits divided by assets. EQTA is Equity divided by Assets. COEX is measured as operating expenses scaled by net banking income. LIQ is deposits divided by loans. NIM is interest margin divided by net banking income. NPLC is measured as nonperforming loans divided by loans. ^a The test for over-identifying restrictions in GMM dynamic model estimation. ^b Arellano-Bond test that average autocovariance in residuals of order 1 is 0. ^c Arellano-Bond test that average autocovariance in residuals of order 2 is 0. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.

Table 4 reports the GMM estimation for the profitability determinants during 1999-2004 periods before the adoption of universal statute by deposit and development banks. The coefficient of the lagged profitability variable is significant at 10% and confirms the dynamic character of the model specification for deposit banks. The estimated persistence of profit coefficient is positive and equal to 0.751 which means that abnormal profit persists for deposit banks but convergence is slow. This may be due to the fact that banks enjoy regulatory protection or possess the capability to prevent imitation or block entry. Goddard et al. (2011) state that the persistence of bank profit is positively related to the size of legal entry barriers, in accordance with the view that actual or potential entry is a key determinant of the intensity of competition. Indeed, there is an association between several institutional and external governance covariates and the persistence of bank profit: the latter is higher where businesses and individuals are afforded less freedom from government interference, where the level of institutional development is low, and where the protection of property rights is relatively weak.

The coefficient of the capital variable (*EQTA*) is positive and significant at 5% for deposit banks and 10% for development banks during 1999-2004. But, a predominantly positive empirical relationship between *EQTA* and profitability is surprising. Indeed, a bank holding a relatively high proportion of liquid assets is unlikely to earn high profits, but is also less exposed to risk. Thus, financial capital affects costs through its use as a source of financing loans (Berger & Mester, 1997), and raising capital through issuing shares involves higher costs than taking deposits, so a negative relationship between *EQTA* and *ROA* is expected. An explanation for the positive coefficient may be that according to a signalling hypothesis, it may be less costly for managers of low risk banks to signal quality by maintaining a high *EQTA* than for managers of high risk banks. This may create a signalling equilibrium involving a positive association between *EQTA* and *ROA*. As a result, Tunisian deposit and development banks invest more in risky assets during the period 1999-2004. Referring to liquidity, the ratio deposits to loans (*LIQ*) is statistically significant at 5% and negatively related to the profitability for deposit and development banks for the period 1999-2004. This ratio shows the relationship between comparatively stable funding sources (i.e. deposits and other short term funding) and comparatively illiquid assets (i.e. loans), indicating a negative relationship between bank profitability and the level of liquid assets held by the bank. Therefore, higher liquidity would be associated with lower profitability. Thus, the overuse of deposits to finance loans is likely to weigh on the profitability of the banks because this resource's structural inadequacy is met by the use of special resources and refinancing in the money market.

The operating efficiency measured by *COEX* variable is statistically significant at 5% and negatively related to the profitability for development banks. Thus, the importance of the operating expenses and particularly staff costs affects their profitability. Development banks remain penalized by an excess staff which weighs on the efficiency Credit risk (*NPLC*) is negatively related to bank profitability (significant at 10% for deposit banks). Indeed, non-performing loans are associated with decreased firm profitability and, hence higher provisions usually indicate higher probability of non-performing ratios and lower asset quality. This shows that deposit banks suffer from the bad quality of their loans and the lack of provisions over the period 1999-2004. Thus, the average provisioning effort has been declining as a result of poor provisioning policies Table 5 reports the GMM estimation for the profitability determinants during 2005-2010 after the adoption of universal statute by deposit and development banks. During 2005-2010 all establishments are approved as a universal bank, being able to specialize according to its strategic choices. The estimated persistence of profit coefficient is positive and significant at the level of 1% for deposit banks and at the level of 10% for development banks during the period 2005-2010. The coefficient of the lagged profitability variable is equal to 0.402 for deposit banks and to 0.950 for development banks, which means that deposit banks are more competitive than development banks.

Therefore, abnormal profit persists for Tunisian banks, but development banks enjoy more regulatory protection than deposit banks. Similar results, comparing to the period 1999-2004, are found for the coefficients of the capital variable (*EQTA*) and the operating efficiency variable (*COEX*). Thus, Tunisian

deposit and development banks invest more in risky assets during the period 2005-2010. The liquidity ratio (i.e. the ratio deposits to loans (*LIQ*)) is statistically significant at 10% for deposit banks and negatively related to the profitability. The same result is found when the profitability is measured for the 1999-2004 periods and consistent with our expectations. Indeed, the overuse of deposits to finance loans is likely to weigh on the profitability. Finally, the coefficient of *NPLC* variable is highly significant for development banks. Therefore, after the adoption of universal bank statute, development banks suffer from the bad quality of their loans and the lack of provisions over the period 2005-2010.

Table 5: GMM Estimation after the Adoption of Universal Bank Statute (2005 – 2010)

	Deposit Banks	Development Banks
Constant	-0.048 (0.815)	0.018 (0.960)
ROA _(t-1)	0.402*** (0.005)	0.950* (0.083)
EQTA	0.486** (0.048)	0.551* (0.077)
COEX	-0.140 (0.425)	-1.011** (0.038)
LIQ	-0.032* (0.077)	0.305 (0.501)
NIM	0.199 (0.497)	0.553 (0.585)
NPLC	-0.012* (0.083)	-2.154** (0.040)
F.Stat	18.14***	13.49**
Prob	0.000	0.014
Sargan test ^a	0.330	0.358
AR(1) ^b	0.679	0.165
AR(2) ^c	0.841	0.466
N. Obs	45	25

*This table shows the GMM estimation for the profitability determinants during 2005-2010 periods after the adoption of universal statute by deposit and development banks. The sample includes annual financial data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2004. We use an unbalanced panel data. ROA is measured as net profits divided by assets. EQTA is Equity divided by Assets. COEX is measured as operating expenses scaled by net banking income. LIQ is deposits divided by loans. NIM is interest margin divided by net banking income. NPLC is measured as nonperforming loans divided by loans. ^a The test for over-identifying restrictions in GMM dynamic model estimation. ^b Arellano-Bond test that average autocovariance in residuals of order 1 is 0. ^c Arellano-Bond test that average autocovariance in residuals of order 2 is 0. ***,** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

CONCLUDING COMMENTS

This paper reports estimate of the persistence of Tunisian bank profit and selected determinants of profitability by using a panel data of 16 Tunisian commercial banks, divided into 11 deposit banks and 5 development banks during the period 1999-2010. The period is divided into two periods: 1999-2004 and 2005-2010. During 2005-2010 all establishments are approved as a universal bank, being able to specialize according to its strategic choices. The coefficient of the lagged profitability variable is significant and confirms the dynamic character of the model specification. Therefore, abnormal profit persists for Tunisian banks, but development banks enjoy more regulatory protection than deposit banks. We find that capital is important in explaining bank profitability. Meanwhile there is evidence of a positive relationship between capital and profitability. This finding does not reflect the expected theoretical relationship between risk and return. This implies that the capital market is not perfect in the Tunisian banking sector and Tunisian deposit and development banks invest more in risky assets during the two periods. The liquidity risk management by Tunisian banks shows that the overuse of deposits to finance loans is likely to weigh on the profitability of the banks because this resource's structural inadequacy is met by the use of special resources and refinancing in the money market. Finally, and as expected, credit risk management is negatively related to bank profitability and shows that deposit and development banks suffer from the bad quality of their loans and the lack of provisions over the period 1999-2010.

The dynamic of Tunisian banking sector is a rational response to the program of the financial sector liberalization to comply with international standards. Tunisian banks must focus on improving their quality of assets because they suffer from the bad quality of their loans and the lack of provisions despite the massive transfers of the Non Performing Loans to their recovering subsidiary company. Banks must adopt a new recapitalization plan which will allow them to optimally cover against the risks of non-performing loans and to consolidate their claims and improve their risk and costs control. Furthermore, Tunisian banking system is considered as a fragmented banking system with a lack of competitiveness, we recommend to Tunisian banks to get closer to the international standards of banking regulation and bank risk management. Moreover, we encourage merger and acquisition operations between banks, and encourage them to strengthen their own funds in order to avoid foreign takeovers.

Banks should realize the best bank efficiency through finding the critical size by adopting a training plan that reduces the cost of bank financing. In addition, we encourage the emergence of socially useful banks by creating dedicated entities such as regional funds through the entrance of regional investors. Banks would, therefore, improve profitability by improving screening and monitoring of credit risk and such policies involve the forecasting of future levels of risk. This study could be extended in several ways. One might use macroeconomic variables to control for external determinants of banks profitability (GDP growth, inflation rate, real lending rate, unemployment). It would be interesting to consider the ownership structure of banks and to examine the impact of different types of shareholders on profitability (state-owned banks, privately owned banks and widely held banks). One might use other measure of profitability as return on equity rather than return on assets. Moreover, it would be conceivable to investigate the efficiency levels (cost and profit efficiency) of deposit and development banks in Tunisia by using Stochastic Frontier Analysis and Data Envelopment Analysis.

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