Loan loss provisions under regulatory pressure: public versus private banks in Tunisia

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Abstract:

We study the effect of capital regulation on bank's loan loss provisions. Using hand collected data on 13 Tunisian banks during the period 2006-2016, we show that Tunisian banks discretionnary decrease loan loss provisions under regulatory pressure. When studying private banks and public banks, we find that they don't respond to the same capital regulatory constraints. Private banks discretionary reduce provisions in reaction to an increase in capital requirements when they are under pressure to meet regulatory eligible capital. However, the provisioning behavior of public banks is influenced by its regulatory capital position: they take lower loan loss provisions to enhance capital positions through the year and higher levels of loans loss provisions when coming into the year with stronger capital positions. Our analyses indicate that Tunisian banks use discretionary capital management to appear to be better capitalized but their overall ability to absorb loan losses is reduced. Regulators must be aware of this association and are requested to further strengthen regulation in loan classification and provisioning.

Keywords: Tunisian banks, capital ratios, eligible capital, capital management, loan loss provisions, capital regulatory pressure, discretionary loan loss provisions.

I- INTRODUCTION

The Tunisian banking system is characterized by limited profitability, inefficiency, low credit intermediation[1], and significant vulnerabilities. The performance of the loan portfolio is very weak and increasingly causes a risk to the stability of the financial system. Tunisian banks, concerned about their profitability, increased their interest margins. As a result, borrowers were unable to repay the service of their debts. This has led to an accumulation of nonperforming loans (NPL). The weight of the NPL is heavy on the Tunisian banks. These loans were initially 21 per cent over the 2002-2006 periods. Then, thanks to the reforms of the Central Bank, they reached 13.5 per cent of total credit in 2012 (Abid et al., 2015). However, Tunisian banks remain to be weakly provisioned and NPL continue to plumb the banking sector with a rate of 16 per cent, the highest rate in the southern and eastern Mediterranean countries in 2015 (African Manager, 2016). They represent 17.8 per cent for public banks and 10.6 per cent for private banks (Kalfaoui and Ben Saâda, 2015). These loans have increased both the volume of doubtful loans and the risk of insolvency.

The reform of the Tunisian banking law[2] was initiated since 2006 in order to strengthen regulation and corporate governance. The preoccupation of regulators was how to improve the solidity and liquidity of the Tunisian banking sector. The regulatory frameworks imposed upon Tunisian banks by the Circulars (91-24[3] and 99-04) as modified by subsequent circulars[4] is widely inspired from the Basel I framework. It has strengthened banks' capital positions to increase the resilience of banks and their ability to handle downturns.

Previous research on the relation between capital regulation and bank's economic behavior, documented that higher capitalized banks are better able to resist to potential financial crises. We extend this stream of research by investigating the change in accounting behavior made by banks in reaction to regulatory pressure imposed by bank capital regulation, known as the "regulatory capital management" hypothesis[5].

Loan loss provisions are accumulated in the allowance account to prevent banks from potential expected losses. The rules for how to account for loan losses in the Tunisian context are outlined by two different sources: (1) the circular n ° 91-24 and n°99-04 related to risk division and

[1] 34 percent of Tunisian firms report that access to finance is a major constraint to them (Bank World Report 2014)
[2] There were real efforts to prepare the adoption of Basel II framework and to converge towards international standards.
[3] In June 2012, the Circular (91-24) of the Central Bank of Tunisia strengthened some aspects of its supervision over the banking sector.
[4] See table 1 (in 2011, twice in 2012, twice in 2013, once in 2014 and once in 2015).
[5]It is defined as thoughtful decisions made by banks in order to optimize capital structure for regulatory purposes.

coverage as modified by subsequent texts and (2) the Tunisian Accounting Standards, TAS 24. Eligible capital for regulatory purposes, including retained earnings and shareholder equity for examples, is necessary to preserve bank solvency in periods when the capital is hit by unexpected losses. When loan loss provisions are increased, they will reduce earnings before taxes on a dinars-for-dinars basis which eventually decrease eligible capital. We hypothesize that this link constitutes a strong incentive for banks to reduce loan loss provisions mainly when they are under regulatory pressure. Taking lower provisions will increase reserves of eligible capital to face unexpected losses but it will reduce the allowance account capacity to prevent banks from potential expected losses. When regulatory pressure motivates banks to reduce provisions to meet minimum regulatory levels of eligible capital, their risk-based capital ratios will improve whereas banks 'overall capacity of coverage is reduced. Thus, a regulatory arbitrage of loan loss provisions is created. This arbitrage is allowed according to TAS 24 which encourages the management to rely on "experienced judgment" to assess the size of impairment losses.

Unlike previous research by Taktak et al. (2010), who focused on the determinants of loan loss reserves of weakly provisioned Tunisian banks, our study seek to explain provisioning discretionary behavior under regulatory pressure.

We investigate if Tunisian banks exercise discretion for regulatory purposes when accounting for loan losses based on data on 13 Tunisian banks during the period 2006-2016[6]. The Tunisian financial sector is small and dominated by public-controlled banks but also presents a significant number of private banks. So, we investigate if higher capital requirements results in creating generally lower and potentially insufficient loan loss provisions to meet minimum levels in public and private banks.

We find that Tunisian banks exercise discretion for regulatory purposes when creating loan loss provisions. They take lower provisions to enhance capital positions through the year and higher provisions when coming into the year with strong capital positions. Private and public banks respond to different capital regulatory pressure. While private banks discretionary reduce loan loss provisions to inflate eligible capital in reaction to increasing capital requirements in the future, public banks decrease their loan loss provisions under pressure to meet capital ratio levels through the year. Both of their capital positions will improve however their overall resilience to risk is reduced.

[6] During the period of our study (2006-2016), bank regulation in the Tunisian context and prudential national rules for risk coverage are widely inspired from the Bale I framework.

Regulators must be aware of this association and are requested to further strengthen regulation in particular for loan classification and provisioning.

I- Bank capital regulation

There are three Basel Accords those have been governing banks over the last 30 years.

During the pre-Basel era, banks used to assess their capital adequacy by the ratio between ***capital requirements*** and ***total assets***. They also used to include the allowance account in the calculation of the eligible capital. This capital adequacy ratio was the top concern of the first Basel Accord (released in 1988). Basel I introduced a new framework to calculate the minimum capital ratio to better link capital with risk. Rules for computation of both numerator and denominator of such a ratio changed:

-In the numerator, ***eligible capital*** levels are calculated based on both on- and off balance sheet risks. Tier I capital is at least comprised from 50% of the required capital. Tier II capital is formed from hybrid capital and subordinated debt. Banks' eligible capital for regulatory purposes is constituted from Tier I- and Tier II capital.

- In the denominator, ***risk-weighted assets*** replaced total assets. In order to calculate Risk-weighted assets, it is assigned different risk-weights to different asset classes on the basis of the asset's inherent risk.

Furthermore, Tier I capital doesn't include the allowance account for loan losses but this latter is included in Tier II capital only with a limit of 1.25% of risk-weighted assets.

According to Basel I, the minimum risk-based capital ratio required by banks by 1992 is 8%. It indicates the required level of capital a bank has to hold for a given level of risk-weighted assets. In 2006, the Basel II accord is introduced to revise the first accord and to further "strengthen the soundness and stability of the international banking system" (Basel Committee on Banking Supervision, 2006, pp. 2-3) [7]. During the time that the minimum risk-based capital ratio of 8% is extended, three related basis are introduced to enhance the framework's sensitivity to risk. The first rule is related to the computation of internal risk-weights, and has an effect on banks' capital requirements[8]. The second rule concerns the development of an adequate risk management processes to better monitor risks (Basel Committee on Banking Supervision,

[7] For more details, see Basel Committee on Banking Supervision's publication, International Convergence of Capital Measurement and Capital Standards: A revised version, June 2006.

[8] Risk-weighted assets are either calculated in accordance with the standardized approach, using risk-weights pre-assigned by national authorities, or the internal ratings-based [IRB] approach, using internal models to determine risk-weights.

2006). The third rule introduces the regulatory disclosure requirements: banks are required to disclose annual risk and capital management reports.

The Basel III accord was introduced in 2010 to improve the weaknesses of the existing framework, as well as to give responses to the global financial crisis. Its objective is to increase the resilience of the banking sector and individual banks' ability to absorb losses (Basel Committee on Banking Supervision, 2011). Basel III carries forward the three pillars from Basel II, with additional regulatory requirements to be gradually implemented over the period 2013-2019. It increases both the quantity and the quality of eligible capital for regulatory purposes[9]. From another side, Basel III recommends prolonging the Basel I-floor through to 2017, though this decision comes under national authorities. The reform of the Tunisian banking law was initiated since 2006 by the BCT in order to converge towards international standards. There were real efforts to prepare the adoption of Bale II framework. Since the enforcement of the Internal Audit Circular of 2006-19, Article 25 provided the attribution of an internal rating system in line with that proposed by the Basel II. In 2016, the new law n° 2016-48 of 11 July 2016 for banks and financial institutions was adopted[10].
During the period of our study (2006-2016), bank regulation in the Tunisian context and prudential national rules for risk coverage are widely inspired from the Bale I framework.

II-The link between loan loss provisions and regulatory ratio in the Tunisian banking sector

The minimum capital ratio is imposed by regulators who also give rules for how to calculate eligible capital and risk-weighted assets. Their preoccupation is how to increase the resilience of banks and their ability to handle unexpected losses.
In this paper regulatory capital management is defined as considerate decisions made by banks to optimize capital structure for regulatory purposes. As the minimum capital ratio is set up by regulators, capital management includes decisions to increase the numerator (eligible capital) or to decrease the denominator (assets) of the risk-based capital ratio. The numerator can be

[9] Additionally, national authorities are given the choice to implement several capital buffers and to determine the appropriate size of these buffers based on domestic macroeconomic conditions. A minimum leverage ratio of 3% independent of risk, as well as two new liquidity ratios are also introduced (Greenbaum, Thakor, & Boot, 2016).
[10] Currently, Tunisian banks are required to comply with the new framework through the requirements of article 16 of circular 2016-06 without exceeding the deadline of end of December 2017.

raised through equity issuances or a restrictive payout policy. The denominator can be decreased by changing the asset composition, securitizing loans, and decreasing lending. Indeed, varying or shifting the loan portfolio to reduce risk, yields more assets with lower risk-weights.

The rules for accounting for loan losses in the Tunisian context are outlined by two different sources: (1) the circular n ° 91-24 and n°99-04 related to risk division and coverage as modified by subsequent texts and (2) the Tunisian Accounting Standards, TAS 24 (as summarized in table 1 below):

Table 1: Regulatory framework and rules for banking provisioning	***Reforms introduced***
1) CBT Rules	
Circulars n° 91-24 and n° 99-04 **(*Quantitative criteria* are used to account for loan loss provisions)**	• **Two categories of assets are distinguished: Current assets and uncertain assets. The latter group is decomposed into 4 classes:** **- Class 1 is composed of assets which have to be closely observed due to industry's difficulties of borrowers.** **- Classes 2, 3 and 4 include assets for witch a payment delay of respectively 90 days, 180 days and 360, is observed. Deficient borrowers are classified into one of the subsequent classes according to the duration of late payment.** ***Default risk is only accounted for after the occurrence of a specific incident with regard to the credit quality of the debtor → Only non-performing loans (class 2 to 4) which are overdue for more than 90 days can be provisioned. The rate of provision ranges from 20% for class 2 assets, 50% for class 3, to 100% for class 4 assets. It also applies the contagion rule for classification of assets 4.***
• **As modified by the subsequent circulars[11] :**	
➢ **Circular no 2012-20 of December 6, 2012**	• **Collective provisions are necessary to cover latent risks on current commitments and commitments requiring specific monitoring.**
➢ **Circular No. 2012-09 of 29 June 2012,**	• **gradual increase of the minimum solvency ratio to 9% for the end of 2013 and then to 10% starting from the end of 2014** • **Instituting, from the end of 2014, of a core funds ratio (Tier 1 ratio) of 6% for the end of 2013 and 7%.** • **Allowing banks, from the financial year 2013, to deduce from their core funds declared on an individual basis their shareholdings in other banks.** • **Constricting, from the end of 2013, the standards on major risks by decreasing the standard from fivefold to threefold of net core funds for incurred risks exceeding 5% of core**

[11] Subsequent circulars modifying circular n ° 91-24 introduced "q*uantitative requirements as regards risk management and coverage"* and *"Qualitative requirements in terms of governance and anti-money laundering and terrorism financing"*

	funds and the norm from 2 to 1.5 times of net core funds for incurred risks exceeding 15% of net core funds. • **Reducing, from the end of 2013, the ceiling applied to incurred risks on related parties from 3 times to just one fold of net core funds**
➢ **Circular No. 2013-21 of 30 December 2013**	• **New rules for additional provisioning according to the seniority of assets in class 4[12].**
➢ **Circular No. 2014-14 of 11 November 2014**	• **Introduced a new liquidity ratio[13] which is largely based on the Liquidity Coverage Ratio of Basel III.**
➢ **BCT Circular No. 2011-06 of 20 May 2011**	• **strengthening good governance rules in banks and financial institutions**
➢ **BCT Circular No. 2013-15 of 7 November 2013**	• **set up a comprehensive internal control system for the fight against money laundering based on the FATF recommendations to protect the banking sector against any abusive financial use**
• **Exceptional measures**	
➢ **BCT circular No. 2015-12 of 22 July 2015**	• **Exceptional measures to support enterprises operating in tourism sector**
2) Tunisian Accounting Standards: TAS 24	
➢ **Tunisian Accounting Standards, TAS 24[14] : (Qualitative criteria and the judgment of management are used to assess for loan loss provisions)**	• **This specific law relies on an economic approach to calculate loan loss provisions. It assesses provisions on the basis of predicted probabilities of defaults without waiting for the effective default of the borrower. It provides a better level of the anticipated losses on loans.**

In accordance with TAS 24 (§25-26), loans are tested for objective evidence of impairment on both individual and collective level every reporting period. The valuation of commitments and the estimation of provisions are the judgments of management. It is essential that this judgment be based on the most likely assumptions and that it be applied consistently. In practice, Tunisian banks apply the provision rules set by CBT circulars and the exercise of management judgment is only allowed when assessing the amount of collective provisions or through the reporting of an internal memo in order to precise the rate of provisioning by class. Even though accounting supervisors seek to prevent management discretion being used for unwanted purposes, TAS 24 is a principle-based standard. This means that management are encouraged to rely on "experienced judgment" when determining the size of impairment losses. However, by relying on experienced judgment, TAS 24 gives management incentives for discretionary accounting

[12] As a result, this measure allowed improving the coverage ratio of nonperforming loans by provisions, up from 45.7% at the end of 2012 to 56.9% at the end of 2015.

[13] This new ratio is able to identify the liquidity risk rather than the transformation risk and to take into account off-balance sheet commitments.

[14] Which is highly inspired from international standards 5 relying on an economic approach.

behavior. Discretionary management behavior could for instance be used to accumulate hidden reserves by generating too high provisions, or to improve capital position by minimizing provisions to raise eligible capital.

Banks have to comply with both accounting and regulatory standards at a time. How the accounting for loan losses could influence eligible capital can be analyzed as capital management for regulatory purposes. Loans are subject to an impairment test of recognition and evaluation of individualized and collective provisions as required by TAS 24. If the existence of impaired value is determined on objective basis, the identification of NPL and the creation of provisions by the bank become an obligation in order to cover expected loan losses. The ability of the bank to stand these losses is enhanced by adding individual and collective provisions to the allowance account. Loan loss provisions are by definition an expense for which a one unit increase results in a one unit decrease of earnings before taxes. This component is included to eligible capital as Tier I denoting that loan loss provisions deflate Tier I capital on a (1-taxrate) basis. Moreover, a one unit increase in the accumulated loan loss provisions in the allowance account constitutes a one unit increase in Tier II capital, given that the Tier II quota of the allowance account is not exhausted (Tier II capital include up to 1.25% of risk-weighted assets from the allowance account if banks apply the standardized method, and 0.6% if banks apply the IRB method).

The direct effect of the variation of loan loss provisions on earnings and its indirect effect on eligible capital represent the regulatory tradeoff of loan loss provisions.

Accumulated provisions in the allowance account together with eligible capital for regulatory purposes constitute the bank ability to cover from the risk of non-performing loans and losses. However, the level of loan loss provisions could be objective and sufficient to enhance the overall ability of the bank to cover losses in periods when banks are exposed to higher required capital pressure.

If banks under pressure reduce their provisions to meet regulatory purposes, their risk-based capital ratios will improve while overall solidity is reduced. Banks appear to be better capitalized, but the overall capacity to bear expected and unexpected non performing loans is reduced.

IV Literature review and hypothesis development

Regulatory pressure is exercised on banks by supervisory authorities every time that a higher risk-weight is applied, a higher minimum risk-based capital ratio is required or the structure of eligible capital is redefined.

A bank has to hold a required level of eligible capital for a given level risk-weighted assets and a minimum risk-based capital ratio. This capital requirement could be affected by an increase of the regulatory pressure. Even though banks' accounting decisions could not be generally influenced by regulatory pressure, the relation between loan loss provisions and eligible capital gives banks incentives to consider regulatory requirements when assessing for loan loss provisions.

The capital management hypothesis has been tested under different regulatory frameworks as summarized in the table 2 below:

Table 2. Summary of literature review

Studies	Results	Context
Pre-Basel studies: **The enclosure of the allowance account in the eligible capital calculation gives banks incentives to exercise discretion to create higher loan loss provisions.**	**Shrieves and Dahl (1992), showed that, in response to regulation, low capitalized banks inflate capital levels and decrease risk exposure.** **Moyer (1990) found a negative link between excess capital and the amount of loan loss provisions. He explains that capital constrained banks created higher provisions to inflate eligible capital.** **Beatty, Chamberlain, and Magliolo (1995) found that accruals (such as loan loss provisions, loan charge-offs, and securities gains and losses) are jointly used for regulatory capital management purposes. They employ the primary capital ratio to test whether provisions are managed to inflate eligible capital when external sources of capital are costly, and find results similar to Moyer (1990).**	**US Banks.** **Capital-constrained banks in the US.** **US banks in the period 1987 to 1989.**
Pre-Basel versus Post-Basel studies : **Results from pre-Basel versus post-Basel studies indicate that loan loss provisions are still used for**	**Kim and Kross (1998) find low capitalized banks to reduce loan loss provisions and increase loan write-offs in the post-Basel era compared to pre-Basel. High capitalized banks exhibited no difference in accrual accounting across the regulatory regimes. Their findings infer that excluding the allowance account from the calculation of eligible capital changed banks' provisioning behavior.**	**US banks** **American Banks**

regulatory capital management. **Under the new risk-based framework[15], the incentives are reversed. Banks are under pressure to create lower provisions.**	**Ahmed, Takeda, and Thomas (1999) test hypotheses of capital management, earnings management and signaling effects through loan loss provisions for the new capital adequacy regulations. They include the regulatory capital ratio and find that its relation to loan loss provisions is less negative in the post-Basel period.**	
Post-Basel studies: **Basel I better linked capital with risk, as banks were required to hold higher levels of eligible capital when risk-exposure increased. As the allowance account was limited in the calculation of eligible capital, banks' incentives to use loan loss provisions for regulatory purposes changed. The trade-off between eligible capital and loan loss provisions creates incentives for banks to reduce provisions.**	**Collins, Shackelford, and Wahlen (1995) find that low capitalized banks reduced loan loss provisions after the allowance account was limited in the eligible capital calculation.** **Shrives and Dahl (2003) capital-constrained banks use discretion to reduce loan loss provisions if external funding is expensive.** **Cummings and Durrani (2014) investigate the effect of the Basel II accord on loan loss provisions. They find that banks use part of surplus capital to pre-fund future credit losses and create lower loan loss provisions when discretionary risk-weighted assets increase.** **Norden and Stoian (2014) tested earnings management and loan loss provisions from risk and profitability perspectives. They find loan loss provisions to be lower when discretionary risk-weighted assets increase.**	**In the US** **Japanese banks** **In Australian banks in the period 2004 to 2012** **85 Dutch banks from 1998 to 2012.**

The minimum risk-based capital ratio is set by regulators. We choose changes in risk weighted assets (DRWAS) as a proxy for the variation in capital requirements through the year. If banks are confronted to an increase in capital requirements, lowering the amount of the provisions improves their risk based capital ratio. As a result, the numerator of the regulatory capital ratio fairly increases, so we hypothesize:

H1: *Banks will exercise discretion to reduce loan loss provisions when facing an increase in capital requirements through the year.*

We expect a negative coefficient on the changes in risk weighted assets if banks exercise discretion to decrease loan loss provisions when facing an increase in capital requirements.

[15] That excludes the allowance account from the calculation of eligible capital.

Requirements of higher capital in the future encourage banks to improve their capital position today. Prior to any additions from this year's earnings, banks can take actions to increase the risk-based capital ratio through the year and their capital position can be improved. In order to study how changes in banks' capital position through the year affect loan loss provisions, we utilize the end of year risk-based capital ratio adjusted for earnings, "AdjCap", as a proxy for banks' enhancement in capital position. We test if banks reduce loan loss provisions to increase eligible capital when they take actions to improve capital position through the year. We hypothesize:

H2: *Banks will exercise discretion to reduce loan loss provisions when improving capital position through the year.*

We expect a negative coefficient on "AdjCap" if banks discretionary reduce loan loss provisions when improving capital position.

We consider "BCap" as the risk-based capital ratio at the beginning of year in order to test if banks with higher ratios coming into the year create higher provisions. Coming into the year with a better capital position, should reduce bank incentives to discretionary manage provisions for regulatory purposes. We hypothesize alternatively:

H3: *Banks with higher (lower) risk-based capital ratios coming into the year will exercise discretion to boost (reduce) loan loss provisions.*

We expect a positive coefficient on "BCap" if banks with higher regulatory capital ratios coming into the year use discretion to increase loan loss provisions and a negative coefficient if banks with lower regulatory capital ratios coming into the year use their discretion to reduce loan loss provisions.

V- Data

The Tunisian banking system consists of 18 universal banks, 2 banks specialized in microcredit and small and medium-sized businesses financing and 3 banks specialized in Islamic banking products[16]. The Tunisian State is presented as a reference shareholder in 7 banks (STB, BNA, BH, BTS, BFPME, BFT and BZ).

[16] REPORT ON BANKING SUPERVISION 2015.

In this study, we use data on thirteen[17] Tunisian banks over the period 2006 to 2016. These banks are listed in the Tunis Stock Exchange. We exclude specialized banks (3 Islamic banks and 2 micro-credits) from the data set in order to insure the comparability of accounting numbers. Accounting and financial data are derived from Bankscope database (December, 2017). Data on non-performing loans, provisions' rates and capital adequacy ratio data are obtained from the CBT database.

To our knowledge, no prior research has applied Tunisian bank data on the trade-off between loan loss provisions and bank capital regulation. In this respect, our study will be an important contribution to existing literature on bank regulation and capital management.

VI- Methodology

We construct a model inspired by Wahlen (1994) and Ahmed, Takeda, and Thomas (1999) to explain banks' discretionary behavior with respect to loan loss provisions. In order to separate the discretionary loan loss provisions from the nondiscretionary component, Wahlen (1994) uses a two-stage loan loss expectations model. We adjust for the model of unexpected changes in loan loss provisions as applied by Wahlen (1994) from an investor's view to better reflect bank behavior. In order to analyze discretionary loan loss provisions, we utilize a regression model similar to Ahmed, Takeda, and Thomas (1990). We introduce capital variables to capture the discretionary behavior of provisioning under regulatory pressure. Then, we control for non-discretionary determinants of loan loss provisions. This approach is less restrictive than a two-stage model (Beatty and Liao, (2014)) because it is uncertain whether non-discretionary variables are free of discretionary influence. Following prior related research, we adopt an income statement view to examine the impact of regulations on annual loan loss provisions similar to Wahlen (1994)[18].

VI-1- Analyses of the impact of regulations on loan loss provisions

a- The dependant variable

Loan loss provisions are modeled using an income statement regression. This regression explains the determinants of loan loss provisions by discretionary capital variables and controls for non-discretionary variables. The dependent variable ***LLP*** is defined as this year's loan loss

[17] 18- (3+2) = 13

[18] A two-stage balance sheet approach similar to Beaver and Engel (1996) can be used to test the robustness of our results.

provisions scaled by average loans. It measures net provisions in year t for bank i. The one stage regression model is defined as follows:

$$LLP_{i,t} = \gamma_0 + \gamma_1 loans_{i,t} + \gamma_2 NPL_{i,t} + \gamma_3 DNPL_{i,t} + \gamma_4 DRWAS_{i,t} + \gamma_5 AdjCap_{i,t} + \gamma_6 BCap_{i,t} + \gamma_7 NIBP_{i,t} + \varepsilon_{i,t} \quad (1)$$

We introduce the following variables in model (1) to examine loan loss provisions in Tunisian banks.

b- Independent discretionary variables

The relation between regulatory capital management and discretionary loan loss provisions is tested using the three flowing variables. ***DRWAS*** is defined as this year's change in risk-weighted assets scaled by assets end of year. It is used as a proxy for the change in banks' regulatory capital requirements like Norden and Stoian (2014). It is expected to have a negative coefficient to confirm H1.

We also introduce two capital ratio variables to assess if banks' capital positions motivate the use of discretionary provisions for loan losses. ***AdjCap*** represents eligible capital adjusted for this year's provisions, scaled by end of year risk-weighted assets. It is a proxy for the bank capital position which can be improved by adjusting the numerator or the denominator. It allows to assess if banks those improve capital position through the year, also utilize discretionary loan loss provisions[19] to increase earnings. If so, it is expected to have a negative coefficient and H2 can be confirmed.

Like Ahmed et al., (1999), we introduce ***BCap*** to examine how capital ratios coming into the year influences provisioning behavior. ***BCap*** is defined as eligible capital coming into the year, scaled by risk-weighted assets beginning of year. Better capitalized banks comes into the year with higher risk-based capital ratios, thus have fewer incentives to use loan loss provisions to improve their capital position. Weakly capitalized banks come into the year with lower risk-based capital ratios, hence with strong incentives to discretionary reduce loans loss provisions and inflate eligible capital. A positive (negative) coefficient on ***BCap*** would confirm alternative hypothesis H3, that banks use discretion to create higher (lower) provisions when capital ratios coming into the year are higher (lower).

[19] Or use their discretion to reduce

c- Non-discretionary variables

To control for the determinants of the non-discretionary component of loan loss provisions, we introduce four additional variables in model (1): ***Loans*** is defined as end of year gross loans scaled by average assets. ***NPL*** reflects end of year nonperforming loans to average loans, while ***DNPL*** is defined as one-year-ahead change in nonperforming loans as a fraction of end of year loans. ***NIBP*** is defined as net income before provisions scaled by end of year assets. These variables allow us to accurately investigate whether and how banks exercise capital management discretion for regulatory purposes.

Among, non-discretionary variables introduced in equation (1) ***Loans*** are considered to reflect default risk in the loan portfolio not captured by NPL. According to Beaver and Engel (1996) and Kim and Kross (1998) there is a significant relation between Loans (or the size of the loan portfolio) and allowances and provisions for loan losses. Loans are expected to have positive coefficient. ***NPL*** reflects non-performing loans as loans more than 90 days overdue. It is an important indicator of default risk (Beaver, Eger, Ryan, and Wolfson (1989)) and of losses coming soon. An increase in non-performing loans should create higher loan loss provisions. So, ***NPL*** are expected to have a positive coefficient. Similar to Beaver and Engel (1996), ***DNPL*** is used as a proxy for the information about the quality of the loan portfolio in time t, not included in ***NPL***. If this information is reflected in this year's provisions, management increase provisions today to account for future deterioration of the loan portfolio. So we expect ***DNPL*** to have a positive coefficient.

In addition to non-discretionary determinants of loan loss provisions, we include ***NIBP*** to control for the influence of earnings on loan loss provisions. Prior research by Ahmed, Takeda, and Thomas (1999) include this variable to test for earnings management through loan loss provisions. Wall and Koch (2000) suggest that income smoothing behavior may result from regulatory constraints. Managers take higher provisions in good periods and lower provisions in downturns. Accordingly, Fonseca and Gonzales (2008) suggest that income smoothing can improve the risk perception of a bank for its regulators and supervisors. Empirically, Omri et al. (2007) find a significant relation between loan loss provisions and earnings management for a panel of Tunisian banks. Under the income smoothing hypothesis, we would expect a positive relationship between ***NIBP*** and loan loss provisions.

Table 1 reports the definition of variables.

Table 3: Definition of Variables

LLP	***Loan loss provisions for bank i in year t to average loans***
Loans	***Gross loans for bank i in year t scaled by average assets***
NPL	***Non-performing loans to average loans***
DNPL	***One-year-ahead change in non-performing loans to loans end of year***
DRWAS	***The change in risk-weighted assets to assets***
AdjCap	***The end of year risk-based capital ratio adjusted for this year's provisions***
BCap	***The risk-based capital ratio coming into the year.***
NIBP	***Earnings before taxes and provisions scaled by assets***

VI-2- Robustness analyses of the discretionary component of LLP

We apply an additional model suggested by Wahlen (1994) and Norden and Stoian (2014) in order to test the robustness of our results. We estimate the non-discretionary component of loan loss provisions, ***NLLP***, before defining the discretionary component of loan loss provisions, ***DLLP***, as the difference between the actual loan loss provisions and the estimated non-discretionary component. We define the non-discretionary provisions for loan losses as follows:

$$\boldsymbol{NLLP_{i,t} = \beta_0 + \beta_1 loans_{i,t} + \beta_2 NPL_{i,t} + \beta_3 DNPL_{i,t} + \mu_{i,t}} \quad \textbf{(2)}$$

NLLP is defined as the non-discretionary component of loan loss provisions scaled by average loans. The definitions and predicted signs on the coefficient of the explanatory variables are similar to those of the main model in equation (1). As ***NLLP*** cannot be examined directly, we regress ***LLP*** on the explanatory variables in equation (2) in order to estimate ***NLLP***:

$$\boldsymbol{LLP_{i,t} = \beta_0 + \beta_1 loans_{i,t} + \beta_2 NPL_{i,t} + \beta_3 DNPL_{i,t} + \varepsilon_{i,t}} \quad \textbf{(3)}$$

Where, $\boldsymbol{\varepsilon_{i,t} = DLLP_{i,t} + \mu_{i,t}}$. If the explanatory variables in equation **(2)** are free of discretion, the error term u will be zero, and we estimate DLLP without error. As LLP consists of both a non-discretionary and a discretionary component, the discretionary loan loss provisions are by definition:

$$\boldsymbol{DLLP_{i,t} = LLP_{i,t} - NLLP_{i,t}} \quad \textbf{(4)}$$

We regress DLLP on discretionary capital variables in order to test our hypotheses on regulatory capital management. Similar to the main model, we include an earnings variable to control for potential impact of earnings levels on provisioning behavior. Following previous studies, we consider EBTP to reflect discretionary behavior. The predicted signs on the coefficients of the variables are similar to those of equation (1). The second-stage regression is defined as follows:

$$\boldsymbol{DLLP_{i,t} = \beta_0 + \beta_1 DRWAS_{i,t} + \beta_2 AdjCap_{i,t} + \beta_3 BCap_{i,t} + \beta_4 NIBP_{i,t} + \mu_{i,t}} \qquad \textbf{(5)}$$

VII- Results

VII- 1 Descriptive statistics

Table 4 reports descriptive statistics of the main variables. A Pearson correlation matrix of the same variables is presented in Table 5.

Loan loss provisions scaled by average loans have a mean (median) equal to 1.4% (0.9%). The IMF[20] reports of Tunisia 2002 and 2006 showed similar annual levels of loan loss provisions to total assets. Ahmed and al. (1999) find loan loss provisions to constitute 0.8% (0.5%) of average loans for American banks in the period 1987 to 1995. Studying banks across 40 countries, Fonseca and González (2008) find loan loss provisions to constitute 1.1% (0.5%) of assets beginning of year in the period 1995 to 2002. Our sample of Tunisian banks is thus comparable to previous studies on loan loss provisions. Non-performing loans equal 17% (13.5%) of average loans, while the one-year-ahead change in non-performing loans are -0.6% (-0.7%) of end of year loans.

VII-2 Regression results from the main model

Results from the main model are reported in Table 5. Coefficients of all the discretionary capital variables are not consistent. **DRWAS** is insignificant with the opposite predicted sign. This finding is opposite to hypothesis H1, stating banks create lower loan loss provisions in periods of increasing capital requirements.

[20] See IMF reports 2002 and 2006.

Table 4: Variable descriptive statistics during the period 2006-2016

This table shows descriptive statistics for main variables. LLP is loan loss provisions to average loans. Loans are loans to average assets. NPL is non-performing loans to average loans, while DNPL is the one-year-ahead change in non-performing loans to loans end of year. DRWA is the change in risk-weighted assets to assets. AdjCap is the end of year risk-based capital ratio adjusted for provisions, while BCap is the risk-based capital ratio coming into the year. NIBP is net income before provisions scaled by assets.

	N	MEAN	MEDIAN	SD	10%	90%
LLP	**131**	**0,014**	**0,009**	**0,0149**	**0,0004**	**0,029**
Loans	**131**	**0,711**	**0,718**	**0,467**	**0,109**	**1,356**
NPL	**112**	**0,170**	**0,135**	**0,105**	**0,081**	**0,314**
DNPL	**101**	**-0,006**	**-0,0073**	**0,042**	**-0,037**	**0,039**
DRWAS	**101**	**0,006**	**0,002**	**0,018**	**-0,005**	**0,030**
AdjCap	**129**	**0,152**	**0,114**	**0,111**	**0,086**	**0,28**
BCap	**113**	**0,140**	**0,106**	**0,110**	**0,077**	**0,275**
NIBP	**125**	**0,0242**	**0,0248**	**0,007**	**0,014**	**0,032**

Table 4'- Correlation matrix

	LLP	Loans	NPL	DNPL	DRWAS	AdjCap	BCap	NIBP
LLP	**1**							
Loans	**0.7961***	**1**						
NPL	**0.5159***	**0.3013***	**1**					
DNPL	**0.2235***	**0.1893**	**0.0307**	**1**				
DRWAS	**0.3529***	**0.2916***	**0.1962**	**0.777***	**1**			
AdjCap	**-0.3532***	**-0.423***	**-0.3359***	**0.249***	**0.1166**	**1**		
BCap	**-0.4651***	**-0.4701***	**-0.3846***	**0.1398**	**0.005**	**0.8450***	**1**	
NIBP	**-0.1667**	**-0.1946**	**-0.2886***	**-0.0530**	**-0.168**	**-0.1450**	**-0.1214**	**1**

Both of the risk-based capital ratio variables are however significant with predicted signs on the coefficients. **AdjCap** is significant at 1% level, supporting hypothesis H2. A 1% increase in risk-based capital ratio adjusted for provisions constitutes a 17.2% decrease in loan loss provisions. **BCap** tests if banks with higher risk-based capital ratios coming into the year exercise discretion to create higher loan loss provisions. The variable is positive and significant at 1%, supporting that a 1% higher risk-based capital ratio coming into the year constitutes an 12% increase in loan loss provisions.

The signs on the coefficients of the non-discretionary control variables are in line with the predictions, though the variables are of varying significance. Coefficients on **Loans** are positive

Table 5- Regression results from the main model

This table shows regressions of loan loss provisions during the period 2006-2016 on Tunisian banks. We report coefficients (p-values in parenthesis) from our Fixed Effects, Pooled OLS, Random Effects and Dynamic Fixed Effects regressions. The dependent variable, LLP, is loan loss provisions to average loans. Loans is loans to average assets. NPL is non-performing loans to average loans, while DNPL is the oneyear-ahead change in non-performing loans to loans end of year. DRWA is the change in risk-weighted assets to assets. AdjCap is the end of year risk-based capital ratio adjusted for provisions, while BCap is the risk-based capital ratio coming into the year. NIBP is net income before provisions scaled by assets. LLPt-1 is the lagged dependent variable. Standard errors are clustered on bank level. One, two, or three asterisks mean that the coefficients are significant at 10%, 5%, and 1% respectively.

	Predicted sign	(1) LLP	(2) LLP	(3) LLP	(4) LLP
Loans		**0.007**	**0.016****	**0.010****	**0,012*****
	+	**(0.101)**	**(0.002)**	**(0.010)**	**(0,000)**
NPL	**+**	**0.079*****	**0.060*****	**0.074*****	**0,046*****
		(0.000)	**(0.000)**	**(0.000)**	**(0,000)**
DNPL	**+**	**0.078****	**0.071****	**0.076*****	**0,103*****
		(0.009)	**(0.004)**	**(0.000)**	**(0,000)**
DRWAS	**-**	**0.031**	**0.082**	**0.046**	**0,024**
		(0.702)	**(0.426)**	**(0.593)**	**(0,826)**
AdjCap	**-**	**-0.172*****	**-0.152*****	**-0.167*****	**-0,159*****
		(0.000)	**(0.001)**	**(0.000)**	**(0,000)**
BCap	**+**	**0.115*****	**0.126*****	**0.118*****	**0,140*****
		(0.000)	**(0.000)**	**(0.000)**	**(0,000)**
NIBP	**+**	**0.419****	**0.161**	**0.288***	**0,139**
		(0.015)	**(0.235)**	**(0.066)**	**(0,250)**
LLPt-1					**0,250****
					(0,015)
Model Specification		**Fixed Effects**	**Pooled OLS**	**Random Effects**	**Dynamic RE**
R^2		**0.69**	**0.76**	**0.73**	**0,78**
SE clustered on bank		**Yes**	**Yes**	**Yes**	**Yes**
Observations		**99**	**99**	**99**	**99**

Regression (1), (2), (3):

$$LLP_{i,t} = \gamma_0 + \gamma_1 loans_{i,t} + \gamma_2 NPL_{i,t} + \gamma_3 DNPL_{i,t} + \gamma_4 DRWAS_{i,t} + \gamma_5 AdjCap_{i,t} + \gamma_6 BCap_{i,t} + \gamma_7 NIBP_{i,t} + \varepsilon_{i,t}$$

Regression (4)

$$LLP_{i,t} = \gamma_0 + \gamma_1 loans_{i,t} + \gamma_2 NPL_{i,t} + \gamma_3 DNPL_{i,t} + \gamma_4 DRWAS_{i,t} + \gamma_5 AdjCap_{i,t} + \gamma_6 BCap_{i,t} + \gamma_7 NIBP_{i,t} + \gamma_7 LLP_{i,t-1} + \varepsilon_{i,t}$$

and significant at 5% and 1% level, suggesting that an increase in the lending activity of banks entail higher loss exposure, and thus loan loss provisions. The size of the loans portfolio is regarded when determining the level of loan loss provisions in Tunisian banks. **NPL** is significant at 1% with the predicted sign on the coefficient. This result emphasizes non-performing loans as a nondiscretionary determinant of loan loss provisions. Keeping all other factors constant, a 1% increase in non-performing loans will increase provisions for loan losses by 7%. This result is similar to findings of Wahlen (1994), Collins, Shackelford, and Wahlen (1995) and Kim and Kross (1998). **DNPL** is significant at 5% and 1% level, indicating that bank managers' knowledge on future quality of loans (not included in NPL) is reflected in loan loss provisions. This suggests that all information on loan quality explains loan loss provisions in Tunisian banks, consistent with findings of Beaver and Engel (1996).

Testing various lags and specifications of explanatory variables could provide insights into whether other nondiscretionary elements better explain loan loss provisions in our sample. **NIBP** is of varying significance, indicating that higher earnings levels do not always constitute higher levels of loan loss provisions. This result is consistent with the finding of Ahmed, Takeda, and Thomas (1999) on American banks.

The main model provides significant coefficients with expected signs, except for the variables DRWAS and NIBP. The findings are robust to various specifications. We don't confirm our first hypothesis that Tunisian banks use discretion to reduce loan loss provisions to inflate eligible capital for regulatory purposes in reaction to an increase in capital requirements. Nevertheless, we find evidence that (1) Tunisian banks improve their capital position through the year by creating lower provisions and (2) those coming into the year with stronger capital position create higher levels of loan loss provisions. The coefficients on the discretionary capital variables are consistent across the pooled OLS-, RE-, and dynamic model.

VII-3 Regression results of discretionnary loan loass provisions

Results from the robustness analyses are reported in Table 6. Results examining non-discretionary loan loss provisions are reported in Panel A. Similar to the main model, **Loans** is positive and significant at 5% and 1% level. **NPL** is significant and positive at 5% and 1%. A 1% increase in non-performing loans constitutes an increase in non-discretionary loan loss

provisions of 7%. This finding is fairly similar to that of the main model. Consistent with the main model, **DNPL** is significant, though only marginally at 5%. The coefficient is positive, indicating that management use knowledge about future quality of the loan portfolio when determining loan loss provisions. A 1% increase in one-year-ahead change in non-performing loans constitutes a 9% increase in non-discretionary loan loss provisions.

Results examining discretionary loan loss provisions are reported in Panel B. Similar to the main model **DRWAS** is not significant at any conventional level. This indicates that the change in risk-weighted assets is of no importance when determining for loan loss provisions.
Both of the risk-based capital ratio variables are however significant with predicted signs on the coefficients. **AdjCap** is negative and significant at 5% and 1% level, supporting hypothesis H2. A 1% increase in risk-based capital ratio adjusted for provisions constitutes a discretionnary reduction of 10% of loan loss provisions. This finding suggests that banks exercise discretion to reduce loan loss provisions when improving capital position through the year. **BCap** is positive and significant at 1%, supporting that a 1% higher risk-based capital ratio coming into the year constitutes a discretionnary increase of 9% of loan loss provisions. **NIBP** is positive and significant at 1% level, indicating that earnings levels influence discretionnary loan loss provisions, which is consistent with the smoothing hypothesis and corroborates previous studies (e.g., Kanagaretnam et al., 2004 for US banks; Laeven and Majnoni, 2003 for banks operating in OECD countries and Omri et al., 2007 and Taktak et al., 2010 for Tunisian banks[21]).

We confirm that Tunisian banks exercise discretion for regulatory purposes when creating loan loss provisions. More precisely, prior to any additions from this year's earnings, they discretionnary reduce loan loss provisions in order to increase the risk-based capital ratio through the year and enhance their capital position. However, banks coming into the year with stronger capital position create higher levels of loan loss provisions. We conclude that under regulatory constraints, managers behave opportunistically. They take higher provisions in presence of strong capital positions and lower provisions to face low capital positions coming into the year. Consequently, discretionary income smoothing behavior appears as a result from regulatory constraints (Wall and Koch, 2000).

[21] They found that for Tunisian banks, earnings smoothing practices are an important driver of loan loss provisions.

Table 6 - Regression results of discretionary LLP

This table shows two-stage regressions of loan loss provisions during the period 2006-2016 on Tunisian banks. We report coefficients (p-values in parenthesis) from our Fixed Effects, Pooled OLS, and Random Effects regressions. Panel A shows the first-stage regression results. The dependent variable, LLP, is loan loss provisions to average loans. Loans is loans to average assets. NPL is non-performing loans to average loans, while DNPL is the one-year-ahead change in non-performing loans to loans end of year.
Panel B shows the second-stage regression results. The dependent variable, DLLP, is discretionary loan loss provisions to average loans. DRWA is the change in risk-weighted assets to assets. AdjCap is the end of year risk-based capital ratio adjusted for provisions, while BCap is the risk-based capital ratio coming into the year. NIBP is net income before provisions scaled by assets. Standard errors are clustered on bank level. One, two, or three asterisks mean that the coefficients are significant at 10%, 5%, and 1% respectively.

Panel A: Regression of non discretionary LLP

	(1) LLP	(2) LLP	(3) LLP
Loans	**0.008****	**0.018*****	**0.016*****
	(0.023)	**(0.000)**	**(0.000)**
NPL	**0.082****	**0.065*****	**0.073*****
	(0.008)	**(0.001)**	**(0.000)**
DNPL	**0.085****	**0.104****	**0.095****
	(0.040)	**(0.023)**	**(0.014)**
NIBP	**0.420***	**0.175**	**0.237**
	(0.089)	**(0.261)**	**(0.165)**
Model Specification	**Fixed Effects**	**Pooled OLS**	**Random Effects**
R^2	**0.60**	**0.68**	**0.67**
SE clustered on bank	**Yes**	**Yes**	**Yes**
Observations	**99**	**99**	**99**

First-stage regression: $LLP_{i,t} = \beta_0 + \beta_1 loans_{i,t} + \beta_2 NPL_{i,t} + \beta_3 DNPL_{i,t} + \beta_4 NIBP_{i,t} + \varepsilon_{i,t}$

Panel B: Regression of discretionary LLP

	(1) DLLP	(2) DLLP	(3) DLLP
DRWAS	**-0.050**	**0.006**	**-0.028**
	(0.488)	**(0.925)**	**(0.684)**
AdjCap	**-0.114****	**-0.090****	**-0.102*****
	(0.003)	**(0.006)**	**(0.000)**
BCap	**0.086*****	**0.089*****	**0.091*****
	(0.001)	**(0.001)**	**(0.000)**
NIBP	**0.695*****	**0.381***	**0.487*****
	(0.001)	**(0.060)**	**(0.011)**
Model Specification	**Fixed Effects**	**Pooled OLS**	**Random Effects**
R^2	**0.15**	**0.20**	**0.18**
SE clustered on bank	**Yes**	**Yes**	**Yes**
Observations	**99**	**99**	**99**

Second-stage regression: $DLLP_{i,t} = \beta_0 + \beta_1 DRWAS_{i,t} + \beta_2 AdjCap_{i,t} + \beta_3 BCap_{i,t} + \beta_4 NIBP_{i,t} + \mu_{i,t}$

VII-4 Regression results : public versus private banks

We perform two additional analyses to compare between the discretionary behaviors of public banks versus private ones in using loan loss provisions for regulatory purposes.

Results examining discretionary loan loss provisions of private banks are reported in Panel 1. Inconsistently with the main model, **DRWAS** is significant at 5% and 1% levels with a negative coefficient. Keeping all other factors constant, this result suggests that a 1% increase in the change in risk-weighted assets constitutes a discretionary reduction in loan loss provisions of 17.7%. This finding confirm hypothesis H1, stating private banks create lower loan loss provisions in periods of increasing capital requirements. Neither of the capital ratio variables **AdjCap** nor **BCap**, are significant at any conventional level. This indicates that, for private banks, capital position coming into the year and improvements in capital positions during the year are of no importance when determining loan loss provisions.

NIBP is positive and significant with varying levels (10%, 5%, 1%), indicating that earnings levels influences discretionnary loan loss provisions. This finding is consistent with the smoothing hypothesis and corroborates previous studies of Omri et al., (2007) and Taktak et al., (2010) for Tunisian banks. Our study suggests that discretionary income smoothing behavior may be as a result from regulatory constraints (Wall and Koch, 2000).

Results examining discretionary loan loss provisions of public banks are reported in Panel 2. Consistent with the main model, we find no indication of **DRWAS** influencing loan loss provisions at any conventional level. However, both of the risk-based capital ratio variables are significant with predicted signs on the coefficients. **AdjCap** is negative and significant at 5% and 1% level, supporting hypothesis H2. A 1% increase in risk-based capital ratio adjusted for provisions constitutes a discretionnary reduction of 12.3% of loan loss provisions. This finding suggests that public banks exercise discretion to reduce loan loss provisions when improving capital position through the year. **BCap** is positive and significant at 5% and 1% levels,

Table 7- Regression results: private versus public banks

This table shows the regression results respectively for private banks (Panel 1) and for public banks (Panel2). The dependent variable, DLLP, is discretionary loan loss provisions to average loans. DRWAS is the change in risk-weighted assets to assets. AdjCap is the end of year risk-based capital ratio adjusted for provisions, while BCap is the risk-based capital ratio coming into the year. NIBP is net income before provisions scaled by assets. Standard errors are clustered on bank level. One, two, or three asterisks mean that the coefficients are significant at 10%, 5%, and 1% respectively.

Panel 1: Regression results of discretionary LLP for private banks

	(1) DLLP	(2) DLLP	(3) DLLP
DRWAS	**-0.177****	**-0.138****	**-0.172*****
	(0.003)	**(0.007)**	**(0.000)**
AdjCap	**0.037**	**0.059**	**0.043**
	(0.396)	**(0.380)**	**(0.261)**
BCap	**-0.030**	**-0.019**	**-0.022**
	(0.478)	**(0.772)**	**(0.590)**
NIBP	**0.641****	**0.253***	**0.493*****
	(0.002)	**(0.097)**	**(0.000)**
Model Specification	**Fixed Effects**	**Pooled OLS**	**Random Effects**
R^2	**0.18**	**0.25**	**0.21**
SE clustered on bank	**Yes**	**Yes**	**Yes**
Observations	**72**	**72**	**72**

Second-stage regression: $DLLP_{i,t} = \beta_0 + \beta_1 DRWAS_{i,t} + \beta_2 AdjCap_{i,t} + \beta_3 BCap_{i,t} + \beta_4 NIBP_{i,t} + \mu_{i,t}$

Panel 2: Regression results of discretionary LLP for public banks

	(1) DLLP	(2) DLLP	(3) DLLP
DRWAS	**0.122**	**0.140**	**0.140**
	(0.396)	**(0.305)**	**(0.172)**
AdjCap	**-0.136****	**-0.123****	**-0.123*****
	(0.039)	**(0.040)**	**(0.000)**
BCap	**0.091****	**0.092****	**0.092*****
	(0.004)	**(0.008)**	**(0.000)**
NIBP	**0.645**	**0.854**	**0.854****
	(0.195)	**(0.132)**	**(0.013)**
Model Specification	**Fixed Effects**	**Pooled OLS**	**Random Effects**
R^2	**0.536**	**0.547**	**0.547**
SE clustered on bank	**Yes**	**Yes**	**Yes**
Observations	**27**	**27**	**27**

Second-stage regression: $DLLP_{i,t} = \beta_0 + \beta_1 DRWAS_{i,t} + \beta_2 AdjCap_{i,t} + \beta_3 BCap_{i,t} + \beta_4 NIBP_{i,t} + \mu_{i,t}$

supporting that a 1% higher risk-based capital ratio coming into the year constitutes a discretionnary increase of 9.2% of loan loss provisions. Public banks coming into the year with a higher risk-based capital ratio, are not regulatory constrained and allow themselves to discretionnary increase their loan loss provisions, while those constrained to improve their capital position through the year, exercice their discretion to reduce loan loss provisons and their overall resilience to risk is reduced.

Unlikely to private banks who discretionary decrease loan loss provisions to inflate eligible capital in reaction to increasing capital requirements in the future, public banks reduce discretionary loan loss provisions in order to increase the risk-based capital ratio through the year to enhance their capital position. While private banks focus on meeting long term capital requirements, public banks focus on managing short term levels of the risk capital ratios.

Conclusion

We conclude that, capital regulation exercises strong pressures on Tunisian banks to discretionary reduce loan loss provisions to meet capital ratios and capital requirements levels. Even though banks' accounting decisions could not be generally influenced by regulatory pressure, the relation between loan loss provisions and eligible capital gives banks strong incentives to consider regulatory requirements when assessing for loan loss provisions.

Our findings argue that under regulatory constraints, Tunisian banks behave opportunistically when assessing for loan loss provisions. They take lower provisions to enhance capital positions through the year and take higher provisions when coming into the year with strong capital positions. Their focus to meet regulatory constraints results in an income smoothing behavior as argued by Wall and Koch, (2000).

Robustness checks show that both private banks and public banks exercise discretion for regulatory purposes when determining loan loss provisions. However, they react to different capital regulatory pressure. Private banks reduce discretionary loan loss provisions to inflate their eligible capital in reaction to increasing capital requirements in the future. This behavior also allows them to increase their earnings. Their capital requirements will improve while their overall resilience to risk is reduced.

The provisioning behavior of public banks is influenced by its regulatory capital position: they take lower loan loss provisions to enhance capital positions through the year and higher levels

of loans loss provisions when coming into the year with stronger capital positions. This behavior deteriorates their overall capacity to handle unexpected losses even though their risk-capital ratio is met. When public banks come into the year with higher risk-based capital ratios they take a short time advantage to discretionary increase loan loss provisions as they are weakly provisioned.

Results highlighted in this study are inconsistent with the preoccupation of regulators in aiming to increase the resilience of weakly provisioned banks. Regulators must be aware of the serious effect of capital management practice on the bank overall solidity. They are requested to find the way to supervise the scope of the discretionary use of provisions to manipulate capital position or to further strengthen regulation in particular for loan classification and provisioning.

References

Abid, A., Ouertani, N. and Ghorbel, Z. (2015), "Les déterminants des NPL des ménages en Tunisie", *La Revue Gestion Et Organisation*, Vol.7, No.2, pp.77-92.

African Manager (2016), available at : www.africanmanager.com

Ahmed , A. S., Takeda, C., & Thomas, S. (1999, November). Bank loan loss provisions: a reexamination of capital management, earnings management and signalling effects. *Journal of Accounting & Economics,* 28(1), 1-25.

Beatty, A., Chamberlain, S. L., & Magliolo, J. (1995, Autumn). Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital and Earnings. Journal of Accounting Research, 33(2), 231-261.

Beaver, W. H., & Engel, E. E. (1996, August-December). Discretionary behavior with respect to allowances for loan losses and the behavior of security prices. Journal of Accounting & Economics, 22(1-3), 177-206

Ben Saada M. (2017), "The impact of control quality on the non-performing loans of Tunisian listed banks", *Managerial Auditing Journal, Vol. 33, N. 1.*

CENTRAL BANK OF TUNISIA Report on Banking Supervision, 2015. December 2016. Supervisionwww.bct.gov.tn/bct/siteprod/documents/sup_bc_ang.pdf

Collins, J. H., Shackelford, D. A., & Wahlen, J. M. (1995, Autumn). Bank Differences in the Coordination of Regulatory Capital, Earnings and Taxes. Journal of Accounting Research, 33(2), 263-291.

Cummings, J. R., & Durrani, K. (2014, December). Effect of the Basel Accord Capital Requirements on the Loan-Loss Provisioning Practices of Australian Banks. Center for International Finance and Regulation, CIFR Working Paper. Hentet fra Effect of the Basel Accord Capital Requirements on the Loan-Loss Provisioning Practices of Australian Banks: http://www.cifr.edu.au/project/T002.aspx

Fonseca, A., & González, F. (2008, February). Cross-country determinants of bank income smoothing by managing loan-loss provisions. Journal of Banking & Finance, 32(2), 217-228.

Kalfaoui, H. and Ben Saâda, M. (2015), "The determinants of banking performance: empirical evidence from Tunisian listed bank", *International Journal of Finance & Banking Studies*, Vol. 4, No.2, pp.21-28.

Kanagaretnam, K., Krishnan, G., & Lobo, G. (2010, November). An empirical analysis of auditor independence in the banking industry. *The Accounting Review*, 85(6), 20112046.

Laeven, L., & Majnoni, G. (2003, April). Loan loss provisioning and economic slowdowns: too much, too late? *Journal of Financial Intermediation*, 12(2), 178-197.

Moyer, S. E. (1990, July). Capital adequacy ratio regulations and accounting choices in commercial banks. Journal of Accounting and Economics, 13(2), 123-154.

Norden, L., & Stoian, A. (2014, December). Bank earnings management thorugh loan loss provisions: A double-edged sword? De Nederlandsche Bank Working Paper , 404, 145.

Shrieves, R. E., & Dahl, D. (1992, April). The relationship between risk and capital in commercial banks. Journal of Banking & Finance, 16(2), 439-457.

Shrieves, R. E., & Dahl, D. (2003, July). Discretionary accounting and the behavior of Japanese banks under financial duress. Journal of Banking & Finance, 27(7), 12191243.

Taktak, B., Boudriga, A. and Ajmi D., (2010), "Loan loss reserves of weakly provisioned banks: evidence from major Tunisian banks", *Afro-Asian J. Finance and Accounting*, Vol. 2, No. 1, 2010.

Wahlen, J. M. (1994). The Nature of Information in Commercial Bank Loan Loss Disclosures. The Accounting Review, 455-478.