The relationship between non-performing loans and banking system stability : The case of Tunisia

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Introduction (1)

Non-performing loans (NPLs) and banking system stability nexus continues to gain more research attention, especially after the 2008-2009 global financial crisis (GFC) that led to credit crisis in most economies.

Some countries are somewhat conservative in their lending policies to maintain the integrity of credit portfolios. The high rate of non-performing loans in the banking sector negatively affects the performance of banks and consequently the economic situation.

Introduction (2)

Non-performing loans can be defined as defaulted loans, from which banks are unable to profit. Loans usually fall due if no interest is paid in 90 days, but this may vary depending on countries and actors.

Where high NPLs affect directly the performance of banks, limiting their ability to lend and exercise their role in the development process, reflecting negatively on the bank profitability and the whole economy.

Purpose of paper

This project seeks to determine the relation between NPLS and banking profitability.

This relation seems to be not linear and a threshold of NPLS will be estimated to have a positive profitability, using an econometric framework.

General Framework of the study

The aim of this study is to examine the determinants affecting the banking profitability in the period Q4 2010 - Q4 2019, for 10 banks, by estimating a model showing the impact of NPLS on banking profitability.

To prove the relationship between credit risk and banking performance, we consider the relation between NPLS and the profitability of the banking sector.

Banking system in Tunisia

The banking system remains well capitalized, but several banks do not comply with the regulatory liquidity requirements.

The system-wide capital adequacy ratio remained stable at 11.7 in December 2018.

Nonperforming loans (NPLs) decreased to 13.4 percent of total loans in December 2018 from 14.2 in September as public banks achieved progress with the reduction of their NPL portfolios.

By contrast, the system-wide ratio of liquid assets to total assets decreased to 4.5 percent at end-2018 from 5.7 percent at end-2017, and the ratio of liquid assets to short-term liabilities to 75.2 percent from 91.7 percent.

Methodology (1)

- An econometric model regarding the factors determinants of loan default in the banking sector was created.
- The model is estimated using panel data regression.
- The method of analysis is system GMM.

Methodology (2)

The model:

$$ROA_{it} = \alpha + \beta_1 ROA_{it-1} + \beta_2\ NPLS_{it-1} + \beta_3 NPLS_{it} + \beta_4 NPLS_{it_i}^2 + \beta_5 NPLS_{it_i}^3 + \beta_6 C/D_{it} + \beta_7 SOlv_{it} + \varepsilon_{it}$$

$i: bank,\ \ t: quarter$

ROA: Return on Assets (ROA)

NPLS: Non-performing loan to total loan ratio for bank i at time t

C/D: Loan to assets

Solv: Solvability Ratio

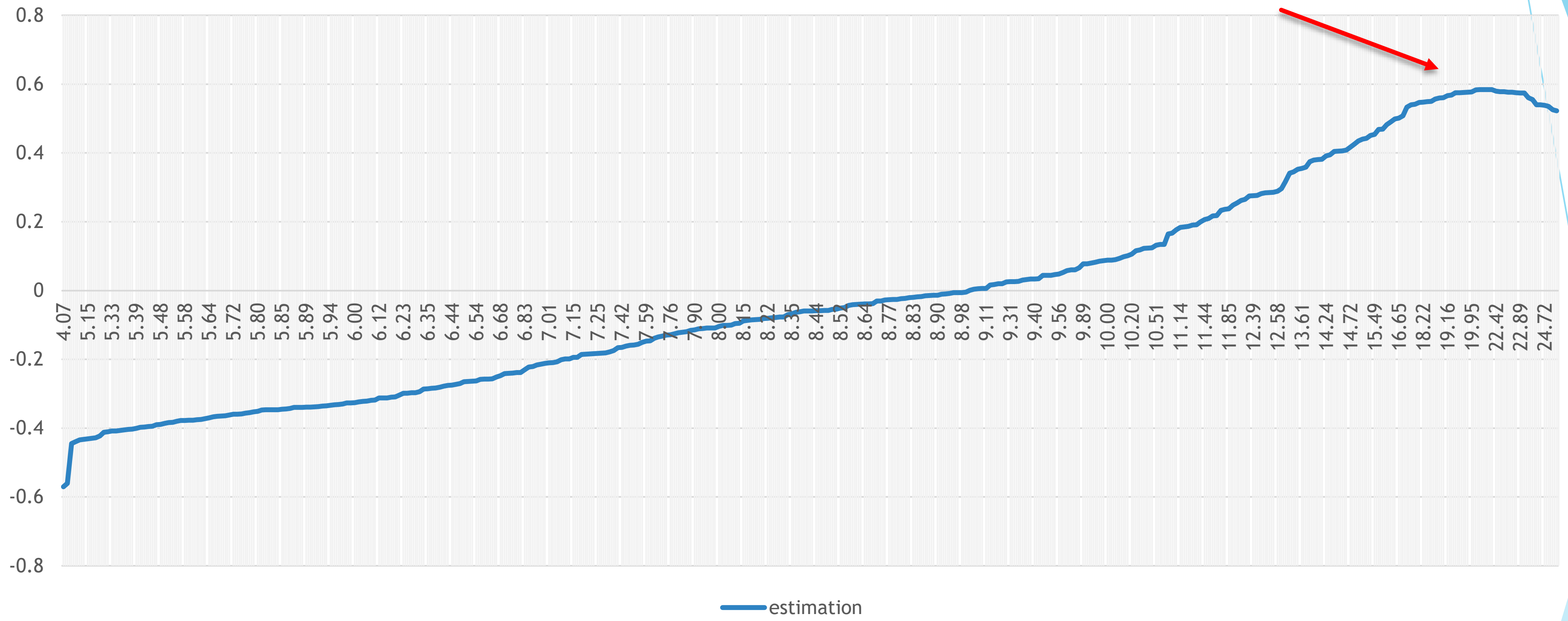
ε_{it}: the error terms

Results

Table: Regression results

Dependent variable=ROA	Model 1	Model 2
ROA_{it-1}	0.103	0.319***
	(0.468)	(0.001)
$NPLS_{it-1}$	-0.101*	-1.22**
	(0.064)	(0.051)
$NPLS_{it}$	-0.488***	-1.182*
	(0.000)	(0.061)
$NPLS^2_{it}$	0.017***	0.083**
	(0.001)	(0.045)
$NPLS^3_{it}$		-0.0013*
		(0.000)
C/D_{it}	-2.351	-0.729
	(0.197)	(0.791)
$Solv_{it}$	0.011	0.006
	(0.154)	(0.869)
NPLS Threshold	27	30.7
F-statistic (p-value)	0.000	0.000
Test of the second order (p-value)	0.244	0.157
Sargan test (p-value)	0.052	0.080
Hansen test (p-value)	0.999	0.9106

The marginal effect of NPL versus NPL



Q1	Me	Q3
6.36	8.43	11.16

Results

- The results conclude that non-performing loan ratios NPLS had a significant negative impact on banks profitability ratio. An increase in percentage points in NPLS ratio decrease the ROA estimated at 0.48. An increase in percentage points in lag NPLS ratio decrease the ROA estimated at 0.1.
- In addition, there is a significant effect on ROA for the previous period. The previous ROA has a positive impact on ROA.
- The results show that the correlation between the ROA and the ratio of NPLs is not linear and we have a NPLS threshold.

Conclusion and perspective

- Non-performing loan had an impact on banks profitability.
- This relation seems to be not linear.
- When NPLS ratio attend around 27 percent ⇒ bank profitability become null.
- Profitability is associated with low levels of NPLS
- The results implies that profitability of the Tunisian banking sector can be improved by increasing the quality of the assets.
- Add Dummy variable of bank type to see if there is a difference between banks.
- Add ROA ^ 2, to see if there is also a non-linearity with ROA.

Thank you for your attention