UNIVERSITÀ CATTOLICA
del Sacro Cuore

DIPARTIMENTO DI SCIENZE ECONOMICHE E SOCIALI

Determinants of Bank Profitability
in the Euro Area: Has Anything Changed?

Mariarosa Borroni
Mariacristina Piva
Simone Rossi

Quaderno n. 119/novembre 2016

VP VITA E PENSIERO

Università Cattolica del Sacro Cuore

DIPARTIMENTO DI SCIENZE ECONOMICHE E SOCIALI

Determinants of Bank Profitability
in the Euro Area: Has Anything Changed?

Mariarosa Borroni
Mariacristina Piva
Simone Rossi

VP VITA E PENSIERO

Mariarosa Borroni, Mariacristina Piva e Simone Rossi*, Dipartimento di Scienze Economiche e Sociali, Università Cattolica del Sacro Cuore, Piacenza (*corresponding author)

✉   mariarosa.borroni@unicatt.it

✉   mariacristina.piva@unicatt.it

✉   simone.rossi@unicatt.it

I quaderni possono essere richiesti a:
Dipartimento di Scienze Economiche e Sociali,
Università Cattolica del Sacro Cuore
Via Emilia Parmense 84 - 29122 Piacenza - Tel. 0523 599.342
http://dipartimenti.unicatt.it/dises

✉   dises-pc@unicatt.it

www.vitaepensiero.it

Abstract

During the recent financial crisis bank profitability has become an element of strong concern for regulators and policymakers; in fact, both self-financing strategies and capital increases – necessary to provide a higher level of capitalization – rely on the ability of a bank to generate profits. However, the determinants of bank profitability, which seemed to be unequivocally identified by previous literature, appear to have changed under the effect of regulatory and competitive dynamics. We test this hypothesis on commercial, cooperative and saving banks, employing a random effect panel regression on a dataset comprising bank-level data and macroeconomic information (covering the period 2006-2013) for nine countries of the Euro area. Our findings suggest that after a period of "irrational exuberance" in which credit growth and high leverage were seen as proper and fast ways to boost profitability, a sound financial structure and a wiser and objective credit portfolio management have become the main drivers to ensure higher returns.

1.   Introduction

The banking sector plays a crucial role in the modern economies; this statement is especially true for countries in which the transmission of purchasing power is not widely guaranteed by traded securities. Therefore, it's not surprising that the soundness of the banking system, and in particular bank profitability, is a relevant element of concern for policymakers and regulators. The new regulatory framework introduced by Basel III has strengthened this assumption; in fact, the choice for the banks that need to improve their regulatory capital ratio is between self-financing (i.e. retaining a major part of net profits) and capital increase. The success of both these strategies relies on the ability of a bank to produce an adequate return on equity; this result will be hard to meet in a sector in which the competition and the costs generated by the compliance to new regulation are soaring over time.

Since the seminal works of Short (1979) and Bourke (1989), academic literature has widely investigated the main determinants of bank profitability. Competitive dynamics, continuously changing regulation, introduction of new accounting standards have contributed in subsequent years to make challenging the research activity, giving birth to different streams of literature. From a geographical point of view, we can divide works based on a cross-country comparison (Molyneux and Thornton 1992; Demirguc-Kunt and Huizinga 1999; Goddard, Molyneux and Wilson 2004a;

Athanasoglou, Delis and Staikouras 2006; Pasiouras and Kosmidou 2007; Goddard et al. 2011; Dietrich and Wanzenried 2014; ElKelish and Tucker 2015; Weigand 2015) from others that focuses on a single country (Athanasoglou, Brissimis and Delis 2008; Alexious and Sofoklis 2009; Alper and Anbar 2011; Dietrich and Wanzenried 2011; Trujillo-Ponce 2013; Lusignani and Onado 2014; Brighi and Venturelli 2014; Chronopoulos et al. 2015).

In the past, expected differences in the behaviour of the banks and in their ability to obtain profits were seen as correlated with their dimension and geographical scope (e.g. small vs. big banks, domestic vs. multinational players); more recently, the focus has been switched toward features linked to elements of governance and market relevance (e.g. cooperatives vs. savings vs. commercial banks, listed vs. unlisted intermediaries, systemic vs. non systemic players). Moreover, beside internal determinants of profitability (Bourke 1989; Demirguc-Kunt and Huizinga 1999; Goddard, Molyneux and Wilson 2004b; Pasiouras and Kosmidou 2007) has grown the importance of market characteristics from a competitive and macroeconomic point of view (Bourke 1989; Athanasoglou, Brissimis and Delis 2008; Demirguc-Kunt and Huizinga 1999; Molyneux and Thornton 1992; Demirguc-Kunt and Huizinga 2000; Beckmann 2007; Albertazzi and Gambacorta 2009; Genay and Podjasek 2014; Saeed 2014).

More recently, interest has been raised on peripheral and emerging economies (Flamini, McDonald and Schumacher 2009; Javaid et al. 2011; Olson and Zoubi 2011; Misra 2015) and on the effect of the crisis on bank profitability; however existing literature on this latter theme is still limited (Bolt et al. 2012; Beltratti and Stulz 2012; Kasselaki and Tagkalakis 2014).

This variety observed in literature is in line with the developing business model of the banks, which nowadays must compete in a challenging environment, much more segmented and complex than in the past. Moreover, the recent financial crisis has dramatically evidenced the risks underlying some competitive and operative strategies previously carried on by part of the banking system. For example, the fast expansion of credit and a high leverage had been seen in the past as good schemes to improve bank profitability; during the crisis, these same strategies has been widely considered (also by prudential regulation) as a potential dangerous source of instability. Furthermore, the starting point of the recent crisis has nearly coincided with the advent of significant changes in banking regulation (for example the rules introduced by Basel II in 2008). These latter innovations have the potential to permanently modify the way to perform the banking business, changing at the same time the fundamental drivers of banking profitability.

In this sense, our work, using bank-level data covering the period 2006-2013, aims to highlight which have been – and how they have

changed over time – the main determinants of bank profitability just before and during the crisis in 9 countries among the 'first-entrants' in the Euro area.

We contribute to literature in different ways. First of all, the time span under investigation allows us to better explore the effect of the crisis on bank profitability. Moreover, the geographical scope of our sample reduces the heterogeneity problems usually linked to cross country analysis; in effect, the legal and regulatory framework of the Euro Area is widely homogeneous and Basel II and Basel III provisions have strengthened this harmonization.

2.   *Data and methodology*

In order to explore the determinants of bank profitability before and during the crisis we use bank-level data derived from individual bank balance sheets and income statements, as available from BvD Bankscope database. We consider only commercial, cooperative and saving banks. For macroeconomic and competitive conditions we use data from World Bank, European Central Bank and Eurostat. Our data set covers the eleven 'first entrant' countries of Euro-area (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain); however two of them (Ireland and Netherlands) are not included in the final sample given the widespread presence of missing values in domestic banks

balance sheets. We investigate the period 2006-2013. There is wide evidence that the financial crisis started in late 2007; however, it is quite difficult to determine the exact starting point of the negative effect of the crisis on banks profitability. In effect, what really counts in modelling an econometric analysis is not the official beginning of the crisis, but the moment from which the bank balance sheets have been affected by the crisis itself. According to this statement, we split our sample in two different periods (Pre-crisis and Crisis) using the mean and median values of our banks profitability measures over time as a reference; data show that profitability measures mainly drop in 2009 balance sheets, so we consider this year the starting point of the crisis.

Table 1 lists and describes the variables used in this study and indicates the expected effect of them on bank profitability. Table 2 summarizes the descriptive statistics of these variables, highlighting the mean-median values before and during the crisis. Panel composition is outlined in Table 3.

Table 1: Variables definition

Variable	Description	Expected effect	Source
ROAA	Return on average assets		Bankscope
ROAE	Return on average equity		Bankscope
NIM	Net interest margin over average earning assets		Bankscope
Loans_TA	Net Loans over total assets	+/-	Bankscope
Loans growth	Loans growth	+	Bankscope
Loanimpch_Loans	Loan impairment charges to average gross loans	-	Bankscope
Total assets	Natural Logarithm of total assets	+/-	Bankscope
Eq_TA	Equity over total assets	+/-	Bankscope
Cost Income	Cost income ratio	-	Bankscope
Nonintinc_grev	Non-interest income over gross revenues	+/-	Bankscope
Cooperative	Dummy variable: 1 for cooperative banks	-	Bankscope
Saving	Dummy variable: 1 for saving banks	-	Bankscope
GDP growth rate	Annual real GDP growth	+	Eurostat
HICP	Harmonized index of consumer prices – Euro Area	+/-	Eurostat
HHI	Herfindahl Hirschman index for credit institutions Total Assets	+/-	European Central Bank
MktCap_GDP	Market capitalization over GDP – 1 lag	+/-	World Bank

Table 2: Descriptive statistics

PRE-CRISIS PERIOD						
Variable	Obs	Median	Mean	Std. Dev.	Min	Max
ROAA	375	0.542	0.566	0.553	-3.986	2.442
ROAE	375	7.948	8.406	13.201	-106.938	83.592
NIM	375	1.796	1.794	0.786	-1.072	4.934
Loans_TA	375	62.868	58.455	20.667	8.293	91.415
Loans growth	375	9.980	13.778	22.365	-30.670	180.460
Loanimpch_Loans	375	0.370	0.464	0.513	-1.120	3.540
Total assets	375	16.560	17.038	1.342	13.904	21.533
Eq_TA	375	6.421	6.816	3.148	0.377	16.830
Cost Income	375	62.874	64.064	18.092	18.343	198.394
Nonintinc_grev	375	36.980	38.106	41.073	-84.960	662.680
GDP growth rate	375	2.400	1.988	1.545	-1.000	8.400
HICP	375	2.200	2.430	0.741	1.300	4.500
HHI	375	0.068	0.060	0.047	0.018	0.316
MktCap_GDP	375	102.482	89.671	36.323	33.949	144.561

Table 2: Descriptive statistics (continued from previous page)

CRISIS PERIOD						
Variable	Obs	Median	Mean	Std. Dev.	Min	Max
ROAA	625	0.321	0.310	0.562	-5.882	3.116
ROAE	625	4.691	4.475	10.090	-84.757	73.447
NIM	625	1.547	1.579	0.590	-0.766	4.155
Loans_TA	625	63.705	59.072	20.401	8.521	93.155
Loans growth	625	2.840	3.314	10.617	-56.370	127.630
Loanimpch_Loans	625	0.370	0.527	0.758	-6.080	5.020
Total assets	625	16.745	17.231	1.290	14.496	21.354
Eq_TA	625	7.102	7.211	3.045	1.192	18.013
Cost Income	625	63.332	62.746	14.812	24.184	145.124
Nonintinc_grev	625	38.060	37.415	14.414	-30.250	208.560
GDP growth rate	625	0.400	-0.010	2.638	-8.300	5.700
HICP	625	1.700	1.640	0.953	-0.900	3.700
HHI	625	0.055	0.058	0.048	0.021	0.370
MktCap_GDP	625	42.067	43.145	14.225	13.476	86.540

Table 3: Sample composition

Bank type	N° of observations	N° of banks
Full Sample	1,000	125
Commercial	*416*	*52*
Saving	*248*	*31*
Cooperative	*336*	*42*

Country	N° of observations	N° of banks
Austria	32	4
Belgium	24	3
Germany	192	24
Spain	56	7
Finland	24	3
France	472	59
Italy	144	18
Luxemburg	32	4
Portugal	24	3
Total	**1,000**	**125**

We use the following random effect panel model to explore the determinants of bank profitability before and during the crisis:

$$\Pi_{it} = c + \sum_{j=1}^{J} \beta_j X_{it}^j + \sum_{m=1}^{M} \beta_m X_{it}^m + \sum_{d=1}^{D} \beta_d X_{it}^d + \varepsilon_{it}$$

(I)

where Π_{it} is the profitability of bank i at time t, c is the constant term and ε_{it} the disturbance term. Our explanatory variables are grouped into bank-specific (X_{it}^j) and macroeconomic ones (X_{it}^m); moreover, we include a set of dummies (X_{it}^d) that captures bank specialization (i.e. cooperatives and saving banks). Random effect specification has been preferred on fixed effect given the results of an Hausman test on the differences between the coefficients.

According to mainstream literature, we consider three dependent variables to explain bank profitability: ROAA, ROAE and NIM. ROAA (return on average assets) explains bank capacity to generate profits from the managed assets and it's widely considered the key ratio to evaluate bank profitability (Golin 2013). ROAE (return on average equity) reveals how much profit a company generates with the shareholders' capital. NIM (net interest margin over average earning assets) may be considered a proxy for the income generation capacity of the traditional banking business, i.e. lending and borrowing money.

The following bank-specific characteristics are used as internal determinants of performance:

- eq_ta: the ratio of Equity to Total Assets is a measure of capital strength. High ratios indicate a low level of leverage, and therefore low riskiness: consequently, on the basis of the conventional risk-return hypothesis, they are associated with lower expected profitability. However, as noted in Dietrich and Wanzenried (2014), lower levels of risk strengthen bank soundness and reduce funding costs, with a positive effect on its profitability. Given these opposite effects, the impact of bank's capitalization on profitability is not theoretically determinate.

- cost income: calculated as ratio between operating costs (which include administrative costs, staff expenses, and property costs) and gross revenues, this indicator is a measure of efficiency: a lower level of this ratio has an expected positive effect on bank profitability (among others, Molyneux and Thorton 1992; Goddard et al. 2013; Dietrich and Wanzenried 2014).

- loans_ta: the ratio Net Loans to Total Assets measures the weight of loans (net of reserves) on total assets. It shows bank's traditional approach towards lending activities and, indirectly, it's experience/specialization in granting credit to customers, leading to a deeper consciousness in credit risk

evaluation. In this sense, we expect a positive effect of this variable on profitability (in line with Goddard et al. 2013; Abreu-Mendes 2001; Demirguc-Kunt and Huizinga 2000).

- loans growth: this variable indicates the growth rate of gross loans between the previous and the current year. Being a way to expand business opportunities, loans growth - where not 'abnormal' (Foos, Norden and Weber 2010) - may promote bank profitability (Kok, Moré and Pancaro 2015); hence we expect positive sign for the coefficient associated to this variable.

- nonintinc_grev: the ratio Non-Interest Income to Gross revenues is a measure that allows us to identify the level of income diversification of a bank. The higher the ratio, the most important are activities different from traditional lending and borrowing. This kind of business diversification has two opposite effects on profitability. On the one hand, it can promote a reduction in profit volatility, due to a 'portfolio effect'; on the other hand, it may distract the bank from its core business. In literature are found very different diversification measures and the impact of them on profitability is mainly empirically determined (Kok, Moré and Pancaro 2015).

- total assets: in order to prevent heteroskedasticity problems, we use the natural logarithm of bank assets to control for

bank size. An increase in the bank dimension brings two opposite effects: on the one hand the opportunity to exploit scale and scope economies and on the other hand the costs associated with bureaucracy and complexity. Hence, the expected sign is undetermined.

- Loanimpch_loans: Loan impairment charges to average gross loans are part of the overall cost of lending activity; in this sense they have a negative impact on bank profitability (Chronopoulos et al. 2015) as measured by ROAA and ROAE. This is not likely to occur for NIM, that can instead benefit from a riskier portfolio.

Our model controls for bank specialization through three dummies that identify commercial (Commercial), cooperatives (Cooperative) and savings banks (Saving); this allows us to focus on the impact of a mutualistic nature on profitability before and during the crisis. Cooperatives and saving banks usually provide credit lines to small and medium enterprises and therefore are considered more close to the local economy (Goddard et al. 2013; Goddard, Molyneux and Wilson 2004a); we expect that this commitment can lower bank profitability, due to the difficulty to enforce 'flight to quality' strategies.

Our set of external indicators includes different coincident and lagged country-specific variables that are likely to influence the bank

profitability; undoubtedly, the strength of competition in the banking sector, the soundness of the surrounding economic environment and other external factor impact on the costs and revenues of a bank, on the quality of its assets and hence on its financial stability.

To capture the fluctuations of the economic cycle we use the real GDP growth for each country under investigation. Previous studies have found a positive relation between this variable and the profitability of the banking sector (Goddard et al. 2011; Kanas, Vasiliou and Eriotis 2012; Albertazzi and Gambacorta 2009; Athanasoglou, Delis and Staikouras 2006; Beckmann 2007); improved market conditions are associated with a better quality of the loans portfolio and with an increase of net interest margin. The growth of credit demand raises interest rates, while liquidity abundance on the market reduces funding costs for banks; naturally, the worsening of economic conditions brings to an opposite result, compressing the banks' profit margins.

The choice to select countries that are part of the Euro Area allows us to have a homogeneous environment with regard to monetary policy; nevertheless, there are still differences in the level of inflation and interest rates. To deal with this source of heterogeneity we use the national HICP index observed in each country; inflation influences different items in the bank balance sheets, like assets value, funding costs and interest rates on loans. However, in existing literature there is no clear evidence about the final effect of inflation on bank

profitability (Beltratti and Stulz 2012; Demirguc-Kunt and Huizinga 2000; Trujillo-Ponce 2013; Pasiouras and Kosmidu 2007); the expected sign of the coefficient in our regressions is therefore indeterminate.

The traditional theories about the effect of competition on firm profitability have been applied to the banking sector leading to different approaches. Among them we find the Structure - Conduct - Performance hypotheses, the Efficient - Structure hypotheses, the Expense Preference hypotheses, the Galbraith - Caves Risk-avoidance hypotheses (for a review of literature about these topics see Rasiah 2010). Usually a higher degree of market concentration is associated with the opportunity of extracting oligopolistic rents through collusive behaviours. However, a concentrated banking market can be the result of a fierce competition between intermediaries: this could lead to compress their profit margins, for example in the traditional activity of borrowing and lending, reducing bank profitability. As a result, the expected effect of concentration on profitability is uncertain. It's worth observing that is difficult to find an uncontroversial measure of market concentration; previous studies have used a wide set of indicators (i.e. the market share of the first 3-5 players, the Lerner Index, etc.). In our paper we use the Herfindahl Hirschman Index (HHI) of total assets for each country, which is the measure of market concentration used by European Central Bank.

In addition, we try to control for the 'competition' between banks and financial markets. To do this, we use a measure of relative importance of capital markets for the economy of a country, built as the ratio of market capitalization over GDP (mktcap_GDP). Where financial markets are underdeveloped, there is room for the banking system to exploit its bargaining power towards the customers, for example in credit supply: in this sense, poor financial markets fail in counterbalancing a concentrated banking market. On the contrary, efficient markets can compete with the banking sector in providing financial resources to borrowers and opportunities to investors. At the same time, banks could expand their business lines toward financial consulting and trading services, raising their non-interest incomes; as a result, the expected effect of financial market development over bank profits is undetermined. Since a relevant share of market capitalization is attributable to large listed banks, we prevent endogeneity problems using a lagged version of this variable.

3.   Results

Estimation results are presented in Table 4.

Table 4: Regression results

	ROAE		ROAA		NIM	
	Pre-crisis (1)	Crisis (2)	Pre-crisis (3)	Crisis (4)	Pre-crisis (5)	Crisis (6)
total assets	-0.003	0.012	-0.687	0.377	-0.139***	-0.118***
	(0.023)	*(0.032)*	*(0.777)*	*(0.670)*	*(0.050)*	*(0.042)*
eq_ta	0.055***	0.034***	-0.566	-0.223	0.061***	0.048***
	(0.011)	*(0.009)*	*(0.448)*	*(0.194)*	*(0.018)*	*(0.009)*
loans_ta	-0.001	0.003	0.026	0.074	0.014***	0.005***
	(0.002)	*(0.002)*	*(0.051)*	*(0.047)*	*(0.003)*	*(0.002)*
loans growth	0.003	0.002	0.089***	0.012	0.003***	0.003**
	(0.001)	*(0.002)*	*(0.032)*	*(0.039)*	*(0.001)*	*(0.001)*
loanimpch_avgloan	-0.195**	-0.229***	-6.011**	-4.091***	0.184***	0.051***
	(0.087)	*(0.088)*	*(2.446)*	*(1.136)*	*(0.050)*	*(0.016)*
cost income	-0.015***	-0.021***	-0.269***	-0.408***	-0.002	-0.006***
	(0.004)	*(0.003)*	*(0.095)*	*(0.067)*	*(0.002)*	*(0.001)*
nonintinc_grev	-0.002***	0.000	-0.046***	-0.002	-0.002**	-0.014***
	(0.000)	*(0.001)*	*(0.014)*	*(0.022)*	*(0.001)*	*(0.003)*
cooperative	-0.228**	-0.233***	-4.565*	-5.803***	-0.364**	-0.288**
	(0.113)	*(0.087)*	*(2.298)*	*(1.667)*	*(0.169)*	*(0.118)*
saving	-0.231**	-0.243***	-4.919**	-4.710***	-0.156	-0.212*
	(0.101)	*(0.077)*	*(2.367)*	*(1.424)*	*(0.151)*	*(0.118)*
GDP growth rate	-0.086***	0.072***	-2.163**	1.360***	-0.042	0.018*
	(0.029)	*(0.025)*	*(0.859)*	*(0.384)*	*(0.035)*	*(0.010)*
hicp	-0.083	0.159*	-2.427	2.325*	0.007	0.034
	(0.105)	*(0.083)*	*(2.809)*	*(1.205)*	*(0.031)*	*(0.028)*
hhi	2.358	-4.819***	116.671	-73.098**	5.211***	-2.340**
	(4.163)	*(1.623)*	*(115.035)*	*(30.622)*	*(1.715)*	*(1.074)*
mktcap_gdp	0.007**	-0.004	0.118	-0.097***	-0.004	-0.000
	(0.003)	*(0.002)*	*(0.095)*	*(0.036)*	*(0.003)*	*(0.001)*
Constant	0.391	1.518**	24.716*	27.199*	0.131	3.906***
	(0.611)	*(0.689)*	*(13.770)*	*(15.237)*	*(0.321)*	*(0.816)*
Wald test on time dummies	14.65***	9.05*	23.38***	12.18**	11.76***	22.00***
	(0.00)	(0.06)	(0.00)	(0.02)	(0.00)	(0.00)
Wald test on country dummies	8.67	19.82**	5.90	17.37**	37.33***	36.74***
	(0.37)	(0.01)	(0.66)	(0.03)	(0.00)	(0.00)
R-squared overall	0.57	0.55	0.32	0.50	0.65	0.62
Banks	125		125		125	
Observations	375	625	375	625	375	625

The recent crisis has emphasised the importance of credit dynamics for the soundness of the banking system; this both from a quantitative and qualitative point of view. In line with this observation, we use three measures, to highlight the importance of lending (net loans to total assets and loans growth) and the quality of credit portfolio (Loan impairment charges to average gross loans) for the banks included in our sample. The share of loans over total assets has a positive and significant coefficient in NIM regression, but not in ROAE and ROAA estimations; bank specialization in the traditional lending activity seems to have a positive and stable effect on the net interest margin.

Loans growth has a positive and significant sign over all our pre-crisis regressions; in that period the attitude to increase credit was considered a good health indicator of a bank and one of the most crucial driver to boost profitability. However, recent studies (Foos et al., 2010) have demonstrated that an abnormal credit growth can generate more loan loss provisions (LLPs) and a reduction of the overall bank profitability; this is what happened across the crisis period.

The worsening quality of the outstanding credit portfolio, as measured by loan impairment charges to average gross loans, reduces ROAA and ROAE - that are more sensitive to LLPs - but not NIM that doesn't take into account this item. NIM may rather be

increased from a riskier outstanding credit portfolio; however this effect should be negative from a risk-adjusted point of view.

Table 4 reports a negative and significant coefficient on total assets in NIM estimations; larger banks have experimented a lower profitability in the period under examination. This should be explained by different point of views. On the one hand, immediately after the beginning of the financial crisis, the blackout of the interbank market has penalized much more the borrowers than the lenders (usually represented by institutions with a high ability to collect money on the market, i.e. small local banks). On the other hand, smaller banks typically present a wider interest rate spread between borrowing and lending.

Equity over total assets has positive and significant coefficient in NIM and ROAA regressions; it has negative but not significant coefficients in ROAE table. Banks with a lower leverage are perceived as more stable by the market and can pay lower risk premium; this has a positive effect on NIM and net income. The results obtained in ROAE regressions can be explained considering that in this profitability measure the equity represents the denominator; a higher level of equity, *coeteris paribus*, reduces the expected level of ROAE.

Cost Income ratio, as expected, presents steadily negative and significant sign. Banks effort to improve their efficiency has granted a higher level of profitability before and during the crisis.

We find a negative and significant coefficient on non-interest income over gross revenues in NIM estimation; we find mixed results in ROAA and ROAE regressions. As expected, lower levels of specialization in traditional banking activity reduce the NIM of the banks included in our sample. ROAA and ROAE regressions show negative and significant coefficients during the pre-crisis period and positive and not significant coefficient during the crisis. These results are coherent with a two-tier period; the first in which the leading strategy to boost profitability was expanding the lending portfolio and the second – i.e. during the crisis – that required the banks to find alternative sources of profit.

Table 4 reports negative and significant coefficients on our two specialization dummies (cooperatives and saving banks) in almost all the regressions. The results are consistent with the typical attitude of these types of banks, which favour long lasting relationship instead of short-term profitability; the wide time span of the crisis and the frequent small and medium enterprises bankruptcy have exacerbated these results.

With regard to macroeconomic conditions, we find significant and positive coefficients on GDP growth during the crisis, while negative and significant before. This latter result appears trickier to explain. Probably, during the pre-crisis period the delayed recognition of the worsening of macroeconomic conditions in banks balance sheets

(through a higher level of LLPs) has led to spread out the path of banking profitability and economic growth.

Tables report positive and weakly significant coefficients on HICP in ROAA and ROAE regressions for the crisis period; however it must be noted that during the time span under investigation, HICP has experienced a high volatility, even reaching negative values.

HHI has negative – where significant – coefficient in ROAA and ROAE regressions. Estimation results appear coherent with a market framework in which concentration leads to tougher competition between banks, reducing profitability; this is true particularly in troubled periods, when rivalries are fiercer. For NIM we find a positive and significant coefficient in the pre-crisis period, while negative and significant during the crisis; this mixed result seems to suggest that the extraction of oligopolistic rents in likely to occur only during economic upturns, while during a crisis period the 'life-and-death struggle' severely erodes the margins.

Finally, coefficients associated to market capitalization over GDP are positive before the crisis and negative in the following period in ROAA and ROAE regression, while negative and not significant in NIM table. A high development of financial markets can be used by the banking system to increase profitability. However, during economic downturns, the perceived riskiness of the banking business rises; in this context, financial markets may become a potential

competitor of banks, offering a wide set of alternative financial opportunities to investors.

4.   Conclusions

The new regulatory framework introduced by Basel III has strengthened the importance of bank profitability; this both to promote self-financing and to ease capital increases. In effect, the success of these strategies relies on banks ability to generate profits to retain a major part of them or attract new investors. In this sense, European Central Bank (2015) issued a recommendation to banks 'to base their dividend policies on conservative and prudent assumptions to cover their current capital requirements and prepare to meet more demanding capital standards'. This statement has a very crucial implication for countries strongly relying on the banking sector; in fact, any lack of regulatory capital implies the need for reducing the amount or riskiness of credit granted to customers.

In recent years, lending policies have been taken to the forefront of academic and political debate, due to the primary role that credit expansion has played in the crisis. Our results confirm that rigorous behaviours in granting credit to borrowers improve bank profitability. A greater level of net loans over total assets seems to improve profitability with a positive effect on NIM, but not necessarily on ROAA and ROAE (which takes directly into account

LLPs). Moreover, we find that loans growth can improve bank profits; coherently with Foos Norden and Weber (2010), this growth must be conscious and wisely based on a risk-return approach to mitigate potential adverse effect over LLPs.

As expected, lower cost-income ratios have a positive effect on profitability. Moreover, results indicate that banks profits are associated with higher capital resources (i.e. low leverage); this outcome explains the concerns of the authorities about the regulatory capital adequacy of the banking system. On the contrary, dimension per-se (as measured by total assets), doesn't show a significant impact on bank profitability in the period under investigation; a more crucial role is played by bank specialisation.

Saving e Cooperative banks are in fact associated to lower profitability levels in our dataset; being strongly close to the territory makes banks more sensitive to local shocks. Their endogenous mutualistic nature emphasises the commitment to the local environment, leading these banks to act as a social security cushion, especially during harsh times. Moreover, the reduced importance of soft information in the process of credit evaluation introduced by Basel II (and confirmed by Basel III) may permanently mitigate the historical advantages of a relationship banking approach, which has always been the 'ace in the hole' of these types of banks.

We find a discontinuity between different profitability measures, which often have been used in literature to provide reciprocal

robustness checks to regressions: in effect, NIM shows results that are sometimes really different from ROAA and ROAE. This fact may raise concerns about the impact of non-recurring elements in banks income statements on traditional profitability measures and hence may open a debate about the best key performance indicator. In this line, European Central Bank (2010) stated that 'a consistent framework for measuring banks' performance may incorporate more insider data than those used for ROE, but may also provide a good equilibrium between providing a reasonable level of insider information (namely as regards business strategy and risks associated with each business line) and relatively simple and comparable indicators'.

We need to bear in mind that beside the traditional dynamics related to competition and the costs linked to the compliance to the new regulatory frameworks, also the 'long wave' of non-performing loans and LLPs deriving from the recent economic downturn are likely to affect bank profitability still in the future. Improving efficiency and finding a sound competitive positioning will be fundamental to deal with these problems, maintaining a sufficient profitability to meet capital requirements and be attractive on capital markets.

References

Abreu M., V. Mendes (2001), Commercial bank interest margins and profitability: evidence for Some EU Countries, paper presented at the Proceedings of the Pan-European Conference Jointly organized by the IEFS-UK & University of Macedonia Economic and Social Sciences, Thessaloniki, Greece, May 17-20.

Albertazzi U., L. Gambacorta (2009), Bank profitability and the business cycle, *Journal of Financial Stability, 5*, 393-409.

Alexious C., V. Sofoklis (2009), Determinants of Bank Profitability: Evidence from the Greek Banking Sector, *Economic Annals, vol. LIV (182),* 93-118.

Alper D., A. Anbar (2011), Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey, *Business and Economic Research Journal*, 2 (2), 139-152.

Athanasoglou P., S.N. Brissimis, M. Delis (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability, *Journal of International Financial Markets, Institutions and Money*, *18*, 121-136.

Athanasoglou P., M. Delis, C. Staikouras (2006). Determinants of Bank Profitability in the South Eastern European Region, MPRA Paper No.10274 online at http://mpra.ub.uni-munchen.de/10274/.

Beckmann R. (2007). Profitability of Western European banking systems: panel evidence on structural and cyclical determinants,

Deutsche Bundesbank Discussion Paper, Series 2: Banking and Financial Studies No.17/2007.

Beltratti A., R.M. Stulz (2012), The credit crisis around the globe: Why did some banks perform better?, *Journal of Financial Economics*, 105 (1), 1-17.

Bolt W., L. de Haan, M. Hoeberichts, M.R.C. van Oordt, J. Swank (2012). Bank profitability during recession, *Journal of Banking and Finance, 36*, 2552-2564.

Brighi P., V. Venturelli (2014), How do income diversification, firm size and capital ratio affect performance? Evidence from bank holding companies, *Applied Financial Economics, 24*, 1375-1392.

Bourke P. (1989), Concentration and other determinants of bank profitability in Europe, North America and Australia, *Journal of Banking and Finance*,13 (1), 65-79.

Chronopoulos D.K., H. Liu, F.J. McMillan, J.O.S. Wilson (2015), The dynamics of US bank profitability, *The European Journal of Finance*, vol.21, No.5, 426-443.

Demirguc-Kunt A., H. Huizinga (1999), Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence, *The World Bank Economic Review*, *13 (2),* 379-408.

Demirguc-Kunt A., H. Huizinga (2000), Financial Structure and Bank Profitability, World Bank Policy Research Working Paper no.2430, august.

Dietrich A., G. Wanzenried (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland, *Journal of International Financial Markets, Institutions & Money*, *21*, 307-327.

Dietrich A., G. Wanzenried (2014). The determinants of commercial banking profitability in low-,middle, and high-income countries. *The Quarterly Review of Economics and Finance*, *54*, 337-354.

Elkelish W.W., J. Tucker (2015) Property Rights Institutions and Bank Performance Across Countries, *Managerial Finance*, *41*, 80-101.

European Central Bank (2010), Beyond ROE – How to measure bank performance. Appendix to the Report on EU Banking Structures, September.

European Central Bank (2015), Recommendation on dividend distribution policies, January.

Flamini V., C. McDonald, I. Schumacher (2009), The determinants of commercial bank profitability in Sub-Saharan Africa, IMF Working Paper No. 09/15.

Foos D., L. Norden, M. Weber (2010), Loan growth and riskiness of banks, *Journal of Banking and Finance, 34*, 2929-2940.

Genay H., R. Podjasek (2014), What is the impact of a low interest rate environment on bank profitability?, Chicago Fed Letter, The Federal Reserve Bank of Chicago, n. 324, July.

Goddard J., P. Molyneux, J.O.S. Wilson (2004a), The profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis, The Manchester School, vol. 72 (3), 363-381.

Goddard J., P. Molyneux, J.O.S. Wilson (2004b), Dynamics of Growth and Profitability in Banking, *Journal of Money, Credit and Banking, 36 (6)*, 1069-1090.

Goddard J., H. Liu, P. Molyneux, J.O.S. Wilson (2011), The persistence of bank profit, *Journal of Banking and Finance, 35*, 2881-2890.

Goddard J., H. Liu, P. Molyneux, J.O.S. Wilson (2013), Do Bank Profits Converge?, European Financial Management, vol. 19, No. 2, 345-365.

Golin J. (2013), The Bank Credit Analysis Handbook: A Guide for Analyst, Bankers and Investors, John Wiley & Sons.

Haldane A.G. (2009), Small lessons from a Big Crisis, speech given at the Federal Reserve Bank of Chicago 45th Annual Conference, 8 May.

Javaid S., J. Anwar, K. Zaman, A. Gafoor (2011), Determinants of bank profitability in Pakistan: Internal factor analysis, *Mediterranean Journal of Social Sciences*, 2 (19), 59-78.

Kanas A., D. Vasiliou, N. Eriotis (2012), Revisiting bank profitability: A semi-parametric approach, Journal of International Financial Markets, Institutions & Money, 22, 990-1005.

Kasselaki M.T., A.O. Tagkalakis (2014), Financial soundness indicators and financial crisis episodes, Annals of Finance, vol. 10, issue 4, 623-669.

Kok C., C. Moré, C. Pancaro (2015), Bank profitability challenges in euro area banks: the role of cyclical and structural factors, *Financial Stability Review*, May, 134-145.

Lusignani G., M. Onado (2014). A long-term approach to Italian banks' profitability. Paradise lost?, *The Journal of Financial Perspectives*, 2, 1-26.

Misra S.D. (2015), Determinants of bank profitability in India, The International Journal of Indian Culture and Business Management, vol. 10 (2), 193-211.

Molyneux P., J. Thornton (1992). Determinants of European bank profitability: A note, *Journal of Banking and Finance, 16*, 1173-1178

Olson D., T. Zoubi (2011) Efficiency and bank profitability in MENA countries, *Emerging Market Review*, 12, 94-110.

Pasiouras F., K. Kosmidou (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union, *Research in International Business and Finance, 21*, 222-237.

Rasiah D. (2010), Review of Literature and Theories on Determinants of Commercial Bank Profitability, Journal of Performance Management, vol. 23 (1), 23-49.

Saeed M.S. (2014). Bank-related, Industry-related and Macroeconomic Factors Affecting Bank Profitability: A Case of the United Kingdom, *Research Journal of Finance and Accounting*, 5, 42-50.

Short B. (1979), The relation between commercial bank profit and banking concentration in Canada, Western Europe and Japan, *Journal of Banking and Finance* 3 (3), 209-219.

Trujillo-Ponce A. (2013). What determines the profitability of banks? Evidence from Spain, *Accounting and Finance*, 53, 561-586.

Weigand R.A., (2015), A Tale of Two Banking Systems: The Performance of U.S. and European Banks in the 21st Century, *Investment Management and Financial Innovations, 11 (1)*, 8-24.