EFFICIENCY IN ITALIAN SAVING BANKS: IS UNITY THE STRENGTH?

Alfiero, Simona[1]; Elba, Filippo[2]; Esposito, Alfredo[1]; Resce, Giuliano[3]

[1]Dept. of Management, University of Turin, Turin, Italy

[2]Dept. of Science for Economics and Business, University of Florence, Florence, Italy

[3]Dept. of Economics, university of Roma 3, Rome, Italy

ABSTRACT

This study investigates the Italian SBs sector efficiency over the 2010 –2015 period. The measure of efficiency, in the first stage, is estimated via Data Envelopment Analysis – Slack Based Model. In the second stage we compare the performance of SBs belonging to bank groups with those stand-alone via Policy Evaluation. Results show that when comparing SBs belonging to a banks group with stand-alone SBs, although a positive but not significant ATT, we find no relevant differences between the SBs part of group and the stand-alone. However, with reference to Technical Efficiency the stand-alone SBs experience the worst performance while after an insight into the inefficiency decomposition it is clear that difficulties are due to managerial inefficiency.

Keywords: Saving Banks, Efficiency, Data Envelopment Analysis, Policy Evaluation, Average Treatment Effect on the Treated, Performance, Group, Stand-alone

INTRODUCTION

The banking sector is continuing to play a crucial role in countries economies and Saving Banks (SBs), part of it, are fundamental in economic developments (Gardener et al., 1997; Iannuzzo et al., 2010). The competitive pressures led to the restructuring of Italian SBs . The government set the sectorial reform by issuing the Amato Law no. 218 of 30 July 1990 in order to reorganize the sectors legal framework leading to the transformation of public banks into JSCs.

Researchers have investigated the influence of firm ownership structure affecting performance (e.g. Jensen and Meckling 1976, Fama and Jensen 1983). Due to it being commercially competitive, Köhler (1996) pointed out the the relevance of the SBs efficiency evaluation stating that they would require an efficient management and sound earning capacity and be subject to those same competitive forces within the EU banking system.

In Italy, we know that SBs had a congruous influence on local territories. With respect to the present framework, the aim of our study seeks to investigate whether, and to what extent, belonging to a banking group improves performance in terms of efficiency.

Our study, addresses this fundamental research question: is there a relative efficiency recent trend that led the transformation of the Italian SBs and allows for its shifting from a territorial proximity to a territorial branding and finally to a partial sectorial demise?

In Section 2 we trace a theoretical background and a brief note on the Italian SBs sector while Section 3 focuses on data specifications and methodology. Section 4 focuses on the SBs efficiency results of SBs belonging to Groups versus those Stand-alone. Section 5 highlights conclusions and remarks. To the best of our knowledge, this is the only study of its kind.

THEORETICAL BACKGROUND AND A BRIEF NOTE ON THE ITALIAN SBS SECTOR

Studies on the Italian banking sector efficiency are few examples are those conducted by Favero-Papi (1995) and Resti *et al.* (2015) about the determinants as scale inefficiencies and regional disparities while there is one on Italian cooperative banks as per Barra *et al.* (2013). Casu and Girardone (2002) compared results obtained in different countries focusing on commercial banks. Since the work of Sherman and Gold (1985), considered the first on the banking industry, scholars refer to the DEA technique as a useful tool to measure the relative efficiency of banks as in Berger and Humphrey (1997), Fethi and Pasiouras (2010) and Tsolas (2011). Berger and DeYoung (1997) and Williams and Gardener (2003) shows that a low levels of efficiency lead to lack of credit monitoring and inefficient control of operating expenses. The main reason for the use of the DEA technique is the smallest number of observation requirement**s** and because it takes into account multiple inputs and outputs simultaneously, compared to ratios where one input relates to one output at each time as per Thanassoulis (1993). Italian SBs started operating in the nineteenth century as institutions in which the credit and social aspects were intertwined, rooted in social and economic goals. However, at the end of the twentieth century due to sectoral regulatory developments they turn into full joint stock companies operating under complete commercial principle taking into consideration both stakeholder values and shareholder value. In order to add some useful information to the actual banking framework, the Bank of Italy's annual report states that *"At the end of 2015 Italy had 139 banks belonging to 75 banking groups, 424 standalone banks, and 80 branches of foreign banks. Last year the number of banks decreased by 20: there were 16 new licences and 36 terminations, of which 26 were due to bank consolidation, 8 to liquidation and 2 to voluntary termination of the banking licence"* and that *"In November 2015 a solution was found to the crisis of four banks under special administration, holding around 1 per cent of system-wide deposits. The solution was based on the new rules introduced in the Italian legal system in transposing Directive 2014/59/EU on the recovery and resolution of credit institutions and investment firms (BRRD)"* Banca di Italia, (2015).

According to the Bank of Italy's information, the Italian Government after some financial scandals issued the Law Decree on the 22 November 2015, n. 183 (a.k.a. *"decreto salva banche"*, 2015) choosing to terminate four banks while setting up four new substitute entities.

DATA SPECIFICATIONS AND METHODOLOGY

The analysis covers the 2010 - 2015 period and the data source is Bankscope (2015).

DATASET SAMPLE	2015	2014	2013	2012	2011	2010
TOTAL SBs	23	29	34	37	40	38
GROUP	11	16	20	22	25	23
NO GROUP	12	13	14	15	15	15

Table 1. *The SBs sample dataset for the 2010 - 2015 period.*

In order to measure banking efficiency there are two main approaches: the intermediation approach of Sealey and Lindley (1977), which considers the bank as intermediators by transforming the production factors into outputs and the production approach. In the first part of the analysis, we evaluate the efficiency of SBs as per the Slacks based Model of Tone (2001) while in the second part we compare the performances of the SBs part of a bank group with the performances of those SBs via policy evaluation tools. Table 2 provides the variables descriptive statistics.

Variables	Type	Min	Median (A)	Max	Mean (B)	Dev. st.	A/B*
Impaired Loans		29	248	4.858	690	979	0,36
Total Assets	Input	584	2.926	50.587	6.492	10.029	0,45
Total Expenses		15	69	1.218	138	209	0,50
Loans		428	2.185	36.029	4.662	6.991	0,47
Pre-tax Profit	Output	-2.169	7	401	0	179	68,26
Total Customer Deposits		274	1.491	27.283	3.033	4.512	0,49

*discounted values at 2010 prices

Table 2. *The whole period 2010 - 2015 dataset descriptive statistics. Data in Mln. of € – Source: Bankscope - Bureau Van Dijk (2016).*

Total assets, operating expenses and impaired loans are inputs variables. With reference to the outputs side we chose the total loans, customer deposits (considered by many as an input and by other**s** as an output) and pre-tax profits. The main reason for the use of Efficiency Frontier Techniques like DEA, a non-parametric technique, lies in the fact that frontier approaches appears to be superior to standard financial ratios analysis (Iqbal and Molyneux, 2005) as, also, per the Basel Committee report (2006) which stated that the frontier efficiency measures provides a better comprehension over traditional ratios, especially on corporate governance issues. We refer to DEA as per Charnes *et al.* (1978) and Banker *et al.* (1984) in a SBM as per the Tone (2001) version with *t* multiplying all the variables.

The linear program is the following:

$$\min_{t,\lambda,S,Z} \tau = t - P_c Z$$
$$t + P_y S = 1$$
$$x_0 = X\lambda + Z$$
$$y_0 = Y\lambda - S$$
$$\lambda \geq 0, S \geq 0, z \geq 0$$

(1)

where the vector of actual inputs is under evaluation, the costs matrix of banks sample, is the vector for inputs excesses, is the vector of firms outputs under evaluation, is the matrix with the outputs of all the firms sample, is the vector with the output slacks, is the vector of intensity and and are the vectors that contains weights. Uncovering the effects of being part of a group on efficiency is arduous because of the merge of a bank does not happens randomly. In order to evaluate this kind of influence, we perform an impact evaluation considering SBs part of a group as the *"treatment"* variable. Our check relies on a set of banking sector ratios measures such as, Impaired Loans to Gross Loans Resti *et al.* (2015), Loans to Customer Deposits (Williams and Gardener, 2003) and Altunbaş and Marqués (2008), and Interest Income on Loans to Average Gross Loans (Foos *et al.*, 2010). Moreover, we add the Cost to Income Ratio (Beccalli *et al.*, 2006), Hess and Francis (2004) and Mathuva (2009) and the Tier 1 Regulatory Capital as per Merle (2013) and Beltratti and Stulz (2009). To address self-selection bias (heterogeneity in treatment propensity that relates to the variables of outcomes), we refer to the PS Matching as per Rosenbaum and Rubin (1983):

$$P(X) = \Pr(D = 1|X) = E(D|X)$$

(2)

where is the PS: the conditional probability of receiving the treatment that in our case is being part of group) given certain characteristics.

ITALIAN SBS EFFICIENCY RESULTS AND GROUP VERSUS STAND-ALONE

The figures 1.1 and 1.2 highlights, respectively, the combined relative efficiency level over the 2010 – 2015 period under CRS, VRS and the SE efficiency (adopting nominal values) and the combined and aggregate level of those SBs belonging to a Group or Stand-alone.

SBs combined DEA CRS, VRS and SE efficiency (nominal values) (1.1)

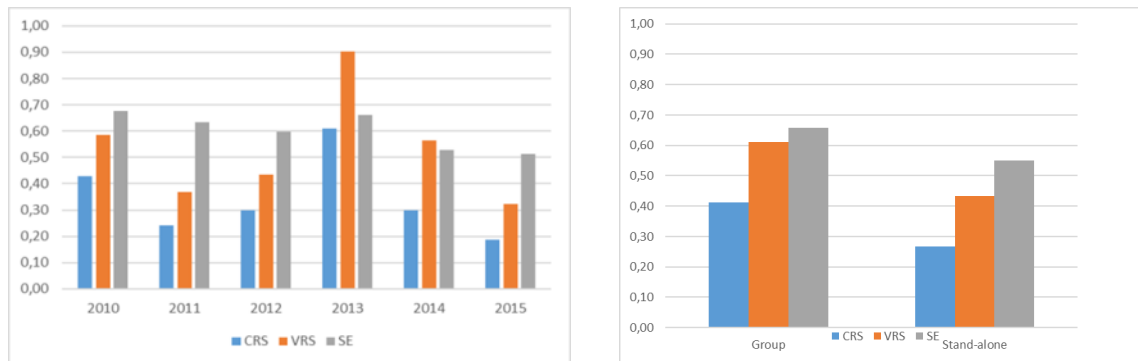**SBs combined DEA efficiency of Group – Stand Alone (discounted values) (1.2)**

Figure 1. *The Efficiency of Italian SBs over the 2010 - 2015 period on the base of two different perspectives.*

The following figures 2.1 and 2.2 highlight, respectively, the combined level of the relative efficiency over the 2010 – 2015 period under CRS, VRS and the SE efficiency (adopting nominal values) and the combined and aggregate level of those SBs belonging to a Group or Stand-alone.

SBs CRS Group vs. Stand-alone (2.1)
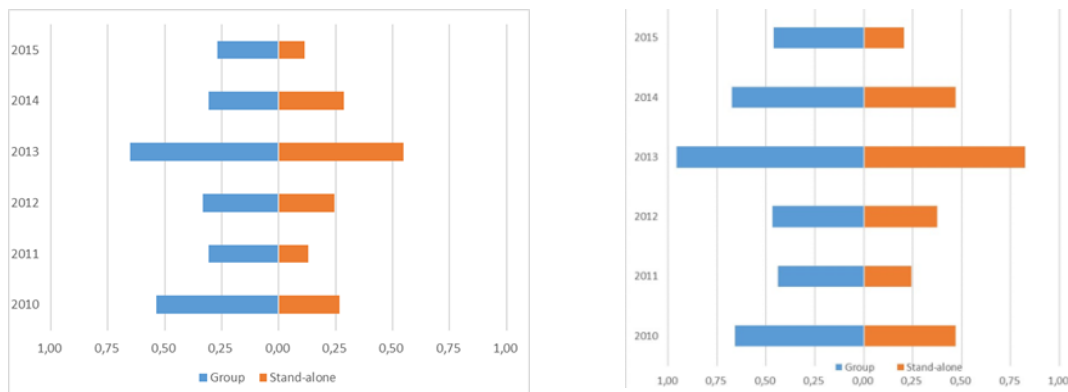
SBs VRS Group vs. Stand-alone (2.2)

Figure 2. *The efficiency of Italian SBs over the 2010 – 2015 period, belonging or not to a bank group, on Constant Return to Scale (2.1.) and Variable Return to Scale (2.2) on the base of discounted values.*

Yet we face the first self-selection problem: is the performance difference due to the Groups policies or to the self stand-alone performance? A merger or a takeover is never a casualty. Hence, we choose to compare the last performances by controlling a set of variables using the PS Matching approach. Having estimated the PS and following the Becker-Ichino (2002) algorithm, we detect the ATT, where the treatment is to be part of a group.

Methodology	CRS (Technical Efficiency)				VRS (Managerial Efficiency)			
	ATT	Std. Err.	95% Conf. Interval		ATT	Std. Err.	95% Conf. Interval	
Stratification	0,178	0,086	0,003	0,374	0,231	0,124	-0,049	0,421
Nearest neighbour	0,200	0,078	-0,123	0,319	0,238	0,126	-0,059	0,420
Radius	0,118	0,057	0,006	0,228	0,155	0,062	0,041	0,300
Kernel	0,171	0,077	0,022	0,299	0,222	0,115	-0,012	0,398

Table 4. *The ATT Results, Non-treated (0 – Stand Alone) vs Treated (1 - Group). Confidence intervals are bias-corrected; bold values are statistically significant (95%).*

As table 4 shows, although the ATT is slightly positive but not particularly significant revealing that the economic side controls shows no significant differences between the 20 SBs part of a bank group and the 16 stand-alone.

CONCLUSIONS

Our study shows the level of relative efficiency of the combined Italian SBs over the 2010 – 2015 period. In comparison to their belonging to a group or not we observe no significant differences. In addition, via policy evaluation tools, we find no relevant dichotomies among SBs belonging to groups with those not part of it.

REFERENCES

Altunbaş, Y, Marqués, D., (2008), Mergers and acquisitions and bank performance in Europe: The role of strategic similarities. Journal of Economics and Business, 60(3), pp. 204–222.

Banca di Italia (2015): https://www.bancaditalia.it/pubblicazioni/relazione-annuale/2015/en_rel_2015.pdf?language_id=1.

Banker, R., Charnes, A., Cooper, W., (1984), Some models for estimating technical and scale inefficiencies in Data Envelopment Analysis, Management science, 30, pp. 1078–1092.

Barra, C., Destefanis, S., Lubrano Lavadera, G., (2013), Regulation and the crisis: the efficiency of Italian cooperative banks, Centre for studies in economics and finance, working paper n. 38.

Basel Committee on Banking Supervision, (2006), Enhancing corporate governance for banking organisations. February, available at http://www.bis.org/publ/bcbs122.pdf

Beccalli, E., Casu, B., Girardone, C., (2006), Efficiency and stock performance in European banking. Journal of Business Finance & Accounting, 33.1-2, pp. 245–262.

Becker, S.O., Ichino, A., (2002), Estimation of average treatment effects based on propensity score. The Stata Journal vol., 2,4, pp. 358–377.

Beltratti, A, Stulz, R., (2009), Why did some banks perform better during the credit crisis? A cross-country study of the impact of governance and regulation. Charles A. Dice Cent. Work. Pap. 2009-12

Berger, A.N., De Young, R., (1997), Problem loans and cost efficiency in commercial banking. Journal of banking and finance Vol.21, pp. 849-870.

Berger A.N., Humphrey, D.B., (1997), Efficiency of financial institutions international survey and directions for future research. European journal of operational research, 98, pp. 175–212.

Casu, B., Girardone, C., (2002), A comparative study of the cost efficiency of Italian bank conglomerates. Managerial finance, 28(9), pp. 3–23.

Charnes, A., Cooper, W., Rhodes, E., (1978), Measuring the efficiency of decision-making units. European Journal of Operational Research, vol. 2, pp. 429–444.

Fama, E.F., Jensen, M.C., (1983), Separation of ownership and control, Journal of Law and Economics, 26, pp. 301–325.

Favero, C.A., Papi, L., (1995), Technical efficiency and scale efficiency in the Italian banking sector: a non-parametric approach. Applied economics, 27.4, pp. 385–395.

Fethi, M.D., Pasiouras, F., (2010), Assessing bank efficiency and performance with operational research and artificial intelligence techniques: a survey. European journal of operational research, n. 2, pp. 189–98.

Foos, D., Norden, L., Weber, M., (2010), Loan growth and riskiness of banks. Journal of Banking & Finance, 34(12), pp. 2929–2940.

Gardener, E.P.M., Molyneux, P., Williams, J., Carbo, S., (1997), European savings banks: facing up the new environment. International journal of banking marketing, vol. 15(7), pp. 243–254.

Hess, K., Francis, G., (2004), Cost income ratio benchmarking in banking: a case study. Benchmarking: An International Journal, 11(3), pp. 303–319.

Iqbal, M., Molyneux, P., (2005), Thirty years of Islamic banking: history, performance, and prospects, Palgrave MacMillan, New York.

Iannuzzi E., Berardi M., (2010), Global financial crisis: causes and perspectives, EuroMed Journal of Business, Vol. 5 Issue: 3, pp.279-297,

Italian Government, (2015) http://www.gazzettaufficiale.it/eli/id/2015/11/23/15g00200/sg

Jensen, M.C., Meckling, W., (1976), Theory of the firm: Managerial behavior, agency costs and capital structure. Journal of Financial Economics, 3, 4, pp. 305–360.

Mathuva, D.M., (2009), Capital adequacy, cost income ratio and the performance of commercial banks: the Kenyan scenario. The International Journal of Applied Economics and Finance, 3.2, pp. 35–47.

Merle, J., (2013), An Examination of the Relationship Between Board Characteristics and Capital Adequacy Risk Taking at Bank Holding Companies, Academy of Banking Studies Journal, 12.

Resti, A., Brunella, B., Nocera, G., (2015), The credibility of European banks' risk-weighted capital: structural differences or national segmentations? BAFFI CAREFIN Centre Research Paper, 9.

Rosenbaum, P.R., Rubin, D.B., (1983), The central role of the propensity score in observational studies for casual effects. Biometrika vol. 70, 1, pp. 41–55.

Sealey Jr., C.W., Lindley, J.T., (1997), Inputs, outputs, and a theory of production and cost at depository financial institutions, The journal of finance, pp. 1251–1266.

Sherman, H.D., Gold, F., (1985), Branch operating efficiency: evaluation with data envelopment analysis. Journal of banking and finance, no. 2, 9, pp. 297–315.

Tone, K., (2001), A Slacks-based Measure of Efficiency in Data Envelopment Analysis. European Journal of Operational Research vol., 130, pp. 498–509.

Tsolas, I. E. (2011). Bank branch-level DEA to assess overall efficiency. EuroMed Journal of Business, 6(3), 359-377.

Williams, J., Gardener, E., (2003), The efficiency of European regional banking. Regional Studies, 37(4), pp. 321–330.