

# THE RISE AND FALL OF ITALIAN SAVING BANKS. A DEA EFFICIENCY APPROACH

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## Abstract

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Nowadays, Italian Savings Banks (SBs) are providing financial support for the development of local economies as full commercial competitors and players of the Italian banking sector. The study points out the strong link between efficiency performance and the evolution of the sector characterised by a transition from a territorial proximity to a regional brand and thus to a partial collapse. Via the non-parametric Data Envelopment Analysis - Slack Based Model methodology, the evaluation of the SBs efficiency score is carried out over the 2010-2015 period. The results show that SBs belonging to a Bank Group regularly outperform the Stand-Alone ones. Thus, generally increasing technical efficiency, managerial efficiency and scale efficiency confirm the sectorial evolution. The study is innovative for considering the question of SBS and territorial branding of banking groups. Moreover, its results help to understand how to avoid the same mistakes of the past in the future, therefore, under current circumstances, it is particularly important for scholars, managers, people of local communities, and decision-makers.

**Keywords:** Saving Banks, Risk Management, Efficiency, Data Envelopment Analysis

## 1. INTRODUCTION

The banking sector, although suffering of a significant (sometimes rightly) criticism, plays a fundamental function in countries economics. SBs are part of it being fundamental in the economics developments of countries and evolved to full-service commercial banks, attempting to maximize profits, being virtually indistinguishable from their commercial bank competitors (Gardener *et al.* 1997) and Choudhry and Jayasekera (2014) recently confirmed the importance of banking efficiency for a functioning market, also as a private enterprise that produce a public good (Mottura, 2015). The global crisis and the weak economic restoration, as per the Hansen (1939) Great Depression definition, belongs to the economic "secular" stagnation. In such period, the follows of ethical drivers and business efficiency is essential for the support of little local economies. However, as banks strive for greater operational efficiency, the increased level of competition can lead them to face excessive risks (Hellman, Stiglitz, *et al.* 2000). Although many scholars' states much about the banking corporate governance, is almost true that the banking sector shows relevant differences with respect to other corporations and economic sectors, justifying the distinctive interests in its governance problems (Adams and Mehran 2012).

From a historical perspective, these institutions played a pivotal role in promoting local economies and social development. As per Bülbül *et al.* (2013) "until about 25 years ago, almost all European countries had a so-called "three pillar" banking system comprising private banks, (public) savings banks and (mutual) cooperative banks". The SBs pillar is described as the original microfinance institutions of the nineteenth and even eighteenth centuries (Seibel, 2005) born via different roots; sometimes set up by publicly minded private philanthropists but just as often by local or national public finance bodies. The aim of those special kind of corporations was the provision of a safe harbour as well as some basic form of payments mechanism. Put it simple, a local SB born led by local governments in order to offer some savings and payments services as, also, a local credit service. These corporations, typically began as mutual institutions operating with a significant level of public involvement while, currently, there is no requirement for SBs to operate under any particular organisational structure, just being careful not to violate the EU competition law (Ehlermann, 1992).

In such a scenario, competitive pressures like the need to realise capital adequacy requirements have led to some SBs sectorial restructuring. Thus, reflecting the Matsuoka point of view (2013) on "competition-fragility" when argues that higher competition leads to a more risk taking approach in

banking and the loss of bank value, Beck et al. (2013) on the fact that a greater competition is generally associated with larger impact on banks' risk-taking activities and Liu et al. (2012) that displayed a positive link between competition and bank stability, without explicitly focusing on cooperative banks and savings banks. When considering the link with territorial proximity researcher as Ahn and Le (2015) has investigate on German savings banks (mostly focusing on mathematical models development), Chiaramonte et al. (2015) on a sample of cooperative, savings and commercial banks from OECD countries and their contribution to banking sector stability, and Barra et. Al. (2013) on cooperative banks, there are no recent Italian studies on Italian saving banks.

In Italy, the government set a SBs sectorial reform attempting to reorganize the sectorial legal framework reform while removing distinctions and transforming the public banks into JSCs. The main idea was the State controls reduction, without the loss of the social principles reassigned to the Foundations. The Amato Law led to the born of Foundations, in a context of Italian Banks privatisation reforms because until the 80ies Italian banks were still under public control with more than 80% run by the State. Nowadays, the SBs current legal form belongs to the sphere of joint stock institution (Joint Stock Companies - the Italian Società per Azioni - S.p.A.). In other European countries, they still belong to local form of State economy intervention (e.g. relevant in Germany).

Due to its being commercial competitors, Köhler (1996) highlights the relevance of the SBs efficiency evaluation stating that, they must have an efficient management and sound earning capacity being subject to those same competitive forces within the EU banking system. In Italy, SBs had a congruous influence on local territories. The aim of this paper is to determine the relative efficiency of the Italian SBs banking sector and to show how the same trend has influenced the sectorial transformation. Moreover, Saccomanni (2012) states that *"The Supervisory analysis show, however, that the performance of SBs became part of banking large size banks large, and in which the Foundations hold minority shareholdings, are on average better than those of the SBs subject to the exclusive control of Foundations"*. The latter is a specific and direct confirmation of the SBs Italian trend on which our research questions relies.

Hence, our actuality live-linked study, address the question:

*RQ:* There is 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?

To the best of our knowledge, this is the only study devoted to such Italian SBs sectorial trends.

The article organization is as follows: historical excursus and literature review provides the evolution of SBs and banking efficiency studies; in the second part data and methodology explains the research methodology and describes data sources along with the financial statements variables details. Finally, results and conclusions present empirical findings, discussion and concluding remarks.

## 2. BRIEF HISTORICAL EXCURSUS AND LITERATURE REVIEW

Institutions such as SBs born on a specific kind of mission: the spread of the "spirit of parsimony" among families belonging to lowest economic classes, promoting a savings mentality in order to help them in difficult times. This main mission was enlarged and stretched to the desire of enable the access to financial services for individuals that were not able to afford it them and support the local SMEs within their local communities (Ayadi, et al., 2009). This original mission is common to all current existing SBs that should follow the dual objective, the economic and the social one.

The 18th century, in Europe, is to be remind as the age of "private enterprise" because of the collective and individual efforts to reach prosperity without any apprehension about forms of public and/or social responsibility. Indeed, the European framework was characterised by smalls, large fragmented governments and wicked relationship. For instance, in the later 19th century England, their growth slowed and reversed in opposition to the growing path of other countries such as France, Italy, Germany, United States, France, Italy and Spain (Wadhvani, 2011).

The SBs profitability and financial sustainability was functional to their share (or "charge") of the public welfare, often showing realising no profits. Starting from several SBs countries regulatory reform waves of circa three decades ago, the SBs distinctiveness suffered of a progressive reduction. Indeed, it the territorial form (regional or local) is for the greatest part completely contracted such as the public ownership and organisational form under a public law regime (a part from some specific case such the German one).

With reference to the goal of encouraging the spread of a parsimony and saving mentality among the citizens, taking into account the peoples state of crises, currently this is a secondary target because of their engagement in also others and complex problems such as the fight to survive to hard times (mostly true for South European Peoples) while competing in open financial markets and fully challenging all the business principles.

### 2.1. A Brief History of Italian Saving Banks

The forerunners of the Italian SBs are the Mounts of Piety. The close connection between Mounts of Piety and SBs relies, also, on the fact that many SBs arose as the results of mergers. The first national sector regulations, adopted after the Italian process of reunification, is the Law no. 753 of August 3, 1862, which identified the Mount of Piety as institutional pawnbrokers and SBs as charities organisations. The so-called "Florence Congress" established the approval of proposals to the Government concretely asking for a recognition *"with precise laws of the existence mode of Saving Banks"* trying to eliminate any uncertainty about their character and legal status.

The author of the project (Minister Grimaldi) underlined that governmental intention was to define the main SBs characteristics and the definition of clear rules and legal framework. At the end of the parliamentary process, was issued the Law no. 5546 of October 1888 as the first organic law on SBs sector (the law was approved with the

Royal Decree no. 3290 of April 1889, later replaced by the regulations of the Royal Decree no. 43 of January 1897). Indeed, the Crispi Law<sup>1</sup>, provide the attribution of the legal status to all SBs and a homogeneous framework, distinct either from that about Charity Opera and from commercial companies.

In 1926, the Banking Act as per the Law n.2587 of 1927, established as mandatory the merger of Mounts and during the coming decades, SBs enjoyed a period of expansion, with their independence not subjected to any regulatory intervention. With the advent of Mussolini Government, we saw the development of the interventionism on SBs as the birth of the so-called “petrified forest” (an expression became famous because of the metaphor described by ministry Giuliano Amato, nowadays Judge of the Constitutional Court).

The Royal Decree Law no. 269 of February 1927, introduced modifications for the ordinary SBs accentuating their dependence on the government with the loss of a mere supervision and the introduction of a true control while the Royal Decree no. 375 of March 1936, with the idea of defining a new banking discipline and solve some structural problems of the banking world, laid down the new Act on banking and credit matters. In 1938, on the eve of WWII the regime attack the heart of SBs autonomy with the Royal Decree Law of 24 February 1938, converted into the Law 3 June 1938 (Ministry Mussolini), provide rules about the appointment of the President and the Vice President of SBs as a personal prerogative of the head of government. In fact, SBs were forced to merge into Regional Federations, harnessed and directed by the cooperative system (the regime), with the loss of their identity. As results of rules and after the war, in 1961 the loans against pledge service was exert by 10 first class Mounts, 43 second class 50 SBs and three Public credit institutions.

During the eighties, in 1985, the “banking activity” was defined as a business activity being the beginning of a disengagement process of the public sector in the banking sector as per the Law no. 23 of 10 February 1981 n. 23 (referred to the State intervention for the recapitalization of Public Credit Institutions entrusting the task to the Ministry of Treasury) and the first Bank of Italy White Paper of Italy of 1981 on the organization of Public Credit institutions.

In 1988 the Bank of Italy published a second white book which states the need for a formal (and substantial) privatisation with the adoption of an organisational civil law model (that of joint-stock companies). According to the Bank of Italy vision, the Government issued the so-called Amato Law no. 218 of 30 July 1990 (restructuring and consolidation of credit institutions governed by public law) and the Legislative Decree no. 356 of 20 November 1990 that refers to the banking groups’ regulation providing, in combination with the following Legislative Decree no. 356 of 1990 the reorganisation of the banking sector, also through the conversion of public banks into full JSCs leading to a formal but not substantial control of SBs (part of local politician influences). The privatisation process continued with the legislative interventions under the provisions of the Law no. 461 of December 31, 1998 (the so-called Ciampi Law),

which premise the actual distribution, among the public, of investments that these foundations had into SBs equity.

However, as stated by the Constitutional Court in its judgment no. 163 of May 1995, the Court finds the existence of a genetic and functional link between the transferring entities and assignee banks. The transferring entities cease to exist as such, and are transformed into «Foundations», “private non-profit organization, with full statutory and management autonomy” which “pursue exclusively socially beneficial aims and the promotion of economic development in accordance with their respective statutes” (as per the art. 2 of Legislative Decree no. 153 of 1999). The Foundation heritage is specifically bound to the statutory purposes. The Foundations, from the entry into force of the Legislative Decree no. 153 of 1999 cannot acquire new controlling shareholdings in companies. In short, the above legal transformation was linked to a rigorous system of incompatibility with managerial and governance positions, respectively, in the Foundation and conferred SBs. The ratio of the rules that provides the banking Foundation assets destination to the exclusive social utility purpose.

## 2.2. The Italian SBs Nineties Merge and Takeover Process

In response to fundamental changes in regulation and technology, the financial industry undergone a consolidation wave. According to Amel, Panetta *et al.* (2004) the M&A in main industrialized countries were 19,996 between 1990 and 1995 and 34,147 between 1996 and 2001. Italy, since the 1990 gradual privatisation of its SBs, the “regional principle” was left via the banking business legal separation from social and cultural activities and decreased the public (even at local level) banks ownership. The Amato law (law 218/1990) of 1990 was the trigger of the reform process and the ownership transferred to the (publicly owned) foundations. The foundations carry on the public ownership and command still owning SBs (even if in a downsized manner).

The transformation in an expanded open financial system relied also on the 1994 Dini law (Law 474 of 1994) and the abrogation of the foundations obligation to retain the control of their JSCs. This law kicked off, officially, the privatisation of the Italian banking system. The last step in the banking system transformation was provide by the 1998 Ciampi law (Law 461 of 1998) that set up a four-year time limit within the foundations were to sell the control they still held in banking companies. Foundations that complied with the law benefited of relevant tax exemptions.

The Italian banking reforms of the 1990s implied the change of the whole banking industry nature. The drivers of efficiency and performance substituted the seasoned aim (as primary objective) of supporting territories and local economies. Simultaneously, in the nineties the empirical investigations on banking grew and resulted in a wave of novel, creative and refined (parametric and non-parametric) research studies that often detected significant economies of scale for medium-sized and large banks (Berger and Mester 1997; Dermine 1999) to which, also SBs, evolved. When referring to efficiency and performance, the current framework,

<sup>1</sup> Law 17 July 1890 no. 6972 in Official Gazette of 22 July 1890 no.171 on the public charities institutions

fully integrating the competition and open financial market principles, the “consolidation processes were accompanied by gains in efficiency and competitiveness, however not offsetting the increasing distortions in the ownership structure of a large part of the Italian banking groups” (Focarelli *et al.*, 2002). Given what above, again, we recall the Saccomanni 2012 statement about the SBs becoming part of large size banking group because of the efficiencies improvements.

### 2.3. Note on the Current Italian SBs Sector and Latest News

In Italy, SBs starting their operation in the nineteenth century as institutions in which the credit and social aspects were living together. However, at the end of the twentieth century due to sectoral regulatory developments they turn into full joint stock companies being their social and philanthropic role transferred to the philanthropic foundations.

According to ACRI (2015) as contribution to sector, Italian SBs at the end of 2014 are forty and holds 3,733 (in 2014 were 4,345) branches, 30.967 employees (in 2014 were more than 36 thousand), total assets of 183.1 billion (in 2014 were 206.2 billion) and 134.8 in direct deposits (in 2014 were 144.4 billion). Banking groups (which partly belongs to the local territorial Foundations) own SBs in the attempt to cover the link between the ancient SBs and the local strong proximity to communities and territories. Furthermore, at the end of 2012, (the starting point of our sample for the relative efficiency study level), Italian SBs were 39 of which 23 are part of bank groups and 16 are stand-alone while 11 out of the 23 SBs part of a group belongs to the Intesa San Paolo Group.

In 2015, according to the Italian Law Decree 22 November 2015, n. 183 (a.k.a. “*decreto salva-banche*” - which contains rules to ensure the continuity of financial services offered by four distressed banks as Banca delle Marche, Cassa di Risparmio di Ferrara, Cassa di Risparmio di Chieti and Banca Etruria), two SBs were terminated (namely the 50%). Actually, the decree aimed to the complete reduction of the reserves, capital represented by shares, and nominal value of subordinated liabilities, resulting in termination of the administrative and property rights. Indeed, the Italian Government chose to formally terminate distress banks and set up new banks without deteriorated and subordinated debts transferring to the local territories the high socio-economic impacts (put it simple, derived from a fraud). It was the *de facto* first application of the bail-in rules, even before the entry into force of the European Bank Recovery and Resolution Directive (BRRD).

It is to be noticed that the Bank of Italy Report for 2014 (Banca d'Italia, 2014, 2015) states that in 2008 - 2014 period the bank employees and branches decreased by about 17,900 (-5.6%) and 3,400 (-9%) units because of distribution channels such as internet and mobile and the 57% of families has this kind of access while the 53% in 2014. The latter is another indirect confirmation of the loss of the links with local communities; peoples are able to switch rapidly from a bank to another. Bank branches decreased of an 1,5% with respect to 2014 to 30.258 unity and 11,4% with respect to 2008 mostly due to large size banks that, in order to

recover some form of efficiency started to cut their number of branches. All considered and within the mentioned trend, in 2015 we observe the starting of the SBs termination process that is leading to a partial sectorial demise.

### 2.4. On the Banking Efficiency Studies

The study of Sherman and Gold (1985) is widely known as the first on banking industry via DEA technique and many others followed (Berger and Humphrey 1997; Ashton and Hardwick 2000; Fethi and Pasiouras 2010). Berger and De Young (1997), Kwan, and Eisenbeis (1997) states the relevance of the banks efficiency concept with reference to risks speculations. Moreover, Berger and DeYoung (1997), and Williams (2004) took into account the “*bad management*” hypothesis pointing out that a low levels of efficiency lead to lack of credit monitoring and inefficient control of operating expenses (which has immediate effect on cost efficiency). With reference to Altunbas *et al.* (2007) and Sufian (2009) studies, Italian SBs can suffer of scale inefficiencies because of their findings on larger size banks sample and results on efficient scale economies.

Italian researchers started investigation on banking efficiency in nineties. Important studies were developed by Favero-Papi (1995) and Resti (1997) highlighting scale inefficiencies and regional disparities while Casolaro and Gobbi (2007) worked on the IT influence and others on Italian cooperative banks (Lopez *et al.*, 2002; Battaglia and Ricci, 2008; Bonanno, 2012, Barra *et al.*, 2013; Zago and Dongili, 2014; Aiello and Bonanno, 2015). Together, Italian and European scholars conducted a comparison on results obtained in different countries (Vivas, 1997) in the investigation of economies and efficiency of conglomerates (Casu and Girardone, 2002). However, most of their studies focuses on commercial banks, while fewer examines also SBs efficiency.

With respect to the SBs sector and the nineties merger wave, Messori (2002) analysed the effects of the Italian banking merger process underlining that the processes of banking consolidation achieved an increase in efficiency and competitiveness. The evolution of competitive conditions in the Italian banking sector was analysed, with a parametric approach, by Angelini and Cetorelli (2003), pointing out that the process of legislative deregulation boosted the banking competition and mergers. The Carletti *et al.* (2005) study dedicated to the Italian SBs merger process underlined the success of the Italian nineties legislative framework reforms due to an increase in profitability.

## 3. METHODOLOGY

Our study follows an eclectic and intertwined path that involves the measurement of banking efficiency following the Data Envelopment Analysis (over the 2010-2015 period). DEA is a non-parametric programming technique introduced by Charnes *et al.* (1978) aim at the measure of the relative, to the best one, bank performance by converting multiple inputs and outputs of each decision-making unit into measurable units. The DEA developed by Charnes, Cooper and Rhodes (1978) is grounded on the Farrell's work (1957), “The measurement of productive efficiency” and the main advantages are the ability to accommodate a multiplicity of inputs

and outputs, the no a priori weights assumption and the requirement of small number of observations (Sexton, 1986).

The main reason for the use of Efficiency Frontier Techniques like DEA 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. Moreover, Paradi and Zhu (2013) survey found that there has been sharp increase in DEA application in order to measure banking sector efficiency and that figures are likely to grow after the global financial crisis.

The Constant Returns to Scale (CCR) DEA

model enhancement, in order to account for the evaluation of Variable Returns to Scale, is the BCC (Variable Return to Scale) model of Banker, Charnes and Cooper (1984). The VRS model means that it scores the pure technical efficiency (also called managerial efficiency) and includes the so-called convexity constraints by changing the specification of the problem and providing the measure of Managerial Efficiency  $\theta$  VRS adding  $e\lambda = 1$  to the program (in 1.1  $\theta$  is a scalar and  $\lambda$  is a vector of constants). The Table 1 presents the CCR, BCC and SBM linear models. In the case of the SBM model the variables  $s^+$  and  $s^-$  are the measure of the distance of inputs  $X\lambda$  and outputs  $Y\lambda$  of a virtual unit from those of the unit evaluated. In order to account for the SBM Variable Returns to Scale, the condition  $e^T\lambda = 1$  needs to be added to the formula.

**Table 1.** Data envelopment analysis: CCR, BCC and SBM models

1.1. CCR Model (Constant Return to Scale) <i>Input oriented</i>	1.2. BCC Model (Variable Return to Scale) <i>Input oriented</i>	1.3. SBM Model (Constant Return to Scale) <i>Input oriented</i>
$\begin{aligned} &\min \theta \\ \text{s.t. } &\theta x_j - X\lambda \geq 0, \\ &Y\lambda \geq y_j \\ &\lambda \geq 0 \end{aligned}$	$\begin{aligned} &\min \theta \\ \text{s.t. } &\theta x_j - X\lambda \geq 0, \\ &Y\lambda \geq y_j \\ &e\lambda = 1 \\ &\lambda \geq 0 \end{aligned}$	$\rho = \min_{\lambda, s^-, s^+} \frac{1 - \frac{1}{m} \sum_{i=1}^m \frac{s_i^-}{x_{i0}}}{1 + \frac{1}{s} \sum_{r=1}^s \frac{s_r^+}{y_{r0}}}$ $\begin{aligned} \text{s.t. } &x_0 - s^- = X\lambda \\ &y_0 + s^+ = Y\lambda \\ &\lambda \geq 0, s^- \geq 0, s^+ \geq 0 \end{aligned}$

An efficient DMUs, under DEA methodology, receive an efficiency scores of  $\theta = 1$ , while the DMUs scoring less than 1 are inefficient. The input orientation is addressed by the question: "By how much can input quantities be proportionally reduced without changing the output quantities produced?". The efficiency measure is associate to the use of a minimum number of inputs in order to produce a certain number of outputs or the maximum production of outputs using a certain number of inputs (Fethi and Pasiouras, 2010). The measure of the scale efficiency is the ratio of CRS efficiency scores to VRS efficiency scores meaning that is equal to *CRS score/ VRS score*. The lower the scale efficiency is, the higher the impact of scale size (Thanassoulis, 2001).

In order to measure the banking efficiency there are two main approaches: the intermediation approach and the production approach. The intermediation approach was proposed by Sealy and Lindley (1977) aiming at the maximisation of the market value of financial intermediaries. In this light, deposits are view as part of the intermediation process of taking deposits and subsequently transforming into loans. Banks are financial intermediaries between depositors and creditors. They collect deposits and other liabilities to apply them as interest-earning assets. Deposits are considered as input while there is a great consideration of the operating costs. In the production approach as per Benston (1965) a bank is defined as a financial institution that produces services for its customers and producers of deposits, loans and other services. The main difference between the two approaches is the

treatment of deposits. In the light of the production approach deposits are considered as an output. The purpose of the production approach is to minimize the operating costs and it uses the traditional factors of production of capital and labour to produce the number of accounts of loan and deposit services. Ahn and Lee (2014) have recently provided an insight into DEA inputs and outputs specification in order to understand whether these are consistent with the criteria upon which banks make decisions. A Recently a study of Toloo and Tichý (2015) used deposits an output and in the context of the survey made by Toloo et al. (2015) it has shown that deposits can be useful as both inputs and outputs with prevalence on outputs consideration.

With reference to recent researches in this field, the input and output variables for this paper were selected according partially to the production and intermediation approach. On the inputs side, the first input of total assets Bank is a proxy for the bank size. Total operating expenses represents the labour input built as the sum of personnel expenses and other operating expenses. When referring to risk, many take it into account as a proxy for risk the NPLs (Non Profit Loans) (see Fiorentino et al., 2009; Fiordelisi et al., 2011; Asmild and Zhu 2012). In our study, the risk variable, proxy, is the use of impaired loans that are able to represent the risk likely to occur. Klein (2013) too accounted for Impaired Loans that are able to embed, in a risk management perspective, a more extensive aggregate. On the risk side, Ferri and Pesic (2016) and Barucci and Milani (2016), provide evidences of the so-called regulatory arbitrage phenomenon by banks in manipulating risk coefficients.

### 3.1. Data Specifications and Variables Accounting for Our SBM Model

The Italian efficiency SBs analysis covers units ranging from 23 to 40, during a six years' period. The specific focus on the 2010 - 2015 takes into account the crisis eruption of 2007 and the downward spiral of a global 2008/09 recession while a general consensus (after many believes of reestablishment) aggregates on the fact that from 2010 to 2015 the economics framework was a stagnating one (Jimeno et al., 2014; Truger, 2014; Gordon, 2014; Baldwin and Giavazzi, 2015; Storm and Naastepad, 2015; Hein, 2016; European Parliament, 2016).

SBs showing lacks of reliable data and outliers, for the variable taken into account, were excluded. We estimate separate annual efficiency frontiers rather than a common frontier across time by allowing an efficient bank in one year to be inefficient in another as, also, per Isik and Hassan (2002).

The study, in order to provide single yearly snapshots, intentionally relies on the use of 6 years data, considering it independently. In fact, each SBs year efficiency is computed on its DEA model reference. The data integration of sources such as Bankscope - Bureau Van Dijk (2016) and ACRI (Associazione di Fondazioni e Casse di Risparmio S.p.A.) results in our dataset. The following is a resume table of the SBs sample dataset composition.

**Table 1.** The SBs sample dataset over the 2010-2015 period with respect to the SB belonging to a group or not

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

As the first step, we evaluate the Italian SBs efficiency and in a second step, we compare results against their being part of a bank group. Following and enhancing Alfiero *et al.* (2016), the variables we chose fits to measure the relative efficiency of the Italian SBs consisting of three inputs such as total

assets, operating expenses (personnel plus other operating expenses), impaired loan and three outputs such as loans, customer deposits and operating profits. Table 2 summarizes the descriptive statistics of the six variables sample.

**Table 2.** Descriptive statistics of the Simple (Inputs and Outputs) variables of the SBM non-oriented Constant Return to Scale and Variable Return to Scale models (SBM - CRS, SBM VRS) (in millions of €).

Variable	I/O	Year	Minimum	Maximum	Average	Standard Deviation
Total Assets	$X_1$	2015	1,051.20	51,373.20	7,615.13	11,000.73
		2014	709.00	52,203.50	7,211.66	10,528.96
		2013	709.70	50,162.70	6,760.16	9,959.69
		2012	799.70	49,322.00	6,575.02	10,105.80
		2011	609.30	49,290.70	5,888.39	10,275.16
		2010	583.70	46,339.10	5,954.14	10,070.47
Total Operating Expenses	$X_2$	2015	20.70	1,020.40	159.10	217.50
		2014	20.30	976.70	153.68	206.91
		2013	19.80	1,009.90	137.66	198.84
		2012	17.20	1,187.40	140.22	233.56
		2011	15.50	1,074.10	130.94	220.26
		2010	14.60	879.70	12.98	201.55
Impaired Loans	$X_3$	2015	82.60	5,057.40	1,224.23	1,472.71
		2014	64.60	4,473.00	1,083.91	1,325.63
		2013	60.90	3,895.00	821.21	1,062.47
		2012	45.70	3,141.00	600.19	793.38
		2011	30.30	2,452.00	437.92	654.45
		2010	29.20	2,014.40	362.88	520.45
Loans	$Y_1$	2015	638.10	36,462.50	5,248.24	7,658.61
		2014	610.40	37,275.80	5,018.45	7,393.80
		2013	639.10	36,391.90	4,758.99	7,006.02
		2012	635.3	35,128.10	4,725.48	6,978.97
		2011	451.70	34,783.10	4,420.76	7,292.64
		2010	427.90	30,406.60	4,403.13	6,888.40
Operating Profits	$Y_2$	2015	-249.30	328.00	3.86	92.83
		2014	-532.50	256.10	-10.09	129.71
		2013	-676.30	268.70	5.23	139.56
		2012	-226.90	102.00	-6.32	53.59
		2011	-29.60	293.40	20.14	58.88
		2010	-64.50	409.00	22.76	73.55
Total Customer Deposits	$Y_3$	2015	508.10	28,401.50	4,027.03	5,935.76
		2014	496.60	25,254.90	578.65	5,085.22
		2013	484.20	23,251.80	3,137.20	4,469.73
		2012	439.80	22,018.80	2,835.64	4,145.28
		2011	276.80	22,888.80	2,668.80	4,472.58
		2010	294.40	18,114.80	2,697.23	4,090.47

Sources: BANKSCOPE - Bureau Van Dijk (2016); ACRI (2016)

## 4. RESULTS

Taking into account the SBs merger process started in nineties and our eclectic path, what follows are the results of our investigation. In Table 3 we

point out the sectorial Total Asset Values (and its decreasing) and percentages with respect to the SBs belonging to a bank group or not only for the 2012-2014 (a three years' period before the shutdown of 2015). The following are the results.

**Table 3.** Results of the Total Assets (as a size proxy) sectorial investigation as per the period 2010-2015

<i>SBs Year</i>	<i>Total Assets 100%</i>	<i>SBs Group Total Assets</i>	<i>SBs Stand-Alone Total Assets</i>
2010	226.257,50	148.602,30 (65,68 %)	77.655,20 (34,32 %)
2011	235.535,60	151.253,80 (64,22 %)	84.281,80 (35,78 %)
2012	251.969,20	156.699,10 (62,19 %)	95.270,10 (37,81 %)
2013	241.597,40	153.703,50 (63,62 %)	87.893,90 (36,38 %)
2014	224.114,80	146.103,40 (65,19 %)	78.011,40 (34,81%)
2015	175.148,00	104.574,40 (67,49 %)	70.573,60 (32,51 %)

Table 3, showing the sectorial size trend, blatantly reveal the decreasing trend of SBs stand-alone total assets and the increasing trend for those SBs belonging to a bank group. Moreover, it shows that, with respect to the sector size, two-third of the sector is hold by banking groups. This is a clear evidence and confirmation of the sectorial

transformation into territorial brands of banking groups.

As a starting point, in order to answer to RQ, Table 4 show results for the relative SBM efficiency scores over the 2010-2015 period alongside with their graphic trend.

**Table 4.** Results of the relative SBM efficiency of the Italian SBs over the 2010-2015 period and trend graphic

<i>GENERAL</i>	<i>SBM CRS</i>	<i>SBM VRS</i>	<i>SE</i>
2010	0,730939	0,879668	0,830926
2011	0,65461	0,816765	0,801467
2012	0,694719	0,879303	0,790079
2013	0,713741	0,929132	0,76818
2014	0,720831	0,888779	0,811035
2015	0,75043	0,865761	0,866787
<b>AVERAGE</b>	<b>0,710879</b>	<b>0,876568</b>	<b>0,807491</b>

The noticeable alternate trend of the technical efficiency (SBM-CRS), the managerial efficiency (SBM - VRS) and the scale efficiency (SE) proving a final

increasing trend. The relative SBM efficiency of the SBs part of a group and stand-alone is highlighted in the following Table 5.

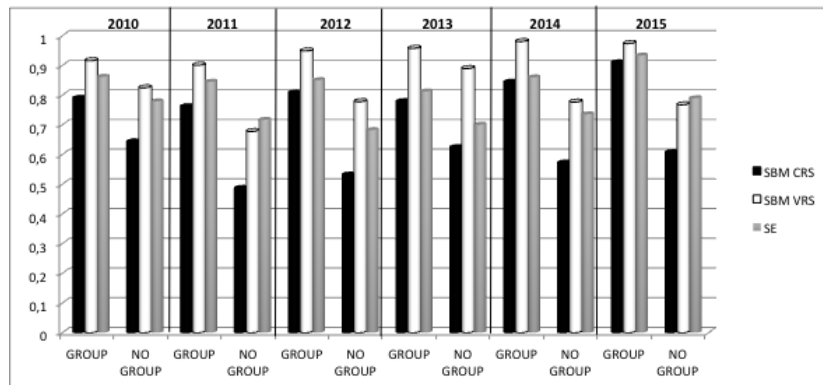
**Table 5.** Efficiency results of Italian SBs with respect to their belonging to a bank group.

<i>SBs belonging to a bank group</i>				<i>SBs NOT belonging to a bank group</i>			
<i>GROUP</i>	<i>SBM CRS</i>	<i>SBM VRS</i>	<i>SE</i>	<i>NO GROUP</i>	<i>SBM CRS</i>	<i>SBM VRS</i>	<i>SE</i>
2010	0,788826	0,915661	0,861483	2010	0,64218	0,82448	0,778891
2011	0,760744	0,900404	0,844892	2011	0,485406	0,677367	0,716608
2012	0,806695	0,948573	0,850431	2012	0,530487	0,777707	0,682117
2013	0,77746	0,957065	0,812338	2013	0,622714	0,889229	0,700286
2014	0,842706	0,980194	0,859734	2014	0,570831	0,776269	0,735352
2015	0,908182	0,973327	0,933069	2015	0,605825	0,767158	0,7897
<b>AVERAGE</b>	<b>0,814102</b>	<b>0,945871</b>	<b>0,852268</b>	<b>AVERAGE</b>	<b>0,57624</b>	<b>0,785368</b>	<b>0,725872</b>

Table 5 is the direct confirmation of the 2012 Bank of Italy General Manager statement (Saccomanni, 2012). Indeed, the SBs belonging to a bank group shows, generally, a better and increasing (almost) of the technical efficiency (CRS), managerial efficiency (VRS) and scale efficiency (SE) over the

6-year period. They outperform, constantly, the efficiency of SBs not belonging to a bank group as per the following graph. This result is, again, the best confirmation of the sectorial transformation into territorial brands of banking groups.

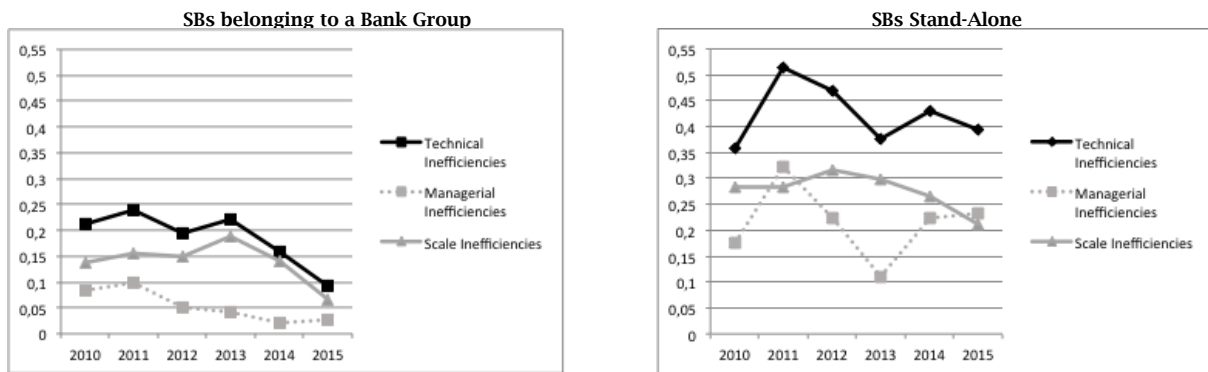
**Figure 1.** Graph showing the relative efficiency of 2010-2015 period with respect to the belong or not to a bank group



An insight into the inefficiencies provides a better and clear confirmation of the Saccomanni statement as per the following Figure 2 where the

inefficiency trends of the SBs belonging to a Bank Group is undisputable decreasing.

**Figure 2.** Technical, managerial and scale inefficiencies of Italian SBs belonging to a Bank Group and Stand-Alone

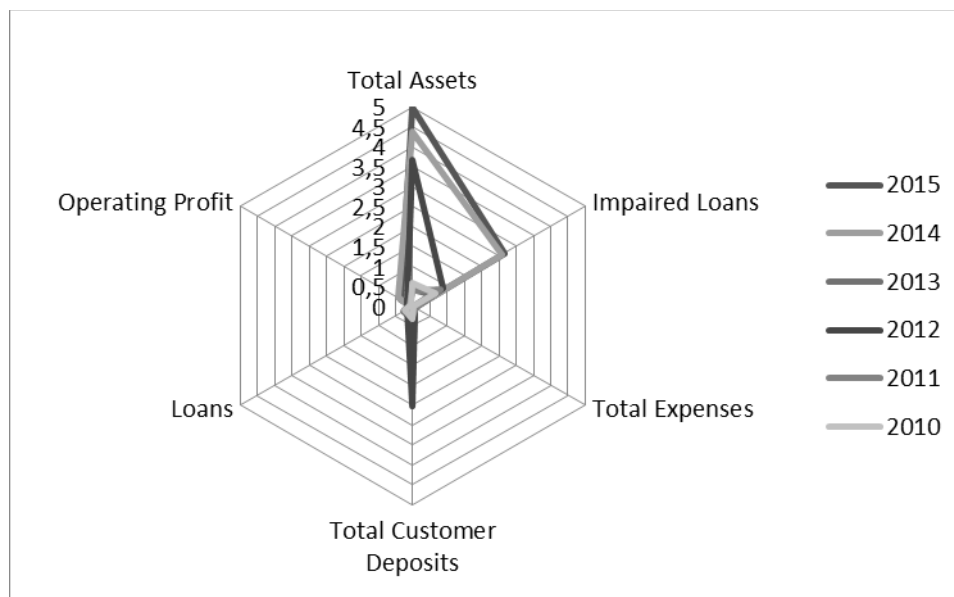


From the above graphs is easy to point out that the efficiency of SBs belonging to a Bank Group outperforms, regularly, that one of those Stand-Alone. This result is the confirmation that SBs are currently considered just as territorial brands of a big size bank group. Indeed, the past inefficiencies and the current one are of significance in order to

understand the sectorial termination process pointed out in the conclusions.

With respect to the three inputs such as total assets, operating expenses, impaired loan and the three outputs such as loans, customer deposits and operating profits, the following Fig. 3 shows an insight into the slacks values.

**Figure 3.** The Slacks trend over the 2010–2015 with respect to the six considered variables



The quick snapshot of Fig. 3 is able to show the combined sums of relevant slacks over the 2010 - 2015 period, namely the achievable improvements of inputs or outputs with respect to the efficiency frontier, obviously without worsening the situation. Indeed, slacks are mainly relevant on the inputs side regarding the total assets, impaired loan while less significant on the outputs side where only the customer deposits variable shows some meaningful implication. This result is able to provide a clear concise information about the relevance of the banking size and the risk factor represented by the impaired loans.

**4. DISCUSSION**

Historically, the merge and takeover process can be attribute to SBs previous financial conditions or because of hidden financial crime scandals. The results of our work, by means of DEA SBM model,

are of significance in evaluating SBs performance because of their focusing on inefficiencies source.

Indeed, the almost outperformance of SBs belonging to a bank group on the technical efficiency, managerial efficiency and scale efficiency over the considered timeframe it may be considered as parte of managerial issues because of their borrowing managerial experiences. Indeed, the benefits of being part of a bank groups are clearly deriving from the integration of enhanced groups' managerial strategic and tactical corporate policies.

In addition, the slacks investigation appear to be useful for future direction of improvements in order to enhance the efficiency. Indeed, slacks accounting for the inputs side regarding as of total assets and impaired loans may allow to managers to more precise decisions. As a further confirmation of our results, Ferri et al. (2014) provide evidence that higher shares of cooperative banks (saving banks among the latter) in national banking systems led to



low credit standards throughout the recent crisis, therefore the envelope in our model of the Impaired Loans variable is of fundamental relevance.

According to our research question, the research findings coupled with the recent milestone year for the Italian SBs sector as of 2015, are a

further confirmation of the sectorial trend. At the end of May 2016 the ending results of SBs termination process (that mostly affect the year 2015), some of which as per as per Italian Law Decree n. 183 (a.k.a. “*decreto salva-banche*”), are the following:

**Table 6.** The 2015-2016 SBs process of termination

<i>Nr.</i>	<i>Saving Banks</i>	<i>Date of Termination</i>
1	Banca Adriatico (former CARISAP)	16 of May 2016
2	CR Savona	23 of November 2015
3	CR Carrara	December 2015
4	CR Rieti	23 of November 2015
5	CR Viterbo	23 of November 2015
6	CR Civitavecchia	23 of November 2015
7	CR Chieti as per Italian Law Decree n. 183	22 of November 2015
8	CR Ferrara as per Italian Law Decree n. 183	22 of November 2015

It is of some relevance, that four out of the eight terminated banks belongs to Intesa San Paolo Group while the others being stand-alone SBs or belonging to another troublesome bank group, shows a low efficiency level and the last two are the *de-facto* bankruptcies banks as per Italian Law Decree n. 183 (a.k.a. “*decreto salva-banche*”). Moreover, in line with our thoughts, SBs belonging to a bank group show a better level of efficiency. The results, coupled with real circumstances such as the Italian Law Decree 183/2015 and the termination process, provides useful insights to decision-makers.

Taking into consideration the high efficiency level of four terminated SBs (average of 0,9543 on SBM-VRS managerial efficiency on 2014 score) and the fact that belongs to Intesa San Paolo Group shows, it is possible to infer that those banks were, at some point, operating just as territorial brands. Hence, the Intesa San Paolo management considered the “*mission accomplished*” and “*well done*” because of the achieved target leading to their legal termination. The remaining SBs due their termination, mainly to bad management, financial scandals where not serious financial crimes as main drivers that leads to the dismissal of power from local influencing policy-maker politicians’ people. Indeed, all the concerns about consolidation and the survival of small SBs have been correct. Is possible to address this shift also to the bad management behaviour of the local Foundation and institutions that appoints the SBs top management.

## 5. CONCLUSIONS

The post Amato SBs reform (surfing also the global financial crisis) revealed, up to date, a significant criticism on the politicisation of SBs and the lack of managerial skills. Thus, backgrounded by empirical evidences (the merger and termination process) is just a confirmation of the loss of the regional and local credit service focus that was, at the starting of SBs history, the expression of local citizens, an added value as per their philanthropic purposes.

The article illustrates how management may better identify the source of inefficiencies and main potential improvements, and how the efficient or benchmark frontier technique may useful in evaluating the banks performance. The research and its results are a direct confirmation that the SBs negative trend and the nineties merge and takeover, led to the restructuration process currently at its apex.

In addition, clear evidence about a territorial proximity story shifted into a territorial branding and to an ultimate partial demise were provided. According to this final finding, the partial sectorial demise trend is manifest and the fact that most of SBs still belongs to bank group, was and is the simple forecast exercise, of further future SBs terminations and loss of territorial proximity. Indeed, from our business management perspective, the SBs management incurred the same mistakes of the past becoming *de-facto* turned away from responsibilities and losing the territorial proximity as an overall result.

There are a number of additional issues which, although of significance, are beyond the scope of this paper. These include the choice of other financial statements dimension as well as insight into the marketability dimensions. The limited number of Italian SBs did not allow, due to respect of the DEA rule of thumb, for expanding the model accounting for additional stream of variables.

Future research direction by DEA application specific field application may be coupled by means of policy tool evaluation (e.g. Ichino-Becker score) in order to better assess differences and envelope, by an improved fine-tuning, the two main stream of profitability dimension.

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