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INTANGIBLE ASSETS AND PROFITABILITY IN THE ITALIAN BANKING INDUSTRY: WHICH RELATIONSHIP?

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Abstract

Purpose of this paper is to value the role of the human capital in the profitability production within the Italian Mutual Bank (Bcc); to achieve this, we provide for the carrying out of an analysis on a sample of 209 of the above-mentioned banks using the Pulic's VAICTM methodology (1998), in a five-year period of time (2006-2010). Obviously, we will use what the specialized literature gives us, which offers interesting and in-depth hints about the intellectual capital, but only referred to the listed medium-large banks; as far as we know there are no analysis and assessments over the local banks which, apart from their dimension, have a more and more nerve role in the financing of the real economy. The results of our analysis show clearly how the human capital has a meaningful role on the banks' profitability, especially those which let the active presence in the territory be a setting value of their own business mission. At a territorial level, the Bcc of the South show steadier marginal effects than their sister companies of the North. In a historical period characterized by evident phenomena of credit crunch put into action by the great banks on the real economy, the banks' local model and centrality of the human capital which characterize them still represents a value on which set up the sustain and the revival of the economy in the territory.

Keywords: Intangibles, Human Capital, Mutual Banks, VAIC

1. Introduction

Since a long time, in the wide view of the models of the corporate 'strategic policies, it has been highlighted the concept of intellectual capital which not only embraces the individuals' knowledge and intelligence, but also different intangible components (or assets) which the competitive success (or failure) relies on. The intangibles – apart those whose valorization is foreseen by accounting rules at an International level – are components of a corporate system which often sees itself responsible of almost positive performances for the shareholders and the other interest holders within the enterprise (stakeholder), but of which often there is no measurement or representation, neither in use by the management nor by the other parts (customers, external analysts, authorities).

Following an authoritative trend of the more recent literature (Previati and Vezzani, 2007) the intangible assets can be classified as follows:

- 1) *intellectual properties*: are easily monetizable assets whose property is defended by law tutelage;
- 2) *intellectual assets*: are intangible assets proper of the enterprise and indivisible from it;

- 3) *intellectual capital*: are assets produced by people's intellectual activity, hardly measurable and not present in the traditional corporate balances sheet, but contributing to form the economic capital of the enterprise.

The intellectual capital (IC), object of such work, is mainly linked to the knowledge which can be converted into value. If this aspect seems to be shared in the doctrine, different are the interpretations given so far to the associated concept of value creation, increasing a wide and diversified literature.

Among the different corporate organizations, the banks seem to be particularly sensitive to the item of the intellectual capital in view of the persevering relationship hold with the customers.

It is known that the liquid assets, the financial capital and the human capital are three important resources (strategical levers) of each bank. In particular, for what it concerns the human capital, it connotes itself more and more as a strategic variable; in this direction, it is necessary, moreover, to have at disposal competences which have to adapt themselves constantly and quickly to the varying customers' behaviors.

As for the banking field, there are some reasons which make the IC study and measurement particularly interesting. Among these we can point out:

- a) the particular reliability of the banking balances respect the ones belonging to enterprises of other sectors, in consideration of the complex and binding discipline these enterprises have to follow;
- b) the nature of the banking sector qualifies itself as a sector of high "intellectual" intensity.

The banks are actually improving their stock of knowledge and immaterial activities to ensure themselves an average grade of competitiveness. Furthermore, the features of the financial institutions, and the banks in particular, make relatively easy the application of methods of measurement of the intellectual capital. Nevertheless, the measurement and its effective use in operational-strategic key have been dealing with a narrow number of cases.

In such a context, the object of the present work is thus to analyze the role of the intellectual capital within the banks, in order to value how it can influence the profitability.

As for this last aspect, from the official data it can be noticed a contraction of the margins during 2010¹. Such scenery seems worsened later on by the EBA analysis which has imposed the main Italian banks quick increases of capital. At a European level we can draw how in more recent years (as some first indications referred to 2010 say) the highest profitability is got in presence of less traditional models of business and with a more marked recourse to financial investments. More in detail, the profitability decreases above all in the Italian banking groups and in the Spanish medium-small ones. In the case of the Italian banks it appears against the run of the market - respect the European mean - the evolution of the interest margin decreased of the 9% against the medium one of the 10% in Europe. This datum can be largely explained by the financial crisis which forced the European banks (more than the Italian ones) to review a part of the own investments and to put more attention to the credit section. In Italy, the economic-financial crisis under way has, instead, been heavy a lot at the level of the loans to the customers.

To stop and invert the trend towards the fall of the profitability, the Italian banks have been invited by the Auditing Authorities to reduce drastically the operational costs, with particular reference to the one related to the personnel. The latter seems to be clearly higher than the European mean so (since years) they're in the Banca d'Italia's target. The relationship can be explained above all by the fact that the Italian banks have always privileged the credit activity instead of the financial trading (by its own or third parties) and the credit activity, from a

¹ From the observation of the official data available on the market it is pointed out how the profitability of the first Italian banking groups has dropped in the first nine months of the 2010 respect the same period of the 2009. The ROE seems in fall, going from 4.3% to 3.7%, the same as the interest margin which results still further reduced of the 9%, both for the further reduction of the rates in force and the contraction of the volume of the loans supplied. Profits, in general, appear to be in a further downturn of the 8%.

structural point of view, employs a greater number of people than the broking activity or the wholesale financial one.

In order to be able to estimate the relevant cost of the personnel, it is necessary – moreover – to understand the existing relationship between intellectual capital (intangible) and the production of the yield.

For this purpose, it can be analyzed the sector of the mutual banks which, letting the local interests and the bank mutualism be their own business *mission*, should be characterized by a tightly positive correlation between intellectual capital and yield.

For this purpose the “VAIC” methodology (Pulic, 1998) is put into effect.

Obviously, we will use what the specialized literature gives us, which offers interesting and in-depth hints about the intellectual capital, but only referred to the listed medium-large banks; as far as we know there are no analysis and assessments over the local banks which, apart from their dimension, have a more and more nerve role in the financing of the real economy.

Actually, the results achieved show that:

- 1) The Bccs show a positive correlation statistically relevant at the 1% between yield and intellectual capital.
- 2) The banks' profitability decreases during the years under investigation and classifies the 2010 as the worst running of the last five-year period.
- 3) Conditions being equal, the profitability of the listed Banks is lower than the Bcc's one.
- 4) Dividing the sample between Bccs of the North and Bccs of the South and valuing by fixed effects, it is singled out that the Southern banks have a greater marginal effect than the “sister” in the North, even such a result could be characterized by the different numerosness of the two analyzed samples.
- 5) The relation total loans/deposits and cost/income ratio is never statistically relevant.
- 6) The relation loans to customers/total loans seems statistically relevant only in the Bcc sample, but with a negative sign. Such a result, showing a drop in the profitability when increasing the loans to the real economy, justifies even in part the credit crunch of the last years put into effect by the medium-large listed banks.

The work has been organized as follows: in the second section it is presented a review of the main contributions by the literature on the topic of the intangibles and on the effects on the value creation in a bank; in the third one the VAIC methodology is presented; in the fourth one they're reported the purposes and the methodology used; in the fifth one the results achieved are commented; in the sixth one, we commented and we made the final results.

2. Literature Review

The literature on the topic of the IC measurement is wide and diversified. Here as follows, it is produced a brief review of the main meaningful contributions.

If we go carefully back to the origins of the first theoretic-methodological developments linked to the items related to the intellectual capital, it is recovered the important influence of other scholars: Becker (Nobel prize in 1992 for the contribution to the human capital), White (sociologist, founder of the network analysis), Williamson (father of the theory of the transaction costs), Penrose (from whom it derives the current of the enterprise resource-based view) and Simon (Nobel prize in 1978, also for the contribution to the decision-making processes in limited rationality).

In the wake of the so called theoretic current, Edvinsson and Malone (1997) represent the IC as knowledge, applied experience, professional expertise, relationships with the customers which allow to operate with a competitive advantage. Sullivan *et al.* (2000), instead, speak about knowledge which can be converted in profit, while Lev (2001) defines as intangible resources the immaterial assets needed to create future income without having a physical aspect (ex. real estate) or a financial aspect (ex. shares and bonds).

The consequence of such a way to consider the IC is that the market value of a firm depends not only on the value of the recorded financial capital, but also on the no-recorded intangible capital the IC belongs to (Teece, 1986; Edvinsson and Sullivan, 1996).

Getting his idea from this analysis perspective, Brooking (1996) states that the IC can be obtained as mere difference between the book and the market value of a firm.

Bradley (1997), instead, translates the concept of value creation into a macroeconomic view stating that the IC is the ability to transform the invisible assets in resources creating wellness not only from the firm's point of view, but also from the country's.

If we shift the attention towards perspectives oriented to the IC measurement in a financial point of view, we can take into consideration contributions inspiring themselves to the *option pricing theory* or analysis currents covering the measurement of the intangible assets with a specific reference to the benchmarking among Countries.

The "activity of the intellectual capital" in the sector of the financial services could follow what has been tried in the recent past by some studies on the X-efficiency in the banks (Leibeinstein, 1966), and help the different stakeholder (among these in particular properties, management, customers, authorities) to understand the concrete perspective of value creation by the same institutions.

Despite the recognized importance of the human capital, only a few works are specifically dedicated to intellectual capital in the financial institutions. This consideration not necessarily involves a lack of attention towards this item, but it requires two orders of evaluation. On one hand, the financial sector characterizes itself for aspects of specificity which make it not easily comparable to other sectors; as a consequence, the studies, above all the empirical analysis, tend to exclude the operators of this sector from the sample into consideration. On the other hand, we are in presence of operators characterizing themselves by strong features of informative asymmetry, which make difficult the gathering of information.

The measurement and the reporting are the main topics of two articles recently appeared about the no- financial measures of the performance in Finnish banks (Hussain *et al.* 2002) and Japanese ones (Hoque and Hussain, 2002). Another general contribution on the intangibles reports the experiences of two anonymous Sweden banks (Johanson *et al.* 1999a), while a sample of Canadian banks is considered in a contribution dealing with items of personnel turnover and practices of knowledge management (Stovel and Bontis, 2002). In these works, the attention is focused on factors driving towards the adoption of reporting on the intangibles and on the intellectual capital in the financial institutions, sometimes inspired by the representations proposed by the best known advisors and specialized managers (Edvinsson and Sullivan, 1996; Edvinsson and Malone, 1997; Sveiby, 1997).

The tie performance/intellectual capital in the banking sector is studied by Pulic² in a sample of Austrian banks (1993-1995) and Croatian ones (1996-2000). The same methodology is used in a series of studies carried out in the International field. Among these, Mavridis and Kyrmizoglou (2005) show the presence of a significant and positive correlation between the human capital and the value added, taking as reference specimen a group of Greek banks; the same results are achieved by Hancock *et al.* (2007) who analyze a sample of 150 enterprises listed in the Singapore Stock Exchange in the years 2000-2002; Goh (2005) who, analyzing a sample of Banking Institutes in Malay, demonstrates that all the banks present in such market characterize on average themselves by a higher efficiency in terms of human capital at the expense of the structural one; Bharathi (2010) likewise demonstrates the strongest relation between the human capital and the profitability in private banks respect the public ones, subjecting to verification the Pakistani banking sector; Cabrita and Vaz (2006)³ also demonstrate that the value of the organization is created by the interaction of the three dimensions of the intellectual capital.

Other interesting studies about the relation between VAIC and Market Value/ Book Value (MV/BV) have been carried out on the Turkish listed banks by Yalama and Coskun

² Cfr. Pulic and Bornemann (2002), Pulic (2001).

³ Cabrita and Vaz (2006) analyze a sample of 53 banks joined to the Portuguese Bankers Association.

(2007) and by Samiloglu (2006)⁴. The latter, in particular, demonstrates that there is no significant relationship between the dependent MV/BV variable and the VAIC.

In Italy there are a few starting studies on the IC item in the sector of the financial services. Among them it can be recalled the study by Pierigé and Vezzani (2002) – carried out on a sample of 19 national listed banks - based on an in-depth analysis on the relation between the traditional balance indicators tending to the creation of a synthetic index of measurement of the intellectual capital, as Reborà's one (2003) who describes the perception of usefulness of some indicators of intellectual capital by the management of 6 listed banks and looks for the most efficient management levers to build business competences based on the intellectual capital. The attempt to link the personnel management and its quality to measures of performances in banks is presented by Geretto and Vezzani (2002), while Previati and Vezzani (2004) demonstrate that the measurement of the intangible offers - besides a pointing out of the value of implicit assets - an important function for the enterprise, forcing it to re-consider its essence of organization which turns capital, competences and work into production including knowledge.

Finally, a work by Alberici (2006)⁵ analyses the potentialities of the intellectual capital balance as informative source for the evaluation of the credit merit of those firms asking for credit.

3. THE VAIC™

Following a widespread classification worked out for the first time at the beginning of the 90's by the Skandia insurance group, we can divide the intellectual capital into three basic components related to: human capital⁶, relational capital⁷, organizational capital (or structural)⁸.

It's the continue interaction between human, relational and organizational capital that, combining itself with the financial capital flows, refines and gives value to each component, feeding this way the whole enterprise value. The structural capital and the relational capital can't exist or work independently from the human capital (Rastogi, 2003). The structural capital is mainly considered as an extension and an evidence of the human capital which expresses, through innovations and processes, new relationships with the business stakeholders. The relational capital represents the compound effect of the efforts supported by the organization staff (that is the same human capital). As a consequence, the human capital is not the sum of the single elements making it up, but it has to take into consideration its interdependences. Starting from such assumptions, in 1998 Pulic develops the Value Added Intellectual Coefficient methodology, best known as VAIC™.

The resources expressed in balance can be of two types: tangible and financial assets (employed assets), or intellectual assets (in their components of the human capital and the structural capital).

⁴ From the analysis of the IC in a period of time from 1998 to 2001, Samiloglu has demonstrated that there is no significant relation between the dependent MV/BV variable and the independent VACA (Value Added Coefficient Capital), STVA (Structural Capital Value Added Coefficient), and VAHU (Value Added Human Capital Coefficient) variables, making up together the VAIC™. In short, it has been pointed out that the VAIC™ method, together with its parameters VACA, STVA and VAHU, explains only the 30% of the MV/BV variable in 1998, the 2.2% in 1999, the 6.6% in 2000 and the 1.6% in 2001.

⁵ This work proposes a model of the IC report drawing up and analysis developed by the Danish Ministry of Industry. Even it deals with an initiative at the van, the model still presents significant limits restraining the informative potentialities of the reports about the intangibles. Cfr. Alberici A. (2006), pp 7-30.

⁶ The attention of the research on the human capital is paid as to the decisions on the investments in knowledge and capacities aimed at improving the company's productiveness. From a business point of view, all the elements considered lead to relate the work cost to the return on the investment (in terms of future productiveness) linked to the development of the knowledge and the abilities of the employees.

⁷ It deals with relations the enterprise has set with the market, the customers, the suppliers, the partners.

⁸ It represents the business know-how, the power of innovation and the efficiency/effectiveness of the company processes.

In particular, it is assumed that they are in force among the corporate resources the following relations:

- (1) Tangible and Financial Assets (CEE) = Physical Capital + Financial Asset= Total Assets- Intangible Assets.
- (2) Intellectual Capital (IC)= Human Capital + Structural Capital
- (3) Human Capital (HC)= Total cost in human resources
- (4) Structural Capital (SC) = VA – HC.

The coefficient under examination represents an index of measurement of the efficiency in the use of the resources; in other words, it shapes the efficiency of the IC in the value creation employing all the corporate resources.

It can also be taken to pieces by the sum of three indicators of efficiency:

- (5) VAIC™ = HCE + CEE + SCE

The HCE (*Human Capital Efficiency*) is given by the relationship between VA and HC and it indicates the amount of the value added generated per money unit invested in personnel costs. So, it represents an indicator of efficiency of the human capital value added employed, which forms a part of the efficiency of the total intellectual capital.

The SCE (*Structural Capital Efficiency*) is given by the relation between SC (given by the difference between VA and HC) and VA, representing an indicator of efficiency of the structural capital value added, which forms a part of the efficiency of the intellectual capital.

The sum of HCE and SCE sets up this way the ICE (*Intellectual Capital Efficiency*) indicator.

Obviously, the intellectual capital can't operate in a detached way, but it clearly needs physical and financial capital to create value for any company.

CEE (*Capital Employed Efficiency*) – given by the relationship between VA and Invested Capital – then denotes the quantity of value added produced by the investment of 1 euro input of physical capital.

Thus, the VAIC™ can be intended as joint of the overall intellectual capacity, for a company, in the value creation. A raised coefficient means that the major value has been created exploiting the company's resources both in terms of physical capital and intellectual capital.

So, the VAIC™ represents a measure of efficiency of the IC, that is the capacity of the corporate to use its IC to produce major profits of other enterprises of the same industrial sector and it can be used to make comparisons among banks or also among business units of the same bank.

It can be noticed immediately how all the main researches numbered so far have in common the use of the VAIC™ as methodology of analysis. The advantages of this instrument are the following:

- a) the methodology creates a standard and coherent measure and allows to carry out comparative analysis among different enterprises;
- b) all the input data are based on objective and verifiable information;
- c) the methodology is simple to calculate and use.

These advantages are reflecting on the increase of the studies using the methodology in this field and which will be used in the present work.

4. Empirical Questions and Methodology

As it comes out from the analysis of the literature, the contributions on the item of the intangible capital have been so far hit at the centre of the medium-large banks, mostly listed in the Stock Exchange. No research has analyzed so far the role of the intangible capital in the mutual banks.

Such an element appears really useful to be able to estimate the incidence of the human, relational and structural capital in those banks that make the closeness with the territory their dogmatic corpus.

That is, we want to value the existing relationship between intangible capital of a mutual bank in respect to its profitability. Such an element appears interesting in a historic period in which the closeness to the territory and the classic credit activity, in place of more profitable ones, but also risky policies of proprietary trading, appear as a *must* (probably anachronistic), but surely to be revalued to give stability to the market. Investing on the intangibles, rather than in technologically advanced platforms, can produce again elements of positive income.

With such goal we intend to estimate such relationship within the mutual banks sector, comparing it with Italian listed Banks. The choice of the mutual banks seems suitable if we consider that such typology of banking institution keeps a more binding relation with its territory, so the role of the intellectual capital should be of greater impact and significance.

Our analysis is based on a sample of 209 banks – observed in the period 2006-2010 giving rise to 1.022 observations – subdivisible in two groups: the whole banks belonging to the first group sees itself made up of 192 Italian mutual banks (out of a total number of about 400) and the group of the 17 banks listed in Borsa Italiana S.p.A.

4.1. Methodology

The essential attributes of the economic/financial performance are given by the combining between yield and risk. This is as true as more the risk gets a no- indifferent importance and it reveals itself under a variety of forms (not only competitive and operational risks, common to all the enterprises, but also credit and financial risks, taking on the financial institutions a determining prominence and not comparable with the one of the enterprises operating in other sectors). The consideration of the income – apart from the risk profiles – is destined to provide a partial and distorted representation of the bank's performance or of a particular combination.

The need to reach measures of profitability "correct" for the risk imposes the use of Value at Risk (VaR) or Capital at Risk (CaR)⁹ methodologies.

As regard to the present work, we decided to choose which measure of banks' analyzed performances to use, so the Raroc (Risk Adjusted Return on Capital) which appears made up of the connection between the profit and the total internal capital. The impossibility to have total internal capital at disposal for each bank allows us to use the Regulatory Capital as its *proxy*. The idea is that a bank has to have at its disposal a higher level of regulatory capital in order to balance the decrease of the capital's total (calculated on the whole takeover of the 1st and the 2nd Pillar). Such a choice, thus, if on one hand reduces the Raroc (because the denominator is higher than it should be), on the other hand, however, it preserves the indication of the relationship which is intended to be tested during our analysis.

In order to analyze the effected produced by the VAIC on the Raroc we appraise the following model:

$$(6) \text{RAROC} = \beta_0 + \text{VAIC} \beta_1 + \text{TOTAL LOANS/ DEPOSITS} \beta_2 + \text{REGULATORY CAPITAL/ TOTAL ASSETS} \beta_3 + \text{COST INCOME} \beta_4 + \text{LOANS TO CUSTOMERS/ TOTAL LOANS} \beta_5 + \text{REGIONAL GDP} \beta_6 + \varepsilon$$

where the main dependent variable is right the VAIC (Table 1). The main relationship, as already stated, consists in demonstrating if the **VAIC** indicator influences the bank profitability and in which measure. In the same way it will be estimated the weight under the **ICE**¹⁰ sub-component on the banks' total profitably in order to be able to test and quantify the incidence of the human capital, the relational capital and the organizational capital on the total profitability of the mutual banks.

⁹ Such a variable represents the amount of the own proper capital necessary to protect, in a probabilistic angle, the bank's creditors against the positions of risk, intended as maximum potential loss the position can be subdued to, with a certain level of probability, in a certain period of time.

¹⁰ The number values referred to the ICE sub-component have been explained in the present work, but they're under the author's availability.

Among the variables of control it is taken into consideration the **Total loans/Deposits (tot loan_dep)** relation, an asset variable which relates the whole of the total loans with the deposits of the bank. We expect that if the bank increases the total loans - in relation to the level of the own deposits – the enterprise profitability will increase because they're produced greater incomes represented respectively by interests and commission fees, dividends, capital gain over the proprietary trading. This appears evident if the bank affects its own total loans keeping a high quality and composition, because, if this didn't occur, the same would record a high deterioration of the same total loans which would cause a reduction of the Raroc's level. For this reason, as the total loans increase, with an equal number of deposits, the Raroc index should increase.

Among the regressors we have included also the **Regulatory capital / Total assets (reg cap_totass)** relation which represents the "financial lever" variable. Because of the fact that a major lever grade allows to get an income increase, we can deduct that when this relation decreases the bank's profitability will increase.

A further variable is pointed out in the **Cost/Income Ratio (cir)**; it is the main indicator of the bank's management efficiency: minor is the value expressed by such an indicator, major it will appear the efficiency achieved by the bank. It appears clear that as the total operating expenses decrease, being equal the total income, the Raroc increases.

A variable of particular relevance is constituted by the **Loans to customers/Total loans (Loan cust_totloan)** relation. It expresses a relationship able to value the choices of *asset allocation* of each bank. In effect, as it is known, the bank can decide to employ the capital gathered in loans to customers, rather than in activities of proprietary trading or, in more marginal cases, of acquisition of corporate equities. The literature, confirmed by the professional evidences, clearly shows that the employment in loans to costumers represents the most profit-making employment activity for the bank, but also the most risky component. Normally, the increase of the produced profitability appears more than proportional in respect to the marginal risk supported; this should allow a positive relation respect the Raroc. But, if the increase of the loans to customers was not properly safeguarded in terms of *credit risk mitigation*, it could occur the opposite situation.

The regression model takes into consideration a further variable of control represented by the **Regional GDP (Gdp)**. Such a variable should be able to provide significant results in relation to the different territorial wealth which marks out the Italian regions. It is well known, in effect, in literature that a region's GDP performance conditions in a positive way the banks' profitability through the influence the same exercises on levels of the intermediated masses. Obviously, as for the listed banks, we have opted for the use of the national GDP, since all the listed banks operate on the whole Italian territory.

In some alternative specifications instead of controlling by GDP, the checking is done by regional dummies.

To take into account the changes passed through the time, we have inserted the regressors in the annual dummies.

Table 1. Description of the Full Set of Potential Explanatory Variables for the Performance of the Raroc

Variable	Description
VAIC	Represents the aggregate of the whole intellectual capacity in the creation of value for a company and it is made up the summation among the efficiency of the human capital, the structural capital and the physical capital employed in the bank
tot loan_dep	Variable of "asset" which puts in relation the whole total loans through the gathering done by the bank
reg cap_totass	Variable of "financial leverage"
cir	"Economic" variable and main indicator of management efficiency
Loan cust_totloan	"Strategic" variable. It quantifies the portion of total loans addressed to the sustain of the real economy (loans to customers)
Gdp	Variable "of context"

5. Data and Results

5.1. OLS Assessment

In order to test the incidence of the VAIC variable and the Ice sub-component on the profitability of our sample of reference we went on estimating the models of regression through the use of the OLS methodology. Then, instead, they will be presented the assessments by fixed effects of the credit institutes.

The results of the assessment are marked in the table 2. In the first column we report the results achieved on the whole sample, while in the second one you find the results achieved focusing only on the BCCs. In these two specifications we control through regional dummies. In the columns 3 and 4, instead, they have been assessed the previous specifications controlling, this time, through regional GDP.

Table 2. OLS Assessment (Whole sample)

	Raroc Whole sample with regional dummies, quoting dummies and time dummies	Raroc BCCs with regional and time dummies	Raroc Whole sample with GDP, quoting dummies and time dummies	Raroc BCCc With GDP and time dummies
VAIC	0.0309*** (0.0089)	0.0186*** (0.0069)	0.0301*** (0.0082)	0.0184*** (0.0058)
tot loan_dep	0.0014 (0.0135)	0.0141 (0.0122)	0.0015 (0.0135)	0.0143 (0.0129)
reg cap_totass	-0.1246* (0.0704)	-0.1592** (0.0718)	-0.1478** (0.0664)	-0.1817** (0.0740)
Cir	0.0009 (0.0017)	-0.0481 (0.0484)	0.0006 (0.0016)	-0.0489 (0.0435)
Loan cust_totloan	-0.0000*** (0.0000)	-0.0069 (0.0156)	-0.0000*** (0.0000)	-0.0093 (0.0144)
year== 2006	0.0458*** (0.0061)	0.0445*** (0.0063)	0.0468*** (0.0059)	0.0451*** (0.0063)
year== 2007	0.0496*** (0.0056)	0.0468*** (0.0061)	0.0511*** (0.0053)	0.0479*** (0.0061)
year== 2008	0.0263*** (0.0064)	0.0312*** (0.0056)	0.0275*** (0.0061)	0.0322*** (0.0056)
year== 2009	0.0102** (0.0048)	0.0116** (0.0050)	0.0110** (0.0047)	0.0122** (0.0050)
region==Listed banks	-0.0311*** (0.0120)	.	-0.0221** (0.0107)	
GDP			-0.0005 (0.0003)	-0.0005 (0.0004)
Observations	1022	937	1022	937
Adjusted R-squared	0.337	0.387	0.338	0.389

Notes: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

In all the four sceneries the VAIC always appears positive and statistically significant at 1%, but with a major marginal effect in the scenery 1 (0.0309).

The table 2 still shows that in all the four sceneries into consideration the relationship between total loans and deposits does not appear statistically significant. This can be explained in consideration that, being the period of economic recession under way, the increase of the total loans has not been translated into an increase of profitability.

Such a valuational logic is strengthened by the results obtained as for the loans to customers/total loans variable which appear not statistically significant if the regional dummies are used, while it appears relevant in case of use of the only GDP (as variable of context), but

with negative sign. This result shows the presence of an inverse correlation between loans given to the real economy and profitability produced by the banks, and this may be explained by the fact that a major level of loans is not associated to an equivalent level of *credit risk mitigation* (so to let the Raroc decrease) or that such a delta has not been compensated anymore for the adjustments on the credit which have obviously lowered the bank's profitability.

This result, thus, seems at least partly justifying the choice of the banks with a greater dimension to run policies of *credit crunch*, leaving the only Bccs the task to support the real economy, even if sacrificing a part of the own profitability. The same CIR variable does not seem at any case statistically significant. Such a datum appears interesting because it would tend to demonstrate that the incidence of the total operating expenses does not influence the profitability level produced by the banks belonging to our sample.

The output, moreover, highlights the significance at a level of the 10% (column 1) and the 5% (columns 2, 3, 4) as for the leverage variable (PV/Tot Att). This significance seems stronger in the case of the sub-sample made up of the only Bccs when using the GDP as variable of control.

The negative sign of the relation confirms that when the leverage ratio increases, it corresponds to it an increase of the profitability. This datum, more marked in the case of the only no-listed banks (columns 2 and 4), highlights how in the Bccs the management of the optimum financial structure is less structured than the bigger banks.

Moreover, the normative provisions imposing the injection to legal reserve of at least a 70% of the profit got, demonstrates a greater level of per cent capitalization of the above-mentioned tipology of bank and, as a consequence, it would tend to reduce the leverage effect.

The use of time dummies allows us, furthermore, to understand the evolution of the profitability during the time. If necessary, we could think about the continuous evolution of the regulation during the last years which has notoriously modified the operational and management assets of the banks operating in Italy or the evolution of macro-economic variables (cfr. interest rates' performance) which influence their competitive dynamics. Using the 2010 as year of reference, the table marks how for the BCCs the profitability has decreased during the course of the time¹¹.

In order to make a further comparison among the only Bccs operating in Italy, we'll keep going on dividing the sample in two sub-samples including the Bccs in the North and the remaining ones in the Centre-South respectively. In these specifications we control through regional dummies (Table 3).

Such analysis is based on 268 observations as for the Centre-Southern sample and 669 observations for the Northern one. As for this study, we notice that both the VAIC and the ICE sub-component appear significant at 5% in the Centre-Southern regions (marginal effect = 0.0178) and at 10% in the Northern ones (marginal effect = 0.0196).

The leverage relation appears significant only in the North, while the CIR presents significance and negative sign only in the Bccs of the Centre-South. Obviously, however, these results could partly be justified by the reduced dimension of the sample related to the Centre-South. The relation loans to customers/total loans appear statistically no significant. The profitability seems worsened during the time only for the Credit Institutes operating in the North.

¹¹ We would get the same results even in the case we evaluated the relevance of the only intellectual capital (ICE) – as VAIC's sub-component – in the determination of the profitability of the Banks within our sample. The results obtained, not reported in the text, show how the ICE has a strong statistical significance on the profitability of the whole sample and in the sub-sample of the only Bccs, clarifying how the banking world – and the local banks in particular – make (or should make) the human capital a lever of strategic development. In these second scenery, the lever effects results statistically significant only in the case of the no-listed sample. The remaining results are confirmed in significance and sign.

Table 3. OLS Assessment (only BCCs)

	Raroc Bccs in Centre - South	Raroc Bccs in North	Raroc Bccs in Centre- South	Raroc Bccs in North
VAIC	0.0178** (0.0082)	0.0196* (0.0104)		
tot loan_dep	0.0872 (0.0681)	0.0136 (0.0122)	0.0874 (0.0682)	0.0134 (0.0122)
reg cap_totass	-0.6082 (0.3855)	-0.1209*** (0.0417)	-0.6070 (0.3864)	-0.1154*** (0.0434)
Cir	-0.1047* (0.0588)	-0.0247 (0.0690)	-0.1054* (0.0590)	-0.0256 (0.0693)
Loan cust_totloan	0.0094 (0.0400)	-0.0188 (0.0181)	0.0095 (0.0402)	-0.0183 (0.0180)
year== 2006	0.0244* (0.0137)	0.0518*** (0.0067)	0.0246* (0.0137)	0.0519*** (0.0067)
year== 2007	0.0208 (0.0133)	0.0562*** (0.0068)	0.0210 (0.0133)	0.0564*** (0.0069)
year== 2008	0.0125 (0.0140)	0.0375*** (0.0053)	0.0127 (0.0140)	0.0377*** (0.0053)
year== 2009	-0.0007 (0.0148)	0.0147*** (0.0044)	-0.0006 (0.0148)	0.0148*** (0.0044)
region==Listed banks
Ice			0.0176** (0.0083)	0.0193* (0.0104)
Observations	268	669	268	669
Adjusted R-squared	0.266	0.492	0.266	0.491

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

5.2. Assessment through Fixed Effects

On the basis of the estimations obtained through the OLS methodology, now we intend to verify the robustness of our results through a following regression by "fixed effects", aimed at removing any possible distortion (bias) determined by the presence of omitted variables (tab.4).

In these estimations, in fact, we control through fixed effects the credit institutes and we exploit the variability in time of our variable of interest. The assessment through fixed effects confirms the significance and the sign of the VAIC variable respect the Raroc. The significance appears at 1% in the case of no-listed banks and 5% in the case of the whole sample. The marginal effect in the 4 sceneries analyzed in the table 4 appears noticeably more marked than the previous assessment.

The variables of control do not appear statistically significant, except for the *Loan cust_totloan* variable appearing statistically significant in the whole sample, but characterized by the negative sign. The table 5, at last, presents the results obtained with the model through fixed effects when it is subdivided the Bccs sample as for their geographic position.

The result of such regression is that the VAIC affects the profitability in a positive way. The *tot loan_dep* variable appears significant at 10% only in the Centre-South set with positive sign and marginal effect equal to 0.0702. Such a result would tend to demonstrate that the Centre-Southern Bccs possess a quality on the marginal total loans surely higher than the sister companies of the North. The significance of the above-mentioned marginal total loans, however, has to be recorded in the property finance sector because the *Loan cust_totloan* variable goes on not being statistically significant.

Table 4. Assessment through fixed effects (whole sample)

	Raroc Whole sample with regional dummies, quoting dummies and time dummies	Raroc BCCc with regional and time dummies	Raroc Whole sample with GDP, quoting dummies and time dummies	Raroc BCCc With GDP and time dummies
VAIC	0.0501** (0.0212)	0.0221*** (0.0083)	0.0500** (0.0212)	0.0221*** (0.0083)
tot loan_dep	0.0075 (0.0104)	0.0156 (0.0144)	0.0075 (0.0104)	0.0153 (0.0143)
reg cap_totass	-0.1470 (0.1047)	-0.0843 (0.0622)	-0.1470 (0.1048)	-0.0842 (0.0623)
Cir	0.0052 (0.0041)	-0.0454 (0.0642)	0.0052 (0.0041)	-0.0457 (0.0645)
Loan cust_totloan	-0.0000*** (0.0000)	-0.0269 (0.0320)	-0.0000*** (0.0000)	-0.0278 (0.0319)
year== 2006	0.0371*** (0.0109)	0.0423*** (0.0087)	0.0365*** (0.0108)	0.0403*** (0.0104)
year== 2007	0.0367*** (0.0132)	0.0439*** (0.0093)	0.0358*** (0.0130)	0.0413*** (0.0115)
year== 2008	0.0176 (0.0122)	0.0294*** (0.0074)	0.0167 (0.0122)	0.0266*** (0.0102)
year== 2009	0.0061 (0.0065)	0.0104** (0.0052)	0.0055 (0.0067)	0.0084 (0.0070)
Gdp			0.0006 (0.0026)	0.0017 (0.0029)
Observations	1022	937	1022	937
Adjusted R-squared	0.408	0.428	0.408	0.428

Notes: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

The *reg cap_totass* variable seems significant at 10% in the sample of the Centre-South and at 5% in the North confirming the negative sign. The marginal effect appears more pushed in the banks of the Centre-South (-1.92) than the ones of the North (-0.04). Such result could demonstrate that the profitability of the Bccs in the North, not being able to be the mainstay of the total loans' expansion, appears much more influenced by the use of a more pusher level of financial leverage. This circumstance, however, could represent an element of weakness for the Bccs of the North because the use of the leverage is destined to suffer strong limitations as regard to the new prescriptions of Basel 3.

The *CIR* variable continues to appear not significant.

These assessments too show a worsening of the profitability in the course of the time, because many annual dummies are positive respect the year of reference that is 2010. The worsening, however, is found only in the banks of the North.

Table 5. Assessment through fixed effects (only BCCs)

	Raroc BCCs in Centre- South	Raroc BCCs in North	Raroc BCCs in Centre- South	Raroc BCCs in North
VAIC	0.0305** (0.0136)	0.0214* (0.0109)		
tot loan_dep	0.0702* (0.0389)	0.0123 (0.0132)	0.0705* (0.0390)	0.0123 (0.0132)
reg cap_totass	-1.9299* (1.1062)	-0.0422** (0.0186)	-1.9285* (1.1073)	-0.0347** (0.0170)
Cir	-0.1213 (0.0937)	-0.0004 (0.0908)	-0.1220 (0.0942)	-0.0010 (0.0907)
Loan cust_totloan	0.0366 (0.0366)	-0.0434 (0.0375)	0.0368 (0.0366)	-0.0432 (0.0375)
region==Listed banks
year== 2006	0.0208 (0.0164)	0.0527*** (0.0091)	0.0210 (0.0163)	0.0527*** (0.0092)
year== 2007	0.0158 (0.0162)	0.0576*** (0.0103)	0.0161 (0.0161)	0.0577*** (0.0103)
year== 2008	0.0081 (0.0146)	0.0385*** (0.0070)	0.0084 (0.0145)	0.0386*** (0.0070)
year== 2009	-0.0062 (0.0146)	0.0145*** (0.0038)	-0.0061 (0.0146)	0.0145*** (0.0039)
Ice			0.0303** (0.0137)	0.0214* (0.0110)
Observations	268	669	268	669
Adjusted R-squared	0.347	0.591	0.347	0.590

Notes: Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01

6. Concluding Remarks

Object of the present research work was to test the contribution of the intellectual capital to the creation of profitability of the Italian mutual banks. Such item, if in part dealt with by the literature with regards to the big listed banks, appears completely neglected as to the local banks which, however, hold an important role in the real economy.

With this purpose, it has been chosen a sample of 209 banks – of which 192 Bccs and 17 listed banks – and it was assessed the main relation between adjusted profitability for the risk (Raroc) and value added of the intellectual capital (VAIC). The estimations have been obtained through the OLS methodology and through fixed effects of the banks.

The results achieved by our analysis show that it exists a strong and positive relation between intellectual capital (measured by the VAIC) and adjusted profitability for the risk of our Bccs' sample. In particular, the Sothern Bccs present a higher marginal effect than the sister companies of the North.

The outcomes with a VAIC statistically significant at a level of the 1% lead to revise with less strictness the problem of the presumed excessive personnel cost within the Italian banks. Banks, as it is known, appear more linked to traditional operational models (and less to operations of proprietary trading) than to an International outline, so they're structurally bounded to a major presence of work-force.

This concept appears obviously enhanced later on for the local banks which operate almost exclusively with and in favor of families and local enterprises. The analysis has furthermore marked the no-significance of the *total loans/deposits* and *cost/income* relations. Such evidences find their own ratio in the fact that the banks' profitability of the last five-year period has almost been exclusively determined by the level of adjustments on the credits due to the economic crisis under way.

This result is later on confirmed by the fact that the *loans to customers/ total loans* relation appears exclusively significant in the Bccs' sample, but with negative sign.

The use of the time dummies has furthermore highlighted how the profitability of the banks belonging to our sample has been decreasing during the last years and that the 2010 has been the worst financial year in terms of profitability.

Using, moreover, the only quoted banks as sample of control, we may point out that, under the same conditions, their profitability is lower than the one achieved by the Bccs. The results shown by the present work, obviously outcomes of a five-year period conditioned by the protraction of the economic crisis, should certainly be verified in a period of better economic-entrepreneurial steadiness.

References

- Alberici, A., 2006. L'analisi del capitale intellettuale per la valutazione del merito di credito [The analysis of intellectual capital for the credit rating evaluation]. *Rivista Bancaria- Minerva Bancaria, Istituto di Cultura Bancaria Francesco Parrillo*, 4, pp.7-30.
- Bharathi, K.G., 2010. The intellectual capital performance of banking sector in Pakistan. *Pak. J. Commer. Soc. Sci.*, 4(1), pp.84-99.
- Bradley, K., 1997. Intellectual capital and the new wealth of nations. *Business Strategy Review*, 8(1), pp.53- 62.
- Brooking, A., 1996. *Intellectual capital - Core asset for the third millennium enterprise*. London: International Thomson Business Press.
- Cabrita, M.R. and Vaz, J.L., 2006. Intellectual capital and value creation: Evidence from the Portuguese banking industry. *The Electronic Journal of Knowledge and Learning*, 3(2-3), pp.266-280.
- Edvinsson, L. and Malone, M.S., 1997. *Intellectual capital: Realizing your company's true value by finding its hidden brainpower*. New York: HarperCollins.
- Edvinsson, L. and Sullivan, P., 1996. Developing a model for managing intellectual capital. *European Management Journal*, 14, pp.356-364.
- Geretto, E. and Vezzani, P., 2002. Qualità delle risorse umane e performance delle banche: Il Return on quality [The quality of human resources and the performances in the banking industry: The return on quality], *Bancaria*, 58(3), pp.47-64.
- Gigante, G., and Previati, D., 2009. Intellectual capital and banking's performance. Some empirical evidence from the Italian banking system. *The European Association of University Teachers of Banking and Finance*, Annual Meeting, September 2009.
- Goh, P.C., 2005. Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital*, 6, pp.385-396.
- Hancock, P., Tan, H.P., and Plowman, D., 2007. Intellectual capital and financial returns of companies. *Journal of Intellectual Capital*, 8(1), pp.76-95.
- Hoque, Z. and Hussain. M., 2002. Understanding non-financial performance measurement practices in Japanese banks: A new institutional sociology theory perspective. *Accounting, Auditing and Accountability Journal*, 15(2), pp.162-183.
- Hussain, M., Gunasekaran, A., and Islam, M.M., 2002. Implications of non-financial performance measures in Finnish banks. *Managerial Auditing Journal*, 17(8), pp.452-463.
- Johanson, U., Martensson, M., and Skoog, M., 1999a. Measuring and managing intangibles. Twelve Swedish qualitative exploratory case studies, *School of Business Stockholm University Working Paper*, Mimeo.
- Leibeinstein, H., 1966. Allocative efficiency vs. "X-efficiency". *The American Economic Review*, 56(3), pp.392-415.
- Lev, B., 2001. *Intangibles: Management, measurement and reporting*. Washington: The Brookings Institution Press.
- Mavridis, D. and Kyrizoglou, P., 2005. Intellectual capital performance drivers in the Greek banking sector. *Management Research News*, 28(5), pp.43-62.

- Previati, D. and Vezzani, P., 2004. *Misurazione e reporting del Capitale Intellettuale nel settore dei servizi finanziari* [Measurement and reporting of intellectual capital in the financial services industry], Milano: Newfin, Università Bocconi.
- Previati, D. and Vezzani, P., 2007. *Il capitale intellettuale: misurazione, gestione e valorizzazione – Prospettive di analisi e prassi manageriali per il settore dei servizi finanziari* [The intellectual capital: measurement, management and development – Prospects of analysis and managerial behavior in the financial services industry]. Roma: Bancaria Editrice.
- Pulic A., 2001. Value creation efficiency analysis of Croatian banks 1996-2000. [online] Available at: <www.vaic-on.net>.
- Pulic, A. and Bornemann, M., 1999. The physical and intellectual capital of Austrian banks. [online] Available at: <<http://www.measuring-ip.at/Papers/Pulic/Bank/en-bank.html>>.
- Pulic, A., 1998. Measuring the performance of intellectual potential in knowledge economy. [online] Available at: <<http://www.measuring-ip.at/Opapers/Pulic/Vaictxt.vaictxt.html>>.
- Samiloglu, F., 2006. The performance analysis of the Turkish banks through VAIC and MV/BV ratio. *Journal of Administrative Sciences*, 4(1), pp.207-226.
- Stovel, M. and Bontis, N., 2002. Voluntary turnover: Knowledge management friend or foe? *Journal of Intellectual Capital*, 3(3), pp.303-322.
- Sullivan, P.H., Jr. and Sullivan, P.H. Sr., 2000. Valuing intangibles companies, an intellectual capital approach. *Journal of Intellectual Capital*, 1(4), pp.325-336.
- Sveiby, K.E., 1997. *The new organizational wealth-managing and measuring knowledge-based assets*. San Fransisco: Berrett-Koehler.
- Teece, D.J., 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research Policy*, 15, pp.286-305.
- Yalama, A. and Coskun, M., 2007. Intellectual capital performance of quoted banks on the Istanbul stock exchange market. *The Journal of Intellectual Capital*, 8(2), pp.256-271.