

## **Is cooperative banks' reaction to business cycle different?**

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This paper investigates whether bank ownership is correlated with bank lending behaviour over the business cycle. Banks are said to behave in a pro-cyclical way when their lending, the stringency of their credit rating policy and provisioning practices as well as their profitability move in correlation with the economy's short-term business cycles.

We argue that cooperative banks behave differently and that this is one of the reasons for cooperative banks' success: the cooperative ownership is a signal of commitment, i.e. the bank will support members and their territories, under any macroeconomic circumstances. This is perceived as a real difference from the other banks, which are frequently described by a famous statement of Mark Twain: a banker is a fellow who lends you his umbrella when the sun is shining, but wants it back the minute it begins to rain. We test the empirical implications of this hypothesis using data on Italian provinces between 1995 and 2006. The econometric results provide partial support for the hypothesis.

**Key words:** business cycle, panel data, bank lending

**JEL classification:** C23, E32, G21

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## 1. Introduction

The consolidation process in the banking industry raised the concern about the survival of local and cooperative banks. However, a relatively abundant empirical literature has shown that local banks not only survive but are often performing better than larger banks. In particular, local banks seem to be better in solving asymmetric information problems emerging between borrowers and lenders, given their capacity to deal with informational opacity and to establish long-term relationships, especially with small and medium enterprises (SMEs).

We argue that one of the reasons for cooperative banks' success is the 'trust' factor: the cooperative ownership is a signal of commitment, i.e. the bank will support members and their territories, under any macroeconomic circumstances. This is perceived as a real difference from the other banks, which are frequently described by a famous statement of Mark Twain: a banker is a fellow who lends you his umbrella when the sun is shining, but wants it back the minute it begins to rain.

This paper investigates whether bank ownership is correlated with bank lending behaviour over the business cycle. Banks are said to behave in a pro-cyclical way when their lending, the stringency of their credit rating policy and provisioning practices as well as their profitability move in correlation with the economy's short-term business cycles. Local banks success may derive by the lower volatility of lending policies over the economic cycle. Credit smoothing is crucial for the SMEs, the first victims of credit rationing during economic slowdowns.

The analysis is carried out at local level. At this purpose, we use a panel data collecting information for Italian provinces, at sector level, by bank category, between 1995 and 2006.

The remainder of the paper is structured as follows. In the next section, we briefly overview the empirical literature dealing with the procyclicality of banks' behaviour. Section 3 is devoted to the description of the economic context, while section 4 presents the data and the econometric exercise. Section 5 concludes.

## **2. Literature review**

The relation between bank lending and business cycle has been often the subject of much investigation. The interest for the issue comes at least from two stylised facts (Berger, A.N. and G.F. Udell, 2003). One stylised fact is that lending often increases significantly during business cycle expansions, and then falls considerably during subsequent downturns. These changes in lending are generally more than proportional to the changes in economic activity, suggesting that they are changes in bank loan supply that tend to accentuate business cycle.

A second stylised fact about bank loan procyclicality is that observed measures of loan performance problems appear to follow a distinct pattern over the business cycle (Albertazzi, U. L. Gambacorta, 2006).

Berger, A. and G.F. Udell (2003) explain bank lending procyclicality through the institutional memory hypothesis. The “institutional memory” hypothesis is driven by deterioration in the ability of loan officers over the bank’s lending cycle that results in an easing of credit standards. This easing of standards may be compounded by simultaneous deterioration in the capacity of bank management to discipline its loan officers and reduction in the capacities of external stakeholders to discipline bank management. They test the empirical implications of this hypothesis using data from individual US banks providing empirical support.

Micco and Panizza (2004) examine whether bank ownership (public vs private, domestic vs foreign) is correlated with bank lending behaviour over the business cycle. They find that state-owned banks may play a useful credit-smoothing role because their lending is less responsive to macroeconomic shocks than the lending of private banks. Moreover, they investigate whether this differential behaviour is due to an explicit objective of stabilizing credit or to the presence of “lazy” public bank managers; evidence is found in support of the former hypothesis. In the case of foreign-owned banks, the paper finds that the results are less clear-cut and argues that this finding is in line with existing theoretical models.

De Nicolò and Loukoianova (2007) present a model of a banking industry with heterogeneous banks that delivers predictions on the relationship between banks’ risk of failure, market structure, bank ownership, and banks’ screening and bankruptcy costs. They

test empirically these predictions and find, among the other results, that the positive and significant relationship between bank concentration and bank risk of failure is stronger when bank ownership is taken into account, and it is strongest when state-owned banks have sizeable market shares.

Bonaccorsi di Patti et al. (2005) try to evaluate credit growth differentials among banks of different dimension through demand and supply factors. They find that the increasing market share owned by small banks is not explained by their territorial and sector specialization. The empirical results show that the restructuring process of the banking system occurred in the last decade, which interested mostly the bigger banks, explains a high percentage of the growth differentials.

Yeager et al. (2002) seek to address the degree to which county economic activity affects community bank performance. Community banks draw loans and deposits from their local markets and therefore may be more vulnerable to local economic slowdowns precisely because they have locally concentrated loan and deposit customers. When local economic conditions weaken, many customers and small community banks are likely to be affected similarly, thus impairing the credit quality of many loans simultaneously. Additionally, these banks may suffer more from severe deposit runoffs than do banks with geographically diverse customers because of the local banks' reliance on concentrated sets of depositors. Then, the authors' initial hypothesis is that rural banks' performance is more likely to be correlated with county economic data than other banks because rural banks tend to lend to a relatively high percentage of firms and residents in their own counties. To assess the degree of dependence between local economic activity and bank performance, the authors focused on the statistical correlation between four measures of bank performance and four measures of economic activity. The results were not in line with the expectations. Indeed, county economic data had little influence on bank performance, but state economic data exhibited strong relationships to the performance measures. This result was robust to different specifications.

Aghion et al. (2007) examine how uncertainty and credit constraints affect the composition of investment and thereby volatility and growth. They develop a model where firms engage in two types of investment: a short-term one; and a long-term one, which contributes more to productivity growth. Because it takes longer to complete, long-term investment has a relatively less cyclical return but also a higher liquidity risk. The first effect

ensures that the share of long-term investment to total investment is countercyclical when financial markets are perfect; the second implies that the share of long-term investment turns procyclical when firms face tight credit constraints. Thus, they introduce a novel propagation mechanism: through its effect on the cyclical composition of investment, tighter credit can lead to both higher volatility and lower mean growth. They also provide evidence supporting these predictions

### **3. The economic framework**

The pace of Italian GDP growth has slowed, since the turn of the century, to an average of 0.9 between 2001 and 2006, against an average of 1.8 in EU15. If a longer period is considered, 1996-2006, the Italian economic performance improves to an average of 1.4, which remains lower than the EU 15 average of 2.3.

Bank loans had the same dynamic as GDP, except for the years 2000 and 2005-2006, characterised by an accelerated growth. However, the picture is not uniform across the different categories of banks. As it emerges in Figure 1, Cooperative Banks (hereinafter, BCCs) have experienced a significantly higher growth of loans than the average banking system. As a result, across the period BCCs' market share has steadily increased. It is worth investigating if BCCs' growth has been uniform across categories of customers or if there have been different dynamics.

Figure 2 shows that, BCCs have increased loans to enterprises three times more than the other banks, while the trend has been just a bit more dynamic in households sector (+20%). If only non financial firms are taken into account (which represent 36% of total loans while loans to quasi-enterprises are about 30%), we can exploit more detailed information on the branch of activity.

When we consider the different branches independently, we observe that the dynamics has been more accelerated than the average in construction and other services sectors (Figure3). This trend is not in line with the whole banking system which registered a relevant growth only in services sector.

However, the better performance of BCCs has not been equally distributed across the different branches of activity: indeed, as Figure 4 shows clearly, the growth has been 10 times higher in machinery sector and only two times higher in the services sector.

In order to shed some light on which factors have contributed to this different dynamic, we inspect the relation between the growth differential and the initial market share, the riskiness of the branch of activity and the value added growth. As far as the first indicator is concerned, Figure 4 shows that the higher growth has been registered in those sectors characterised by a lower initial market share: this could signal a catching up process aimed at gaining more market shares in traditionally disregarded sectors.

This assessment is confirmed by the indicator measuring the relation between the average loan per client of BCCs and the banking system. The ratio has significantly increased between 2001 and 2004 (which represents the more dynamic period for BCCs) signalling a trend towards customers of bigger dimension than before in BCCs' portfolios.

A second aspect to take into account entails the potential relation existing between loans growth in different branches and the corresponding riskiness. Indeed, bigger banks may have decided to leave riskier sectors in view of the implementation of Basel 2 requirements, so giving indirectly market opportunities to BCCs. As represented in Figure 5, only 5 branches of activity, presenting higher growth rate than the average, are also riskier than the average. However, these five sectors represent more than 50 per cent of BCCs' loans to enterprises. This could signal that BCCs have gained market shares increasing their exposure to risk. Taking into consideration the quasi enterprises sector (which also combines higher growth and higher risk and has an important weight in the BCCs' portfolio) confirm this dynamic.

Finally, we analysed the relation between growth differential in different branches – distinguishing between BCCs and the whole system – and the value added growth in the same branches, in order to see if the increase in market shares occurred in the more or less dynamic sectors. It does not emerge a statistically significant relation (Figure 6).

#### 4. Empirical model, variables and datasets

In this section we use data on Italian provinces to test our key hypothesis: local banks lending policies have been different from the whole banking sector's ones over the analysed economic cycle.

For this purpose, we employ several different databases. First, we use data coming from Central Credit Register (*Centrale dei Rischi-CR*)<sup>1</sup> of Bank of Italy. This database collects information on loans exceeding the 75000 euro threshold. Given the limited dimensions of BCCs' business, this threshold may induce some bias in our analysis. Nevertheless, this database has an important advantage: it allows the partition of the sample in four categories: 1. BCC; 2. other small banks belonging to groups; 3. other small banks; 4. medium and large banks (foreign banks subsidiaries included). To overcome the potential bias of *CR* database, we then use the database *bastral*<sup>2</sup>, losing the opportunity of distinguishing BCCs from other small banks. Finally, always exploiting *bastral* database, we focus on loans given to craft enterprises (it is the sum of craft enterprises with less than 5 employees, with more than 5 but less than 20 employees and with more than 20 employees).

A preliminary investigation suggested us that, in line with expectations, the dynamic of the period has been higher for the local banks than for the big banks, involved in the consolidation process. Indeed, in the past two decades the Italian banking system has undergone intense restructuring, with an increasing number of bank mergers and acquisitions. This could have affected significantly the banks' behaviour. We should care about this in dealing with econometric results. Figure 7 shows that banks belonging to group 4 – medium and large banks – have been almost static in the period analysed.

The analysis in this paper is carried out using a simple estimation strategy. The panel is composed by 103 provinces\*4sectors\*4 banks' categories between 1997 and 2004 (theoretical number of observations equal to 13184). Following Micco e Panizza (2004), we use the next econometric specification:

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<sup>1</sup> Centrale dei rischi is a credit bureau register managed by Bank of Italy and collecting information about loans issued by banks and financial institutions.

<sup>2</sup> BASTRA 1 is a statistical database managed by Bank of Italy collecting information about banks activity.

$$crl_{jki,t} = \alpha + \beta_1 ycr_{jk,t} * bcc_{i,t} + \beta_2 ycr_{jk,t} * loc_{i,t} + \beta_3 ycr_{jk,t} * fil_i + \delta_{1j} + \delta_{2k} + \varepsilon_{ijk,t}$$

where  $crl_{i,t}$  represents the loans growth of banks with dimension  $i$ , in sector  $j$ , province  $k$ , at time  $t$ .  $bcc$ ,  $loc$  and  $fil$  are dummy identifying the different bank categories. In principle, several variables (GDP, investment, consumption, employment, etc) may be employed as proxies for the phase of the business cycle; however, the choice is restricted when a provincial perspective is taken. As a result,  $ycr$  measures value added growth rate in sector  $j$ , province  $k$ , at time  $t$  - proxy of economic cycle. The same regression has been implemented also substituting the same value added growth rate with the lagged value added (in order to minimize any unintentional feedback from the endogenous variables), the per capita value added growth rate, and the employment rate growth. Hence, the interactions measure how lending by cooperative banks, local banks, and small banks owned by big banking group reacts (relative to big banks) to shocks. In all cases, we include fixed effects for provinces and sectors, which control for average differences not captured by the other exogenous variables. We also run the test with and without time fixed effects. A negative value of  $\beta_1$  will indicate that cooperative banks behave differently from the whole banking system over the cycle: a positive coefficient will indicate the opposite.

Table 1 shows the results from the first regression: In column 1, the coefficient on  $vajkgr*bcc$  is  $-2.27$ , indicating that lending by BCCs is much less procyclical than that of medium and large banks. It is interesting the significance (and the positive sign) of the coefficient on  $vajkgr*fil$ , corresponding to other small banks belonging to groups; while, in the case of other small banks ( $vajkgr*loc$ ) we find that they are not significantly different from medium and large banks. In Column 3 we employ employment growth instead of value added growth, as proxy of economic cycle, obtaining almost the same results.

To investigate the same issue from a different point of view, the relation between market shares (Figure 8) and value added interacted with banks categories dummies has been estimated. However, we did not find statistical evidence in this direction. Following Yeager et al (2002), we explored the relationship of lending dynamics with national economic data. We found that national economic data have only little and not significant influence (we do not report the corresponding table for sake of brevity).



As we already pointed out, the use of CR database could induce some bias in our results, given that the 75,000 euro threshold determines the exclusion of a significant share of BCCs' clients. To test if this is the case, in the following estimates we employ *bastra1* database, losing the capacity to distinguish BCCs from other small banks but overcoming the threshold limit.

The unit of observation is again represented by the province: in particular we observe the loans granted by banks (two categories: BCCs and the all the other banks) to enterprises operating in 4 sectors (agriculture, industry without constructions, constructions and services), between 1998 and 2006.

As we clarified in the previous section, the period analysed could turn in some mystifying results, given that the increase in market shares owned by BCCs has been spread all over the sectors, and in particular in agriculture and constructions. The increasing market share owned by BCCs could derive also by the restructuring processes in the banking sector. A recent study of Bank of Italy (Beretta and Del Prete, 2007)<sup>3</sup> shows that in the period 1993-2004 (which in part corresponds to our period of analysis) each year has been characterised by the occurrence of acquisitions concerning banks representing about 22 per cent of loans to productive system; this share decreases to slightly more than 14 per cent for mergers.

The equation we estimate using data coming from *bastra1* is the following:

$$crl_{jki,t} = \alpha + \beta_1 ycr_{jk,t} * bcc_{i,t} + \gamma * qm_{jk,t} + \delta_{1j} + \delta_{2k} + \varepsilon_{ijk,t}$$

where  $crl_{i,t}$  represents the loans growth of the two categories of banks (BCCs and the others) in sector  $j$ , province  $k$ . BCC is the dummy that identifies cooperative banks.  $ycr$  measures the growth of value added in sector  $j$ , province  $k$ , year  $t$  - proxy of economic cycle. An aspect to be analyzed is whether loans dynamics is affected by BCCs' market share.

Among the regressors, in addition to dummies controlling for geographical and sector characteristics, we include a variable measuring the market shares.

In table 2, we have the key results. Market share has no influence in explaining how bank financing is affected by business cycle. A statistically significant inverse relation, even if not immediate, seems to exist between bank loans dynamics and value added growth.

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<sup>3</sup> Beretta E., S. Del Prete (2007) "Aggregazioni bancarie e specializzazione nel credito alle PMI: peculiarità per area geografica"

Finally we focused on a more homogeneous sample – loans to craft enterprises. The period considered is 1998-2006 which slightly covers a business cycle. However, when we use this sub-sample, we do not find a statistically significant relation between loans growth and economic cycle, signalling a clear acyclicity. This is in line with several empirical works dealing with Basel II effects on small and medium enterprises (Cannata, 2006) and with the special treatment received by retail credit and SME loans as a recognition of the fact that the riskiness of such exposure derives to a greater extent from idiosyncratic risk and much less from common factor risk.

#### **4. Concluding remarks**

This paper provides some evidence that local cooperative banks do not follow the same lending pattern, exhibited by other banks, in relation to the change in economic activity. The results obtained corroborate the hypothesis that local cooperative banks tend to behave differently from the whole banking system, smoothing their support to local business, over the cycle.

The chosen database should guarantee that these results are not biased by the different clients served by local and big banks. Nevertheless two factors have to be acknowledged: first, as already mentioned, the period under investigation has been characterized by a strong merger activity involving large and medium banks. The reorganization process ensuing from this mergers may have impacted on the lending of these banks. Moreover, the adaptation to the new regulatory framework (Basel 2) may also have had an effect on the lending strategy of the large banks. These two factors may make more difficult to interpret the result.

To take into consideration these aspects we should run the regressions with only non-merging banks - i.e. deleting observations on banks that engaged in mergers over the  $[t-x, t]$  period - to ensure that results are not due to mergers.

More robust results would be obtained with a longer time series: 10 years represent only one business cycle. Moreover the years analysed are somewhat peculiar since they are characterised by the introduction of tougher capital requirements and many bank mergers.

Another aspect to be considered is the evolution of banks' riskiness over the business cycle (Quagliariello, 2006): after the peak of the cyclical upturn, customers' profitability worsens, borrowers' creditworthiness deteriorates and non-performing assets are revealed, thus causing losses in banks' balance sheets.

Finally, following Aghion et al. (2007), we could introduce in our estimate the financial development level, measured as the ratio between loans and GDP in order to verify if a lower level of financial development implies a higher impact of macroeconomic shock. Given the heterogeneity characterising Italy, it could be interesting to test this hypothesis.

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**Table 1. Results**

	(1)	(2)	(3)
vajkgr*bcc	-2.27** (0.99)	1.10 (1.10)	-
vajkgr*fil	1.87* (0.98)	2.04* (1.09)	-
vajkgr*loc	-0.78 (0.11)	1.17 (1.08)	-
occgr*bcc	-	-	-3.86*** (1.47)
occgr*fil	-	-	-0.36 (1.44)
occgr*loc	-	-	-0.17 (1.43)
dummy province	yes	yes	yes
dummy sector	yes	yes	yes
dummy year	yes	yes	yes
R <sup>2</sup>	0.14	0.14	0.15
N. of observations	11439	11439	11383

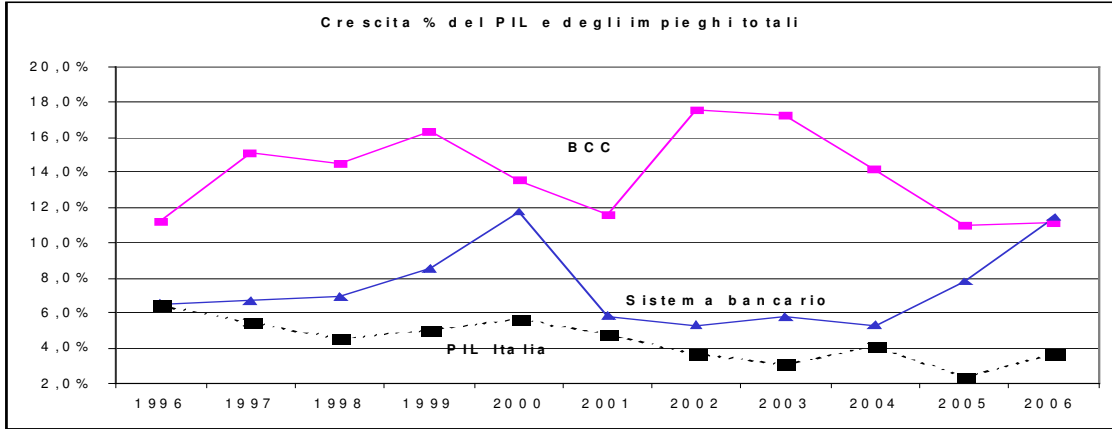
Note: significativity \* 90%; \*\* 95%;\*\*\*99%. (1) value added with one period lag; (2) per capita value added; (3) employment growth with one period lag.

**Table 2. Results**

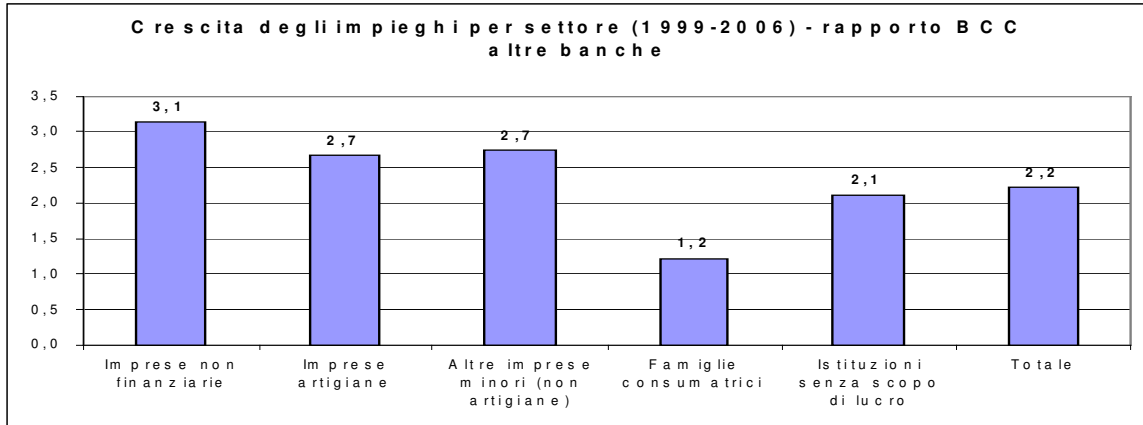
	(1)
Vajkgr <sub>(-2)</sub> * bcc	-2,79* (1,5)
qm	0,02 (0,04)
dummy province	yes
dummy sector	yes
dummy year	yes
R <sup>2</sup>	0,14
N. of observations	6574

Note: significatività \* 90%; \*\* 95%;\*\*\*99

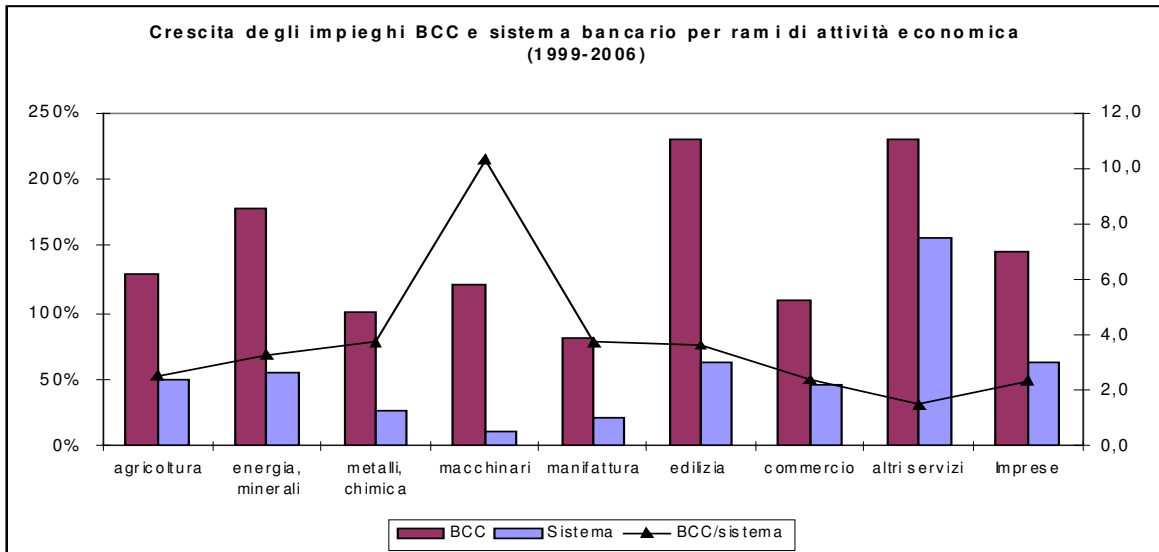
**Figure 1: GDP and loans growth**



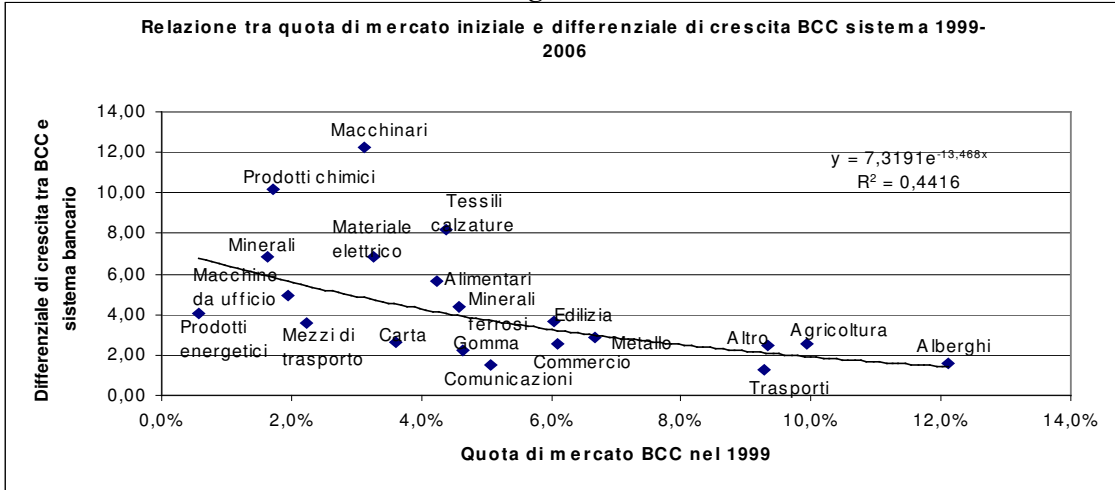
**Figure 2: Loans growth by sector**



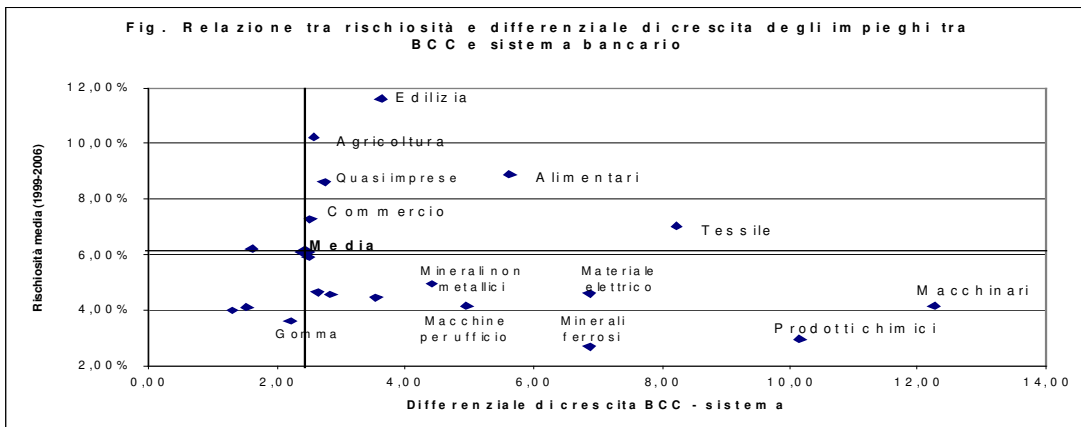
**Figure 3: Loans growth by sector of activity**



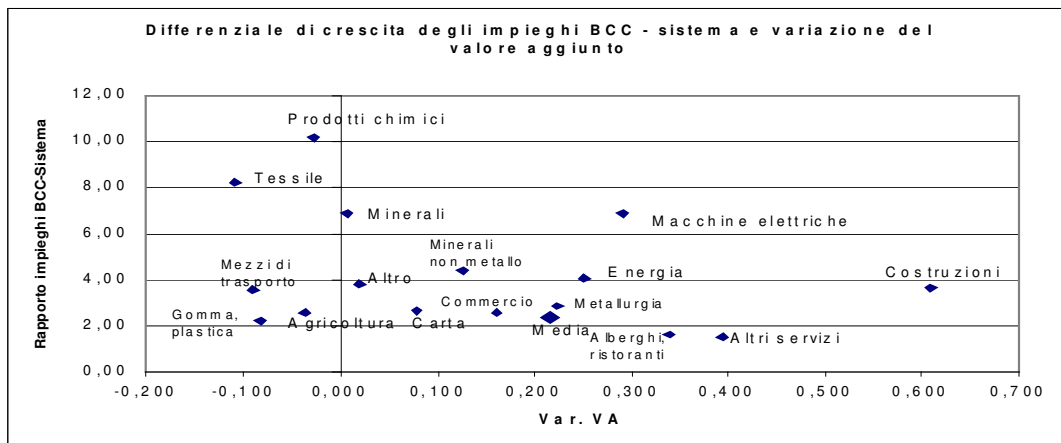
**Figure 4**



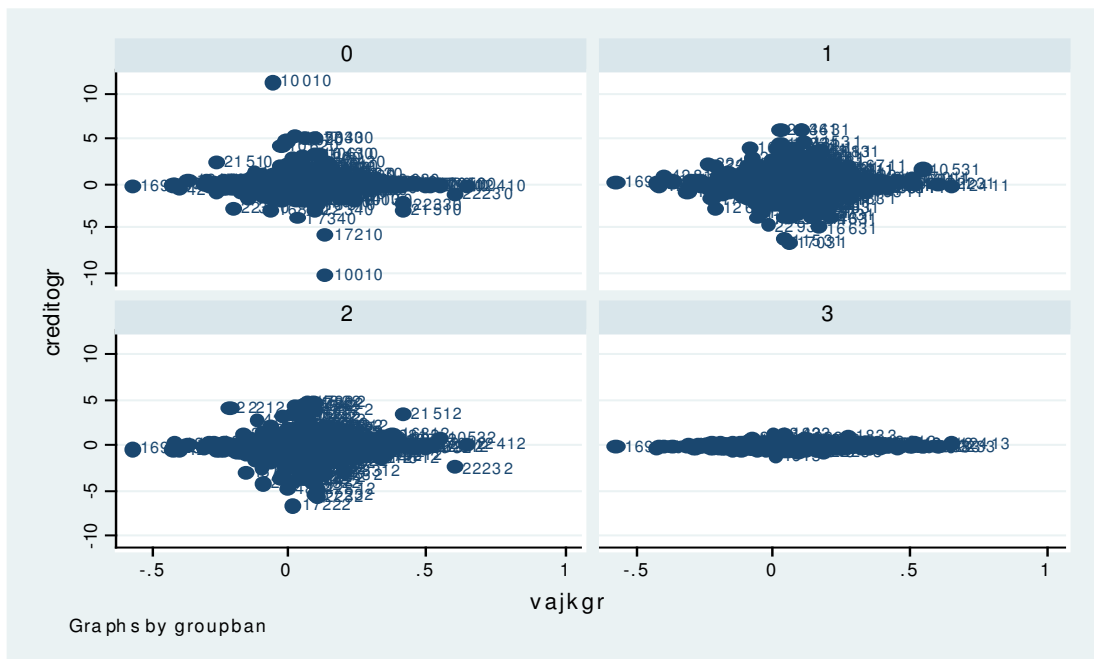
**Figure 5**



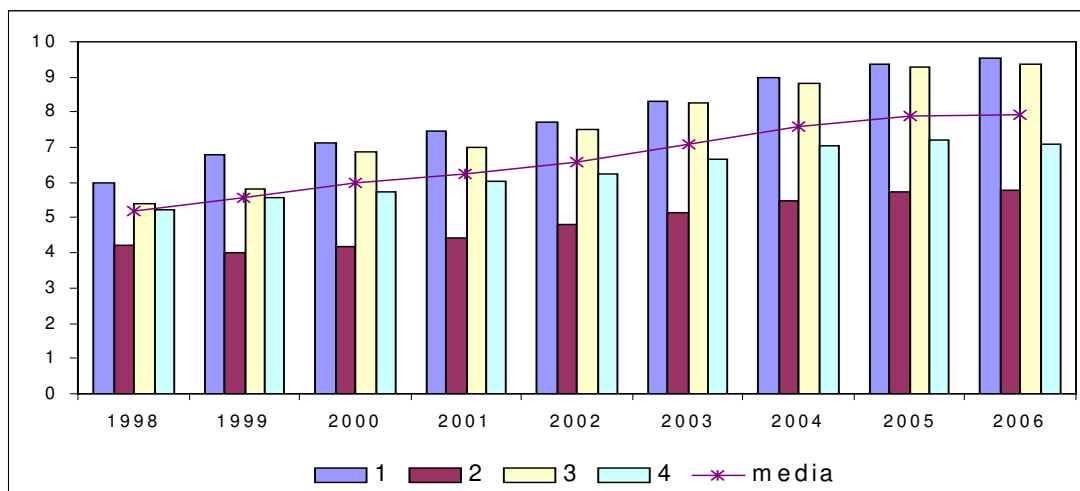
**Figure 6**



**Figure 7: Banks Credit growth and value added**



**Figure 8. BCCs' market shares**



Note: 1 Agriculture; 2 Industry(without construction); 3 Construction; 4 Services.