Bad Loans and Efficiency in Italian Banks

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Motivation

Quality of credit is a specific signal of the soundness of the banking sector as excessive credit risk could impair the efficient allocation of capital.

Bad credit may also impair the performance of banking institutions, given that “.. virtually all research [..] find that failing institutions have larger proportions of non-performing loans prior to failure, and that asset quality is a statistically predictor of insolvency ..” (Berger and DeYoung, 1997: 850).

In addition, there is a significant relationship between the efficiency of the banking system and economic growth. Moreover, the efficiency of the banking system influences the performance of the real sector of the economy.

The aim of this paper is to measure the efficiency of a banking system taking into account the role that credit quality may play at a microeconomic level.
Questions

1. Do high levels of problem loans necessarily imply bank’s inefficiency?

2. Is the impact of credit quality more important for good credit quality banks?
Methods

1. **Estimation of technical efficiency:** by *directional technology distance function* to incorporate credit quality into the technology.

   Bad loans are treated as a bad output.

   Data Envelopment Analysis (DEA).

2. **Post-estimation:** with kernel smoothing techniques (Li’s test) to compare between distributions (with and without bad loans in output specification).

   Correlation and contour plots of joint probabilities distribution (double kernel) to see whether the efficiency *rankings* of banks change with different output specification.
Data

Data by ABI, the Italian Association of Banks.

*Value added* approach:
O: loans to non financial agents (good & bad) non interest income,
I: labor (total costs) capital (physical + intangibles)

*Intermediation* approach:
O: loans to nonfinancial firms (good & bad) securities (fixed income) core (transaction) deposits.
I: non-core deposits free capital labor (total costs) capital (physical + intangibles)

Bad loans variable for the quality of credit.

Years 1993-2004. Cross-sections
Results

1. Does credit quality affect banks’ efficiency?
For each year we report the mean of the efficiency results estimated including and not including bad loans. Notice that zero implies that the observation is located at the frontier.

YES, distributions are indeed different, as confirmed also by Li’s tests.
2. *Is a multidimensionality curse or an economically significant effect?*

We split the sample of banks by the incidence of bad to total loans:

![Density vs Technical Efficiency chart](chart.png)

**Figure 5. Efficiency scores distributions by bad loans incidence (1= Low, 2= High) - selected years**

Yes, economically significant effect.
3. Does it matter for efficiency rankings?

Figure 7. Contour plots of joint densities of efficiency rankings by specification and bad loans incidence (1= Low, 2= High) - selected years

Yes, otherwise wrong ranking of banks
Conclusions

Credit quality is an important issue in financial systems and in the real economy.

The banks’ efficiency increase significantly once problem loans are taken into account— an important aspect of banking production, credit quality, needs to be considered when evaluating banks’ performances.

The ranking of banks based on an output specification that omits credit quality may impair the performance gauging application since it may find banks with good (bad) credit quality worse (better) performers than they actually are.

These issues are of special importance for the use of performance evaluation for regulatory and policy making purposes.