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Abstract

In this article, we invest ... ly with respect to the changes in the ban ... of the Basel Capital Accord. Results from a ... ge marginal effect of both indicators of R & D ... nsatisfied credit needs. We find that the introduction of the new rules is likely to have a moderate impact on the capital requirements of banks when considering the possibility for a bank to pool together all the companies in its portfolio. However, we obtain an increase in capital requirements when we focus on the sub-sample of firms performing product innovation. In particular, the analysis suggests that the new rules on regulatory capital requirements might have a negative impact on lending conditions for those SMEs that are relatively younger, smaller and showing positive R & D expenditures.

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1.
1. For country level analyses, see Rajan and Zingales (1998) and Guiso et al. (2004). For an analysis of the Italian context, see Benfratello et al. (2008).
2.
2. See Hall (2002) and Carpenter and Petersen (2002) for a review on this topic.
3.
3. As will be clarified in section III, the rules set by Basel II have been repeatedly modified to account for a potential worsening effect on lending conditions to SMEs.

4.

4. As highlighted by one referee, innovative SMEs find it difficult to access external finance because of their specific characteristics and idiosyncratic risk. The Basel II Capital Accord aims at standardizing credit risk assessment practices and reducing the degree of subjectivity in the evaluation of borrowers' creditworthiness. Hence, we argue that the implementation of the new system might further worsen lending conditions for these kinds of companies.

5.

5. See Hall (2002) for a review focused on financial constraints to R & D investment, and Bond et al. (2003) for country-level analyses.

6.

6. According to the 'pecking order theory of financing', firms face a hierarchy of financial sources in terms of costs. They prefer to use internal funds first, then external debt and finally external new equity to fund investments. The latter form of financing is in fact inclined to elevate *lemons premia* since shareholders are reluctant to issue new stock because they believe that management is acting on behalf of the existing shareholders and, as a consequence, the firm is expected to be overvalued.

7.

7. See Basel Committee on Banking Supervision (1988), International Convergence of Capital Measurement and Capital Standards.

8.

8. The standardized approach represents an updated version of the risk-weighting scheme set out in the original 1988 Agreement. This approach is likely to be adopted by less sophisticated banks that do not dispose of the historical data on their loan portfolio performance needed to comply with the requirements imposed by the IRB approach.

9.

9. The PD is the probability of a borrower's default over a one-year horizon. LGD, which is the complement to one of the recovery rates, is determined by considering the specific features of the operation. EAD is the credit exposure on the obligation at the time of default. M is the maturity of the loan. For a further discussion, see the Appendix.

10.

10. More precisely, the Basel Committee introduced different risk-weight functions for SMEs and large businesses, with a size-adjustment in the risk-weight formula for firms with a turnover between 5m and 50m (June 2004, para. 272—273). Moreover, banks are allowed to consider as retail those SMEs with a turnover between 1m and 5m, provided that their total exposure to any one firm remains below 1m. In that case, the credit must be managed as a retail exposure on a pooled basis (June 2004, para. 330).

11.

11. The main difference with the final Basel II formulas is that expected losses (PD*LGD) are not subtracted from the capital requirements.

12.

12. It is noteworthy that there is no worldwide uniform and accepted criterion to determine when a firm is large, medium-sized or small. The criteria, as well as the economic measures to establish their definitions (number of employees, total assets, annual turnover ...), vary from country to country and within common economic zones (EU, USA). According to Basel II, a SME is a firm with less than 50m of annual sales.

13.

13. It is possible that statistics on formal R & D spending misrepresent the 'true' innovative effort carried out at the firm level. In fact, R & D activities carried out within SMEs are often embedded in standard production activities or, more generally, take the form of informal research or externally acquired services.
14.
14. We acknowledge the useful suggestion of an anonymous referee on this point.
15.
15. We have used a cluster method to check such a property.
16.
16. The model is estimated with STATA 9.0 and the ivprobit routine. We tested both the maximum likelihood estimator and a two-step procedure based on Newey (1987).
17.
17. On this issue, see Crespi and Scellato (2007) and Kaplan and Zingales (1997).
18.
18. We acknowledge the two authors in providing us with the model.
19.
19. See for example the study carried out by Unioncamere in 2004. Sixty-five per cent of the firms considered in the study are reported to belong to rating classes ranging from BBB- and BB-.
20.
20. Results from a survey conducted in Italy in 2006 on a sample of 12 Italian banking groups show that the majority of banks do not consider intangibles as meaningful determinants in credit risk assessment (Ughetto, 2008b). In principle, Basel II opens up the possibility for banks to use qualitative criteria (and thus innovation-related factors) together with quantitative information in appraising the creditworthiness of their borrowers. However, banks are disregarding innovation in their risk assessment. This could imply that the sole implementation of the Accord might not lead to reducing informational asymmetries between lenders and borrowers as might be expected. Hence, if innovative firms show a higher idiosyncratic risk, the bank in its portfolio optimization process might either continue to ask them to pay higher interest rates or simply deny them credit.0

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