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

References

Altman EI, Sabato G., (2005) Effects of the new Basel Capital Accord on bank capital requirements for SMEs. *Journal of Financial Services Research* 28: 15-42.

Google Scholar

Arrow K. (1962) *Economic welfare and the allocation of resources for invention* . In: Nelson R (ed.) *The Rate and Direction of Incentive Activity: Economic and Social Factors*. Princeton, NJ: Princeton University Press.

Google Scholar

Audretsch D., Elston J., (2002) Does firm size matter?: Evidence on the impact of liquidity constraints on firm investment behaviour in Germany. *International Journal of Industrial Organization* 20: 1-17.

Google Scholar

Basel Committee on Banking Supervision (1988) *International Convergence of Capital Measurement and Capital Standards*, Bank for International Settlements.

Google Scholar

Basel Committee on Banking Supervision (2004) *International Convergence of Capital Measurement and Capital Standards*, Bank for International Settlements.

Google Scholar

Basel Committee on Banking Supervision (2005) *An explanatory note on the Basel II IRB Risk Weight Functions*, Bank for International Settlements.

Google Scholar

Beck T., Levine R., and Loayza N. (2000) Finance and the sources of growth. *Journal of Financial Economics* 58: 261-300.

Google Scholar

Benfratello L., Schiantarelli F., and Sembenelli A. (2008) Banks and innovation: Microeconomic evidence on Italian firms. *Journal of Financial Economics* 90: 197-217.

Google Scholar

Bhattacharya S., Ritter J., (1983) Innovation and communications: Signalling with partial disclosure, *Review of Economic Studies* 50: 331-346.

Google Scholar

Bond S., Elston JA, Mairesse J., et al. (2003) Financial factors and investment in Belgium, France, Germany and the United Kingdom: A comparison using company panel data . *The Review of Economics and Statistics* 85: 153-165.

Google Scholar

Carpenter R., Petersen B., (2002) Capital market imperfections, high-tech investment and new equity financing. *Economic Journal* 112: 54-72.

Google Scholar

Crespi F., Scellato G. (2007) *Ownership structure, liquidity constraints and investment decisions: Microeconomic evidence for Italy. To appear in* The Manchester School.

Google Scholar

Dietsch M., Petey J., (2002) The credit risk in SME loans portfolios: Modelling issues, pricing and capital requirements. *Journal of Banking and Finance* 26: 303-322.

Google Scholar

Encaoua D., Laisney F., Hall BH, et al. (2000) *Economics and Econometrics of Innovation* . Amsterdam: Kluwer.

Google Scholar

Fazzari SR, Hubbard G., and Petersen B. (1988) Financing constraints and corporate investment. *Brookings Papers on Economic Activity* 1: 141-195.

Google Scholar

Guiso L. (1998) High-Tech firms and credit rationing. *Journal of Economic Behaviour and Organization* 35: 39-59.

Google Scholar

Guiso L., Sapienza P., and Zingales L. (2004) Does local financial development matter? *Quarterly Journal of Economics* 119: 929-969.

Google Scholar

Hadlock C. (1998) Ownership, liquidity, and investment. *The RAND Journal of Economics* 29: 487-508.

Google Scholar

Hall BH (1992) *Research and development at the firm level: Does the source of financing matter? NBER Working Paper No. 4096*.

Google Scholar

Hall BH (2002) The financing of research and development. *Oxford Review of Economic Policy* 18: 35-51.

Google Scholar

Hao KY, Jaffe AB, (1993) Effect of liquidity on firm’s R & D spending . *Economic Innovation and New Technology* 2: 275-282.

Google Scholar

Haroff D. (1998) Are there financing constraints for innovation and investment in German manufacturing firms? *Annales d’Economie et de Statistique* 49-50: 421-456.

Google Scholar

Hart O., Moore J., (1995) Debt and seniority: An analysis of the role of hard claims in constraining management. *American Economic Review* 85: 567-585.

Google Scholar

Himmelberg CP, Petersen B., (1994) R & D and internal finance: A panel data study of small firms in high tech industries. *Review of Economics and Statistics* 76: 38-51.

Google Scholar

Jaffee DM, Russell T., (1976) Imperfect information, uncertainty and credit rationing . *Quarterly Journal of Economics* 90: 651-666.

Google Scholar

Jensen M., Meckling W., (1976) Theory of the firm, managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics* 5: 305-360.

Google Scholar

Kaplan S., Zingales L., (1997) Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics* 92: 169-176.

Google Scholar

King R., Levine R., (1993) Finance and growth: Schumpeter may be right. *Quarterly Journal of Economics* 32: 367-386.

Google Scholar

Lev B. (2001) *Intangibles: Management, Measurement and Reporting*. Washington, DC: Brookings Institution Papers.

Google Scholar

Meier-Ewert M. (2002) *Basel II: The remaining issues*. CEPS Policy Brief No. 13.

Google Scholar

Merton RC (1974) On the pricing of corporate debt: The risk structure of interest rates. *The Journal of Finance* 29: 449-470.

Google Scholar

Mulkay B., Hall BH, and Mairesse J. (2001) *Investment and R & D in France and in the United States* . In: Deutsche Bundesbank (ed.) *Investing Today for the World of Tomorrow*. New York: Springer.

Google Scholar

Myers S., Majluf N., (1984) Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13: 187-221.

Google Scholar

Nelson RR (1959) The simple economics of basic scientific research. *Journal of Political Economy* 67: 297-306.

Google Scholar

Newey WK (1987) Efficient estimation of limited dependent variable models with endogenous explanatory variables. *Journal of Econometrics* 36: 231-250.

Google Scholar

Piga CA, Atzeni G., (2007) R & D investment, credit rationing and sample selection. *Bulletin of Economic Research* 59: 149-178.

Google Scholar

Rajan R., Zingales L., (1998) Financial dependence and growth. *American Economic Review* 88: 559-586.

Google Scholar

Saurina J., Trucharte C., (2004) The impact of Basel II on lending to small and medium-sized firms: A regulatory policy assessment based on Spanish credit register data. *Journal of Finance Services Research* 26: 121-144.

Google Scholar

Scellato G. (2007) Patents, firm size and financial constraints: An empirical analysis for a panel of Italian manufacturing companies. *Cambridge Journal of Economics* 1: 55-76.

Google Scholar

Schiantarelli F. (1996) Financial constraints and investment: A critical survey of the international evidence. *Oxford Review of Economic Policy* 12: 70-89.

Google Scholar

Schumpeter JA (1942) *Capitalism, Socialism, and Democracy*. New York: Harper and Row.

Google Scholar

Schwaiger WS (2002) *Basel II: Quantitative Impact Study on Austrian Small and Medium-sized Enterprises. Vienna* Technical University of Vienna.

Google Scholar

Stiglitz J., Weiss A., (1981) Credit rationing in markets with imperfect information . *American Economic Review* 71: 393-410.

Google Scholar

Ughetto E. (2008a) Does finance matter for R & D investment?: New evidence from a panel of Italian firms. *Cambridge Journal of Economics* 32: 907-925.

Google Scholar

Ughetto E. (2008b) *The financing of innovative activities by banking institutions: Policy issues and regulatory options*. In: Laperche B and D Uzunidis (eds) *Powerful Finance and Innovation Trends in a High-risk Economy*. Basingstoke: Palgrave Macmillan.

Google Scholar

Unioncamere (2004) *Basilea II: L'affidabilità delle Imprese Minori*. Rome: Mediacamere Scrl.

Google Scholar

Wooldridge JM (2002) *Econometrics of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

Google Scholar