

Interest Rate Model Risk and Basel II: A simulation study

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Equilibrium models of the term structure are widely used in the valuation of interest rate derivatives as well as in bank risk management. For banks, pillar two of the Basel II framework provides, that an “Internal Capital Adequacy Assessment Process (ICAAP)” has to be established. This process should allow banks to measure and report the appropriate capitalization for current and future risks, in particular interest rate exposures. In its Capital Requirement Directive (CRD, 2006/48/EC and 2006/49/EG), the European Union essentially follows the Basel II guidelines in its principle of double proportionality. A further concretion of the directive was published by the Committee of European Banking Supervisors (CEBS). The set of rules suggests that a Value-at-Risk-based approach be taken in managing interest rate risk. This leaves bank managers with the discretionary decision to choose from different models of the term structure in order to measure and report interest rate risk. We estimate eight different term structure models for three different currencies by means of the Generalized Method of Moments (GMM). In a second step we perform a Monte-Carlo simulation of typical bank balance sheet exposures on the basis of the estimated term structure models. The results show, that equity cushions vary substantially with the choice of different models of the term structure. Hence, bank management is left with the latitude of judgement in quantifying the Basel II-capital requirements to support interest rate risk. *JEL classification: G21, G32* *Topics: Basel II internal capital requirements (EU Capital Requirement Directive (CRD, 2006/48/EC and 2006/49/EG, 2006)) , risk management, interest rate risk, model risk, Value-at-Risk, Monte-Carlo simulation of bank balance sheet*

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