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PRESS RELEASE

A Multi-Factor Model for the Valuation and Risk Management of Demand Deposits

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From the viewpoint of a depositor, demand deposits are relatively straightforward financial instruments. However, from the viewpoint of a deposit-issuing bank or bank supervisor, demand deposit accounts (DDAs) are notoriously difficult to value and manage. Three important complexities arise. First, depositors may withdraw the deposits at any moment. For example, if banks were not to raise deposit rates sufficiently in response to an increase in market rates, depositors might withdraw their balances or part of them in order to invest their funds at the higher market rates. So banks' price setting and depositors' volume behavior need to be modelled jointly. Second, DDAs are not actively traded on a liquid market. Therefore, there is no easily observed market value that can be attributed to them. Third, DDAs supply depositors with liquidity and payment services which are costly for the bank to provide.

We define the economic value of the deposits as the face value of the deposits minus a premium. The premium reflects the fact that deposit rates offered by the bank often lie below risk-free interest rates. More specifically, the premium or economic rent that a bank earns on its deposits is set equal to the present value of the difference between future risk-free interest rates and future deposit rates (including a compensation for costs the bank incurs by servicing the account net of fees received).

In this paper we estimate the economic value of demand deposits and its sensitivity to shocks to interest rates (i.e. shocks to the yield curve). The simulation of the yield curve into the future is a key driver of the valuation exercise as future interest rates are used to discount future deposit account cash flows to their present values. Therefore, it is important to use a model that estimates the yield curve as accurately as possible. A second key determinant of the economic value of deposits is the rate at which deposit balances are withdrawn over time, i.e., their decay rate. We report the economic value of deposits under a number of different decay rate assumptions.

Based on our model specification and Belgian bank savings deposits data between December 1994 and June 2005, we find that deposit premiums are economically significant, but sensitive to deposit balance decay rate and servicing cost assumptions. In addition, the sensitivity of premiums to shocks in market interest rates depends to a large extent on the nature of the shock (for example, whether it affects the level or the slope of the yield curve). We also discuss the relevance of our findings in the current policy discussions.

Our estimates reflect that Belgian savings deposits accounts are not true transactions accounts and that specific price and fiscal regulation applies to them. First, the pricing of savings deposits must consist of a base rate on the one hand and a loyalty or growth premium on the other hand. While the base rate is paid out pro rata of the number of days the deposits have been in the account, growth and loyalty premiums are only reaped when balances have remained in the account without interruption for relatively long time periods (6 months to 1 year, typically). Hence, these growth and loyalty premiums are important drivers of the stability of saving deposit balances for Belgian banks. Second, the interest earned on savings deposits by depositors is exempt from the withholding tax up to a certain amount and this also contributes to their stability.

Finally, we also present duration estimates for deposits based on an approach that is more commonly used in large internationally active banks, i.e. a dynamic replicating portfolio model. While we argue that our discounted cash flow approach is preferable to these replicating portfolio models, we nevertheless compare the estimates that follow from both approaches.

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