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Interest rates and default in unsecured loan markets

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Abstract

This paper investigates how interest rates affect the probability of default (PD) in a general equilibrium incomplete markets economy. We show that the PD depends positively on the loan interest rate and negatively on the economy base interest rate. Empirically, this finding is confirmed by estimation of the Cox proportional hazard model with time-varying covariates using a sample of 445 889 individual contracts from a large Brazilian bank. Among the controls are macroeconomic variables and specific characteristics of the contracts and borrowers. A lower base interest rate, implied by easing monetary policy, leads banks to lend more money for riskier borrowers, increasing the PD.

Keywords:

Default probability

Incomplete markets

Survival analysis

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Notes

1 In the aggregate level, see Ali and Daly (2010) for an analysis of the macroeconomic determinants of credit risk using cross country data and Chu ([2001](#)) for a time series analysis of the Brazilian case.

2 Interest rate paid by Brazilian government bonds.

3 Only age was included from personal borrower's characteristics because no other variable was available in the data set.

4 Notice that endogeneity of the interest rates is not an issue here because the estimated model uses real interest rates as covariates. In addition, the economy interest rate is set according to the inflation targeting monetary policy regime, independently from the average rate of default in the economy.

5 Notice that loan contracts with different moments of default will have more than one value for a given macroeconomic variable during their lifetime, requiring a dynamic way of dealing with multicollinearity (Van den Poel and Larivire 2004). However, the dynamic structure of the collinearity is not a major issue here because the data set covers a short period of time.

6 Lagged time-dependent variables were included in the estimated models, but they were not statistically significant.

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