Real Effects of Negative Interest Rates: Micro-Evidence from Japan *

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April, 2019

ABSTRACT. This paper investigates the effects of the negative interest rate policy on bank credit and borrowing firms' behavior by using bank-firm matched data for Japanese listed firms. By utilizing difference-in-difference method, it finds that the implementation of the negative interest rate policy on February 2016 by the Bank of Japan significantly decreases loans from banks with excess deposits. More concretely, this paper exploits the difference in excess deposits that are held by commercial banks at the Bank of Japan as a treatment. Because the introduction of the negative interest rate policy was unpredicted by the financial market and banks, the introduction can be interpreted as a 'quasi' natural experiment. By investigating more than ten thousands of firm-bank level loan data, this paper quantify the effects of negative interest rate policy on bank loans. In contrast to the previous research that used the bank-level data, this firm-bank loan data allows us to control for the demand factor completely. Hence, it shows that the finding of the effect is robust for omitting variable problems, which is of first order importance in the identification of supply-side factors. Furthermore, the negative interest rate has heterogeneous credit allocation effects; more financially unstable banks increase loans to risky firms, or firms with lower distance-to-default measure, more than to less risky firms. In addition, non-financial firms that are borrowing from banks with more exposure to the negative interest change their corporate policy. This result indicates that the negative interest rate policy has a real effect on economy through credit allocations.

JEL classification: E44, E52, G21.
Keywords: negative interest rates; credit supply and allocation effects; loan-level data; bank risk taking; firm's corporate policies

* The authors acknowledge financial support from a Grant-in-Aid from the Ministry of Education, Science, Sports and Culture. The views expressed here are those of the authors and do not necessarily reflect the official views of the Bank of Japan.

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