Implied Risk-Perception and the Risk-Taking Behaviour by Banks:
Micro-Level Data Approach

This paper analyses risk-taking behaviour by banks with regard to the newly issued loans in (pseudo-) real time. We focus on the credit risk, as it is perceived by banks. We measure the perception of credit risk for individual banks by decomposing the spread between interest rates into the lender-, borrower-, and the loan- related components (relative to the benchmark specification) varying in time. We investigate the patterns of risk-perception in 2017– 2020 with regard to all new loans denominated in local currency and issued by the domestic banks to the non-banking sector in Russia. We show the correspondence between the implied *perception* of credit risk and the distribution of ex-ante credit risk for the newly issued loans – for overall banking system and for the groups of banks at portfolio level.

This is the first empirical work presenting the evolution of risk-perception by banks coupled with the alternative measure of ex-ante credit risk at portfolio level.

Our goal is to identify risk-perception by banks regarding new corporate loans to Russian corporates issued in 2017-2020. We compare risk, as it was perceived by banks and some of their groupings, with their risk-taking, measured by ex-ante probability of default (PD) of new loans.

Risk-perception measure is the interest rate spread component attributable to a particular lender. We define the spread as the difference between the rate on a newly issued loan and the base specification (benchmark). The level of the credit spread in the economy could vary significantly depending on the macro factors, prevailing lending conditions, industry-specific and the borrower-specific characteristics.

We try to trace the evolution of the subjective perception (hereinafter referred to as the implied perception) of the credit risk by a particular lender through the spread component over time and conclude on the notable changes in its dynamics. By measuring the level and the dynamics of risk-perception we contribute to the related literature Paligorova and Santos (2012), Jimenez et al. (2014). To identify the lender-related component of the spread between the interest rates, we regress the spread against a set of quarterly time-varying dummy variables for the individual lender- and borrower-related components, and control for the loan characteristics. We show heterogeneity in the perception of credit risk by banks.

We complement our analysis based on risk-perception in credit spread with the analysis of median PD of newly issued loan portfolio and study their interplay. To measure an ex-ante credit risk, we

identify statistically significant relationships between the shortlisted financial ratios and the subsequent default event. We develop PD model to estimate the odds of the borrower to default on its obligations at a horizon of one year. The details on development and validation of the model are presented in the Technical Annex where we compare its performance with the alternative estimates of credit risk (credit quality group and credit spread in interest rates).

This paper proceeds as follows: we start with the relevant literature review and present our identification strategy. Next, we show the empirical findings: the level and evolution of lender-related component in credit spread (measure of risk-perception), evolution of the median probability of default for the portfolio of newly issued loans (measure of ex-ante credit risk), and the interplay of two measures.

In the Technical Annex we develop and validate PD model to measure an ex-ante credit risk of the portfolio of newly issued loans.

Our next goal is to test risk-taking channel of monetary policy (Borio, C. and Zhu, H. (2008), Jiménez et al. (2014)): how do changes in monetary policy affect risk-perception of banks and their risk-taking? How strong is the channel in Russia?

We see two main difficulties:

1. Disentangling effect of monetary policy from other confounding factors that usually cause monetary policy changes in a systematic way. For example, for an oil-exporting economy, like Russia's, changes in oil price is such confounding factor of systematic monetary policy changes (see Bernanke et al. (1997)). Evolution of oil prices is also important for business sentiments, consumer confidence and may directly affect banks' risk-perception. Extracting monetary policy "shocks" is one possible way to deal with the issue. When testing the channel in panel data with time fixed effect the issue arises how to disentangle the common time factor from monetary policy changes, common to all banks.

2. Dealing with sample selection issue when we don't observe information on loan applications and cannot account for it along the lines Jiménez et al. (2014). Identified risk-perception by banks covers only those loan applications that were approved by a bank. But we don't know anything about those applications that were rejected by banks. The rejection rate is an important piece of information about risk-taking and risk-perception.

Another goal of our further research is measuring effects of macroprudential policy on risk-taking by banks (and their risk-perception?). Regarding corporate lending since 2014 Bank of Russia

has introduced several measures to deal with the dollarisation of lending. An interesting avenue is to study spillovers of extensive macroprudential measures undertaken by the Bank of Russia in consumer lending to their risk-taking in corporate lending.