

# ECONOMETRIC ESTIMATION OF THE MONETARY POLICY EFFECT ON THE DEBT BURDEN AT THE INDUSTRY LEVEL IN RUSSIA

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The efficiency of monetary policy partly depends on the level of debt burden (Occhino, Pescatori, 2014) as, firstly, the corporate indebtedness is a good indicator of imminent banking crises (Drehmann, Juselius, 2012); secondly, higher levels of corporate debt increase fluctuations in the real sector of the economy (Jorda et al., 2013; Aizenman et al., 2013); thirdly, in cases involving high levels of corporate debt, a contractionary monetary policy leads to a smaller decrease in the price level in comparison with a low level of debt burden (Goodhart et al., 2022). High values of corporate debt limit the operation of the transmission mechanism of monetary policy weakening the influence of the Central Bank on the economy (Lo, Rogoff, 2015; Schäuble, 2015). Insufficient access to credit or, conversely, excess lending may increase risks of bankruptcy in varying degrees depending on the industry (Deryugina et al., 2018).

The main purpose of our research is to evaluate the impact of monetary policy on the companies' debt burden at industry level. To do this, we use three different approaches according to the type of scenario: the hard scenario (1) when all debt has a floating rate; the base scenario (2) assuming that a certain part of the debt has a fixed rate; the soft scenario (3) with all old debt having a fixed rate). The calculation is based on the methodology described in the existing literature (Drehmann, Juselius, 2015):

$$Cordebt = \frac{(1 + i) * D_{total}}{Y} \quad (1)$$

$$Cordebt = \frac{0.42 * D_{total} + 0.58 * (D_{old} * (1 + i_{old}) + D_{new} * (1 + i))}{Y} \quad (2)$$

$$Cordebt = \frac{D_{old} * (1 + i_{old}) + D_{new} * (1 + i)}{Y} \quad (3)$$

where:  $D_{total}$  – the amount of total debt (including overdue),  $D_{old}$  – amount of old debt,  $D_{new} = D_{total} - D_{old}$  – amount of new debt,  $i$  – weighted average rate RUONIA,  $i_{old}$  – fixed rate on loans issued, equal to the last available value,  $Y$  – production of goods and services by industry.

The paper presents a model based on BVAR with 7 variables (output by industries, rate, inflation, total output, industry debt (total and old) and oil prices as an exogenous variable) in the real terms. We use BVAR in application to 7 industries (mining, manufacture, construction, and others). The monetary policy shock is identified using sign restrictions. The response for the growth rate of the debt burden was calculated using bootstrapped impulse responses for  $Y$ ,  $i$ ,  $D_{total}$ ,  $D_{old}$  to the MP shock. The estimation results obtained using (1)-(3) formula presented above point to the heterogeneous nature of the debt burden. For the mining industry we present the calculations obtained using both the raw data on debt and corrected data via missing values imputation.

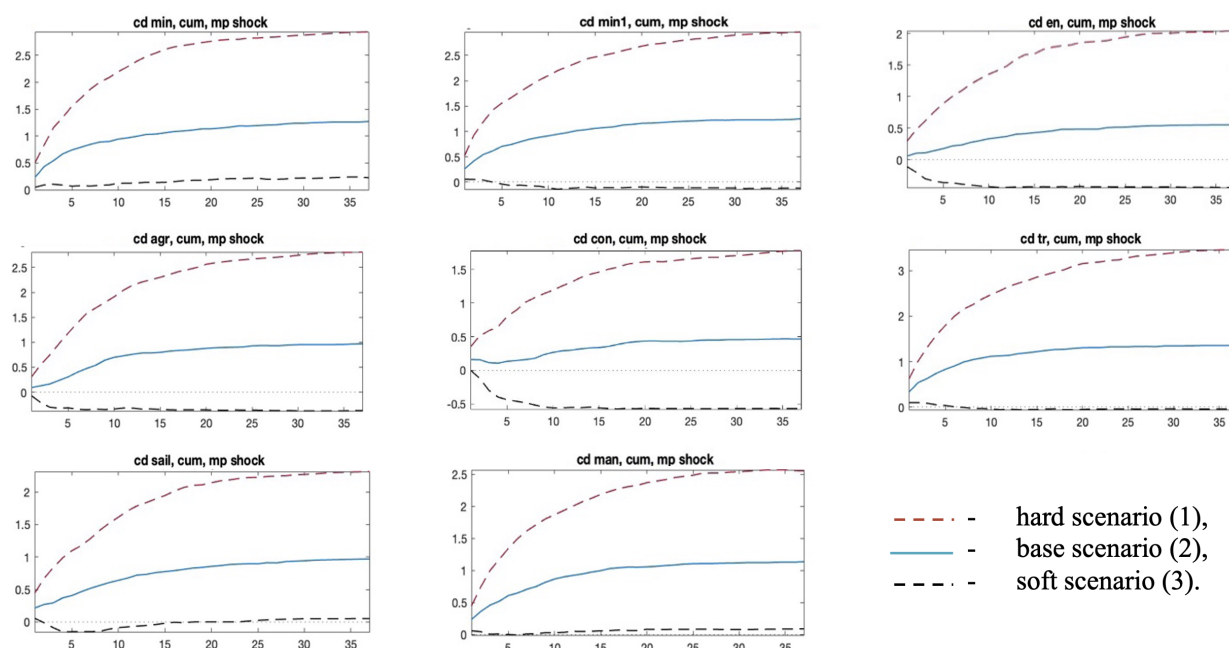


Table 1. The final values for changes in the debt burden by industry in response to rate changes due to a shock of 5 pp, 10 pp, 15 pp. ( ) – for the base scenario; [ ] – for the soft scenario; \* – the significance of impulse responses over 3 years.

	min*(*)[]	min1*(*)[]	man*(*)[]	en*()[]	agr*(*)[]	con()[]	tr*()[]	sail*(*)[]
0pp	22,95% (23,9%) [24,62%]	39,29% (39,81%) [40,19%]	24,47% (24,71%) [24,88%]	13,61% (13,84%) [14,01%]	26,1% (26,47%) [26,74%]	11,29% (11,46%) [11,59%]	14,98% (15,01%) [15,04%]	12,53% (12,56%) [12,58%]
5pp	23,98% (24,41%) [24,69%]	40,92% (40,59%) [40,16%]	25,62% (25,28%) [24,88%]	14,12% (14,1%) [13,89%]	27,2% (26,86%) [26,62%]	11,67% (11,61%) [11,52%]	15,63% (15,29%) [15,03%]	13,05% (12,78%) [12,6%]
10pp	25% (24,92%) [24,77%]	42,56% (41,37%) [40,14%]	26,78% (25,85%) [25,07%]	14,64% (14,36%) [13,78%]	28,3% (27,24%) [26,5%]	12,04% (11,76%) [11,45%]	16,29% (15,57%) [15,02%]	13,57% (13%) [12,62%]
15pp	26,03% (25,43%) [24,84%]	44,19% (42,15%) [40,12%]	27,93% (26,43%) [25,16%]	15,16% (14,62%) [13,67%]	29,4% (27,63%) [26,38%]	12,41% (11,91%) [11,39%]	16,94% (15,86%) [15,01%]	14,01% (13,22%) [12,65%]

#### Literature:

- Drehmann M., Juselius M., *Leverage dynamics and the real burden of debt*, BIS Working Papers, 2015, No. 501.
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- Occhino F., Pescatori A., *Leverage, investment, and optimal monetary policy*, The BE Journal of Macroeconomics, 2014, No. 14(1), P. 511–531.
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