Bank of Russia

PATTERNS OF CORPORATE CREDIT LINES UTILIZATION AND ITS IMPLICATION FOR FINANCIAL STABILITY

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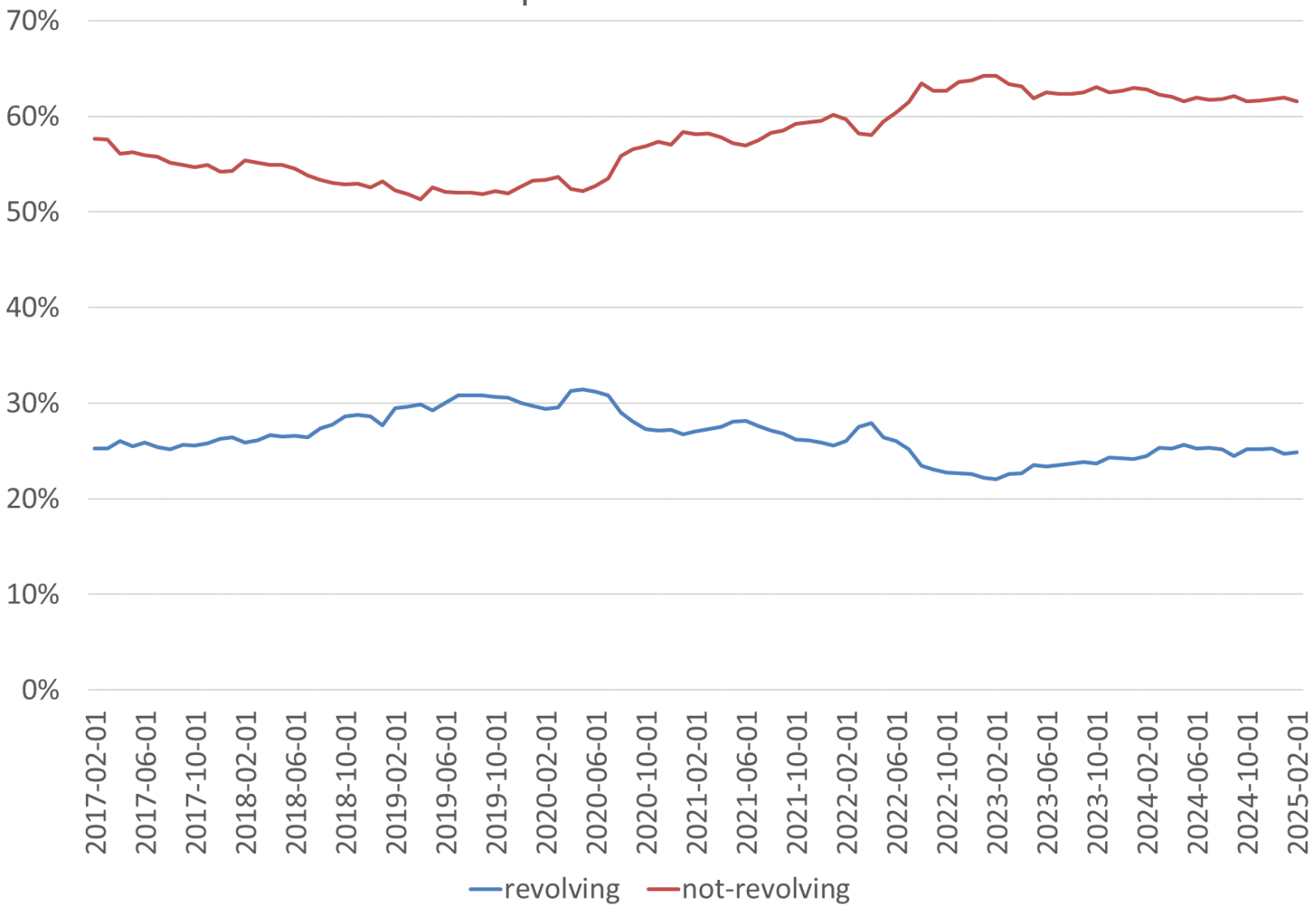
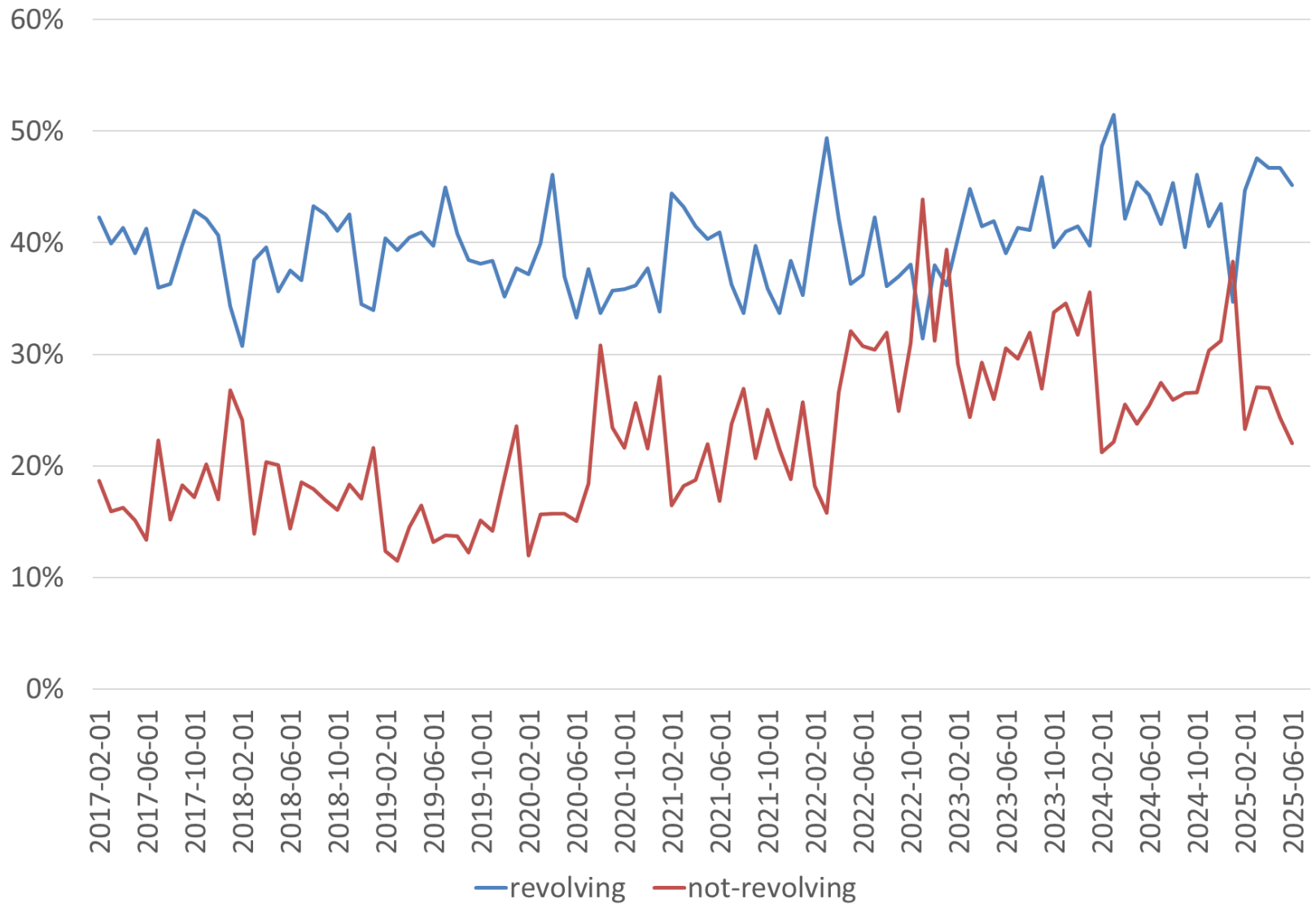
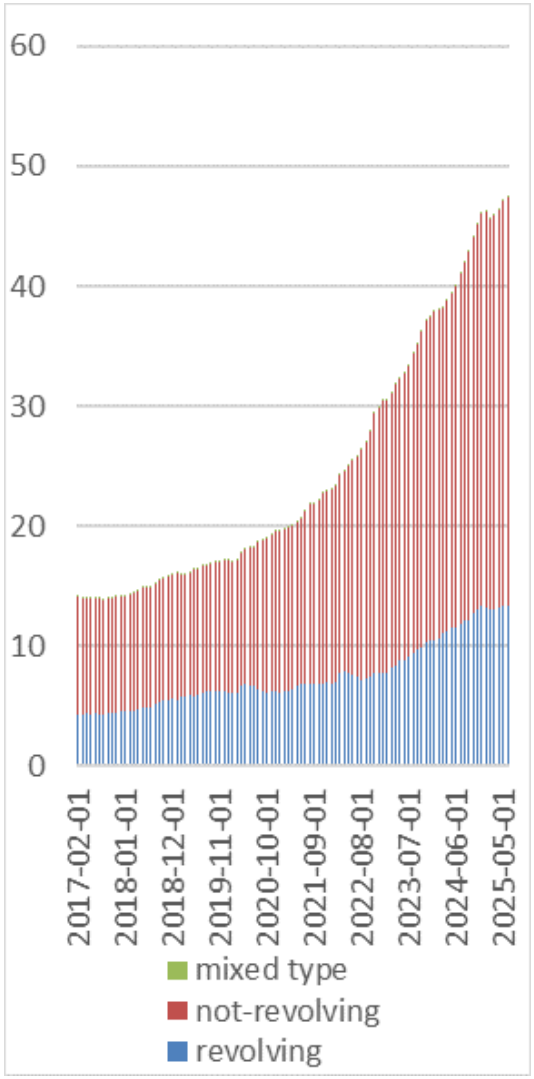
Share of debt on revolving and not-revolving credit lines in corporate credit portfolio of banks



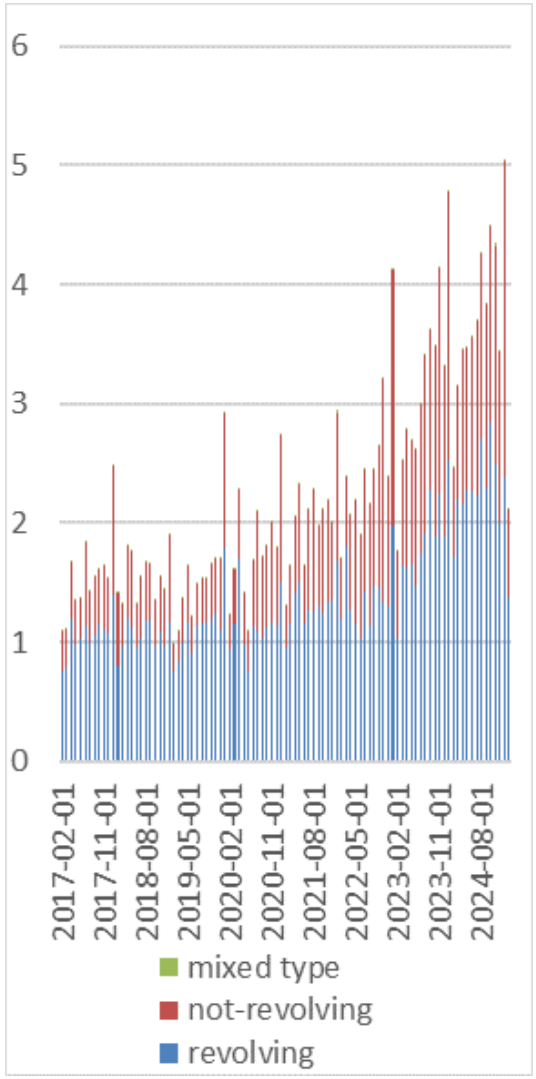
Share of revolving and not-revolving credit lines in all issued corporate credit loans



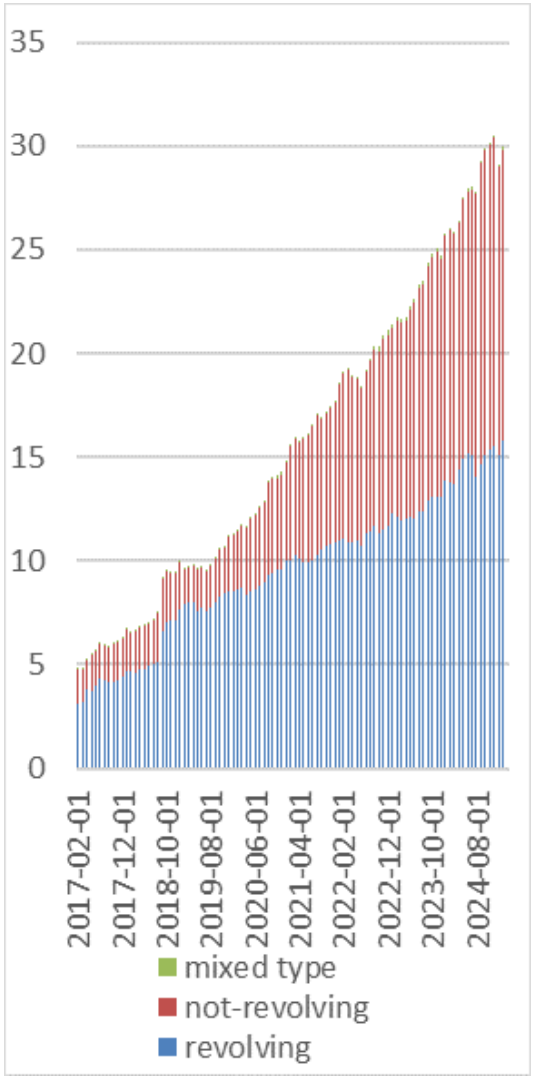
Stock of debt



Loans issued



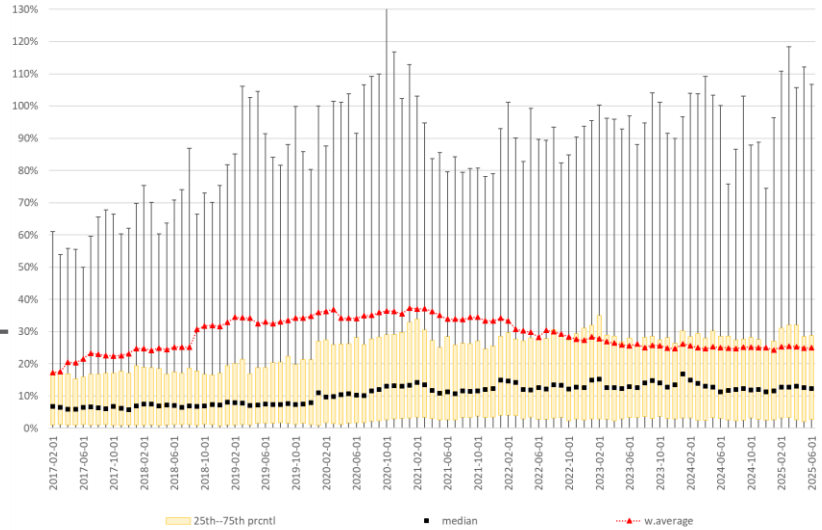
Unused limits

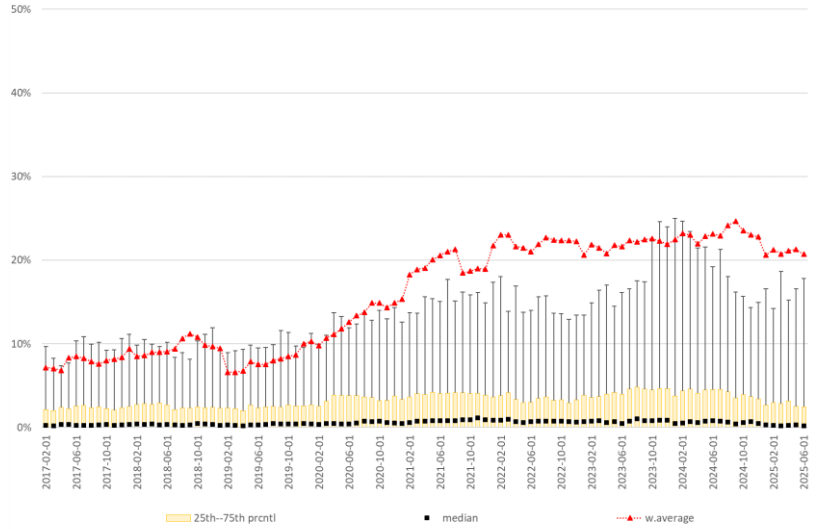


Revolving credit lines

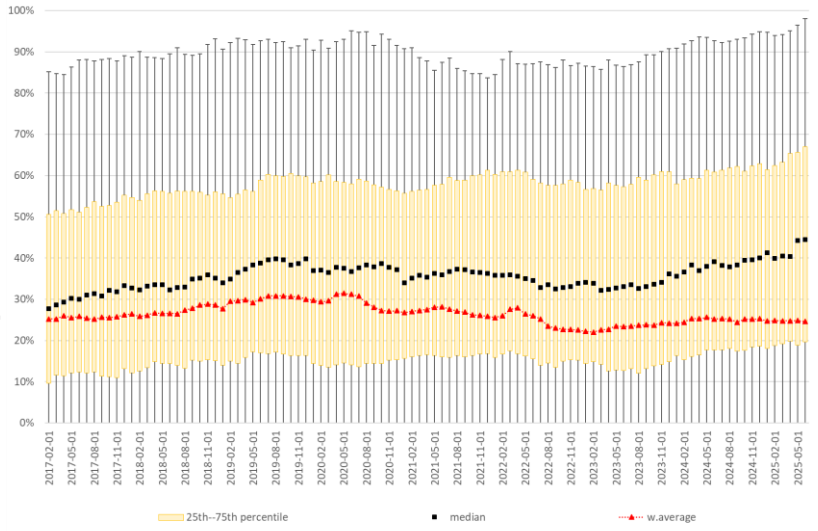
Not-revolving credit lines

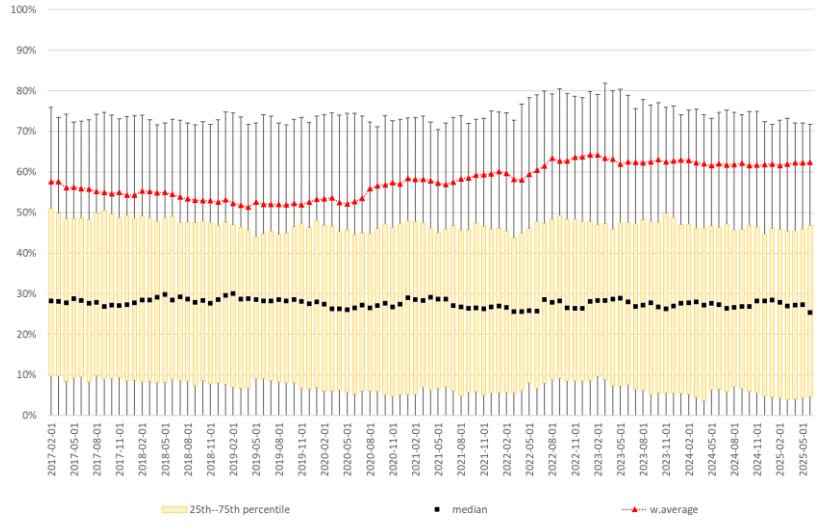
Limits to portfolio ratio



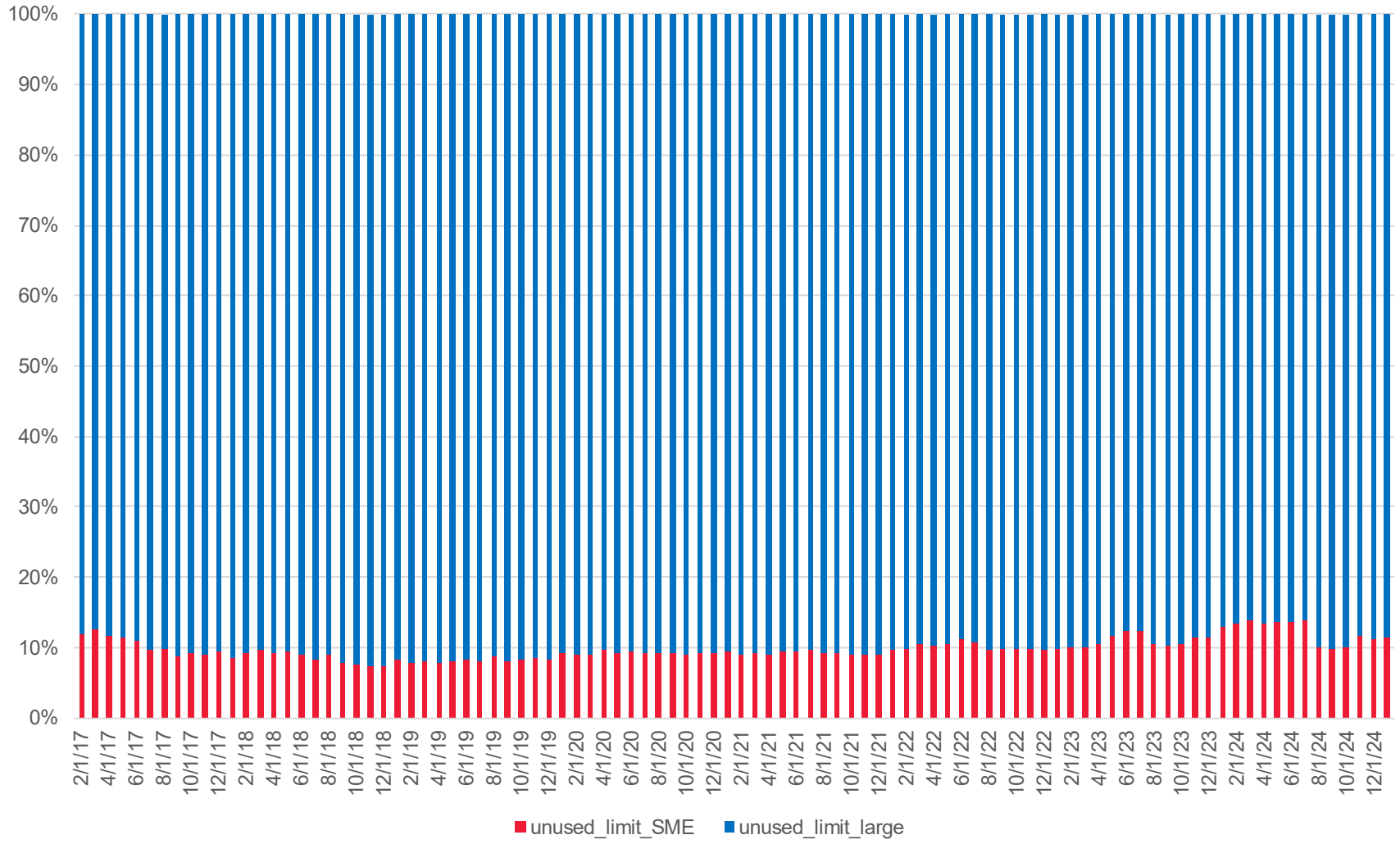


Debt to portfolio ratio

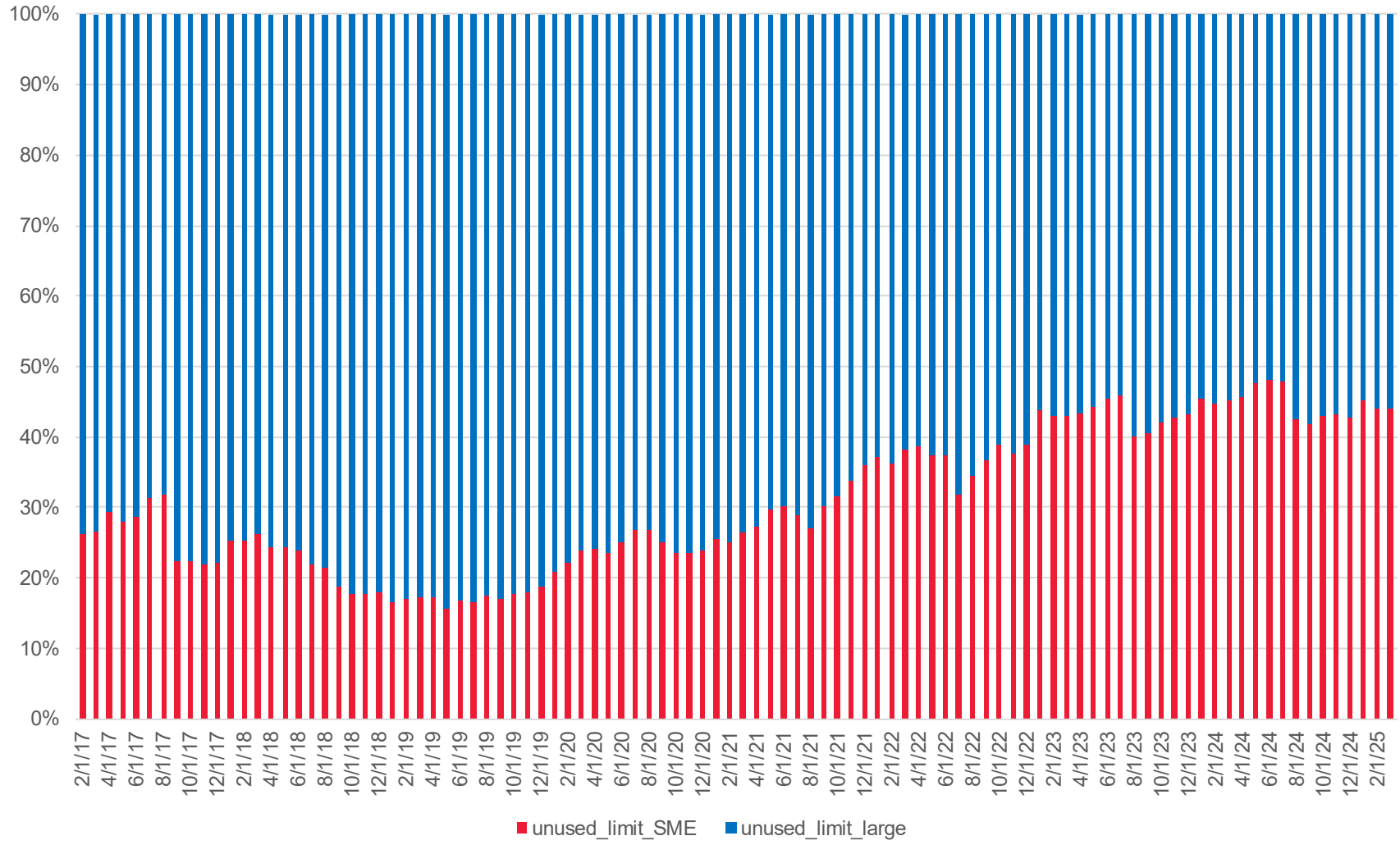




Unused limits on revolving credit lines



Unused limits on not-revolving credit lines



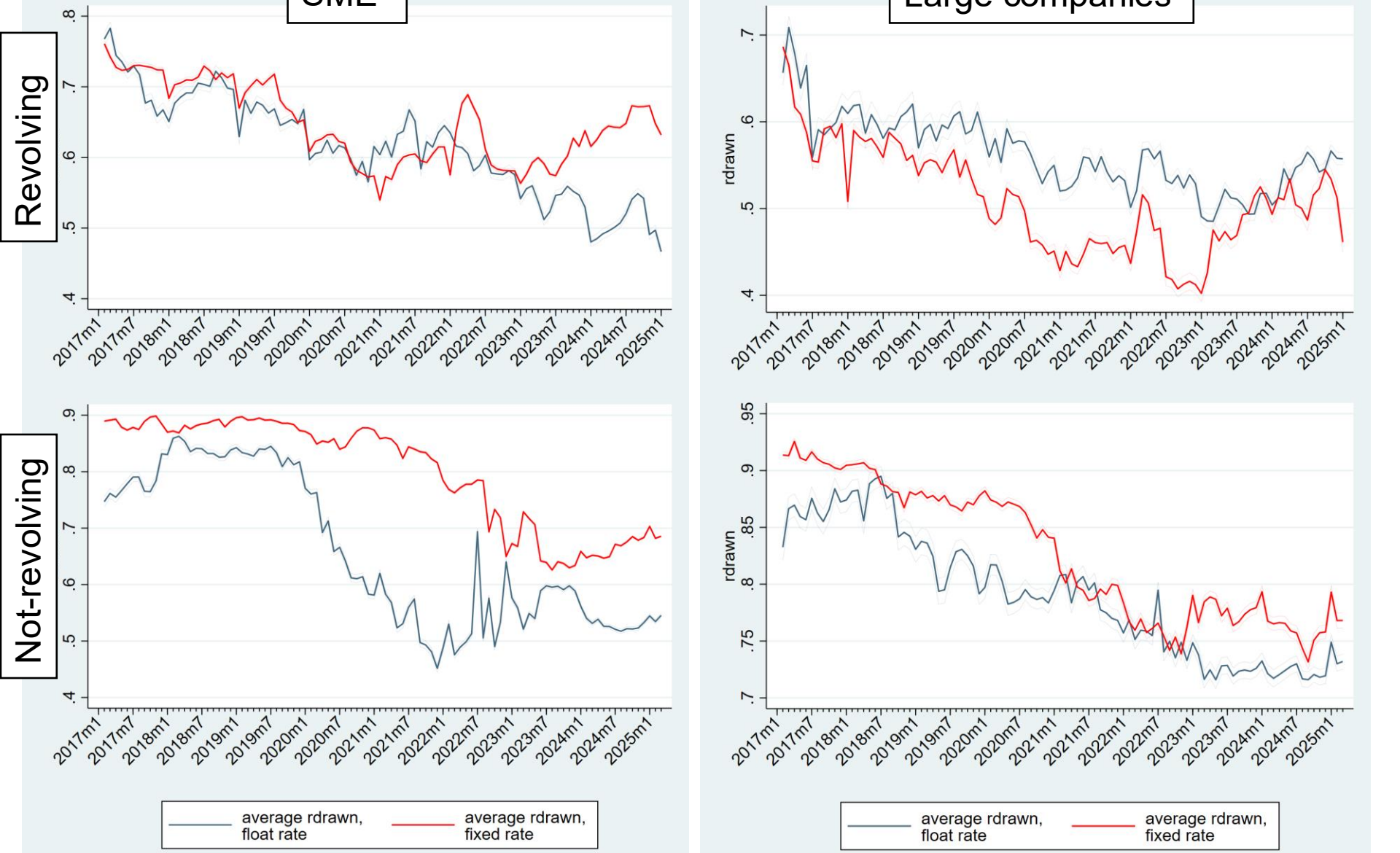
Utilization rates by IR type and companies' size

SME

Large companies

Revolving

Not-revolving



What factors have an impact on credit lines utilization?

- Jimenez, et al. (2009) identifies a set of important variables: age of credit lines, number and length of relationships with banks, defaults of the borrower, bank characteristics, etc.

- Greenwald, et al. (2021) shows that restrictive monetary policy and negative economic shocks influence the utilization rate

- Chodorow-Reich G. et al.(2021) proved that small firms have higher utilization rates during normal times. However in crisis period the major part of the increase in lending occurs due to credit line withdrawals made by large companies.

Main data sources:

- Banks report statement №0409303 (credit registry) contains detailed information about each loan tranche issued by a bank to a firm on monthly basis: names and IDs of the creditor and borrower, the type of credit, the currency, the size of the loan, the credit limit, etc.

- Macroeconomic variables (inflation rate and industrial production index) are taken from Federal State Statistics Service

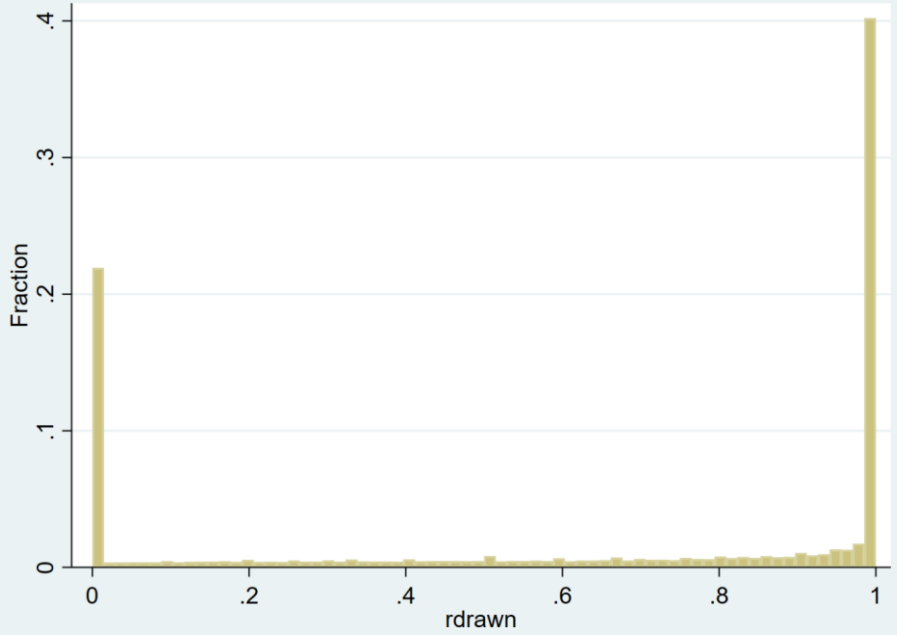
- We use data from January, 2017 until December, 2024
- We drop mixed type credit lines and focus on revolving and not-revolving credit lines
- In most cases we use credit line utilization rate calculated as

$$rdrawn_t = \frac{Drawn_t}{Commit_t}$$

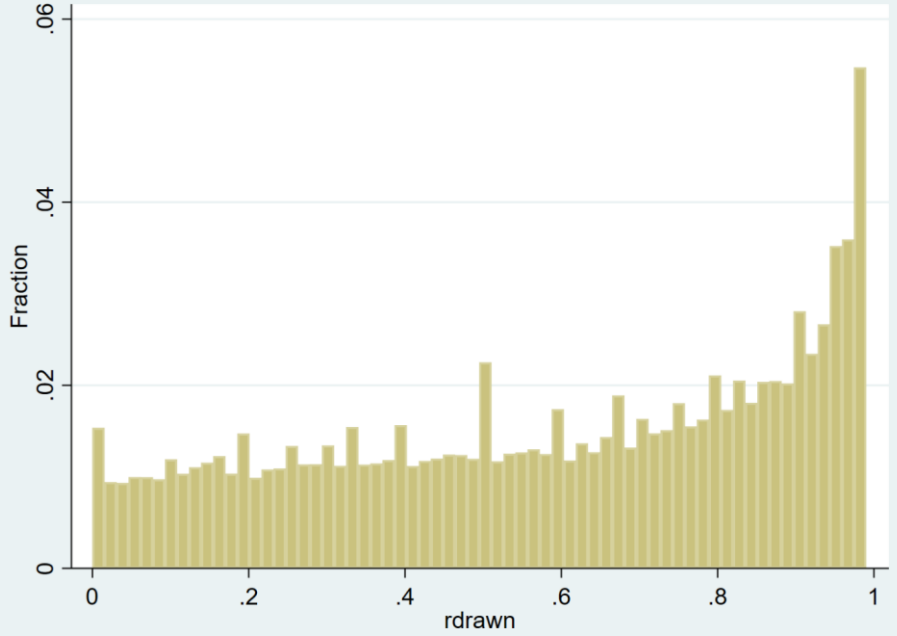
- $Drawn_t$ - amount of funds drawn on credit line
- $Commit_t$ - amount of funds committed by the banks (with changes)

Revolving credit lines utilization rate for lines

All values of rdrawn

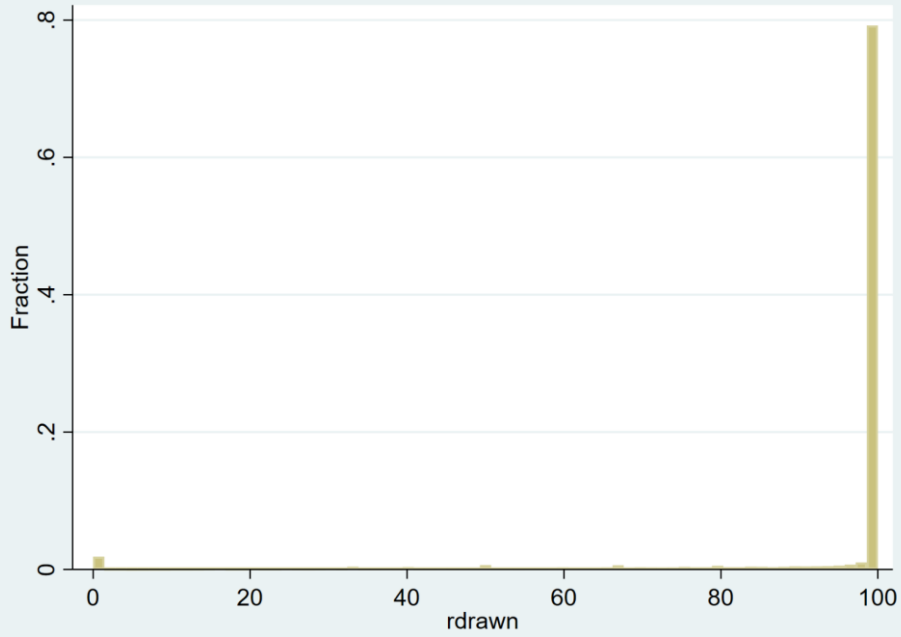


0.01<rdrawn<0.99

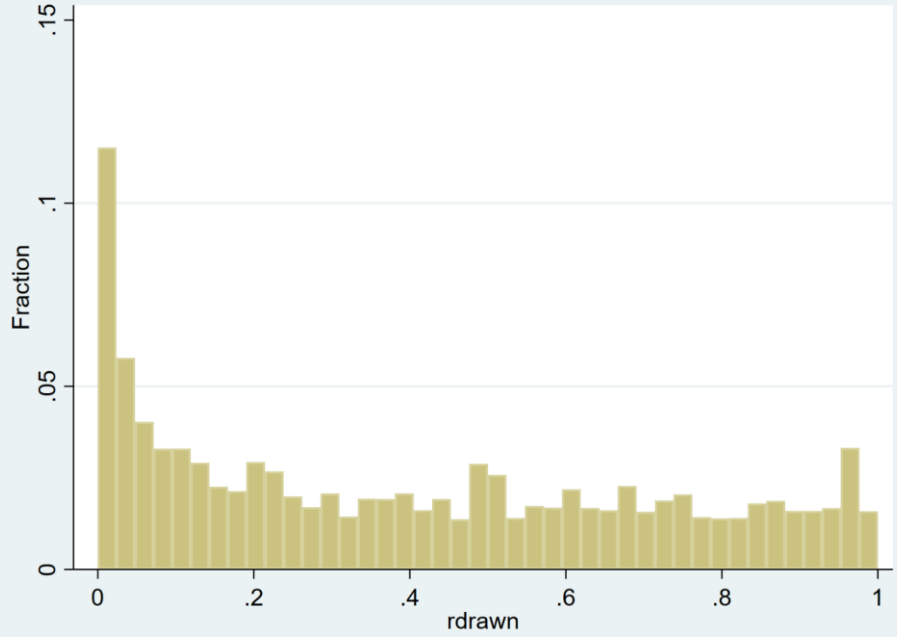


Not-revolving credit lines utilization rate

All values of rdrawn

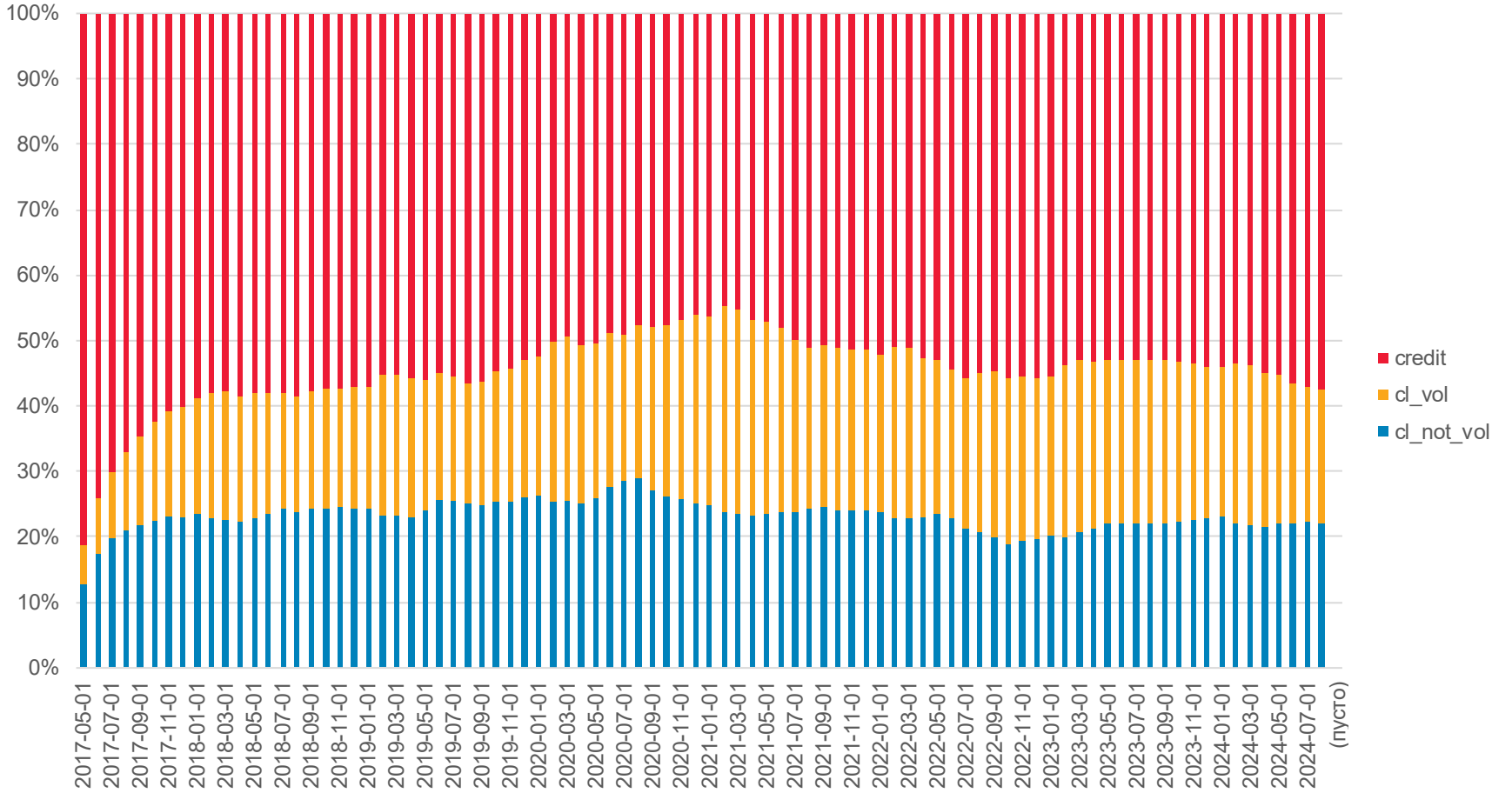


0.01<rdrawn<0.99



Fully drawn revolving credit lines

- More than a half of the fully used credit lines remain so for the next three months
- Another 20% repay less than a half of the limit



Regression design

- We apply methodology presented in Jimenez, et al. (2009) for overall CIR sample. We use fractional probit as a baseline specification and FE for robustness check.

$$RDRAWN_{ijkt} = \\ = \beta_0 + \beta_1 Credit\ line_{it} + \beta_2 Firm_{jt} + \beta_3 Bank_{kt} + \beta_4 Economic\ cycle_t + \eta_{ijk} + \varepsilon_{it}$$

- Credit line: indicator variable for credit lines that defaulted and time passed since the default; line age; indicator variable for long-term loans; indicator variable for collateral; type of interest rate
- Firm: age as borrower; indicator for defaulted companies; length of relationships with the bank and number of banks that have relationships with this borrower; indicator for large entities.
- Bank: if the credit line is handled by the firm's largest lender; bank's share of the corporate loan market; share of non-performing loans in total loans
- Economic cycle: inflation rate and industrial production index.

How long does it takes to start withdrawals on credit lines?

- We take into account only those lines that were approved after 2017
- We take the same set of explanatory variables that was used in panel regression estimation (without defaults on credit lines)
- In this case we use survival analysis
- The event is determined as the first money transfer from bank to company

	Revolving lines		Not-revolving lines	
	(probit, ME)	(survival, $rdrawn = 0$)	(probit, ME)	(survival, $rdrawn = 0$)
main bank	0.091***	0.079***	0.062***	0.046**
bank share	−0.728***	0.061*	−0.064	0.217***
bank npl share	−0.426***	0.128	0.158***	0.120
prod.index	−0.00069***	0.0029**	−0.0035***	0.015***
inflation	0.00053***	−0.016***	−0.0013***	−0.153***
line age	−0.00093***	−1.210***	−0.0026***	−1.701***
collateral	0.021***	0.115***	−0.011***	−0.098***
fix rate	0.0018***	−0.0003	0.041***	0.037***
long term	0.039***	0.296***	−0.0037***	0.012
ln age bor	−0.026***	0.002	−0.015***	−0.012**
large enterprises	−0.031***	−0.034***	−0.046***	−0.253***
ln with bank	0.0130***	−0.048***	0.055***	−0.036***
default inn	0.066***	0.150	−0.028***	0.125**
default inn x months	0.0035***	0.003***	0.0014***	0.0015*
ln count bank	0.0059***	0.108***	0.0035	0.050***
default cl	0.025**		0.038***	
default cl x months	−.0162***		−0.0042	
default cl x months sq	0.00010		0.00013**	
trend			0.000053	
N	2,618,507	99738	2,229,240	111387
pseudo R^2	0.0068		0.0061	
ln_p		1.485		1.809
Wald test	14421.22	38604.95	14198.77	50095.64

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

	Revolving lines		Not-revolving lines	
	(SME)	(large)	(SME)	(large)
main bank	.094***	.0966***	.071***	.048***
bank share	−.965***	−.032	−1.141***	1.492***
bank npl share	−.460***	−.239***	.153***	.061
prod.index	−.0008***	−.0004***	−.0039***	−.0001
inflation	.0006**	.0008*	−.0014***	.0002***
line age	−.0009***	−.0011***	−.0038***	−.0008***
collateral	.016***	.038***	−.0186***	.032***
fix rate	−.0011***	.0045***	.047***	.023***
long term	.042***	.030***	−.0057***	.018***
ln age bor	−.027***	−.024***	−.015***	−.0014***
ln with bank	.014***	.014***	.060***	.066***
default inn	.063***	.048***	−.041***	.0067***
default inn x months	.0057***	.0013**	.0008**	.0025***
ln count bank	−.0004	−.0001	.0067***	.0062
default cl	.029**	.014	.059***	−.016
default cl x months	−.018***	−.012	−.007**	−.0009
default cl x months sq	.0001	.0001	.0002***	.0001
trend			.0003***	−.001***
N	2,133,690	484,817	1,795,470	433,770
pseudo R^2	0.0072	0.0080	0.0074	0.0058
Wald test	12968.63	2801.35	16389.99	1342.82

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

	Jan'17—Mar'20	Apr'20—Mar'21	Apr'21—Feb'22	Mar'22—Aug'24	Sep'24—Dec'24
main bank	0.093***	0.115***	0.102***	0.085***	0.067***
bank share	−0.370***	0.069	−1.028***	−1.613***	−1.347***
bank npl share	−0.015	−0.952***	−0.373***	−0.283***	−0.702***
prod.index	0.00005	−0.0005***	−0.0003	−0.0010***	0.0003
inflation	0.015***	−0.048***	0.016***	0.0002	0.025***
default of CL	0.035	0.022	0.067**	0.073***	0.132***
default of CL x month from default	−0.021*	−0.010	0.006	−0.045***	0.065***
default of CL xmonth from default sq	0.0002	0.00008	−0.0003	0.0003***	
line age	−0.0013***	−0.0008***	−0.0019***	−0.0012***	0.0006
collateral	0.020***	0.020***	0.039***	0.021***	−0.006*
fix rate	−0.006***	−0.0003	−0.0003	0.003*	−0.001
long term	0.042***	0.030***	−0.0007	0.045***	0.041***
ln age bor	−0.010***	−0.022***	−0.052***	−0.045***	−0.045***
large enterprises	−0.028***	−0.029***	−0.032***	−0.032***	−0.030***
ln with bank	0.013***	0.005	0.013***	0.023***	0.0003
default inn	0.079***	0.092***	0.079***	0.032**	0.050**
months default inn	0.0039***	0.0017**	0.0063***	0.0094***	0.023***
ln count bank	−0.004	−0.002	−0.004	−0.005*	0.040***
N	689,292	287,406	286,528	1,158,374	196,907
pseudo R^2	0.0063	0.0085	0.0132	0.0089	0.0138
Wald test	4026.32	3204.27	3680.03	26572.89	1479416.24

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

	Jan'17—Mar'20	Apr'20—Mar'21	Apr'21—Feb'22	Mar'22—Aug'24	Sep'24—Dec'24
main bank	0.062***	0.065***	0.056***	0.053***	0.048***
bank share	−0.343*	−3.210***	2.464***	0.657***	−1.767***
bank npl share	0.280***	0.313***	−0.177***	0.0069	0.302**
prod.index	−0.0004***	−0.0041***	−0.0018***	−0.0000	−0.0004***
inflation	0.037***	−0.136***	−0.015***	−0.0003	0.002
default of CL	0.049***	0.105***	0.087***	0.043**	0.080**
default of CL x month from default	−0.0042	0.0057	−0.0015	−0.0013	0.015***
default of CL xmonth from default sq	0.00004	−0.0002	−0.0001	0.00005	
line age	−0.0042***	0.0006***	−0.0049***	−0.0033***	−0.00001
collateral	0.0086***	−0.0069***	0.0196***	−0.028***	−0.047***
fix rate	0.011***	0.042***	0.048***	0.041***	0.042***
long term	0.024***	0.0003	0.016***	0.009***	−0.013***
ln age bor	−0.003	−0.022***	0.028***	0.003	−0.0002
large enterprises	−0.028***	−0.023***	−0.047***	−0.070***	−0.061***
ln with bank	0.053***	0.085***	0.069***	0.062***	0.036***
default inn	−0.019*	−0.106***	−0.058***	0.003	0.023*
months default inn	0.0019***	−0.0017**	0.0025*;;	0.0062***	0.035***
ln count bank	0.004	0.011**	−0.016***	−0.003	−0.008
trend	0.0015***	0.0040***	−0.0005**	0.00002	0.0026***
N	448,064	615,406	262,743	766,696	136,331
pseudo R^2	0.0092	0.017	0.0109	0.0090	0.0100
Wald test	2308.49	25659.91	2497.45	4010.45	1691.47

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

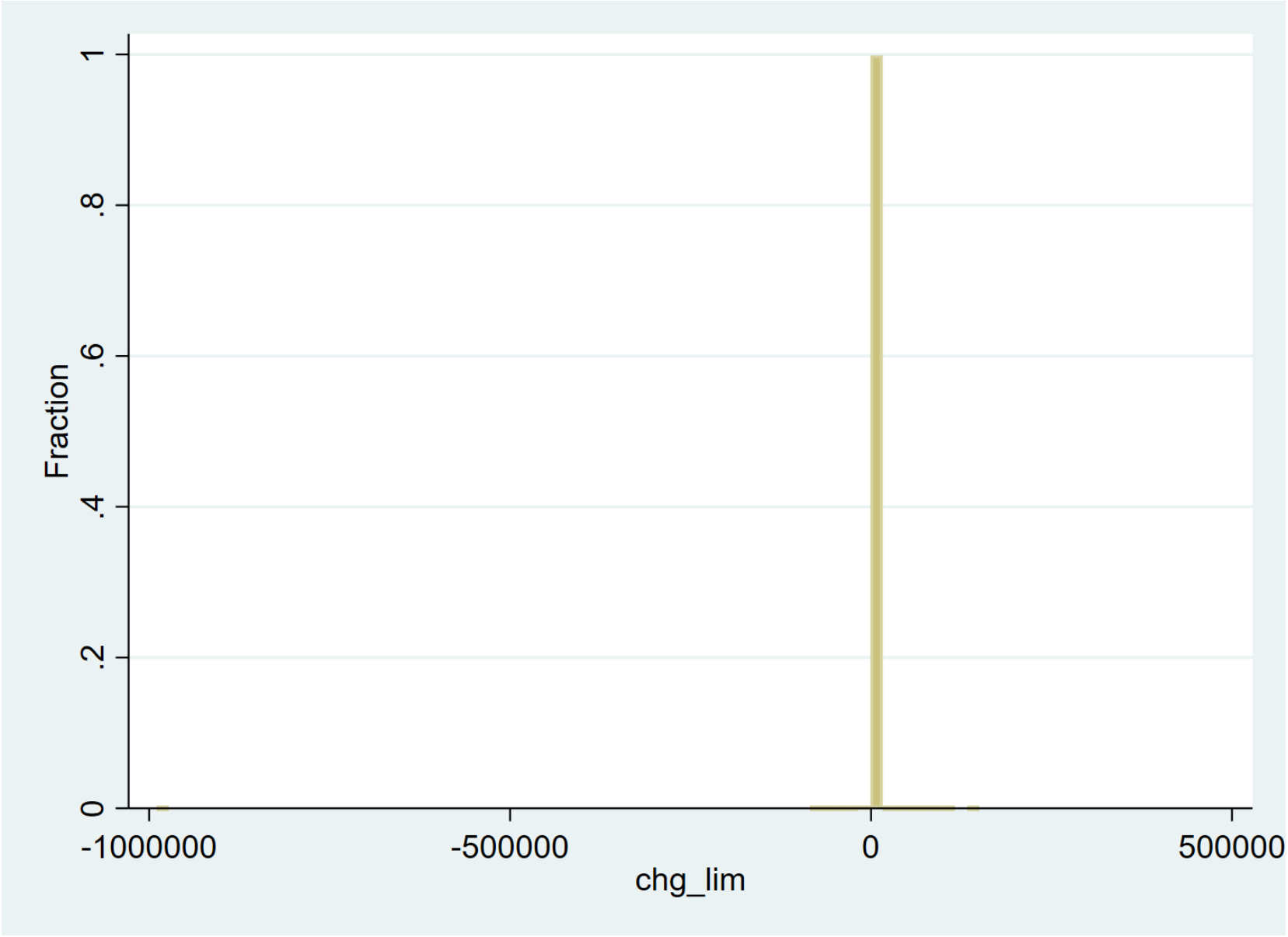
Results

- Unused limits on credit lines constitutes almost a half on the overall corporate debt to banks
- This ratio exists despite the fact that 40% of credit lines are fully used
- Withdrawals on the major part of credit lines begin immediately after the contract assignment
- Utilization rate is higher for the younger credit lines, for the younger and smaller companies, for the main banks, for the banks with a lower market share, in case of longer firm-bank relationships, and for credit lines with fixed interest rate
- Default on credit line is not correlated with the utilization rate for large companies, while in case of SMEs utilization rate of previously defaulted credit lines is higher

Discussion

- We cannot separate demand-side effects from supply-side effects as we have no information about credit lines applications
- Many banks are implied to have the right to decline to provide funding in some cases. It may lower the direct pressure on banking accounts, but can affect corporates
- There is no reliable identifier for the contracts where banks have the right to limit the access to the credit line
- Relationship banking can partially explain our results: the longer is the history of relationships between the bank and the company, the better the bank can set the appropriate commitment amount on the credit lines

Changes in commitment amounts



Discussion

- Restructurings can be an alternative measure of corporate financial resilience (instead of defaults)
- We see no strong evidences of banks tending to restrict utilization of credit lines with fixed interest rates comparing to credit lines with floating interest rates (despite such behavior could be beneficial for banks)

- Commitment amounts are changes in 30% of cases, but most of them are close to 0

Thank you for your attention!