EXPLORING THE CONJUNCTION BETWEEN THE STRUCTURES OF DEPOSIT AND CREDIT MARKETS IN THE DIGITAL ECONOMY UNDER INFORMATION ASYMMETRY

Elena Deryugina

Alexey Ponomarenko

Andrey Sinyakov

Our objective

"To my knowledge, the empirical literature has not yet tackled the question of how changes in deposit market (or loan market) power causally affect loan pricing. Indeed, we know surprisingly little about how bank market power in funding markets shapes loan pricing."

Arping (2017)

Our hypothesis

Banks' clients' transactions is the source of information on borrowers' creditworthiness

Tobback, E., & Martens, D. (2019), Tounsi et al. (2017), Óskarsdóttir et al. (2019), Agarwal et al. (2019), Fang, B., & Zhang, P. (2016), Chen, N., Ribeiro, B., and Chen, A. (2016).

->deposit market's structure determines information asymmetries on the credit market

->opportunities for strategic pricing behavior arise

Related research

- Credit and deposit market structures (Arping 2017, Allen and Repullo 2004, Boyd and De Nicolo 2005)

- Loan and deposit rates setting (Freixas, Rochet 2008, Chiappori, et al. 1995, Grant, 2011)

- Corporate "ecosystems" during digitalisation (FSB 2020, Stulz 2019, Carstens 2018, Crémer et al. 2019)

- Information asymmetries and strategic behavior (Arping 2017, Hale, Santos 2008, Hauswald and Marquez 2006, Rajan 1992, Sharpe 1990, Bouckaert and Degryse 2006)

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- Bank's clients' transactions are the only source of information on credit risk

- One of the banks dominates the deposits market

Credit market

Credit market

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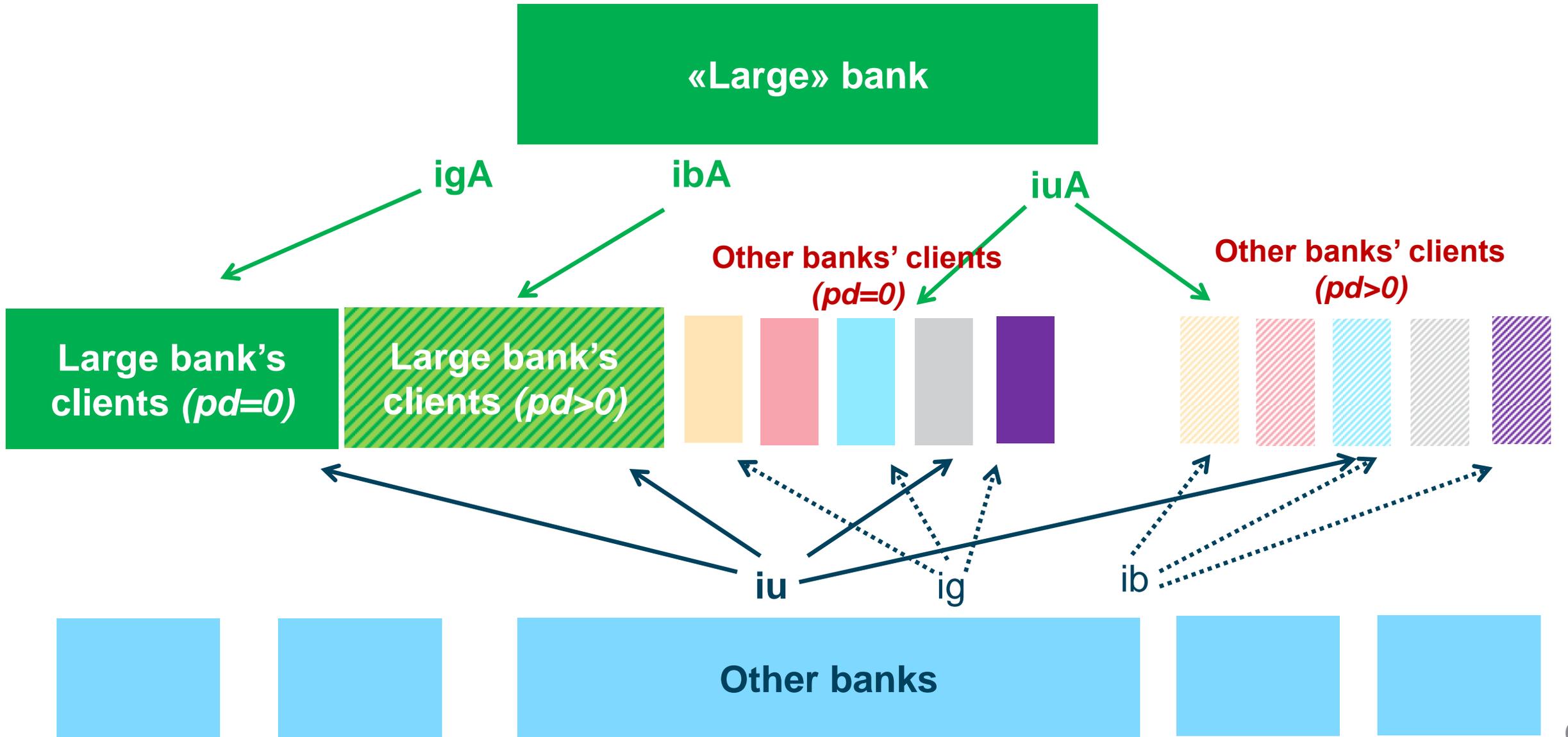
Large bank's market share on the riskless "known" borrowers' segment

$$GAA = \alpha + \beta\left(i_u - i_{g,A}\right)$$

or

$$GAA = \begin{cases} \dfrac{1}{N+1}\left(1 + N\dfrac{\min(i_u, i_{g,A} + x) - i_{g,A}}{x}\right), & i_{g,A} \leq i_u \\[3ex] \dfrac{1}{N+1}\left(1 - \dfrac{\min(i_{g,A}, i_u + x) - i_u}{x}\right), & i_u \leq i_{g,A} \end{cases}$$

Loan demand

$$D_{GAA} = GAA \cdot M \cdot A \cdot good \cdot (1 + c \cdot (i^* - i_{g,A}))$$

Large bank's profit

$$Profit\_A$$

$$= D_{GAA} * i_{g,A} + D_{BAA} * i_{b,A} * (1 - pd) + N * D_{Gbi\,A} * i_{u,A} + N * D_{BbiA} * i_{u,A} * (1 - pd) - (D_{BAA} + N * D_{BbiA}) * pd$$

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Equilibrium I

Banks optimize the respective interest rates until convergence is achieved

- Larger share on "known" borrowers increases the banks' profit

- If sensitivity of loan demand to interest rates is high the market for "unknown" borrowers ceases to exist

Equilibrium II

Large bank can predict the small banks' reaction when conducting the optimization

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Interest rates

Large bank
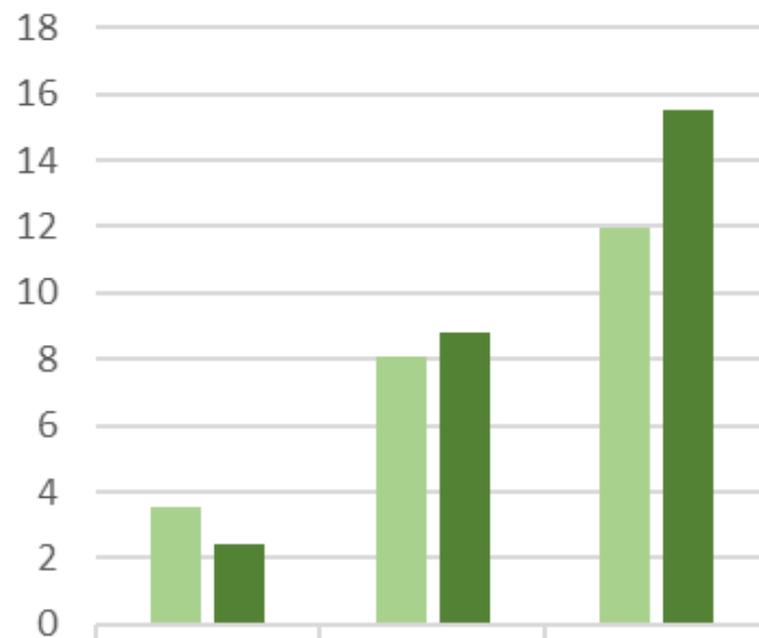
	ig,A	iu,A	ib,A
◼ Equilibrium I	3.57	8.08	11.97
◼ Equilibrium II	2.41	8.83	15.54

Small banks
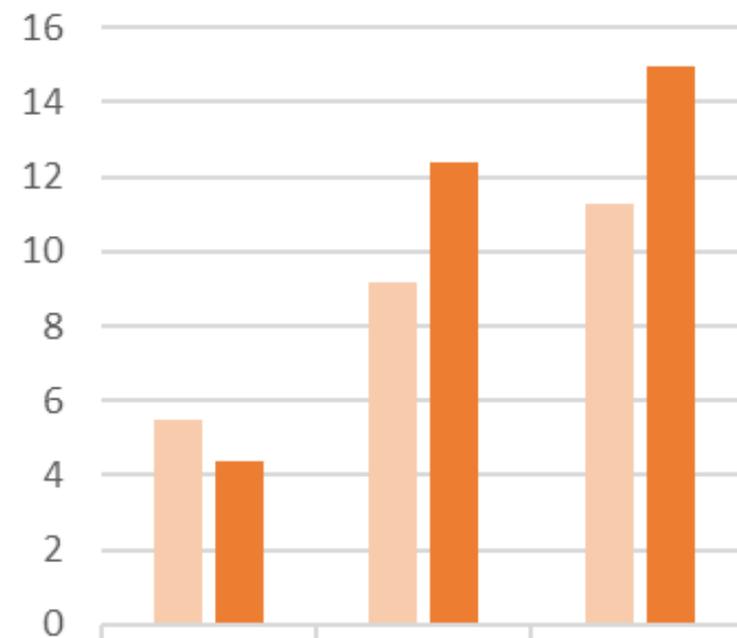
	ig	iu	ib
◼ Equilibrium I	5.48	9.15	11.26
◼ Equilibrium II	4.37	12.37	14.95

Results

Large bank's profit

	i1=	5,48	4,37
	i2=	9,15	12,37
	i3=	11,26	*14,95*

	Equilibrium I	
i1A= *3,57*		
i2A= *8,08*	**100**	**149,7**
i3A= 11,97		
		Equilibrium II
i1A= 2,41		
i2A= 8,83	**89,8**	**120,5**
i3A= 15,54		

Small bank's profit

	i1=	5,48	4,37
	i2=	9,15	12,37
	i3=	11,26	*14,95*

Equilibrium I	
100	**86,8**
	Equilibrium II
88,7	**92,4**

Results
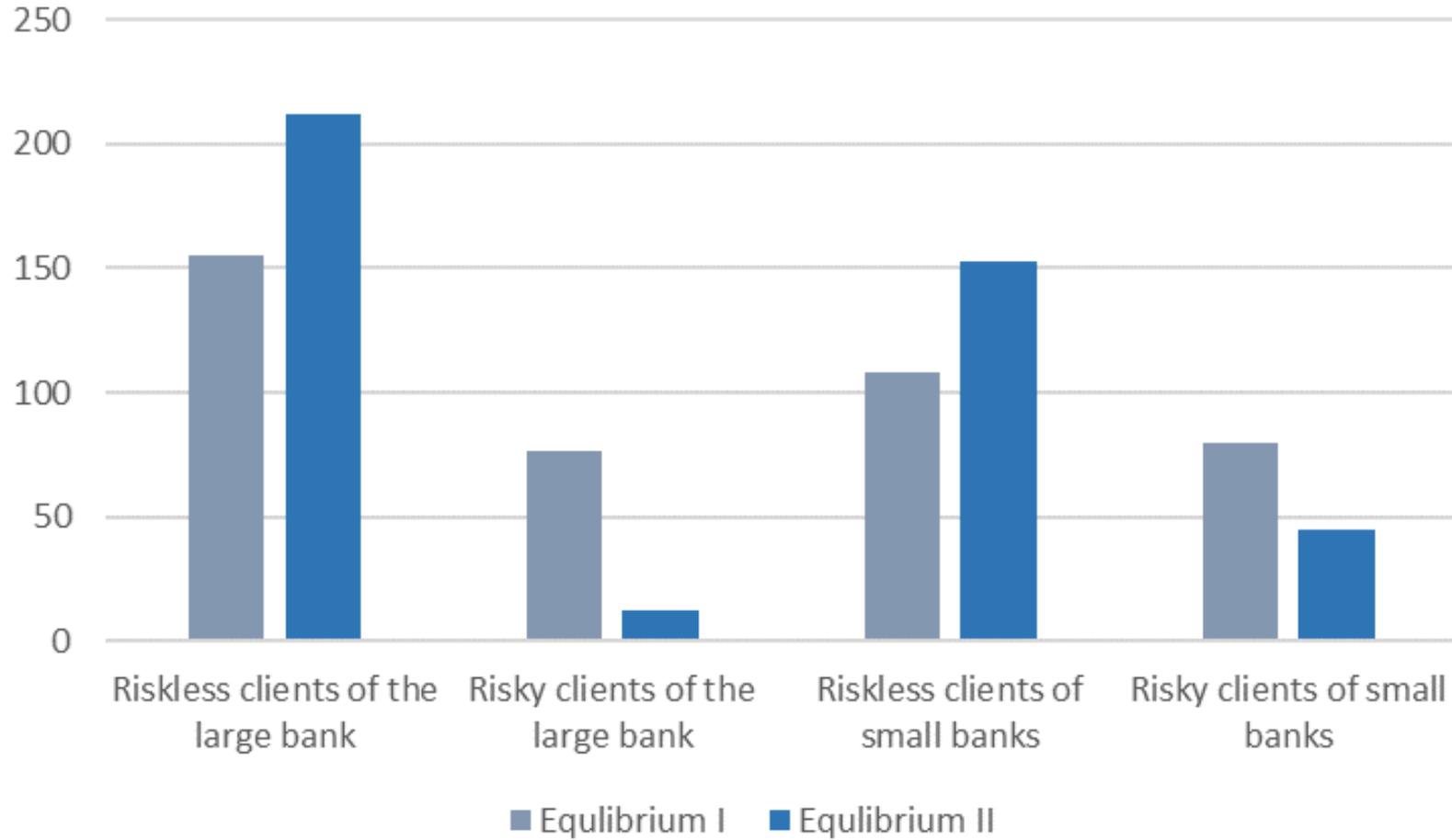
Loans

Loan portfolio composition
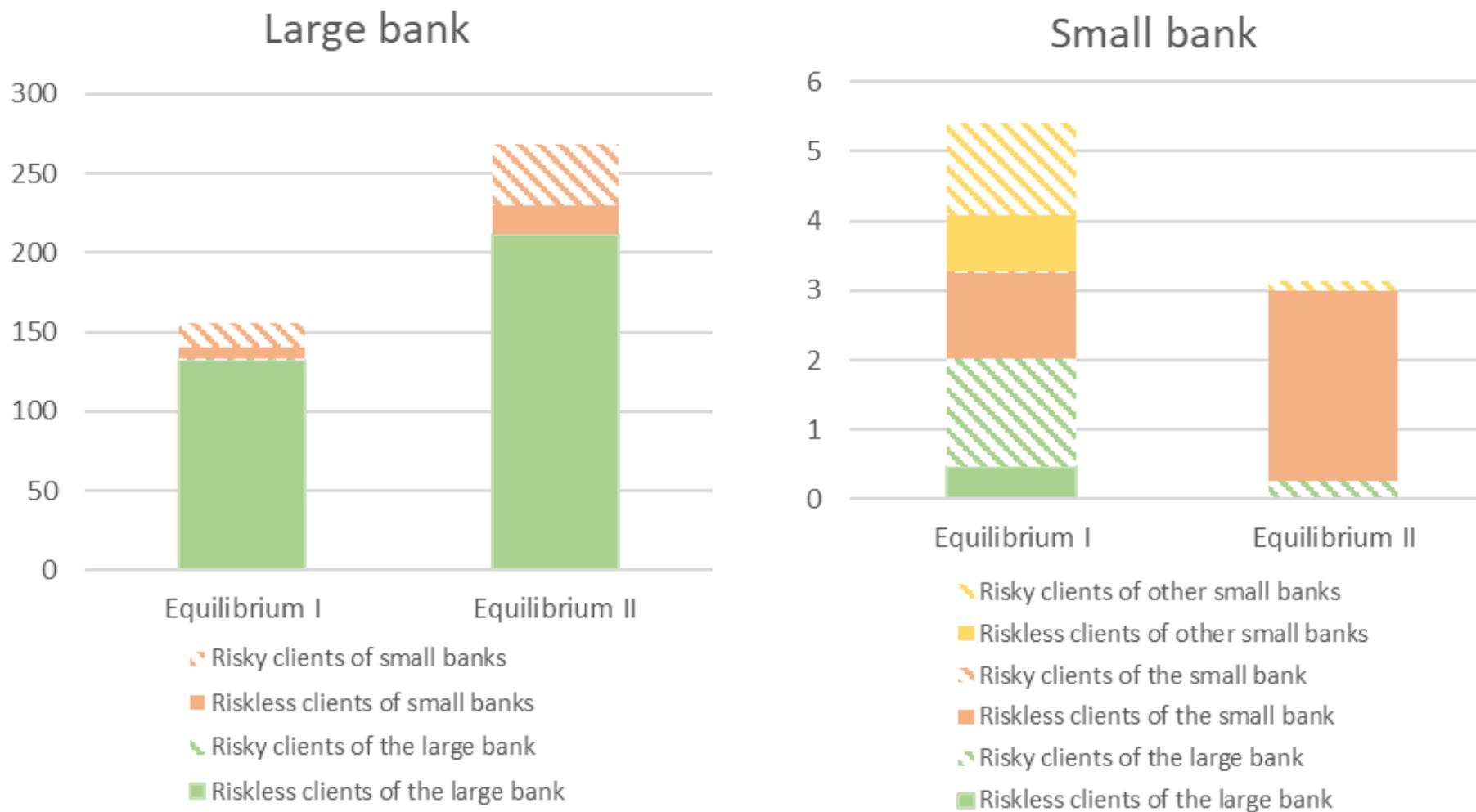
Results

Aggregate probability of default
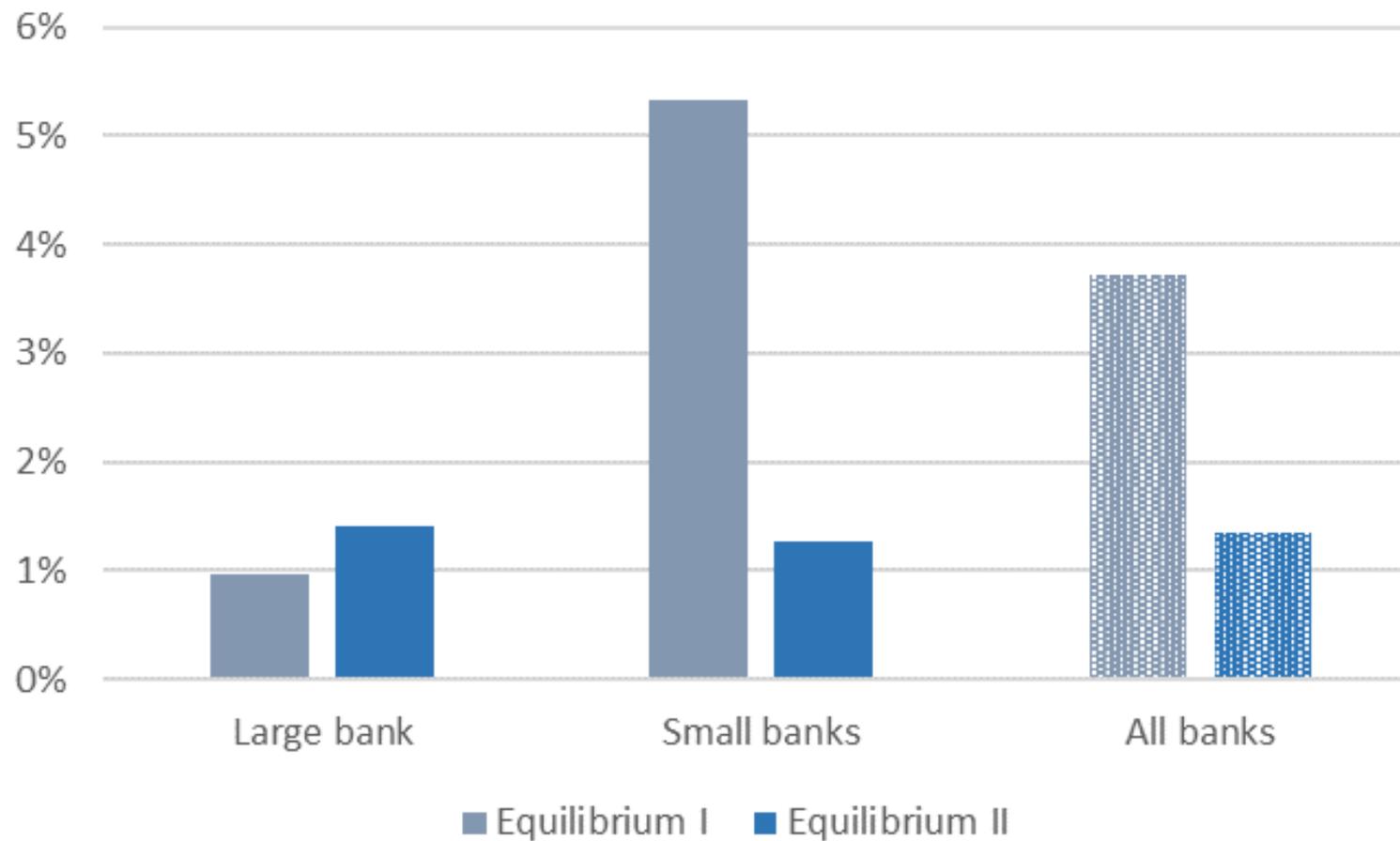
Profit composition
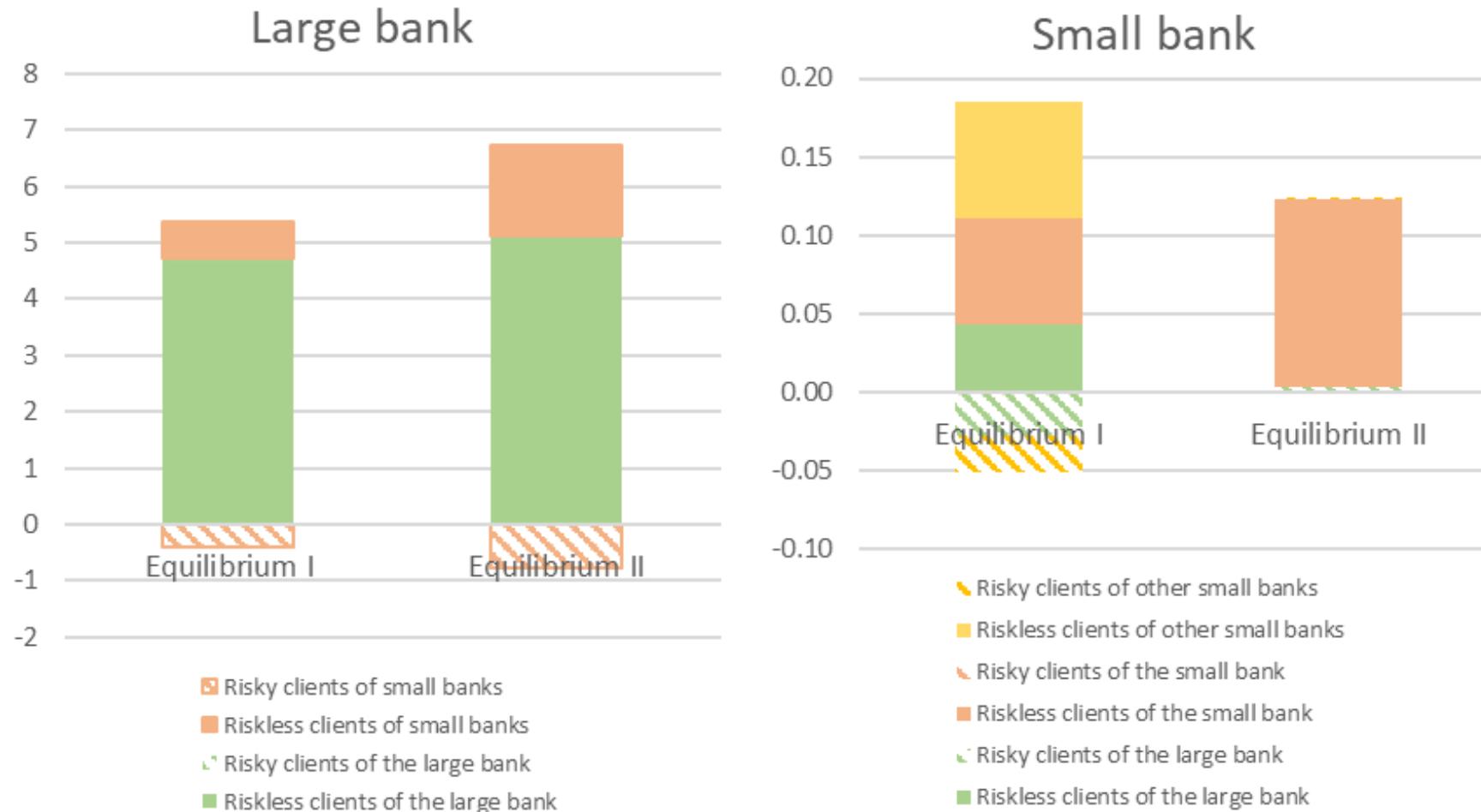
Sensitivity analysis

Large bank's profit (A=0,02)

	5,48	4,37
i1=		
i2=	9,15	12,37
i3=	11,26	*14,95*

		Equilibrium I	
i1A=	*3,57*		
i2A=	*8,08*	**100**	**102,5**
i3A=	11,97		
			Equilibrium II
i1A=	2,41		
i2A=	8,83	**98,4**	**101,2**
i3A=	15,54		

Small bank's profit (A=0,02)

	5,48	4,37
i1=		
i2=	9,15	12,37
i3=	11,26	*14,95*

|	Equilibrium I	
	100	**99,9**
		Equilibrium II
	101,16	**101,17**

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Profit share of the large bank under different parameters' values

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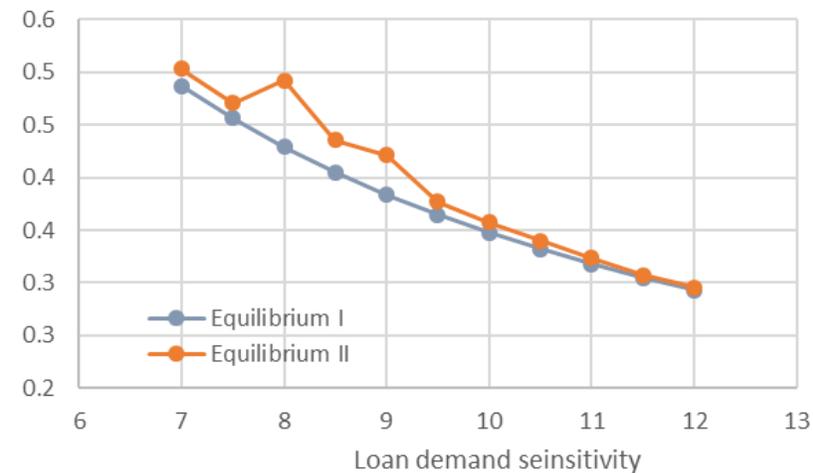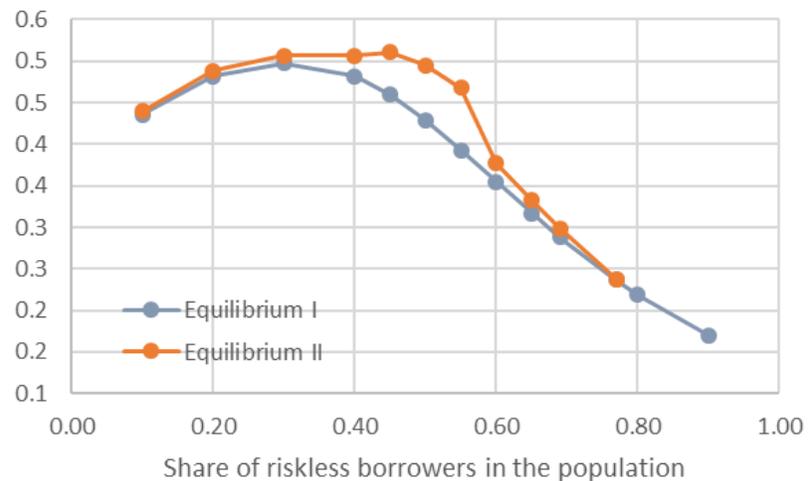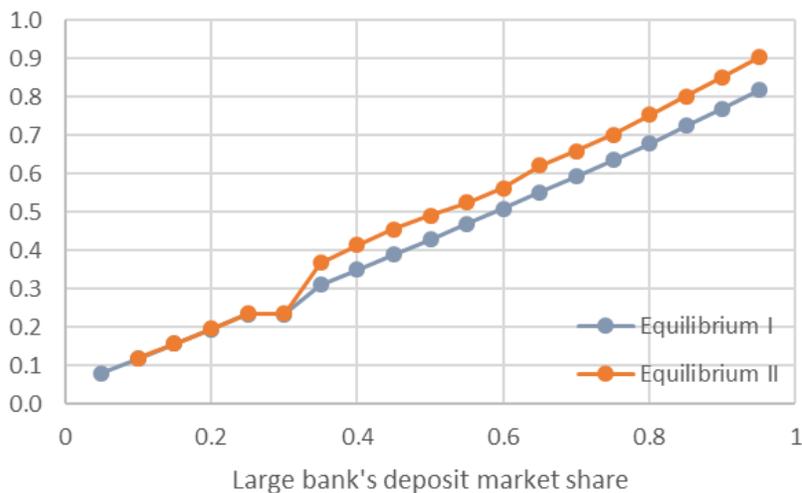
- We show that the dominance on the deposit market may result in changes in the structure of the loan market: the dominant bank can increase its profit at the expense of reducing the profit of other banks.

- At the same time, the availability of credit for risky borrowers and the credit risks of banks are reduced.

- Our results may be useful in the development of regulatory policy in the context of rapid development of the digital economy and finance.