How Does P2P Lending Fit the Consumer Credit Market?

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Motivation: Market Trends

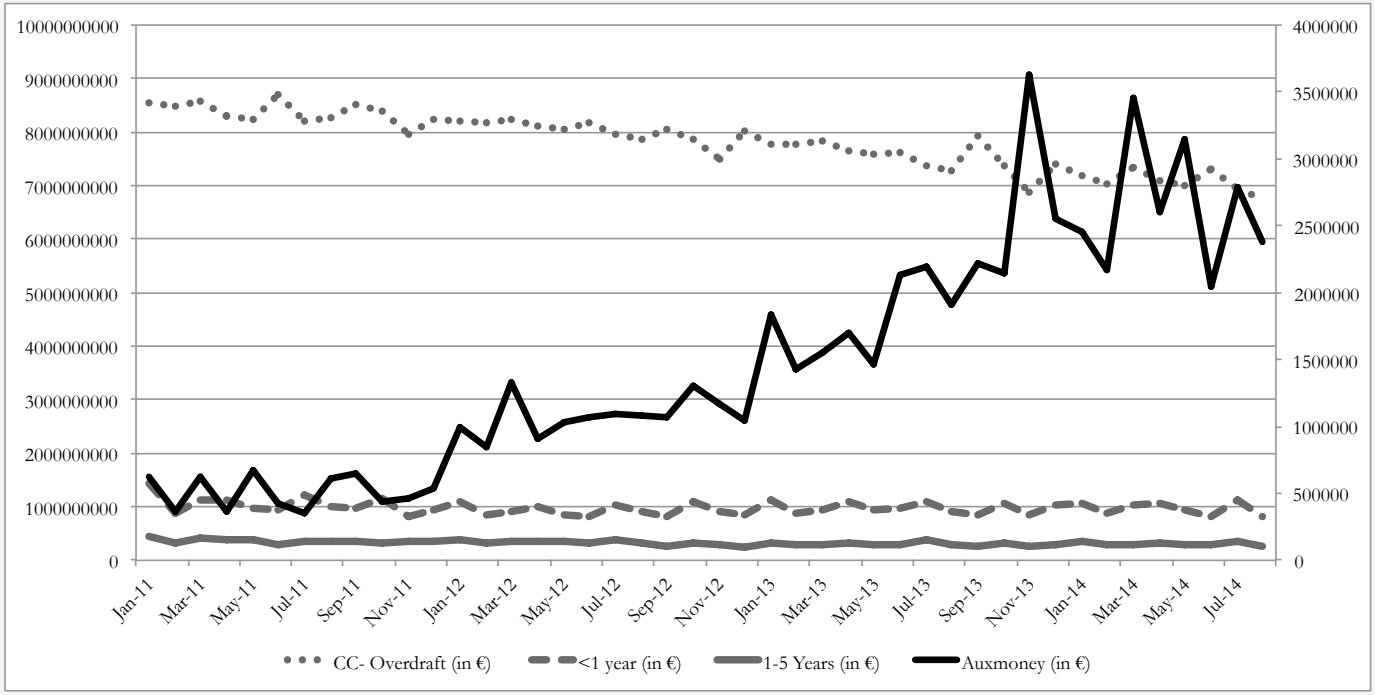

Figure: Non-construction credit lines in Germany (105 Sparkassen und Volksbanken) and Auxmoney. Source: Deutsche Bundesbank und Auxmoney

Motivation

- Why do consumers look for P2P loans?
- Are they consumers that do not receive loans from banks? or are they consumers refinancing themselves at better conditions?
- Are P2P loans complements or substitutes of the banking system?

Our paper aims to understand how P2P lending complements the (non-construction) consumer credit market

Our Analysis

More specifically, we address the questions:

- Are the interest rates charged by P2P lenders in Germany higher than those of banks?
- Are P2P loans more risky than bank loans?
- Are risk-adjusted interest rates so different from those of banks?
- Are P2P loans complements or substitutes of the banking system?

Our Analysis

$$K^{P2P} = f\left(i^{P2P}, \pi^{P2P}; K^{b}, i^{b}, \pi^{b}\right), \tag{1}$$

where K is new credit provision, i nominal interest rate, and π risk (probability of default).

Are the interest rates charged by P2P lenders in Germany higher than those of banks?

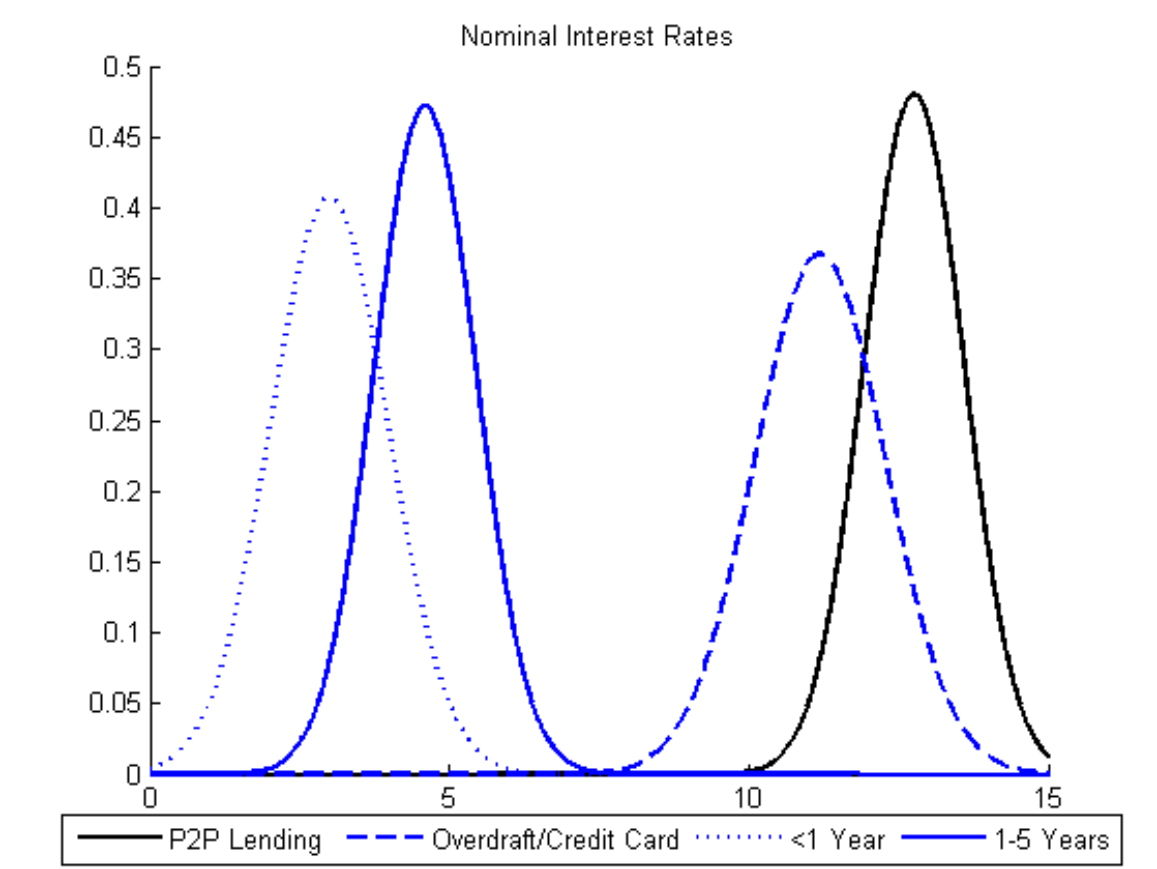

Figure: Nominal interest rate from Non-construction Loans and Auxmoney assuming normal distribution. Source: Deutsche Bundesbank und Auxmoney.

Are the interest rates charged by P2P lenders in Germany higher than those of banks?

	Banks			Auxmoney
	CC/Overdraft	$[0,1]$	$]1,5]$	
Mean	11.18	2.99	4.59	12.75
Std Error	1.08	0.98	0.84	0.83
Min	8.72	1.23	2.01	10.33
25^{th} pcl	10.37	2.35	3.98	12.2
Median	11.3	2.83	4.56	12.75
75^{th} pcl	12.01	3.33	5.08	13.36
Max	13.2	8.13	6.75	14.47
# Obs	572	572	572	397

Table: Distribution of nominal interest rate. Banks is a group compost by a sample of 105 Sparkassen and Volksbanken aggregated by state. Source: Deutsche Bundesbank and Auxmoney

Are P2P loans more risky than bank loans?

	Banks			Auxmoney
	CC/Overdraft	$[0,1]$	$]1,5]$	
Mean	0.12	0.14	0.05	7.27
Std Erros	0.12	0.23	0.33	3
Min	-0.11	-1.51	-2.82	0.88
25^{th}	0.05	0.05	0.01	6.25
Median	0.1	0.12	0.03	6.25
75^{th}	0.16	0.21	0.06	8.77
Max	0.85	1.86	3.07	24.27
# obs	572	572	572	397

Table: Default probability (PD) in % from Auxmoney and banks loans. Derived from loan loss provision from banks and Schufa Score for Auxmoney. Banks is a group compost by a sample of 105 Sparkassen and Volksbanken aggregated by state. Source: Deutsche Bundesbank and Auxmoney

Are risk-adjusted interest rates so different from those of banks?

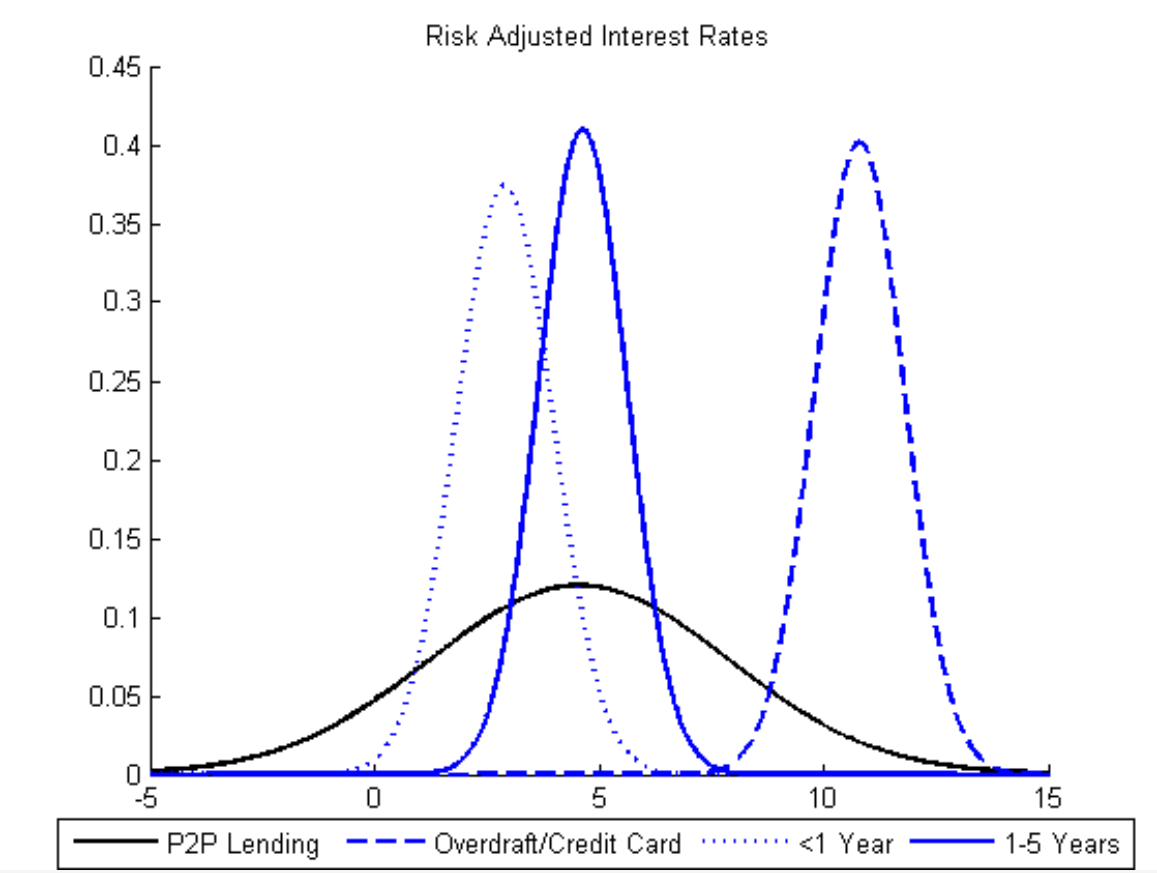

Figure: Risk-adjusted interest rate from Auxmoney and Banking sector assuming normal distribution. Risk adjusted as: $1 + r = (1 - \pi) \times (1 + i) + \pi \times RR$

Are risk-adjusted interest rates so different from those of banks?

	Banks			Auxmoney
	CC/Overdraft	$[0,1]$	$]1,5]$	
Mean	11.05	2.85	4.54	4.55
Std Erros	1.07	0.96	0.91	3.32
Min	8.6	0.51	1.69	-14.55
25^{th}	10.29	2.21	3.89	2.96
Median	11.18	2.64	4.54	5.19
75^{th}	11.86	3.22	5.02	6.48
Max	13.12	7.93	8.3	12.61
# Obs	572	572	572	397

Table: Distribution of risk-adjusted interest rate. Banks is a group compost by a sample of 105 Sparkassen and Volksbanken aggregated by state. Source: Deutsche Bundesbank and Auxmoney

Are P2P loans complements or substitutes of the banking system?

We estimate

$$K^{P2P} = f\left(i^{P2P}, \pi^{P2P}; K^{b}, i^{b}, \pi^{b}\right), \tag{2}$$

and

$$K^{b} = f\left(i^{b}, \pi^{b}; K^{P2P}, i^{P2P}, \pi^{P2P}\right), \tag{3}$$

where K new credit provision, i nominal interest rates and π risk (PD).

- **Hypothesis 1:** P2P lending and consumer credit lines are substitutes, K^{P2P} and K^{b} are negative correlated;
- **Hypothesis 2:** P2P lending and consumer credit lines are complements, K^{P2P} and K^{b} are positive correlated;

	log(Volume)			
	K_t^{P2P}		K_t^b	
	(I)	(II)	(III)	(IV)
i_{t-1}^{P2P}	-0.3435***	-0.4002***		
	(0.0659)	(0.0378)		
$i_{t-1}^{P2P} - i_{t-1}^b$	0.2957***	0.3772***		
	(0.0834)	(0.0418)		
π_{t-1}^{P2P}	-0.1507	0.1041		
	(0.2414)	(0.2985)		
$\pi_{t-1}^{P2P} - \pi_{t-1}^b$	0.1389	-0.1134		
	(0.2515)	(0.3010)		
K_{t-1}^{P2P}	0.2811**	0.1637*	-0.0064	0.0011
	(0.0920)	(0.0832)	(0.0077)	(0.0052)
i_{t-1}^b			0.0467***	0.0474***
			(0.0094)	(0.0098)
$i_{t-1}^b - i_{t-1}^{P2P}$			0.0029	0.0048
			(0.0043)	(0.0046)
π_{t-1}^b			0.0126	0.0056
			(0.0242)	(0.0224)
$\pi_{t-1}^b - \pi^{P2P}$			-0.0002	-0.0002
			(0.0005)	(0.0003)
K_{t-1}^b	-3.988***	-4.318***	0.5346***	0.6042***
	(0.6114)	(0.6781)	(0.0744)	(0.0531)
State controls	No	Yes	No	Yes
State FE	Yes	Yes	Yes	Yes
R^2	0.6789	0.7363	0.997	0.9976
State	11	9	11	9
# Obs	365	313	365	313
Autocorrelation	0.000	0.000	0.000	0.000

Conclusion

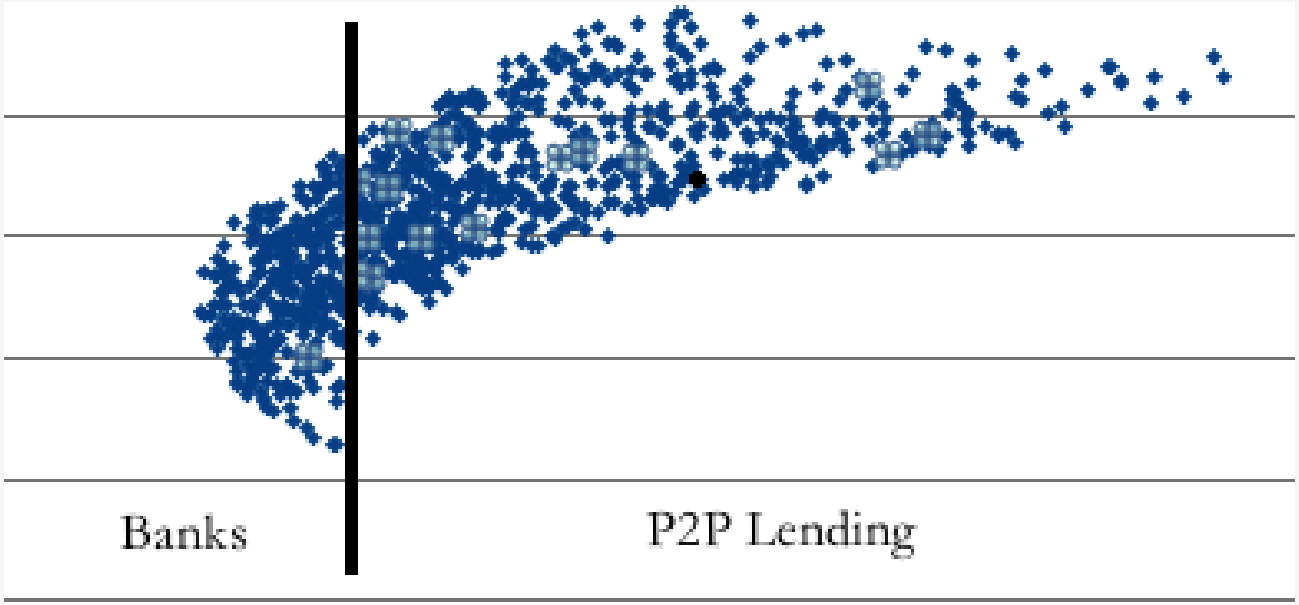

Figure: Hypothetical risk-return line representing the credit market. Y-axis return, X-axis risk.

Conclusion

- P2P loans have a higher interest rate and risk $\rightarrow$ P2P consumers are typically different from bank consumers;
- Once we control for risk difference, interest rates are very similar;
- Controlling for risk-difference P2P lending is a substitute of the banking sector, although it supplies a different share of the market;
- P2P-Platforms enhance the consumer credit market by providing high risk small size loans;

Appendix

Lending Amounts

	Banks				Auxmoney
	K^o	K^z	K^m	K^b	K^{P2P}
Mean	75,413,940	9,436,381	3,177,000	99,864,000	109,089
St.Dev.	60,745,630	26,663,760	2,737,000	76,210,000	119,543
25 Pctl	38,044,000	1,206,000	1,436,000	65,357,000	27,500
50 Pctl	60,411,500	3,099,000	2,566,500	78,324,000	71,200
75 Pctl	92,530,500	7,656,500	3,990,500	103,093,000	141,550
# Obs	4664	4664	4664	4664	397

Table: Lending amounts, K, (in Euro) by bank, month and state, where the index o stands for overdraft and credit card, z stands for $[0, 1]y$ loans, m stands for $]1, 5]y$ loans. Source: Research Data ans Service Center (RDSC) of the Deutsche Bundesbank and Auxmoney, sample period January 2011 until August 2014.