

# Nonbank Lending and the Transmission of Monetary Policy

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# Motivation

*The financing structure of the euro area economy has evolved since the global financial crisis (GFC) with nonbank financial intermediation taking a more prominent role. This shift affects the transmission of monetary policy. (ECB Strategy Review, 2021)*

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- Rise of nonbank intermediaries in many parts of the world, especially since GFC
  - ▶ US: Nonbanks important provider of credit to publicly-traded firms (Chernenko, Erel and Prilmeier, 2020) and to small businesses (Gopal and Schnabl, 2020)
- Conflicting predictions about how they affect monetary transmission
  - ▶ Bank lending channel: monetary policy “gets in all cracks” by affecting funding cost of all intermediaries who borrow short-term (Stein, 2013)
  - ▶ Recent evidence: monetary tightening shifts supply of credit from banks to nonbanks (Drechsler, Savov and Schnabl, 2017, Elliott et al., 2020, and Xiao, 2020)

# Research questions

- We study how nonbanks affect the transmission of monetary policy in corporate and consumer credit markets
- Answer three main research questions:
  1. Does a tightening of monetary policy change the composition of credit supply by shifting loans from banks to nonbanks?
  2. How does the substitution into more nonbank lending affect the transmission of monetary policy to financial and real outcomes (e.g. corporate investment and household consumption)?
  3. What explains the differential response of nonbanks vis-a-vis banks to monetary policy shocks?

# Our approach

- Analyze universe of unsecured credit extended by banks and nonbanks in Denmark to firms and households between 2003 and 2018
- Proxy changes in DK interest rates with euro area monetary policy shocks (currency peg)
- Control for credit demand by comparing loans by banks and nonbanks to the same borrower in the same year (Khwaja and Mian, 2008)
- Combine data on the universe of credit with
  1. balance sheet information on NFCs and tax records on every household in DK to study real effects
  2. detailed funding data on banks and nonbanks to explore mechanism behind our results

## Preview of results

After a one standard deviation size shock to monetary policy (tightening), nonbanks...

- increase their share in credit supply to both firms and households by ca. 5%
  - ▶ Effects driven mostly by intensive margin
- attenuate the monetary transmission by lending more to firms and households, allowing those with nonbank ties to sustain investment and consumption after a rate hike
  - ▶ Nonbanks almost fully eliminate (supply-side) transmission to corporate real outcomes
- are able to raise debt (especially long-term) to expand their lending operations

# Literature

- Changes in monetary policy affect credit market outcomes
  - ▶ Kashyap and Stein (2000), Jiménez et al. (2012), Jiménez et al. (2014), and Heider, Saidi and Schepens (2019) among many others
  - ▶ Elliott et al. (2020) document increased risk-taking by nonbanks after a monetary tightening in US syndicated loans and car loans
  - ▶ **Contribution:** nonbanks in universe of credit; evidence from Europe; transmission to real outcomes with admin. data; funding data on lenders to explore mechanism
- Studies of monetary policy's real effects using micro data
  - ▶ Di Maggio et al. (2017), Cloyne et al. (2018), Wong (2019), Cloyne, Ferreira and Surico (2020), and Holm, Paul and Tischbirek (2021)
- Increasing role of nonbank financial intermediaries in various credit markets
  - ▶ Buchak et al. (2018), Fuster et al. (2019), Murfin and Pratt (2019), Irani et al. (2021), and Chernenko, Erel and Prilmeier (2020)

# Data

## ► Descriptives

- Annual data from the Danish Tax Agency on the universe of **unsecured credit** extended between 2003 and 2018 to non-financial firms (NFCs) and individuals
  - Account-level data: credit balance at year end and total interest paid over past year
  - Cannot distinguish between credit products (term loans, credit card debt, commercial paper etc.)

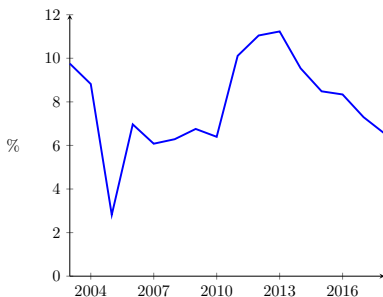


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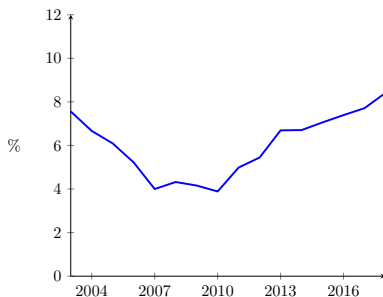
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  - Account-level data: credit balance at year end and total interest paid over past year
  - Cannot distinguish between credit products (term loans, credit card debt, commercial paper etc.)
- Data on borrower and lender characteristics:
  - NFCs: location, balance sheet, income statement, industry, number of employees
  - households: location, disposable income, debt, unemployment status
  - lenders: industry codes distinguish banks (deposit-taking) from nonbanks (non deposit-taking) financial companies; balance sheet data from commercial data provider

## Share of nonbank debt in total unsecured debt



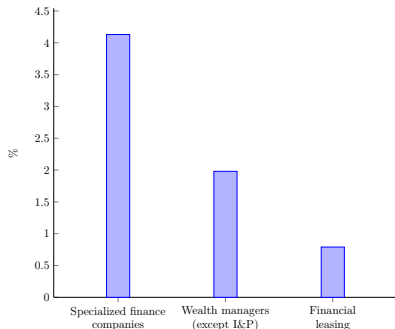
(a) Corporate Debt



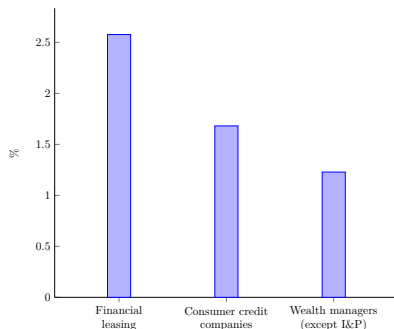
(b) Consumer Debt

- Unsecured debt in DK equivalent to ca. 50% of GDP
- Between 2003-2018 nonbank debt accounts for ca. 8% of unsecured debt

# Largest nonbank industries in Denmark



(a) Corporate Debt



(b) Consumer Debt

# Identification - Monetary policy and credit supply

## 1. Endogeneity of monetary policy

- ▶ Policy rates may be anticipated by market participants and driven by local lending conditions
- ▶ We exploit Denmark's currency peg to the Euro, which gives us exogenous variation as Denmark imports ECB-policy, which is decided with no regard to the economic conditions in Denmark (Andersen et al., 2021; Jiménez et al., 2012)

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## 2. Disentangling credit demand and supply

- ▶ Include granular borrower-level controls to capture credit demand with borrower-year fixed effects as in Khwaja and Mian (2008)
- ▶ We compare lending terms to borrowers who, in a given year after a monetary policy shock, receive credit from at least one bank and nonbank
- ▶ Robustness: include borrowers with single lender-type by creating borrower-types based on industry-location-size-year (ILST) as in Degryse et al. (2019)

# Shifts in credit supply composition

- Q1: Does a tightening of monetary policy change the composition of credit supply by shifting loans from banks to nonbanks?
- Empirical specification at the borrower  $b$ , lender  $l$ , year  $t$  level:

$$\log(\text{debt}_{b,l,t}) = \alpha_{b,t} + \delta_l + \beta(\text{Nonbank}_l \times \text{MP Shock}_{t-1}) + \theta(\text{Nonbank}_l \times \text{Macro Controls}_{t-1}) + \varepsilon_{b,l,t} \quad (1)$$

- ▶  $\alpha_{b,t}$  are borrower-time fixed effects, capturing borrower demand as in Khwaja and Mian (2008)
- ▶  $\delta_l$  are a lender fixed effects, capturing lenders' business model
- ▶  $\text{Nonbank}_{l,t}$  is a dummy equal to 1 if lender  $l$  in year  $t$  is a nonbank
- ▶  $\text{MP Shock}_{t-1}$  is the cumulative sum of euro area monetary policy shocks
- ▶  $\text{Macro Controls}_{t-1}$  are a set of macroeconomic controls for DK (GDP growth and forecast, inflation) and a measure of financial volatility (VIX)

## Results: Shift in credit composition

	Corporate Credit		Consumer Credit	
Outcome var: Log debt				
Nonbank x MP Shock	4.09*** (1.51)	1.85** (0.94)	5.77*** (0.12)	6.18*** (0.08)
Observations	275,516	642,213	16,171,885	28,730,149
R2	0.65	0.40	0.54	0.26
Macro Var. Interactions	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Borrower-Year FE	Yes		Yes	
ILST FE		Yes		Yes

Note: \* for  $p < .10$ , \*\* for  $p < .05$ , and \*\*\* for  $p < .01$

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- One SD size shock to monetary policy increases share of nonbank debt in total unsecured corporate credit by 4% and by roughly 6% in consumer credit



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- One SD size shock to monetary policy increases share of nonbank debt in total unsecured corporate credit by 4% and by roughly 6% in consumer credit
- Results driven by *intensive* margin: no economically meaningful effect on new lending relationships
- Interest rates: no economically significant effect on the relative price of nonbank credit

## Borrower-level effects

- After studying monetary policy's effect on the *share* of nonbank credit supply, we now turn to the borrower-level effects by aggregating data to borrower-year level
- How do nonbanks affect monetary policy transmission to total credit supply?

$$\log(y_{b,t}) = \alpha_b + \beta \text{MP Shock}_{t-1} + \theta \text{Macro Controls}_{t-1} + \varepsilon_{b,t}, \quad (2)$$

- Our regressions vary the dependent variable  $y_{b,t}$ :
  - ▶ Total debt, including secured debt (balance sheet data)
  - ▶ Total unsecured credit (account-level data)
  - ▶ Total unsecured bank and nonbank credit (account-level data)

## Results: Borrower-level credit

	(1) Debt	(2) Credit	(3) Bank Credit	(4) Nonbank Credit
<b>A. Corporate credit</b>				
MP Shock	-1.46*** (0.10)	-0.12 (0.25)	-0.41 (0.25)	7.15*** (0.67)
Observations	776,559	849,021	752,889	87,370
R2	0.84	0.72	0.70	0.82
<b>B. Consumer credit</b>				
MP Shock	-3.11*** (0.02)	-5.11*** (0.04)	-5.52*** (0.04)	3.94*** (0.06)
Observations	22,955,365	21,141,615	18,375,312	6,385,964
R2	0.83	0.69	0.67	0.69
Macro Controls	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes

- Nonbanks increase credit supply, thereby attenuating the fall in total debt/credit at the borrower-level due to the traditional bank-lending channel

# Nonbanks and real effects of monetary policy

- What does the increase in nonbank credit after a monetary tightening imply for borrowers' real outcomes?

$$\begin{aligned}\log(y_{b,t}) = & \alpha_b + \beta(\text{Nonbank borrower}_{b,t-1} \times \text{MP Shock}_{t-1}) \\ & + \gamma \text{MP Shock}_{t-1} + \theta(\text{Nonbank borrower}_{b,t-1} \times \text{Macro Controls}_{t-1}) + \\ & (3)\end{aligned}$$

- ▶  $y_{b,t}$  are real outcomes such as investment (firms) and consumption (households)
- ▶  $\text{Nonbank borrower}_{b,t-1}$  is a dummy equal to one if at least 50% of the borrowers' debt in  $t-1$  was granted by nonbanks
- Hypotheses:
  - ▶  $\gamma < 0$ : A monetary tightening reduces investment/consumption
  - ▶  $\beta > 0$ : Borrowers with ties to nonbanks experience better real outcomes relative to those without nonbank relationships

## Results: Real effects

	Corporates		Households	
	Investment	Wage bill	Consumption	MV new cars
MP Shock	-2.91*** (0.18)	-1.67** (0.06)	-2.52*** (0.01)	-1.45*** (0.16)
Observations	504,288	621,602	23,232,087	131,562
R2	0.69	0.90	0.59	0.60
Macro Var. Interactions	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes

- Ties to nonbanks insulate borrowers from adverse real effects of monetary tightening shocks, esp. so for corporate borrowers
- Similar results for a range of other real outcomes (e.g. NFC profits and total assets; HH disp. income and real estate) ► Firms ► Households

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MP Shock	-2.91*** (0.18)	-1.67** (0.06)	-2.52*** (0.01)	-1.45*** (0.16)
Nonbank borrower x MP Shock	3.96*** (1.03)	1.09** (0.38)	0.94*** (0.04)	6.22* (0.62)
Observations	504,288	621,602	23,232,087	131,562
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► Firms
► Households

# What drives nonbanks differential response to MP?

- To explore the mechanism, we combine credit data with detailed balance sheet information on lenders
- We show how monetary policy shocks affect lenders' funding in separate regressions for banks and nonbanks:

$$y_{l,t} = \alpha_l + \beta \text{MP Shock}_{t-1} + \theta \text{Macro Controls}_{t-1} + \varepsilon_{l,t}, \quad (4)$$

- The dependent variable  $y_{l,t}$  is the growth rate of lenders'
  - ▶ Short-term debt
  - ▶ Long-term debt
  - ▶ Total debt (short + long)
  - ▶ Equity

## Results: Lenders' funding

	(1) Short-term debt	(2) Long-term debt	(3) Total debt	(4) Equity
<b>A. Banks</b>				
MP Shock	1.24 (1.11)	-8.48*** (1.35)	0.04 (0.79)	3.17*** (0.52)
Observations	1,519	1,045	1,520	1,524
R2	0.12	0.17	0.14	0.23
<b>B. Nonbanks</b>				
MP Shock	2.528 (1.956)	6.641*** (2.066)	2.930** (1.400)	2.776*** (0.721)
Observations	3,341	1,119	3,346	3,373
R2	0.12	0.23	0.15	0.18
Macro Controls	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes
Lender Cluster	Yes	Yes	Yes	Yes

- After a monetary tightening, nonbanks are able to attract (long-term) debt financing



# Robustness

## 1. Monetary Policy and Lending Decisions

- ▶ Alternative monetary policy shocks (Altavilla et al., 2019); alternative fixed effects and clustering

## 2. Borrower-level effects of monetary policy

- ▶ Effects on credit supply: replace borrower fixed effects with industry/municipality effects to include one-time borrowers
- ▶ Real effects: include borrower-level controls; alternative measure of nonbank relationships

## 3. Monetary policy and lenders' funding

- ▶ 4-digit Industry clustering/fixed-effects; alternative winsorizing of growth rates;

# Conclusion

- We find that an unexpected tightening of monetary policy..
  1. leads nonbanks to increase their share in credit supply
  2. leads nonbanks to increase their credit supply to both firms and households
  3. has significantly less real consequences for borrowers with ties to nonbanks (esp. for firms)
  4. leads nonbanks to increase their (long-term) debt financing, allowing them to lend more
- Results suggest that a large nonbank sector may reduce the effectiveness of traditional monetary policy to curtail credit growth

Thank you for your feedback

## Nonbank risk-taking channel

- Q2: Do nonbanks shift their loans towards more risky borrowers in response to a monetary tightening?
- Empirical specification:

$$y_{b,l,t} = \alpha_{b,t} + \delta_l + \beta(\text{Nonbank}_l \times \text{MP Shock}_{t-1}) + \theta(\text{Nonbank}_l \times \text{Macro Control}) + \gamma(\text{Nonbank}_l \times \text{MP Shock}_{t-1} \times \text{Borrower Risk}_{b,t}) + (5)$$

- Absent a credit score/default risk indicator, we proxy borrower risk with delinquency history and other observable characteristics
  - ▶ Firms: leverage, sales, and cash holdings
  - ▶ Households: leverage, income, and unemployment history
- Hypothesis:  $\gamma > 0$ , meaning that after a monetary tightening, nonbanks increase their lending to firms with above median riskiness relative to banks

# No evidence of nonbank risk-taking

► Firms

► Households

	Corporate Credit		Consumer Credit	
A. Outcome var: Log debt				
Nonbank x JK	0.51 (1.72)	1.24 (1.821)	5.85*** (1.03)	5.494*** (0.108)
Triple - Leverage	-2.25 (2.59)	0.06 (1.58)	-1.47*** (0.21)	-1.32*** (0.136)
Observations	230,349	596,803	14,944,449	26,671,289
R2	0.66	0.42	0.54	0.27
Borrower-Year FE	Yes		Yes	
ILST FE		Yes		Yes

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B. Outcome var: Interest rate				
Nonbank x JK	-0.000 (0.000)	-0.000** (0.000)	0.000 (0.000)	-0.000*** (0.000)
Triple - Leverage	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Observations	309,780	668,312	18,689,780	30,924,207
R2	0.46	0.14	0.51	0.13
Borrower-Year FE	Yes		Yes	
ILST FE		Yes		Yes

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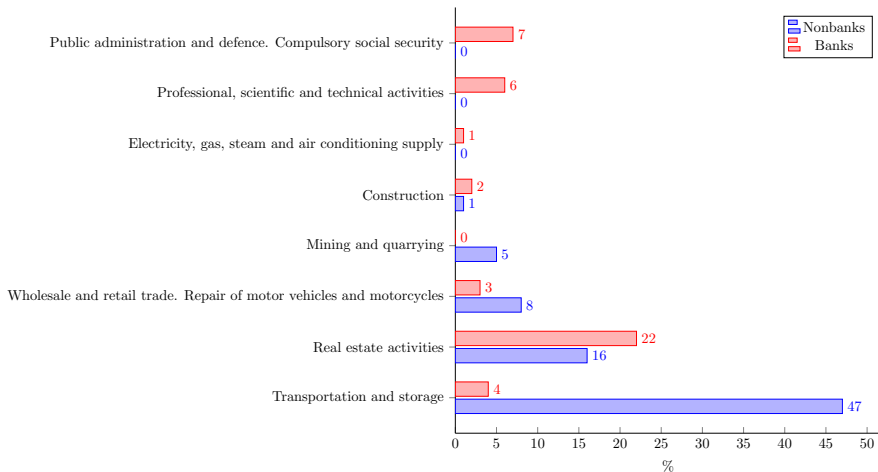
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ILST FE		Yes		Yes



# Most popular borrower industries by lender type



# Summary statistics

► Firms

► Households

◄ Return

	All borrowers			Nonbank borrowers			Bank borrowers		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Panel A. Firms with bank & nonbank lenders									
Total debt (m DKK)	8.02	96.54	0.15	11.93	282.33	0.19	7.79	72.24	0.15
Interest rate	0.12	0.37	0.05	0.06	0.11	0.04	0.13	0.38	0.05
Nonbank debt share	0.06	0.20	0.00	0.85	0.17	0.94	0.01	0.06	0.00
No. of lenders	3.32	1.92	3.00	3.15	1.37	3.00	3.33	1.94	3.00
No. of nonbank lenders	0.60	0.75	0.00	1.53	0.77	1.00	0.55	0.71	0.00
Total assets (m DKK)	299.40	4,403.78	13.23	326.73	7,111.51	7.56	297.78	4,189.00	13.66
N	370,977			20,421			350,556		
Panel B. Households with bank & nonbank lenders									
Total debt (thsd DKK)	170.65	1,464.54	23.00	72.20	1,212.21	24.91	181.44	1,489.20	22.68
Interest rate	0.10	0.11	0.08	0.10	0.10	0.07	0.10	0.11	0.08
Nonbank debt share	0.12	0.25	0.00	0.79	0.20	0.80	0.04	0.11	0.00
No. of lenders	4.40	2.52	4.00	4.90	2.75	4.00	4.35	2.49	4.00
No. of nonbank lenders	1.51	1.39	1.00	2.59	1.57	2.00	1.39	1.32	1.00
Disp. income (thsd DKK)	399.71	609.32	358.03	334.03	309.31	290.17	406.91	633.21	365.45
N	20,291,278			2,004,404			18,286,874		

**Table 1:** Nonbank (bank) borrowers are those who receive at least 50% of their debt from nonbank (banks).

- Focusing on borrowers receiving credit from banks and nonbanks simultaneously reduces our sample by ca. 75%

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Panel A. Firms with bank & nonbank lenders									
Total debt (m DKK)	8.02	96.54	0.15	11.93	282.33	0.19	7.79	72.24	0.15
Interest rate	0.12	0.37	0.05	0.06	0.11	0.04	0.13	0.38	0.05
Nonbank debt share	0.06	0.20	0.00	0.85	0.17	0.94	0.01	0.06	0.00
No. of lenders	3.32	1.92	3.00	3.15	1.37	3.00	3.33	1.94	3.00
No. of nonbank lenders	0.60	0.75	0.00	1.53	0.77	1.00	0.55	0.71	0.00
Total assets (m DKK)	299.40	4,403.78	13.23	326.73	7,111.51	7.56	297.78	4,189.00	13.66
N	370,977			20,421			350,556		
Panel B. Households with bank & nonbank lenders									
Total debt (thsd DKK)	170.65	1,464.54	23.00	72.20	1,212.21	24.91	181.44	1,489.20	22.68
Interest rate	0.10	0.11	0.08	0.10	0.10	0.07	0.10	0.11	0.08
Nonbank debt share	0.12	0.25	0.00	0.79	0.20	0.80	0.04	0.11	0.00
No. of lenders	4.40	2.52	4.00	4.90	2.75	4.00	4.35	2.49	4.00
No. of nonbank lenders	1.51	1.39	1.00	2.59	1.57	2.00	1.39	1.32	1.00
Disp. income (thsd DKK)	399.71	609.32	358.03	334.03	309.31	290.17	406.91	633.21	365.45
N	20,291,278			2,004,404			18,286,874		

**Table 1:** Nonbank (bank) borrowers are those who receive at least 50% of their debt from nonbank (banks).

- Focusing on borrowers receiving credit from banks and nonbanks simultaneously reduces our sample by ca. 75%

# Firms - Summary statistics

◀ Return

	All firms			Nonbank borrowers			Bank borrowers		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Panel A. Full dataset									
Total assets (m DKK)	134.31	2,661.45	5.44	162.32	4,401.73	4.66	133.27	2,574.31	5.47
Total debt (m DKK)	3.20	48.81	0.06	6.01	173.76	0.12	3.10	37.02	0.05
Interest rate	0.11	0.34	0.05	0.05	0.12	0.04	0.12	0.35	0.05
Nonbank debt share	0.04	0.17	0.00	0.92	0.15	1.00	0.00	0.04	0.00
FTE employees	76.37	843.78	3.00	28.11	274.03	3.00	78.12	857.35	3.00
Firm age (Years)	14.87	15.22	10.00	15.81	18.84	10.00	14.83	15.08	10.00
No. of lenders	2.23	1.62	2.00	2.38	1.32	2.00	2.22	1.63	2.00
No. of nonbank lenders	0.26	0.56	0.00	1.29	0.62	1.00	0.22	0.52	0.00
Debt to equity ratio	5.29	70.13	2.01	5.99	192.06	1.99	5.26	60.90	2.01
N	1,888,881			66,308			1,822,573		
Panel B. Firms with bank & nonbank lenders									
Total assets (m DKK)	299.40	4,403.78	13.23	326.73	7,111.51	7.56	297.78	4,189.00	13.66
Total debt (m DKK)	8.02	96.54	0.15	11.93	282.33	0.19	7.79	72.24	0.15
Interest rate	0.12	0.37	0.05	0.06	0.11	0.04	0.13	0.38	0.05
Nonbank debt share	0.06	0.20	0.00	0.85	0.17	0.94	0.01	0.06	0.00
FTE employees	146.60	1,160.96	8.00	48.25	356.40	6.00	152.33	1,190.94	8.45
Firm age (Years)	18.64	15.76	15.00	16.04	15.49	12.00	18.79	15.76	15.00
No. of lenders	3.32	1.92	3.00	3.15	1.37	3.00	3.33	1.94	3.00
No. of nonbank lenders	0.60	0.75	0.00	1.53	0.77	1.00	0.55	0.71	0.00
Debt to equity ratio	5.75	44.22	2.12	5.81	33.10	2.14	5.74	44.78	2.12
N	370,977			20,421			350,556		

**Table 2:** Nonbank (bank) borrowers are those who receive at least 50% of their debt from nonbank (banks).

# Households - Summary statistics

◀ Return

	All households			Nonbank borrowers			Bank borrowers		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
Panel A. Full dataset									
Total debt (thsd DKK)	132.11	1,062.04	6.90	62.81	1,066.30	16.44	137.38	1,061.53	6.02
Nonbank debt share	0.08	0.23	0.00	0.85	0.21	0.93	0.02	0.08	0.00
Interest rate	0.09	0.11	0.06	0.09	0.10	0.06	0.09	0.11	0.06
No. of lenders	3.29	2.41	3.00	4.07	2.75	3.00	3.23	2.37	3.00
No. of nonbank lenders	0.93	1.30	0.00	2.22	1.57	2.00	0.83	1.22	0.00
Disp. income (thsd DKK)	365.93	615.17	318.10	316.68	301.79	268.83	369.67	632.51	322.34
Age of oldest adult	47.78	14.85	47.00	49.01	14.38	49.00	47.69	14.88	47.00
Recently unemployed	0.09	0.28	0.00	0.09	0.29	0.00	0.09	0.28	0.00
N	72,815,493			5,142,829			67,672,664		
Panel B. Households with bank & nonbank lenders									
Total debt (thsd DKK)	170.65	1,464.54	23.00	72.20	1,212.21	24.91	181.44	1,489.20	22.68
Nonbank debt share	0.12	0.25	0.00	0.79	0.20	0.80	0.04	0.11	0.00
Interest rate	0.10	0.11	0.08	0.10	0.10	0.07	0.10	0.11	0.08
No. of lenders	4.40	2.52	4.00	4.90	2.75	4.00	4.35	2.49	4.00
No. of nonbank lenders	1.51	1.39	1.00	2.59	1.57	2.00	1.39	1.32	1.00
Disp. income (thsd DKK)	399.71	609.32	358.03	334.03	309.31	290.17	406.91	633.21	365.45
Age of oldest adult	48.65	12.51	49.00	50.45	12.63	51.00	48.45	12.48	48.00
Recently unemployed	0.10	0.30	0.00	0.11	0.31	0.00	0.10	0.30	0.00
N	20,291,278			2,004,404			18,286,874		

**Table 3:** Nonbank (bank) borrowers are those who receive at least 50% of their debt from nonbank (banks).

## Robustness: alternative MP shocks & firm credit

	(1) JK (Sign)	(2) JK (HF Euron)	(3) AL 1M	(4) AL 3M	(5) AL 1Y
<b>A. Outcome var: Log debt</b>					
Nonbank x MP Shock	4.09*** (1.51)	4.51*** (1.55)	0.55 (1.35)	5.95*** (1.46)	0.64 (1.71)
Observations	275,516	275,516	288,798	288,798	288,798
R2	0.65	0.65	0.65	0.65	0.65
<b>B. Outcome var: Interest rate</b>					
Nonbank x MP Shock	-0.004** (0.002)	-0.004** (0.002)	-0.001 (0.002)	-0.005*** (0.002)	-0.003 (0.002)
Observations	380,162	380,162	399,907	399,907	399,907
R2	0.46	0.46	0.47	0.47	0.47
Macro Control Interactions	Yes	Yes	Yes	Yes	Yes
Borrower-Year FE	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes

# Robustness: alternative MP shocks & consumer credit

	(1) JK (Sign)	(2) JK (HF Euron)	(3) AL 1M	(4) AL 3M	(5) AL 1Y
<b>A. Outcome var: Log debt</b>					
Nonbank x MP Shock	5.77*** (0.12)	4.12*** (0.13)	1.73*** (0.13)	5.84*** (0.11)	3.75*** (0.14)
Observations	16,171,885	16,171,885	17,589,906	17,589,906	17,589,906
R2	0.54	0.54	0.54	0.54	0.54
<b>B. Outcome var: Interest rate</b>					
Nonbank x MP Shock	0.003*** (0.000)	-0.000*** (0.000)	0.002*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Observations	20285707	20285707	22092009	22092009	22092009
R2	0.50	0.50	0.52	0.52	0.52
Macro Control Interactions	Yes	Yes	Yes	Yes	Yes
Borrower-Year FE					
Lender FE	Yes	Yes	Yes	Yes	Yes
LenderFE	Yes	Yes	Yes	Yes	Yes



## Robustness: alternative clustering & firm credit

	(1)	(2)	(3)	(4)	(5)
<b>A. Outcome var: Log debt</b>					
Nonbank x MP Shock	4.09*** (1.51)	4.09*** (1.41)	4.09 (3.43)	4.09 (4.94)	4.09*** (1.61)
Observations	275,516	275,516	275,516	275,516	275,516
R2	0.65	0.65	0.65	0.65	0.65
<b>B. Outcome var: Interest rate</b>					
Nonbank x MP Shock	-0.004** (0.002)	-0.004*** (0.002)	-0.004*** (0.002)	-0.004 (0.002)	-0.004** (0.002)
Observations	380,162	380,162	380,162	380,162	380,162
R2	0.46	0.46	0.46	0.46	0.46
Macro Var. Interactions	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes
Borrower-Year FE	Yes	Yes	Yes	Yes	Yes
Clust.: Lender-Borrower	Yes				
Clust.: Lender			Yes	Yes	
Clust.: Borrower		Yes	Yes	Yes	
Clust.: Year				Yes	
Clust.: Lender-Borrower-Year					Yes

# Robustness: alternative clustering & consumer credit

	(1)	(2)	(3)	(4)	(5)
<b>A. Outcome var: Log debt</b>					
Nonbank x MP Shock	5.77*** (0.12)	5.77*** (0.12)	5.77*** (1.77)	5.77*** (1.59)	5.77*** (0.13)
Observations	16,171,885	16,171,885	16,171,885	16,171,885	16,171,885
R2	0.54	0.54	0.54	0.54	0.54
<b>B. Outcome var: Interest rate</b>					
Nonbank x MP Shock	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.001)	0.003 (0.004)	0.003*** (0.000)
Observations	20,285,707	20,285,707	20,285,707	20,285,707	20,285,707
R2	0.50	0.50	0.50	0.50	0.50
Macro Var. Interactions	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes
Borrower-Year FE	Yes	Yes	Yes	Yes	Yes
Clust.: Lender-Borrower	Yes				
Clust.: Lender			Yes	Yes	
Clust.: Borrower		Yes	Yes	Yes	
Clust.: Year				Yes	
Clust.: Lender-Borrower-Year					Yes

# Results: Risk-taking in corporate credit

◀ Return

	(1) Indebt b/se	(2) intrate b/se	(3) Indebt b/se	(4) intrate b/se	(5) Indebt b/se	(6) intrate b/se
Nonbank x JK	0.683 (1.787)	-0.002 (0.002)	1.172 (1.714)	-0.001 (0.002)	5.421*** (1.874)	-0.006*** (0.002)
Triple - Leverage	-2.423 (2.683)	-0.001 (0.003)				
Triple - Sales			-3.006 (2.622)	-0.007** (0.003)		
CashRat_inter					-3.275 (3.460)	0.004 (0.004)

# Results: Risk-taking in consumer credit

◀ Return

	(1)	(2)	(3)	(4)	(5)	(6)
	ln debt	int. rate	ln debt	int. rate	ln debt	int. rate
Nonbank x JK	5.85*** (0.17)	0.000 (0.000)	3.60*** (0.14)	0.004*** (0.000)	6.17*** (0.13)	0.003*** (0.000)
Triple - Leverage	-1.47*** (0.21)	0.000 (0.000)				
Triple - Income			2.92*** (0.23)	-0.003*** (0.000)		
Triple - Unemployment					-0.27 (0.41)	-0.002*** (0.000)
Observations	14,944,449	18,689,780	16,170,775	20,284,312	16,171,885	20,285,707
R2	0.54	0.51	0.54	0.51	0.54	0.50
Macro Var. Interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lower-lvl interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower-Year FE	Yes	Yes	Yes	Yes	Yes	Yes

- We find no evidence that nonbanks shift their credit supply towards more risky borrowers in response to a monetary tightening

## Robustness: risk-taking with single-lender firms

Here, we replace our borrower-year fixed effects with ILST fixed effects to include borrowers, who do not receive credit from banks and nonbanks simultaneously

	(1) Indebt b/se	(2) intrate b/se	(3) Indebt b/se	(4) intrate b/se	(5) Indebt b/se	(6) intrate b/se
Nonbank x JK	1.453 (1.821)	-0.002 (0.002)	1.566 (1.769)	-0.002 (0.002)	5.949*** (1.858)	-0.007*** (0.002)
Triple - Leverage	-2.624 (2.640)	-0.003 (0.003)				
Triple - Sales			-2.367 (2.565)	-0.007** (0.003)		
CashRat_inter					-2.045 (3.650)	0.005 (0.004)
Observations	226,453	304,458	274,624	370,977	204,663	273,483
R2	0.66	0.47	0.65	0.46	0.67	0.46
Macro Var. Interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lower-lvl interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes	Yes
ILST FE	Yes	Yes	Yes	Yes	Yes	Yes

## Robustness: risk-taking with single-lender households

Here, we replace our borrower-year fixed effects with ILST fixed effects to include borrowers, who do not receive credit from banks and nonbanks simultaneously

	(1) ln debt	(2) int. rate	(3) ln debt	(4) int. rate	(5) ln debt	(6) int. rate
Nonbank x JK	5.494*** (0.108)	-0.000*** (0.000)	5.003*** (0.091)	0.003*** (0.000)	6.397*** (0.084)	0.002*** (0.000)
Triple - Leverage	-1.328*** (0.136)	0.000 (0.000)				
Triple - Income			0.513*** (0.147)	-0.002*** (0.000)		
Triple - Unemployment					-0.511* (0.242)	-0.001*** (0.000)
Observations	26,671,289	30,924,207	28,729,896	33,411,968	28,730,149	33,412,275
R2	0.27	0.13	0.26	0.12	0.26	0.12
Macro Var. Interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lower-lvl interactions	Yes	Yes	Yes	Yes	Yes	Yes
Lender FE	Yes	Yes	Yes	Yes	Yes	Yes
ILST FE	Yes	Yes	Yes	Yes	Yes	Yes

## Robustness: credit supply with one-time borrowers

Here, we replace borrower fixed effects with industry fixed effects to include borrowers, who do not appear in two consecutive periods in our sample

	(1) Debt	(2) Credit	(3) Bank Credit	(4) Nonbank Credit	(5) Bank Credit Pure	(6) Nonbank Credit Pure
MP Shock	-1.98*** (0.14)	-4.42*** (0.28)	-3.88*** (0.29)	-6.59*** (0.74)	-5.56*** (0.31)	-13.01*** (1.43)
Observations	808,852	885,929	790,078	94,920	723,918	24,421
R2	0.21	0.11	0.11	0.15	0.11	0.28
Macro Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

# Results: Firm-level real effects

[◀ Return](#)

	(1) Tot. Assets	(2) Investment	(3) Oper. Profit	(4) Wage Bill
MP Shock	-2.78*** (0.08)	-2.91*** (0.18)	-5.65*** (0.13)	-1.67*** (0.06)
Nonbank borrower x MP Shock	2.24*** (0.49)	3.96*** (1.03)	4.38*** (0.78)	1.09** (0.38)
Observations	776,689	504,288	607,803	621,602
R2	0.86	0.69	0.74	0.90
Macro Control Interactions	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes



# Results: Household-level real effects

[◀ Return](#)

	(1)	(2)	(3)	(4)	(5)
	Disp. Income	Consumption	MV RE	MV New Cars	MV Total Assets
MP Shock	-2.05*** (0.01)	-2.52*** (0.01)	-6.02*** (0.01)	-1.45*** (0.16)	-6.81*** (0.02)
Nonbank borrower x MP Shock	0.23*** (0.02)	0.94*** (0.04)	-0.08** (0.04)	6.22*** (0.62)	1.21*** (0.09)
Observations	24,302,612	23,232,087	14,850,076	131,562	24,096,429
R2	0.84	0.59	0.90	0.60	0.89
Macro Control Interactions	Yes	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes	Yes

## Robustness: real effects with alternative nonbank-history measure

Here, we replace our nonbank-borrower indicator (equal to one if 50% of credit came from nonbanks) with a dummy equal to one if the firm received any nonbank credit in the previous period

	(1) Tot. Assets	(2) Investment	(3) Oper. Profit	(4) Wage Bill
MP Shock	-3.16*** (0.08)	0.03 (0.19)	-5.54*** (0.13)	-2.06*** (0.06)
Nonbank relation x MP Shock	2.25*** (0.39)	8.72*** (0.86)	5.76*** (0.62)	1.37*** (0.31)
Observations	776,689	504,294	607,849	621,635
R2	0.86	0.68	0.74	0.90
Macro Control Interactions	Yes	Yes	Yes	Yes
Borrower FE	Yes	Yes	Yes	Yes