Trade Uncertainty and U.S. Bank Lending*

Ricardo Correa[1] Julian di Giovanni[2] Linda Goldberg[3] Camelia Minoiu[4]

[1]Federal Reserve Board

[2]New York Fed, CEPR

[3]New York Fed, CEPR, NBER

[4]Atlanta Fed

SHoF "The Effects of New Geopolitical Risks on Financial Markets and Firms"
August 23, 2023

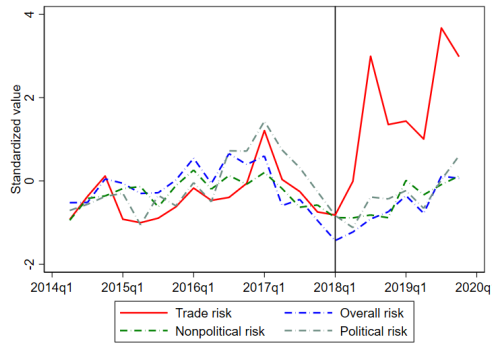
*The views expressed in these presentation are those of the authors and do not necessarily represent the views of the Federal Reserve Board, the Federal Reserve Banks of Atlanta and New York, or the Federal Reserve System.

Motivation

An era of global uncertainty

- A growing concern since the GFC
- Brexit, pandemic, geopolitics, climate, ...
- Trade: deglobalization/ fragmentation, supply chain disruptions, reshoring
- Uncertainty changes investment, spending, trade finance needs
- Trade uncertainty spiked in 2018, a 3.6 st. dev. increase relative to index history, and stayed high

Figure: Trade Uncertainty Index



Source: Hassan et al. (2019) overall risk index and major components.
Notes: Similar trends with Trade Policy Uncertainty Index from Caldara et al (2020).

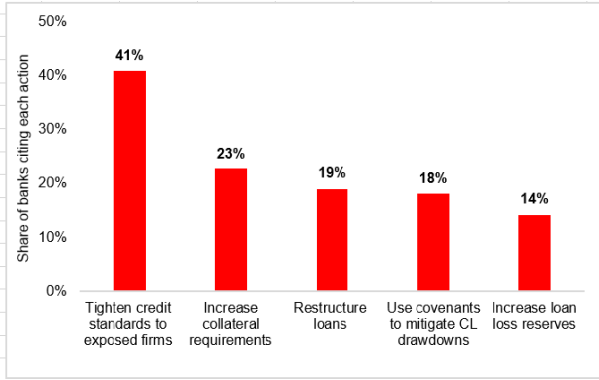
Evolution of trade sentiment

Motivation

Financial sector source of potential amplification

- Banks' actions can amplify contractionary impulses from uncertainty shocks
- Mechanisms:
  - Real-options theory (banks adopt "wait-and-see" attitude)
  - Financing constraints (tightening because of future balance sheet losses)
- Survey data ⇒ Bank lending behavior is affected along multiple margins

Figure: Bank Actions to Mitigate Trade Risks



Source: Federal Reserve Senior Loan Officer Opinion Survey (SLOOS), April 2019

This paper

1. Research design
   - Exploit "exogenous" increases in trade uncertainty
   - Combine data on trade uncertainty with banks' initial sectoral loan shares to obtain *pre-determined* bank-level measures of exposure to trade uncertainty
   - Relate bank exposures to uncertainty to the volumes and terms of credit
2. Baseline questions
   - How does differential exposure to trade uncertainty affect bank lending?
   - Which firms are affected? Spillovers to low-uncertainty sectors?
   - Is there evidence of effects on real outcomes?
3. Identification of banks' uncertainty mechanism
   - "Wait-and-see" incentives: loan maturities, firms' perceived default risk
   - Financial frictions channel: heterogeneous effects by bank capital

Main Results

1. Banks exposed to high trade uncertainty contract lending relative to low-uncertainty banks
   - $\Rightarrow$ This holds for both directly and indirectly affected borrowers
   - $\Rightarrow$ Intensive and extensive margins of lending
2. Evidence of a "wait-and-see" and financial frictions channel
   - Exposed banks reduce the maturity of their loans, make more on-demand loans
   - Exposed banks assess their borrowers as riskier
   - Exposed banks reduce exposures to ex-ante riskier borrowers
   - Exposed banks facing capital constraints contract lending more
3. Credit contraction affects investment and asset growth for exposed firms
   - Especially for firms that are more reliant on bank finance

Data sources

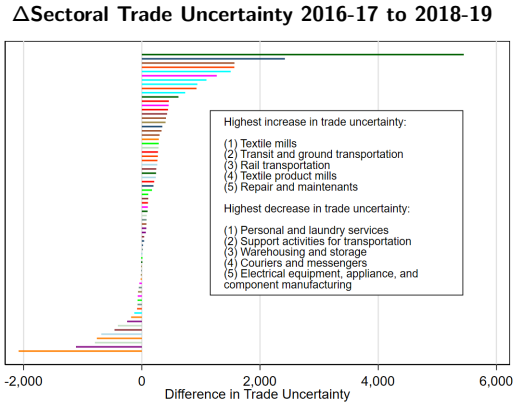
- FR Y-14Q (U.S. "Credit Register"): Loan-level data on large business loans ($>$ \$1 mn) from banks subject to stress tests (US BHCs $>$ \$50 bn in assets)
  - 75% of total loan commitment volume in the banking sector
  - 80% of banking sector assets
  - 60% of nonfinancial business debt

$\Rightarrow$ Use total quarterly lending to domestic non-financial firms over 2016-2019

- FR Y-9C bank-level data on bank characteristics (asset size, deposits, capital)
- Firm-level trade uncertainty measures based on textual analysis of earnings call transcripts (Hassan et al., 2019), aggregated at the 3-digit NAICS sector level

Hassan et al. (2019)

Trade uncertainty



Notes: Non-financial sectors are listed in descending order of uncertainty. Calculated by averaging Hassan et al. (2019)'s firm-level trade uncertainty data, based on textual analysis of earnings call transcripts, across firms within 3-digit NAICS sectors.

Table of rankings

- Change in average firm-level trade uncertainty measured at sector level
- Rank sectors by level of trade uncertainty and define "high-uncertainty sectors" as $>$ 75th percentile

$\Rightarrow$ Many sectors are in manufacturing

- **Key for identification**: Firms in high- and low-uncertainty sectors had similar growth prospects before the "trade war" Sales Growth

Bank exposure to trade uncertainty

- Construct a continuous measure of bank exposure to trade uncertainty that is *sector-specific*, combining sectoral trade uncertainty information with loan exposures
- Denote a bank by b and sector by s or s' and compute total loan exposures to change in sectoral uncertainty for each bank b that lends to firms in sector s:

$$Bank\ Exposure^{U}_{b,s} = \sum_{s' \neq s} \omega_{bs',\text{2014-15}} \times \Delta Uncertainty_{s',\text{2018-19/2016-17}}$$

where $\omega_{bs',2014-15}$ is bank b's beginning-of-sample loan share to firms in any sector s' other than s

$\Rightarrow$ Omits "direct" uncertainty exposure of firms in sector s (Federico et al. 2020)

$\Rightarrow$ Uncorrelated with standard bank characteristics Balancing table

Estimating the impact of trade uncertainty on credit supply

Standard difference-in-differences approach

Conjecture 1. Banks respond to increased trade uncertainty by reducing credit supply

$$y_{b,i,s,t} = \beta_1(\textit{Bank Exposure}^{U}_{b,s} \times \textit{Post}_t) + \beta_2 X_{b,t} + \beta_3(X_{b,t} \times \textit{Post}_t) + \gamma_{i,t} + \delta_{b,i} + \epsilon_{b,i,s,t} \quad (1)$$

- y is loan growth, loan spread, or new loan indicator
- $\textit{Post}_t$ is an indicator variable for post-2017:Q4
- $X_{b,t}$ is a vector of (lagged) bank controls (size, CET1 capital, core deposits, specialization as in Paravisini et al. (2023))
- $\gamma_{i,t}$ are firm$\times$quarter FE and $\delta_{b,i}$ are firm$\times$bank FE

Credit supply contracts for all firms, including low uncertainty firms

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure×Post	-0.102***	-0.111***	0.260***	0.283**
	(0.030)	(0.036)	(0.085)	(0.096)
Observations	925,225	658,123	481,152	337,955
R^2	0.342	0.350	0.856	0.856
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: Low-uncertainty firms defined as those in sectors below the 75th pctile of the distribution of the change in uncertainty between 2016-2017 and 2018-2019 across sectors.

Dynamic effects | Placebo | Anticipation effects

Credit supply contraction on extensive margin

	(1)	(2)	(3)	(4)
	New Loan		**New Loan Share (vol-weighted)**	
	A. Loan-level data		**B. Bank-firm level data**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure × Post	-0.018***	-0.017**	-0.019***	-0.019**
	(0.005)	(0.008)	(0.005)	(0.007)
Observations	925,630	658,255	328,912	236,971
R^2	0.581	0.588	0.672	0.681
Bank controls	Y	Y	Y	Y
Bank controls × Post	Y	Y	Y	Y
Firm × Quarter FE	Y	Y	Y	Y
Firm × Bank FE	Y	Y	Y	Y

Identifying the mechanisms

Conjecture 2a. Consistent with real-options theory for non-financial firms making investment decisions under uncertainty, exposed banks adopt a "wait-and-see" attitude

- Are more likely to downgrade the perceived creditworthiness of firms
- Reduce loan maturities (assess firms' creditworthiness more frequently)
- Reduce exposures to riskier firms (less protected by tariffs, higher input costs)

Identifying the mechanisms

Conjecture 2a. Consistent with real-options theory for non-financial firms making investment decisions under uncertainty, exposed banks adopt a "wait-and-see" attitude

- Are more likely to downgrade the perceived creditworthiness of firms
- Reduce loan maturities (assess firms' creditworthiness more frequently)
- Reduce exposures to riskier firms (less protected by tariffs, higher input costs)

Conjecture 2b. Exposed banks more likely to experience financial constraints

- Lower-capital banks should contract lending more

Wait-and-see: Exposed banks reduce loan maturities

	(1)	(2)	(3)	(4)
	% short maturity loans		**% demand loans**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure × Post	0.025*	0.079***	0.047***	0.091***
	(0.014)	(0.025)	(0.015)	(0.021)
Observations	335,442	248,159	346,388	254,595
R^2	0.023	0.024	0.082	0.054
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: "% short-maturity loans" is the share of loans with maturities of less than 2 years in the total number of outstanding loans for a given bank-firm-quarter; similarly for "% demand loans". Observations at the bank-firm-quarter level, weighted by loan size.

Wait-and-see: Exposed banks assess higher default risk for firms

	(1)	(2)
	Probability of default	
	All firms	Low-uncertainty firms
Bank exposure × Post	0.008**	0.021***
	(0.003)	(0.005)
Observations	451,575	326,539
R^2	0.013	0.019
Bank controls	Y	Y
Bank controls×Post	Y	Y
Bank FE	Y	Y
Quarter FE	Y	Y

Notes: Probabilities of default are assigned by banks using internal risk models and the Basel II framework and are at the bank-firm-quarter level, weighted by the loan share.

Wait-and-see: Exposed banks contract credit more to less protected firms

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure × Post × Low tariff protection	-0.187***	-0.215***	0.268**	0.299**
	(0.052)	(0.059)	(0.103)	(0.118)
Bank exposure × Post × High tariff protection	-0.074	-0.152	0.378***	0.290*
	(0.069)	(0.122)	(0.114)	(0.140)
Observations	288,687	185,435	148,118	95,331
R^2	0.338	0.344	0.854	0.855
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: High new tariff protection (available for manufacturing sectors, at 4-digit NAICS) defined as indicator for sectors above 75th percentile change in import tariff revenue relative to domestic consumption, in 2018.

Wait-and-see: Exposed banks contract credit more to import-dependent firms

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure × Post × High import dependence	-0.121***	-0.127**	0.343***	0.333***
	(0.038)	(0.047)	(0.098)	(0.103)
Bank exposure × Post × Low import dependence	-0.090**	-0.079	0.192**	0.194**
	(0.042)	(0.045)	(0.077)	(0.084)
Observations	665,692	470,644	348,858	246,151
R^2	0.348	0.361	0.861	0.859
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: High import dependence (available for manufacturing sectors, 3-digit NAICS) is an indicator for sectors with above-median imports relative to industry value added.

Financial frictions: Lower-capital banks adjust lending more

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	Equity/ Assets	Stressed CET1 ratio	Equity/ Assets	Stressed CET1 ratio
Bank exposure×Post×Low-capital	-0.158***	-0.147***	0.367***	0.539**
	(0.039)	(0.041)	(0.167)	(0.194)
Bank exposure×Post×High-capital	-0.075	-0.028	0.172***	0.127***
	(0.046)	(0.059)	(0.041)	(0.039)
Observations	658,123	588,746	337,955	297,946
R^2	0.744	0.746	0.856	0.857
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: High-capital banks defined as those with capital ratios above the 75th percentile in 2017. Stressed CET1 ratio refers to the minimum CET1 capital ratio estimated under the "Supervisory Severely Adverse" scenario of the Dodd-Frank Act stress test (DFAST). The sample is composed of low-uncertainty firms.

Real economic effects

Conjecture 4. Firms more exposed to trade uncertainty have worse real outcomes.

$$Firm\ Exposure_i^U = \sum_b w_{ib,2014} \times Bank\ Exposure_b^U$$

where $w_{ib,2014}$ is firm i's beginning-of-sample loan share from bank b.

- Firms that are more dependent on bank financing (e.g., privately held) exhibit worse real effects.

Worse real outcomes for more exposed firms

Dependent variable	(1) **Total debt growth**	(2) **Capex growth**	(3) **Asset growth**	(4) **Total debt growth**	(5) **Capex growth**	(6) **Asset growth**
		All firms			Low-uncertainty firms	
Firm exposure×Post	-0.038*	-0.044***	-0.044*	-0.022	-0.053***	-0.050*
	(0.019)	(0.010)	(0.024)	(0.022)	(0.011)	(0.029)
Observations	18,917	19,978	21,469	13,251	14,180	14,957
R^2	0.515	0.703	0.626	0.502	0.705	0.607
Firm characteristics	Y	Y	Y	Y	Y	Y
Firm characteristics×Post	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Industry×County×Year FE	Y	Y	Y	Y	Y	Y

Notes: Estimations on firm-year level data over 2016–2019, full sample. Firm characteristics: size, liquidity, tangibility, ICR, ROA, speculative-grade dummy, and sales growth.

More adverse outcomes for firms with less access to capital markets

Dependent variable	(1) **Total debt growth**	(2) **Capex growth**	(3) **Asset growth**	(4) **Total debt growth**	(5) **Capex growth**	(6) **Asset growth**
	All firms			Low-uncertainty firms		
Firm exposure×Private firm	-0.038*	-0.047***	-0.077*	-0.021	-0.054***	-0.101**
	(0.020)	(0.010)	(0.041)	(0.023)	(0.012)	(0.051)
Firm exposure×Public firm	-0.034	-0.023	-0.038	-0.007	-0.051	-0.040
	(0.057)	(0.026)	(0.025)	(0.068)	(0.032)	(0.030)
Observations	18,917	19,978	21,469	13,251	14,180	14,957
R^2	0.515	0.703	0.626	0.502	0.705	0.607
Firm characteristics	Y	Y	Y	Y	Y	Y
Firm characteristics×Post	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Industry×County×Year FE	Y	Y	Y	Y	Y	Y

Alternative measure of bank dependence

Economic magnitudes

- Credit supply contraction by banks: a one st. dev. increase in bank exposure to uncertainty is associated with
  - loan growth that is lower by 2.5 ppts (median: 0%)
  - loan spreads that are higher by 6.5 bps (mean: 185 bps)
  - probability of new loan origination by 0.5% (unconditional: 5%)
  - similar magnitudes for all firms and low-uncertainty firms

- Real effects for firms: a one st. dev. increase in firm exposure to uncertainty via banks is associated with lower
  - debt growth by 2.4 ppts (mean: 5.5%)
  - capital expenditure growth by 2.7 ppts (mean: 17%)
  - total asset growth by 2.7 ppts (mean: 10%)

Additional results and falsification tests

- Bank rotation of C&I lending to other assets C&I rotation
- Firms' demand for credit Credit line utilization
- **Baseline results are robust to methodological choices**
  - Alternative measures of "spillover" firms Other spillovers Correlation
  - More demanding loan-type fixed effects Loan type
- **Ruling out other explanations**
  - Control for macro and commodity price cycles Cyclicality
  - Control for USD fluctuations Exchange rate
  - Horse-race with bank exposure to tariffs Tariff exposure
  - Horse-race with bank exposure to overall uncertainty Overall uncertainty exposure

Conclusions

- Uncertainty reduces bank credit supply across **all** firms
  - All firms experience a credit contraction, indicating a spillover of sector-specific real shocks through the banking system
  - Results are consistent with a real-option mechanism for banks
  - Exposed banks that are more constrained cut lending more
  - Exposed firms experience adverse real effects
- Results support the notion of a "banking channel" for the transmission of uncertainty shocks to the real economy
- Analyses of trade wars' macroeconomic impacts should account for the endogenous contractionary (credit supply) effects through the financial system.

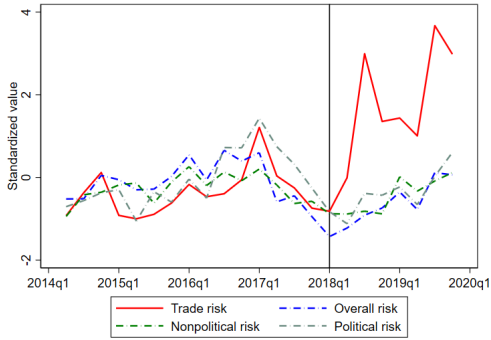
Appendix

Related literature

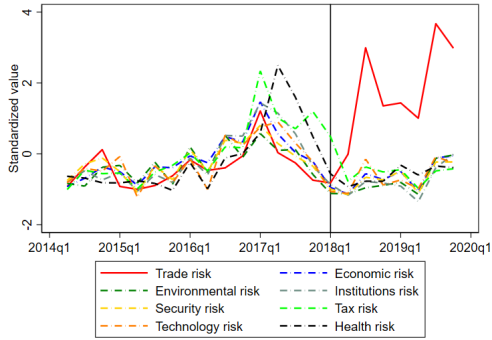
- Banks and trade
  - Amiti et al. (2019), Amiti & Weistein (2011), Niepmann (2015), Paravisini et al. (2015), Niepmann & Schmidt-Eisenlohr (2017a,b), Federico et al. (2020)
- Uncertainty
  - **Real and financial effects**: Bloom (2014), Buch et al. (2015), Baker et al. (2016), Berger et al. (2020), Kaviani et al. (2020), Alessandri et al. (2020)
  - **Bank lending**: Valencia (2017), Alessandri & Bottero (2020), Suardi & Wu (2021), Jasova et al. (2021)
- Shock spillovers through banks
  - **Global banks**: Peek & Rosengren (2000), Cetorelli & Goldberg (2012), Schnabl (2012), De Haas & Van Horen (2013), Amiti & Weinstein (2018)
  - **Across sectors/firms**: Gilje et al. (2016), Cortes & Strahan (2017), Huber (2018), Galaasen, Jamilov, Juelsrud & Rey (2021), Martin et al. (2021)
- Trade war
  - **Real effects**: Amiti et al. (2019, 2020), Flaaen and Pierce (2019), Waugh (2019), Cavallo et al. (2021), Fajgelbaum et al. (2021)

Hassan et al. (2019) uncertainty index breakdown

The trade risk sub-component dominated overall uncertainty during the "trade war"



(a) Trade vs. overall



(b) Trade vs. others

Notes: These figures depict the trade risk index vs (a) the overall index and major sub-components, and (b) other more disaggregated sub-components of the overall risk index over 2014-2019. Back

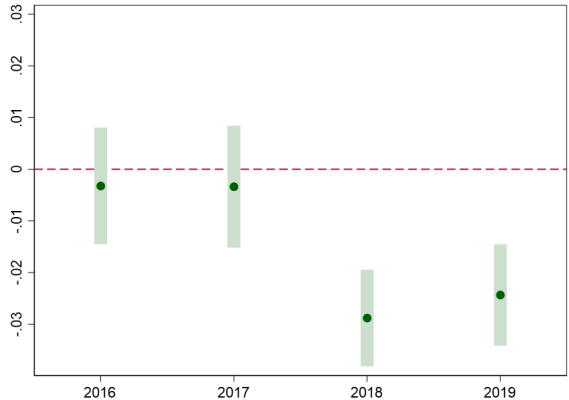
Ranking of sector-level change in trade uncertainty

NAICS-3	NAICS Sector Name	Change in trade uncertainty
	Panel A. Largest increases in trade uncertainty	
313	Textile Mills	5447.8
485	Transit and Ground Passenger Transportation	2420.6
482	Rail Transportation	1567.7
314	Textile Product Mills	1565.6
811	Repair and Maintenance	1503.8
532	Rental and Leasing Services	1268.3
525	Funds, Trusts, and Other Financial Vehicles	1094.2
483	Water Transportation	940.3
331	Primary Metal Manufacturing	925.5
516	Broadcasting and Content Providers	734.2
333	Machinery Manufacturing	619.5
523	Securities, Commodity Contracts, and Other	457.2
445	Food and Beverage Retailers	454.0
519	Web Search Portals, Libraries, Archives, and Other Information Services	443.5
621	Ambulatory Health Care Services	427.2
112	Animal Production and Aquaculture	408.9
334	Computer and Electronic Product Manufacturing	401.3
	Panel B. Largest decreases in trade uncertainty	
315	Apparel Manufacturing	-2084.7
812	Personal and Laundry Services	-1113.7
488	Support Activities for Transportation	-792.4
493	Warehousing and Storage	-760.0
492	Couriers and Messengers	-685.4
335	Electrical Equipment, Appliance, and Component Manufacturing	-462.2
236	Construction of Buildings	-404.0
524	Insurance Carriers and Related Activities	-247.6
531	Real Estate	-180.4
623	Nursing and Residential Care Facilities	-126.4
423	Merchant Wholesalers, Durable Goods	-80.3
339	Miscellaneous Manufacturing	-72.4
322	Paper Manufacturing	-71.8
562	Waste Management and Remediation Services	-68.8
622	Hospitals	-64.0
332	Fabricated Metal Product Manufacturing	-51.8
312	Beverage and Tobacco Product Manufacturing	-41.4
722	Food Services and Drinking Places	-20.4

Back

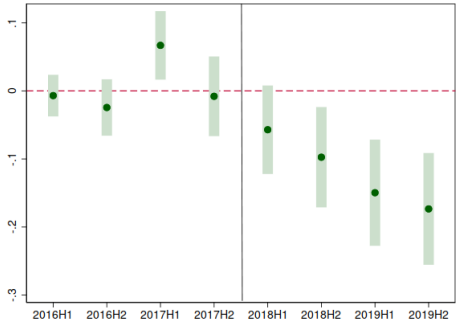
Sales growth by firm uncertainty

High- and low-uncertainty firms show no pre-existing differences in real sales growth before the "trade war"

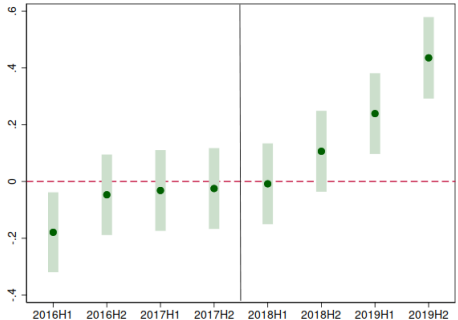


Notes: The figure depicts the difference in real sales growth between firms in high and low-uncertainty sectors over 2015-2019. Back

Dynamic effects in spillover regressions



(a) Loan growth



(b) Loan spread

Notes: These figures show the effects of bank exposure to trade uncertainty on loan growth (left panel) and loan spreads (right panel) for spillover (low uncertainty) firms during 2016:Q1-2019:Q4. The chart plots the estimated coefficients and the associated 99% confidence levels of the dynamic diff-in-diff variant of models (1) and (3) with interaction effects between Bank exposure and half-year dummies over the sample period. Back

Firm growth: Low vs. high bank-dependent firms

Dependent variable	(1) Total debt growth	(2) Capex growth	(3) Asset growth	(4) Total debt growth	(5) Capex growth	(6) Asset growth
		All firms			Low-uncertainty firms	
Firm exposure×HBD	-0.060***	-0.042***	-0.109***	-0.046*	-0.063***	-0.120***
	(0.021)	(0.012)	(0.028)	(0.025)	(0.015)	(0.033)
Firm exposure×LBD	-0.040	-0.056***	-0.041	-0.020	-0.054***	-0.042
	(0.035)	(0.015)	(0.035)	(0.041)	(0.017)	(0.040)
Observations	18,042	18,921	20,043	12,336	12,073	13,669
R^2	0.581	0.710	0.652	0.561	0.710	0.629
Firm characteristics	Y	Y	Y	Y	Y	Y
Firm characteristics×Post	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Industry×County×Year FE	Y	Y	Y	Y	Y	Y

Back

Rotation of C&I lending to other asset types

	(1) **Total asset Growth**	(2) **Loans % Assets**	(3) **Securities % Assets**	(4) **Cash % Assets**
Bank exposure × Post	0.071	-0.042***	0.003*	0.009
	(0.041)	(0.010)	(0.001)	(0.012)
Observations	448	452	452	452
R^2	0.352	0.995	0.976	0.971
Bank characteristics	Y	Y	Y	Y
Bank characteristics×Post	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Quarter FE	Y	Y	Y	Y

Back

Exposed firms' demand for credit increased

	(1)	(2)	(3)	(4)
	Credit line utilization rate			
	A. Loan-level data		**B. Firm-level data**	
High-uncertainty firm × Post	0.073***	0.004*	0.097***	0.005***
	(0.004)	(0.002)	(0.003)	(0.002)
High-uncertainty firm	-0.003		0.0001	
	(0.003)		(0.003)	
Observations	1,002,997	998,691	644,048	639,439
R^2	0.207	0.675	0.210	0.802
County × Quarter FE	Y	Y	Y	Y
Bank × Quarter FE	Y	Y		
Firm FE		Y		Y

Back

Alternative measures of "spillover" firms

	(1) Loan growth	(2) Loan spread	(3) Loan growth	(4) Loan spread
	Firms in no-tariff sectors		Low-uncertainty firms (Drop trade finance loans)	
Bank exposure×Post	-0.070*	0.238***	-0.091**	0.278***
	(0.033)	(0.078)	(0.036)	(0.091)
Observations	636,703	333,020	649,429	333,894
R^2	0.344	0.857	0.350	0.856
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Back

Exposure to trade uncertainty vs. tariffs

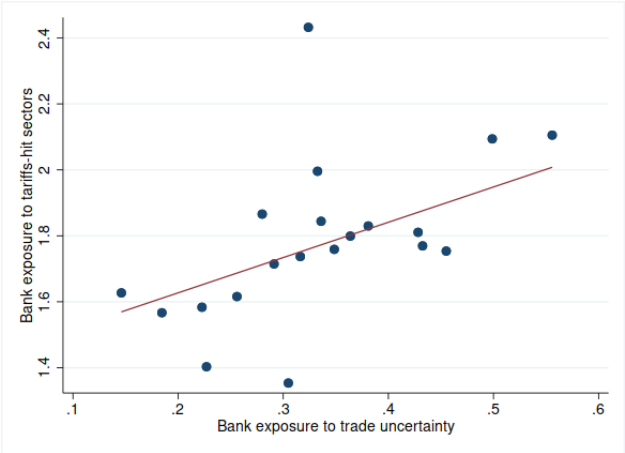
	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure to uncertainty×Post	-0.140***	-0.153***	0.233**	0.262**
	(0.029)	(0.033)	(0.082)	(0.092)
Bank exposure to tariffs-hit sectors×Post	0.258***	0.271***	0.318**	0.252**
	(0.074)	(0.088)	(0.110)	(0.111)
Observations	918,982	653,795	477,573	335,091
R^2	0.343	0.350	0.855	0.855
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Back

Exposure to trade vs. overall uncertainty

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure to uncertainty × Post	-0.094**	-0.084*	0.272***	0.304***
	(0.035)	(0.040)	(0.072)	(0.078)
Bank exposure to overall uncertainty × Post	-0.025	-0.063	-0.008	-0.022
	(0.030)	(0.037)	(0.061)	(0.060)
Observations	918,982	653,795	477,573	335,091
R^2	0.343	0.350	0.855	0.855
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Bank exposure to trade uncertainty and tariff hit sectors



Notes: This figure plots the average bank exposure to trade uncertainty vs. bank exposure to tariff-hit sectors.

Back

Robustness: Loan-type fixed effects

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
	Panel A. With Loan Type×Quarter FE			
Bank exposure×Post	-0.084**	-0.098**	0.263***	0.287**
	(0.035)	(0.042)	(0.078)	(0.087)
Observations	925,465	658,123	481,126	337,942
R^2	0.359	0.363	0.858	0.858
	Panel B. With Firm×Loan Type×Quarter FE			
Bank exposure×Post	-0.092**	-0.097**	0.245***	0.272**
	(0.033)	(0.038)	(0.082)	(0.094)
Observations	924,523	657,440	480,463	337,473
R^2	0.362	0.369	0.858	0.858
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Notes: Loan-type refers to trade finance loans vs. other loans.

Anticipation effects: Drop 2017

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure×Post	-0.086**	-0.065	0.350***	0.317***
	(0.033)	(0.043)	(0.105)	(0.108)
Observations	916,523	647,925	477,526	332,162
R^2	0.250	0.362	0.790	0.850
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Back

Control for bank cylicality (MP effects) and commodity prices (oil firms)

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
	Panel A. Control for bank cyclicality			
Bank exposure×Post	-0.053*	-0.071**	0.252***	0.284***
	(0.026)	(0.032)	(0.066)	(0.077)
Observations	925,465	658,123	763,095	541,185
R^2	0.342	0.350	0.856	0.856
	Panel B. Drop oil firms			
Bank exposure×Post	-0.106***	-0.117***	0.236**	0.255**
	(0.030)	(0.036)	(0.086)	(0.101)
Observations	876,802	609,751	451,049	308,030
R^2	0.337	0.343	0.856	0.856
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Back

Control for USD fluctuations

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
Bank exposure×Post	-0.098***	-0.107**	0.322***	0.342***
	(0.031)	(0.037)	(0.084)	(0.090)
Bank exposure to tradable-goods sectors×USD broad index	-0.001	0.002	0.105*	0.112**
	(0.008)	(0.011)	(0.049)	(0.050)
Observations	872,735	620,126	450,864	315,130
R^2	0.343	0.352	0.846	0.846
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

Back

Placebo tests

	(1)	(2)	(3)	(4)
	Loan growth		**Loan spread**	
	All firms	Low-uncertainty firms	All firms	Low-uncertainty firms
	Panel A. Placebo: 2015-2016 vs. 2017-2018			
Bank exposure×Post	0.022	0.034	0.078**	0.044
	(0.031)	(0.033)	(0.036)	(0.037)
Observations	939,016	665,828	491,941	344,075
R^2	0.342	0.349	0.850	0.851
	Panel B. Placebo: 2014-2015 vs. 2016-2017			
Bank exposure×Post	0.044	0.037	-0.111***	-0.129***
	(0.026)	(0.030)	(0.035)	(0.031)
Observations	930,363	657,446	489,185	340,833
R^2	0.344	0.350	0.844	0.844
Bank controls	Y	Y	Y	Y
Bank controls×Post	Y	Y	Y	Y
Firm×Quarter FE	Y	Y	Y	Y
Firm×Bank FE	Y	Y	Y	Y

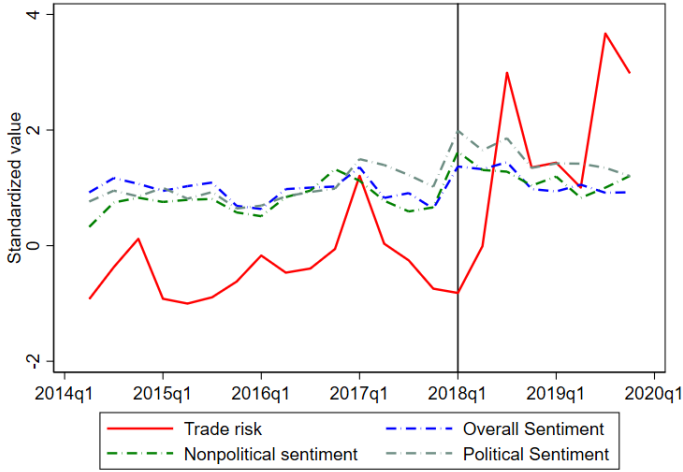
Back

Balancing bank characteristics

	(1)	(2)	(3)	(4)	(5)
	Bank exposure to trade uncertainty				
Year:	**2016**	**2017**	**2018**	**2019**	**2016–2019**
Size (log-assets)	0.050	0.050	0.043	0.053	0.058
	(0.046)	(0.047)	(0.038)	(0.040)	(0.041)
Capital (common equity/total assets)	-0.027	-0.030	-0.038	-0.026	-0.004
	(0.033)	(0.029)	(0.031)	(0.035)	(0.017)
Core deposits (% of liabilities)	-0.003	-0.001	-0.000	0.001	-0.002
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Specialization	0.308	0.308	0.216	0.246	0.392
	(0.296)	(0.322)	(0.246)	(0.300)	(0.288)
Observations	30	30	29	28	171
R^2	0.219	0.221	0.205	0.152	0.216

Back

Trade uncertainty versus sentiment



Notes: This figure plots the index of trade uncertainty against overall the index of trade sentiment, with political and nonpolitical components. All indexes are based on firm-level data from Hassan et al. (2019) .