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TRADE UNCERTAINTY AND BANK CREDIT GROWTH: EVIDENCE FROM CHINA AND THE EUROPEAN UNION COUNTRIES

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ABSTRACT

This paper examines the relationship between trade uncertainty and bank lending using a sample of commercial banks in China and the European Union (EU) countries during the period of heightened trade uncertainty from 2017Q1 to 2021Q3 measured by the World Trade Uncertainty (WTU) index. We show that trade uncertainty slows bank credit growth. We find no significant difference in the lending response to trade uncertainty between Chinese and EU banks. Our additional analyses indicate that the credit-reducing effect of trade uncertainty is stronger for better-capitalised banks and more liquid banks. We also find that trade uncertainty is negatively associated with the growth of different bank funding sources, namely, customer deposits, liabilities, and equity. However, we do not find significant evidence that trade uncertainty affects bank credit risk.

Keywords: Trade uncertainty; Banks; Credit growth; China; European union.
JEL Classifications: F13; F14; G21.

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I. INTRODUCTION

The adverse effects of economic uncertainty on banks' appetite to lend has garnered significant attention from economists and policymakers in recent years. Berger *et al*. (2022) find that banks, in response to economic policy uncertainty, tend to hoard liquidity, keeping more cash and liquid securities to themselves and offering fewer credits to firms and households. Wu and Suardi (2021) suggest that banks will behave conservatively during times of greater economic uncertainty. Ashraf and Shen (2019) assert that an increase in economic policy uncertainty requires an additional risk premium (i.e., higher average interest rates on bank gross loans), which will drive banks to lower their credit supply. Analysing loan applications submitted by corporations to banks in Italy, Alessandri and Bottero (2020) show that when uncertainty is high, banks tend to adopt a wait-and-see strategy and become less responsive to changes in their cost of funds. Likewise, Bordo *et al.* (2016) and Danisman *et al*. (2020) find that banks in the US and Europe, respectively, are reluctant to give credit when facing uncertainty as they intend to minimize their exposure to default risks.

Notwithstanding the considerable volume of studies conducted concerning this topic thus far, the query about the specific reaction of banks when confronted with heightened uncertainty related to trade remain unanswered. Would banks become more cautious and tighten their lending standards in an extremely fickle trade environment? Our study is motivated to address this research gap.

A series of recent events, including the US-China trade war, the UK's referendum votes to leave the European Union (EU) (i.e., Brexit), and the geopolitical unrest between Russia and Ukraine are said to give rise to uncertainty with regard to changes in future trade landscape across the globe. The culminating impact of these events is manifested in the exponential increase in the index of World Trade Uncertainty (WTU) created by Ahir *et al.* (2018). As shown in Figure 1, the index reached its historical high in the first quarter of 2019 after having been stable at low levels for about 20 years, coinciding with a series of tariff increases by the US followed by retaliation from its trading partners (see Brown and Kold, 2022 for more details and timeline of the US's trade negotiations with China, the EU and other countries during the Trump era).

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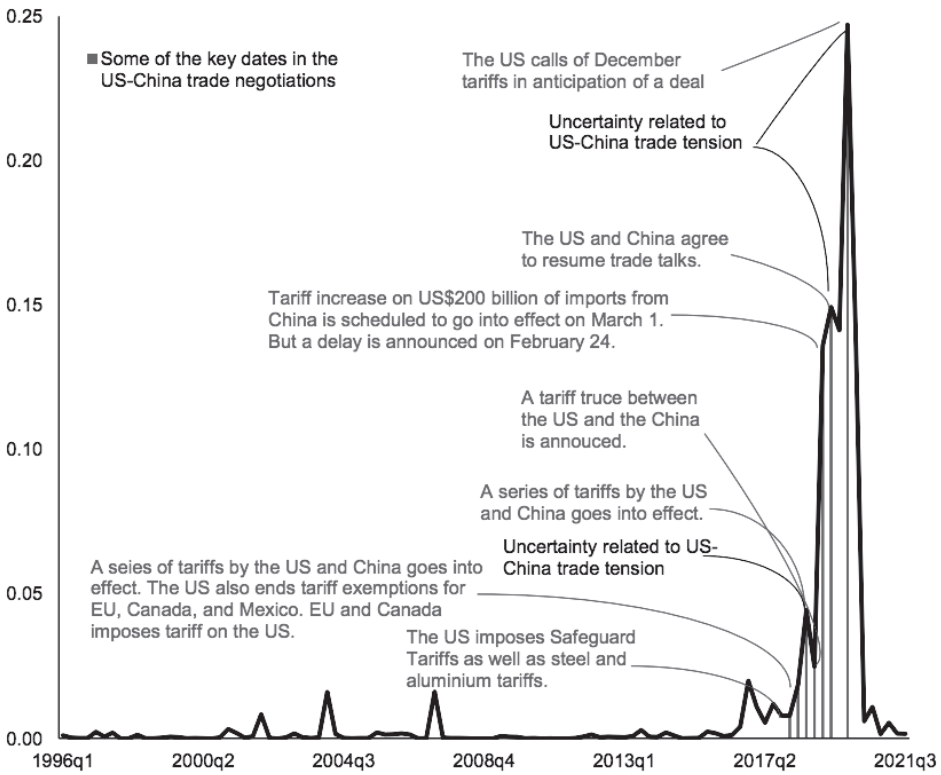
Figure 1.
Evolution of the WTU Index Over Time

This figure is extracted from Ahir *et al.* (2022).



Without firm resolution among trading economies, policymakers fear that the rising uncertainty surrounding the trade tensions will curtail the economic recovery (Gopinath, 2019; Fajgelbaum and Khandelwal, 2021) and disrupt the global value chains (Mao and Görg, 2020; Wu *et al.*, 2021) in the post pandemic era. Their concern aligns with the endogenous growth model developed by Mendoza (1997), which predicts that the presence of terms-of-trade fluctuations is likely to reduce savings and growth. Similarly, Caldara *et al.* (2020) reveal that unexpected increases in uncertainty about future tariffs would deter business investment. Such economic slowdown is anticipated to be sharper if trade uncertainty reduces banks' tendency to extend credit to households and firms in the countries. Therefore, the nexus between trade uncertainty and bank credit growth is of importance to regulators and policymakers to prevent another episode of credit supply slump.

In theory, increased trade uncertainty can dampen bank credit growth through various channels. First, from a credit demand perspective, households are inclined cut back on consumption and firms tend to delay expansion plans, postponing borrowing for capital expenditures, purchasing inventory, and entering new markets, when they are unsure about future trade policy changes (Bloom, 2014). This borrower hesitancy leads to a decrease in loan applications and slower credit

growth. Second, from a credit supply point of view, trade disputes can alter market dynamics and result in supply chain disruptions, making it harder for businesses to meet their financial obligations due to cash flow challenges. This can prompt banks to be more stringent in approving new loans as they anticipate higher default risks (Nilsen, 2002). In addition, uncertainty in cross-border trade can reduce the value of exported goods used as collateral, affecting the terms, conditions, and amounts of loans banks are willing to provide (Fabbri and Menichini, 2010). Third, banks may decide to conserve the existing liquidity as they are afraid that the market volatility stemming from trade uncertainty can hinder access to funding, eroding their future lending capacity. Lastly, regulators may require banks to increase capital buffers or impose stricter lending limits in response to increased trade risks (Demir *et al*., 2017). These additional regulatory constraints can increase operational costs and complexity in transactions, forcing banks to exercise caution in lending to comply with evolving requirements.

To test this hypothesis, we rely on Ahir *et al.*'s (2018) WTU index to examine the effects of trade uncertainty on bank lending using a sample of 386 commercial banks in China and the European Union (EU) member countries (including the UK) for the period between 2017Q1 and 2021Q3. The reasons why we choose these two markets are obvious. First, they account for a sizable share of 46.7% of the world's exports, according to the United Nations Comtrade (2021) estimates. However, the data on trade over the sample period reveals significant differences between China and the EU countries. The total value of goods and services that China exports and imports, relative to its GDP, stands at 36.67%, indicating the country's greater reliance on domestic production to drive its economy. On contrary, the EU demonstrates a much higher degree of integration with global trade flows, with trade accounting for a substantial 134.15% of its GDP. Turning to domestic credit, China surpasses the EU with a remarkable 165.24% of GDP allocated to the private sector, highlighting its emphasis on leveraging credit for economic growth. In comparison, the EU's private credit stands at 77% of GDP, suggesting a more moderate credit-driven economy within the union. Second, China and the EU have been the US's two largest trading partners for many years, making them highly susceptible to the country's trade sanctions. According to the latest figures provided by the Office of the US Trade Representative, the US's exports to and imports from China in 2020 accounted for 8.7% and 18.6% of the country's overall exports and imports, respectively, while those for the EU stood at 16.3% and 18.1%, respectively, in 2019. In particular, the protectionist measures advocated by former President Donald Trump are feared to hamper trade relationships and investment between these economic powerhouses. While China takes a confrontational approach by immediately retaliating with tit-for-tat tariffs, the EU remains relatively neutral and independent, refraining from aligning against the US to reap benefits from the weakening of the US-China trade ties (Garcia Herrero, 2019; González and Véron, 2019). Thus, it is interesting to see how these two different stances over international trade disputes would shape bank lending and risk-taking behaviour. Third, a diversion of Chinese traders from the United States to the EU could positively impact the availability of bank credit in the member countries (Goulard, 2020). This expectation arises from the fact that in 2020, China surpassed the US as the EU's largest trading partner. During that

year, the trade volume between the EU and the US amounted to $671 billion, down from $746 billion in the previous year.

To briefly summarise our results, we find that trade uncertainty significantly restrains bank credit growth. These findings contribute to two strands of literature. The first, and main, literature to which we contribute investigates the relationship between economic uncertainty and bank lending. Our study complements this literature in several ways. First, while previous studies in this strand have primarily centered around a broad and multifaceted metric of economic uncertainty, we focus on the consequences of uncertainty that is specific to trade. In addition, we compare the lending responses to trade uncertainty of banks headquartered in China versus those headquartered in the EU region but find no significant difference between the two markets. Second, we test whether the magnitude of the negative relationship between trade uncertainty and bank credit growth depends on several bank characteristics. We find that the credit-reducing effect of trade uncertainty is more substantial for better-capitalised banks, complementing Danisman *et al.* (2020) discussion about EPU. This result, at the same time, aligns with the zombie lending literature that worse-capitalised banks reduce loans less when facing contractions to avoid writing off loan losses on their capital (e.g., Blattner *et al.*, 2019; Acharya *et al.*, 2020; Dursun-de Neef and Schandlbauer, 2021). On the other hand, it contradicts the findings of Bordo *et al.* (2016) that an increase in capitalisation reduces the EPU effects on bank loan growth. Our analysis also reveals that the adverse effect of trade uncertainty on the expansion of credit is less pronounced for banks with lower levels of liquidity. This is opposite to the evidence on the shielding effect from EPU of asset liquidity documented by Bordo *et al.* (2016) and Hu and Gong (2019). Third, our study further enriches the literature by showing that trade uncertainty shrinks banks' sources of funds, such as customer deposits, liabilities, and equity. Fourth, we attempt to add to the study of Chi and Li (2017) and Caglayan and Xu (2019), who find a positive association between EPU and banks' credit risks. However, we do not find similar significant evidence for trade uncertainty effects.

The second strand of literature comprises a limited number of studies highlighting the importance of trade in fostering the supply of bank credit. Among the few are Rajan and Zingales (2003), who assert that opening to trade may spur domestic credit provision as it weakens incumbent banks' ability to block the entrance and liberalisation of credit markets, which will breed competition and erode their rents. Their hypothesis subsequently corroborated by Baltagi *et al.* (2009), who suggest that openness to trade may elucidate the amount of bank credit extended to the private sector in developed as well as developing nations. Using the case of private loans issued by the Bank of England in the 18th century, Demetriades and Rousseau (2011) show that international trade has a positive long-run association with the amount of credit extended. However, Bordo and Rousseau (2012) find that the linkage between bank credit and trade does not persist after the Second World War. In a similar vein, Nilsen (2002) suggests that a slowdown in trade activity may diminish overall economic growth, resulting in either a decrease in credit demand or a reduction in loan supply. We contribute to this literature by bringing to the fore the fact that credit growth is likely to

be curtailed not only by the levels of trade activity themselves but also by the uncertainty surrounding trade negotiations.

The rest of this article is structured in the following way. Section II describes the data used in the study. Section III presents the model specifications and discusses the results, followed by Section IV, which concludes the paper.

II. DATA

Our analysis is based on a sample of 386 commercial banks in China and the EU member countries with at least two consecutive quarterly loan observations during the sample period. The sample period is from 2017Q1 to 2021Q3 spanning the time of heightened trade tensions between the US and its two largest trading partners (i.e., China and the EU).[1] The same period also witnessed the EU's exposure to uncertainty about the outcome of the negotiations for the UK's withdrawal from the world's largest trading bloc. Banks located in Cyprus, Estonia, Luxembourg, and Malta for which the index values are not provided by Ahir *et al.* (2018) are excluded from our sample. We include only commercial banks in our sample to reduce the possible bias due to the differences in nature and business scope of banks with different specialisations, as done in previous studies (e.g., Chen *et al.*, 2017; Wu *et al.*, 2017 among others). All quarterly balance sheet and income statement data for the banks are collected from Fitch Connect database provided by Fitch Solutions. When constructing our dataset, we rely on unconsolidated accounts and only use consolidated data when the former are not available.[2] The bank-specific variables are winsorised at the 1% and 99 % levels to reduce the potential effect of outliers. Meanwhile, macroeconomic indicators are gathered from the Quarterly National Accounts database maintained by the Organisation for Economic Co-operation and Development (OECD) Statistics.

Table 1 provides the description of the variables and data sources. Our dependent variable is banks' quarterly loan growth rate. As shown in Table 2, the mean loan growth rate is 2.52%, with Chinese commercial banks experiencing a higher rate of 4.37% compared to the 1.97% observed among EU banks. As for the dependent variables used in our additional analyses, it shows that the mean values of the growth of the sources of bank funding, namely, customer deposits, liabilities, and equity are 2.41%, 2.12%, and 1.67%, respectively. It is also observed that in correspondence to their faster-growing credits, Chinese banks raise all these funding types at a higher growth rate compared to their non-Chinese counterparts. As for the chosen credit risk measures, we find that the mean values of loan loss provisions and non-performing loans account for 4.57% and 6.72% of the gross loan amounts extended by our sample banks, respectively. These ratios are higher for EU banks than Chinese banks on average with a considerably larger variation.

[1] 2021Q3 is the latest quarter for which the index data were available at the time of writing.

[2] Consolidated data make up only a minority share, to be specific, 13.3% of our entire data.

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Table 1.
Variable Definitions

This table provides the definitions of all variables used in the analysis and their sources.

Variable	Definition	Source
	Bank-specific Variables	
ΔLoans	Quarterly growth rate of gross loans.	Fitch Connect
ΔLoans/assets	Quarterly growth rate of loans to total assets ratio.	Fitch Connect
ΔDeposits	Quarterly growth rate of customer deposits.	Fitch Connect
ΔLiabilities	Quarterly growth rate of total liabilities.	Fitch Connect
ΔEquity	Quarterly growth rate of equity.	Fitch Connect
LLP	Ratio of loan loss provisions to gross loans.	Fitch Connect
NPL	Ratio of non-performing loans to gross loans.	Fitch Connect
Size	Natural logarithm of total assets.	Fitch Connect
Capitalisation	Ratio of equity to total assets.	Fitch Connect
Liquidity	Ratio of liquid assets to total assets.	Fitch Connect
ROAA	Return on average assets.	Fitch Connect
Funding	Ratio of total deposits to total liabilities.	Fitch Connect
	Country-specific Variables	
WTU	Quarterly trade uncertainty index by country.	Ahir *et al.* (2018).
ΔGDP	Percentage change in real GDP from previous quarter.	OECD Statistics.
Inflation	CPI inflation rate.	OECD Statistics.
	Bank Location Dummy Variables	
D_{CHINA}	A dummy variable that takes the value one if the bank is from China and zero otherwise.	Authors' own calculations.
D_{EU}	A dummy variable that takes the value one if the bank is from the EU countries (including the UK) and zero otherwise.	Authors' own calculations.
D_{EU5}	A dummy variable that takes the value one if the bank is from EU5 countries and zero otherwise.	Authors' own calculations.
$D_{NON-EU5}$	A dummy variable that takes the value one if the bank is from countries other than China and EU5 and zero otherwise.	Authors' own calculations.
D_{UK}	A dummy variable that takes the value one if the bank is from the UK and zero otherwise.	Authors' own calculations.
	Bank Characteristics Dummy Variables	
$D_{HIGH-CAPITAL}$	A dummy variable that takes the value one if the bank's equity to total assets ratio is above the median in 2018Q2 and zero otherwise.	Authors' own calculations.
D_{LARGE}	A dummy variable that takes the value one if the bank's total assets expressed in natural logarithm is above the median in 2018Q2 and zero otherwise.	Authors' own calculations.
$D_{HIGH-DEPOSIT}$	A dummy variable that takes the value one if the bank's deposit-liabilities ratio is above the median in 2018Q2 and zero otherwise.	Authors' own calculations.
$D_{HIGH-LIQUIDITY}$	A dummy variable that takes the value one if the bank's liquid assets ratio is above the median in 2018Q2 and zero otherwise.	Authors' own calculations.
$D_{HIGH-ROA}$	A dummy variable that takes the value one if the bank's ROAA is above the median in 2018Q2 and zero otherwise.	Authors' own calculations.

For the independent variable of interest, we adopt the cross-country WTU index provided by Ahir *et al.* (2018) on a quarterly basis.[3] The index is computed by adding up how often the word 'uncertainty' and its variants appears near to trade-related terms in the Economist Intelligence Unit (EIU) Country Reports.[4] In specific, they look at the following words: protectionism, North American Free Trade Agreement (NAFTA), tariff, trade, United Nations Conference on Trade and Development (UNCTAD) and World Trade Organization (WTO). The raw counts are then normalised by the total words count within each report, allowing for cross-country comparison, and rescaled by multiplying by 1,000. A higher value means higher level of trade-related uncertainty and vice versa. As shown in Figure 2, the index started increasing exponentially around the second quarter of 2018. Note that the index value prior to our sample period (i.e., 2017Q1) are mostly zero for most countries. Also note that the increase in the index has been recorded not only in the US and its trading partners, but also in many other countries (see Ahir *et al.*, 2022). Conversely, an opposite trend was observed for the growth of bank loans during the period, providing us with the motivation to uncover the relationship between the two variables. The mean level of trade uncertainty among the countries in our study, as shown in Table 2, is 3.58.

[3] The index data can be downloaded from https://worlduncertaintyindex.com/data/

[4] The EIU country reports provide analyses and forecasts on politics, economic policy, the domestic economy, foreign and trade payments events, and on their overall impact on the country risk prepared by industry specialists and country experts on a regular basis for 189 countries.

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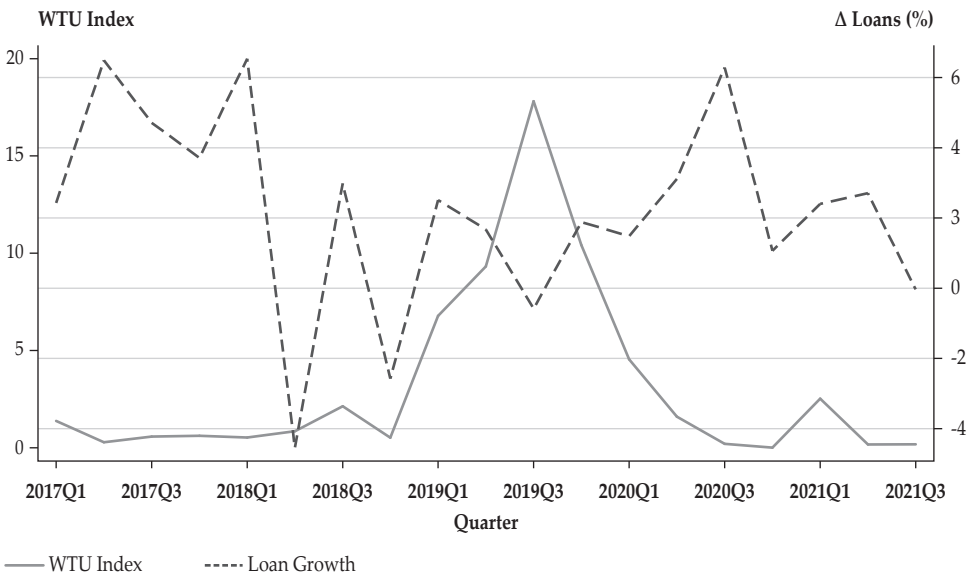
Table 2.
Summary Statistics

This table provide the summary statistics of the variables used in the analysis. Panel A reports those for the entire sample. Panel B and C report those for Chinese banks and EU banks, respectively. The definition of each variable is provided in Table 1.

Variable	Panel A: All Banks					Panel B: Chinese Banks Only (n=62)					Panel C: EU Banks Only (n=342)				
	Obs.	Mean	Std. Dev.	Min.	Max.	Obs.	Mean	Std. Dev.	Min.	Max.	Obs.	Mean	Std. Dev.	Min.	Max.
ΔLoans (%)	5,741	2.252	15.674	-75.450	79.082	681	4.373	3.619	-6.700	16.939	5,060	1.966	16.622	-75.450	79.082
ΔLoans/assets (%)	5,741	0.170	33.827	-754.244	643.029	681	1.352	2.996	-12.322	21.627	5,060	0.011	36.012	-754.244	643.029
ΔDeposits (%)	5,593	2.407	11.604	-51.346	50.677	679	3.296	4.584	-12.829	20.433	4,914	2.284	12.258	-51.346	50.677
ΔLiabilities (%)	5,741	2.122	7.395	-25.057	30.059	681	2.965	3.994	-14.225	16.258	5,060	2.009	7.733	-25.057	30.059
ΔEquity (%)	5,739	1.666	8.159	-28.705	33.025	681	3.226	4.868	-20.594	33.025	5,058	1.456	8.484	-28.705	33.025
LLP (%)	3,461	4.565	5.256	0.014	30.562	559	3.365	0.700	1.761	5.582	2,902	4.796	5.703	0.014	30.562
NPL (%)	2,927	6.723	9.787	0.096	51.447	543	1.491	0.874	0.191	13.290	2,384	7.915	10.477	0.096	51.447
Size	5,741	23.290	2.523	18.092	28.825	681	25.840	1.703	22.398	28.825	5,060	22.947	2.416	18.092	28.786
Capitalisation (%)	5,741	9.215	7.149	1.520	56.250	681	6.840	1.060	4.240	11.460	5,060	9.535	7.549	1.520	56.250
Liquidity (%)	5,731	22.694	19.181	0.620	94.400	681	15.879	5.379	2.690	41.030	5,050	23.613	20.162	0.620	94.400
ROAA (%)	5,049	0.666	1.012	-3.740	3.680	681	0.897	0.246	0.050	2.610	4,368	0.630	1.080	-3.740	3.680
Funding (%)	5,725	82.024	20.037	6.230	99.836	681	86.746	7.863	6.230	98.378	5,044	81.386	21.070	6.230	99.836
WTU	5,741	3.575	6.741	0.000	37.786	681	4.579	7.419	0.000	28.532	5,060	3.440	6.634	0.000	37.786
ΔGDP (%)	5,517	0.506	4.378	-19.449	18.522	681	1.369	3.699	-9.500	10.700	4,836	0.384	4.452	-19.449	18.522
Inflation (%)	5,455	1.212	1.018	-2.051	5.467	681	0.473	0.966	-1.978	1.958	4,774	1.317	0.980	-2.051	5.467

Figure 2.
Average Bank Loan Growth and Trade Uncertainty Levels in China and the EU Countries

This figure plots the mean values of quarterly change in gross loans and the WTU index over the sample period of 2017Q1-2021Q3.



Consistent with literature, we control for a set of bank-specific variables (e.g., Bertay *et al.*, 2015; Ibrahim and Rizvi, 2018; Hamid, 2020; Dursun-de Neef and Schandlbauer, 2021). They consist of total assets in natural log form to represent the size of the bank, equity-to-total assets ratio for capital adequacy, the share of liquid assets in total assets for liquidity, return on average assets for profitability, and the share of total deposits to total liabilities for sensitivity to market risk. In addition, we include quarterly growth rates of real gross domestic product (GDP) and Consumer Price Index (CPI) inflation rates to account for the macroeconomic conditions. We compute the correlation coefficients between the variables and present it in Table 3. All correlations are relatively low (below 0.60) and thus show no indication of multicollinearity problem.

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Table 3.
Pairwise Correlations

This table provides a pairwise correlation matrix of the variables used in the analysis. The definition of each variable is provided in Table 1. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	ΔLoans	1.000														
(2)	ΔLoans/assets	0.697***	1.000													
(3)	ΔDeposits	0.356***	0.123***	1.000												
(4)	ΔLiabilities	0.291***	-0.024*	0.553***	1.000											
(5)	ΔEquity	0.164***	-0.019	0.183***	0.232***	1.000										
(6)	LLP	-0.027	0.034**	-0.040**	-0.065***	-0.070***	1.000									
(7)	NPL	-0.099***	-0.096***	-0.030*	-0.040**	-0.125***	0.812***	1.000								
(8)	Size	0.010	0.000	0.013	0.007	0.014	-0.296***	-0.271***	1.000							
(9)	Capitalisation	-0.036***	-0.006	-0.040***	-0.063***	0.014	0.437***	0.334***	-0.408***	1.000						
(10)	Liquidity	-0.050***	-0.071***	-0.006	-0.005	-0.004	0.095***	0.029	-0.186***	0.159***	1.000					
(11)	ROAA	0.058***	0.028**	0.038***	0.054***	0.193***	-0.092***	-0.230***	-0.011	0.104***	-0.031**	1.000				
(12)	Funding	0.055***	0.058***	0.062***	0.057***	0.022*	0.072***	0.070***	-0.351***	-0.005	0.000	0.114***	1.000			
(13)	WTU	-0.037***	-0.012	-0.048***	-0.076***	-0.052***	-0.104***	-0.076***	0.036***	-0.031**	0.020	0.005	-0.006	1.000		
(14)	ΔGDP	0.035***	0.008	0.037**	0.026*	0.069***	-0.003	-0.032*	0.033**	-0.013	-0.016	0.036**	0.020	-0.118***	1.000	
(15)	Inflation	-0.044***	-0.001	-0.056***	-0.090***	-0.061***	-0.044**	-0.050***	-0.133***	0.046***	0.003	0.084***	0.040***	-0.074***	-0.019	1.000

III. MODEL SPECIFICATION AND RESULTS

A. Basic Results

To examine the relationship between trade uncertainty on bank lending, we first estimate the following baseline model:

$$\Delta Loans_{i,t} = \beta WTU_{j,t} + \delta\, x_{i,t-1} + \theta z_{j,t} + \mu_i + \rho_t + \varepsilon_{i,j,t} \quad (1)$$

where *i, j,* and *t* refer to bank, country, and quarter, respectively. Δ*Loans* stands for the quarterly growth rate of gross loans. *WTU* denotes the quarterly WTU index. *x* is the vector of bank-specific controls that capture a bank's overall condition. *z* is the vector of country-level controls that account for the macroeconomic conditions. We include bank fixed effects to account for heterogeneity between banks and period fixed effects to account for any time-dependent factors affecting all banks simultaneously. The standard errors are robust and clustered at bank level. μ is a bank-specific effect; ρ is a quarter fixed-effect; ε is the standard error term. We acknowledge the endogenous nature of the relationship between trade and credit. This is because in today's modern, integrated trade markets, developments in banking and financial sectors and their products could also determine countries' degree of trade openness, the depth and scope of trading relationships and, in turn, the uncertainty associated with it.

Table 4.
The Effects of Trade Uncertainty on Bank Credit Growth: Baseline Estimations

This table shows regression results estimating the effects of trade uncertainty on bank credit growth. The dependent variable is the quarterly growth rate of gross loans. All bank-specific controls are lagged one period. Bank and quarter fixed effects are included in all specifications. Standard errors, clustered at the bank level, are given in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)
	ΔLoans	ΔLoans	ΔLoans
WTU	-0.081**	-0.154***	-0.165***
	(0.035)	(0.042)	(0.044)
$Size_{t-1}$		-1.977	-1.992
		(4.984)	(4.975)
$Capitalisation_{t-1}$		0.835**	0.823**
		(0.388)	(0.389)
$Liquidity_{t-1}$		0.447***	0.444***
		(0.116)	(0.119)
$ROAA_{t-1}$		-0.035	0.031
		(0.554)	(0.570)
$Funding_{t-1}$		-0.329***	-0.323***
		(0.106)	(0.107)
ΔGDP			-0.069
			(0.070)
Inflation			-0.410
			(0.323)

Table 4.
The Effects of Trade Uncertainty on Bank Credit Growth: Baseline Estimations (Continued)

	(1)	(2)	(3)
	ΔLoans	ΔLoans	ΔLoans
Quarter fixed effects	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes
Observations	5,741	4,638	4,373
Number of banks	386	370	352
R-squared	0.037	0.101	0.105

Table 4 reports the results of estimating Eq. (1). As shown in Column (1) of the table, the coefficient of the WTU index in the univariate specification is negative (-0.081) with a statistical significance level of 5%, which indicates that both Chinese and EU banks tend to lend less under country-specific uncertainty in relation to trade. The impact is also economically significant: a one-unit increase in the WTU index results in a reduction of 0.08% in growth in bank loans. Put differently, a one-standard-deviation increase in the WTU index (6.741) leads to a reduction in the growth rate of bank loans of 0.55% (-0.081*6.741). This is about a quarter of the average bank loan growth in our sample (0.546/2.252).

Columns (2) and (3) of Table 4 report the results of the regression controlling for the bank-specific variables only and the one that estimates the full model in Eq. (1), respectively.[5] Incorporating both categories of controls generate higher R-squared values of 10% to 11%, implying a stronger explanatory power of the model. Our earlier conclusion that trade uncertainty has an adverse effect on bank lending remains unchanged. However, the WTU index coefficients in the specifications with controls are slightly higher with a 1% statistical significance level. Specifically, Column (2) and (3) show that a one-standard-deviation increase in the WTU index reduces the growth rate of bank loans by 1.04% (-0.154*6.741) and 1.11% (-0.165*6.741), respectively. Our findings complement those from earlier studies that document a similar negative association using a much broader index for uncertainty, including the EPU Index of Baker *et al.* (2016) (e.g., Chi and Li, 2017; Danisman *et al.*, 2020; Nguyen *et al.*, 2020) and the WUI of Ahir *et al.* (2018) (e.g., Gozgor *et al.*, 2019; Demir and Danisman, 2021).

With regard to the control variables, the coefficients on the liquidity and capitalisation ratios are both positively significant in line with theoretical predictions that banks that hold more equity capital and liquid assets relative to their assets are likely to increase their credit supply. Interestingly, we find that the results are opposite for banks' funding structure, suggesting that banks whose liabilities consisted mainly deposits tend to grow their credit supply at a slower rate, as also found by Cull and Peria (2013) for the 2008-2009 financial crisis period.

[5] Note that in our subsequent specification in which both bank-level and macroeconomic controls are considered, the number of observations is further reduced to 4,373 with 352 banks, as shown in Column (3) of Table 4. This is because quarterly observations for economic growth and inflation rates are not available for Bulgaria, Croatia, and Romania.

The reason for this phenomenon could be that banks facing tighter regulation and supervision post-crisis would prefer to invest deposits in non-intermediation activities than to extend more credit to borrowers to minimise risks (Cucinelli, 2016).

B. Robustness Checks

We check the robustness of our baseline estimations in several ways and present the results in Table 5. First, the dependent variable is normalised by total assets before the regression is rerun in the first column of the table. This is done to capture the relationship between loan growth and trade uncertainty in a more meaningful way, without being biased by the size differences of the banks. We find that our results are consistent that a rise in the WTU index of one standard deviation corresponds to 1.16% (-0.172*6.741) lower growth rates of the loan-to-asset ratio.

Table 5.
The Effects of Trade Uncertainty on Bank Credit Growth: Robustness Checks

This table shows the robustness checks on the baseline results in Table 4. The dependent variables are the quarterly changes in loan-to-asset ratios in Column (1) and the quarterly growth rate of gross loans in Column (2) to (6). The WTU variable is lagged one period in the specification in Column (2). All bank-specific controls are lagged one period. The regressions in Column (1) and (2) are estimated using OLS with bank and quarter fixed effects. The regressions in Column (3) and (4) are estimated using two-step system GMM with Windmeijer's (2005) finite sample correction to the covariance matrix. The regression in Column (5) is estimated using OLS with country and quarter fixed effects. The regression in Column (6) is estimated using OLS with quarter fixed effects only. Standard errors, clustered at the bank level, are given in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Bank FE	Bank FE	System GMM	System GMM	Country FE	Pooled OLS
	(1)	(2)	(3)	(4)	(5)	(6)
	Loans/assets	ΔLoans	ΔLoans	ΔLoans	ΔLoans	ΔLoans
WTU	-0.172**		-0.113***	-0.129***	-0.147***	-0.130***
	(0.075)		(0.042)	(0.048)	(0.049)	(0.047)
WTU_{t-1}		-0.090*				
		(0.050)				
$Size_{t-1}$	9.182*	-2.032	-1.330**	-1.147**	-0.428**	-0.076
	(4.831)	(4.982)	(0.547)	(0.555)	(0.170)	(0.118)
$Capitalisation_{t-1}$	0.662	0.819**	-0.078	0.016	-0.144**	-0.074
	(0.548)	(0.387)	(0.336)	(0.333)	(0.056)	(0.049)
$Liquidity_{t-1}$	0.980***	0.442***	0.021	0.096	0.071***	0.046**
	(0.356)	(0.119)	(0.099)	(0.090)	(0.024)	(0.022)
$ROAA_{t-1}$	-0.017	0.053	2.265**	1.678*	0.259	0.327
	(1.039)	(0.572)	(0.886)	(0.894)	(0.351)	(0.315)
$Funding_{t-1}$	-1.231**	-0.320***	-0.140	-0.166**	-0.071***	-0.028
	(0.603)	(0.108)	(0.087)	(0.083)	(0.024)	(0.019)
ΔGDP	-0.128	-0.011	-0.119	-0.172	0.004	0.092
	(0.158)	(0.068)	(0.093)	(0.106)	(0.064)	(0.064)
Inflation	0.022	-0.342	-0.981**	-0.941**	-0.623**	-0.478*
	(0.445)	(0.314)	(0.441)	(0.455)	(0.317)	(0.252)

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Table 5.
The Effects of Trade Uncertainty on Bank Credit Growth: Robustness Checks (Continued)

	Bank FE	Bank FE	System GMM	System GMM	Country FE	Pooled OLS
	(1)	(2)	(3)	(4)	(5)	(6)
	Loans/assets	ΔLoans	ΔLoans	ΔLoans	ΔLoans	ΔLoans
$\Delta Loans_{t-1}$			-0.463***	-0.322***		
			(0.080)	(0.052)		
$\Delta Loans_{t-2}$				0.207***		
				(0.066)		
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	No	No
Country fixed effects	No	No	No	No	Yes	No
Observations	4,373	4,373	4,373	4,023	4,373	4,373
Number of banks	352	352	352	336	352	352
R-squared	0.118	0.104			0.063	0.045
AR(1) test (*p*-value)			0.002	0.000		
AR(2) test (*p*-value)			0.945	0.300		
Hansen test (*p*-value)			0.342	0.220		

Second, we replace the WTU index with its lagged values to account if the changes in the index may take time to affect banks' loan growth, providing more sensible representation of the relationship of interest. Column (2) of Table 5 shows that the coefficient on our lagged trade uncertainty variable is negative, though with a lower statistical significance, indicating weak evidence that trade uncertainty in a quarter may continue to slow credit growth next quarter. The size of the coefficient is lower, that is, a one-standard-deviation increase in last quarter's WTU index reduces the present quarter's loan growth by 0.61% (-0.090*6.741).

Third, to check whether our results continue to hold when accounting for persistence in bank loan growth arising from factors such as loan growth targets set by individual banks (Ibrahim, 2016), we allow for the dynamic setting of our model as follows:

$$\Delta Loans_{i,t} = \alpha \Delta Loans_{i,t-1} + \beta WTU_{j,t} + \delta\, x_{i,t-1} + \theta z_{j,t} + \mu_i + \rho_t + \varepsilon_{i,j,t} \qquad (2)$$

The left-hand side and right-hand side variables are defined as in Eq. (1). Applying the traditional within-group fixed effects estimator to the dynamic equation in Eq. (2) would be problematic since the lagged dependent variable is, by construction, correlated with the bank-specific time-invariant effect (see Anderson and Hsiao, 1982; Hsiao, 1986). Because of this correlation, the estimator has been proven to yield a downward biased estimates for the coefficients of the lagged dependent variable. Alternatively, we apply a two-step system Generalised Method of Moments (GMM) panel estimator, as proposed by Blundell and Bond (1998) with finite sample correction procedure of Windmeijer (2005) that addresses

the severe downward bias in the standard errors. The system GMM estimator is found to be more efficient than the first-difference GMM estimator, which would perform poorly when the time series are highly persistent making lagged level variables weak instruments for subsequent first differences. To address this, the system estimator uses the lagged first differenced variables as the instruments for the level regression, and the lagged level variables as the instruments for the first differenced regression. By doing so, potentially important information in the level relationship can be preserved, and the biases and poor precision associated with weak instruments can be minimised. We instrument the lag dependent variable and all bank-level control in a GMM fashion, treating them to be endogenous. To limit the number of instruments, we restrict the lag range used in generating them at two. The WTU index and country-level controls are, on the other hand, taken to be strictly exogeneous and instrumented by themselves, as similarly done in related studies (e.g., Danisman *et al.*, 2020; Demir and Danisman, 2021).[6] Two tests are performed to confirm the appropriateness of our dynamic GMM estimations. The first is the tests of Arellano-Bond AR(1) and AR(2) for both first- and second-order autocorrelation in the first-difference residuals and the second is the Hansen test of overidentifying restrictions.

As shown in Column (3) of Table 5, the negative and highly significant coefficient on the lagged loan growth variable obtained by the GMM estimator is suggestive that previous quarter's growth in bank loans may reverse the present ones. We continue to add the second lag of the loan growth variable in Column (4), and find it highly significant along with the first lag. The over-identification tests in both estimations generate *p*-values greater than 0.1 for the AR(2) and Hansen J-statistics suggesting that our models are correctly specified as the second-order serial correlation is absent and the utilised instruments are valid. It can be seen that our earlier finding that trade uncertainty impedes bank lending remains intact even after controlling for the persistence in loan growth rates.

Lastly, to confirm that our results are not due to resorting to more sophisticated econometric techniques, we alternatively use a pooled OLS controlling for country fixed effects instead of bank fixed effects in Column (5) and neither bank nor country fixed effects, only time fixed effects in Column (6) of Table 5. The estimates are again negative at a threshold of statistical significance of 1% for the index of WTU.

C. Additional Analyses

C.I. Is the Effect Different for Chinese Banks Versus EU Banks?

In this section, we explore whether banks from different headquarter locations lend differently under trade uncertainty by extending the model in Eq. (1) in several specifications. In the first one, we include the interaction term between the WTU index and a dummy variable that is equal to unity when the bank is from China, $WTU^{*}D_{CHINA}$, and the interaction term between the WTU index and a dummy variable that is equal to unity when the bank is from EU countries including the

[6] Treating all explanatory variables endogenously could cause the number of instruments to grow very rapidly, weakening the validity of the instruments, and so as the consistency of our estimates.

UK, WTU^*D_{EU}. As mentioned earlier, we hypothesise that Chinese and EU banks may exhibit varying lending responses in the face of trade uncertainty. Their responses are likely influenced by factors such as disparities in trade patterns, private credit dynamics, and their respective approaches in dealing with trade sanctions imposed by the US. Next, we further divide EU banks into those from EU5 countries (Germany, the United Kingdom, France, Italy, Spain) and from other EU member countries, and include the interactions of their dummy variables with the variable of interest, WTU^*D_{EU5} and $TU^*D_{NON\text{-}EU5}$, in the second specification.[7] Lastly, we further classify the non-Chinese banks into those from the EU member countries and from the UK, and include the interactions of their dummy variables with the variable of interest, WTU^*D_{EU} and WTU^*D_{UK}, in the third specification. This is to identify the unique lending response of the UK banks, if any, as the country voted in favour of Brexit.[8]

We present the results from estimating these extended specifications in the Table 6. The WTU index's interaction terms with a Chinese bank dummy and a dummy that pools banks from EU nations are shown with negative coefficients in the first column of the table. However, the test of equality suggests that the lending response of Chinese banks to changes in trade uncertainty is not statistically different from that of EU banks. Also, our results show no significant differences in lending growth when we split the interaction term for EU banks into that for EU5 banks and that for other EU banks in Column (2). Interestingly, in Column (3) of Table 6, we find that the effect of trade uncertainty for the UK banks is positive, although statistically insignificant. Besides, the test of equality indicates that the banks react to trade uncertainty differently than their peers in China and the EU countries.

[7] The EU5 countries are the largest economies in Europe accounting for 81.06% of EU GDP in 2019.
[8] The UK formally left the EU on 31 January 2020.

Table 6.
The Comparison of the Effects of Trade Uncertainty on the Lending of Banks from Different Headquarter Locations

This table shows regression results comparing the effects of trade uncertainty on credit growth of banks from different headquarter locations. The dependent variable is the quarterly growth rate of gross loans. All bank-specific controls are lagged one period. The sample is split between banks from China and those from EU countries in Column (1). The sample EU banks are further split into those from the EU-5 countries and those from non-EU-5 countries in Column (2). The sample is split between banks from China, the EU countries, and the UK in Column (3). Bank and quarter fixed effects are included in all specifications. Standard errors, clustered at the bank level, are given in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)
	ΔLoans	**ΔLoans**	**ΔLoans**
WTU x D_{CHINA}	-0.155***	-0.157***	-0.158***
	(0.042)	(0.043)	(0.042)
WTU x D_{EU}	-0.168***		-0.179***
	(0.054)		(0.054)
WTU x D_{EU5}		-0.194***	
		(0.061)	
WTU x $D_{NON-EU5}$		-0.136**	
		(0.057)	
WTU x D_{UK}			0.101
			(0.103)
$Size_{t-1}$	-1.998	-2.005	-1.970
	(4.976)	(4.972)	(4.978)
$Capitalisation_{t-1}$	0.823**	0.822**	0.828**
	(0.389)	(0.388)	(0.390)
$Liquidity_{t-1}$	0.444***	0.445***	0.444***
	(0.119)	(0.119)	(0.119)
$ROAA_{t-1}$	0.032	0.028	0.020
	(0.570)	(0.570)	(0.571)
$Funding_{t-1}$	-0.323***	-0.323***	-0.324***
	(0.107)	(0.107)	(0.107)
ΔGDP	-0.068	-0.072	-0.068
	(0.072)	(0.073)	(0.072)
Inflation	-0.416	-0.439	-0.393
	(0.331)	(0.335)	(0.331)
Quarter fixed effects	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes
Observations	4,373	4,373	4,373
Number of banks	352	352	352
R-squared	0.105	0.105	0.106
Test of equality (*p*-value)			
$\beta_1 - \beta_2 = 0$	0.847	0.577	0.742
$\beta_1 - \beta_3 = 0$		0.758	0.018
$\beta_2 - \beta_3 = 0$		0.249	0.004

C.II. Does the Lending Response to Trade Uncertainty Vary Across Bank Characteristics? In our additional tests, we explore the heterogeneity of the effects of trade uncertainty on lending depending on bank characteristics in terms of capitalisation, size, funding structure, liquidity, and profitability. As such, we split the sample into five sets of high and low dummy variables and repeat the analysis with the interaction between the WTU index and these dummies. For example, the 'high-capital banks' dummy is equal to unity for banks with 2018Q2 equity to asset ratio above the median, and otherwise for banks below the median. Similar dummies are created for the remaining four bank characteristics categories. We use the bank characteristics of 2018Q2 because 2018Q2 is the last quarter before a series of tariff increases by the US and its trading partners went into effect around the third quarter of 2018, which saw the WTU index started increasing exponentially. Accordingly, the extended model is specified as follows:

$$\Delta Loans_{i,t} = \beta WTU_{j,t} * D_{j/i,t} + \delta\, x_{i,t-1} + \theta z_{j,t} + \mu_i + \rho_t + \varepsilon_{i,j,t} \quad (3)$$

where *D* denotes the dummy variables for the banks' conditions or characteristics explained above. Other variables are defined as in Eq. (1).

Figure 3.
Average Loan Growth for Highly Capitalised Vs. Lowly Capitalised Banks

This figure plots the mean value of the quarterly change in gross loans separately for highly capitalised and lowly capitalised banks over the sample period of 2017Q1-2021Q3. Highly (lowly) capitalised banks have a ratio of equity to total assets in the second quarter of 2018 above (below) the median.

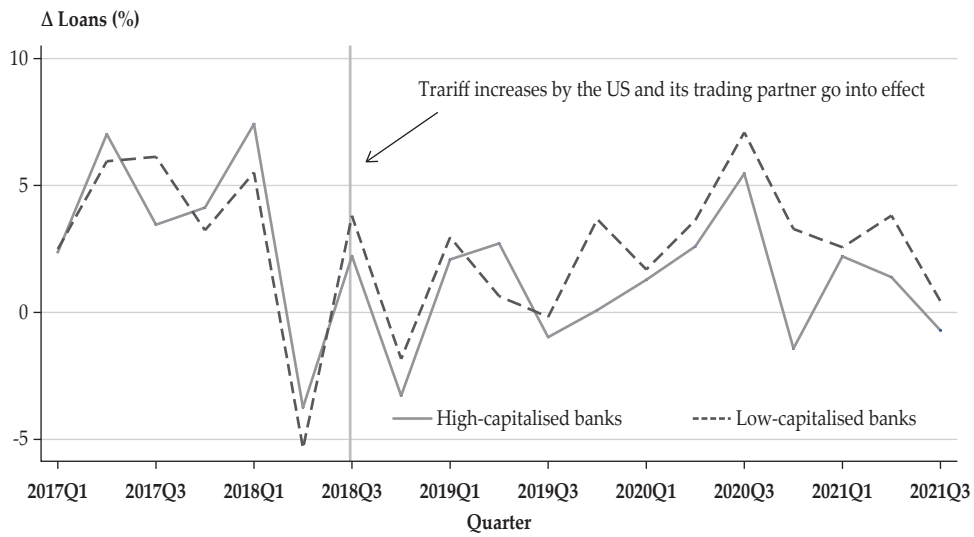

Table 7.
The Role of Bank Characteristics

This table shows regression results estimating the effects of trade uncertainty on bank credit growth, depending on bank characteristics. The dependent variable is the quarterly growth rate of gross loans. The set of bank-specific and macroeconomic control variables is the same as in the baseline model in Table 2. All bank-specific controls are lagged one period. The sample is split depending on several continuous variables, namely, *Capitalisation* in Column (1), *Size* in Column (2), *Funding* in Column (3), *Liquidity* in Column (4), and *Profitability* in Column (5), being above or below the median of the sample distribution in 2018Q2. Bank and quarter fixed effects are included in all specifications. Standard errors, clustered at the bank level, are given in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Capitalisation	**Size**	**Funding**	**Liquidity**	**Profitability**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	ΔLoans	**ΔLoans**	**ΔLoans**	**ΔLoans**	**ΔLoans**
WTU x $D_{LOW\text{-}CAPITAL}$	-0.117***				
	(0.039)				
WTU x $D_{HIGH\text{-}CAPITAL}$	-0.235***				
	(0.063)				
WTU x D_{SMALL}		-0.204***			
		(0.068)			
WTU x D_{LARGE}		-0.145***			
		(0.039)			
WTU x $D_{LOW\text{-}DEPOSIT}$			-0.167***		
			(0.046)		
WTU x $D_{HIGH\text{-}DEPOSIT}$			-0.160**		
			(0.063)		
WTU x $D_{LOW\text{-}LIQUIDITY}$				-0.118**	
				(0.050)	
WTU x $D_{HIGH\text{-}LIQUIDITY}$				-0.212***	
				(0.051)	
WTU x $D_{LOW\text{-}ROA}$					-0.169***
					(0.049)
WTU x $D_{HIGH\text{-}ROA}$					-0.160***
					(0.051)
$Size_{t-1}$	-1.968	-1.986	-1.997	-2.012	-2.001
	(4.974)	(4.975)	(4.978)	(4.976)	(4.981)
$Capitalisation_{t-1}$	0.837**	0.828**	0.823**	0.825**	0.823**
	(0.390)	(0.389)	(0.389)	(0.389)	(0.389)
$Liquidity_{t-1}$	0.444***	0.444***	0.444***	0.444***	0.444***
	(0.119)	(0.118)	(0.119)	(0.118)	(0.119)
$ROAA_{t-1}$	0.028	0.023	0.031	0.017	0.029
	(0.570)	(0.570)	(0.570)	(0.570)	(0.568)
$Funding_{t-1}$	-0.322***	-0.322***	-0.323***	-0.324***	-0.323***
	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)
ΔGDP	-0.065	-0.066	-0.069	-0.070	-0.069
	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)
Inflation	-0.412	-0.421	-0.410	-0.399	-0.411
	(0.322)	(0.322)	(0.323)	(0.323)	(0.323)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	4,373	4,373	4,373	4,373	4,373
Number of banks	352	352	352	352	352
R-squared	0.106	0.105	0.105	0.106	0.105
Test of equality (*p*-value)					
β_1- β_2=0	0.019	0.269	0.909	0.060	0.835

We first plot the average change in loans for highly and lowly capitalised banks separately. It can be seen in Figure 3 that it was not until 2018Q2 that highly capitalised banks reduced their loans more than lowly capitalised banks. Subsequently, we estimate the model in Eq. (3). Two results stand out. First, trade uncertainty has stronger negative effects on the loan growth of banks that are more highly capitalised. In particular, Column (1) of Table 7 shows that, for banks with an above-median capitalisation, the reduction of quarterly loan growth in response to a one-unit increase in the trade uncertainty index is 0.24%. This number declines about half as much (to 0.11%) when the effect is measured for banks with a below-median capitalisation. One explanation for this is that well-capitalised banks may be more risk-averse because they are cautious about the shock-absorbing buffers from greater capitalisation being insufficient to reduce trade uncertainty harms, or because they want to minimise the probability of not meeting capital requirements in the presence of trade uncertainty. Our result is in line with that of Danisman *et al.* (2020) on the EPU effect on bank lending. Similar evidence is also documented by Dursun-de Neef and Schandlbauer (2021) in the event of banks facing a higher COVID-19 exposure. Bordo *et al.* (2016), on the other hand, find the opposite showing that the unfavourable consequence of EPU becomes lower as capitalisation increases.

Second, we find a consistent result on the asset side of banks' balance sheet suggesting that trade uncertainty's negative impact on loans expansion is larger in magnitude for banks with a larger share of liquid assets. Column (4) of Table 7 indicates that the difference is similar to our estimation in Column (1), which is around 0.1%, and is statistically significant. On the other hand, the *p*-values of *t*-tests for the equality of the coefficient on the WTU index across other high versus low categories provided in the remaining columns of the table suggests no significant differences in bank lending response to changes in trade uncertainty across banks with differing sizes, funding structures and levels of profitability.

C.III. Does Trade Uncertainty Affect Banks' Funding Sources and Credit Risk Too?

Lastly, we attempt to find out whether trade uncertainty also affects the growth of different sources of funding for banks and their loan quality. To do so, we replace the dependent variable with three bank funding variables, namely, the growth rates of customer deposits, liabilities, and equity. Meanwhile, the measures for a bank's credit risk level considered are the shares of loan loss provisions and non-performing loans in gross loans. The equation to be estimated is provided below:

$$\Delta Funding_{i,t}(Risk_{i,t}) = \beta WTU_{j,t} + \delta\, x_{i,t-1} + \theta z_{j,t} + \mu_i + \rho_t + \varepsilon_{i,j,t} \quad (4)$$

where $\Delta Funding$ consists of the growth of three bank funding sources (in percent), namely, $\Delta Deposits$, $\Delta Liabilities$, and $\Delta Equity$, and *Risk* consists of the two bank credit risk ratios (in percent), namely, *LLP* and *NPL*.

Table 8.
The Effects of Trade Uncertainty on Bank Funding Source Growth and Credit Risk

This table shows regression results of the effects of trade uncertainty on the growth of banks' sources of funding and their credit risk. The dependent variables are the quarterly growth rates of customer deposits, total liabilities, and equity in Columns (1) and (2), (3) and (4), and (5) and (6) of Panel A, respectively, and the shares of loan loss provisions and non-performing loans in gross loans in Columns (1) and (2), and (3) and (4) of Panel B, respectively. The set of bank-specific and macroeconomic control variables is the same as in the baseline model in Table 2 except that the ratio of total deposits to total liabilities is excluded in all regressions in Panel A. All bank-specific controls are lagged one period. The sample is split between banks from China and those from EU countries in even-number columns. Bank and quarter fixed effects are included in all specifications. Standard errors, clustered at the bank level, are given in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Panel A: Funding Source Growth						Panel B: Credit Risk			
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)
	ΔDeposits	ΔDeposits	ΔLiabilities	ΔLiabilities	ΔEquity	ΔEquity	LLP	LLP	NPL	NPL
WTU	-0.061*		-0.094***		-0.043**		-0.003		-0.005	
	(0.032)		(0.021)		(0.019)		(0.005)		(0.012)	
WTU x D_{CHINA}		-0.076**		-0.111***		-0.052**		-0.006		-0.021*
		(0.032)		(0.026)		(0.025)		(0.007)		(0.012)
WTU x D_{EU}		-0.056		-0.089***		-0.040*		-0.002		0.002
		(0.038)		(0.024)		(0.022)		(0.005)		(0.014)
$Size_{t-1}$	-7.581**	-7.572**	-8.364***	-8.354***	-6.366***	-6.361***	-0.741	-0.738	0.936	0.965
	(3.454)	(3.454)	(2.700)	(2.700)	(1.138)	(1.138)	(2.062)	(2.063)	(2.686)	(2.691)
$Capitalisation_{t-1}$	0.674***	0.675***	0.418***	0.419***	-0.709***	-0.708***	0.045	0.045	0.009	0.010
	(0.199)	(0.199)	(0.154)	(0.154)	(0.142)	(0.142)	(0.087)	(0.087)	(0.180)	(0.181)
$Liquidity_{t-1}$	0.013	0.014	-0.023	-0.023	-0.059***	-0.059***	0.003	0.003	-0.052**	-0.051*
	(0.046)	(0.046)	(0.027)	(0.027)	(0.020)	(0.020)	(0.014)	(0.014)	(0.026)	(0.026)
$ROAA_{t-1}$	0.346	0.345	0.566**	0.564**	-0.535**	-0.536**	-0.332	-0.332	-0.225	-0.226
	(0.412)	(0.412)	(0.242)	(0.242)	(0.242)	(0.242)	(0.264)	(0.264)	(0.578)	(0.579)
$Funding_{t-1}$							-0.024	-0.024	-0.058**	-0.058**
							(0.020)	(0.020)	(0.029)	(0.029)
ΔGDP	0.018	0.017	-0.085***	-0.087***	-0.109***	-0.110***	0.009	0.008	-0.014	-0.016
	(0.048)	(0.049)	(0.031)	(0.031)	(0.032)	(0.032)	(0.007)	(0.007)	(0.014)	(0.014)
Inflation	-0.246	-0.236	-0.255	-0.244	-0.116	-0.111	0.364***	0.366***	0.416***	0.429***
	(0.218)	(0.219)	(0.168)	(0.169)	(0.159)	(0.161)	(0.118)	(0.119)	(0.149)	(0.152)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,281	4,281	4,385	4,385	4,383	4,383	2,937	2,937	2,485	2,485
Number of banks	342	342	354	354	354	354	281	281	268	268
R-squared	0.104	0.104	0.238	0.238	0.241	0.241	0.098	0.098	0.087	0.088
Test of equality (*p*-value)										
β_1- β_2=0		0.656		0.411		0.683		0.612		0.132

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In the odd-numbered columns of Panel A in Table 8, we observe negative and statistically significant coefficients on the WTU index, indicating that the funding of banks is vulnerable to rising trade uncertainty. It is shown that a one-unit increase in the WTU index reduces the growth rate of customer deposits by 0.06% and that of total liabilities and total equity by 0.09% and 0.04%, respectively. Similar to estimating the baseline Eq. (1) in Column (1) of Table 6, we provide evidence for the heterogeneous funding sensitivity to trade uncertainty across Chinese and EU banks in the even-numbered of the same panel. Although the test of equality suggests no significant differences between Chinese and EU banks for all sources of funding, our result indicates that the detrimental impact of uncertainty in trade on the growth of customer deposit funding is only significant for Chinese banks in the regression in Column (2).

As for the influence of trade uncertainty on bank credit risk, we provide no significant evidence in Panel B in Table 8, except in the regression in Column (4), where the coefficient on the interaction term between the WTU index and a Chinese bank dummy registers a negative sign but with a weak statistical significance. The result suggests that an increase in trade uncertainty may lower the share of non-performing loans in total loans at Chinese banks. This could be due to lower amount of loans extended by the banks under trade uncertainty as documented in our earlier results in Table 6.

IV. CONCLUSION

The primary objective of this study is to investigate how trade uncertainty affects bank loans growth based on evidence from the Chinese and EU banking markets over the period 2017Q1-2021Q3. Using the WTU index provided by Ahir *et al.* (2018) as a proxy for the levels of trade uncertainty, we show that an increase in trade uncertainty may lead to a significant reduction in the lending activities of banks. However, the effect varies across bank characteristics. In particular, we find that better-capitalised banks and more liquid banks tend to reduce credit growth more in times of high trade uncertainty. Besides, we confirm that banks' funding sources are also negatively sensitive to trade uncertainty, but it is not the case for their loan quality.

These findings draw the attention of regulators and policymakers to the need to create and sustain a stable and amicable trade ecosystem. Such ecosystem, as implied by our analysis, plays a crucial role for the deepening of credit markets. At the same time, it is also imperative for regulators and policymakers to actively foster an enabling credit environment amidst the ongoing trade competition. First, they should work towards improving the infrastructure for sharing credit information. This would enable banks to have adequate access to credit data, allowing them to make more informed decisions when granting loans. Second, efforts should be made to enhance contract enforceability, ensuring that the interests of the contracting parties are legally protected. Third, institutional quality needs to be strengthened in light of the need for transparent and accountable governance structures that promote fair transactions. In addition, our study highlights the importance of designing incentive schemes that mitigate banks' risk aversion during periods of trade uncertainty. By creating appropriate incentives, banks can

be encouraged to continue lending even when facing potential risks arising from fluctuations in trade policies. This adaptability is crucial for banks to sustain their operations and provide liquidity to the real economy, particularly when faced with intense trade rivalry between major economic powers.

This study has several limitations that offer opportunities for future research. First, one cannot attribute the negative coefficients on the WTU index found in this study at face value to either households and firms' weaker inclination to borrow or banks' reduced appetite to extend credit in the countries, or both. Future research may rather use more granular data on loan demand by borrowers and loan supply by banks to isolate the effect to either the former or the latter. When it comes to trade uncertainty, future studies may delve into alternative measures that offer greater objectivity, surpassing mere linguistic interpretations as a means of measurement. Moreover, future studies could extend the estimation to different country contexts, for example, the US, and to a broader sample in terms of bank type and ownership. The present study intends to exclude US banks from its analysis to avoid sample selection bias as their observations would account more than one third of the sample if they were included. A similar reason is also mentioned in previous studies such as those of Chen *et al.* (2021) and Hao *et al.* (2022) for excluding US banks in their analyses. Future research could also distinguish the amount of bank credit provided to households and non-tradable sectors from that provided to tradable sectors, or break the numbers down by industry, and compare how their growths are affected by trade uncertainty.

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