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How do economic policy uncertainty and inflation individually and collectively influence bank loan pricing decisions in China?

Thanh Nguyen
School of Business, James Cook University Australia – Singapore Campus, Singapore, Singapore

Amsyar Bin Minhaj
School of Business, James Cook University – Singapore Campus, Singapore, Singapore, and

Anh-Tuan Doan
International School of Business, University of Economics Ho Chi Minh City, Ho Chi Minh City, Vietnam

Abstract

Purpose – This study aims to examine how economic policy uncertainty (EPU) and inflation affect bank loan pricing decisions both individually and jointly in China.

Design/methodology/approach – Panel regressions are used on data from Chinese banks spanning 2005–2022.

Findings – The analysis reveals that both local and global EPU negatively affect bank loan pricing, while inflation exerts a positive impact. Moreover, higher inflation mitigates the negative impact of EPU on loan pricing, whereas increased EPU amplifies inflation's effect on loan prices. These findings hold when the data are segmented into two bank groups: the Big Four and joint-stock commercial banks and city commercial banks.

Originality/value – To the best of the authors' knowledge, this study is the first to examine how EPU and inflation, both individually and together, influence loan pricing in China. The findings provide insights into how monetary policies (which affect inflation) and economic policies (which shape EPU) interact to shape loan pricing in China's state-driven banking system. These insights can help banks refine their loan pricing and risk management strategies, assist investors and borrowers in making informed decisions and guide policymakers in balancing socioeconomic stability with financial stability

JEL classification – G20, G21, G28

Data availability: Data in support of findings of this study are available from the corresponding author upon reasonable request.

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during uncertain and inflationary periods. Ultimately, this can help mitigate negative impacts on the banking sector and the broader economy.

Keywords Economic policy uncertainty, EPU, Inflation, Loan price, Chinese banks, Panel regression

Paper type Research paper

1. Introduction

Over the past four decades, China has undergone a remarkable transformation, evolving from a primarily agrarian society into the world's second largest economy. Its GDP grew from just 7% of the US GDP in 1990 – 73% in 2022, reaching $18.3tn (Prasad, 2023). China's entry into the World Trade Organization (WTO) in 2001 strengthened its role as a major global trade and financial power. This success has been fueled by a series of major policy initiatives, including industrialization (1990s–2010s), the Belt and Road Initiative (2013), "Made in China 2025" (2015), and ongoing economic rebalancing efforts (2010s–2020s) (Zhang and Lan, 2023; Cavanna, 2019). However, these policy changes have also introduced significant economic policy uncertainty (EPU), which affects business and financial stability.

A cornerstone of China's economic development is its banking sector, which operates under a unique model of state capitalism. Unlike banks in free-market economies, Chinese banks are guided by government objectives that prioritize strategic socio-economic goals over profitability (Yeung, 2021). State-owned banks dominate the sector, holding over 40% of total banking assets by 2015, with joint-stock and city commercial banks playing supporting roles (Allen *et al.*, 2017). Despite market liberalization efforts, the banking system remains deeply integrated with the state, reflecting its pivotal role in implementing national policies.

China's one-party governance system concentrates decision-making in the hands of a few top officials. This often results in a lack of transparency and clear communication, making policies uncertain and unpredictable. Such uncertainty affects key areas such as banking and the overall economy (Chen *et al.*, 2017). The central bank of China, named The People's Bank of China (PBoC), for example, is closely tied to government policies and does not function as an independent monetary authority (Zheng and Wang, 2021). This strong connection to the state adds to the lack of clarity in how policies are created and implemented, further increasing uncertainty in economic sectors, including banking (Chen *et al.*, 2017).

The Chinese Communist Party has a slogan, "crossing the river by feeling the stones," which reflects its approach of making frequent adjustments to fiscal, monetary and regulatory policies. While this flexibility can be helpful, it also raises EPU. For example, the 2013 anti-corruption campaign targeted top business executives and disrupted leadership and operations in the financial sector. The sudden and strict actions, after years of leniency toward corruption, left banks and businesses unsure about future policies, causing delays in investments and projects (Fang, 2024). Similarly, in 2016, China introduced circuit breaker regulations to stabilize stock prices. However, these rules triggered panic selling and had to be withdrawn within four days, leading to a sharp rise in EPU (Cai *et al.*, 2022). These frequent policy changes and their unpredictability create challenges for China's banking sector, which must operate in an environment of high uncertainty while meeting government expectations.

Chinese banks also face unique challenges in balancing profitability, risk management and government directives. For instance, they are often required to extend credit to state-owned enterprises (SOEs), even when these firms are financially weak or the overall economy is struggling (Yeung, 2021; Wu *et al.*, 2023). Implicit government guarantees for SOE loans reduce perceived credit risk but also distort lending practices, potentially leading

to low loan pricing. Moreover, China's limited capital market development and strict capital controls restrict investment options, forcing greater reliance on the banking sector during periods of economic uncertainty. While research shows that emerging markets are more vulnerable to EPU than developed economies (Carriere-Swallow and Felipe Cespedes, 2013), the specific impact of EPU on loan pricing in Chinese banks remains underexplored.

Inflation is another important factor influencing the banking sector. Despite China's impressive economic growth, averaging 7.08% annually over the past two decades, the country has maintained a low and stable inflation rate of 2.24%. However, inflation in China is positively sensitive to EPU (Siming *et al.*, 2019; Wang, 2023; Ogbuabor *et al.*, 2024). Businesses often reduce investment and cut back on hiring when faced with uncertain conditions, which in turn affects inflation (Wang and Weng, 2024; Marasanti and Verico, 2024). Inflation also plays a crucial role in shaping credit demand, as rising inflation expectations are typically linked to higher future interest rates (Ropele *et al.*, 2022; Dziwornu *et al.*, 2024; Dinh, 2020). Given this, understanding how EPU interacts with inflation is crucial for shaping loan pricing strategies in Chinese banks. Therefore, this study addresses two key questions:

Q1. How do EPU and inflation individually influence loan pricing in Chinese banks?

Q2. How do EPU and inflation together affect loan pricing in Chinese banks?

Using data from 132 Chinese banks between 2005 and 2022, the study finds that EPU generally reduces loan prices, while inflation increases them. Additionally, EPU amplifies the impact of inflation, while inflation moderates the negative effect of EPU on loan prices. These findings remain consistent across different bank types and sensitivity tests.

This paper makes two key contributions. First, while several studies have explored the impact of EPU on credit terms, credit growth and credit risk (Shabir *et al.*, 2022; Danisman *et al.*, 2020; Danisman *et al.*, 2021; Kamal *et al.*, 2024), as well as its effect on credit pricing (Dang and Nguyen, 2023; Ashraf, 2021; Tran and Phan, 2022; Gong *et al.*, 2022), most focus on banks in the USA, Europe and other developed economies. These studies often rely on multi-country bank-level data sets, which may fail to capture the unique circumstances of individual nations, or firm-level data, which tend to emphasize borrower-related factors while overlooking critical bank-specific elements such as funding costs and deposit inflows. Importantly, none of these studies examine Chinese banks. Given China's distinct state-driven financial system, findings from free-market economies cannot reliably predict how EPU influences loan pricing in China. This study addresses this gap by providing novel insights into how EPU impacts loan pricing within the unique context of Chinese banks. Furthermore, our research challenges the prevailing assumption – supported by prior empirical work (Dang and Nguyen, 2023; Ashraf, 2021; Tran and Phan, 2022; Gong *et al.*, 2022) – that lenders universally raise premiums to mitigate risks associated with uncertainty.

Second, this study is among the first to investigate the moderating role of EPU in the relationship between inflation and loan pricing. While existing literature often examines the separate effects of EPU and inflation on credit markets, no attention has been given to their interaction and its influence on loan pricing. Understanding this interaction is crucial for policymakers, as it sheds light on how monetary policy (which affects inflation) and economic policies (which contribute to EPU) jointly shape credit markets. This knowledge can guide banks in developing effective loan pricing and risk management strategies while assisting investors and borrowers in making informed decisions and guiding policymakers in balancing socio-economic stability with financial stability during uncertain and inflationary

periods. Ultimately, this can help mitigate negative impacts on the banking sector and the broader economy.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 describes the data and methodology. Section 4 presents the results and analysis. Finally, Section 5 concludes with policy implications and suggestions for future research.

2. Literature review

2.1 Underlying theories

Different theories help explain how EPU and inflation can affect loan pricing, mainly by influencing credit demand/supply, deposit supply/demand, risk and bank behavior.

Higher EPU leading to lower loan prices can be explained by two key theories: the Irreversible Investments Theory and the flight-to-safety theory. According to the Irreversible Investments Theory, introduced by Bernanke (1983), high economic uncertainty makes it difficult for companies to predict future returns. As a result, firms postpone investments and hiring to avoid risks from market fluctuations (Bloom *et al.*, 2007). Studies show that higher EPU leads to a drop in corporate investments (Gulen and Ion, 2016; Liu and Zhang, 2020; Wang *et al.*, 2014), which reduces the demand for credit. This decrease is also seen in lower merger and acquisition activity (Bonaime *et al.*, 2018; Nguyen and Phan, 2017), reduced venture capital (Huang *et al.*, 2022) and fewer initial public offerings (Çolak *et al.*, 2017). With less demand for loans, banks may lower interest rates to attract borrowers.

The flight-to-safety theory suggests that during periods of economic uncertainty, investors prefer safer assets such as government bonds or bank deposits. This shift increases bank deposits and lowers the cost of funds for banks. Research by Gholipour and Dunkley (2019) shows that higher EPU leads to more demand for safe assets. Similarly, Goodell *et al.* (2021) report that firms hold more cash when there is greater volatility of economic uncertainty.

However, higher EPU can also lead to higher loan prices. This is explained by the Default Risk Premium Theory and the Financial Instability Theory. The Default Risk Premium Theory builds on the Irreversible Investments Theory. When companies delay investments, they generate less revenue and cash flow, which can hurt their profitability. As a result, these companies may struggle to pay off their debts, increasing the risk of defaults. Studies such as Nguyen *et al.* (2022) and Lu *et al.* (2023) document evidence of a positive impact of EPU on firm default risk. To cover potential losses from higher default rates, banks raise borrowing interest rates. Additionally, uncertain economic policies make banks more cautious, often hoarding liquidity instead of issuing loans (Berger *et al.*, 2022; Ashraf, 2020; Mendy *et al.*, 2023) or tightening credit criteria (Benlemlih *et al.*, 2024). This reduced credit supply erodes bank profitability, prompting higher loan prices to offset liquidity costs (Pástor and Veronesi, 2013; Bordo *et al.*, 2016; Chi and Li, 2017).

The financial instability theory, introduced by Diamond and Dybvig (1983), explains that heightened uncertainty increases loan defaults while reducing credit supply. This weakens bank earnings and reserve capital, forcing banks to adopt riskier strategies to maintain profitability (Ge *et al.*, 2023; Killins *et al.*, 2020; Moudud-Ul-Huq and Akter, 2022). EPU decreases bank stability (Shabir *et al.*, 2021; Nguyen, 2021; Desalegn *et al.*, 2023; Danisman and Tarazi, 2024), eroding depositor and investor confidence, causing a bank run and then raising banks' cost of funds (Valencia, 2016). This dynamic contrasts with the flight-to-safety theory, which suggests that higher uncertainty typically lowers the cost of funds. To compensate for increased funding costs, banks raise loan interest rates. Additionally, higher EPU worsens information asymmetry between lenders and borrowers, making it harder for

banks to assess creditworthiness. In response, banks charge higher interest rates to mitigate the perceived risks (Tran, 2021).

Finally, the Fisher effect explains how inflation impacts loan prices. According to Fisher (1930), when inflation expectations rise, nominal interest rates also tend to increase, allowing lenders to preserve their real rate of return. Friedman (1980) found that for every 1% increase in expected inflation, nominal interest rates rise by approximately 0.65%. This theory shows that higher inflation leads to higher loan prices, as lenders raise interest rates to maintain their returns.

2.2 The impact of economic policy uncertainty on loan price

Thus far, we have examined the various forces shaping the relationship between EPU and loan price. EPU's impact on credit markets is multifaceted, influencing both the demand for and supply of loans. Increased EPU dampens investment activity, reducing credit demand while simultaneously prompting banks to tighten credit supply because of higher risks of default from borrowers, contracting the supply for credit. Additionally, uncertainty drives investors to seek safe havens, boosting bank deposits and lowering loan rates, while fears of bank defaults lead to bank liquidity hoarding and investors' deposit withdrawal. These opposing forces coexist, and the net impact of EPU on loan pricing depends on their relative strength, the banking system's features and the broader economic context.

Empirical studies show mixed results on how EPU affects loan pricing. During times of high economic uncertainty, banks often tighten debt terms (Tran and Phan, 2022), limit loan growth (Shabir *et al.*, 2022; Danisman *et al.*, 2020), face higher loan losses (Kamal *et al.*, 2024; Danisman *et al.*, 2021) and report lower net interest income (Ozili and Arun, 2022). These factors can lead to higher lending rates when EPU rises (Dang and Nguyen, 2023; Ashraf, 2021; Tran and Phan, 2022; Gong *et al.*, 2022). On the other hand, during uncertain times, banks may attract more deposits (Tran *et al.*, 2021) and benefit from lower funding costs (Tran and Nguyen, 2023), which can lower loan prices. Furthermore, digitalization and fintech innovations have transformed the banking sector, enabling banks to assess credit risk better and reduce operational costs, which may lower loan prices (Liu *et al.*, 2024; Lee *et al.*, 2021). Fintech companies have increased competition, prompting banks to offer more competitive loan prices (Elsaid, 2023). However, most studies focus on Europe or the USA, with little research specifically on China.

State intervention is a key feature of emerging economies, where rapid economic changes require strong government involvement (Yu, 2000). In banking, state intervention through monetary and fiscal policies or ownership in financial institutions can either reduce or increase EPU. Therefore, the classical financial theory from free-market economies that increased uncertainty leads to higher credit risk premiums cannot be applied in China.

On the one hand, state intervention can reduce EPU by stabilizing markets during periods of volatility. For example, countercyclical fiscal and monetary policies during the global financial crisis helped emerging economies recover faster than developed ones by reducing uncertainty and restoring growth (Didier *et al.*, 2012). Similarly, SOEs benefit from directed credit policies that shield them from the negative effects of EPU, unlike private firms, which face reduced investment and financing during uncertain times (Liu and Zhang, 2020; Yeung, 2021). Furthermore, government measures to contain COVID-19, such as income support and fiscal interventions, reduced uncertainty and improved stock market performance (Chang *et al.*, 2021).

Greater state intervention can also exacerbate EPU, especially when policies are inconsistent or lack transparency. During the COVID-19 pandemic, measures such as workplace shutdowns and travel bans, while necessary short-term, increased uncertainty

because of economic costs and long-term sustainability challenges (Allen, 2022; Alvarez *et al.*, 2021; Rabhi *et al.*, 2021). In countries with more government involvement in banking, state-owned banks tend to operate less profitably and carry greater risk, heightening uncertainty (Cornett *et al.*, 2010). These interventions are often complicated by unclear political goals and dysfunctional institutions, further amplifying policy uncertainty (Dash *et al.*, 2021; Fasanya *et al.*, 2021; Haldar and Sethi, 2021). Frequent policy reversals from excessive government intervention can also undermine market confidence and increase EPU (Zhu and Yu, 2022).

In China, many banks are either partially or majority-owned by the central or local government. The dual role of Chinese banks as profit-driven entities and state policy tools further complicates the relationship between EPU and loan pricing. During periods of volatility, government pressure prompts banks to lower lending rates to stimulate economic growth, as seen during the recent pandemic and ongoing property market slowdown. State-owned banks, in particular, are mandated to support financially distressed firms, underdeveloped regions and strategic sectors to stabilize the economy and mitigate unemployment (Bailey *et al.*, 2011). These banks also exhibit procyclical lending behavior, increasing credit during economic downturns and reducing it during upswings (Panizza, 2023). Furthermore, research by Cheng *et al.* (2021) indicates that political uncertainty stimulates loan growth in Chinese city banks, especially those with higher government ownership and lower marketization. Such efforts to expand credit supply during uncertain economic periods exert downward pressure on bank loan pricing. SOEs in China do not reduce their investments and borrowing in response to EPU unlike private firms (Liu and Zhang, 2020), suggesting the presence of such strong government intervention that insulates SOEs from market volatility. This reduces the default risk premium that would otherwise be charged. Additionally, during these uncertain periods, deposit inflows are expected as Chinese banks, with government backing, are considered safe havens for investors' money. This increases the supply of funds, which lowers the cost of funds and subsequently reduces interest rates on loans. Therefore, we hypothesize:

H1. Increased EPU is related to decreased loan prices in Chinese banks.

2.3 The impact of inflation on loan price

Higher inflation expectations can raise borrowing costs through several mechanisms. First, inflation increases the inflationary risk premium on loans to offset the expected erosion of the real value of loan returns. Second, higher expected inflation changes economic behavior. Individuals increase consumption, demand higher wages and shift investments from deposits to higher-return assets (Binder and Brunet, 2022; Niizeki and Hori, 2023; Pattanaik *et al.*, 2020; Premik and Stanisławska, 2017). Consequently, banks may experience higher deposit outflows during periods of high inflation and may increase deposit interest rates to preserve liquidity. To cover the additional cost of securing funds, banks raise loan prices. Similarly, firms raise prices, cut investments and seek more credit (Coibion *et al.*, 2020). This heightened demand for credit drives up loan interest rates. Third, as inflation rises, central banks typically raise benchmark lending rates to control economic overheating. This increase in benchmark rates raises the cost of borrowing for banks, which they then pass on to borrowers through higher loan prices. As a result, rising inflation expectations are typically linked to higher future interest rates (Ropele *et al.*, 2022; Dziwornu *et al.*, 2024; Dinh, 2020; Ashraf, 2021).

Contrary to prevailing economic theories, loan pricing might decline instead of rising when inflation spikes. This paradox occurs when inflation positively affects firm efficiency

(Tarkom and Ujah, 2023) or central banks keep interest rates low to avoid economic slowdowns, even amid inflation spikes. Some inflationary episodes are seen as temporary and do not necessitate rate hikes, especially when future inflation is expected to stabilize as demand and supply shocks ease. For instance, the US Federal Reserve maintained interest rates below 1% during the pandemic to support the economy. Despite inflationary spikes in various industries because of global supply chain disruptions and government stimulus checks, the Federal Reserve believed that the inflation was temporary (Santacreu and LaBelle, 2022). Additionally, inflation driven by rising asset prices, such as real estate, can negatively affect loan pricing. Higher asset values provide better collateral, a higher safety net in case of default, reducing lenders' perceptions of default risks and allowing for cheaper borrowing. The early 2000s housing bubble in the USA is an example, where rising house prices led to more subprime mortgages as lenders underestimated collateral risks (Goetzmann *et al.*, 2012).

In China, PBoC has actively adjusted monetary policies in response to rising inflation, marking a shift from a passive to an active anti-inflation stance since the early 2000s (Girardin *et al.*, 2017). This change was influenced by high inflation rates in the 1990s and China's integration into the global economy after joining the WTO in 2001, which necessitated stable monetary policies to manage trade and financial flows. As China's growth relies heavily on exports and manufacturing, controlling inflation is crucial for stabilizing the exchange rate and maintaining competitive exports. Additionally, the significant presence of fixed-income earners, particularly elderly pension recipients and employees of SOEs, increases lenders' perceptions of default risks during inflationary periods. Effective communication and policy actions by the PBoC are essential to reinforce perceptions of temporary inflation. Without clear policy signals, inflation may persist, leading to further interest rate hikes. Studies on China indicate that rising inflation increases banks' non-performing loans by lowering borrowers' income, reducing their ability to repay debt (Umar and Sun, 2018; Purwanto and Mei Ling, 2021). Tan and Floros (2012) found that inflation is significantly and positively related to bank profitability. This implies that Chinese banks tend to increase credit premiums during inflation hikes. Therefore, we hypothesize:

H2. Inflation exerts upward pressure on loan pricing in China.

2.4 The joint effects of economic policy uncertainty and inflation on loan price

So far, we have hypothesized that Chinese banks lower loan prices when EPU is higher but increase loan prices when inflation is higher. Now, we explore how EPU interacts with inflation to affect bank loan prices in China.

The theoretical relationship between EPU and inflation appears mixed. Increased economic uncertainty tends to reduce aggregate demand, exerting deflationary pressures (Leduc and Liu, 2016). On the other hand, individuals, households and firms base their future inflation expectations on past economic conditions and available information, which can influence actual inflation (Muth, 1961; Phelps, 1968). When economic conditions are uncertain, they may raise prices to offset higher potential risks, increasing inflation.

Most empirical studies, however, report a long-term positive impact of EPU on inflation. For instance, Athari *et al.* (2022) on Japan, Istrefi and Piloiu (2014) on the USA and Europe, Marasanti and Verico (2024) on ASEAN and Ashiru and Oladele (2023) on Nigeria confirm this positive relationship. In China, studies by Siming *et al.* (2019) for China and Ogbuabor *et al.* (2024) for four emerging economies, including China, found that rising EPU leads to higher inflation. Conversely, Wang (2023) discovered that a 1% increase in CPI results in a 35.2-point increase in EPU in China.

We argue that China, with its rapidly growing economy driven by exports and substantial foreign direct investment, faces high EPU. The PBoC, as an active anti-inflation authority, often raises interest rates to manage trade and financial flows during inflation. Studies on China, such as Siming *et al.* (2019) and Ogbuabor *et al.* (2024), show that rising EPU leads to higher inflation, while Wang (2023) found that increased inflation leads to higher EPU. This dual uncertainty causes Chinese banks to charge higher credit risk premiums because of the higher perceived risks during uncertain and inflationary periods, resulting in higher loan prices. Therefore, we expect the interaction of EPU and inflation to positively affect bank loan prices in China. We hypothesize:

H3a. Increased EPU amplifies the positive impact of inflation on bank loan prices in China.

H3b. Increased inflation dampens the negative impact of EPU on bank loan prices in China.

3. Methodology and data

3.1 Methodology

3.1.1 The impacts of economic policy uncertainty and inflation on bank loan pricing. According to market efficiency theory, which suggests that all available information is quickly reflected in pricing decisions (Ashraf and Shen, 2019; Francis *et al.*, 2014; Tran, 2021), we include EPU as a key independent variable in our loan pricing model to capture market sentiment and confidence in economic policies. Additionally, inflation affects the overall economic environment, influencing the risks associated with bank lending and the real interest rates banks aim for. Therefore, we also include inflation as another important independent variable. Our model, which aims to estimate the impacts of EPU and inflation on loan pricing for Chinese banks (*H1* and *H2*), is as follows:

$$LoanPricing_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 Inflation_t + \pi Control + \varepsilon_{i,t} \quad (1)$$

where i represents the bank and t represents the year. *LoanPricing* is loan price, which is proxied by the annual interest income to gross loans ratio. This ratio shows the average yearly interest rate charged by a Chinese bank on its loans. *EPU* is an index developed by Baker *et al.* (2016) to measure EPU through news analysis. *Inflation* is measured by the yearly consumer price index. *Control* represents a set of control variables. $\varepsilon_{i,t}$ is an idiosyncratic error term. β and π are parameters to be estimated.

China's EPU index measures policy-related economic uncertainty using articles from the *South China Morning Post* (SCMP). Articles are identified using three sets of keywords: (China, Chinese), (economy, economic) and (uncertain, uncertainty). These are further filtered for policy-related terms such as *policy, spending, budget, political, interest rates* and *reform*, along with governmental authority terms such as *government, Beijing, authorities*, or standalone terms such as *tax, regulation, central bank, People's Bank of China (PBoC), deficit* and *WTO*. To maintain consistency, the frequency of relevant articles is divided by the total number of monthly articles and normalized to a mean of 100. Because the frequency of EPU data is monthly while we use annual variables, the median EPU value for each year is applied in our main analysis.

The control variables include six bank-level factors (interest expense to liabilities, equity to assets, non-interest expenses to assets, loan loss provisions (LLP) to gross loans, loan to deposits and bank size measured by the logarithm of total assets) and one country-level

factor (GDP growth). These factors, widely recognized in the literature (Ashraf and Shen, 2019; Ge *et al.*, 2023), influence credit pricing decisions. Banks base loan pricing decisions on funding costs, operational efficiency, borrower default risk premiums and liquidity risk premiums. To account for funding costs, we include the ratio of interest expense to total liabilities, reflecting the average interest rate paid on liabilities, and the ratio of equity to assets, reflecting the capital structure. For operational expenses, we use the ratio of non-interest expenses to assets. Loans are low-liquidity assets, and a high loan-to-deposit ratio increases liquidity risk, which often requires a higher premium. To account for this risk, we include the loan-to-deposit ratio as a control variable in our analysis. Bank size is considered to account for the bank's industry position. Loans with higher default risks require banks to charge a higher premium to compensate for potential loan losses. To account for borrowers' default risk, we include the ratio of LLP to gross loans as a control variable. Finally, GDP growth is included to account for the demand for bank credit. The selection of these control variables is also consistent with relevant studies, including Ashraf (2021), Dang and Nguyen (2023) and Gong *et al.* (2022).

Moreover, the results may be influenced by biases from omitted variables, endogeneity issues because of reverse causality, or measurement errors in the EPU. To address these concerns, we test the sensitivity of the results through several steps. First, to mitigate variable omission bias, we include additional control variables, such as the banking sector concentration ratio (CR5) and the government 10-year bond yield (Govt Bond Yield), to account for structural changes in the banking sector. Second, to address endogeneity issues, we apply the one-step GMM system developed by Blundell and Bond (1998) with robust standard errors. Finally, to resolve potential measurement errors in the EPU, we use two alternative EPU measures: the mean SCMP EPU (calculated as the average of 12 monthly values) and the median EPU derived from two mainland Chinese newspapers, the Renmin Daily and the Guangming Daily, as constructed by Davis *et al.* (2019).

As the world's second-largest economy and a crucial trading partner for many nations, China is significantly impacted by global economic fluctuations. These fluctuations can lead to adjustments in lending rates for Chinese firms. To better understand this phenomenon, we also investigate how global EPU, measured by the median and mean of monthly global EPU, influences loan pricing by Chinese banks.

3.1.2 The impact of the interplay of economic policy uncertainty and inflation on bank loan pricing. To explore how EPU and inflation work together to influence bank loan prices (*H3*), we add an interaction term between inflation and EPU to equation (1), as shown below:

$$LoanPricing_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 Inflation + \beta_3 EPU_t \times Inflation + \pi Control_{i,t} + \varepsilon_{i,t} \quad (2)$$

To facilitate more meaningful interpretations, we center the data for *EPU* and *Inflation* at their respective means, resulting in adjusted variables denoted as *c.EPU* and *c.Inflation*.

In equation (2), the impact of EPU on loan price is represented by $\beta_1 + \beta_3 \times Inflation$, while the impact of inflation is represented by $\beta_2 + \beta_3 \times EPU$. Therefore, the significance and sign of β_1 β_2 and β_3 will provide evidence to either confirm or reject *H3*.

Specifically, if β_1 and β_3 are statistically significant and positive, it indicates that EPU positively influences bank loan pricing, with higher inflation strengthening this effect. Conversely, if both coefficients are negative and statistically significant, it suggests that increased EPU reduces bank loan pricing, and higher inflation exacerbates this negative impact. If both coefficients are significant with β_1 negative and β_3 positive, EPU negatively impacts loan pricing, and increased inflation mitigates this effect; while if β_1 is positive and

β_3 is negative, EPU positively affects loan pricing, and higher inflation weakens this positive impact.

Similarly, if β_2 and β_3 are statistically significant and positive, inflation increases loan prices, and increased EPU amplifies this increase. Conversely, if both coefficients are negative and significant, inflation negatively correlates with loan prices, and higher EPU strengthens this negative correlation. If the coefficients are significant with opposite signs, it indicates an offsetting effect of EPU on the inflation-loan pricing relationship.

The selection of the estimator for equations (1) and (2) involves several tests, including the Breusch–Pagan, Hausman and *F*-tests. The standard error for the estimator is determined using multiple diagnostic tests, such as the Modified Wald test for heteroskedasticity, the Pesaran test for cross-sectional dependence and the Wooldridge test for autocorrelation.

3.2 Data

Table A1 in the Appendix outlines the description, measurement and source of data for all variables used in this study. Table 1 presents the summary statistics for the variables used in this study, based on a sample of 1,625 observations from 132 Chinese banks (only banks with at least five consecutive years of data are included in the sample). These banks include the "Big Four" state-owned banks, 13 joint-stock commercial banks, and 115 city commercial banks. The period from 2005 to 2022 was chosen for several reasons. First, data on many Chinese banks are not available before 2005, making it difficult to include earlier years. Second, this period covers major economic and policy events in China, such as the post-WTO accession era (2001), the global financial crisis (2008–2009), the US–China trade war (2018–2020) and the COVID-19 pandemic (2020–2022) (Liu, 2024). It also includes key initiatives such as industrialization (1990s–2010s), the Belt and Road Initiative (2013), the launch of "Made in China 2025" (2015) and efforts to rebalance the economy (2010s–2020s) (Zhang and Lan, 2023; Cavanna, 2019). These changes required significant adjustments to monetary and fiscal policies, causing EPU variability, which shaped the banking sector during this time. Despite these challenges, China experienced strong economic growth, averaging 7.08% per year, while keeping inflation low and stable (2.24% per year). This period provides a solid foundation for studying how EPU and inflation affect loan pricing in Chinese banks.

The table shows that Chinese banks charge an average interest rate of 9.44% on gross loans, with a wide range from 1.99% to 60.3% and a standard deviation of 3.44%. This

Table 1. Summary statistics of the deployed variables

Variables	Mean	SD	Min	Max
Loan price	9.442	3.445	1.987	60.304
Chinese EPU SCMP median	367.959	251.811	62.741	756.088
Global EPU PPP median	179.776	75.087	61.669	326.776
Inflation	2.239	1.197	−0.728	5.925
Interest expense to liabilities	2.450	1.001	0.474	25.641
Equity to assets	7.189	2.720	−13.714	65.187
Non-interest expenses to assets	0.997	0.397	0.096	4.273
LLP to gross loans	1.251	0.741	−0.115	6.242
Loan to deposits	68.958	68.774	12.354	1,430.890
Bank size	218,313.211	645,512.505	232.389	5,742,860.425
GDP growth	7.076	2.561	2.239	14.231

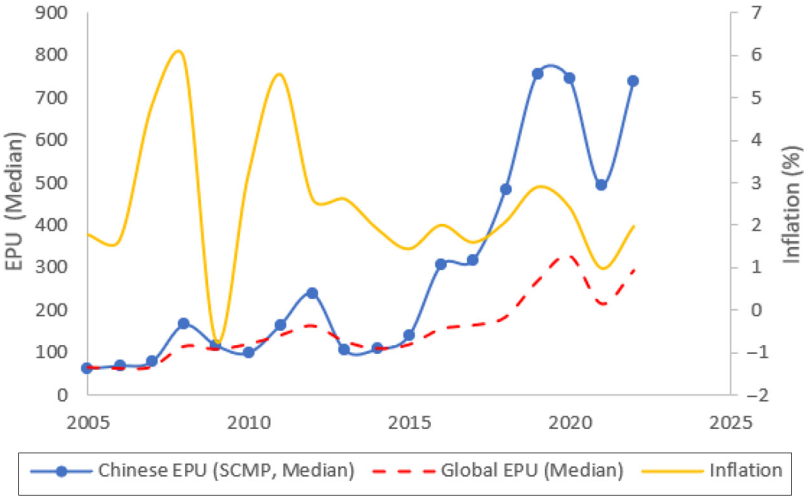
Source(s): Authors' own work

highlights significant differences in lending practices among commercial banks in China. The average EPU in China is 367.96, with a peak of 756.09 in 2019 during the COVID-19 pandemic, a period marked by strict regulations, lockdowns and an economic slowdown (Ullah *et al.*, 2023). Inflation in China has been relatively stable, with a standard deviation of 1.20%. It reached a high of 5.93% in 2008 before dropping sharply to −0.73% in 2009 because of the global financial crisis, which reduced global demand and slowed China's export-driven economy (Zhang, 2011).

The control variables also show significant variation. On average, Chinese banks pay 2.45% on liabilities and fund 7.2% of their assets with equity. They incur non-interest expenses equal to 1% of their assets and set aside provisions of 1.25% for gross loans. Additionally, they use 68.96% of customer deposits to fund loans. From 2005 to 2022, China's average GDP growth rate was 7.08%.

Figure 1 shows a strong similarity in the movement patterns of Chinese EPU, global EPU and inflation, suggesting an interaction between EPU and inflation. The high correlation coefficient between Chinese EPU and global EPU (0.93) indicates significant exposure of the Chinese economy to global economic conditions.

Table 2 presents the pairwise correlation coefficients for the variables in equation (1). The low correlation coefficients among all variables suggest a low risk of multicollinearity in the multivariate analysis. The table reveals a negative correlation between EPU and loan price (coefficient = −0.173) and a positive correlation between inflation and loan price (coefficient = 0.003), aligning with *H1* and *H2*. Additionally, loan price shows positive correlations with interest expenses on assets, non-interest expenses to assets and loan loss provisions to gross loans. This suggests that banks may transfer the costs of maintaining deposits, operational expenses and credit risk premiums to borrowers. A negative correlation is observed between loans to deposits and loan price, indicating that banks may lower loan prices to increase credit volume in China. However, these correlations should be interpreted cautiously until further regression analysis with control variables is performed.



Source(s): Authors' own work

Figure 1. Median Chinese EPU (SCMP), global EPU and inflation from 2005 to 2022

Table 2. Pairwise correlations between deployed variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Loan price	1.000									
(2) EPU SCMP median	−0.173***	1.000								
(3) Inflation	0.003	−0.063**	1.000							
(4) Interest expense to liabilities	0.813***	0.097***	−0.042*	1.000						
(5) Non-interest expenses to assets	0.074***	−0.398***	0.130***	−0.070***	1.000					
(6) LLP to gross loans	0.075***	0.312***	−0.147***	−0.008	−0.067***	1.000				
(7) Equity to assets	−0.005	0.131***	−0.065***	0.016	0.080***	0.140***	1.000			
(8) Loan to deposits	−0.150***	0.045*	0.029	0.023	−0.143***	−0.077***	0.068***	1.000		
(9) Bank size	−0.175***	0.123***	−0.005	−0.093***	−0.302***	−0.027	−0.170***	0.189***	1.000	
(10) GDP growth	0.019	−0.763***	0.189***	−0.120***	0.276***	−0.310***	−0.170***	0.042*	−0.073***	1.000

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work

4. Empirical results

4.1 The impact of economic policy uncertainty and inflation on bank loan pricing in China

We first conducted a preliminary investigation into the potential effects of EPU and inflation on loan prices using the Granger causality test for panel data proposed by Dumitrescu and Hurlin (2012), with lag selection guided by the Akaike Information Criterion (AIC). The results, presented in Table A2 in the Appendix, show a rejection of the null hypothesis, indicating that the lags of EPU and inflation significantly impact the current value of loan prices. This provides evidence of a causal impact of EPU and inflation on loan prices in Chinese banks without control variables.

Part A of Table 3 shows the results of tests for selecting the appropriate estimator for panel data models. The Breusch–Pagan test favors random effects over pooled ordinary least square (OLS). However, the *F*-test indicates potential bias in both pooled OLS and random effects because of significant fixed effects. The Hausman test confirms that fixed effects are generally more suitable. Therefore, we use a fixed-effects estimator to account for unobserved bank-specific characteristics.

We then check the residuals of the fixed effects models for heteroskedasticity, cross-sectional dependence and autocorrelation (Part B). The tests confirm the presence of these issues. The results are consistent across different measures of both local and global EPUs. To address these problems, we use the fixed effects estimator with Driscoll and Kraay (1998) standard errors. The outcomes are presented in Table 4.

In Table 4, Column 1 presents the main results on the effects of China's EPU and inflation on loan pricing, with EPU measured by the median of monthly EPU from the SCMP. The estimated coefficient for EPU is negative and statistically significant, supporting our first hypothesis (*H1*) that higher EPU leads to lower loan pricing. This finding diverges from classical finance theory supported by prior empirical studies, such as Ashraf (2021), who examined bank data from 88 countries; Gong *et al.* (2022), who analyzed firm-level data in 18 major economies; Tran and Phan (2022), who used firm-level data from the US; and

Table 3. Diagnosis tests

Part A: Tests for selecting an appropriate estimator			
Tests	Breusch and pagan test for random effects	*F*-test for fixed effects	Hausman test for random effects versus fixed effects
EPU SCMP median	723.25***	7.41***	49.64***
EPU SCMP mean	673.49***	7.05***	48.61***
EPU mainland median	732.82***	7.49***	58.07***
Global EPU median	699.62***	7.23***	55.28***
Global EPU mean	679.68***	7.19***	60.70***
Part B: Residual tests			
Tests	Modified wald test for heteroskedasticity	Pesaran test for cross-sectional dependence	Wooldridge test for autocorrelation
EPU SCMP median	7,965.79***	56.04***	193.73***
EPU SCMP mean	6,548.55***	75.22***	196.40***
EPU mainland median	6,903.25***	55.51***	195.89***
Global EPU median	10,631.23***	63.80***	195.38***
Global EPU mean	8,046.24***	71.39***	196.30***

Note(s): The table presents the test statistics; *** indicates 1% level of significance
Source(s): Authors' own work

Table 4. The impact of EPU and inflation on bank loan pricing in China

	China's EPU						Global EPU			
	Med EPU SCMP		*Mean EPU SCMP*		*Med EPU mainland*		*Global med EPU*		*Global mean EPU*	
	(1)		*(2)*		*(3)*		*(4)*		*(5)*	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
c.EPU	−0.009***	0.001	−0.009***	0.002	−0.019***	0.002	−0.033***	0.004	−0.035***	0.004
c.Inflation	0.346**	0.134	0.318**	0.127	0.295*	0.158	0.384**	0.154	0.398**	0.150
Interest expense to liabilities	2.684***	0.149	2.685***	0.150	2.689***	0.153	2.672***	0.159	2.668***	0.162
Non-interest expenses to assets	−0.047	0.414	0.086	0.508	0.265	0.327	0.481	0.343	0.190	0.373
LLP to gross loans	0.605***	0.157	0.646***	0.170	0.536***	0.184	0.392*	0.205	0.439**	0.205
Equity to assets	−0.012	0.028	−0.011	0.029	−0.007	0.029	−0.021	0.034	−0.015	0.035
Loan to deposits	−0.006	0.004	−0.007	0.004	−0.007	0.004	−0.007	0.004	−0.007*	0.004
Bank size	0.500	0.316	0.544	0.359	0.574	0.375	0.506	0.368	0.599	0.375
GDP growth	−0.242**	0.093	−0.199*	0.096	−0.195**	0.087	−0.434***	0.078	−0.412***	0.090
Constant	−0.843	3.795	−1.747	4.116	−2.197	4.345	0.322	4.093	−0.592	4.194
Observations	1,625		1,625		1,625		1,625		1,625	

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work

Dang and Nguyen (2023), who studied banks in Vietnam, that higher uncertainty increases credit premiums. Our finding highlights the critical role of state intervention in shaping bank behavior in China. During periods of elevated EPU, the Chinese government appears to prioritize economic stability by encouraging banks to reduce loan prices. Banks may be incentivized – or even compelled – to suppress risk premiums to align with government objectives, such as fostering economic growth or stabilizing employment. This result also aligns with the flight-to-safety theory, which suggests that during uncertain periods, Chinese banks may benefit from increased deposit inflows because of their perceived stability under strong government backing. These inflows can lower funding costs, enabling banks to offer lower loan prices.

The positive and statistically significant coefficient for inflation indicates that inflation puts upward pressure on bank loan pricing, supporting our second hypothesis (*H2*). This finding suggests that Chinese banks adjust loan prices to account for increased credit risk caused by increased inflation and to ensure they maintain real returns during inflationary periods. This behavior is consistent with traditional economic theory, such as the Fisher Effect, which predicts that lenders raise nominal interest rates to counter the impact of inflation. Additionally, our finding aligns with previous studies, such as those by Ashraf *et al.* (2021) for banks in 35 emerging economies (including China), Dinh (2020) for banks in China and Europe and Tan and Floros (2012) for banks in China, which all found that Chinese banks tend to increase credit premiums during high inflation periods to protect their real returns and offset potential loan losses.

The positive and statistically significant coefficients of both the interest expense to liabilities ratio and the LLP to gross loans ratio align with theoretical expectations. These ratios reflect the credit-related expenses banks incur. To maintain profit margins, banks pass these increased funding costs and credit losses on to borrowers by raising loan prices. The findings are also in line with studies by Ashraf (2021) using a bank-level data set from 88 countries, including China. Conversely, the coefficients for the non-interest expense to assets ratio, equity to assets ratio, loan to deposits ratio and bank size are not statistically significant. This suggests that loan pricing in Chinese banks is not significantly influenced by operational efficiency, equity levels, liquidity conditions, or bank size. One possible explanation is that many Chinese banks, particularly those with significant central or local state ownership, benefit from implicit government guarantees. These banks often need to balance profit generation with government directives, which may make factors such as equity levels, liquidity conditions, bank size and operational efficiency less important in their loan pricing decisions (Yeung, 2021). As a result, the risk profiles associated with these variables may have a limited impact on how they price loans. The GDP growth rate shows a negative and statistically significant coefficient. This implies that during economic expansions, creditors perceive lower risks, leading to reduced borrowing costs for their clients. The finding is consistent with the study by Dang and Nguyen (2023) on Vietnamese banks.

In addition, Columns 2 and 3 in Table 4 presents the results for the impact of China's EPU and inflation on loan prices. Column 2 uses the mean of monthly EPU based on the SCMP, while column 3 uses the median of monthly EPU from a mainland newspaper. We observe that the results are consistently robust across these different measures of China's EPU.

Next, we examine how global EPU, measured using the median and mean of monthly global EPU, affects loan pricing by Chinese banks. The results, shown in Columns 4 and 5 of Table 4, indicate that the coefficients for global EPU are consistently negative and statistically significant. This suggests that, similar to the effect of local EPU, Chinese banks

lower loan prices during periods of increased global economic uncertainty to support the domestic economy.

4.2 The joint impacts of economic policy uncertainty and inflation on loan pricing in China

We use equation (2), which includes the interaction term *EPU* × *Inflation*, to examine how EPU and inflation together influence loan pricing by Chinese banks. The main findings are presented in column 1 of Table 5. The coefficients for EPU and inflation retain their expected signs and statistical significance, as observed in equation (1), with EPU showing a negative effect and inflation a positive one.

Importantly, the coefficient for the interaction term *EPU* × *Inflation* is positive and statistically significant. This indicates that under higher inflation, the tendency of Chinese banks to lower interest rates in response to increased EPU is less pronounced. In other words, while the government may pressure banks to reduce lending rates during periods of high EPU, inflationary pressures offset this effect. This aligns with economic theory, which suggests that inflation erodes the real value of returns, prompting creditors and lenders to raise interest rates to preserve the purchasing power of their loan returns.

The positive interaction also suggests that higher EPU strengthens the impact of inflation on loan prices. This could be because inflation, which naturally increases credit risk, becomes even more worrisome during periods of economic uncertainty. As a result, banks may raise loan prices more significantly to offset the combined risks. This finding is consistent with studies by Siming *et al.* (2019) and Wang and Weng (2024) for China, which suggest that rising EPU leads to higher inflation in China. This, in turn, amplifies the impact of inflation on loan prices in Chinese banks. The findings support our third hypothesis (*H3a* and *H3b*).

We test the robustness of our results by taking several steps. First, to address concerns about the EPU measure, we use alternative measures of local and global EPU. The results, shown in Columns 2, 3 and 5 of Table 5, indicate that the findings on the individual and combined effects of EPU and inflation remain consistent across different EPU measures.

Second, to address concerns about omitted variables, we added two additional control variables that capture structural changes in the banking sector: CR5 and Govt Bond Yield. The results, presented in Tables 3 and 4 in the Appendix, confirm the negative impact of EPU, the positive impact of inflation and the combined positive effect of EPU and inflation on loan prices.

Finally, to address endogeneity concerns from reverse causality, we used the one-step GMM system by Blundell and Bond (1998) with robust standard errors. We instrumented the lagged dependent variable with "GMM-style" instruments and treated other variables as exogenous. Given the unbalanced panel data and autoregressive model, we used the orthogonal deviations transformation, which accounts for potential bank-level fixed effects. GMM is preferred because it handles endogeneity with internal instruments (lagged variables) and captures the persistence in loan pricing over time. The results in Table A5 in the Appendix confirm the robustness of our findings.

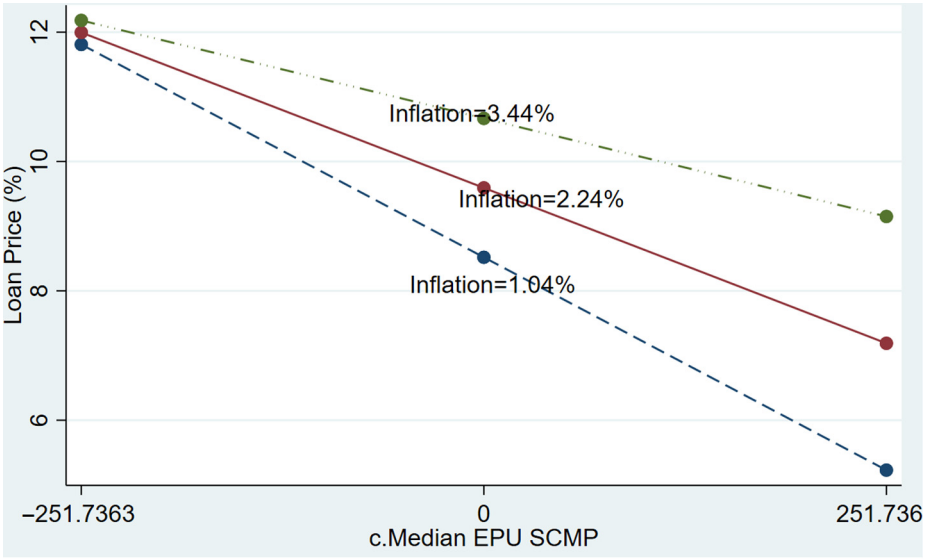
Figure 2 shows the predicted marginal effects of Chinese EPU on loan prices at three inflation levels: the average inflation rate from 2005 to 2022 (2.24%), one standard deviation above the average (3.44%) and one standard deviation below the average (1.04%). The EPU values have been centered, with −251.74, 0 and 251.74 on the centered EPU (c.EPU) axis corresponding to actual EPU values of 116.20, 367.93 and 619.66, respectively. The figure illustrates that the downward slopes of the lines become less steep as inflation increases, showing a weaker negative effect of EPU on loan prices under higher inflation.

Additionally, Column 1 of Table 6 predicts the marginal effects of Chinese EPU on loan prices. It reveals that as inflation rises from 1.04% to 2.24% and then to 3.44%, the negative

Table 5. The impact of EPU on the relations of inflation and Chinese banks' loan price

	China's EPU						Global EPU			
	Med EPU SCMP		*Mean EPU SCMP*		*Med EPU mainland*		*Global med EPU*		*Global mean EPU*	
	(1)		*(2)*		*(3)*		*(4)*		*(5)*	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
c.EPU	−0.010***	0.001	−0.010***	0.001	−0.019***	0.002	−0.033***	0.002	−0.034***	0.003
c.Inflation	0.897***	0.071	0.979***	0.071	0.674***	0.138	0.731***	0.148	0.694***	0.162
c.Inflation × c.EPU	0.003***	0.000	0.003***	0.000	0.006***	0.002	0.007***	0.002	0.006**	0.002
Interest expense to liabilities	2.675***	0.153	2.674***	0.155	2.685***	0.156	2.670***	0.159	2.667***	0.162
Non-interest expenses to assets	−0.222	0.340	−0.221	0.393	0.160	0.313	0.422	0.350	0.141	0.381
LLP to gross loans	0.514***	0.134	0.550***	0.141	0.455***	0.155	0.356*	0.187	0.405**	0.190
Equity to assets	0.004	0.029	0.011	0.031	0.005	0.032	−0.013	0.036	−0.007	0.037
Loan to deposits	−0.005	0.003	−0.006	0.004	−0.006	0.003	−0.006	0.004	−0.007*	0.004
Bank size	0.965***	0.226	1.131***	0.233	0.924**	0.354	0.766*	0.376	0.839**	0.383
GDP growth	−0.126*	0.063	−0.077	0.054	−0.056	0.115	−0.332***	0.097	−0.315**	0.114
Constant	−6.364**	2.768	−8.477***	2.749	−6.727	4.356	−3.098	4.280	−3.751	4.416
Observations	1,625		1,625		1,625		1,625		1,625	

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work



Source(s): Authors' own work

Figure 2. The marginal effects of the EPU on Chinese banks' loan price

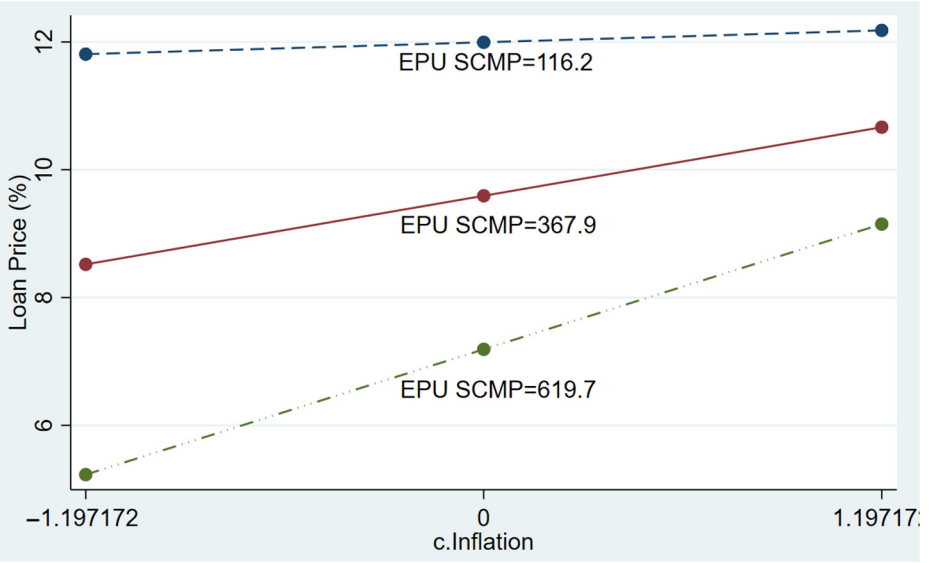
Table 6. The predicted marginal effects of EPU and inflation on Chinese banks' loan price

Marginal effect of EPU on loan price (1)		Marginal effect of inflation on loan price (2)	
Inflation = 1.04%	−0.0131*** (−14.5853)	Median EPU SCMP = 116.20	0.1554** (2.0811)
Inflation = 2.24%	−0.0095*** (−15.1158)	Median EPU SCMP = 367.93	0.8966*** (12.5890)
Inflation = 3.44%	−0.0060*** (−12.0671)	Median EPU SCMP = 619.66	1.6377*** (13.0229)

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively; standard errors in parentheses
Source(s): Authors' own work

impact of EPU on loan prices decreases from 1.31% to 0.95% and further to 0.60%. These reductions in the negative effect are all statistically significant at the 1% level.

Figure 3 shows the predicted marginal effects of inflation on Chinese banks' loan prices as Chinese EPU changes from 116.2 (one standard deviation below the mean) to 367.9 (the mean), and then to 619.7 (one standard deviation above the mean). The steeper upward trend in the figure indicates that Chinese banks tend to raise loan prices more in response to inflation when EPU is higher.



Source(s): Authors' own work

Figure 3. The marginal effects of the inflation on Chinese banks' loan price

As shown in column 2 of Table 6, as Chinese EPU increases from 116.2 to 367.9 and then to 619.7, the marginal positive effects of inflation on loan prices increase from 0.15% to 0.90% and then to 1.64%, all at a 1% significance level.

4.3 Further investigation

We further divide the data set into two subsets based on bank type:

(1) the Big Four and joint-stock commercial banks; and

(2) city commercial banks, to determine if there is a difference in loan pricing decisions between these two groups.

The results, presented in Table 7, show a consistent negative impact of local and global EPU, a positive impact of inflation and positive combined effects of EPU and inflation across both bank groups. One possible explanation is that the central government has partial ownership of the Big Four and joint-stock commercial banks, while the local government holds partial ownership of city commercial banks. Consequently, their loan pricing decisions tend to be influenced by the central government, either directly or indirectly, in the same direction.

5. Conclusion and policy implications

5.1 Conclusion

This study explores the individual and combined effects of EPU and inflation on bank loan pricing in China, a rapidly growing market with significant government involvement in its banking system. Using the fixed effects estimator with Driscoll and Kraay (1998) standard errors on a data set of 132 Chinese banks from 2005 to 2022, we found that both local and global EPU negatively impact bank loan pricing, while inflation has a positive effect. Our

Table 7. The individual and joint effects of local and global EPU and inflation on loan price by bank types

	The big four and joint stock commercial banks								City commercial banks							
	China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*	
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
c.EPU	−0.005***	0.001	−0.019***	0.002	−0.005***	0.000	−0.018***	0.001	−0.003***	0.001	−0.010***	0.003	−0.004***	0.001	−0.011***	0.003
c.Inflation	0.159**	0.060	0.194***	0.063	0.553***	0.086	0.400***	0.084	0.203**	0.088	0.191**	0.081	0.357***	0.094	0.226***	0.044
c.Inflation × c.EPU					0.002***	0.000	0.003***	0.001					0.001*	0.000	0.001	0.001
Interest expense to liabilities	2.198***	0.301	2.083***	0.344	2.126***	0.334	2.083***	0.369	2.649***	0.140	2.645***	0.141	2.649***	0.141	2.645***	0.142
Non-interest expenses to assets	1.177**	0.411	1.993***	0.528	0.942**	0.390	1.884***	0.507	1.365***	0.213	1.615***	0.178	1.249***	0.236	1.599***	0.191
LLP to gross loans	0.493**	0.215	0.266	0.261	0.438*	0.217	0.279	0.252	0.452***	0.119	0.383***	0.125	0.435***	0.116	0.379***	0.125
Equity to assets	−0.060	0.043	−0.081	0.053	−0.035	0.038	−0.071	0.050	0.039	0.028	0.040	0.030	0.039	0.029	0.040	0.030
Loan to deposits	−0.001	0.001	−0.001	0.001	−0.001	0.001	−0.000	0.001	−0.120***	0.014	−0.126***	0.014	−0.115***	0.017	−0.125***	0.015
Bank size	0.632*	0.326	0.868**	0.331	0.891***	0.290	0.980***	0.315	0.568***	0.161	0.530***	0.171	0.698***	0.139	0.555***	0.153
GDP growth	−0.082	0.107	−0.183	0.113	−0.002	0.110	−0.122	0.116	−0.063	0.048	−0.110	0.069	−0.043	0.046	−0.103	0.070
Constant	−6.070	5.106	−8.630	5.270	−9.820*	4.746	−10.556*	5.110	3.214	1.916	4.105**	1.689	1.600	1.954	3.765**	1.450
Observations	280		280		280		280		1,345		1,345		1,345		1,345	

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work

results also show that higher inflation weakens the negative relationship between EPU and loan pricing, while greater EPU strengthens the impact of inflation on loan prices. Additionally, the interest expense to liabilities ratio and the LLP to gross loans ratio both increase loan prices, while the GDP growth rate decreases them. These results hold true when we divide the data into two bank groups:

(1) the Big Four and joint-stock commercial banks; and

(2) city commercial banks.

The findings remain consistent across various sensitivity tests, including using alternative EPU measures, adding control variables and applying a different GMM estimator.

5.2 Policy implications

This study provides valuable insights into how EPU and inflation affect loan pricing strategies. It reveals that Chinese banks tend to lower loan prices during uncertain times, which contrasts with traditional finance theories that suggest higher uncertainty leads to higher credit risk premiums. This behavior, likely influenced by government intervention, offers a new perspective on loan pricing in state-driven financial systems. Additionally, the study supports economic theories such as the Fisher effect by showing that banks adjust loan prices in response to inflation. The interaction between inflation and EPU also offers new insights into how banks adjust their pricing under combined inflationary and uncertain conditions, contributing to a better understanding of these dynamics.

The findings also have important policy implications. First, while government intervention to lower loan prices during uncertain times may provide short-term stability, policymakers must balance this with the long-term health of the financial sector. Ongoing pressure to reduce loan prices could hurt bank profitability and capital reserves, increasing systemic risks. Therefore, policymakers should monitor the impact of such measures on financial stability.

Second, because inflation raises loan prices, policymakers should focus on aligning fiscal and monetary policies to control inflation. If inflation drives loan prices too high, it could limit credit access, particularly for small businesses and consumers, which could slow economic growth.

Finally, because higher EPU amplifies the effect of inflation on loan prices, Chinese banks should adopt flexible loan pricing strategies that account for both inflation and policy uncertainty. To support credit access, especially for vulnerable sectors such as small businesses, export industries and real estate, policymakers should work to reduce EPU by ensuring stable and transparent policies. Clear communication from the PBoC and other regulators regarding future policies can help reduce uncertainty. Additionally, targeted interventions such as temporary interest rate caps, subsidies, or credit guarantees could help ease borrowing costs and maintain credit flow during periods of high EPU and inflation.

Overall, these insights can help banks improve their loan pricing and risk management strategies; assist investors and borrowers in making informed decisions during uncertain and inflationary times; and guide policymakers in balancing socio-economic stability with financial stability. This approach can help mitigate negative impacts on the banking sector and the broader economy.

5.3 Study limitations and future research

This study highlights the significant role of government intervention in shaping how uncertainty affects loan pricing decisions. However, it also points out the need to measure the

extent of this intervention to better understand the balance between market forces and government-driven adjustments. The lack of such a measure in this analysis limits our understanding of how state influence specifically impacts loan pricing during uncertain times. This creates an opportunity for future research to explore the degree of state intervention in the relationship between EPU and loan pricing. Additionally, future studies could examine whether the degree of state ownership in banks strengthens or weakens the effects of uncertainty on loan prices.

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Corresponding author
Thanh Nguyen can be contacted at: nguyen.thanh@jcu.edu.au

Appendix

Table A1. Variable description

Variables	Description/measurement	Data source
Dependent variable		
Loan price	Equals the annual ratio of interest income to gross loans for each bank (%)	Bloomberg
Main independent variable		
EPU	An EPU index developed by Baker *et al.* (2016) that tracks policy-related economic uncertainty using data from the South China Morning Post (SCMP). The index frequency is monthly, and for our main analysis, we use the median EPU value for each year	Baker *et al.* (2016) https://policyuncertainty.com/
Inflation	Equals the annual percentage change in consumer prices in China (%)	World development indicators database, world bank
Independent control variables		
Interest expense to liabilities	Equals the annual ratio of interest expense to total liabilities for each bank (%)	Bloomberg
Equity to assets	Equals the annual ratio of total equity to total assets for each bank (%)	Bloomberg
Non-interest expenses to assets	Equals the annual ratio of non-interest expenses to total assets for each bank (%)	Bloomberg
LLP to gross loans	Equals the ratio of loan loss provision to gross loans for each bank (%)	Bloomberg
Loan to deposits	Equals the ratio of gross loans to total deposits (%)	Bloomberg
Bank size	Equals the natural logarithm of the annual total assets of each bank (US$)	Bloomberg
GDP growth	Equals the year-on-year annual GDP growth rate for China	World development indicators database, world bank

Source(s): Authors' own work

Table A2. Granger causality test

	Coef.
H0: X does not Granger-cause Y.	
H1: X does Granger-cause Y	
EPU → Loan price	
EPU SCMP median	12.1183***
EPU SCMP mean	11.7586***
EPU mainland median	13.2068***
Global EPU median	5.6714***
Global EPU mean	6.6278***
Inflation → loan price	−2.0016**

Note(s): ** and *** indicate 5 and 1% levels of significance, respectively
Source(s): Authors' own work

Table A3. The individual and joint impacts of EPU and inflation on loan price (adding CR5)

	China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
c.EPU	−0.009***	0.001	−0.032***	0.003	−0.010***	0.001	−0.032***	0.003
c.Inflation	0.324**	0.120	0.359**	0.143	0.969***	0.100	0.670***	0.170
c.Inflation × c.EPU					0.003***	0.000	0.006*	0.003
Interest expense to liabilities	2.683***	0.149	2.666***	0.163	2.677***	0.152	2.666***	0.162
Non-interest expenses to assets	−0.201	0.514	0.084	0.380	−0.428	0.455	0.041	0.412
LLP to gross loans	0.628***	0.155	0.454**	0.190	0.581***	0.139	0.452**	0.181
Equity to assets	−0.009	0.028	−0.010	0.032	0.015	0.029	0.000	0.034
Loan to deposits	−0.006	0.004	−0.005	0.003	−0.005	0.003	−0.005	0.003
Bank size	0.596*	0.322	0.726**	0.320	1.199***	0.231	0.991**	0.351
GDP growth	−0.258**	0.107	−0.480***	0.102	−0.068	0.076	−0.360**	0.133
CR5	0.019***	0.006	0.035***	0.005	0.019***	0.006	0.035***	0.005
Constant	−2.864	4.027	−3.638	3.805	−10.497***	2.785	−7.380*	4.198
Observations	1,493		1,493		1,493		1,493	

Note(s): ***, ** and * indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work

Table A4. The individual and joint impacts of EPU and inflation on loan price (adding gov bond yield)

	China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
c.EPU	−0.010***	0.001	−0.038***	0.003	−0.011***	0.001	−0.039***	0.003
c.Inflation	0.411***	0.113	0.488***	0.128	1.025***	0.077	0.909***	0.154
c.Inflation × c.EPU					0.003***	0.000	0.008***	0.002
Interest expense to liabilities	2.696***	0.144	2.686***	0.154	2.690***	0.146	2.686***	0.154
Non-interest expenses to assets	0.063	0.372	0.622**	0.276	−0.104	0.318	0.572*	0.288
LLP to gross loans	0.664***	0.141	0.439**	0.187	0.577***	0.112	0.403**	0.158
Equity to assets	−0.009	0.025	−0.018	0.029	0.009	0.025	−0.007	0.031
Loan to deposits	−0.006	0.004	−0.007	0.004	−0.005	0.003	−0.006	0.004
Bank size	0.543*	0.291	0.580*	0.306	1.059***	0.186	0.896**	0.324
GDP growth	−0.251**	0.094	−0.494***	0.075	−0.126**	0.045	−0.382***	0.111
Govt bond yield	−0.673***	0.188	−0.898***	0.294	−0.820***	0.144	−1.021***	0.271
Constant	0.842	3.453	2.770	3.645	−4.809**	2.265	−0.904	4.157
Observations	1,625		1,625		1,625		1,625	

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work

Table A5. The individual and joint impacts of EPU and inflation on loan price by GMM

	China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*		China's EPU *Med EPU SCMP*		Global EPU *Global med EPU*	
EPU measures	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*	*Coef.*	*Std. err*
L.Loan price	0.072***	(0.027)	0.060***	(0.022)	0.244**	(0.122)	0.277*	(0.143)
c.EPU	−0.008***	(0.001)	−0.029***	(0.003)	−0.007***	(0.001)	−0.021***	(0.005)
c.Inflation	0.323***	(0.045)	0.341***	(0.044)	0.621***	(0.113)	0.470***	(0.087)
c.Inflation × c.EPU					0.002***	(0.001)	0.004***	(0.001)
Interest expense to liabilities	2.718***	(0.133)	2.713***	(0.142)	2.639***	(0.187)	2.629***	(0.202)
Non-interest expenses to assets	−0.296	(0.572)	0.111	(0.490)	−0.327	(0.454)	0.204	(0.381)
LLP to gross loans	0.496***	(0.163)	0.279	(0.172)	0.338**	(0.164)	0.215	(0.170)
Equity to assets	−0.095*	(0.049)	−0.121**	(0.051)	−0.073*	(0.041)	−0.101**	(0.042)
Loan to deposits	−0.005	(0.004)	−0.005	(0.005)	−0.005	(0.003)	−0.005	(0.004)
Bank size	0.249	(0.181)	0.221	(0.187)	0.352	(0.257)	0.079	(0.243)
GDP growth	−0.250***	(0.031)	−0.451***	(0.049)	−0.117***	(0.027)	−0.224***	(0.066)
p-Value of AR1/AR2	0.001 / 0.26		0.011 / 0.12		0.003 / 0.691		0.002 / 0.947	
p-Value of Hansen	0.769		0.835		0.593		0.684	
No. of observations	1,229		1,229		1,361		1,361	

Note(s): ***, ** and *indicate 1, 5 and 10% levels of significance, respectively
Source(s): Authors' own work