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Do Geopolitical Risk and Economic Uncertainty Harm Bank Credit? (Evidence From the Indonesian Bank)

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ABSTRACT

This study examines how economic uncertainty and geopolitical risks affect credit growth. It analyzes data from 47 Indonesian banks from 2008 to 2022. The study employs purposive sampling to select 47 Indonesian banks based on loan and financial data availability, resulting in 456 observation data. Economic uncertainty and geopolitical risk significantly reduce overall bank credit growth. Further investigation into different proxies of independent variables derived from various regression model specifications has a robust result indicating the negative impact on credit growth. The analysis highlights that lagged economic uncertainty and geopolitical risk values continue to impact current credit growth dynamics, emphasizing their persistent effects. Robustness tests further support these findings, confirming the negative impact of lagged economic uncertainty and geopolitical risk on credit growth. Based on the results, the study contributes to the literature on the effects of economic uncertainty and geopolitical risks on credit growth, supporting the real options theory and the precautionary motive hypothesis. It offers key policy recommendations: reduce economic uncertainty and geopolitical risk, monitor and manage their persistent impacts, strengthen financial system resilience through robust regulation, and promote sustainable economic growth via infrastructure investment, innovation, and structural reforms.

Keyword: *Credit Growth, Economic Uncertainty, Geopolitical Risk*
JEL Classification: *E50 E52 D81 G21*

INTRODUCTION

In the global economy, credit growth has a very important role as a leading indicator of a country's economic health. However, credit growth is influenced not only by internal domestic factors but also by external factors such as economic policy uncertainty, which impacts deposit spreads (Nguyen et al., 2020). This impact can change over time, especially before and after periods of financial crisis (Berger et al., 2022). Besides economic uncertainty, geopolitical risk is another factor that has an asymmetric and specific impact on currency exchange rates (Bossman et al., 2023). Economic uncertainty and geopolitical risk are complex and interrelated factors that can significantly affect a country's financial performance, such as credit growth.

Credit is an agreement between a borrower and a lender in which the borrower obtains present value and agrees to repay the lender in the future, usually with additional interest. Within the financial sector, credit is considered one of the main drivers of economic growth, which is emphasized in the empirical literature due to the link between finance and sustainable development growth (Adeleye, 2021). Banks tend to expand lending after periods of greater economic growth (Danisman, Demir, et al., 2020). Economic globalization and financial openness have caused countries to become more interconnected and dependent on each other in terms of economics and geopolitics (Djulius et al., 2022; Mansour-Ichrakieh & Zeaiter, 2019; Rostiana et al., 2022). From a geopolitical perspective, this study can see how power dynamics between countries affect the global economic situation. Geopolitical risk mitigation should be a priority for all countries (Dogan et al., 2021). When geopolitical risks include threats from wars, terrorist acts, and conflicts between countries, reinforce awareness of the possibility of shifting economic resources. This awareness, in turn, generates uncertainty regarding possible policy changes in financial markets and government sectors and their potential impact on future economic conditions. In other words, geopolitical risks can increase financial fluctuations and policy uncertainty, exacerbating financial tensions (Khoo & Cheung, 2021).

(Bordo et al., 2016) find that economic policy uncertainty (EPU) negatively affects U.S. commercial and industrial credit growth. Besides that, (Chi & Li, 2017) find that economic policy uncertainty increases credit risks alongside shrinking loan sizes. (Bordo et al., 2016) find that the higher uncertainty leads to a consistent decrease in credit growth. Furthermore, global economic uncertainty has negatively affected credit growth, with emerging economies bearing the brunt of these impacts compared to their advanced counterparts (Caglayan & Xu, 2019). However, based on our knowledge, a scant study about geopolitical risk on credit growth exists. Economic uncertainty and geopolitical risk studies mainly focus on developed countries. Hence, this study examines the effect of economic uncertainty using the World Uncertainty Index (WUI) and focuses on the Indonesian Bank. Most of the previous research used the EPU index to measure economic uncertainty, and scant studies still use WUI to measure economic uncertainty. (Huseyin et al., 2021) investigated how WUI influences credit growth in Islamic and conventional banks, revealing a negative effect. Other

than that, (Demir & Danisman, 2021a) conducted a comparative study on the effects of WUI and geopolitical risk on credit growth, concluding that WUI reduces credit growth, whereas geopolitical risk has no significant impact. Difference from the EPU index, the WUI is measured by counting the occurrences of the word "uncertainty" in Economist Intelligence Unit (EIU) country reports. EUI reports provide insights into political and economic developments within each country and forecasts regarding future political and economic policies. Its standardization makes this index comparable between countries. WUI dataset encompasses short- and long-term uncertainties pertinent to the real economy.

This study finds that economic uncertainty and geopolitical risk negatively impact credit growth. Economic uncertainty and geopolitical risk are causing the decline in credit growth. Investors and policymakers must pay attention to price changes associated with geopolitical and financial risks (Ding et al., 2021). Geopolitical risks are related to armed conflicts, acts of terrorism, and diplomatic tensions between countries. Such risks have impacts that can be globally widespread and systematic (Baur & Smales, 2020). Therefore, this study contributes to the literature in several aspects. As a novel contribution, it presents the first study to compare the impact of economic uncertainty (WUI) and geopolitical risk (GPR) on bank growth in the context of the Indonesian Bank. The results indicate that economic uncertainty and geopolitical risk negatively affect credit growth. These findings suggest that bank credit behavior is responsive to economic uncertainty and geopolitical risk, highlighting that economy-related uncertainty and geopolitical tensions are more crucial for overall credit behavior adjustment.

The structure of this study is as follows: Section 2 describes the literature review and hypothesis. Section 3 presents the methodology and data used. Then, section 4 presents the findings of this study and the implications. Finally, the concluding section ends the paper with the conclusions presented.

Real options theory and the precautionary motive hypothesis are the two theories that can offer complementary perspectives on how economic policy uncertainty and geopolitical risk affect bank credit growth. Real options theory posits that banks may increase the option value in uncertain conditions to delay the investment until the uncertainties subside or become more manageable (Pringpong et al., 2023). Consequently, credit growth may grow to slow down or decline in countries with elevated uncertainty and geopolitical tensions. Besides, the precautionary motive hypothesis suggests that banks prioritize risk mitigation over potential returns in the face of heightened uncertainty (Azis et al., 2022; Kurniawan et al., 2023; Pringpong et al., 2023; Safitri et al., 2023). Related to banks and credit growth, this hypothesis implies that banks become more conservative in their lending decision practices when there are high tensions of economic policy uncertainty and geopolitical risks. Banks may tighten credit standards and reduce lending activity to safeguard against potential losses. As a result, credit growth may decelerate or even contract in regions exposed to elevated geopolitical tensions.

Table 1. Previous Related Research

Title	Variables	Method	Result
Economic policy uncertainty and credit growth: Evidence from a global sample (Nguyen et al., 2020)	**Dependent:** Credit Growth **Independent:** Economic Policy Uncertainty (EPU) **Controls:** Bank Size Bank Capital Bank Liquidity Banking System Risk Banking system Profitability	panel-corrected standard errors (PCSE) and feasible generalized least squares (FGLS)	EPU negatively affects bank credit growth
Economic Policy Uncertainty and the Credit Channel: Aggregate and Bank-Level U.S. Evidence over Several Decades (Bordo et al., 2016)	**Dependent:** Bank Loan Growth **Independent:** Economic Policy Uncertainty (EPU) **Controls:** Bank Specific variables GDP	Fixed effect with lag variables specification.	Economic policy uncertainty negatively affects bank credit growth. This impact varies based on certain bank characteristics, such as the overall capital-to-assets ratio and the liquidity of bank assets.
Economic Policy Uncertainty and Bank Credit Growth: Evidence from European Banks (Danisman, Ersan, et al., 2020)	**Dependent:** Credit Growth **Independent:** Economic Policy Uncertainty (EPU) **Controls:** ROA Size Capitalization Deposit Share Liquidity Unemployment GDP Growth Employees Branch Foreign SUB Wholesale	1. Fixed Effect with Year Fixed Effect specification. 2. Two-Step Different GMM	Uncertainty in economic policies hampers the credit growth of European banks.
The impact of economic uncertainty and geopolitical risks on bank credit **(Demir & Danisman, 2021b)**	**Dependent:** Credit Growth Consumer Loan Growth Corporate Loan Growth Mortgage loan growth **Independent:** Economic Policy Uncertainty (WUI) Geopolitical Risk (GPR)	Two-Step Different GMM	Economic uncertainty leads to a notable decline in overall bank credit growth, whereas geopolitical risk does not influence credit growth.

Title	Variables	Method	Result
	Controls: ROA Size Equity to Asset Liquidity Unemployment Inflation Foreign Sub Loan Loss Reserves/Gross Loam Trade Openness Oil Rents GDP Growth		
Policy Uncertainty and Corporate Credit Spreads (Kaviani et al., 2020)	**Dependent:** Credit Spread **Independent:** Policy Uncertainty Index (PUI) Uncertainty of tax code expiration Presidential election **Controls:** Operating Income to sales Coupon Maturity S&P return Stock Return Size Liquidity GDP Growth	OLS panel and time-series regression	Econmic Policy uncertainty has a substantial impact on firms' borrowing costs.
Economic Policy Uncertainty Effects on Credit and Stability of Financial Institutions **(Caglayan & Xu, 2019)**	**Dependent:** Bank Credit Bank Stability **Independent:** Economic Policy Uncertainty (EPU) **Controls:** Foreign Bank GDP Growth Inflation Bank Concentration Openness	Generalized Method of Moment	Economic uncertainty decreases the availability of credit and causes increases in banks' non-performing loans and loan loss provisions, thereby disrupting sectoral stability.

Sources: Data Processed

Economic policy uncertainty is not directly observable and is difficult to distinguish from uncertainty about economic conditions (Kaviani et al., 2020). Banks often face great economic policy uncertainty when they face various policy changes, such as monetary and fiscal policy, financial regulation, and trade policy. These uncertainties can significantly impact businesses and households, affecting' lending and risk-taking behavior (Caglayan & Xu, 2019). Moreover, related to economic policy uncertainty,

there is direct evidence that the positive relationship between economic policy uncertainty and loan loss reserves reflects managers' rational expectations (Ng et al., 2020).

Economic uncertainty, measured by the World Uncertainty Index (WUI), affects banks' business activities (Tran et al., 2021). WUI is an important risk factor in the banking industry (Ashraf & Shen, 2019). Economic uncertainty also contributes to reduced financial stability, especially in countries with high levels of competition, minimal regulation, and smaller financial systems (Phan et al., 2021). (Ashraf & Shen, 2019) found that uncertainty related to government economic policy is a risk factor for bank lending.

A rise in the WUI rate, often associated with recession and weak economic recovery, hinders bank lending growth and thus reduces economic activity. In other words, increasing WUI leads to a slow economic recovery process (Gozgor et al., 2019). The banking industry shows a highly sensitive response to economic policy uncertainty, where banks quickly show reluctance to provide additional financing (Danisman et al., 2021). Given that the collective behavior of market participants is less affected by geopolitical instability, the negative impact of significant economic policy changes is likely to outweigh the expected positive benefits (Pyo, 2021). Bank risk tends to increase when economic uncertainty increases, mainly due to its impact on the rate of return and volatility of bank returns (Wu et al., 2020). Based on this discussion, we propose H1:

H1: Economic uncertainty negatively affects credit growth.

When developing the economic policy, one aspect is considering risks from geopolitical events such as wars, political tensions, elections, natural disasters, conflicts, political landscape and leadership changes, and rising tensions with other countries. The Geopolitical Risk Index (GPR) captures the type of risk that the Economic Policy Uncertainty Index cannot identify (Baur & Smales, 2020). These geopolitical risks are crucial factors that affect economic and financial markets, including the foreign exchange market (Kisswani & Elian, 2021).

Uncertainty arising from interstate political conflicts or acts of terrorism can destabilize a country's economy. The impact can be felt in banks' lending decisions, where increased market uncertainty tends to make banks more cautious in issuing loans. The role of domestic credit in the economy is significant; the volume of credit in the financial sector is a major factor in spurring economic growth (Demir & Danisman, 2021). In addition, geopolitical uncertainty can also affect government policies related to financial regulation and monetary policy. Therefore, geopolitical risk impacts liquidity and credit availability in the overall market. Increased political risk contributes to increased risk in all aspects of risk-taking by banks. This confirms that the higher the level of geopolitical risk, the lower the likelihood of bank stability(Al-Shboul et al., 2020). (Demir & Danisman, 2020) find evidence that GPR cannot affect the credit growth of 19 countries in their sample. However, their result was not specific to

Indonesian banks, which may have different results. Based on this discussion, this study proposes H2:

H2: Geopolitical risk negatively affects on credit growth

METHOD

This study collects the bank-level data variables from the Osiris database, which covers listed and private banks worldwide. This study only focuses on the Indonesian Bank, one of the emerging economies in Asia. This study uses the 47 banks in Indonesia for 2008-2022. This study employs panel data analysis. The sample collection used is purposive sampling with criteria such as filtering the sample based on the Bank with loan and financial data. After filtration, this study gets 456 observation data to test the model.

The dependent variable of this study is bank credit growth. Following previous literature (Albaity et al., 2022; Danisman, Demir, et al., 2020; Demir & Danisman, 2020), this study measures credit growth with the annual growth of gross loans.

This study employs the world economic uncertainty and geopolitical risk as independent variables. Unlike (Ozturk et al., 2020), who measure economic uncertainty with an Economic Policy Uncertainty (EPU) Index developed by (Baker et al., 2016), this study measures economic uncertainty with the World Uncertainty Index (WUI) developed by (Ahir et al., 2022). WUI is the index calculated by counting the occurrences of "uncertainty" words in Economist Intelligence Unit (EIU) country reports, normalizing these counts by the total number of words in the reports, and ensuring cross-country comparability. WUI captures the short- and long-term uncertainty related to policy and the real economy with detailed political and economic developments in each country. This study measures the WUI data to match our other data by leveraging the quarterly WUI data with an average of four quarters. Then, this study creates another proxy for WUI for the robustness test. Following the methods of Demir & Danisman (2020) and Huseyin et al. (2021), who use two alternative calculations of WUI, are employed for robustness checks. WUI_2 is calculated by weighting the country-specific quarterly WUI values and assigning weights of 1 and 2 to the first and last 6 months of the year, respectively. The third WUI proxy is WUI_3, calculated by averaging country-specific quarterly WUI values with weights ranging from 1 to 4 for each subsequent quarter of a year.

Following the previous literature, such as (Pringpong et al., 2023; Shabir et al., 2023; Wang et al., 2023) Geopolitical Risk (GPR) is the second independent variable this study focuses on to discuss its effect on credit growth. The Geopolitical Risk Index (GPR) measured the second independent variable. The GPR index is available monthly. GPR data is the count of articles concerning geopolitical risk in the news articles across 11 prominent national and international newspapers. The words utilized pertain to distinct categories, including explicit references to geopolitical risk and events,

tensions related to military and nuclear affairs, instances of war, and threats from terrorism. Monthly indices specific to each country's geopolitical risk are accessible, and for our foundational annual measurement, this study computes the average value across all months of a given year. Additionally, this study employs alternative GPR calculation proxies for robustness tests, such as GPR_2 and GPR_3, following the same procedures as those applied to the WUI index.

This study accounts for several bank-specific control variable characteristics identified in prior research (Bilgin et al., 2021; Demir & Danisman, 2020, 2021b; Demir & Ozturk, 2021a; Setiawan et al., 2021). This study considers control variables from various dimensions such as bank size calculated by the natural logarithm of total assets; the proportion of equity to total assets, which is an indication of capitalization; profitability, calculated using return on assets (ROA); then, this study considers the bank portfolio which shows the core business and credit exposure of bank activities as measured by the ratio of net loans to total assets. Despite the bank-specific as the control variable, this study also considers the country's economic situation. Therefore, following previous studies, this study includes the GDP growth and inflation rates as control variables (Shabir et al., 2021; 2017; Wu, Li, et al., 2021a, 2021b).

Table 2. Variables measurement

World Uncertainty Index measures (Independent Variable) **The WUI data can be found here: https://worlduncertaintyindex.com/**	
WUI	Average of four quarters data index (Ahir et al., 2022; Demir & Danisman, 2021)
WUI-2	The weighted average of the quarterly country-specific WUI with weights 1 and 2 for the first and last 6 months of a year (Ahir et al., 2022; Demir & Danisman, 2021)
WUI-3	The weighted average of the quarterly country-specific WUI with weights from 1 to 4 for each subsequent quarter in a year (Ahir et al., 2022; Demir & Danisman, 2021)
The Geopolitical Risk Index measures (Independent Variable)	
GPR	The country-specific Geopolitical Risk Index (GPR) monthly average is a weight of 1 for the first six months and a weight of 2 for the last six months of the year. (Demir & Danisman, 2020)
GPR-2	The monthly country-specific GPR forms the weighted average of 1 for the first six months and 2 for the last six months of the year. (Demir & Danisman, 2020)
GPR-3	The monthly weighted average of the monthly country-specific GPR is from 1 to 4 for each subsequent quarter in a year. (Demir & Danisman, 2020)
Credit Growth Measurement and Sources (Dependent Variable)	
Credit growth	Annual growth of the gross loans (Demir & Danisman, 2021)
Bank characteristic variables (Control Variables)	
Size	Natural Logarithms of Total Assets (Fu et al., 2014; Iorgova & Ross, 2023; Phan et al., 2021)
Equity Ratio	The ratio of total equity over total assets (Danisman et al., 2020)

Bank Portfolio	The ratio of net loans over total assets (Hoang et al., 2022; Shabir et al., 2023a)
ROA	Return on Asset Ratio (Shabir et al., 2021)
Macroeconomic variables (Control Variable)	
GDP Growth	The data can be found in the World Bank Database. GDP per capita growth rate (Demir & Ozturk, 2021; Shabir et al., 2024)
Inflation	The annual growth rate of the consumer price index (Demir & Danisman, 2021; Shabir et al., 2024)

This study examines the effect of economic and geopolitical uncertainty on credit growth by developing our baseline models following previous research models, such as those (Demir & Ozturk, 2021b; Shabir et al., 2023). The models are formulated as follows:

$$\text{Credit Growth}_{,i,j,t} = \alpha + \beta_1 WUI_{j,t} + \sum \beta_i Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\text{Credit Growth}_{,i,j,t} = \alpha + \beta_1 GPU_{j,t} + \sum \beta_i Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

Based on these equations, the subscripts (i), (j), and (t) represent banks, countries, and time, respectively. Credit Growth is a dependent variable, while WUI and GPR are the primary explanatory variables. The vector β comprises bank-level and country's economic situation as control variables. Then, ε signifies the error term.

This study was designed and utilized panel data, combining cross-sectional data (across companies) with time series data (over the years). This study estimates equations (1 and 2) using the fixed-effects model. Additionally, this study employs alternative proxies for independent variables and conducts various sensitivity tests later to ensure the robustness of our findings.

RESULT AND DISCUSSION

Table 3 below reports the descriptive statistics of the variables used in the models.

Table 3. Descriprive Statistic

Variable	Obs	Mean	Std. dev.	Min	Max
WUI	456	0.1364219	0.0807495	0.0174083	0.3222596
GPR	456	0.035582	0.0194456	0.0158325	0.0942861
WUI-2	456	0.1376198	0.0734211	0.023211	0.281463
WUI-3	456	0.1396685	0.0770403	0.0208899	0.2919584
GPR-2	456	0.0346487	0.0222531	0.0172368	0.103917
GPR-3	456	0.0347785	0.0243687	0.0177965	0.11212
BANK SIZE	456	20.12727	2.628942	10.61621	23.02503
ROA	453	0.0104444	0.0216538	-0.113	0.1079
EQUITY RATIO	456	0.1521695	0.0831037	0.0318	0.8621
BANK PORTFOLIO	456	0.6089026	0.11119	0.1393	0.812
GDP GROWTH	420	4.494049	2.194747	-2.065005	6.345022

INFLATION	456	4.480143	2.320456	1.56013	13.10867

Sources: Data Processed

Table 2 above describes the data that this study used. The data shows various variables from 456 observations. Table 2 shows us that the mean value of the uncertainty index (WUI) stands at 0.136, with a standard deviation of 0.081, ranging from 0.017 to 0.322. Similarly, the geopolitical risk index (GPR) has an average value of around 0.036, with a standard deviation of 0.019, ranging from 0.016 to 0.094. other than that, for another proxy of WUI and GPR, we compared WUI-2, WUI-3, GPR-2, and GPR-3 for the robustness test and found slight variations in means and standard deviations across different versions. Related to the control variable, table 2 above shows the natural logarithm of total assets (BANK SIZE) averaging at approximately 20.13, return on assets (ROA) at 0.01, equity to total assets ratio (EQUITY RATIO) at 0.15, and net loans to total assets ratio (BANK PORTFOLIO) at 0.61. Moreover, GDP growth averages 4.49%, with inflation around 4.48%.

Table 4. Pearson correlation matrix of the variables used in the models.

		1	2	3	4	5	6	7	8	9	10	11	12
1	WUI	1.0000											
2	GPR	0.1322	1.0000										
3	WUI-2	0.9713	0.1418	1.0000									
4	WUI-3	0.9599	0.1598	0.9934	1.0000								
5	GPR-2	0.1089	0.9933	0.1085	0.1255	1.0000							
6	GPR-3	0.1133	0.9889	0.1113	0.1293	0.9979	1.0000						
7	BANK SIZE	-0.0411	-0.0090	-0.0429	-0.0424	-0.0149	-0.0159	1.0000					
8	ROA	0.0847	0.0202	0.0526	0.0479	0.0375	0.0394	-0.2117	1.0000				
9	EQUITY RATIO	-0.0680	0.1681	-0.0417	-0.0272	0.1591	0.1648	0.0503	-0.1318	1.0000			
10	BANK PORTFOLIO	-0.0018	-0.2251	-0.0040	-0.0133	-0.2094	-0.1990	-0.0941	0.1115	-0.2029	1.0000		
11	GDP GROWTH	0.1405	0.2860	0.1617	0.1773	0.3427	0.3889	-0.0518	0.1582	-0.1523	0.2024	1.0000	
12	INFLATION	0.1122	0.1389	0.0407	-0.0034	0.1695	0.1520	0.0087	0.2044	-0.2491	0.0830	0.4685	1.0000

Sources: Data Processed

Table 3 above shows the Pearson correlation matrix, which indicates the pairwise correlations between variables in this study's dataset. Positive correlation coefficients suggest a positive relationship between variables, while negative coefficients suggest a negative relationship. Based on Table 3 above, multicollinearity is found between variables WUI-2 and WUI-3 (0.9934), which suggests redundancy. However, we separate the WUI-2 and WUI-3 into different models. Therefore, this multicollinearity is not our problem.

Table 5. ain results of models 1 and 2 regression using the fixed effect model.

VARIABLES	**(1) credit growth**		**(2) credit growth**		**(3) credit growth**		**(4) credit growth**	
WUI	-4.882 (-6.05)	***						
GPR			-0.580 (-6.05)	***				
L.WUI					-3.829 (-5.04)	***		
L.GPR							-1.275 (-5.04)	***

VARIABLES	(1) credit growth		(2) credit growth		(3) credit growth		(4) credit growth	
BANK SIZE					-0.00484		-0.00484	
					(-1.50)		(-1.50)	
ROA					1.383	***	1.383	***
					(3.57)		(3.57)	
EQUITY RATIO					-0.296	**	-0.296	**
					(-2.14)		(-2.14)	
GDP GROWTH					-0.0952	***	-0.0541	***
					(-4.20)		(-3.70)	
INFLATION					-0.147	***	0.324	***
					(-5.93)		(4.29)	
BANK PORTFOLIO					0.256	***	0.256	***
					(2.84)		(2.84)	
CONS	0.868	***	-1.347	***	1.072	***	-5.028	***
	(6.58)		(-5.72)		(5.05)		(-4.95)	
BANK EFFECT	YES		YES		YES		YES	
YEAR EFFECT	YES		YES		YES		YES	
Obs.	456		456		343		343	
R2	0.446		0.446		0.527		0.527	

Sources: Data Processed

Table 4 shows us the main result of regression models 1 and 2. From Table 4 above, this study also tests WUI and GPR using lag value, and the result is still robust. For details, the output above represents a panel data model with a fixed effect where credit growth is regressed on several independent variables such as WUI and GPR, other than that regressed on the lag value a year of WUI and GPR. This study finds that the coefficient of WUI is negative and statistically significant across all specifications (WUI and L.WUI). The result indicates that an increase in economic uncertainty leads to a decrease in credit growth. However, this result supports previous research, such as Demir & Danisman (2020), that finds the negative effect of WUI on bank credit growth. Therefore, economic uncertainty will harm bank credit, as previous findings show (Demir & Danisman, 2021b; Nguyen et al., 2020). This result makes intuitive sense, such as uncertainty may cause lenders to become more risk-averse and reluctant to extend credit. Therefore, this result supports the precautionary motive hypothesis that banks may take low risk to mitigate the heightened economic uncertainty with more conservative lending decisions.

Like economic uncertainty, this study finds that the GPR coefficient is negative and statistically significant across all specifications. However, the previous literature by (Demir & Danisman, 2020) did not prove that GPR can negatively affect credit growth. This study shows that GPR negatively affects credit growth in the special context of the Indonesian Bank. Therefore, this result indicates that an increase in geopolitical risk leads to a decrease in credit growth. Like real options theory and precautionary motive, banks may make convergent decisions on lending or investments to mitigate the high risk of Geopolitical instability, which can disrupt economic activities and undermine investor confidence, dampening credit growth.

Related to the control variable, this study finds that BANK SIZE, ROA, EQUITY RATIO, BANK PORTFOLIO, GDP GROWTH, AND INFLATION have coefficients that seem to have mixed signs and significance levels across specifications, suggesting their effects on credit growth are more nuanced and may vary depending on other factors. Therefore, based on this regression output, economic uncertainty and geopolitical risk negatively affect credit growth. This result makes logical sense as both factors introduce uncertainty and risk into the economic environment, which can lead to cautious lending behavior by financial institutions. When uncertain or unstable economic and geopolitical conditions, lenders may tighten credit standards and reduce lending, hindering economic credit growth.

Table 6. Robustness test results of models 1 and 2 regression using the fixed effect model and the different proxy of WUI and GPR with lag value variable.

	(1) credit growth		**(2) credit growth**		**(3) credit growth**		**(4) credit growth**	
L.WUI-2	-3.286 (-5.04)	***						
L.WUI-3			-2.456 (-5.04)	***				
L.GPR-2					-1.881 (-5.04)	***		
L.GPR-3							-1.320 (-5.31)	***
BANK SIZE	-0.00484 (-1.50)		-0.00484 (-1.50)		-0.00484 (-1.50)		0.00223 (0.65)	
ROA	1.383 (3.57)	***	1.383 (3.57)	***	1.383 (3.57)	***	1.162 (3.02)	***
EQUITY RATIO	-0.296 (-2.14)	**	-0.296 (-2.14)	**	-0.296 (-2.14)	**	-0.347 (-2.31)	**
BANK PORTFOLIO	0.256 (2.84)	***	0.256 (2.84)	***	0.256 (2.84)	***	0.336 (3.48)	***
GDP GROWTH	-0.0865 (-4.13)	***	-0.0638 (-3.86)	***	-0.0631 (-3.85)	***	0.0209 (6.05)	***
INFLATION	-0.0926 (-5.27)	***	-0.0628 (-4.05)	***	0.534 (4.58)	***	0.0359 (1.74)	*
CONS	0.873 (4.95)	***	0.643 (4.70)	***	-7.824 (-4.98)	***	-4.856 (-5.43)	***
BANK EFFECT	YES		YES		YES		YES	
YEAR EFFECT	YES		YES		YES		YES	
Obs.	343		343		343		304	
R2	0.527		0.527		0.527		0.525	

Sources: Data Processed

Table 5 above represents the regression output that presents the results of a robustness test where different model specifications are tested for alternative variables measurement and considering the lag value of independent variables. L.WUI-2, L.WUI-3, L.GPR-2, and L.GPR-3 are the variables that appear to be lagged versions and

alternative proxies of variables related to economic uncertainty (WUI) and geopolitical risk (GPR), the calculation of alternative measurement can be seen in Table 1.

Table 5 shows that this study finds negative and statistically significant coefficients indicating that past economic uncertainty and geopolitical risk levels significantly affect credit growth. This result indicates that historic economic uncertainty and geopolitical risk levels continue to influence current credit growth dynamics.

Overall, the results show us that robust results reinforce the findings of the initial regression, indicating that both economic uncertainty and geopolitical risk have persistent and significant negative effects on credit growth. However, this finding is worth noting that the inclusion of different lagged variables related to economic uncertainty and geopolitical risk does not substantially alter the overall explanatory power of the model, as indicated by the consistent R-squared values across specifications.

CONCLUSION

This study examined the effects of economic uncertainty (WUI) and Geopolitical risk (GPR) on credit growth. It found the negative effects of WUI and GPR on credit growth. However, this result is robust after being tested using different proxies of independent variables. This study also supports the previous literature by Demir and Danisman, which states that WUI negatively affects credit growth but is different for GPR results. Based on the research results, lagged values of economic uncertainty and geopolitical risk also demonstrate significant negative effects on credit growth, indicating that past levels of uncertainty and risk continue to impact current credit growth dynamics. The robustness test supports and reinforces the main findings, with lagged values of economic uncertainty and geopolitical risk maintaining their significant negative effects on credit growth across different specifications.

This study can contribute to the literature and draw policy recommendations. First, This study contributes to the literature about how WUI and GPR affect credit growth and supports the real options theory and the precautionary motive hypothesis. Second, this study contributes to the policymakers' focus on strategies to reduce economic uncertainty and geopolitical risk and foster a more conducive environment for credit growth. The policymaker may implement policies to enhance financial market stability, promote international cooperation, and resolve geopolitical tensions through diplomacy and negotiation. Second, Monitoring and Managing Lagged Effects that recognize the persistent impact of past levels of uncertainty and risk on credit growth, financial institutions and policymakers should continuously monitor and manage these factors. Tirth, policymakers and financial institutions can strengthen financial stability by enhancing the resilience of financial systems. Institutions can help mitigate the adverse effects of economic uncertainty and geopolitical risk on credit growth. This effort can be achieved through robust regulatory and supervisory frameworks, stress testing exercises, and contingency planning to address potential

disruptions to credit markets. Fourth, promoting Investment and Economic Growth policies that foster sustainable economic growth, such as infrastructure investment, innovation promotion, and structural reforms, can support credit growth by creating opportunities for businesses to expand and invest, thereby increasing demand for credit. However, this study has limitations that can be addressed for future research. This study only focuses on the WUI and GPR, specifically Indonesian banks; future research may test the dynamic of WUI and GPR comes from the countries with the highest investment in Indonesia.

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