Asymmetric Causality between Economic Uncertainty and Financial Development: Empirical Evidence

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ABSTRACT

This study analyses the asymmetric causal relationship between economic uncertainty and financial development across 86 countries. The employing of asymmetric Granger causality, as proposed by Hatemi-J (2012), indicates the presence of an asymmetric causal relationship between economic uncertainty and financial development. Positive change, namely a rise in economic uncertainty, adversely affects the growth of financial institutions. The advancement of financial institutions mitigates economic instability. Simultaneously, an escalation in economic uncertainty leads to heightened fluctuations in the financial market. Heightened fluctuations in the financial market will aggravate economic instability. This research will benefit policymakers, financial institutions, and investors by examining the dynamic link between economic uncertainty and financial development for risk reduction and forecasting.

Keywords: Economic uncertainty, financial development, asymmetric granger causality

INTRODUCTION

More and more policymakers and researchers are paying attention to the issue of economic uncertainty, especially since the global financial crisis of 2008 and COVID-19. The well-established theoretical and empirical research has shown that the uncertainty in the economy has an effect on business cycles and the financial system. When there is more uncertainty, businesses and investors tend to "wait and see" and hold off on investing. This leads to slower growth in production. (Bloom, 2009). The financial market was also affected because there were rising shocks of uncertainty. Baker et al. (2020) have put forth the most recent theory that the Covid-19 pandemic may be the cause of the economy's tendency to be hard to predict, which would make things even more uncertain.

It is widely recognised that finance significantly influences economic growth; thus, attaining sustainable financial development should be a primary objective for numerous countries. Conversely, several scholarly works caution that an overabundance of finance may result in heightened economic instability, consequently impeding economic development. Although there exists a connection between economic uncertainty and financial development, it is crucial to examine the dynamic causation between these two factors. There exists a potential for the absence of bidirectional causality or the relevance of Granger causality in the unidirectional relationship between financial development and economic uncertainty, attributed to prior research predominantly emphasising the influence of economic uncertainty on financial development.

This paper aims to fill up the gap in literature by examining an asymmetric Granger causality between economic uncertainty and the expansion of the financial system. Earlier models have focused on the premise that there exists a linear and symmetric relationship between economic variables and the financial system. Because economic uncertainty can cause both positive and negative shocks, the financial sector will grow in different ways, both in terms of size and direction. The growth of the financial sector can also cause positive and negative shocks, which may have different effects on how uncertain the economy is. Negative shocks to the economy, or increasing uncertainty, could hurt the growth of the financial sector more and for a longer time than positive shocks. To create strong financial systems and beneficial macroprudential rules, it is important to understand this kind of asymmetric causation.

This study contributes significantly to the existing body of knowledge. This study examines the dynamic interrelations between economic uncertainty and financial system development through the analysis of Granger causality between these two variables. Macroeconomic and financial variables tend to exhibit greater dynamism than stability; therefore, it is crucial to examine the dynamic relationships between economic uncertainty and financial development through the asymmetric Granger causality methodology. This study provides an advanced perspective on the dynamic relationship between financial system expansion and economic uncertainty. This study employs the econometric method of the asymmetric Hatemi causality test, in contrast to the traditional symmetric or linear Granger causality test. This study goes beyond the usual idea that uncertainty only affects the financial system in one way by looking at the possible two-way relationship between economic uncertainty and figuring out which way Granger causality goes between these two variables. This study is distinctive as it distinguishes between the asymmetric positive and negative shocks of one variable on another. This method gives policymakers and banks a lot of information to help them make smart decisions about how to deal with economic uncertainty and stabilise both the economy and the financial system.

The rest of the paper is as follows:The literature review offers the previous studies related to economic uncertainty and financial development. The data and methodology section describes the data sources, methodology, and empirical model. The results and discussion section describes the empirical findings and the final conclusion.

LITERATURE REVIEW

The study suggests that the economic uncertainty likely represented a significant manifestation of the adverse relationship between economic uncertainty and the stock market. A significant amount of previous evidence indicates that economic uncertainty negatively affects stock and bond markets (Antonakakis et al., 2013; Chen et al., 2024; Chinzara, 2011; Huang et al., 2023; Javaheri & Amani, 2022). This is based on the idea that Bernanke (1983) put forward, which said that high levels of uncertainty make businesses put off hiring and investing. There is a strong link between how uncertain the economy is and how volatile the market is. This economic uncertainty has a big effect on stocks and bonds. Huang et al. (2023) look at how economic uncertainty affects the return volatility of financial assets. Chen et al. (2024) show that exposure to Chinese uncertainty has a negative effect on the future returns of major companies in Japan, Hong Kong, and India over different trading horizons by doing a portfolio-level sorting analysis.

Banks are greatly affected by economic uncertainty. Ozili & Bank (2023) investigates the influence of economic policy uncertainty (EPU) on bank profitability in 22 industrialised countries. The findings demonstrate that heightened economic policy uncertainty (EPU) negatively affects bank non-interest revenue. Wang & Duan (2025) investigate the impact of economic policy uncertainty on loan concentration within a sample of Chinese commercial banks from 2007 to 2020. Using a panel dataset of 311 institutions, the findings demonstrate a significant negative correlation between economic policy uncertainty and the lending concentration of banks. Danisman et al. (2020) investigates the impact of Economic Policy Uncertainty (EPU) on loan growth, utilising a sample of 2,977 private and publicly listed banks in the EU-5 countries (the United Kingdom, Germany, Spain, Italy, and France) from 2009 to 2018. two-step difference GMM estimators show that European banks can't lend as much money because they don't know what the economy will do.

Ma and Hao (2022) stressed that financial development lessens the negative effects of economic uncertainty. Financial development will lessen the enterprise's financial limitations, thereby diminishing economic instability. Fortin et al. (2023) illustrate that economic uncertainty significantly hampers economic growth. Ullah et al. (2024) examines the relationship between economic policy uncertainty (EPU) shocks and stock market development in China, demonstrating that positive EPU shocks significantly hinder stock market growth, while negative EPU shocks substantially promote it.

DATA , EMPIRICAL MODEL AND METHODOLOGY

The empirical study encompasses 86 countries from 1990 to 2021. The financial development data was sourced from the Global Financial Development Database. This study utilises various indicators for assessing the

development of financial institutions (private credit, liquid liabilities to GDP, and deposit money banks to GDP) and the stock market (stock market capitalisation to GDP, stock market total value traded to GDP, and stock market turnover ratio). To assess economic uncertainty, this study utilises two indicators: the World Uncertainty Index (WUI) (Ahir et al., 2022) and Economic Policy Uncertainty (Baker et al., 2016)

It is the Granger causality test that serves as the foundation for the empirical investigation.An asymmetric version of this test, which was developed by Hatemi-J (2012), is described in the following table.This type of testing is able to differentiate between the causal impact of positive shocks and the effect of negative shocks.Taking into account asymmetric causal effects is consistent with the reality, particularly in the context of financial markets, where investors have a tendency to respond more strongly to changes that are unfavourable than they do to changes that are favourable.The performance of this asymmetric causation is likewise satisfactory in situations in which the underlying data does not follow a normal distribution and the volatility varies over time.Testing for asymmetric causation is based on a similar technique, with the primary distinction being that the causal effect of positive shocks may be different from the causal impact of negative shocks. This is the key difference.As a result, it is essential to create these shocks, which may be accomplished by making use of the cumulative sums of the shocks that are operating under the surface. Hatemi-j et al. (2014) contend that conducting causality tests within a panel yields numerous advantages compared to the traditional time series approach, as panel data increases degrees of freedom and may enhance efficiency by incorporating cross-sectional spillover effects.

Let unc as economic uncertainty and fd as financial development.

$$unc_{i,t} = unc_{i,t-1} + \varepsilon_{1i,t} = unc_{i,0} + \sum_{k=1}^{t} + \varepsilon_{i,t}$$

$$fd_{i,t} = fd_{i,t-1} + \varepsilon_{2i,t} = fd_{i,0} + \sum_{k=1}^{t} + \varepsilon_{i,t}$$

For i=1, …, n. Where n is the size of the cross sectional dimension and ε is the white noise error term. The shocks can be identified as $\varepsilon_{1i,t}{}^{+}$= max($\varepsilon_{1i,t}$, 0), $\varepsilon_{2i,t}{}^{+}$= max($\varepsilon_{2i,t}$, 0), $\varepsilon_{1i,t}{}^{-}$= min($\varepsilon_{1i,t}$, 0), $\varepsilon_{2i,t}{}^{-}$= min($\varepsilon_{2i,t}$, 0). Utilising these definitions, we can formulate the cumulative sums of the shocks as :

$$unc^{+}_{i,t} = unc^{+}_{i,t-1} + \varepsilon^{+}_{1i,t} = unc_{i,0} + \sum_{k=1}^{t} + \varepsilon^{+}_{i,t}$$

$$unc^{-}_{i,t} = unc^{-}_{i,t-1} + \varepsilon^{-}_{1i,t} = unc_{i,0} + \sum_{k=1}^{t} + \varepsilon^{-}_{i,t}$$

$$fd^{+}_{i,t} = fd^{+}_{i,t-1} + \varepsilon^{+}_{1i,t} = fd_{i,0} + \sum_{k=1}^{t} + \varepsilon^{+}_{i,t}$$

$$fd^{-}_{i,t} = fd^{-}_{i,t-1} + \varepsilon^{+}_{1i,t} = fd_{i,0} + \sum_{k=1}^{t} + \varepsilon^{+}_{i,t}$$

RESULTS AND DISCUSSION

Table 1: Homogeneity Test

	Δ	p-value	Δadj	p-value
CREDIT, UNC	0.249	0.803	0.358	0.720
LIQUIDITY,UNC	-0.341	0.733	-0.492	0.623
ASSET, UNC	0.442	0.658	0.633	0.527
SMCAP, UNC	0.901	0.368	1.275	0.202
SMVALUE,UNC	2.715	0.007	3.844	0.000
SMTURNOVER,UNC	3.292	0.001	4.656	0.000

Before conducting the granger panel data analyses, the homogeneity test is tested and the results are tabulated in Table 1. The findings of homeigeity test of null hyphotesis of homegeity are majority fail to reject. Hence, this study conduct the panel granger asymmetric causality.

The results of the causality tests are shown in Tables 2 and 3. The asymmetric causality tests indicate that the null hypothesis, which posits that positive shocks in the WUI do not induce positive shocks in financial development, fails to be rejected. In this instance, the estimated parameter is negative. A rise in uncertainty shocks would adversely affect the growth of financial institutions. Likewise, the null hypothesis about positive shocks of Economic Policy Uncertainty (EPU) in relation to positive liquidity finance development is not rejected. Financial institutions react adversely to favourable developments in economic uncertainty.The findings corroborate the hypothesis posited by Danisman & Tarazi (2024), which asserts that heightened economic uncertainty results in diminished bank stability and reduced credit availability (Caglayan & Xu, 2019). The null hypothesis posits that the emergence of positive financial institutions does not induce positive effects on economic uncertainty, failing to reject the WUI and exhibiting weakness in the EPU. Nonetheless, adverse changes are substantial. Consequently, the growth of financial institutions reduces economic uncertainty. This results in line with literature by Kıvanç Karaman & Yıldırım-Karaman (2019), and Ma and Hao (2022). According to them, financial development mitigates the negative effect of the impact of economic uncertainty on growth.

Table 3 presents the findings of the asymmetric Granger causality between economic uncertainty and financial market growth. The favourable alteration of economic uncertainty for both WUI and EPU significantly contributes to beneficial changes in financial market development indicators. According to Ghani & Ghani (2024), uncertainty in US economic policy can be a good predictor for the stock market in other countries, like Pakistan. This is because the study found that uncertainty had a significant impact on the stock market. Faferko et al. (2025) in their study demonstrate the significant effect of uncertainty on stock market anomalies. These studies align with the empirical findings of this research, which indicated significant positive stocks in response to favourable stock market developments.

However, negative change does not lead to rejection. This suggests that heightened economic uncertainty correlates with increases in favourable financial market developments. The null hypothesis is rejected for the impact of positive financial market changes on WUI, but not rejected for negative ones. Consequently, heightened fluctuations in financial markets enhance economic uncertainty.

Table 2: Asymmetric Hatemi-J causality test economic uncertainty and financial institutions development

	W stat	Bootstrapped critical values				W stat	Bootstrapped critical values		
		1%	5%	10%			1%	5%	10%
H_0: UNC^+ ≠> FD^+(FINANCIAL INSTITUTIONS)						**H_0: FD^+(FINANCIAL INSTITUTIONS)≠> UNC^+**			
WUI									
CREDIT	0.258	12.355	4.333	2.201		0.044	10.935	4.454	2.344
LIQUID	0.155	12.364	4.014	2.221		0.099	16.604	5.669	2.662
ASSET	0.026	14.905	4.29	2.281		0.000	11.918	4.132	1.972

EPU									
CREDIT	6.737**	10.214	6.206	4.561		5.18*	9.148	6.118	4.956
LIQUID	1.167	7.371	3.712	2.522		0.212	13.604	5.519	3.906
ASSET	6.603**	11.153	6.063	4.700		9.046**	14.206	4.332	2.086
H_0: UNC$^-$ ≠> FD$^-$ (FINANCIAL INSTITUTIONS)						**H_0: FD$^-$ (FINANCIAL INSTITUTIONS) ≠> UNC$^-$**			
WUI									
CREDIT	4.355**	9.933	3.932	1.950		9.475**	10.91	4.593	2.460
LIQUID	6.447**	11.088	4.086	2.357		8.857**	11.88	4.254	2.310
ASSET	7.282**	10.034	4.669	2.197		4.320	9.101	6.027	4.699
EPU									
CREDIT	5.341*	14.656	5.968	4.181		95.696***	17.932	8.942	6.314
LIQUID	3.448**	9.335	3.357	2.047		75.033***	19.845	6.262	4.179
ASSET	29.256***	18.915	7.633	5.535		115.534***	17.455	8.168	5.676

Note: *, ** and *** indicate statistical significance at 10, 5 and 1% level respectively. Critical values are obtained from 10000 bootstrap replications.

Table 3: Asymmetric Hatemi-J causality test economic uncertainty and financial market development									
	W stat	Bootstrapped critical values				W stat	Bootstrapped critical values		
		1%	5%	10%			1%	5%	10%
H_0: UNC$^+$ ≠> FD$^+$(FINANCIAL MARKET)						**H_0: FD$^+$(FINANCIAL MARKET)≠> UNC$^+$**			
WUI									
SMCAP	4.284**	7.856	3.393	2.326		2.935*	6.454	3.118	2.070
SMVALUE	4.253**	9.606	3.735	2.319		3.187**	8.459	3.903	2.256
SMTURNOVER	3.987**	8.049	3.467	2.312		3.013*	7.431	3.993	2.382
EPU									
SMCAP	7.18**	12.469	3.313	2.326		0.024	9.714	3.365	2.201
SMVALUE	5.68**	8.273	4.095	2.384		1.055	8.391	3.807	2.402
SMTURNOVER	2.772*	9.421	3.605	2.385		1.444	9.086	3.893	2.562
H_0: UNC$^-$ ≠> FD$^-$ (FINANCIAL MARKET)						**H_0: FD$^-$ (FINANCIAL MARKET) ≠> UNC$^-$**			
WUI									
SMCAP	0.768	7.347	3.17	2.246		0.301	6.934	3.584	2.508
SMVALUE	0.837	8.301	3.711	2.136		1.141	6.081	2.985	2.081
SMTURNOVER	0.968	8.718	3.818	2.497		0.001	8.861	4.394	2.484
EPU									
SMCAP	0.001	8.616	3.702	2.297		0.037	9.755	3.933	2.437
SMVALUE	2.164	9.717	3.494	2.308		2.243	6.729	3.391	2.318
SMTURNOVER	3.004*	11.946	4.322	2.842		3.709*	10.418	4.119	2.521

Note: *, ** and *** indicate statistical significance at 10, 5 and 1% level respectively. Critical values are obtained from 10000 bootstrap replications.

CONCLUSION AND POLICY IMPLICATION

This paper examined the causal effects of economic uncertainty on financial development across 86 countries. This research employs an asymmetric causality test for this aim. The empirical findings indicate the presence of an asymmetric causal relationship between economic uncertainty and financial development. The findings indicate that a rise in economic uncertainty (positive developments) significantly causes a decline in the growth of financial institutions. The significant advancements in financial institutional development at that time resulted in a decrease in economic uncertainty. The findings indicate that favourable alterations in economic uncertainty

will lead to beneficial adjustments in the financial market. Heightened economic uncertainty will amplify volatility in the financial market. Nonetheless, favourable alterations in the financial market induce heightened economic uncertainty. The findings reveal asymmetric causation about uncertainty in financial development. As economic uncertainty increasingly manifests as a worldwide phenomena, more study is essential to enhance knowledge of the relationship between uncertainty and the financial system.

The findings have implications for policy. This study found that there are asymmetric causality shocks between economic uncertainty and the development of the financial system. It also showed that positive increases in economic uncertainty shocks have a significant Granger effect on financial institutions and market development. This finding helps policymakers come up with ways to reduce risks so that financial development can continue despite the rise of uncertainty shocks. The research established a bidirectional causation between the positive impacts of financial market expansion and economic uncertainty, offering investors and policymakers insights into the relationship between stock markets and economic uncertainty.

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