An Analytical Study of Stock Market Flows Based on the Premise of Policy Uncertainty

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Abstract. In the case of China, the process of global financial integration is gradually accelerating, and with the opening of trading channels such as the Shanghai-London Stock Connect and the Shanghai-Hong Kong Stock Connect, China is facing more significant cross-border financial risk shocks. Therefore, an in-depth study of the cross-country dynamic transmission of stock market risks in conjunction with EPU is not only conducive to better prevention of risk resonance caused by cross-country transmission, but also conducive to the correct and reasonable evaluation of economic policy uncertainties and the position of national (regional) stock markets in the risk transmission network, as well as to the establishment of an early warning system for offshore risks in China, the consolidation of financial security defences and the resolution of shocks caused by offshore risks. It also provides new ideas for China to establish an early warning system for offshore risks, consolidate its financial security defences, and address shocks arising from imported risks. Therefore, this paper examines the relationship between economic policy uncertainty and cross-border cross-market contagion of risk in equity markets in a selection of 18 major countries (regions) around the world. On the one hand, based on a non-linear network model, the sample is divided into different periods to analyse the spillover effect between EPU and stock market separately and compare it with the traditional linear Granger causality test; on the other hand, based on a PVAR model, the spillover effect between stock market and economic policy uncertainty in G7 and BRICS countries in different periods is further explored. The result is effective recommendations for market participants as well as the government.

Keywords: Financialization · Stock markets · Risk warning · Cross-border markets

1 Introduction

The study of economic policy uncertainty (EPU) and its impact is a topical issue in macroeconomic research [1]. Economic policy uncertainty is the mismatch and time lag between economic policy and the complexity of the market economy in the process of allocating market resources through economic policy, which leads to distortions in the allocation of prices, resources and supply, resulting in uncertainty in the effects and mechanisms of economic policy, especially in the global financial crisis, when the government used large-scale economic policy stimulus to rescue the market [2].

The global economy is currently in a state of great adjustment, with national policies being adjusted with increasing frequency, and as a result the risks of domestic and international uncertainty facing countries are gradually escalating. Uncertainty about economic policies can disrupt stock market volatility in a number of ways, for example, changes in economic policies can raise or lower the expectations of market participants, thereby altering their participation in the market, such as investment and consumption behaviour, and thus affecting stock market volatility [3, 4].

2 Research Questions and Significance

2.1 Research Questions

The questions addressed in this paper are how economic policy uncertainty and stock market volatility spillovers interact; how such volatility spillovers vary across periods of economic development; how mainland China and Hong Kong, China, are affected by economic policy uncertainty and stock market risk contagion from abroad; and how economic policy uncertainty interacts with stock markets in the G7 and BRICS countries and how the impact varies across periods [5].

Research Significance

(1) Theoretical significance
     Compared to traditional methods such as GARCH models and Copula functions, the use of non-linear correlation networks can, on the one hand, avoid serious bias in conclusions due to the neglect of the non-linear nature of risk contagion and, on the other hand, the analysis of the nature of the network can help to analyse how local risks spread to other countries (regions) through network linkages [6].
(2) Relevance
     The study of the two-way relationship between stock market and economic policy uncertainty is of great theoretical and practical importance, not only for understanding the possible causes of extreme fluctuations in stock price indices in different countries (regions), but also for making effective recommendations for government economic policy regulation and risk management for market participants. In particular, for China, as the process of global financial integration continues to accelerate, the study will not only help to better prevent risk resonance caused by cross-country contagion, but also facilitate a correct and reasonable evaluation of economic policy uncertainty and the position of national (regional) stock markets in the risk transmission network, and provide new ideas for China to establish an early warning system for offshore risks, consolidate financial security defences and resolve shocks caused by imported risks from abroad [7].

2.2 Study Content

This paper constructs a non-linear network based on a non-linear Granger causality test to study in depth the dynamic evolution of cross-border and cross-market contagion

of stock market risk in the context of economic policy uncertainty. On the one hand, we use frontier network topology to analyse the spillover effects of stock market and economic policy uncertainty in 18 countries (regions) at different periods, and separately study how mainland China and Hong Kong, China are affected; On the other hand, the spillover effects between stock market and economic policy uncertainty in G7 countries and BRICS countries at different periods are explored separately based on the PVAR model. Finally, countermeasures and recommendations are given based on the empirical results [8].

The details of the study are as follows:

(1) The subjects selected for the study are 18 countries (regions) including the United States, the United Kingdom, France, Japan, Mainland China and Hong Kong, China, and the sample spans the period from August 2004 to December 2020. With reference to the screening of the start of the crisis in the literature, the overall sample was divided into three time periods: pre-crisis, during the crisis and post-crisis, and the data from each time period were analysed separately for the correlation between EPU and stock market. In particular, focus on how the stock market and EPU in mainland China and Hong Kong, China, are influenced by other countries [9].

(2) Based on network correlation analysis, the network correlation indicators of stock market, economic policy uncertainty and aggregate spillover levels of 18 countries (regions) around the world were ranked by size in the full sample period and the economic crisis period respectively, and the top 5 countries (regions) were selected for analysis [10].

(3) Based on the PVAR model, the impact relationship between stock market and economic policy uncertainty is analysed for each of the G7 countries (US, UK, Japan, Germany, France, Italy and Canada) representing developed countries and the BRICS countries (Brazil, Russia, India and China) representing developing countries, and the changes in the impact relationship between the full sample and during the economic crisis are explored.

(4) After synthesising the analysis of the two models, a theory of cross-border cross-market risk contagion effects between economic policy uncertainty and global equity markets is given based on the results obtained from the study, and effective recommendations are made to governments and relevant financial institutions.

2.3 Research Methodology and Technical Pathways

This paper proposes to study the spillover effects between EPUs and stock markets in 18 countries (regions) using a correlation network based on a non-linear Granger causality test. In addition, the relationship between the impact of EPU and stock market in G7 and BRICS countries is further explored based on the PVAR model.

3 Studies Related to the Contagion Effect of Financial Risks

Systemic financial risk represents the spillover contagion of risk from fluctuations among financial institutions. When one market in the financial system becomes highly volatile, the effects can be transmitted to each other through connections between markets, which may eventually cause the collapse of the entire system. A large number of domestic and international scholars have conducted research on the contagion effects of financial risks.

3.1 A Study of Economic Policy Uncertainty

Equation 1 shows the formula of the index, which consists of four components: a news index, which retrieves representative newspapers and magazines in a country (region) and quantifies the number of news reports related to economic policy uncertainty; a failure index of tax laws, which takes into account government reports and estimates the number of laws that are likely to fail in the coming period, and weights them; and a difference index of economic forecasts, which is divided into two modules: government spending and CPI. The third is an index of variance in economic forecasts, which is subdivided into two modules, government spending and CPI, and is based on forecasts of core economic indicators by authoritative forecasters, calculating the size of the variance and treating it as a proxy variable for uncertainty. In practice, the methodology varies somewhat from country to country, but in general the indicator is reasonably valid and representative, and this paper explores the volatility spillover effects between global economic policy uncertainty and stock markets based on this.

$$
\begin{aligned}
EPU = {}^1\!/_2 News\,Index + {}^1\!/_6 Tax\,Code\,Expiry\,Index \\
+ {}^1\!/_6 CPI\,forecast\,margin\,index \\
+ {}^1\!/_6 Government\,expenditure\,forecast\,margin\,index
\end{aligned}
\tag{1}
$$

Following the compilation of the Economic Policy Uncertainty Index by Baker and other scholars, scholars in various countries soon applied this index to the study of financial markets. Sum (2012) finds that the US stock market has a negative effect on economic policy uncertainty and that economic policy uncertainty contributes to the prediction of stock returns.

4 Conclusion

Existing domestic research on cross-country studies of stock market and economic policy uncertainty is relatively sparse, with most studies focusing only on quantitative values of risk spillovers in individual markets, and even when multi-country studies are involved, they tend to be disaggregated into individual countries. However, with the current process of financial integration accelerating and countries becoming increasingly interconnected, it is difficult to ensure that a country's stock market is not influenced by other countries in addition to the uncertainty of its own economic policies. Therefore, the study cannot ignore the dependencies between markets across countries under globalisation. In addition, many scholars, when exploring the relationship between the impact of the stock market and economic policy uncertainty, tend to analyse only the impact of EPU on the stock market, without considering the impact that the stock market has on EPU.

References

1. Pan Jinlong. Research on the impact of China's monetary liquidity on stock market volatility [D]. University of International Business and Economics, 2022. https://doi.org/10.27015/d.cnki.gdwju.2022.000224.

2. Wang WJ. A study on the impact of monetary policy on stock market liquidity in China [D]. Liaoning University, 2022. https://doi.org/10.27209/d.cnki.glniu.2022.000726.
3. Li Xuejiao. Research on the asymmetric effect of monetary policy on stock market liquidity [D]. Jilin University, 2022. https://doi.org/10.27162/d.cnki.gjlin.2022.001022.
4. Tang Qiuyan. Research on the time-varying effect of China's new monetary policy tools on stock market liquidity [D]. Southwest University of Finance and Economics, 2022. https://doi.org/10.27412/d.cnki.gxncu.2022.001841.
5. Winston Kung. Cross-cultural mobility experiences and household asset allocation[D]. Southwest University of Finance and Economics, 2021. https://doi.org/10.27412/d.cnki.gxncu.2021.002686.
6. Zhou Yan. Research on the impact of trading system on the liquidity of Chinese stock market [D]. Zhongnan University of Economics and Law, 2021. https://doi.org/10.27660/d.cnki.gzczu.2021.001071.
7. Liang Simeng. Stock market liquidity and monetary policy regulation in China [D]. Jilin University, 2021. https://doi.org/10.27162/d.cnki.gjlin.2021.007208.
8. Huang Peifan. The impact of monetary policy on stock market liquidity in China [D]. Shanghai University of Finance and Economics, 2020. https://doi.org/10.27296/d.cnki.gshcu.2020.000350.
9. Xu Zhanyong. Virtual capital accumulation and economic growth [D]. Northwestern University, 2005.
10. Dai Xuelai. China's Securities Market Opening: International Comparison and Strategy Study [D]. Fudan University, 2004.