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Education

Ph.D., Economics, University of Illinois at Urbana-Champaign, (expected) May 2020
M.A., Economics, University of Illinois at Urbana-Champaign, 2018
B.S., Statistics, B.A., Economics, Seoul National University, 2009

Professional Experience

Bank of Korea
Junior Economist, 2009−2015

Research Interests

Empirical Macroeconomics and Finance, Applied Time Series and Financial Econometrics

Working Papers

Quantile Impulse Response Analysis with Applications in Macroeconomics and Finance (with Ji Hyung Lee) [**Job Market Paper I**]

Estimation and Inference of Quantile Impulse Response Functions by Local Projections: With Applications to VaR Dynamics (with Heejoon Han and Ji Hyung Lee) [**Job Market Paper II**, *submitted to Journal of Econometrics*]

Work in Progress

The Importance of Stock-Specific Shocks for Aggregate Volatility in the U.S. Stock Market

Honors and Awards

Department Fellowship, University of Illinois at Urbana-Champaign, 2015−2016
Summa cum laude, Seoul National University, 2009
Merit-based scholarship, Seoul National University, 2003−2004

Academic Experience

University of Illinois at Urbana-Champaign
Research Assistant at Regional Economics Applications Laboratory, *Summer 2016, Fall 2016, Spring 2017*
Research Assistant to Professor Ji Hyung Lee, *Summer 2018, Spring 2019, Fall 2019*
Teaching Assistant (Graduate), General Microeconomic Theory (FIN 580 / ECON 530), *Fall 2017, Fall 2018*
Teaching Assistant (Undergraduate), Economic Statistics II (ECON 203), *Spring 2018*

Teaching Experience

Teaching Assistant at Department of Economics, University of Illinois

Micro Economic Theory I (Graduate): Fall 2018*, Fall 2017*

Economic Statistics II (Undergraduate): Spring 2018

* Awarded in the "List of Teachers Ranked as Excellent by their Students"

Other Information

Language: English, Korean

Computer Skills: Matlab, R

References

Ji Hyung Lee (Chair)
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Research Abstracts

Quantile Impulse Response Analysis with Applications in Macroeconomics and Finance (with Ji Hyung Lee) [Job Market Paper I]

Abstract: We study quantile impulse response functions (QIRFs) and their applications in macroeconomics and finance. We build a multi-equation autoregressive conditional quantile model and propose a new construction and statistical inference of the QIRF. We investigate dynamic QIRFs of the US economy in response to monetary policy and financial shocks, providing some interesting results: (i) Economic activity has the most heterogeneous response across its distribution among the variables under study. The left tail of economic activity is the most responsive to monetary policy and financial stimuli. (ii) The conditional 5% quantile of economic activity (*Growth-at-Risk*) shows much more persistent response to a monetary policy shock than the mean IRF of the economic activity. A financial shock, on the contrary, has an acute but transient impact on Growth-at-Risk. (iii) We also assess the impacts of financial and monetary policy shocks on Growth-at-Risk during the global financial crisis. Negative financial shocks during August 2007−June 2009 substantially aggravated Growth-at-Risk over 2008−2009. Unconventional monetary policy tools used during July 2009−December 2015 ameliorated Growth-at-Risk successfully over 2010−2015. (iv) When a measure of financial conditions (NFCI) stays at its right tail quantiles (tighter financial conditions), NFCI displays a locally explosive behavior. As a result, the consecutive right tail events create extreme downside risks to the economy. The tool set of QIRFs, therefore, provides detailed dynamic distributional evolution of macroeconomic and financial variables over time in response to economic shocks.

Estimation and Inference of Quantile Impulse Response Functions by Local Projections: With Applications to VaR Dynamics (with Heejoon Han and Ji Hyung Lee) [Job Market Paper II, *submitted to Journal of Econometrics***]**

Abstract: We investigate the estimation and inference of quantile impulse response functions (QIRFs) for dynamic analysis of Value-at-Risk (VaR). While a shock to one financial institution can propagate

to other financial institutions or to the market, their structural impulse response can be substantially different between downside and upside risks to the market. We propose a new easy-to-use QIRF estimation using the local projection methods and establish consistency and asymptotic normality of the estimator, thereby enabling asymptotic inference. Inferential methods based on stationary bootstrap is also provided, which is of its own interest. Monte Carlo simulation evidence shows that the QIRF estimation using local projections effectively describes dynamics of VaR and that both asymptotic and bootstrap confidence intervals have proper coverage probabilities. We study dynamic reactions of 1% and 5% VaR of 61 US financial institutions when there is a shock to the market. The local projection QIRFs generally exhibit substantial fluctuations compared with previously suggested quantile response tools.

Work in Progress

The Importance of Stock-Specific Shocks for Aggregate Volatility in the U.S. Stock Market

Abstract: I quantitatively assess the role of stock-specific shocks on aggregate volatility in the U.S. stock market. Under a fat-tailed market capitalization distribution, stock-specific shocks can create non-negligible fluctuations in the aggregate market. When a power law is fitted to the upper tail of market capitalization distribution in the S&P 500, the estimate of tail exponent is slightly above one, in which case the contribution of stock-specific shocks to aggregate volatility can be nontrivial. The variance decomposition analysis suggests that the contribution of idiosyncratic shocks to aggregate returns volatility is not considerable; the volatility of stock-specific component is about 20% of the volatility of aggregate returns. This small role of stock-specific shocks is attributable to the size-variance relationship and highly positive correlations among macro-sectoral components. However, I find idiosyncratic shocks can lead to systemic risk using quantile regression methods. Preliminary results show that the lower conditional quantiles of the market return are significantly affected by stock-specific shocks, while the upper quantiles are not. This finding implies that stock-level shocks create downward systemic risk to the market with asymmetric effects on aggregate volatility.