

# HYEYOON JUNG

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## EMPLOYMENT

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<b>Federal Reserve Bank of New York</b> <i>Financial Intermediation Policy Research Division, Research Group</i>	Jul 2021 – Current Economist
<b>J.P. Morgan (S.E.A) Limited</b> <i>FX &amp; Rates Trading, Currency &amp; Emerging Markets</i>	Jul 2012 – Jul 2015 Associate (FX Trader)

## EDUCATION

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<b>Leonard N. Stern School of Business, New York University, New York, NY</b> Ph.D. in Finance <i>Dissertation: Essays on International Finance and Financial Stability</i>	2021
M.Phil in Finance	2019
<b>University of Pennsylvania, Philadelphia, PA</b> <i>Jerome Fisher Program in Management and Technology</i> <b>The Wharton School</b> , Bachelor of Science in Economics, <i>Magna Cum Laude</i> <b>The School of Engineering and Applied Science</b> , Bachelor of Applied Science, <i>Magna Cum Laude</i>	2012

## RESEARCH INTERESTS

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International Finance, Financial Intermediation, Climate Finance, Asset Pricing

## WORKING PAPERS

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**CRISK: Measuring the Climate Risk Exposure of the Financial System** (with Robert Engle and Richard Berner)

**R&R at *Journal of Financial Economics (JFE)***

We develop a market-based methodology to assess banks' resilience to climate-related risks and study the climate-related risk exposure of large global banks. We introduce a new measure, CRISK, which is the expected capital shortfall of a bank in a climate stress scenario. To estimate CRISK, we construct

climate risk factors and dynamically measure banks' stock return sensitivity (that is, climate beta) to the climate risk factor. We validate the climate risk factor empirically and the climate beta estimates by using granular data on large U.S. banks' loan portfolios. The measure is useful in quantifying banks' climate-related risk exposure through the market risk and the credit risk channels.

### **U.S. Banks' Exposures to Climate Transition Risks** (with Joao Santos and Lee Seltzer)

We find that banks' credit exposures to transition risks are modest. We build on the estimated sectoral effects of climate transition policies from general equilibrium models. Even when we consider the strictest policies or the most adverse scenarios, exposures do not exceed 14% of banks' loan portfolios. We also find that commonly used carbon emissions can explain at most 60% of bank exposures estimated off general equilibrium models. Moreover, we find evidence of bank management of transition risk exposures. Banks that signed the Net-Zero Alliance have reduced their exposures compared to non-signatories, mainly by cutting lending to the riskiest industries.

### **Measuring the Climate Risk Exposure of Insurers** (with Robert Engle, Shan Ge, and Xuran Zeng)

Insurance companies can be exposed to climate-related physical risk through their operations and to transition risk through their \$12 trillion of financial asset holdings. We assess the climate risk exposure of property and casualty (P&C) and life insurance companies in the U.S. We construct a novel physical risk factor by forming a portfolio of P&C insurers' stocks, with each insurer's weight reflecting their operational exposure to states associated with high physical climate risk. We then estimate the dynamic *physical climate beta*, representing the stock return sensitivity of each insurer to the physical risk factor. In addition, using the *climate beta* estimates introduced by Jung et al. (2021), we calculate the expected capital shortfall of insurers under various climate stress scenarios. We validate our approach by utilizing granular data on insurers' asset holdings and state-level operational exposure. Our findings indicate a positive association between larger exposures to risky states and higher holdings of brown assets with higher sensitivity to physical and transition risk, respectively.

### **Deviations from the Law of One Price across Economies** (with Jaehoon Kyle Jung)

In a model with agents facing constraints heterogeneous across economies, we provide a novel explanation for an understudied yet economically significant deviation from the Law of One Price across FX forward markets. Specifically, we document a substantial divergence between the exchange rate for locally traded forward contracts and contracts with the same maturity traded outside the jurisdiction of countries during the global financial crisis, and that the magnitudes varied across currencies. The model predicts that (1) the basis increases with the shadow costs of constraints across time and increases with the country-specific FX position limit across countries; (2) the shadow cost of each constraint non-linearly increases as the intermediary sector's relative performance declines below a threshold; and (3) higher shadow cost of the position limit predicts lower future excess return on local-currency denominated assets, as buying local assets relaxes the FX position limit constraint imposed on the intermediaries. We test the model predictions and find consistent evidence in the countries with tight position limits.

## PUBLICATIONS AND FORTHCOMING PAPERS

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### **Real Consequences of Shocks to Intermediaries Supplying Corporate Hedging Instruments**

(Job Market Paper)

#### **Review of Financial Studies (RFS)**

I show that shocks to financial intermediaries that supply hedging instruments to corporations have real effects. I exploit a quasi-natural experiment in South Korea in 2010, where regulations required banks to hold enough capital for taking positions in foreign exchange derivatives (FXD). Using the variation in exposure to this regulation across banks, I find that the regulation caused a reduction in the supply of FXD, leading to a significant decline in exports for firms that held derivatives contracts with more exposed banks. These results indicate the crucial role of intermediaries in allocating risks through the provision of derivatives and establish a causal relationship between financial hedging and real economic outcomes.

**Climate Stress Testing** (with Viral Acharya, Richard Berner, Robert Engle, Johannes Stroebel, Xuran Zeng, and Yihao Zhao)

#### **Annual Review of Financial Economics 2023 15:1, 291-326**

We explore the design of climate stress tests to assess and manage macro-prudential risks from climate change in the financial sector. We review the climate stress scenarios currently employed by regulators, highlighting the need to (i) consider many transition risks as dynamic policy choices; (ii) better understand and incorporate feedback loops between climate change and the economy; and (iii) further explore “compound risk” scenarios in which climate risks co-occur with other risks. We discuss how the process of mapping climate stress scenarios into financial firm outcomes can incorporate existing evidence on the effects of various climate-related risks on credit and market outcomes. We argue that more research is required to (i) identify channels through which plausible scenarios can lead to meaningful short-run impact on credit risks given typical bank loan maturities; (ii) incorporate bank-lending responses to climate risks; (iii) assess the adequacy of climate risk pricing in financial markets; and (iv) better understand and incorporate the process of expectations formation around the realizations of climate risks. Finally, we discuss the relative advantages and disadvantages of using market-based climate stress tests that can be conducted using publicly available data to complement existing stress testing frameworks.

## **PRESENTATIONS** (Including scheduled; Own presentations only)

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**Seminars:** Columbia University, Federal Reserve Bank of New York, E-axes Young Scholar Series on Financial Economics and Sustainability, Financial Stability Oversight Council Meeting 2024

**Conferences:** American Economic Association Meeting, ASSA Meeting (International Banking, Economics, and Finance Association Session), Midwest Finance Association Meeting, CESifo Conference on Energy and Climate Economics, ZEW Conference on Ageing and Sustainability Finance, Western Economic Association International Meeting (International Banking, Economics, and Finance Association Session), Banca d'Italia and IMF Conference on Embedding Sustainability in Credit Risk Assessment, Global Research Alliance for Sustainable Finance and Investment (GRASFI) Conference, Yale Initiative on Sustainable Finance Conference, Stanford Institute for Theoretical Economics (SITE) Conference, WE\_ARE\_IN Macroeconomics and Finance Conference

**Seminars:** Financial Stability Oversight Council Meetings (Banking Group, Markets Group, Scenario Analysis Group), Federal Reserve Cross-bank Climate Risk Community, Indian Institute of Management Ahmedabad, Central Bank of Brazil, International Monetary Fund, European Central Bank, Federal Reserve Board, Federal Reserve Bank of New York 2023

**Conferences:** American Economic Association Meeting, System Climate Meeting by the Federal Reserve Bank of San Francisco, Annual Conference of the Central Bank of Chile, Stanford Institute for Theoretical Economics (SITE) Conference, Women Assistant Professors of Finance (WAPFIN) Conference at NYU Stern, Federal Housing Finance Agency (FHFA) Econ Summit, System Banking Conference by the Federal Reserve Board, Financial Stability Conference by the Federal Reserve Bank of Cleveland and the Office of Financial Research

**Seminars:** Federal Reserve Cross-bank Climate Risk Community, Board of Governor's CREST Seminar, ESSEC-Amundi Chair Webinar, Bank of Korea, Federal Reserve Bank of Richmond 2022

**Conferences:** NBER International Finance and Macroeconomics Program Meeting, Australasian Finance and Banking Conference, Paris December Finance Meeting, UN PRI Academic Network Conference, OFR Climate Implications for Financial Stability Conference, Cornell University ESG Investing Research Conference, International Journal of Central Banking Research Conference, European Finance Association Meeting, Central Bank Research Association Annual Meeting, Banco de Portugal Conference on Financial Intermediation, OCC Symposium on Climate Risk in Banking &

Finance, IMF Macro-Financial Research Conference, System Climate Meeting by the Federal Reserve Bank of San Francisco, NY Fed- Columbia Conference on Environmental Economics and Policy, HEC Paris - CEPR Conference, Banque de France Workshop, Eastern Finance Association Meeting, University of Oklahoma Energy and Climate Finance Research Conference, European Systemic Risk Board Workshop, Western Economic Association International Meeting (International Banking, Economics, and Finance Association Session)

**Seminars:** European Central Bank, Central Bank of Chile, Korea University, 2021  
 Hong Kong University of Science and Technology, Vanderbilt Owen, Yale SOM, Federal Reserve Bank of New York, Federal Reserve Board, Stockholm School of Economics, Federal Reserve Bank of Chicago, Warwick Business School, U of SC Darla Moore, Oxford Said, Imperial College London, University of Hong Kong

**Conferences:** European Conferences of the Economics Community (EC<sup>2</sup>) Conference, MIT GCFP Conference, Australasian Finance and Banking Conference, IFABS Oxford Conference, International Risk Management Conference, Federal Reserve Stress Testing Conference, Volatility and Risk Institute Conference

**Seminars:** Society for Financial Econometrics Seminar, NYU Stern, Columbia 2020  
 GSB (Ph.D.)

**Conferences:** AFA Ph.D. Poster Session, Federal Reserve Board Pre-Job Market Conference

## ACADEMIC AND PROFESSIONAL SERVICES

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### Discussions:

American Economic Association Meeting	2024
International Roles of the U.S. Dollar Conference, Women in System Economic Research Conference, 2023 ECB-NY Fed Workshop	2023
Eastern Finance Association Meeting, Southern Economic Association Meeting, Paris December Meeting	2022
Australasian Finance and Banking Conference	2021

**Refereeing:**

*Applied Economics Letters, Climate Policy, Ecological Economics, Journal of Banking & Finance, Journal of Economic Surveys, Journal of Finance, Journal of Financial Economics, Journal of International Financial Markets Institutions & Money, Nature Climate Change, Quarterly Journal of Economics, Review of Finance, Review of Financial Studies*

**Program Committee:**

International Roles of the U.S. Dollar Conference 2024

**Session Chair:**

IFABS 2021 Oxford Conference (Climate Change Session), EC<sup>2</sup> 2021 Conference (Macroeconomics of Emissions, Climate Finance Session), Paris December Meeting 2022 (Banking/ Financial Intermediation Session)

**Professional Service:**

Financial Intermediation Seminar Organizer, 2022-2023

Research Analysts and Intern Recruiting Coordinator, 2023-2024 (Received Vault Award for Excellence)

**HONORS AND AWARDS**

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Berkeley Haas Sustainability Research Prize Finalist	2023
Research Grant, National Science Foundation Project "Market Based Climate Stress Tests" (Award # 2218455)	2022
Research Grant, Inter-American Development Bank and Volatility and Risk Institute, NYU Stern	2021
Ph.D. Research Grant, Center for Global Economy and Business, NYU Stern	2020
AFA Ph.D. Student Travel Grant	2020
Jules Bogen Fellowship, NYU Stern	2019 – 2020
NYU Stern Doctoral Fellowship	2015 – 2021
NYU Stern Teaching Commendation	2018
Wharton Undergraduate Research Award	2012

**TEACHING EXPERIENCE**

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<b>Instructor, Foundations of Finance</b> (Undergraduate)	Summer 2018
Overall Evaluation: <b>5.0/5.0</b>	

*Awarded Commendation for Teaching Excellence*

Teaching Fellow, Financial Econometrics (Ph.D.) Prof. Robert Engle	Spring 2018
Teaching Fellow, Volatility (MBA) Prof. Robert Engle	January 2020
Teaching Fellow, Investments (Executive MBA) Prof. Anthony Lynch	Fall 2019
Teaching Fellow, Foundations of Finance (MBA) Prof. Anthony Lynch	Summer 2017 – 2019
Teaching Fellow, Principles of Securities Trading (Undergraduate) Prof. Joel Hasbrouck	Spring & Fall 2017- 2018, 2020
Project Advisor, Stern Signature Project (MBA) Prof. Robert Engle	Spring 2021
Guest Speaker, Climate Finance, NYU Stern, Prof. Johannes Stroebe	Fall 2021
Guest Speaker, Credit Risk and Bankruptcy, NYU Stern, Prof. Viral Acharya	Spring 2022
Guest Speaker, Credit Risk and Bankruptcy, NYU Stern, Prof. Viral Acharya	Spring 2023
Guest Speaker, Credit Risk, NYU Stern, Prof. Viral Acharya	Spring 2023
Guest Speaker, Climate Finance, NYU Stern, Prof. Johannes Stroebe	Fall 2023
Guest Speaker, Climate Finance, Cornell Johnson, Prof. Alissa Kleinnijenhuis	Spring 2024

**REFERENCES**

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**Prof. Robert Engle (Co-chair)**

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Email: [rengle@stern.nyu.edu](mailto:rengle@stern.nyu.edu)

**Prof. Philipp Schnabl (Co-chair)**

New York University, Stern School of Business  
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**Prof. Joel Hasbrouck**

New York University, Stern School of Business  
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**Prof. Ralph Koijen**

University of Chicago, Booth School of Business  
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**Prof. Alexi Savov**

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