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<u>**Undergraduate Studies**</u>:
    B.B.A., Business Administration, Korea University, 2014
    B.S., Mathematics, Korea University, 2014

<u>**Masters Level Work**</u>:
    M.S., Finance, University of Illinois at Urbana-Champaign, 2016

<u>**Graduate Studies**</u>:
    University of Pennsylvania, 2016 to present.
    <u>Thesis Title</u>: "Essays on Heterogeneity in Macroeconomics"
    <u>Expected Completion Date</u>: May 2021

    <u>Thesis Committee and References</u>:
    Jesús Fernández-Villaverde (Advisor)
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<u>**Research Fields**</u>:
    Macroeconomics, Finance

<u>**Teaching Experience:**</u>

Summer, 2019 -2020	University of Pennsylvania, an instructor of the Math Camp for the first-year Ph.D.
Spring, 2018	University of Pennsylvania, *Intermediate Macroeconomics*, Teaching Assistant to Professor Dirk Krueger

Fall, 2017	University of Pennsylvania, *Econometrics I: Fundamentals* for the first-year Ph.D. core course, Teaching Assistant to Professor Xu Cheng
Spring, 2013	Korea University, *Investments*, Teaching Assistant to Professor Baeho Kim

Research Experience and Other Employment:

2018-2020	University of Pennsylvania, Research Assistant to Professor Jesús Fernández-Villaverde
2019 Summer	FRB San Francisco Thomas J. Sargent Dissertation Fellow
2018 Summer	Princeton Initiative Summer Program
2014-2016	University of Illinois at Urbana-Champaign, Research Assistant to Professor Dana Kiku and Professor Jaewon Choi
2013-2014	Korea University, Research Assistant to Professor Jong-Wha Lee and Professor Baeho Kim
2013-2014	Asiatic Research Institute (ARI) at Korea University, Assistant Researcher

Presentations (*scheduled):

2021	AEA/ASSA (Virtual), Korea Development Institute, Bilkent University, Federal Reserve Board, Bank of Korea, Federal Reserve Bank of St. Louis, Federal Reserve Bank of Boston, University of Tokyo, University of Florida, Korea University (Business)*, Korea University (Econ)*, SED Annual Meeting*
2020	KER International Conference, WEAI Annual Meeting, MEA Annual Meeting (cancelled), University of Pennsylvania
2019	Federal Reserve Bank of San Francisco, University of Pennsylvania

Professional Activities:

Referee	International Economic Review, Games and Economic Behavior, Macroeconomic Dynamics

Honors, Scholarships, and Fellowships:

2020	Hiram C. Haney Fellowship Award in Economics for Best Third Year Research Paper
2019	FRB San Francisco Thomas J. Sargent Dissertation Fellowship
2016-2020	University of Pennsylvania Doctoral Fellowship
2016-2020	Kwanjeong Educational Foundation Fellowship
2015	American Finance Association (AFA) Doctoral Student Travel Grant Award
2014	Zwisler Fellowship (merit-based), University of Illinois at Urbana-Champaign
2014-2015	University of Illinois at Urbana-Champaign Doctoral Fellowship

Research Papers:

"Striking While the Iron Is Cold: Fragility after a Surge of Lumpy Investments"
(JOB MARKET PAPER)

In this paper I argue that synchronized large-scale investments of large firms can significantly amplify productivity-driven aggregate fluctuations, and lead to investment cycles even in the absence of aggregate shocks. Using U.S. Compustat data, I show that years preceding recessions display investment surges among large firms. Furthermore, after the investment surges, large firms become inelastic to interest rates and display persistent inaction duration. I then develop a heterogeneous-firm real business cycle model in which a firm needs to process multiple investment stages for large investments and can accelerate it at a cost. In the model, following a TFP shock the synchronized timings of lumpy investments are persistently synchronized. And TFP-induced recessions are especially

severe after the surge of large firms' lumpy investments. In support of this prediction, I present evidence for the investment cycle in post-shock period in macro-level data on nonresidential fixed investment.

"Top Income Inequality and the Business Cycle"

This paper studies how the pass-through businesses of top income earners affect the aggregate fluctuations in the U.S. economy. I develop a heterogeneous-household real business cycle model with endogenous labor supply and occupational choice and calibrate the model to capture the observed top income inequality. Compared to the counterfactual economy with the factor-income-driven top income inequality, the economy in the baseline model features the aggregate fluctuations that outperform in explaining the recent changes in the business cycle: 1) stronger negative correlation between labor hour and productivity and 2) higher volatilities of labor hour and productivity relative to the output volatility. Heterogeneous labor demand sensitivities to TFP shocks between pass-through businesses and C-corporations build the core of the aggregate dynamics, and the aggregate employment dynamics display substantial nonlinearity due to this heterogeneity.

"Aggregate Uncertainty and Repeated Transition Method"

This paper develops and tests a novel algorithm that solves heterogeneous agent models with aggregate uncertainty. The algorithm iteratively updates agents' expectations on the future path of aggregate states from the transition dynamics on a single path of simulated shocks until the expected path converges to the simulated path. The nonlinear dynamic stochastic general equilibrium could be computed with a high degree of accuracy by this method; the market clearing prices and the expected aggregate states are directly computed at each point on the path without relying on the parametric law of motion. Using the algorithm, I analyze a heterogeneous-firm business cycle model where firms are subject to an external financing cost and hoard cash as a buffer stock up to a target level. Based on the model, I discuss the business cycle implications of the corporate cash holdings.

Research Papers in Progress:

"Rising Concentrated Intangibles" with Jesús Fernández-Villaverde

"Rising Intangibles and Fading Listed" with Sara Casella and Sergio Villalvazo

Languages: English (fluent), Korean (native)

Computational Skills: MATLAB, Julia, R, Stata, SAS