

Optimal Asset and Housing Allocation: Roles of Housing Adjustment Costs and Bequests

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This project proposes to study the roles of time-varying housing adjustment costs and bequests in strategic asset allocations of homeowners and renters who are also making housing and mortgage decisions. To this end, a dynamic stochastic life-cycle model is developed and evaluated empirically and numerically .

Housing is a major component of wealth for most U.S. households. According to the Panel Study of Income Dynamics (PSID) 2003 data set, real estate accounts for 68% of the financial wealth and 16% of the aggregate wealth of the home owners. It is also well known that the majority of household debt is associated with housing investment. Thus, in order to better understand how a typical U.S. household allocates its assets over the life cycle, modeling the housing decision together with related financing constraints and frictions must be accompanied.

The housing decision consists of an extensive margin (owning versus renting) and an intensive margin (changing housing units or sizes given homeownership). Buying a house requires a substantial amount of resources, which most young households cannot afford. Therefore, a long-term mortgage contract with an initial down payment is usually used and homeowners pay their monthly mortgage bill. Although monthly mortgage bills are seemingly similar to monthly rental fees other than the down payment requirement, owning a home differs from renting because homeowners accumulate their equity through their mortgage payment, bearing a risk from housing price fluctuations. Related, housing adjustment involves the termination and/or the initiation of debt contracts. In a perfectly functioning financial market, capital structure (equity-debt portions) is irrelevant as the Modigliani-Miller theorem states. However, in reality, a larger debt burden usually means greater difficulty in future financing due to certain economic frictions such as information asymmetry between lenders and borrowers.

For instance, suppose that a homeowner is going to move to a different location. This involves selling the existing house and buying a new one. If the sale takes more time and cost than the purchase, as is often the case, this creates an additional cost because it is difficult to obtain a new mortgage given the existing amount of loan. Even for a case of simple refinancing without relocating, its cost and fee can be higher when the amount of an existing loan is larger or the value of the house is lower. Thus, a decision of buying a house today can have a dynamic effect on changes of housing units or sizes in the future via the channel of the existing amount of debt.

In this context, the model proposed in this project incorporates a housing adjustment cost which depends on the remaining mortgage balance in addendum to a conventional transaction cost or fee. Thus, the tenure choice of a housing investment matters in explaining the wealth compositions of households with different age groups and homeownership status. Under this assumption, as homeowners accumulate their equity more, the lower the adjustment cost of a housing investment they have to pay. This implies that homeowners will have an incentive to defer liquidating their home equity until the adjustment cost becomes sufficiently low. It turns out that this feature helps explain the lumpiness of housing adjustment, the hump shape of homeownership, and the increases in financial asset holdings over the life cycle.

As mentioned in the beginning, mortgage contracts contain a down payment requirement, which is a significant hurdle to many first-time home buyers. Although this restriction has been considerably relaxed and even mortgages with zero down payment are available, mortgagors with such mortgage contracts are still subject to mortgage insurance and other types of fees, which implies that there still exist effective down payment restrictions. Thus, without any subsidy toward a down payment, it is difficult to explain the behavior of young households in light of housing and other liquid asset investments.

Based on this observation, another key feature of this project is to allow for alternative forms of bequest to the young home buyers. According to a preliminary result based on a simple version of the proposed model, a partial subsidy from parents to the young home buyers plays a crucial role in explaining the homeownership status of the young households quantitatively. In addition to analyzing the effect of the bequests on housing investment, this project is going to analyze the welfare effects of different taxes on housing as well as bequests and other financial assets.

Finally, the project aims to empirically evaluate the model implications. While there is a burgeoning literature to study dynamic choice problems in household finance, relatively few studies focus on the interactions among bequests/inheritances, housing choices, and strategic asset allocations, especially using panel data sets. Therefore, this project can help abridge the important gap by utilizing both theoretical and empirical approaches.

For this purpose, it is necessary to compile a comprehensive data set including housing choices, asset allocations, bequests/inheritances, and other intra-household transfers of individual households. The Survey of Consumer Finance (SCF), the Panel Study of Income Dynamics (PSID), and the American Housing Survey (AHS) will be the main sources of the data set, and other financial and macroeconomic data sets will be employed as well.

Itemized Budget

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Texas A&M University

A. Personnel: Funding for a 12-month graduate research assistant is requested for the year of the project. \$10,000 is expected for the research assistance.

B. Travel: Travel funds (\$2,000 for domestic and \$3,000 for foreign trips for the year of the project) are requested to attend conferences, workshops, and meetings of professional associations related to the research being proposed.

C. Equipment: Equipment funds (\$5,000) are requested to purchase a high-end desktop computer and a laptop computer. Those will be used to analyze data and numerically solve the problems proposed in the project.

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Education

- University of Chicago, Ph.D. in Economics (Committee: Robert E. Lucas Jr. (Main), Lars P. Hansen, Boyan Jovanovic)
- University of Chicago, M.A. in Economics
- Seoul National University, B.A. in Economics

Academic Positions

- 2010-Present: Assistant Professor, Finance, Mays Business School, Texas A&M University
- 2007-2010: Assistant Professor, Economics, Texas A&M University
- 2004-2007: Assistant Professor, Economics, State University of New York at Buffalo

Publications

- “Momentum Effect as Part of a Market Equilibrium,” (with S. Choi), *Journal of Financial and Quantitative Analysis*, forthcoming
- “Using the Credit Spread as an Option-Risk Factor: Size and Value Effects in CAPM,” (with Y. Hwang, H. Min, J. McDonald), *Journal of Banking and Finance*, Vol 34, Issue 12: (December 2010): 2995-3009
- “Velocity of Money and Inflation Dynamics”, (with C. Subramanian), *Applied Economics Letters*, Vol. 16, Issue 18 (December 2009): 1777-1781 (Lead article)
- “Transactions Cost and Interest Rate Rules,” (with C. Subramanian), *Journal of Money, Credit, and Banking*, Vol. 38 No.4 (June 2006): 1077-1092

Working Papers

- “Stochastic Money Velocity and the Term Structure of Interest Rates,” *revise and resubmit in Journal of Finance*
- “A Monetary Explanation of the Term Structure of Interest Rates and Bond Risk Premia,” (with A. J. Moon), *revise and resubmit in Review of Financial Studies*
- “Macroeconomic Uncertainty and Asset Prices: A Stochastic Volatility Model” (with H. Lee, J. Y. Park, H. Yeo), *revise and resubmit in Journal of Financial and Quantitative Analysis*
- “Evaluating Factor Pricing Models Using High Frequency Panels” (with Y. Chang, and J. Y. Park), *revise and resubmit in Quantitative Economics: Journal of the Econometric Society*
- “Term Structure Dynamics with Macro Factors using High Frequency Data” (with H. Park), *revise and resubmit in Journal of Empirical Finance*
- “Does Ambiguity Matter? Estimating Asset Pricing Models with a Multiple-Priors Recursive Utility” (with D. Jeong and J. Y. Park)
- “Trade, Structural Transformation, and Growth” (with S. Choi and X. Ma)
- “Do Individuals Have Preferences Used in Macro-Finance Models? An Experimental Investigation” (with A. Brown)
- “The Effect of Seniority and Security Covenants on Bond Price Reactions to Credit News” (with D. Cho and J. Shin)
- “Dividend Policy, Investment, and Stock Returns” (with S. Choi, S. Johnson and C. Nam)
- “Sources of Momentum in Bonds” (with A. Mahajan and A. Petkevich)
- “Yield Forecasts and Stochastic Volatility in Affine Models with Macro Factors” (with Y. Chang and H. Park)
- “Do Macroeconomic Variables Forecast Bond Returns?” (with A. J. Moon)
- “Testing for No Arbitrage in Continuous Time: A Resolution to Forward Premium Anomaly” (with S. Jacowitz and J. Y. Park)

Current Projects

- “Information in Government Yields” (with S. Sorescu)
- “Propensity to Pay Dividends and Stock Returns” (with S. Johnson and C. Nam)
- “A General Approach to Extract Stochastic Volatilities with an Empirical Analysis of Volatility Premium” (with H. Lee and J. Park)
- “A Stochastic Dominance Analysis of High-Frequency Data with an Application to the International Diversification Puzzle” (with J. Y. Park, and M. Shintani)
- “Momentum and Business Cycle” (with Z. Chen and R. Petkova)

Publications in Korean

- “Decomposition of Interest Rate Differentials: A Cross Country Analysis,” (with B. Yu), *Economic Analysis* (Kyungje Bunsok) (June 2009) (in Korean; Refereed)
- “An Analysis of the Term Structure of Interest Rates in a Small Open Economy,” (with H. Park), *International Economic Research* (Kukje Kyungje Yongu) (forthcoming 2011) (in Korean; Refereed)

Awards/Fellowships

- HEAD Research Grant (SUNY Buffalo) 2006-2007
- Research Grant (SUNY at Buffalo), 2004-2006
- Henry Morgenthau, Jr. Dissertation Fellowship, 2000-2001
- Korea Foundation for Advanced Studies Fellowship, 1997-2002
- Un-Kyung Foundation Fellowship, 1995-1996
- Bank Of Korea Scholarship, 1989-1992

Selected Presentations

- 2010: American Finance Association Annual Meetings, Atlanta (2 papers); Econometric Society Winter Meeting; Texas A&M, Mays Business School; Michigan State; OSU (co-author); Indiana; Sogang University (Seoul, Korea), Korea Development Institute, Econometric Society World Congress (Shanghai, China), Texas Tech University
- 2009: NBER Summer Institute (Asset Pricing Group), Boston; Texas A&M Economics, Yale University; Vanderbilt, SETA 2009 (2 papers, Kyoto, Japan), Far Eastern and Southern Econometric Society Meeting (Tokyo, Japan), Midwest Macroeconomics Conference (Bloomington, Indiana); Sungkyunkwan University, Korea University; Indiana University.
- 2008: CRSP Forum 2008 (Chicago Booth); World Congress Index Measure Conference (Washington DC); Texas A&M Mays Business School.
- 2007: ASSA Meeting, Chicago; Korea University Business School; Texas A&M University; Econometric Society, North American Summer Meeting (Duke University); Conference on the Interaction of Market and Credit Risk, (Berlin); Bundesbank and BIS;
- Discussant: Texas Monetary Conference (2008, 2009, 2010); Workshop on Methods and Applications for DSGE Models, Cleveland Fed and NBER (2008).

Courses Taught

- Texas A&M University
 - Finance (Mays Business School): Asset Pricing Theory (PhD), Fixed Income Analysis (UG)
 - Economics: Asset Pricing Theory (PhD), Macroeconomic Theory II (PhD), Macroeconomics (UG)
- SUNY at Buffalo
 - Empirical Finance (PhD), Monetary Economics (PhD), Risk Management (MS), Economic Fluctuation and Forecasting (MS), Money and Banking (MS), Financial Economics (MS), Macroeconomics (UG), Microeconomics (UG), Money and Banking (UG)

- University of Chicago
 - Graduate: Macroeconomics (TA)
 - Undergraduate: Introduction to Public Finance (Lecturer), Macroeconomics (TA)

Service

- Referees
 - Journal of Political Economy, Journal of Money, Credit, and Banking, Journal of Monetary Economics, Review of Financial Studies, Journal of Financial Econometrics, Applied Economics, Manchester School, Journal of International Money and Finance, KDI Journal of Economic Policy, Macroeconomic Dynamics, Journal of Banking and Finance, Management Science.
 - NSF Grant External Reviewer (3 times); SSHRC Grant External Reviewer
- Graduate Student Committees:
 - Euljin Kim: Financial Supervisory Service (Chair); Heungju Park: Peking University HSBC Business School (Member); Changwoo Nam: Korea Development Institute (Chair); Ha-Il Park: Bank of Korea (Chair); Joseph Kim: Government of Korea (Chair); Stefan Jacewitz: Federal Deposit and Insurance Corporation (Member); Hyong-Il Lee: Government of Korea (Member); Woong Kim: Bank of Korea (Member); Kyung Soo Han: Bank of Korea (Member); Jongchil Son: Bank of Korea (Member); Sang Bong Kim: Hanseong University (Member); Daehee Jeong: Korea Development Institute (Member); Bongju Song: Korea Naval Academy (Member); Kang Koo Lee: Korea National Assembly Budget Office (Member).
- Research Assistant to Steven Kaplan, GSB, University of Chicago; Bob Lucas, University of Chicago

Professional Associations

- American Finance Association; American Economic Association; Econometric Society; Korean American Economics Association