Research statement

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My general research areas are macroeconomics and international economics with a special focus on inequality, housing, sovereign defaults, survey measures of preferences, and the Chinese economy. For my research, I build dynamic stochastic general equilibrium (DSGE) models with features such as agent heterogeneity, incomplete markets, and strategic interactions. Although much of my research is theoretically and computationally intensive, I also have significant experience with empirical work, ranging from compiling and analyzing large-scale datasets to statistical modeling and inference. In the following, I discuss my current research topics in greater detail.

Inequality   My main research interest centers on understanding inequality dynamics and its macroeconomic implications. Through several projects, I have developed theoretical and empirical frameworks to study interactions between inequality and specific macroeconomic phenomena, such as house prices, policy uncertainty, return differentials, and cross-country consumption risk-sharing.

Inequality and House Prices   In this paper, I develop a heterogeneous agent equilibrium model to study the interactions of inequality and house price dynamics. The model links cross-sectional household portfolio saving decisions to housing market outcomes, contributing to the housing literature by illustrating a new price formation mechanism in which the investment motive among the wealthy plays a key role. A quantitative application of the theory rationalizes puzzling phenomena in China – notably, its recent substantial housing boom accompanied by rising savings rates. The theory in this paper shows that market frictions can have differential impacts cross-sectionally, increasing the risk of an explosion of inequality. This adds to the understanding of a broader topic: how inequality and macroeconomic forces can interact.

The Welfare and Distributional Effects of Fiscal Uncertainty   In this joint project, my coauthors and I conduct a quantitative evaluation of the welfare and distributional effects of fiscal uncertainty. Our model accounts for important distributional aspects of the U.S. economy and key features of its fiscal regime. Our results highlight important channels through which fiscal uncertainty affects the wealthy and the poor differently. In addition to its substantive contributions, our study provides a new computation algorithm that may prove useful for other quantitative studies of stochastic transition-path equilibria.

Return Differentials and Wealth Dynamics   This project aims to identify possible reasons behind the increasing wealth concentration in the United States. Using data from the Survey of Consumer Finance (SCF), my coauthor and I trace the reasons for the increase in wealth concentration back to return differentials on wealth across wealth class. We achieve this by separately decomposing the wealth dynamics of the wealthy and the poor. We further show that the return differentials on total wealth are not due to differences in portfolio composition across wealth classes but caused by within-asset class return differentials. Finally, we present direct evidence on differential returns in housing asset across wealth classes from various data sources.

Inequality and Cross-country Consumption Risk-sharing   The observation that consumption is much less correlated across countries than output (the quantity puzzle) is hard to explain using the standard

representative agent framework. Exploring cross-sectional data on consumption from both the United States and the United Kingdom, I find that the cross-country consumption correlation between wealthy households is much higher than that of the aggregate. This suggests that cross-sectional differences in consumption and saving behaviors are crucial in understanding the quantity puzzle. I thus build a two-country model featuring both incomplete markets and heterogeneous households to explain the quantity puzzle.

I believe that the study of aggregate performance of an economy will overlap more and more with the study of inequality. My future research will explore more possible interactions between distribution and the aggregate dynamics of the economy.

Housing Other than my job market paper, I have a joint project with Dmitriy Stolyarov that focuses on structurally understanding how housing market outcomes are connected to fundamental factors. In particular, we construct a life-cycle framework that links housing demand and wealth accumulation with rent-or-own decisions and that can also integrate equilibrium effects of household decisions on rental rates and house prices.

Housing as a financial asset in a life-cycle model In this project, we formulate an intuitively appealing equilibrium model that captures several salient features of the housing market. A house has a dual role: it is a financial asset as well as a durable providing a flow of services. Demand for housing changes over the life-cycle, and optimal decisions made by agents of different ages determine supply and demand for rental and owner-occupied housing. We characterize equilibrium analytically and focus on comparative statics results that inform on the mechanisms of equilibrium rent and price formation. We test the model's equilibrium conditions directly using national-level data on consumption, wealth, rents, and prices; the model fits the observations well despite its apparent parsimony.

The housing market features low-frequency movements. Our structural approach in this project would allow formulating and evaluating policy responses to changes in market fundamentals in advance of their expected full impact.

Sovereign Defaults I have a joint project with Chenyue Hu on sovereign defaults. The theoretical aspect of our research stresses the strategic interactions between debtors and creditors and its implications. Empirically, we compile and analyze a large panel data set, finding new debtor-creditor trade patterns that are consistent with our theory.

Trade after Sovereign Defaults This project offers new theoretical and empirical insights into the effect of sovereign defaults on trade. In this project, we contend that sovereign debt renegotiation is associated not with trade sanctions but with trade benefits between debtor countries and creditor countries. We find empirical support for the argument from the changes in trade shares after debt renegotiations as well as the Aid-for-trade statistics. Motivated by those findings, we build a two-country DSGE model with incomplete financial markets, allowing strategic interaction between debtors and creditors through trade-cost adjustment and debt default. The model explains several stylized facts about sovereign defaults.

There might be more implications to explore from modeling the strategic interaction between debtors and creditors in the international financial market.

Survey Measures of Preferences Through several joint projects with Miles Kimball and others, I have learned frontier theories and techniques for identifying individuals' preferences along different dimensions utilizing specifically designed survey instruments. I have also gained valuable experience in analyzing large-scale survey data and statistical modeling and inference.

Diminishing Marginal Utility Revisited How quickly does marginal utility diminish? It depends on the dimension along which we consider concavity of the utility function. This paper estimates the distribution of heterogeneous curvature parameters in individuals utility functions using hypothetical choice data and carefully accounting for survey response error. The types of curvature examined include relative risk aversion, intertemporal substitution, the altruism elasticity, and a new measure of how much more a dollar means to a poor family than to a rich family, called inequality aversion. Our results reveal substantial differences in the estimated distributions of different types of curvature.

Separating First-order Risk Aversion from Risk Aversion Standard utility theory cannot explain observed aversion to small gambles without implying ridiculous aversion to large gambles. Nonstandard preference models with first-order risk aversion are frequently proposed as one possible reconciliation. But little work has been done in empirically quantifying the degree of first-order risk aversion. By exploring data from different versions of hypothetical gamble questions in several modules of the Health and Retirement Study (HRS), we examine the population distribution of first order risk aversion. Our preliminary estimates suggest that there is a great deal of first order risk aversion among HRS respondents.

The methodologies on survey measures of preferences might have broader applications. For example, examining cross-cultural differences along certain preference dimensions might shed light on several puzzling macroeconomic phenomena. To be concrete, different degrees of bequest motive toward offspring might help explain differences in life-cycle saving behaviors between households in the United States and in China.

The Chinese Economy As a Chinese national, I have a special interest and some natural advantages in studying China-related questions. My job market paper addresses issues related to inequality, housing markets, and savings rates in China. Through this work I have gained expertise on new data about China, and especially on longitudinal nationwide household surveys. I believe these data will play an important role in future research on China, and particularly in understanding Chinese household behavior.

To conclude, I enjoy learning new techniques, exploring new questions, and collaborating with my colleagues. My working papers are available on `my research website`. Please feel free to contact me for any additional information.