Research Statement

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I am a macroeconomist with a research interest in inequality, environmental and energy economics, and public finance. Specifically, I seek to understand disparities in consumption patterns across the income and wealth distributions and ask how economic shocks or policies can impact these consumption patterns, subsequently affecting the broader economy. To address these questions, I use both econometric methods and quantitative models with non-homothetic consumption preferences informed by micro and aggregate-level data. Using these quantitative models, I also perform counterfactual experiments to examine the effects of alternative policies. In what follows, I briefly describe my current papers and future research plan.

In my job market paper, "**Commuting, Home Utilities, and Production: The Distributional Effects of Energy Price Shocks**", I study the distributional effects of an energy price shock in a framework that includes energy use in housing, commuting, and production. Energy prices experience large and persistent fluctuations compared to other goods and services, which is important for two main reasons: (i) energy is used both by firms and households, and (ii) the demand for energy is inelastic. Consequently, high energy prices can negatively impact consumer demand, potentially exacerbating income and consumption inequality. These concerns lead governments to implement fiscal packages to alleviate the potential adverse impacts of energy price shocks. In designing these policies it is crucial to understand the potential distributional consequences of energy price shocks.

Using the Consumer Expenditure Survey (CEX), I document a robust negative relationship between income and the expenditure share on energy for both housing and commuting. The lowest income quintile allocates 12.5% of their budget to energy, compared to 7.8% for the highest quintile. To study the distributional impacts of an energy price shock, I develop a heterogenous-agent incomplete market model guided by the empirical evidence of varied energy use in consumption and production and the effects of energy price shocks on consumption and the labor market. The model includes non-homothetic consumption preferences to capture variation in the expenditure share on energy across income groups, extensive and intensive margin labor supply decisions, cost of commuting to work as it is energy-intensive and directly related to labor supply decisions, and a production sector that produces non-energy goods and services using energy as a factor of production. The model considers energy as an imported good at an exogenous price, with trade being balanced in each period. The calibrated version of the model reproduces many salient features of the data, including the distribution of income, wealth, and expenditure shares on residential and commuting energy. The quantitative analysis predicts that a one-standard-deviation unanticipated increase in the relative price of energy results in unevenly distributed welfare losses across income groups. Specifically, households in the lowest income quintile experience a burden twice as heavy as that of the highest income quintile. This welfare gap can even grow larger when commuting options are inflexible, especially in the immediate aftermath of the price shock. In addition, my model provides new insights regarding the shock impacts in the presence of work-from-home (WFH) opportunities and federal energy assistance programs, like the Low Income Home Energy Assistance

Program (LIHEAP). The results indicate that following an energy price shock, WFH opportunities only benefit high-income households. In contrast, targeted transfers to low-income households benefit the broader income distribution by reducing uninsurable idiosyncratic risk.

In my other paper, "**Progressive Income Taxation and Consumption Baskets of Rich and Poor**" (*Journal of Economic Dynamics and Control*, 2023), I analyze the implications of differences in consumption baskets across income groups to evaluate the effects of redistributive taxation on efficiency and inequality. The standard approach in redistributive taxation literature ignores this, assuming homothetic consumption preferences explicitly or implicitly. However, a growing body of empirical work based on consumption microdata provides evidence that households' composition of the consumption basket changes with income (e.g., Aguiar and Bils, 2015; Jaimovich, Rebelo, and Wong, 2019). On the other hand, there is evidence that the production of different goods and services requires skilled (i.e., college graduates or above) and unskilled (i.e., non-college graduates) labor at different proportions (e.g., Buera and Kaboski, 2012). Thus, by changing the disposable income distribution, redistributive taxation may alter sectoral demand for goods and services, and hence demand for workers of different skill levels. Considering these factors is crucial for understanding the distributional consequences of progressive taxation.

I link the findings of the empirical consumption literature to the study of progressive taxation in a macroeconomic framework. I develop a static multi-sector general equilibrium model incorporating a parametric tax and transfer function, non-homothetic consumption preferences, and endogenous labor supply, with varying compositions of skilled and unskilled labor in production across sectors. A calibrated version of the model captures the cross-sectional differences in the compositions of households' consumption baskets in the United States. I find that considering the differences in consumption baskets between high- and low-income households leads to a lower optimal choice of tax progressivity compared to the conventional approach that ignores this feature of the data.

In an ongoing project with German Cubas, Mark Robinson, and Pedro Silos, we aim to examine the distributional and aggregate effects of carbon taxes. We compute the carbon emissions for each of the goods in the CEX (identified by universal classification codes), using industry-by-industry carbon emissions from the U.S. Environmental Protection Aagency's (EPA) National Emissions Inventory (NEI) and the Bureau of Economic Analysis' (BEA) input-output tables. This measure includes both direct and indirect emissions. Based on these embodied emissions, we plan to categorize items within household consumption baskets as either high-pollution-intensive or low-pollution-intensive goods and analyze the impact of carbon taxes on the consumption and welfare of households across income groups.

Going forward, I intend to continue working in my current research area. While working on my papers, I have come across several important questions that are yet to be answered. For example, as soon as my job market ends, I will start working on a project investigating optimal fiscal policy in the context of the growing capital-skill complementarity. In addition, I aim to broaden my research scope to growth and labor economics. I hope to continue existing collaborations as well as start new ones to address intriguing questions in these fields.

References

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Oni, Mehedi Hasan (2023). Progressive income taxation and consumption baskets of rich and poor. *Journal of Economic Dynamics and Control*, 157, 104758.