Research Statement Mehedi Hasan Oni, October 2024

I am a macroeconomist with a research interest in inequality, environmental and energy economics, and public finance. Specifically, I seek to understand disparities in household consumption patterns across income and wealth distributions and ask how economic shocks or policies impact these 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. I also use these models to perform counterfactual experiments, examining the effects of alternative policies. In what follows, I briefly describe my published and current papers, as well as my future research plans.

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 unified framework, including energy use in housing, commuting, and production. Typically, energy prices experience large and persistent fluctuations compared to other goods and services. These fluctuations are concerning for an economy due to two main reasons: (i) energy is used both by firms and households, and (ii) the demand for energy is inelastic. Consequently, energy price shocks can impact household income and consumption. This concern leads the government to implement various fiscal packages to alleviate the potential adverse impacts of energy price shocks. In designing such policies, it is crucial to understand the potential distributional effects of energy price shocks. Moreover, carefully evaluating an intended policy requires a comprehensive framework incorporating different uses of energy.

Using the Consumer Expenditure Survey (CEX), I document a robust negative relationship between income and expenditure share on energy for both residential utilities and commuting. Overall, 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 energy price shocks and energy-related policies, I develop a heterogeneous-agent incomplete market model guided by empirical evidence on energy use in consumption and production. The model includes non-homothetic consumption preferences, extensive and intensive margin labor supply decisions, commuting costs—an energy-intensive activity directly related to labor supply decisions—and a production sector that uses energy and non-energy factors in fixed proportions to produce non-energy goods, taking the energy price as exogenous. The calibrated version of the model reproduces many salient features of the data, including the distribution of employment, income, wealth, and expenditure shares on residential and commuting energy. Quantitatively, I find that a positive energy price shock, similar to the one in 2021, results in disproportionate welfare losses across income groups, with the bottom quintile losing nearly twice as much as the top quintile in terms of consumption on impact. Additionally, my model offers new insights regarding the impacts of such shocks in the presence of work-from-home (WFH) opportunities and transfer programs, such as the Low Income Home Energy Assistance Program (LIHEAP). I show that WFH exacerbates consumption inequality, mainly benefiting high-income households due to their disproportionate access. In contrast, a lump-sum transfer to low-income households, financed by higher earnings tax, mitigates the shock's impact on consumption inequality.

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 the composition of consumption baskets across income groups to evaluate the effects of redistributive taxation on efficiency and inequality. A growing body of empirical work based on consumption microdata provides evidence that the composition of house-hold consumption baskets changes with income (e.g., Aguiar and Bils, 2015; Jaimovich, Rebelo, and Wong, 2019). Additionally, 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 in different proportions (e.g., Buera and Kaboski, 2012). Thus, by affecting 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 income taxation.

I link the above facts on household consumption patterns and factor compositions to redistributive taxation analysis within 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 household consumption basket compositions in the United States. I find that accounting for differences in consumption baskets between high- and low-income households reduces the redistributive impact of progressive taxation and results in a lower optimal level of tax progressivity compared to the conventional approach that ignores this feature of the data.

In an ongoing project, **"Taxing Fairly: Adjusting Progressivity to Rising Income Inequality and New Consumption-Leisure Patterns**", I revisit the impact of redistributive income taxation on efficiency and inequality, considering that households derive utility by combining market-purchased goods and services with non-market time. For example, activities like vacations or dining out require both spending money and time. Using data from the CEX and the American Time Use Survey (ATUS), I map household time use and expenditures for each activity. The data show that household expenditure shares for different consumption activities vary across income levels. For example, high-income households spend more money and time on activities like vacations and dining out, while low-income households spend more time watching TV. I also find that the relative price of goods and services predominantly consumed by low-income households declines over time. I then develop a model—an extended version of Oni (2023)—to incorporate that households derive utility by combining consumption goods with non-market time. First, I calibrate the model to the U.S. economy in 2016, solving for optimal tax progressivity and analyzing how the planner's choices differ from those in a conventional model where households derive utility directly from consumption. I then recalibrate the model for 1980 and analyze how rising income inequality affects the planner's choices for tax progressivity from 1980 to 2016. Finally, I compare these results with actual changes in U.S. tax policy.

In another ongoing project, "**The Distributional and Aggregate Effects of Carbon Taxes**", with German Cubas and Pedro Silos, we study the distributional and aggregate effects of carbon taxes. We develop a heterogeneous-

agent multi-sector general equilibrium model with endogenous energy production. Households consume energy and non-energy goods in fixed proportions, where non-energy consumption includes energy-intensive and energyefficient goods, and energy consumption depends on the share of energy-intensive goods in the non-energy composite. Households and firms in non-energy sectors use an energy composite produced by combining clean and fossil energy. The economy's carbon emissions depend on the use of fossil energy and energy composite, calculated following the method in Golosov, Hassler, Krusell, and Tsyvinski (2014). We calibrate the model using U.S. data and aim to analyze four policies based on their impacts on carbon emissions, total output, and consumption inequality: (i) taxing household energy consumption and subsidizing household energy-efficient consumption; (ii) taxing firms' energy consumption and subsidizing the production of energy composite to promote cleaner energy; (iii) taxing both household and firms' energy consumption while subsidizing household energy-efficient consumption; and (iv) taxing both household and firms' energy consumption and subsidizing energy composite production.

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, I aim to analyze the distributional effects of Trump's tax proposals in an open economy version of Oni (2023) at the earliest opportunity. 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

- Aguiar, Mark and Mark Bils (2015). Has Consumption Inequality Mirrored Income Inequality? *American Economic Review*, 105(9), 2725–56.
- Buera, Francisco J. and Joseph P. Kaboski (2012). The Rise of the Service Economy. *American Economic Review*, 102(6), 2540–69.
- Golosov, Mikhail, John Hassler, Per Krusell, and Aleh Tsyvinski (2014). Optimal Taxes on Fossil Fuel in General Equilibrium. *Econometrica*, 82(1), 41–88.
- Jaimovich, Nir, Sergio Rebelo, and Arlene Wong (2019). Trading Down and the Business Cycle. *Journal of Monetary Economics*, 102, 96–121.
- Oni, Mehedi Hasan (2023). Progressive income taxation and consumption baskets of rich and poor. *Journal of Economic Dynamics and Control*, 157, 104758.