Research Statement

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1 Introduction and Summary

Inspired by the adage, "the road to hell is paved with good intentions," my primary interest lies at the intersection of Public Finance, Labor Economics, Macroeconomics, and Computational Economics. My research explores the impacts of taxes and welfare policies—designed with well-meaning intentions—on aggregate and distributional outcomes, as well as the very individuals they aim to support. I am especially interested in the unintended effects of these policies, which may either counter or reinforce the intended outcomes.

Research on taxes and transfers spans a broad, complex agenda with extensive normative aspects. The main challenge is the multitude of objectives, which can be summarized as the desire to achieve improvements in three critical metrics: efficiency, equity, and insurance. However, the inherent trade-offs in welfare programs make it nearly impossible to achieve all these targets simultaneously. This challenge is compounded by the fact that the relative importance of each objective varies based on societal values and individual perspectives. My research uses a dynamic general equilibrium model to navigate these complexities, analyze existing tax and transfer policies, and assess the impact of potential reforms on key macroeconomic indicators such as labor supply and output, overall welfare, and the welfare of vulnerable populations.[1]

While much of my work is quantitative, my first project is empirical, serving as both a foundation and motivation for my subsequent quantitative studies. I strongly believe in the complementarity of quantitative and empirical approaches; theoretical and quantitative frameworks require empirical validation, and the insights they produce, in turn, guide empirical research.

[1]The literature on optimal taxation, which in actuality often examines optimal joint tax and transfer schedules, stems from seminal works, including Ramsey (1927) on optimal commodity taxation; Mirrlees (1971), Diamond (1998), and Saez (2001) on income taxation; Atkinson and Stiglitz (1976) on optimal tax structure; Akerlof (1978) on tagging; and Chamley (1986) and Judd (1985) on capital income taxation. These papers tackle the challenge of optimizing tax mechanisms to ensure minimal inefficiency in raising necessary public revenue. Generally, they focus on five primary factors: labor supply elasticity, the distribution of abilities, surrogate characteristics, household preferences, and social welfare functions. There are micro and macro frameworks in addressing the question of tax and transfer design (see Golosov et al. 2011). My current work leans towards the latter strand of literature, employing similar approaches as those taken by Conesa et al. (2009), Nishiyama (2019), and Guner et al. (2020, 2023), among others.

2 Current Research

My current work focuses on child-related transfers, which constitute a substantial part of welfare programs in OECD countries and are increasingly relevant in policy discussions within developing nations, including my home country, Cambodia. My Ph.D. dissertation, *"Topics in Optimal Design of Taxes and Child Benefits"*, comprises three key studies that explore the design, improvement, and optimization of taxes and child benefit policies. I use Australia as a case study for four main reasons:

(1) **Generous, Targeted Transfers**: Australia's welfare programs, including child-related transfers, are highly targeted and generous. The lump-sum child benefits alone contribute up to 40% of the total income for low-income families.

(2) **Means-Testing Based on Family Income**: While income tax is assessed on an individual basis, Australia's welfare benefits are strictly means-tested based on family income. This design raises effective marginal tax rates (EMTRs) for secondary earners, predominantly affecting female labor market participation.

(3) **Interactions Between Taxes and Transfers**: The means-tested child benefit system combines non-mutually exclusive lump-sum transfers and childcare subsidies within a moderately progressive tax regime. The joint effect of these two systems on efficiency and welfare deserves attention.

(4) **Funding Through General Taxation**: Transfers, including those child-related, are funded through general tax revenue, making both beneficiaries and non-beneficiaries bear the fiscal burden.

Australia's uniquely structured tax and welfare models provide valuable insights into the effectiveness of targeted redistribution policies. In examining the Australian system, my research offers broader guidance on improving and optimizing tax and transfer policies, exploring how different reform options may influence household behavior, macroeconomic outcomes, and welfare distribution.

2.1 Empirical Foundation

My first study, conducted in collaboration with my supervisor, Dr. Chung Tran, examines family income dynamics and the role of government transfers in mitigating income fluctuations over time. We demonstrate the importance of public transfers in buffering income shocks for primary earners, while family earnings, particularly spousal earnings, show minimal response (unless shocks are extreme). Notably, spousal earnings remain relatively unchanged regardless of the direction of shocks to primary earners' income. Together with the M-shaped life cycle labor supply of mothers—characterized by large reductions in work hours during child-rearing years—these findings emphasize the need to understand how public policies, particularly child-related transfers, affect behavior and welfare. This study thus provides an empirical basis and serves as a motivation for my quantitative projects.

2.2 Quantitative Studies

"All models are wrong, but some are useful", as coined by George Box, has guided my approach to building a quantitative framework for studying the design and effects of welfare policies. Though some simplifications are necessary for feasibility and tractability, an ideal model for analyzing child benefit programs should encompass several core elements:

- **Household Heterogeneity**: The model must account for key household attributes such as marital status, parental status (including the age and number of children), and education. Contemporary child benefit programs often employ 'tagging' (see Akerlof 1978) in addition to income and wealth criteria to target specific demographics, making it essential to represent these groups accurately for assessing distributional impacts of policies. For example, because child benefits frequently target low-income single mothers, it is crucial to capture their distinct constraints and policy treatment.

- **Life Cycle Perspective on Welfare**: Short-term income and consumption gains from transfers provide only a partial view, as future declines may offset these gains and affect long-term welfare. Additionally, human capital accumulation is a critical factor when evaluating child benefits, as it accounts for the costs of reduced labor supply that extend beyond immediate lost earnings. A comprehensive welfare analysis, therefore, requires a life cycle perspective to capture changes in consumption and leisure allocations over time.

- **General Equilibrium and Fiscal Sustainability**: Since most welfare programs are funded through general tax revenue, a general equilibrium model that incorporates a government budget-clearing objective is essential for analysis. It accounts for the tax pressure exerted by welfare programs and provides a suitable framework to assess their impacts on fiscal sustainability and economic outcomes.

- **Insurance Mechanism Against Risks**: Individuals face uninsurable risks related to longevity and earnings throughout their lives. Capturing the insurance effect—where transfers provide a consumption floor and mitigate ex-post consumption and leisure risks—is crucial for evaluating the full impact of welfare policies.

- **Policy Relevance and Realistic Reform**: For policy relevance, a framework capable of addressing realistic reform scenarios is ideal. This is especially true for welfare programs with complex means-testing and tagging based on demographic traits, where parametric representations can be difficult to interpret. Therefore, a model's capacity to incorporate a realistic structure of welfare programs—despite computational challenges and some trade-offs in generality—serves as a valuable tool for policy analysis.

These considerations led me to develop a dynamic general equilibrium model of overlapping generations, incorporating family structure (marital and parental status, and age and number of children), education, longevity risk, and idiosyncratic earnings shocks. This rich exogenous household heterogeneity enables endogenous modeling of female labor supply, human capital formation, consumption, and savings. It provides an appropriate environment for counterfactual experiments in my second and third projects, allowing for an in-depth

analysis of how tax and transfer reforms impact household decisions, welfare distribution, and macroeconomic indicators.

Evaluating Welfare and Macroeconomic Effects of Child Benefit Reforms

Building on the dynamic general equilibrium framework, my second study examines the impacts of the current child benefits in Australia and their potential reforms. The findings highlight a trade-off, via the tax channel, between universal and means-tested child benefits. Interestingly, universal child benefits increase labor supply among married mothers, and boost output and welfare, revealing that the current means-testing structure discourages work participation and human capital development, ultimately reducing welfare. However, the fiscal demands of a universal system impose a tax burden that inadvertently harms single mother across educational levels. Furthermore, this misalignment between the intended and actual outcomes cannot be resolved by simply raising benefit levels, as more generous short-term gains for vulnerable groups fail to counteract the adverse effects of the associated tax burden on their lifetime earnings and consumption. These results underscore the need for policy designs that balance means-testing distortions with fiscal sustainability. Even without considering factors such as fertility, marriage, child quality, and the broader externalities of children (e.g., through economic growth and social security contributions), the model illustrates a mild version of the adage, "the road to hell is paved with good intentions." The unintended consequences of a fully universalized system can divert policy from its primary goal. Instead, the findings recommend an incremental reform, advocating for a reduced phase-out rate of the Child Care Subsidy (CCS) program to achieve macroeconomic objectives and a fair distribution of gains.

Optimizing Joint Design of Taxes and Child Benefits

In my third project, I investigate the optimal design of tax and child benefit systems, delving into the interaction between the progressive taxes and means-tested benefits that jointly results in high and non-linear effective marginal tax rate (EMTR) schedules for low-income parents. I then propose an optimal joint design of taxes and child benefits that maximizes ex-ante welfare (under the veil of ignorance). A key finding reveals that a tax system, optimized solely based on income, without considering demographic factors like parenthood, risks undermining the objectives of child benefit policies. In line with the Mirrlees framework, this reform prioritizes work incentives for high-education workers by lowering tax progressivity, enabling them to work and consume more over their lifetime. However, it also increases tax liabilities for low-education earners, pushing some out of the workforce and ultimately reducing welfare for a significant proportion of low-education parents—thereby counteracting the intended objectives of child benefit programs. The analysis further demonstrates that if tax progressivity and childcare subsidies remain at their current levels, a partial universalization that replaces the means-tested lump-sum child benefits (known as the Family Tax Benefit, or FTB) with a universal transfer set at 25% of median income per child is optimal. This reform significantly increases parental and overall welfare, though at a cost to non-parents due to the tax burden. A joint optimal system combines the results of individual reforms, advocating for reduced tax progressivity alongside a moderately generous universal lump-

sum benefit per child, while keeping the means-tested childcare subsidies intact. However, to counterbalance the increased tax liabilities on low-income households due to the reduced tax progressivity, a jointly optimized system proposes a universal transfer of 30% of median income per child, 5 percentage points higher than the standalone child benefit reform. In this joint design, the child benefit reform not only supports vulnerable households but also compensates them for losses incurred through the tax system, while the tax system primarily aims to boost efficiency by minimizing labor supply distortions of high-education households. This combined system greatly enhances both ex-ante and parental welfare through improved consumption allocative efficiency, albeit at the expense of non-parents. The findings show that reducing transfers to parents, though not optimal from an ex-ante welfare perspective, mitigates welfare losses for non-parents while still ensuring moderate gains for parents. This study thus emphasizes the importance of coordinating tax and benefit systems to meet policy objectives effectively and caution against pursuing ex-ante welfare optimization without regard for distributional impacts, as it could lead to significant welfare losses for non-beneficiaries. Together, these projects illustrate how, despite good intentions, generous child benefits for all can hinder the very groups they intend to support. Moreover, the different objectives of tax and transfer policies can often conflict, thus necessitating a holistic approach that considers how policy interactions can shape behavior, fiscal costs, and broader economic impacts.

3 Future Research Directions

My current projects contribute to a deeper understanding of fiscal policy design and establish a solid foundation for examining how policies can effectively deliver their intended outcomes with minimal costs to non-recipients and the broader economy. The model framework I have developed is also flexible, capable of further exploration into household and individual responses to other policies and economic events. With this groundwork, I plan to advance my research in the following directions:

3.1 Expanding the Empirical Foundation

In a forthcoming collaborative project with Dr. Chung Tran and Dr. Nabeeh Zakariyya, I plan to extend the empirical basis of my research by utilizing administrative datasets, such as A-Life from the Australian Tax Office and PLIDA, the Person-Level Integrated Data Asset linking individuals to households. These enriched datasets, encompassing millions of individuals and spanning a substantial timeframe, will facilitate more precise analysis of income dynamics and yield insights into the evolving roles of government and family insurance in Australia. Findings from this empirical work will help identify areas of policy importance that warrant further quantitative examination.

3.2 Extensions of Quantitative Work

There are two main avenues for extending my existing quantitative work:

Extensions Within the Current Framework

Several critical areas remain unexplored by the current models. First, examining a broader set of means-testing parameters, such as income-test thresholds and phase-out rates of child-related transfers, along with alternative budget-balancing mechanisms for the government (e.g., consumption and wealth taxes), would provide valuable insights. Second, assessing the effects of policy changes on households along transition paths is essential for a thorough evaluation of policy impacts and aggregate efficiency. Third, the calibration can be improved through estimation techniques, such as the Simulated Method of Moments (SMM), to better align model outputs with empirical data (e.g., higher-order moments) for a more accurate representation.

Extensions of the current models

A Richer Wage Process: One promising extension involves incorporating a more realistic wage process to better capture wage distribution, an important factor in the optimal design of taxes and transfers. As shown by De Nardi et al. (2024), for example, the choice of wage process can influence welfare policy recommendations.[2] Furthermore, the theoretical frameworks of Diamond (1998) and Saez (2001) emphasize that optimal tax policy depends on the distribution of abilities. A larger mass of high-ability households, all else constant, would lead to greater optimal tax progressivity. Thus, if wage dynamics are correlated with ability, accurately modeling the wage process becomes important for informing effective tax and transfer policies.

Endogenous Fertility, Marriage, and Child Quality: Incorporating endogenous fertility, marriage decisions, and child quality outcomes would broaden the scope of analysis of tax and welfare policies. Among these, endogenizing child quality emerges as a particularly promising extension. Empirical studies suggest child benefits may have, at best, modest effects on fertility (see, for example, Baughman and Dickert-Conlin (2003), Kearney (2004), and Bauernschuster et al. (2016)), a finding supported by quantitative research like Bick (2016). These studies imply that financial incentives are only a minor factor in decisions to have children. Similarly, with regards to marriage, although Becker's theory of marriage (1973, 1974) posits that earnings, affected by tax and transfer treatments, may influence marriage decisions, empirical work (e.g., Alm and Whittington (1999), Moffitt (1994), Williamson Hoynes (1997), Bitler et al. (2004)) shows small or statistically insignificant effects of taxes or child benefits on marriage. Given the empirical findings and the computational expense of endogenizing fertility and marriage within my current framework, these elements will remain exogenous in my near-term research. However, exploring why policy impacts on fertility and marriage are negligible, within the context of these empirical studies, remains a worthwhile quantitative inquiry. A promising path forward lies in examining child quality and its implications for long-run economic growth. Although my current model assumes households optimize average consumption, implicitly accounting for children's consumption, it is silent on how transfers can enhance child quality. Early childhood investment, as Heckman (2006) highlights, is important for fostering both fairness and

[2] In their study based on the UK policy context, they demonstrate that incorporating a more realistic wage process shifts the recommended policy preference toward an income floor rather than in-work benefits.

productivity. Studies by Milligan and Stabile (2011), Dahl and Lochner (2012), and Hoynes et al. (2016) find strong positive effects of child benefits on health, educational, and economic outcomes in adulthood, especially for women.

Furthermore, interactions between marriage/divorce decisions and child quality may have compounding effects across generations. Heckman (2007) find that disadvantaged families, such as single-parent households, tend to produce less educated individuals who are more likely to engage in crime and other socially deviant behaviors. Therefore, even if the direct effect of child-related transfers on marriage might be small, its compounding impact on overall welfare and productivity over generations could be significant. Incorporating child quality into the model could also open up new possibilities for exploring policy alternatives, such as early education subsidies and child nutrition programs. Adding this dimension potentially shifts the recommendations for optimal child benefits and make a stronger case for early childhood interventions and intergenerational equity.

Taxes and Transfers in Developing Countries: Thus far, my research has focused on optimal tax and transfer systems in advanced economies, but there are unique challenges to consider in developing countries. First, households in these economies may have different behavioral patterns in terms of labor supply, savings, fertility, and marriage decisions. Second, the prevalence of large informal sectors in many developing countries complicate income-based solutions, as market earnings of a substantial portion of the population remain unobservable. In this context, optimal tax and transfer policies may require different approaches, such as in-kind transfers (e.g., healthcare and education), tagging based on observable characteristics (e.g., age, education, gender, parental status, or even residential address), and the use of ordeals on transfer recipients (e.g., requirements for training, education, job search, or work). Born and raised in a developing country, I am especially interested in expanding my research in this direction.

Impact and Relevance

The welfare and macroeconomic effects of various tax and transfer policy reforms, including proposals for universal transfers, have been widely discussed across media and debated within the academic, policy, and political spheres. Often, these discussions center on the efficiency-welfare tradeoff at an aggregate level, as well as the redistribution from non-recipients to recipients of public assistance recipients. The latter perspective sometimes adopts a Rawlsian lens, suggesting a "sacrifice-for-the-greater-good" approach in which a degree of economic efficiency—and even non-beneficiary welfare—is willingly compromised to expand support for vulnerable groups, often without fully accounting for the unintended consequences.

By examining behavioral responses and the interplay between tax and child benefit systems, my research highlights potential trade-offs and offers a framework for more informed discussions on policy design. Specifically, my work provides actionable insights to mitigate unintended effects, supporting the development of policies that deliver sustainable benefits to vulnerable households while promoting broader economic stability.

The model I develop addresses a gap in the micro-founded macro modeling of taxes and child benefits in Australia. Additionally, by integrating endogenous factors such as family structure, labor participation, human capital, and idiosyncratic shocks within a dynamic

general equilibrium model with overlapping generations and heterogeneous households, my research also contributes quantitatively to the optimal tax and transfer literature (see Keane 2022 for details on challenges at the frontier of optimal tax research). Moreover, in my third project, I adapt the decomposition method of Bhandari et al. (2021) to break down welfare into three primary components—allocative efficiency, distribution (or equity), and insurance—each linked to key model features. This adaptation facilitates a more comprehensive understanding of the sources of welfare changes across policy regimes and serves as a valuable tool for welfare analysis. Lastly, my research framework offers a versatile foundation, making it adaptable for addressing emerging questions in tax and transfer policy as well as broader economic phenomena.

Conclusion

On a personal level, I view my Ph.D. as a learning journey. I have worked incessantly toward developing my independence as a researcher. I embrace the opportunities to rediscover and revisit established ideas, make mistakes, and refine my thinking. This experience has been both humbling and enriching, shaping me into the researcher I am today. I deeply value the incremental process of knowledge creation and have come to appreciate feedback and criticism as essential to growth in research. I am committed to upholding these values and fostering them in the next generation of students and researchers.

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