

## Dissertation Abstract

### Essays in Macroeconomics with Heterogeneous Agents and Portfolio Choice

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This thesis studies how the asset portfolio heterogeneity of households influences wealth inequality and macroeconomic outcomes in macroeconomic models. Specifically, it analyses the implications of a change in firm leverage and differential asset taxation on inequality and other macroeconomic variables, and how to compute the macroeconomic models used to study these implications more efficiently.

*Chapter 1* studies the effects of a change in firm leverage on wealth inequality and macroeconomic aggregates. The effects are studied in a general equilibrium model with a continuum of heterogeneous agents, life-cycle, incomplete markets, and idiosyncratic and aggregate risk. In the benchmark model, an increase in firm leverage leads to an increase in capital accumulation, and a decrease in wealth inequality and government revenue. Furthermore, I show that if the model abstracts from capital income taxation, the change in leverage has only minor effects on macro aggregates and inequality, despite having significant implications for asset prices.

*Chapter 2* analyzes the redistributive and macroeconomic effects of differential taxation of financial assets with a different risk. Poor households in the US primarily hold their savings in safe financial assets, while wealthy households invest a substantially higher share of their wealth in (risky) equity. However, in many tax codes equity and safe assets are often taxed at different rates. The main reason for this is that investments in equity (which are relatively riskier) are subject to corporate and personal income tax, unlike debt, which is tax deductible for companies. This chapter first builds a simple theoretical two-period model showing that the optimal tax wedge between risky and safe assets is increasing in the underlying wealth inequality. The chapter then analyzes a quantitative model with a continuum of heterogeneous agents, parsimonious life-cycle, borrowing constraint, aggregate shocks, and uninsurable idiosyncratic shocks. The simulations of quantitative models show that elimination of the differential asset taxation leads to a welfare loss and that the optimal tax wedge between taxes on equity and debt is higher than that in the US tax code.

*Chapter 3* proposes a novel method to compute the simulation part of the Krusell-Smith algorithm when agents can trade in more than one asset (for example, capital and bonds). The Krusell-Smith algorithm is used to solve the general equilibrium models with both aggregate and uninsurable idiosyncratic risk, and can be used to both to solve the bounded rationality equilibria, and to approximate the rational expectations equilibria. When applied to solve a model with more than one financial asset, in the simulation part, the standard algorithm has to impose equilibria for each additional asset (find the market-clearing price), for each simulated period. This procedure entails root-finding for each simulated period, which is computationally very expensive. In this chapter, I show that it is possible to avoid root-finding by not imposing the equilibria in each period, and instead, simulate the model without market clearing. The proposed method updates the laws of motion for asset prices by using Newton-like methods (Broyden's method) on the simulated excess demand, instead of imposing equilibrium for each period and running a regression on the clearing prices. In the example

model, the proposed version of the algorithm leads to a decrease in the computational time, even when measured conservatively.