Financial Constraints and Household Heterogeneity in the Macroeconomy

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GFC Great Financial Crisis

HANK Heterogeneous Agent New Keynesian

Abstract

Abstract goes here.

1 Introduction

Households face limits to borrowing. This limit to borrowing is usually much harsher than the so-called natural borrowing limit, which is commonly defined as the expected net present value of an individual's income stream.

The presence of a borrowing limit has consequences not only for individual households but also for the economy as a whole. The following question arises: how does time-variation in those limits affect the economic outcomes on aggregate and household levels? To answer this question, this thesis follows and extends the work by Guerrieri and Lorenzoni (2017) and analyses shocks to the household-level borrowing limits in a heterogeneous agent New Keynesian model (HANK).

Since at least the Great Depression economists have aknowledged the importance of debt, leverage and limits to both of these. The Great Financial Crisis (GFC) was a vivid reminder of how developments in finance, including credit and limits to credit, affect households and the macroeconomy.

The model and its dynamics are solved with the Python package `Econpizza` by Boehl (2023) and the methods therein.

Outline

The remainder of this thesis is structured as follows. Section 2 reviews the related literature. Section 3 lays down the macroeconomic model, the numerical implementation and calibration of which is discussed in section 4. Thereafter, section 5 presents the results and section 7 concludes.

2 Related Literature

This section reviews two strands of the literature which the present thesis is most closely related to: household heterogeneity and financial constraints in the macroeconomy. Before discussing each fields in turn, I briefly highlight the findings of Guerrieri and Lorenzoni (2017), the paper that this thesis is most closely related to.

Guerrieri and Lorenzoni (2017) build a household-focused incomplete-markets model and find that a permanent tightening in the household-level borrowing constraint evokes deleveraging and increased precuationary savings. Combined, these two effects depress output and interest rates in the economy. The recession is aggravated and the economy falls into a liquidity trap when the model is augmented with nominal wage rigidities and the zero lower bound.

References

Boehl, G. (2023). Robust Nonlinear Transition Dynamics in HANK. Retrieved 1st May 2023, from https://ssrn.com/abstract=4433585.

(Cited on page 1)

Guerrieri, V. & Lorenzoni, G. (2017). Credit Crises, Precautionary Savings, and the Liquidity Trap. *The Quarterly Journal of Economics*, *132*(3), 1427–1467. https://doi.org/https://doi.org/10.1093/qje/qjx005.

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Appendices

A Description of Computer Codes

Statement of Authorship

I hereby confirm that the work presented has been performed and interpreted solely by myself except for where I explicitly identified the contrary. I assure that this work has not been presented in any other form for the fulfillment of any other degree or qualification. Ideas taken from other works in letter and in spirit are identified in every single case.

Andreas Koundouros
Bonn, the 25th August 2023