1 Literature Overview

1.1 Bergholt notes

1.1.1 The Household

Optimal consumption decision

$$max_{c_{it}} = (\int_0^1 C_{it}^{\frac{\epsilon-1}{\epsilon}} di)^{\frac{\epsilon}{\epsilon-1}}$$

s.t.

1.2 Nelson Genvieve

Quantitative easing through the portfolio balance channel. Households, hold long- and short-term bonds and have a preferred ratio. Deviation from this preference ratio decrease their utility according to $\frac{\phi}{2}(\frac{B_t^L}{B_t^S} - \delta_B)^{\phi}$. Long-term bonds are perpetuities, thus exist infinitely unless removed by the government. Short-term bonds exist for one period only.

Price of raw capital

1.3 Boehl et al.

Central bank setting interest rate

growth rate

$$\frac{R_t^s}{R^n} = \left(\frac{R_{t-1}^s}{R^n}\right)^{\rho}\left[\left(\frac{\Pi_t}{\Pi}\right)^{\phi_\pi}\left(\frac{Y_t}{Y_t^*}\right)^{\phi_y}\left(\Delta\left(\frac{Y_t}{Y_t^*}\right)\right)^{\phi_{dy}}\right]^{1-\rho} v_{r,t}, \tag{27}$$

with the ZLB constraint

$$R_t^n = \max\left\{\bar{R}, R_t^s\right\}, \tag{28}$$

where we refer to the unconstrained nominal rate R_t^s as the notional (or shadow) rate.

Quantitative easing included as AR(2) process of capital and bonds, both of which are purchased by the CB.

2 Quantitative Easing

2.1 An introduction

Channels of quantitative easing
Signalling: through an announcement of QE future interest rates are assumed to be lower by economic agents
Portfolio balance: Demand for long-term maturity debt or riskier assets increases, as they are being exchanged for short-term low interest rate debt. This decreases the interest rate on those assets now in higher demand as well.
Liquidity: Liquidity is more broadly available to the market, and premia on

liquidity are lowered.

3 Approaches to my thesis

3.1 Including QE

Liquidity channel: Simplest way of including quantitative easing shocks is through stochastic process (possibly with drift) on bond holdings.

3.2 Including energy cost

Simple way of including energy price shocks is a homogenous price increase across goods.

- Is a homogenous price increase through an energy shock a viable assumption?

4 Thesis Outline

4.1 Formal requirements

4.2 Table of contents

Introduction
Quantitative Easing

- Literature
- Applications and historic overview
- Interaction with energy price shock

Literature Overview DSGE Model for QE

- Applications of DSGE and QE
- criticism and short comings of DSGE in QE context

This thesis DSGE Model

- Structure
- Results

Conclusion and Discussion

5 Models

5.1 Complete NK model 7

Household

$$u_t = \epsilon_t^p \left(\frac{(C_t - \phi_H C_{t-1})^{1-\sigma_C}}{(1-\sigma_L)} - \frac{L_t^{1+\sigma_L}}{1+\sigma_L} \right)$$

$\max_{C_t, L_t, K_t, B_t}$