Golden Fetters and Paper Fetters

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Motivation

- CBDC is being **actively explored** by a large number of central banks around the world.

- These investigations are carefully considering a wide range of **design issues**, including the form of CBDC (accounts vs. tokens), privacy issues, and interactions with other types of payments.

- One key issue that warrants further consideration is whether CBDC should be interest bearing, and if so, whether this provides an opportunity to eliminate the **Effective Lower Bound (ELB)** on the level of the central bank's policy rate.

Our Analysis

- **Historical Perspective**: We examine the analogy between the ELB with the classical Gold Standard (GS).

- **Model Specification**: We identify the key ingredients of a DSGE model that are needed for assessing the rationale for eliminating the ELB.

- **Quantitative Analysis**: We conduct a variety of simulations of the DSGE model to gauge the impact of the ELB.

GS and ELB: Historical Coincidences

- Under the GS (1880-1914), monetary authorities fixed the nominal price of gold in terms of domestic currency and were required to maintain convertibility

- ELB is a technical constraint arising from the zero-interest rate on paper cash

GS: Constraint on Monetary Policy

- Gold Exchange Standard (1924-36) **collapsed** in the Great Depression: due to "*golden fetters*", central banks, which no longer had credibility, **were unable to use expansionary monetary policy** as lenders of last resort to protect their banking systems for fear of triggering a speculative attack on their international reserves.

- Their only option **was departure from the gold standard**, devaluation and expansionary monetary policy.

- Countries which left the gold standard **ended the economic contraction and quickly recovered**; while those that did not, lingered in the slump.

ELB: Constraint on Monetary Policy

- The ELB has **limited the ability** of central banks to achieve their inflation targets ("*paper fetters*")

- "Golden fetters" has considerable resonance for the ELB, because of the mentality of the gold standard: adherents were **loath to leave their pegs** even if it would aid recovery.

GS and ELB: Distributional Consequences

- In the short to medium run, price levels would rise or fall reflecting the shocks to the gold market

- The alternating waves of rising and falling price levels led to **political discontent and dissatisfaction** with the operation of the classical GS

- Periods of unanticipated deflation produced **redistribution of income** from debtors to creditors

- In the U.S., this was a key source of political turmoil (William Jennings Bryan presidential campaign speech in 1896: *"...you shall not crucify mankind upon a cross of gold."*)
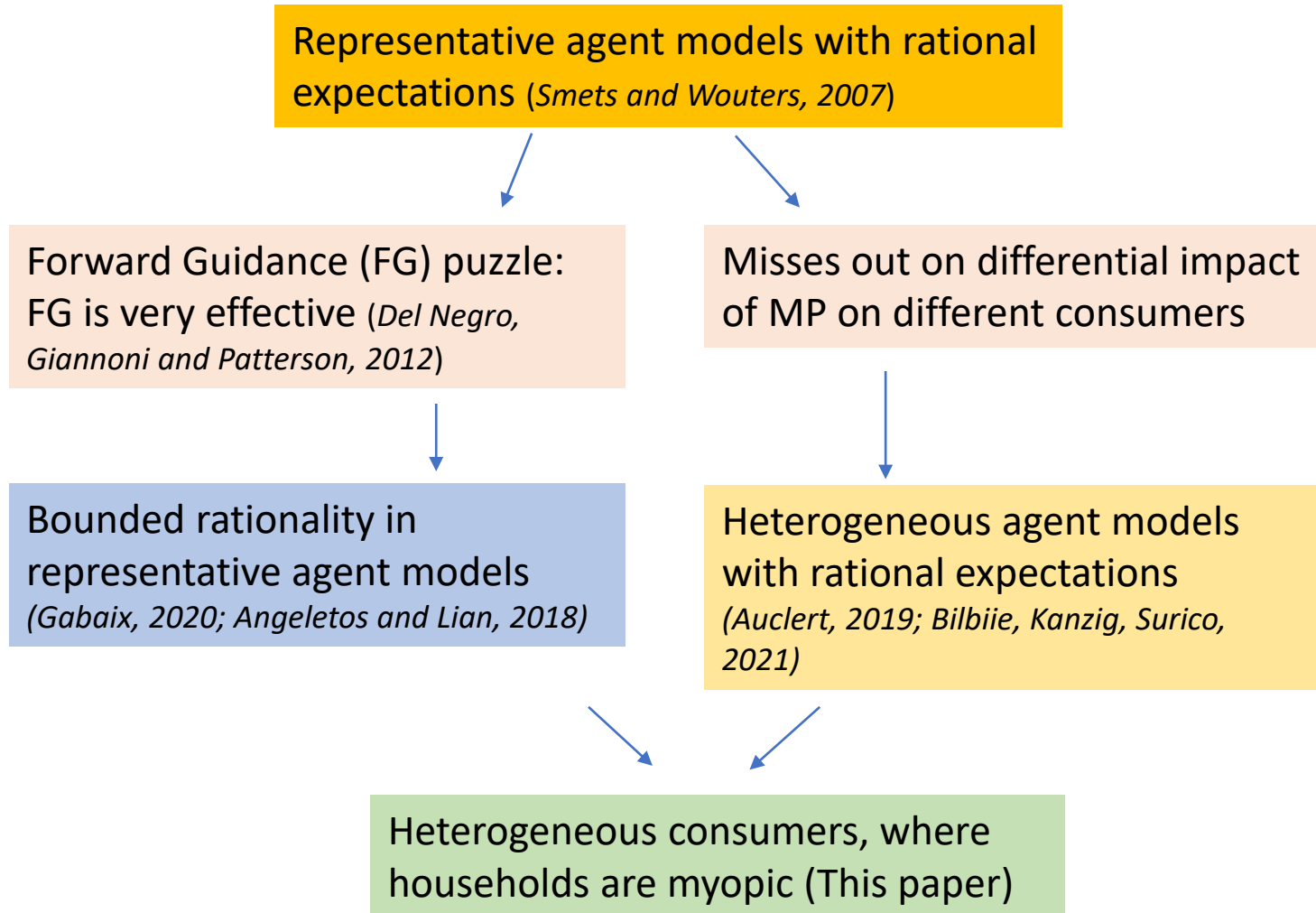
Model Specification

Key ingredients of the NK model to examine the ELB and its distributional effects

- Allow for **different types of consumers** in the economy: savers, and the hand-to-mouth

- Incorporate **realistic features of expectation formation** for the consumers (evidence from survey data suggests expectations are not rational)

First paper to combine these strands of the literature

Revisiting the Effects of Monetary Policy

Representative agent models with rational expectations (*Smets and Wouters, 2007*)

Forward Guidance (FG) puzzle: FG is very effective (*Del Negro, Giannoni and Patterson, 2012*)

Misses out on differential impact of MP on different consumers

Bounded rationality in representative agent models (*Gabaix, 2020; Angeletos and Lian, 2018*)

Heterogeneous agent models with rational expectations (*Auclert, 2019; Bilbiie, Kanzig, Surico, 2021*)

Heterogeneous consumers, where households are myopic (This paper)

Specification of Households

- **Heterogeneity**: Hand-to-mouth **HTM** (λ) and **Savers** (**1- λ**) maximize lifetime utility

- HTM hold no assets and consume labor income

- Savers hold risk-free bonds, receive all firm profits, rent out physical capital

- All households exhibit **bounded rationality**: Cognitive discounting or **myopia** parameter measures attention to the future (Gabaix, 2020)

Other Model Features

- Capital: Level of capital is determined by past level and investment

- Labor market: Union pools labor inputs and sets wages on behalf of both households

- Firms: Monopolistically competitive firms face Calvo pricing

- Fiscal policy: Lump-sum taxes so that the steady state level of consumption for HTM and savers is the same

- Monetary policy: Taylor rule

Parameters

- Percentage of HTM consumers in the economy $\lambda : 50\%$

- Myopia parameter $m: 0.96$

- In the benchmark: $\lambda = 0, m = 1$
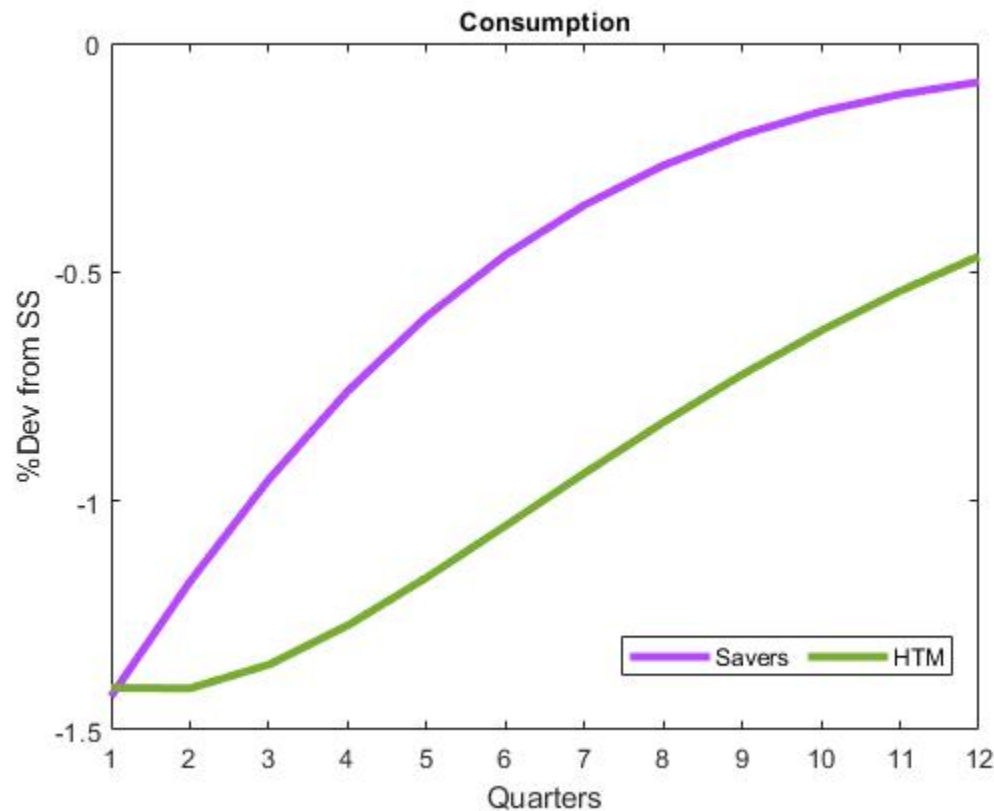
Model Dynamics: Contractionary MP shock

Do the model modifications matter for *aggregate* dynamics? **Very little**
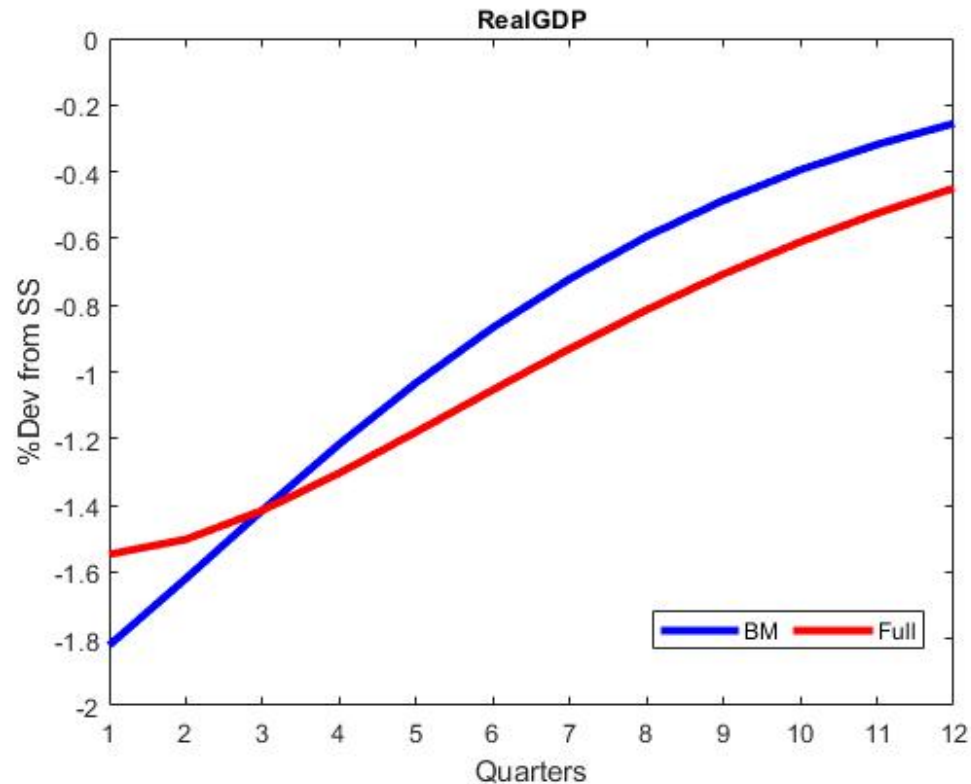
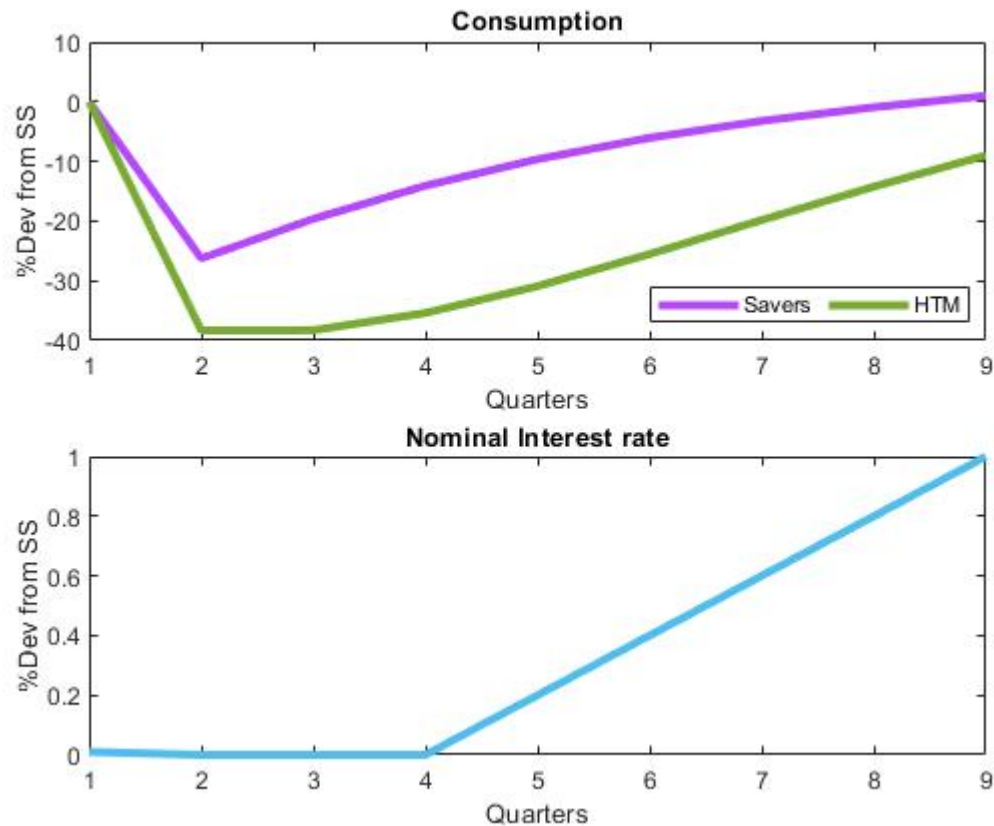Percentage deviations of Real GDP from steady state

Model Dynamics: Contractionary MP shock

Do the model modifications matter for *savers vs. HTM* consumers? **Yes**

Percentage deviations of Consumption from steady state

Model Dynamics: ELB Constraint

Percentage deviations of Consumption from steady state

How to eliminate the ELB with Digital Currency

- Individuals & businesses should **remain free to use paper cash or private payments**.

- Fees should be imposed on large transfers between digital cash and paper cash, thereby curtailing arbitrage and **eliminating the ELB**.

- Moderate amounts of digital cash balances should be **exempt** from negative interest rates.

- The central bank can **respond to severe adverse shocks by cutting interest rates below the ELB to maintain macroeconomic stability**

Synopsis of Findings

- Aggregate dynamics are **not substantially different** when bounded rationality and heterogeneity are introduced

- However, our quantitative analysis suggests that the **recovery for the HTM consumers is much more protracted** during ELB episodes

- The results imply a **strong rationale** for eliminating the ELB

Directions for Future Research

- Incorporate heterogeneity in the labor market

- Incorporate endogenous transitions between the savers and HTM consumers

- Re-think the central bank's objective function with heterogeneous consumers