

Inequality and Macroeconomic Fluctuations and Policies

A Tractable Heterogeneous-Agent New Keynesian Approach

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1. Introduction

Modern Macroeconomics is the journey from Aggregate to Aggregate D Demand and Supply ...

Stylized facts: micro and macro

2: The Representative-Agent New Keynesian Model (RANK)--Why Go Beyond?

A Keynesian-Cross representation.

Lack of Keynesian Cross. Lack of General-Equilibrium.

Fiscal Multipliers.

Forward Guidance Puzzle.

Liquidity Traps and neo-Fisherian effects.

Literature review.

3: A Benchmark Two-Agent (TANK) Model: both Keynesian & General-Equilibrium

Deriving Aggregate D Demand. Aggregate Euler equation. Reviving the Keynesian Cross and General Equilibrium.

Amplification and Dampening. Monetary policy, decomposition Partial versus General-Equilibrium (direct vs indirect effects, Kaplan Moll Violante). Keynesian cross representation.

Fiscal multipliers: government spending. Fiscal transfers.

“Inverted Keynesian logic” and the paradox of thrift.

Forward guidance: still a puzzle.

Literature review.

4: Introducing Risk and Precautionary Saving: a Tractable, Two-State, Two-Asset Heterogeneous-Agent New Keynesian (THANK) Model - without Liquidity

From TANK towards HANK: idiosyncratic risk and precautionary saving.

The Aggregate Euler equation: discounting or compounding?

Determinacy, Taylor rule and price level targeting.

Cyclical inequality and risk.

Other tractable models of cyclical risk, e.g. unemployment (Ravn Sterk, Challe, Werning, Acharya Dogra)

A Catch-22: curing the forward guidance puzzle vs amplification.

Euler-equation wedges and measurement.

Application: Liquidity traps. Deep recessions without deflation. Inequality and risk as triggers of liquidity traps. Forward guidance and its power in a liquidity trap.

Literature review

5: Introducing Liquidity in THANK

Liquid bonds, a simplified Bewley-Aiyagari-Hugget economy,

Deriving the demand for bonds/liquidity/savings.

iMPCs and intertemporal propagation (Auclert Rognlie Straub): role for fiscal multipliers, determinacy.

Determining the price level by fixing the nominal quantity of bonds (Hagedorn).

Literature review

6: Extensions and Evidence: Capital Investment, Sticky Wages, Labor Supply, Estimation

The Role of Physical Capital (Investment): Illiquid Wealth Inequality; Resuscitating the Samuelson Multiplier-Accelerator. The multiplier of the multiplier – an aggregate-demand complementarity.

Sticky wages: dampening or amplification with heterogeneity? The cyclical inequality of profits

Labor Supply: Income effects and Complementarity with Nonseparable utility.

Empirical Evidence: Micro data-based; Macro Estimation of HANK models.

Literature review

7: Optimal Monetary & Fiscal Policy in T(tractable)HANK

The Ramsey Problem in a Two-Agent Economy

Second-order approximation of aggregate welfare: the inequality motive

Optimal monetary policy with the inequality motive: a linear-quadratic problem. The irrelevance of risk: a benchmark.

Optimal policy in a Liquidity trap: Optimal forward guidance duration.

Implications of a liquidity motive: optimal policy with long-run inequality.

Quantitative easing.

Stabilization vs Redistribution: Optimal monetary and fiscal policy. Separation results

Literature review

8: “Aggregate Supply”; Firm Entry/Exit, Product Creation/destruction, Variety

Inequality and the COVID-19 pandemic. Supply shocks with and without heterogeneity. Sectoral reallocations, substitution and complementarity. Firm entry and exit.

Endogenous entry, product variety and business cycles; (optimal) monetary policy. Fiscal policy

Entry-exit as an amplification mechanism.

MAIN REFERENCES (full bibliography below)

1 RANK refresher reading list (selective)

Woodford, M., (2003). “Interest and Prices: Foundations of a Theory of Monetary Policy”.

Gali, J. 2010, “Monetary Policy, Inflation and the Business Cycle: An Introduction to the NK Framework”.

Liquidity traps and zero lower bound

Eggertsson, G. and M. Woodford. "The Zero Bound On Interest Rates and Optimal Monetary Policy,"
Brookings Papers on Economic Activity 34, 2003-1 (2003): 139-235

Christiano L., M. Eichenbaum and S. Rebelo (2011). "When Is the Government Spending Multiplier Large?"
Journal of Political Economy, 119(1), pages 78 - 121

Auerbach, Alan J. and Maurice Obstfeld. "The Case for Open-Market Purchases In A Liquidity Trap,"
American Economic Review, 2005

Benhabib, J., S. Schmitt-Grohe, and M. Uribe (2002). "Avoiding Liquidity Traps," Journal of Political Economy

Bilbiie, F. (2016) “Optimal Forward Guidance”, American Economic Journal: Macroeconomics

Bilbiie, F. 2018, "Neo-Fisherian Policies and Liquidity Traps," CEPR DP

Schmidt, S. (2013): "Optimal Monetary and Fiscal Policy with a Zero Bound on Nominal Interest Rates,"
Journal of Money, Credit and Banking

Nakata, Taisuke (2016). "Optimal Fiscal and Monetary Policy with Occasionally Binding Zero Bound
Constraints," *Journal of Economic Dynamics and Control*

Nakata, T. and S. Schmidt (2019), "Conservatism and Liquidity Traps" *Journal of Monetary Economics*

Del Negro, M., M. Giannoni, and C. Patterson: "The Forward Guidance puzzle" Mimeo
 Woodford, M. (2011). "Simple Analytics of the Government Expenditure Multiplier," American Economic Journal: Macroeconomics, 3(1), p 1-35
 Eggertsson, G. (2010), "What Fiscal Policy Is Effective at Zero Interest Rates?", NBER Macroeconomics Annual
 Leeper, E. 1991, Equilibria under active and passive monetary and fiscal policies, JME
 Bilbiie, F., Monacelli, T. and Perotti, R., (2014), "Is government spending at the zero lower bound desirable?", American Economic Journal: Macroeconomics
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 Mertens K. and M. Ravn 2013. "Fiscal Policy in an Expectations Driven Liquidity Trap," Review of Economic Studies

2. T-HANK: Tractable Heterogeneity

-- *All full references are in the list at the end., Required readings with a star.*

TANK – 2000s and a bit into the 2010s

* Bilbiie 08, **analytical**: aggregate demand and monetary policy; profits and redistribution; optimal monetary policy

* Galí Lopez-Salido Vallés 07, quantitative: physical capital or not; fiscal multipliers, determinacy, numerical;

* Mankiw 00: fiscal policy in TA-RBC; builds on empirical Campbell Mankiw (89!): estimate elasticity of intertemporal substitution from aggregate Euler

Bilbiie Straub 04 fiscal multipliers TANK analytical + dist. tax;

Bilbiie Meier Muller 08: estimated fiscal TANK;

Bilbiie Straub: estimated TANK (Bayesian and GMM)

Colciago;

Ascari, Colciago and Rossi (sticky wages);

· different (related) TA (borrower-saver):

Iacoviello 05 AER (housing, nominal debt)

Eggertsson Krugman 2012 QJE (deleveraging and liquidity traps)

Curdia Woodford; (credit frictions, occasional constraints)

Nistico; (occasional constraints)

Bilbiie Monacelli Perotti; (public debt and redistribution/transfers)

HANK (mid) 2010s

· Monetary policy:

* Kaplan, Moll, Violante (KMV): monetary policy transmission, direct-indirect effects, liquid assets;

* McKay Nakamura Steinsson (MNS): FG power;

Gornemann Kuester Nakajima; MP transmission, unemployment risk, inequality

Guerrieri Lorenzoni: deep LT-deleveraging recessions;

* Auclert; disentangles redistributions channels

Auclert Rognlie: transmission channel;

Bayer Luetticke Pham-Dao Tjaden; Luetticke: liquidity, portfolio composition;

Hagedorn Luo Manovskii Mitman;

Debortoli Galí: compare TANK with HANK

Ferrante Paustian; Maliar Naubert

· Endogenous unemployment implications:

Ravn Sterk; Challe Matheron Ragot Rubio; Den Haan Rendahl Riegler; McKay Reis;

· Fiscal:

Oh Reis; transfers

* Bilbiie The New Keynesian Cross

* Auclert Rognlie Straub The Intertemporal Keynesian Cross

Hagedorn Manovskii Mitman;

Ferrière Navarro;

Cantore Freund

Separate Class: Analytical HANKs

* Acharya Dogra (isolate cyclical-risk channel, CARA utility, pseudo-RANK);

* Bilbiie: The New Keynesian Cross

* Bilbiie: Monetary Policy and Heterogeneity

* Bilbiie Känzig Surico (adding physical capital)

Broer, Hansen, Krusell, Oberg (virtues of sticky wages);

Hagedorn determining price level through quantity of public debt with incomplete markets

Ravn Sterk (add analytical SAM, transmission and puzzles);

Werning (cyclical risk&liquidity);

Holm

Optimal policy in HANKs

quant Bhandari Evans Golosov Sargent; McKay Reis; Nuno Thomas; Cui Sterk;

analytical (TANKs: Bilbiie 08, Ascari et al; Nistico; Curdia Woodford); Challe 2019; Bilbiie 2019

in between: Bilbiie Ragot 2017

Measurement

-- Micro data

* Heathcote Perri Violante

Coibion Gorodnichenko Kueng Silva

* Cloyne Ferreira Surico (MP effects, wealthy-HtM as mortgagors)

* Patterson

Fagereng Holm Natvik

* Slacalek, Tristani, Violante

Lenza Slacalek

Holm Paul Tischbirek

-- Macro data (... many others ongoing)

Auclert Rognlie Straub

Bilbiie Primiceri Tambalotti

3. Entry-Exit References

Entry-Exit & Variety: Business Cycles (2000s)

Bilbiie Ghironi Melitz (2012 JPE); Jaimovich Floetotto; Colciago Etno; Lewis Poilly; Clementi Pallazzo; Lee Mukoyama; Dixon Savagar; Cacciatore Fiori; Hamano Zanetti; Edmond Midrigan Xu; Sedlacek Sterk; Gutierrez Philippon; Carvalho Grassi; Michelacci Paciello Pozzi; **90s**: Chatterjee Cooper; Devereux Head Lapham; Cook;

Entry-Exit & Variety w/ Nominal Rigidities: Monetary Policy

Bilbiie Ghironi Melitz (2007 NBER MA); Bergin Corsetti, Bilbiie Fujiwara Ghironi; Etno Rossi; Bilbiie (2019), Cacciatore Fiori Ghironi; Ascari Colciago Silvestrini, Hamano Zanetti,

COVID-19 Recession:

Guerrieri Lorenzoni Straub Werning; Woodford; Baqaee Farhi; Cesa-Bianchi Ferrero ; Bilbiie Melitz

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2. Acharya, S., E. Challe, and K. Dogra, 2021 "Optimal Monetary Policy according to HANK" *mimeo*
3. Alves, F., G. Kaplan, B. Moll, and G. Violante, "A Further Look at Monetary Transmission in HANK"
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5. Auclert, A. and M. Rognlie 2016, "Inequality and Aggregate Demand," *Mimeo*
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21. Bilbiie, F. 2019, "Monetary Policy and Heterogeneity: An Analytical Framework" *mimeo*
22. Bilbiie Kaenzig Surico 2021 "Capital, Income Inequality, and Consumption: the Missing Link" *Journal of Monetary Economics*

23. Bilbiie, F. 2018, "Neo-Fisherian Policies and Liquidity Traps," *American Economic Journal: Macroeconomics*
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