NOMINAL GDP TARGETING AS "OPTIMAL MONETARY POLICY FOR THE MASSES"

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Strategies for Monetary Policy: A Policy Conference
Policy Panel on "Monetary Strategies in Practice"
Hoover Institution, Stanford University

May 3, 2019
Stanford, Calif.

FEDERAL RESERVE BANK *of* ST. LOUIS

Introduction

NGDP TARGETING AS A FRAMEWORK

- Nominal GDP (NGDP) targeting is sometimes recommended based on New Keynesian models—e.g., see Woodford (remarks at the Economic Policy Symposium in Jackson Hole, 2012).
- Today I will look at NGDP targeting as optimal monetary policy in a different type of model.
- While the models are different, the policy recommendation is similar, which suggests that NGDP targeting may be a relatively robust approach to optimal monetary policy.
- I am hopeful that the results reported here will stimulate more research and that ideas related to price-level targeting and NGDP targeting will continue to gain influence in actual monetary policy deliberations.

WHAT WE DO IN OUR PAPER

- We construct a stylized economy with important private credit markets along with considerable wealth, income and consumption inequality (see Bullard and DiCecio, Working paper, St. Louis Fed, 2019).

- The role of monetary policy in this model is to make sure private credit markets are working correctly (i.e., complete).

- Optimal monetary policy in this model looks like "NGDP targeting"—that is, countercyclical price-level movements.

- This result continues to hold even when there is "massive" heterogeneity—enough heterogeneity to approximate income, financial wealth and consumption inequality in the U.S.

- Hence, *the main result is that NGDP targeting constitutes "optimal monetary policy for the masses" in this environment.*

Environment

GENERAL-EQUILIBRIUM LIFE-CYCLE ECONOMY

- Each period, a new cohort of households enters the economy, makes economic decisions over the next 241 quarters, then exits the economy.
  - Households have log-log preferences defined over consumption and leisure.
  - Households are randomly assigned one of many possible personal productivity profiles when they enter the model.
    - The intra-cohort distribution is uniform. We obtain similar results using a lognormal distribution, i.e., in an economy with arbitrarily rich and poor households.
  - The profile is symmetric—it begins low, rises and peaks exactly in the middle of life, then declines back to the low level.
  - Productivity units determine the value of an hour worked in a competitive labor market.
  - The aggregate production technology is linear, and the economy grows over time at a stochastic rate.
  - The effective lower bound can also be incorporated (Azariadis et al., *JEDC*, 2019).

HOUSEHOLD CREDIT

- The overlapping-generations structure creates a large private credit market essential to good macroeconomic performance.
- Young households want to borrow to move consumption forward in the life cycle, while middle-aged households wish to save for retirement.
    - The private-sector asset in the model can be thought of as "mortgage-backed securities."
- There is a friction in the credit market: non-state contingent nominal contracting.

Equilibrium

THE EQUILIBRIUM MONETARY POLICY CREATES

- The monetary policymaker follows an NGDP targeting rule that delivers complete-markets consumption allocations—similar to Koenig (*IJCB*, 2013) and Sheedy (*BPEA*, 2014).
- Given this policy rule, households consume equal amounts of available production conditional on their productivity; this is called "*equity share contracting*,"and it is optimal under homothetic preferences.
- The NGDP targeting rule works because it provides a form of insurance for all households against future aggregate shocks.
- Income, consumption and asset holdings fluctuate from period to period but in proportion to the value of the real wage.
- All households experience the same stochastic consumption growth rate.

THE WICKSELLIAN NATURAL REAL RATE OF INTEREST

- The equilibrium we study has the following property:
  - *The real interest rate is exactly equal to the output growth rate at every date, even in the stochastic economy.*
- One could think of this as "the Wicksellian natural real rate of interest."
- The proper conduct of monetary policy could be thought of as restoring this Wicksellian real rate, which also characterizes optimal monetary policy in the baseline New Keynesian model.
- In this sense, the two types of models come to the same conclusion about the nature of optimal monetary policy.

HOURS WORKED OVER THE LIFE CYLE
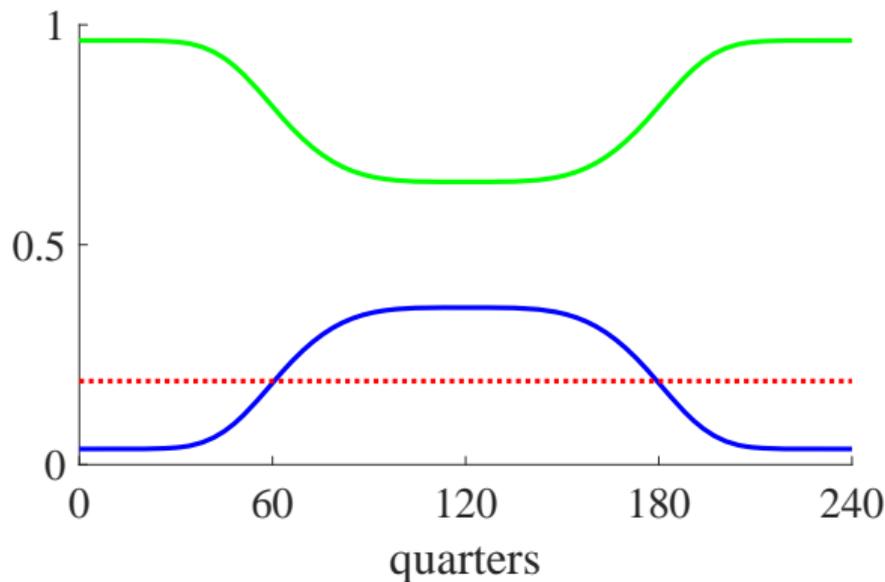
FIGURE: Cross section: Leisure decisions by age (green), labor supply by age (blue) and fraction of work time in U.S. data, 19% (red). The labor/leisure choices depend on age only. High-income households work the same hours as low-income households at each age.

CONSUMPTION MASS
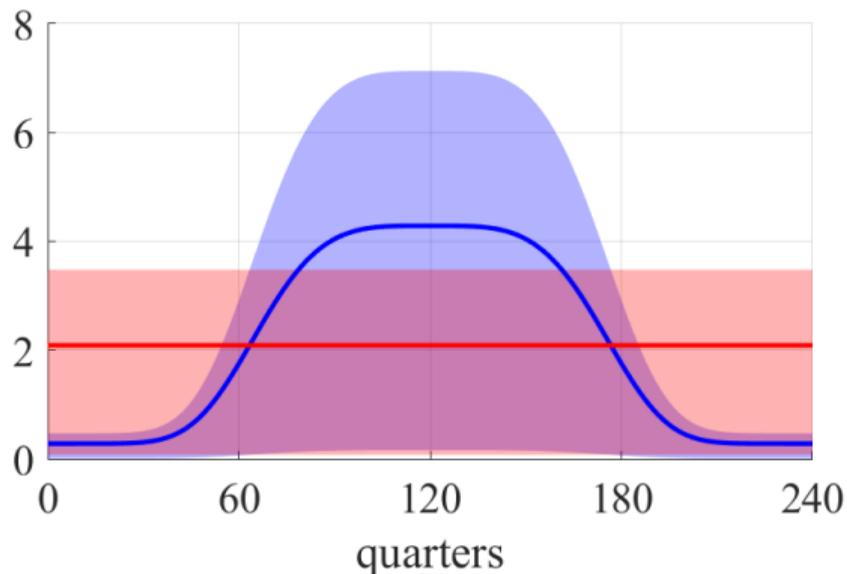
FIGURE: Cross section: Consumption mass (red) and labor income mass (blue) along the complete-markets balanced growth path. Under optimal monetary policy, the private credit market reallocates uneven labor income into perfectly equal consumption for each productivity profile. The consumption Gini is 31.8%, similar to values calculated from U.S. data.

NET ASSET HOLDING MASS
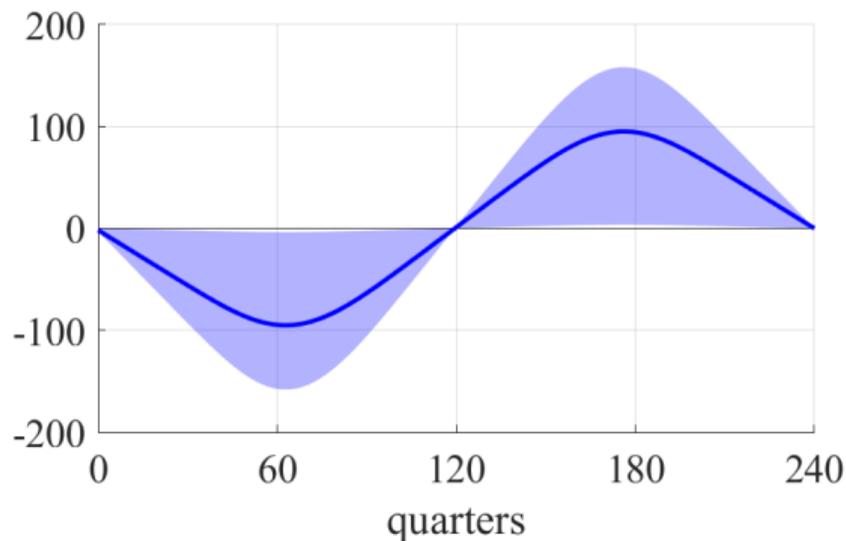
FIGURE: Cross section: Net asset holding mass by cohort along the complete-markets balanced growth path. Borrowing, the negative values to the left, peaks at stage 60 of the life cycle (age ~ 35), while positive assets peak at stage 180 of life (age ~ 65). The financial wealth Gini is 72.7%, similar to values calculated in U.S. data.

Inequality

INEQUALITY IN THE MODEL

- There is a large amount of heterogeneity in the model that depends in part on life-cycle productivity dispersion and in part on the life cycle itself.

	Wealth	Income	Consumption
U.S. data	80% [1]	51% [2]	32% [3]
Model	72.7% [4]	51.6% [5]	31.8%

TABLE: Gini coefficients in the U.S. data and in the model.

[1] Davies, Sandström, Shorrocks and Wolff, *EJ,* 2011.
[2] CBO, 2016.
[3] Heathcote, Perri and Violante, *RED,* 2010.
[4] Wealth is defined as the non-negative part of net assets.
[5] Income is defined as labor income plus non-negative capital income.

Policy

INTERPRETATIONS AS NGDP TARGETING

- No persistence in shocks to the Wicksellian natural rate: The expected rate of NGDP growth never changes, and the economy never deviates from the NGDP path. "Perfect NGDP targeting."
- Persistence in shocks to the Wicksellian natural rate: The expected rate of NGDP growth fluctuates persistently with the shock, and it takes longer to return to the NGDP path.
- Actual policy looks "ordinary" in that both nominal and real rates fall in a recession.

EFFECTS OF A SHOCK
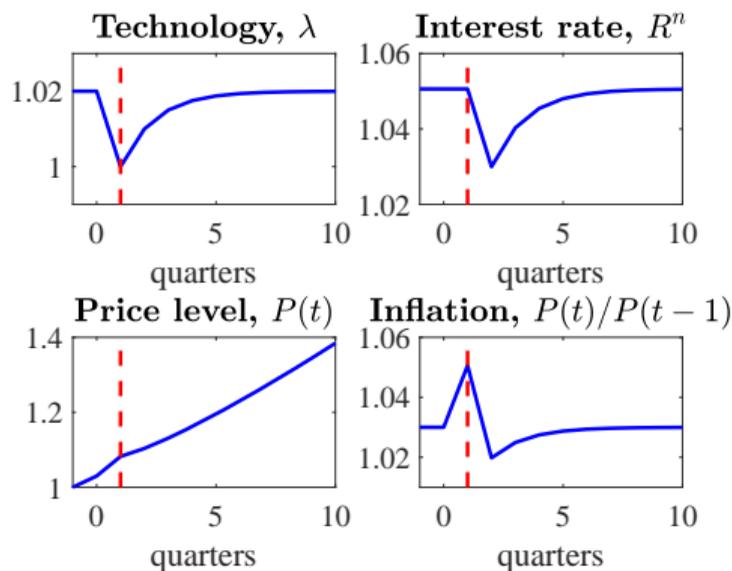
FIGURE: Monetary policy responds to a decrease in aggregate productivity growth by increasing the inflation rate in the period of the shock. Subsequently, inflation converges to its long-run equilibrium value from below. The nominal interest rate drops in the period after the shock.

Conclusions

CONCLUSIONS

- Actual households have peak earning years, so they have to use credit markets to smooth life-cycle consumption.

- In this paper, we study a simple and stylized economy where these credit markets do not work perfectly because of a friction called "non-state contingent nominal contracting."

- The monetary authority can repair the distortionary effects of this friction by conducting monetary policy in a manner recommended by Koenig (*IJCB*, 2013) and Sheedy (*BPEA*, 2014)—NGDP targeting.

- In doing so, the monetary authority restores the Wicksellian natural real rate of interest, which is the real rate of interest that would occur if there were no frictions in the economy.

- This NGDP targeting policy works well for all households in this economy—young and old, rich and poor—because they all face a life-cycle consumption smoothing problem. Thus, it is "optimal monetary policy for the masses."