



BANK OF ENGLAND

Centre for Central Banking Studies

# The Theory of Unconventional Monetary Policy

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## Date

Banca d'Italia, Rome, October 21, 2016

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## Title

Workshop on Unconventional Monetary Policy

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# What This Paper is About



# Theresa May; 5th October 2016



**People with assets have got richer. *People without them have suffered.* People with mortgages have found their debts cheaper. People with savings have found themselves poorer.**



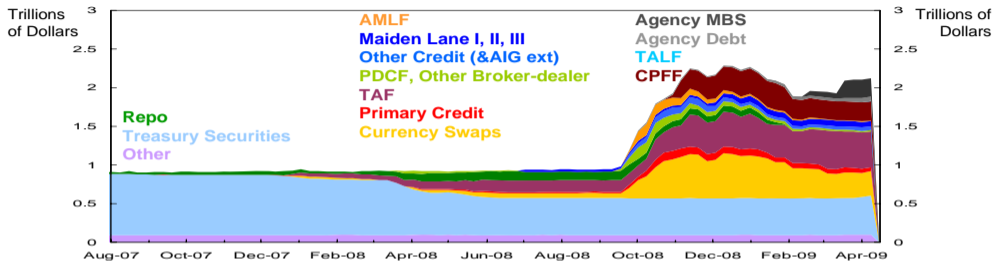
# Our Paper

- We build a simple model in which
  - 1 Multiple outcomes are possible
  - 2 Stock market and real activity fluctuations can be inefficient
  - 3 The central bank can intervene and raise welfare
- The inefficiency at the heart of our setup differs from that in the standard neoclassical reinterpretation of Keynes ([chart](#))
  - Gives monetary policy a role even if there are no rigidities
- In our setup changes in the size and composition of the central bank balance sheet matter
  - We show how they can be used to restore efficiency
- Also a theory of ‘conventional’ monetary policy...

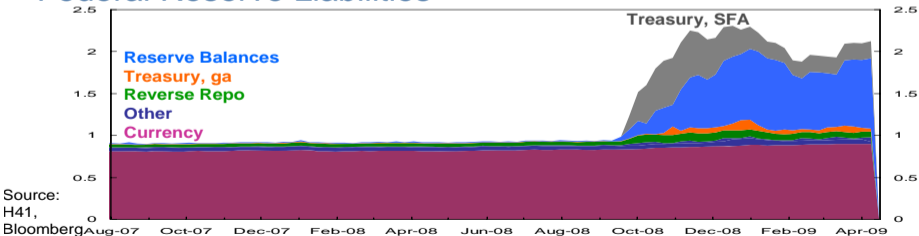


# Quantitative vs Qualitative Easing

## Federal Reserve Assets



## Federal Reserve Liabilities



Source:  
H41,  
Bloomberg



# Our Model

## Three Private Agents: Two Periods

- Entrepreneur

- Lives in period 2 only
- Owns a technology
- Hires workers and produces goods



- Workers

- Two types
- Live for two periods
- Trade financial assets in period 1
- Work and buy goods in period 2



# Our Model

## Two Public Agents (Conventional Monetary Policy)

- Treasury in Period 1
  - Borrow \$ from public
  - Redistributes \$ as lump-sum transfer to workers
- Treasury in Period 2
  - Taxes workers and entrepreneur to repay debt
  
- Central Bank in Period 1
  - Buys some \$ denominated debt from Treasury
  - This creates money
- Central Bank in Period 2
  - Distributes \$ seigniorage to Treasury
  - Allows debt to expire
  - This destroys money



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# Main Idea





# Intuition

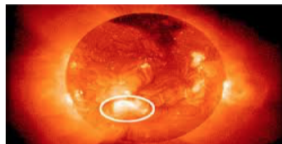
- Multiple equilibria: nothing in the model pins down wages
- Higher nominal wages imply (ceteris paribus) lower real debt burden
  - This makes the entrepreneur better off / workers worse off
  - Negative income effects  $\Rightarrow$  workers willing to work more  $\Rightarrow$  leading to falls in equilibrium real wage
- Workers' loss is entrepreneurs gain (and vice versa)



# Our Model with Uncertainty

## The Asset Markets

- Sunspots
  - We introduce a sunspot shock
  - Seminal newspaper article (optimistic / pessimistic) allows agents to coordinate beliefs
- Three different assets
  - Money yields liquidity services
  - Bonds pay same in both states
  - Equity is a claim on profits of a firm
- Complete Markets
  - Workers can perfectly transfer income across states
  - Entrepreneurs cannot, still excluded



# Equilibrium

## Equilibrium is Determined by Beliefs

- Equilibrium

- Workers form beliefs in period 1 about the price level in different states in period 2
- Workers invest in bonds and equities
- Entrepreneurs real taxes depend on the price level

- Optimistic Belief

- Price level is high
- Real tax burden is low
- Workers work hard (consume less leisure)

- Pessimistic Belief

- Price level is low
- Real tax burden is high
- Workers work less (consume more leisure)



# Unconventional Monetary Policy

## Main Idea

- **Equilibrium is Pareto inefficient**
  - Workers and entrepreneur would cross-insure if they had a chance
- Central Bank could replicate the full participation equilibrium by trading in risky assets
  - Incomplete participation breaks Wallace neutrality!
- To do so, it trades in lieu of the excluded – risky portfolio similar to that which the entrepreneur would have purchased



# Unconventional Monetary Policy

## Composition of CB Balance Sheet Matters

- Qualitative easing can replace missing markets
- CB Equity Trades
  - CB can buy or sell equity in exchange for debt
  - CB trades alter relative prices
  - By buying and selling equity CB can eliminate real effect of inefficient belief shocks
- What should CB/Treasury do?
  - The CB should compress the risk premium and eliminate the part of it due to inefficient belief fluctuations
  - Full stabilisation occurs only if all volatility is non-fundamental
- Central Bank intervention reduces inefficient volatility in asset markets ([chart](#))



# Summary

To generate excess volatility in asset markets in a simple and parsimonious model we rely on:

- A nominal setup, with an indeterminate price level
- Nominal government transfers
  - Depending on the price level, these translate into different real transfers
  - Alternative policy prescription #1: issue real debt
- Beneficiaries of government transfers distinct from those taxed to fund them
  - Breaks Ricardian equivalence
  - Alternative policy prescription #2: PAYG tax systems
- Asset market exclusion
  - All that is required is incomplete insurance
  - Preferred habitat, as in Vayanos and Vila (2009), may lead to similar results

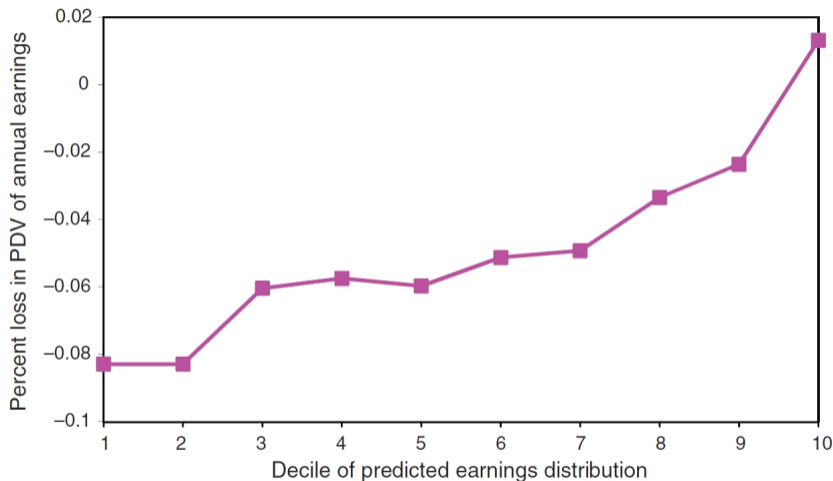


# Conclusion (ctd)

- We take beliefs as given
  - Alternative policy prescription: try to affect beliefs directly
  - Central Bank may be in a unique position to do that
- Caveat: in some states central Bank's asset portfolios will make losses...
  - This may undermine credibility in a setup in which it is potentially extremely valuable
- Qualitative easing, achieved by buying and selling risky assets, is Pareto improving
  - Standard monetary policy unable to restore efficiency
- Broadly, size of welfare improvement will be proportional to share of asset market volatility due to non-fundamental factors ([chart](#))



# Exclusion Significance: Oreopoulos, Von Wachter, Heisz



- Fig.5: Heterogeneity of Losses from Graduating in a Recession ([back](#))





# Rorschach Test: Do Sunspots Matter?

We Think So

