What This Paper is About

While monetary policy – with super-low interest rates and quantitative easing – provided the necessary emergency after the financial crash, we have to acknowledge that there have been some bad side effects.
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

Trillions of Dollars

- AMLF
- Maiden Lane I, II, III
- Other Credit (&AIG ext)
- PDCF, Other Broker-dealer
- TAF
- Primary Credit
- Currency Swaps

Federal Reserve Liabilities

Trillions of Dollars

- Reserve Balances
- Treasury, ga
- Reverse Repo
- Other
- Currency

Source: H41, Bloomberg

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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
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)
Fig. 5: Heterogeneity of Losses from Graduating in a Recession

- Exclusion Significance: Oreopoulos, Von Wachter, Heisz
Rorschach Test: Do Sunspots Matter?
We Think So