

# Discussion of "Optimal Central Bank Balance Sheets"

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- Large expansion of central bank balance sheets post-2008
  - unconventional monetary policy effective away from the ZLB?
  - should central banks reduce balance sheets to pre-crisis levels?
- Gertler-Karadi 11: "A Model of Unconventional Monetary Policy"
  - + central bank buys long-term government bonds with reserves
  - + banks' leverage constraint depends on asset and reserve holdings
- Mechanism: less bond-, more reserve-holdings relaxes banks' lending constraint
  - effective cyclical tool when reserves are scarce
  - unconditionally beneficial to reduce balance-sheet constraints

⇒ central bank should always hold all long bonds, issue reserves

## Mechanism details

- Gertler-Karadi 11: central bank as credit intermediary
  - banks finance non-financial firms s.t. leverage constraint:  
 $bank\ value \geq \kappa_K \cdot (capital\ claims)$
  - central bank can buy capital claims with reserves, acts like unconstrained bank  
 $\Rightarrow$  relaxes aggregate financing constraint, boost investment when banks constrained
- Eren-Jackson-Lombardo 24: central banks as duration intermediary
  - banks finance non-financial firms, bonds and reserves s.t. leverage constraint:  
 $bank\ value \geq \kappa_K \cdot (capital\ claims) + \kappa_B \cdot (long\ bonds) + \kappa_F \cdot (reserves)$
  - central bank buys long bonds with reserves, acts as duration intermediary  
 $\Rightarrow$  reduces bank financing constraint if  $\kappa_B > \kappa_F$ , boosts investment
- Useful extension to study bond purchases, reserve quantities, balance sheet size
  - captures key QE mechanisms: more reserves, less term risk, relaxed constraints

## What is the chicken?

- Most QE models are chicken models (H/T Prescott)
  - households like to consume chicken
  - households cannot produce chicken
  - the government can produce chicken

⇒ the government should produce chicken
- Models of QE differ in the breed of chicken
  - private agents cannot issue safe bonds (the government can)
  - private agents cannot issue reserves (the government can)
  - private agents have limited risk-bearing capacity (the government hasn't)
  - private agents have balance-sheet constraints (the government hasn't)
  - private agents act in segmented markets (the government doesn't)
- What is the right type of chicken? Why can households not produce chicken?

## Two chicken on the table

- Key assumptions
  1. banks have a leverage constraint (the government hasn't)  
**otherwise:** capital investment independent of asset holdings
  2. households cannot participate in asset and reserve markets (the government can)  
**otherwise:** households issue short-term bonds (reserves) buy long bonds
- Do assumptions capture the data? Are we looking at the right chickens?
  - Banks face constraints imposed by share-/debtholders (and the government) ✓
  - Only banks can hold reserves (imposed by the central bank) ✓
  - Non-bank investors hold long bonds ✗

## Who holds long bonds? What makes reserves special?

- Empirical QE literature: central banks bought asset from non-bank investors
  - U.S.: household sector (i.e. hedge funds) sold treasuries and MBS
  - Euro area: foreign investors sell bonds, ...
- Study variation of presented model:
  - households hold long bonds, sell and convert to deposits
  - banks hold reserves with deposit balances
    - ⇒ can reserves crowd out capital financing?
    - ⇒ or boost investment if  $\kappa_F < 0$ ?
- Lack of evidence on broad/real effects of QE through asset prices
  - my view: U.S. QE moved convenience yields/collateral premia (but who knows)
  - separate role for large reserve quantities w. new regulation (see today's program)

## Conclusion

- Simple, quantitative model: rich analysis of balance-sheet policy  
⇒ captures key mechanisms, could add reserve crowding out etc.
  - Normative analysis difficult in chicken models:  
⇒ should government produce chicken, or allow households to do so?  
(optimal balance-sheet size function of regulatory and policy framework)
  - Normative answer may require struct. model of  $\kappa_F(\text{assets}, \text{reserves}, \text{regulation}, \dots)$
- ⇒ Thank you to authors and organizers!