Introduction
oo

Money and prices
ooo

Repos
ooo

Multiplicity
oo

Conclusion
o

Extra
ooo

Discussion of "Open Market Operations" by Rocheteau, Wright, and Xiao

Huberto M. Ennis

Richmond Fed

NBER Multiple Equilibria and Financial Crisis – San Francisco

14–15 May, 2015

MOTIVATION OF THE PAPER

- Study the role of assets in facilitating transactions and its implications for:

    - interest rates
    - OMO-based monetary policy
    - the liquidity trap

- There are several attempts to do this in the literature: most recently, the work of Steve Williamson. Also related to:

    - Duffie on repo "specials"
    - Vayanos-Weill on the "on-the-run" phenomenon
    - Krishnamurthy and Vissing-Jorgensen on "treasuries" demand

- *True motivation* (I suspect): showcase the versatility of the New Monetarist framework

THIS DISCUSSION

- I will not summarize the paper
  - I assumed no need: Randy is well-known for giving excellent presentations
- There is a lot one could talk about in this paper. I will pick three things:
  - the link between money and prices
  - repos and securities lending
  - multiplicity (to acknowledge the theme of this conference)

MONEY AND PRICES

- The New Monetarist story using some Old Monetarist notation
  - "demand" for real balances

    $$m_t = \frac{M_t}{P_t} = L\left(\iota_t, b_t\right)$$

    where ι_t is the nominal interest rate ($\iota_t = r + \pi_t$) and b_t is the supply of bonds (in real terms)
  - also, a "constant velocity" relationship $m_t = v\left(c_t\right)$ where c_t is consumption (of cash-goods)
  - let $dL/db < 0$ (CASE 1 in paper); also the usual $dL/d\iota < 0$
- A one-time change in M_t financed with lump-sum transfers is neutral ($\Delta P_t = \Delta M_t$)
- Open market operation: $\Delta M_t = P_t \phi_b \Delta b_t \rightarrow$ now a one-time OMO changes m_t (because it changes b_t) and consumption

- From the authors: "While this is not an empirical paper, we mention that some people argue real-world markets suffer from a scarcity of high-quality liquid assets. In our stylized model this corresponds to Case 1"

- In case 1, the response of prices to those changes in M that come about from buying bonds is less than proportional

$$\frac{\Delta P}{P} = (1 - \partial_b) \frac{\Delta M}{M}$$

where $\partial_b \propto -dL/db$

- In the U.S., there has been a lot of bond buying funded with central bank liabilities in recent times

Period	Monetary Base	M1	CPI
1985-1994	7.8%	7.9%	3.6%
1995-2005	6.0%	1.8%	2.5%
2006-2014	22.9%	8.4%	2.2%

average annual percentage growth rates

LIQUIDITY TRAP

- The authors discuss a version of their economy where, under some conditions, OMO are "ineffectual" and the nominal return on government bonds is "stuck at" a lower bound of zero (ignoring pledgeability issues)
  - they call this a "liquidity trap"
  - the (main) condition is for the supply of bonds to be relatively low (scarcity of bonds again)

- In a "liquidity trap" OMO (buying bonds with money) does not change prices → in line with last row of table above

- It is efficient in a liquidity-trap situation to *increase* the supply of bonds
  - buying bonds financed with money is not a good idea
  - What does this teach us about "quantitative easing"?

REPOS AND SECURITIES LENDING

- Usual New Monetarist assumption: "agents are to some degree anonymous in the decentralized market" → "hinder unsecured credit"
  - "this is what generates a role for assets in the facilitation of intertemporal exchange"
- Two interpretations: when a buyer meets a seller in the decentralized market,
  - the buyer exchanges assets in possession (money and/or bonds) for goods (Kiyotaki-Wright)
  - the buyer issues an IOU backed by assets in possession and receives goods, then pays back in the centralized market (Kiyotaki-Moore) (How exactly does record-keeping work?)
- Authors offer a third interpretation: Repos
  - not very clear explanation in the paper: is the seller still giving goods to the buyer in the decentralized-market transaction?
  - usually a repo is a transaction of securities vs cash

- Some effort in Section 3.1 of the paper goes into explaining situations where the nominal return on short-term bonds is negative

- The authors argue that their "logic may well be relevant" by quoting *The Economist* magazine

  - part of that quote reads: "not all Treasury securities are equal; some are more attractive for repo financing than others"
  - so, again, repos are taken to be an important part of the story

- A crucial component of the authors' explanation for negative yields: there are some transactions in the decentralized market where only bonds are accepted by the seller

  - even if the buyer has cash, she needs to pay with bonds in certain pairwise meetings to be able to acquire goods
  - then, agents are willing to hold bonds at negative interest because bonds can be used (with some prob.) to purchase goods in those meetings (with big returns)
  - How do I think about repos in this situation? I'm not sure

Repo specials, on-the-run phenomenon, and liquidity

- Each Treasury instrument has its own repo rate

    - special repo rate: any repo rate that is nontrivially below the general collateral rate
    - "most variation in U.S. Treasury repo rates is based on the demand and supply for particular forms of repo collateral, particularly given the common practice of shorting, typically via reverse repo combined with sale of the purchased instrument" (Duffie, 1996)

- Securities lending is usually done using cash collateral: a reverse repo involving cash vs securities

- Are securities in high demand to facilitate transactions? Or to take risky financial positions (like shorting certain bonds) which may produce a high return or an appropriate hedge?

- Does it matter how we model "specialness"? As we know, New Monetarists are for taking microfoundations seriously

MULTIPLICITY

- A natural step is to try to endogenize *acceptability*: Which assets are accepted in which transactions and why?

- The authors take a first step in that direction
    - each asset has a high-quality and a low-quality version
    - all sellers recognize the quality of pesos (money) $\rightarrow$ can see if it is a counterfeit
    - sellers must pay an individual-specific cost κ to recognize the quality of dollars (bonds)
    - sellers draw a random κ from a distribution

- Note that I changed the names of variables:
    - I am calling dollars what I called bonds before
    - I am calling pesos what I called money before
    - (no big deal, these are just names, but it helps with the story)

CURRENCY SUBSTITUTION

- In the nineties in Argentina, for example
  - the central bank sometimes bought and sold dollars as a way to intervene in money markets (so dollars played a similar role to bonds in U.S. OMOs)
  - pesos were accepted in (most) transactions, while dollars only in some
  - to accept dollars, merchants had to set up a new bank account, buy a counterfeit detection machine, etc. → this is the cost κ

- The authors show that in such situations multiplicity of equilibria can easily emerge
  - when more sellers recognize both assets, there is less value on carrying pesos (it is more likely that a buyer will find a seller that recognizes both assets; i.e., pesos are not so crucial)
  - buyers carry less pesos, so it is more profitable for sellers to set up the technology to accept dollars

- From what I know, this is interesting and relevant
  (I lived in Argentina in the early nineties)

CONCLUSION

- Versatility of the New Monetarist framework seems evident from reading the paper
  - in part, this may just reflect the skill of the authors

- The paper provides an interesting perspective on:
  - the link between money, prices, and open market operations
  - the link between "liquidity" and market yields of gov. bonds
    - if you are interested in learning more about this, I recommend Vayanos and Weill (2008) → interestingly, *multiplicity of equilibria* plays a crucial role in that paper
  - the link between asset acceptability and multiple equilibria
  - ... and many other things

MONEY AND PRICES
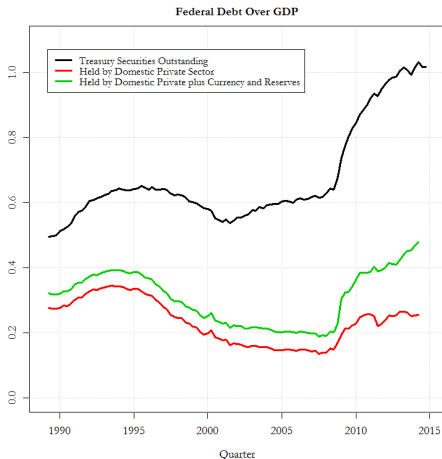
- The New Monetarist story using New Monetarist notation

  - "demand" for real balances m_t in Case 1 solves

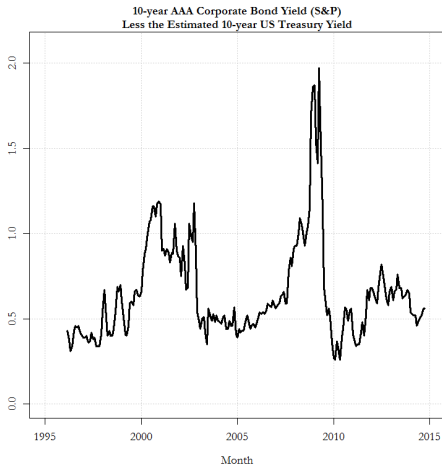 $$\iota_t = \alpha_m L(m_t) + \alpha_2 L(m_t + b_t)$$

  where ι_t is the nominal interest rate ($\iota_t = r + \pi_t$) and b_t is the supply of bonds (in real terms)

  - also, a "constant velocity" relationship $m_t = v(c_t)$ where c_t is consumption (of cash-goods)
  - easy to show that $dm/db < 0$ and $dm/d\iota < 0$

- Real balances are held for two reasons

  - to make payments in only-money meetings $\alpha_m L(m_t)$
  - to make payments in money-&-bonds meetings $\alpha_2 L(m_t + b_t)$

- When bonds increase, there is less reason to hold money to use in money-&-bond meetings $\Rightarrow$ hence $dm_t/db_t < 0$

Introduction
○○

Money and prices
○○○

Repos
○○○

Multiplicity
○○

Conclusion
○

Extra
○●○

On the empirical merit of case 1: How much is enough safe assets?

Federal Debt Over GDP

Legend:
- Treasury Securities Outstanding
- Held by Domestic Private Sector
- Held by Domestic Private plus Currency and Reserves

Quarter

A look at the yield spread

10-year AAA Corporate Bond Yield (S&P)
Less the Estimated 10-year US Treasury Yield

Figure 1: Safe Assets: World
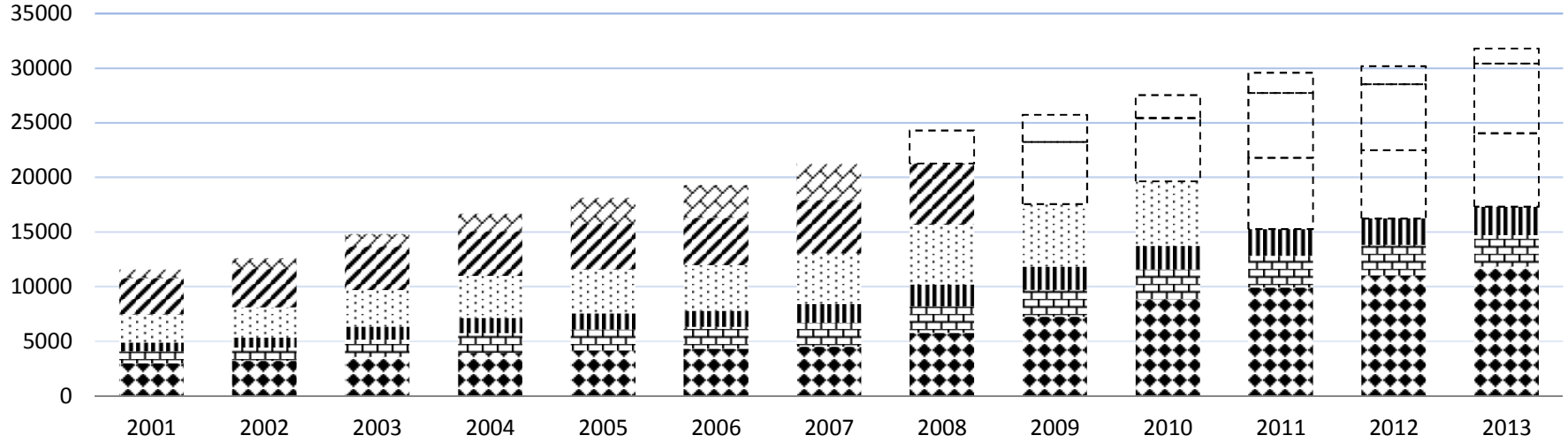
Source: FRB/Eurostat/ECB/Haver

Legend:
- ⊠ US Treasuries
- ⊟ German Bunds
- ⦀ French Bonds
- ⦙ Euro Sovereigns (ex Germany and France)
- ⬧ US Agency Debt
- ⟋ US Private ABS
- ⸦⸧ No Longer Safe Euro
- ⸦⸧ No Longer Safe Agency
- ⸦⸧ No Longer Safe ABS