Comments by Rafael Repullo on

An Analysis of the Literature on International Unconventional Monetary Policy

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Preamble

- Why am I discussing this paper?

  → I am not a macroeconomist

  → It's a survey paper

  → It's forthcoming in the *Journal of Economic Literature*

- Organizers wanted an "outsider's perspective"

  → Incorporating financial stability implications

- My discussion will focus on what I miss in the paper

  → With only brief reference to financial stability issues

What is UMP?

- Unconventional Monetary Policy (UMP) consists of a wide variety of tools recently used by central banks
  - → Asset purchases (QE)
  - → Forward guidance
  - → Lending tools (Targeted LTROs, Funding for lending)
  - → Reserves tools (interest on reserves, tiering)
  - → Negative interest rates
    - Unconventional use of a conventional tool

Structure of paper

- Theoretical frameworks 18 pp
- Description of UMP by four major central banks 4 pp
- Empirical studies of effects of UMP on asset markets 22 pp
- Empirical studies of effects of UMP on macro variables 6 pp
- Final assessment 8 pp

What am I going to do?

- Brief comment on empirical sections
- Brief description of theoretical model
- Three critical comments on theoretical model
  - → What do we mean by “money”?
  - → What is the balance sheet of the central bank?
  - → What do we mean by seigniorage?
- Financial stability effects of UMP
- Concluding remarks

Part 1

Comment on empirical sections

Comment on empirical sections (i)

- Assessing effects of UMP is an extremely difficult task
- Assessing effects of Conventional MP (CMP) is difficult
  - → Have to identify the unanticipated change in policy rate
  - → Because policy changes are (partly) endogenous
  - → But at least there is a “single” policy rate

Comment on empirical sections (ii)

- With UMP we have a large set of policy variables
- Take, for example, the case of QE
  - → It is not just size of the purchases
  - → The characteristics of the assets (issuer, maturities, ratings)
- Moreover, changes are generally bundled with other MP actions
  - → And sometimes also regulatory actions

Comment on empirical sections (iii)

- How can one identify the unanticipated change in policy?

  → And then assess its effects on financial or macro variables?

- A most challenging task indeed

  → Which central banks have to perform anyway

  → Because they have to account for their actions

- Not a great prospect

  → Especially, given absence of a solid theoretical framework

  → That could guide interpretation of empirical results

Part 2

Description of theoretical model

Theoretical model (i)

- Infinitely lived households with utility function that depends on
  - → Consumption of a continuum of differentiated varieties
  - → Labor supply
  - → Real balances
- Monopolistically competitive firms that produce these varieties
  - → Hire labor in a competitive labor market
  - → Set nominal prices subject to convex adjustment costs

Theoretical model (ii)

- Four assets held by households
  - → Money (cash) that pays zero interest
  - → Central bank reserves = one-period government bonds
  - → Two-period government bonds
- Constant supply of one- and two-period government bonds
- Central bank + government budget constraint
- Policy rate is interest on reserves = interest of one-period bonds
- Taylor rule determines the evolution of policy rate

A first query

- In the model

  → Reserves and one-period bonds are perfect substitutes

- In reality

  → Reserves can only be held by banks, not by households

  → But there are no banks in the theoretical model

- Implication

  → Simple QE (purchase of one-period bonds) is irrelevant

What about other types of QE?

- Results show conditions for all types of QE to be irrelevant

  → They only affect the path of two-period interest rates

- Then introduce frictions that make them relevant

  → Market segmentation

  → Limits to arbitrage, etc.

Part 3

Critical comments on theoretical model

Part 3a

What do we mean by “money”?

On the concept of “money”

- Money in the model is a cash-like zero interest asset

  → Passively issued by central bank on demand

  → Provides liquidity services to household

- In reality, cash is completely irrelevant for monetary policy

  → As any central banker would attest

- It is time to think of models that move away from this setup

  → Replace it by reserves issued by central banks

  → This requires having banks in the model: long overdue!

Part 3b

What is the balance sheet of central bank?

Balance sheet of central bank (i)

- Balance sheet does not explicitly appear in model

  → Most peculiar given nature of QE

Central bank	
~~One-period bonds~~	Cash
Two-period bonds	Reserves (net)
	Capital

→ Since reserves and one-period bonds are perfect substitutes

Balance sheet of central bank (ii)

Central bank at date t

Assets = A_t	M_t = Cash
	L_t = Reserves
	K_t = Capital

- Notation
  - → Return of central bank assets = r_{t+1}
  - → Return of central bank reserves = r_{0t+1} (policy rate)
  - → Return of cash = 0

Balance sheet of central bank (iii)

Central bank at date t

Assets = A_t	M_t = Cash
	L_t = Reserves
	K_t = Capital

Central bank at beginning of date $t + 1$

$A_t\,(1 + r_{t+1})$	M_t
	$L_t(1 + r_{0t+1})$
	K_{t+1}

Balance sheet of central bank (iv)

- Assume initial value of central bank's capital $K_t = 0$
- Profits of central bank (transferred to government)

$$\Pi_{t+1} = K_{t+1} - K_t = K_{t+1}$$

$$= A_t(1 + r_{t+1}) - L_t(1 + r_{0t+1}) - M_t$$

$$= (L_t + M_t)(1 + r_{t+1}) - L_t(1 + r_{0t+1}) - M_t$$

$$= \underbrace{L_t(r_{t+1} - r_{0t+1})}_{\text{Profits from reserves}} + \underbrace{M_t r_{t+1}}_{\text{Profits from cash}}$$

Balance sheet of central bank (v)

- Expression for profits corresponds to real world central banks

  → But it is not the one that appears in this paper

  → As well as in most papers in the literature

- The correct expression

$$\Pi_{t+1} = L_t(r_{t+1} - r_{0t+1}) + M_t r_{t+1}$$

- The standard expression

$$T_{t+1} = L_t(r_{t+1} - r_{0t+1}) + \underbrace{M_{t+1} - M_t}_{\text{Printing of money}}$$

Part 3c

What do we mean by seigniorage?

On the concept of seigniorage (i)

- Two concepts of seigniorage

  → Profits of central bank

$$\Pi_{t+1} = L_t(r_{t+1} - r_{0t+1}) + M_t r_{t+1}$$

  → Change in zero cost liabilities of central bank

$$\Delta M_{t+1} = M_{t+1} - M_t$$

On the concept of seigniorage (ii)

- Some reasons why one should prefer the first concept

  → Corresponds to payments of central bank to government

  → Avoids problem that ΔM_{t+1} is exogenous (and volatile)

  → Avoids assumption that cash will be with us forever

  → Important given future central bank digital currencies

On the concept of seigniorage (iii)

- It's surprising how slow progress has been on this front

  → Even central bankers that should know better

  → Keep working with models in which seigniorage is ΔM_{t+1}

- It is high time to abandon this fiction

  → Work with the reality of central bank balance sheets

  → Work with the reality of central bank profits

Part 4

Financial stability effects of UMP

Financial stability effects of UMP (i)

- Assessing effects of CMP on financial stability is difficult

  → Consensus on "too low for too long" no longer exists

- Low policy rates may not increase risk-taking

  → When banks have significant market power

  → Martinez-Miera and Repullo (2021)

- Assessing effects of UMP is even more difficult

Financial stability effects of UMP (ii)

- A general principle

  → To assess the effects of policies on risk-taking

  → Look at effects on banks' charter values

  → Both theoretically and empirically (stock market values)

- High charter values induce prudent behavior

  → Banks have an incentive to preserve them

- Use this principle for first assessment of some UMPs

Financial stability effects of UMP (iii)

- Asset purchases (QE): Bad for financial stability

  → Replace high yielding assets by low yielding reserves

  → Although there may be some capital gains in short run

- Lending tools (Targeted LTROs): Good for financial stability

  → Reduce banks' costs of funding

- Reserves tools (tiering): Good for financial stability

  → Increase return of banks' reserves

- Negative interest rates: Bad for financial stability

  → ZLB on deposit rates reduce intermediation margins

Financial stability effects of UMP (iv)

- Previous assessment ignores general equilibrium effects

  → Through lending and investment decisions

  → Through consumption, employment, output, etc.

- This requires to embed financial institutions into macro models

Concluding remarks

Concluding remarks (i)

- UMP is here to stay

  → We'd better spend resources in understanding its effects

- A challenging task

  → Empirical identification is difficult

  → Theoretical models lag behind the reality of central banks

Concluding remarks (ii)

- No financial intermediaries in standard money-macro models
- Unsatisfactory state of affairs
  - → Banks play key role in transmission of CMP
  - → Even more so for UMP
- It's surprising how slow progress has been on this front
  - → More than 10 years after Global Financial Crisis
  - → Except for a few notable contributions

Concluding remarks (iii)

- We need financial intermediaries to consider
  - → Risk-taking channel of monetary policy
  - → Effect of macroprudential policies
  - → Joint effects of monetary and macroprudential policies
- We also need financial intermediaries to consider
  - → Effect of the introduction of CBDCs
- Summing up: more efforts should be directed towards modeling
  - → Understanding UMP requires unconventional models
  - → Let's build them!

Some references

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