Reserve requirements as a monetary transmission channel

Ewa Wróbel
Ewa.Wrobel@nbp.pl

NBP-SNB 10th Annual Joint Seminar
Zurich, June 2013

Presentation outline

- Motivation. Reserve requirements in emerging economies
- Reserve requirements as a transmission channel
- A handful of stylized facts for Tunisia
- Estimation method. Results for Tunisia
- Instead of conclusions: A few question marks
- Literature

Motivation: EMEs intensively use the RRs

➢ Emerging economies:

- RRs used for liquidity management
- RRs mitigate impact of exchange rate interventions on the supply of money
- RRs frequently replace interest rate tightening:
  - To avoid (undesired) capital inflows
  - Not to worsen NPLs problem
  - If interest rate is perceived as having a relatively low impact on the real sector and inflation
- Instrument of macro-prudential policy

➢ Developed economies:

- Instrument used in QE, problem of zero lower bound
- Potential instrument of macro-prudential policy – suggested in Kashyap, Stein (2012)

RRs in emerging markets: the purpose

- Mostly unremunerated or remunerated below the market rate i.e. can be perceived as a tax, has real effects
- The purpose often difficult to define (price stability, financial stability).
- Frequently double purpose: primary – financial stability, secondary – price stability.
- Sometimes both equally important.
- In Brazil – an instrument promoting diversified credit growth in various parts of the country (to foster economic growth of poorer regions), but also diversified with respect to small/big banks

RRs in emerging markets: effectiveness

- Scarce empirical evidence, mostly for Latin America

- Brazil: $\Uparrow$ RR$\rightarrow$ $\Uparrow$ inflation (through the ERPT effect), $\Downarrow$ credit $\rightarrow$ $\Downarrow$ output (VAR model with sign and zero restrictions)

-Latin America: limited and transitory impact on loans (panel estimation)

-Colombia: $\Uparrow$ RR$\rightarrow$ $\Uparrow$ loan rates (VECM)

RRs as a transmission channel

- ⇑ RR ⇓ loan supply→aggregate demand→ ⇓ inflation rate (π), however…

- ⇑ RR→ ⇑ cost of deposits→ ⇓ banks' demand for deposits ⇓ deposit rates. As a result either

⇑ consumer demand → ⇑ π

or ⇑ demand and prices of other financial assets → wealth effect → ⇑consumption → ⇑ π

RR as a transmission channel

- To restore equilibrium loan rates should $\Uparrow$ but…

- They stay unaffected if CB provides liquidity elastically at a policy rate (e.g. under inflation targeting). The necessary condition: CB loans and deposits raised by commercial banks perfect substitutes.
- They $\Downarrow$ if $\Uparrow \pi \rightarrow \Uparrow$ the value of collateral [Agénor, El Aynaoui (2010)]

RRs as a transmission channel

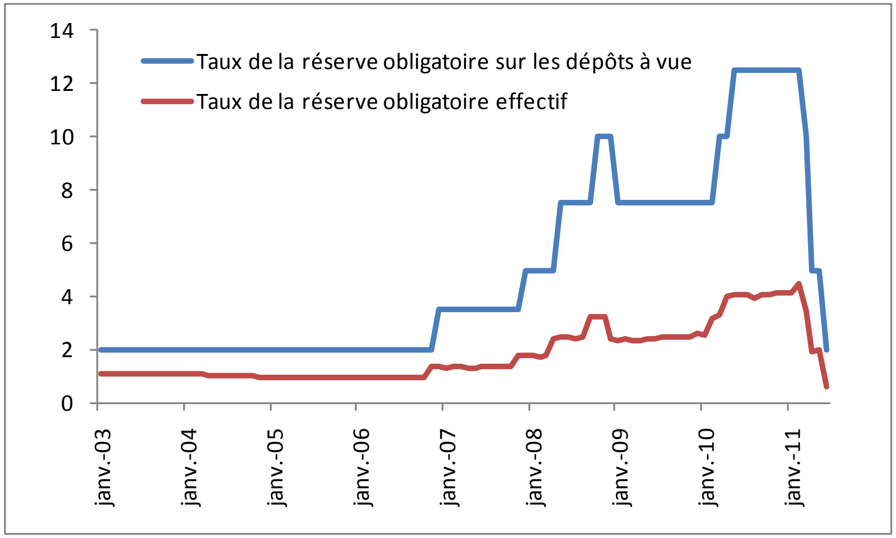
- Ambiguity of the overall macroeconomic effect of reserve requirements changes depends on:

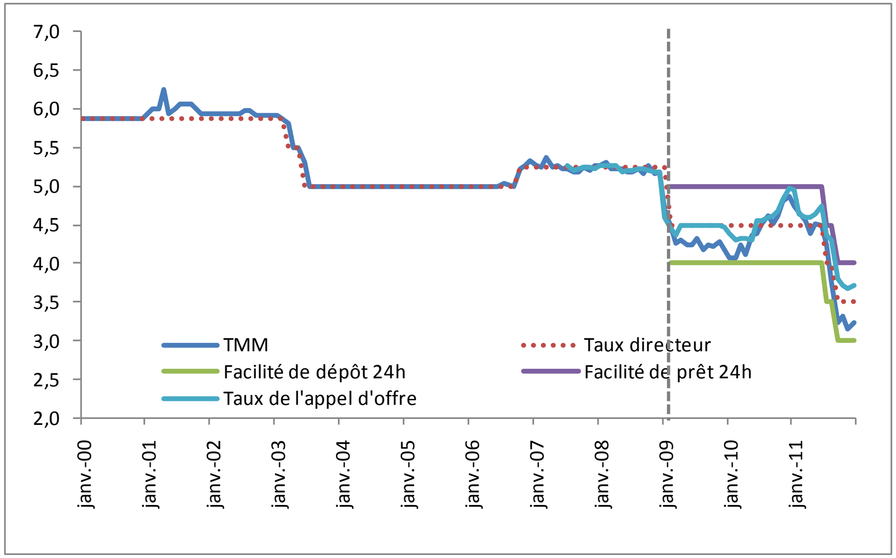
- The relative strength of the reaction of depositors (semi-elasticity of demand for deposits with respect to deposit rates) and borrowers (semi-elasticity of loan demand with respect to loan rates).
- Degree to which banks can replace reservable deposits by CDs
- Importance of bank lending as a source of external funds (the same as in the case of credit channel)
- Degree to which lending can be easily substituted by other sources of financing, e.g. capital market, funds from abroad (the same as in the case of credit channel).

A handful of stylized facts: RRs in Tunisia

- Important instrument in the BCT toolkit, especially over 2006-2011
- Capital inflows owing to privatization process
- Efforts to keep the real effective exchange rate stable (to preserve competitiveness of the real sector). Frequent interventions in the foreign exchange market
- Surplus liquidity of the banking sector
- Monetary policy framework: money supply as the indicative intermediate goal: (belief in a stable money demand function).
- Underdeveloped money and capital markets (e.g. no secondary market for treasuries)
- Quick development of CDs

A handful of stylized facts: RR and interest rate in Tunisia





A handful of stylized facts: financial openness of Tunisia

- Asymmetric openness of capital account

  - almost no restrictions on onward FDIs

  - ceilings on Tunisian FDIs abroad
- restrictions on short term capital inflows (example: investment in treasury bonds: 25% of each issue)
- Restrictions on borrowing from abroad
- Residents nor allowed to hold foreign currency; the only exception - foreign currency for trade purposes
- Banks - obligation to repatriate every day deposits in foreign currency held by residents from their correspondents to the central bank

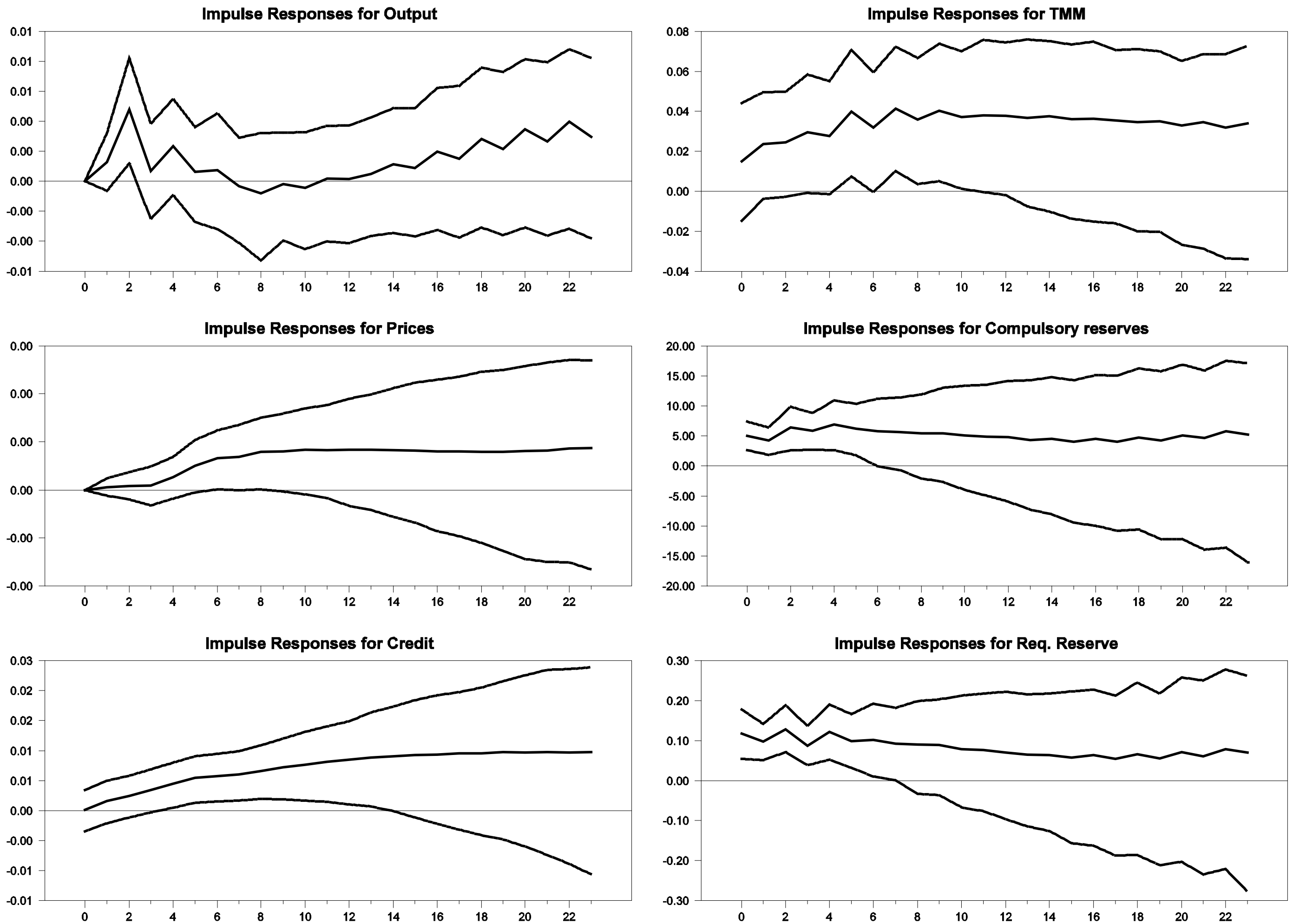
Estimation methods

- Impact of RR ratio on loan rates (VECM) and panel data
- For Tunisia: VAR similar to Glocker, Towbin (2012) for Brazil, but less variables
- Based on Uhlig(2005), *What are the effects of monetary policy on output*?
- VAR with sign restrictions + zero restrictions, 6 variables: manuf. output, core inflation, loans to the non-financial sector, short-term money market rate, compulsory reserves, required reserve ratio (effective). Deterministic elements: trend, dummies for financial crisis and the revolution of 2011

Estimation method

- Restrictions to identify RR shock: after a RR shock(⇑), banks' compulsory reserves ⇑, prices and output react with a delay. Loans and short-term interest rate can react instantaneously to the RR shock
- Restrictions to identify interest rate shock (⇑): banks' reserves ⇓. Prices and output react with a lag; other variables unrestricted.
- Shock to RR is orthogonal to the interest rate shock
- Time span for sign restrictions=3 months
- Four lags→VAR stable, residuals are not skewed, but a problem with serial correlation

RR in Tunisia: VAR estimation results



Impulse response functions-required reserve shock

RRs in Tunisia

- Counterintuitive results: loans increase after RRs tightening.
- Why?

-Increase in collateral value? Not very probable taking into account a relatively small impact on prices

-Banks tend to restructure deposits, increase the share of cheaper deposits (longer-term) or non-reservable deposits. Further research needed to show the impact of the RRs on banks' liablities.

-Surplus liquidity?

Conclusions and question marks for the monetary policy

- RRs may bring an undesired result: higher inflation, but on the other hand, some countries report a (desired) fall in lending.
- It may give incentives for a develepment of non-reservable liabilities
- What purpose? How to reconcile the RRs (and other marco-prudential tools) with the interest rate policy?

Literature

- Reinhart C., Reinhart V.R. (1999), *On the Use of Reserve Requirements in Dealing with Capital Flow Problems*
- Glocker Ch., Towbin P. (2012), *Reserve Requirements for Price and Financial Stability: When Are They Effective?*
- Glocker Ch., Towbin P. (2012), *The Marcoeconomic Effects of Reserve Requirements*
- Vargas H., Cardozo P. (2012), *The Use of Reserve Requirements in an Optimal Monetary Policy Framework*
- Mimir Y., Sunel E., Taskin T. (2012), *Required reserve as a credit policy tool*
- Agénor, El Aynaoui (2010), *Excess liquidity, bank pricing and monetary policy*
- Tovar C. E. et al. (2012), *Credit Growth and the Effectiveness of Reserve Requirements and Other Macroprudential Instruments in Latin America*
- Walsh C. (2012), *Discussion of Reserve Requirements*