National Bank of Romania

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Shadow banking and macroprudential policy

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Presentation outline

1. Brief overview of shadow banking in Romania

2. Case study: calibrating macroprudential tools for:

   2.1 Non-Banking Financial Institutions (NBFIs)

   2.2 Investments Funds (IFs)

3. Conclusions

1. Shadow Banking sector in Romania

Shadow banking sector

Multiple definitions of *shadow banking* sector:

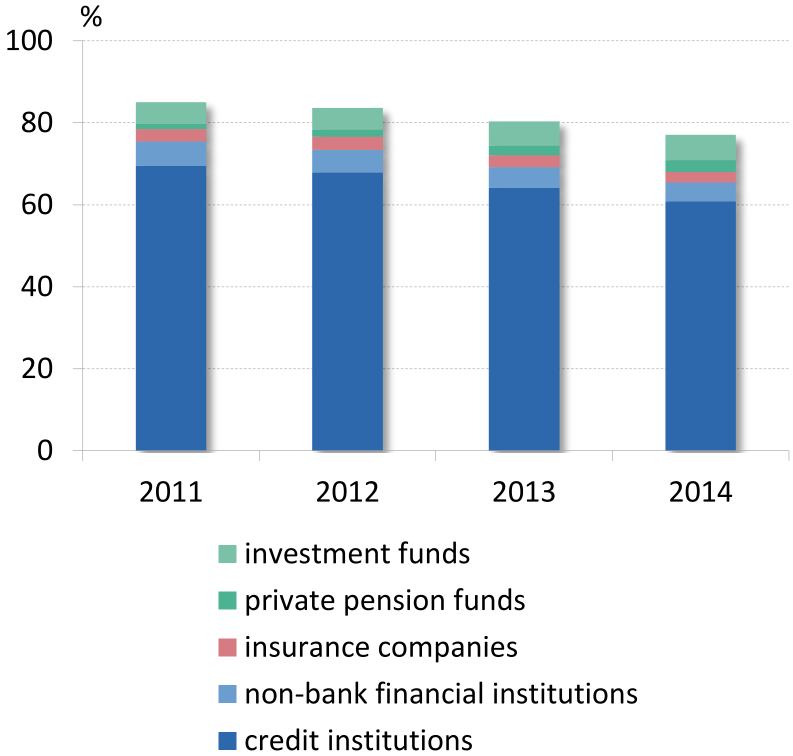
- **FSB (2011)**: “credit intermediation involving entities and activities (fully or partially) outside the regular banking system”
- **IMF (2013)**: “[…] financial institutions that act like banks are not supervised like banks”

Main functions of shadow banking

- Maturity and liquidity transformation
- Leverage
- Credit risk transfer

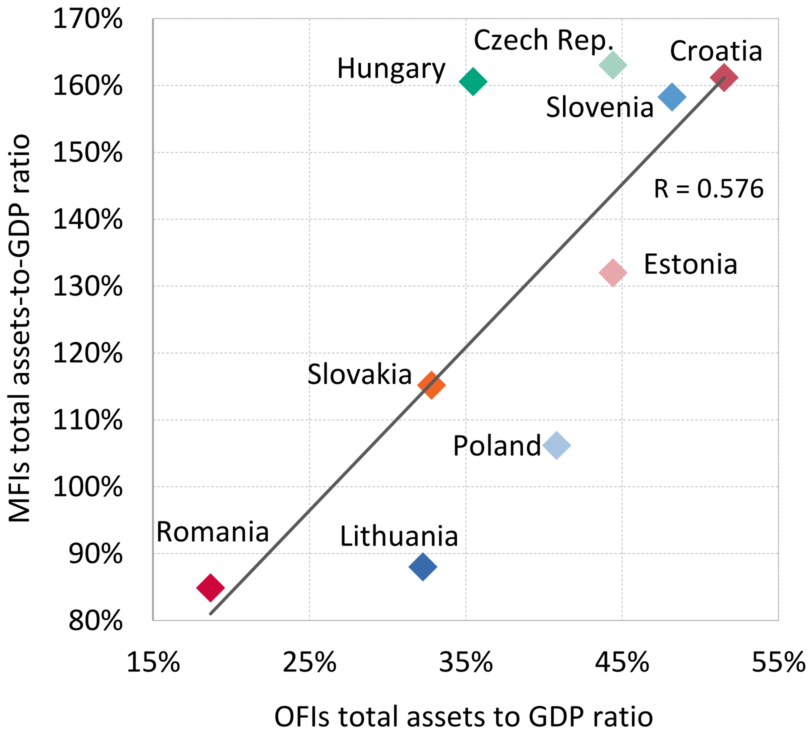
Shadow banking sector in Romania

Structure of the Romanian financial system (assets-to-GDP ratio)



Source: NBR, FSA

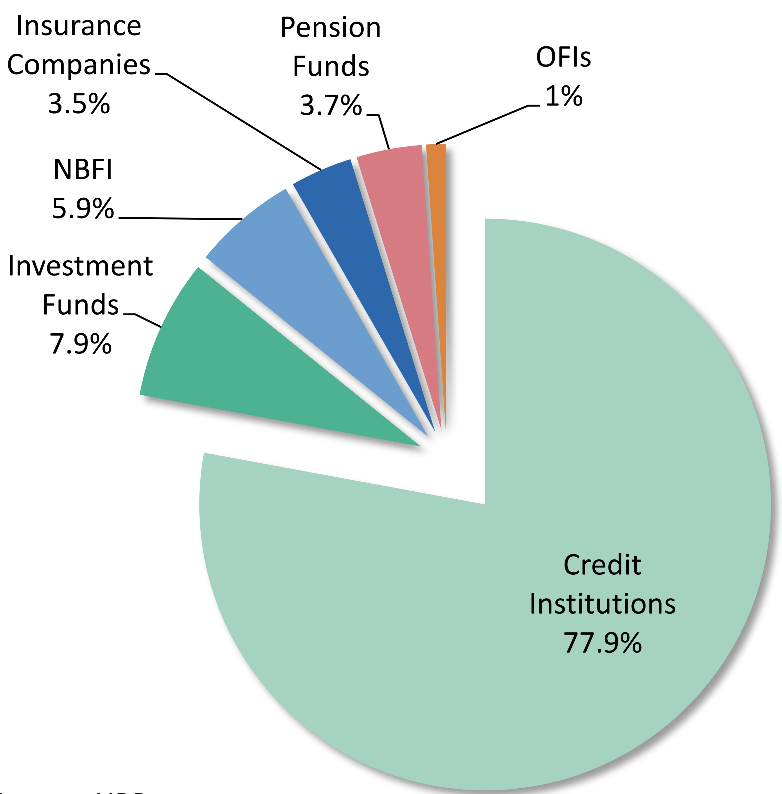
Relative sizes of banking and non-bank financial sectors in CEE countries



Source: ECB, national financial accounts

Shadow banking sector in Romania

Institutional sector classification by relative asset size



Source: NBR

Under the broad FSB (2011) definition

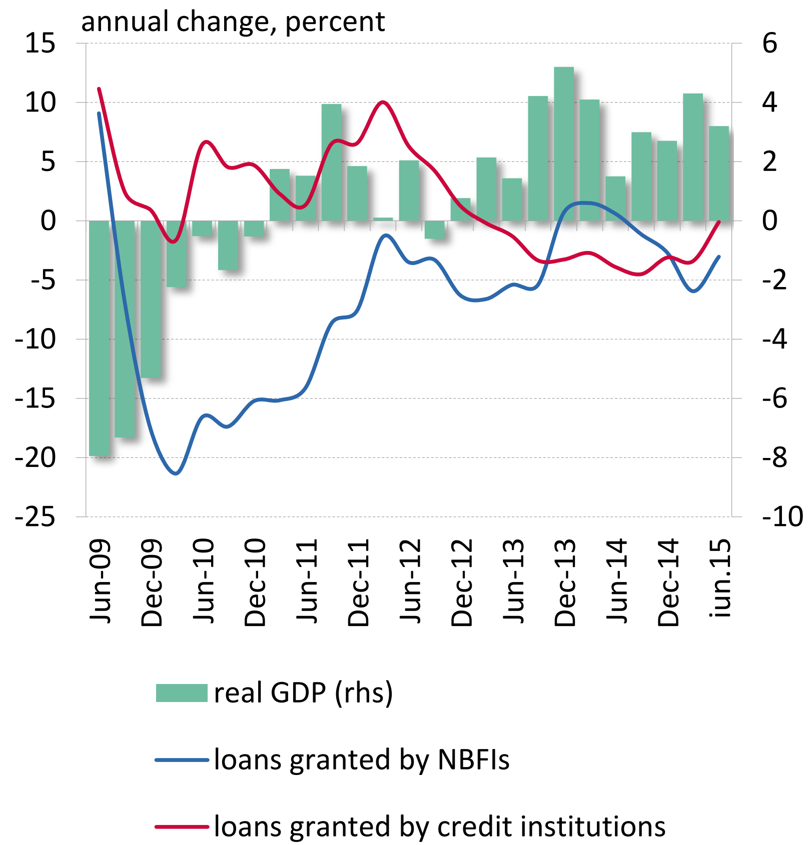
- NBFIs
- Investment Funds
- Money Market Funds

15.5% of financial sector assets

Non-Banking Financial Institutions

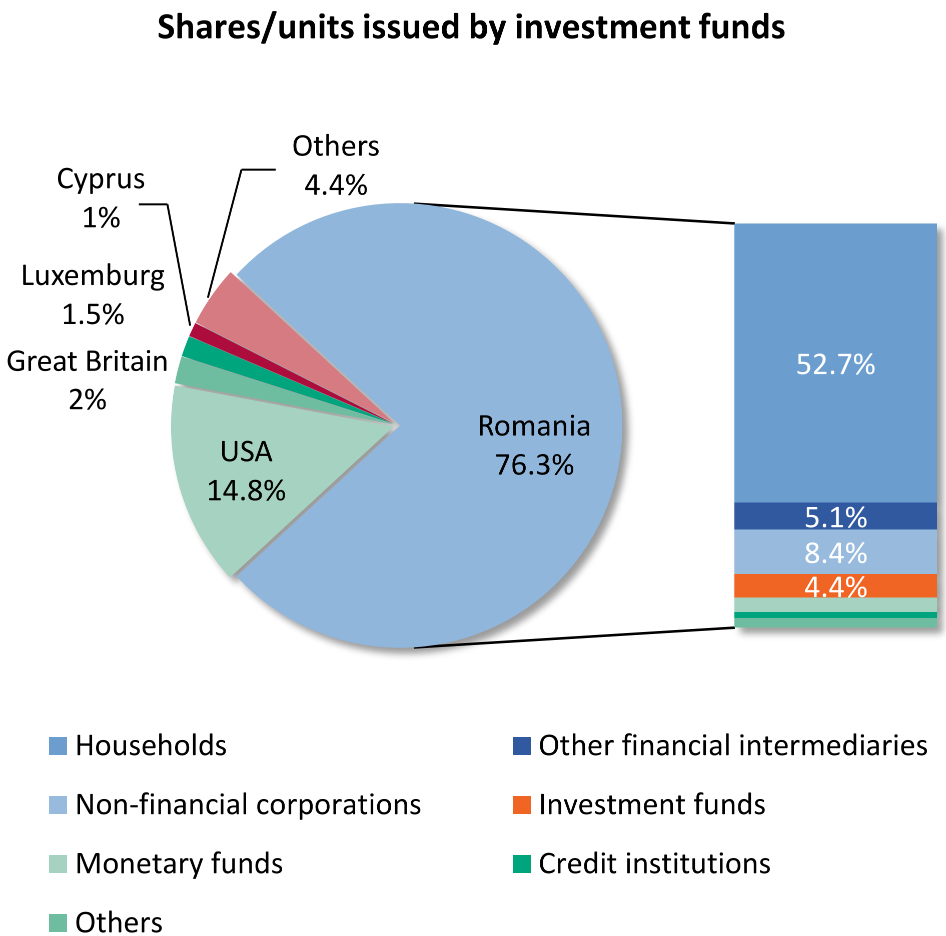
- Supervised by the NBR (law 93/2009)
- Grant loans to **NFCs** (75%), **households** (23%) and **OFIs** (2%)
- Higher **NPL rate** (22.5 %) compared to the banking sector
- Rely heavily on **external financing** (Austria, France, The Netherlands and others)

NBFIs lending and economic growth



Source: NBR

Investment Funds



Source: NBR

- Sustained **growth** after 2009
- 3 **main categories**: closed-end stock, open-end bond and other open-end funds
- Invest in **domestic stocks** (45%), **bonds** (36%), **deposits** (13%) and **fund units** (5%)
- High participation of **domestic investors**, mainly households

2. *Case study*: Calibrating macroprudential tools for NBFIs and investment funds

Macroprudential tools for NBFIs

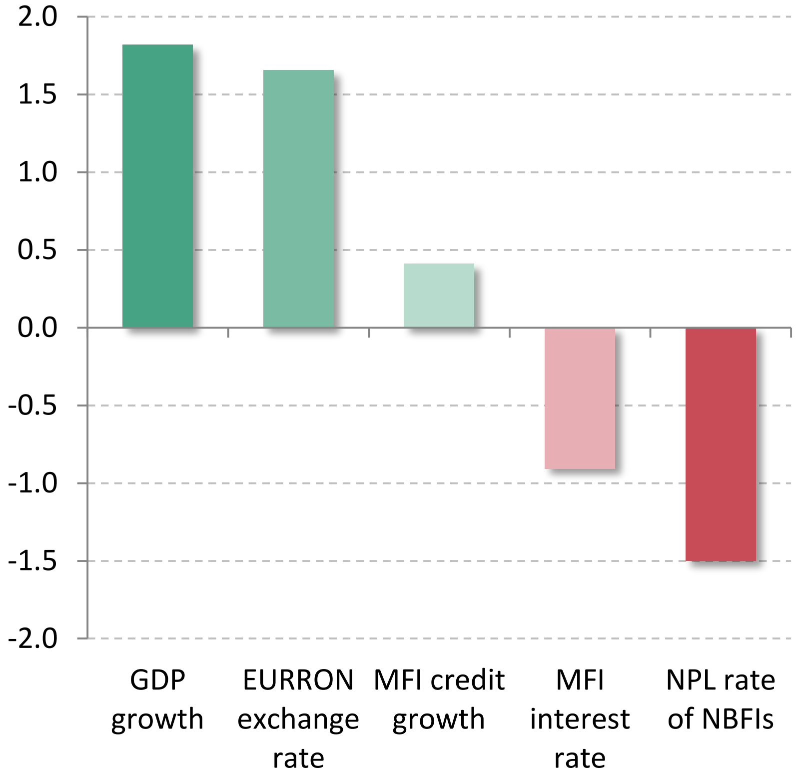
1. What are the main **drivers** of NBFIs credit growth?

2. How does NBFI credit demand **respond** to interest rate shocks?

3. What is the **degree of synchronization** between NBFI and MFI financial cycles?

1. Drivers of NBFI credit growth

Estimated elasticity coefficients of NBFI credit growth



Variable	Coefficient	t-Statistic	Prob.
GDP growth (-1)	1.82	5.06	0.0001
MFI credit growth	0.41	2.38	0.0307
MFI interest rate	-0.91	-5.04	0.0001
EURRON exchange rate	1.66	5.40	0.0001
NPL rate of NBFIs (+2)	-1.50	-2.01	0.0625
R-squared			**0.82**

Multivariate regression analysis

- NBFIs → **complementary** role in financial intermediation
- NPL volume → significant impact on NBFI sector activity

Source: own estimation

2.1. NBFI credit demand response to interest rate shocks

- Bayesian **SVAR model** with sign restrictions (Blake and Mumtaz, 2012)
- Small model of the Romanian economy

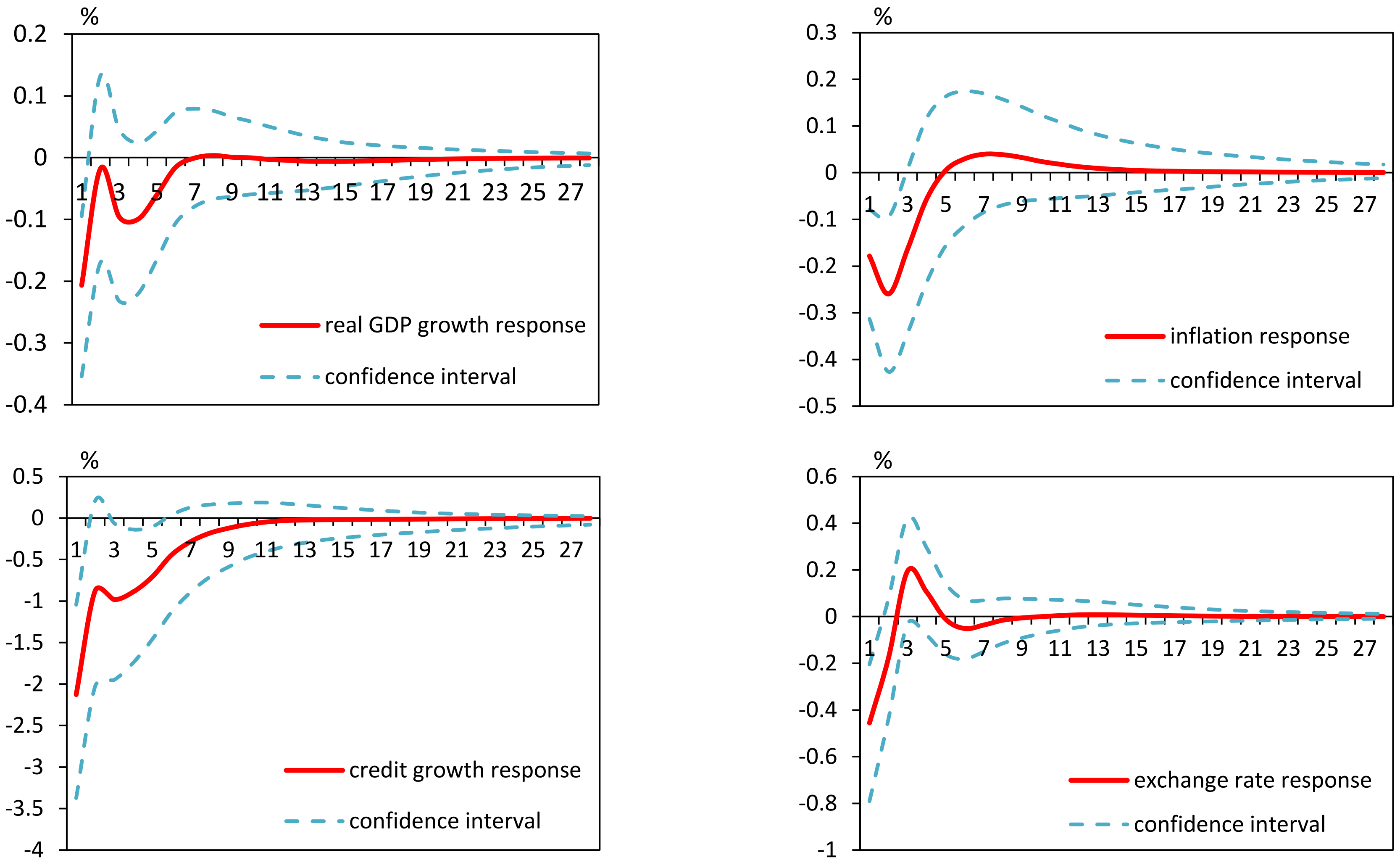
$$Y = \begin{pmatrix} Economic\ Growth \\ Inflation \\ Credit\ Growth \\ Exchange\ Rate \\ Interest\ Rate \end{pmatrix}$$

Variable	Sign
Real GDP growth	-
HICP	-
Credit growth	-
EURRON	-
ROBOR 3M	+

Table 1. Sign restrictions applied in the SBVAR model

2.2 Impulse-response analysis

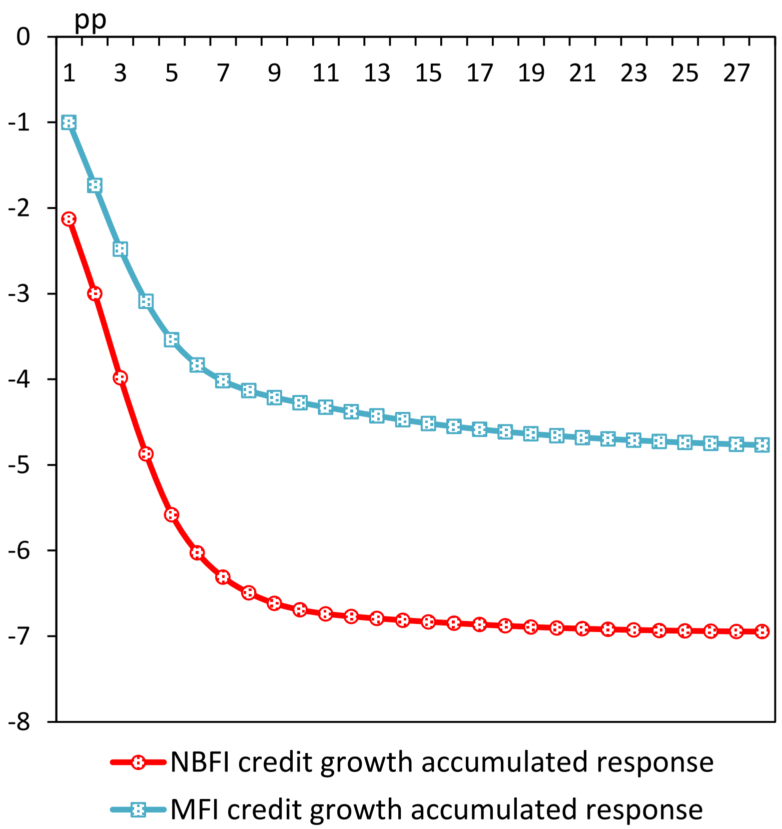
IRFs to a monetary policy shock on the variables included in the SBVAR model



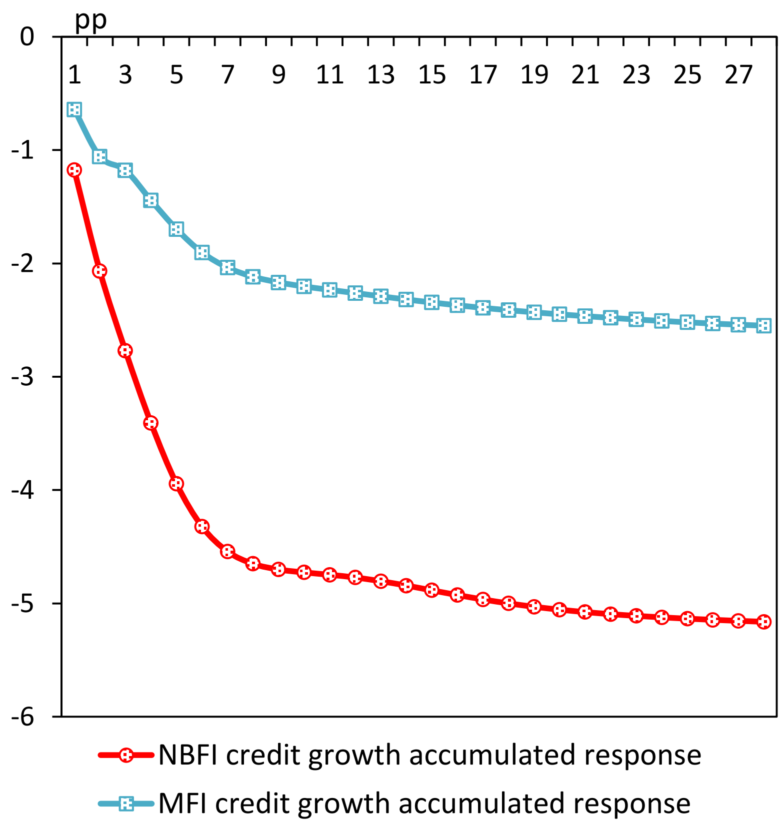
Source: own estimation

2.2 Impulse-response analysis

Accumulated IRFs to an interest rate shock (households sector)



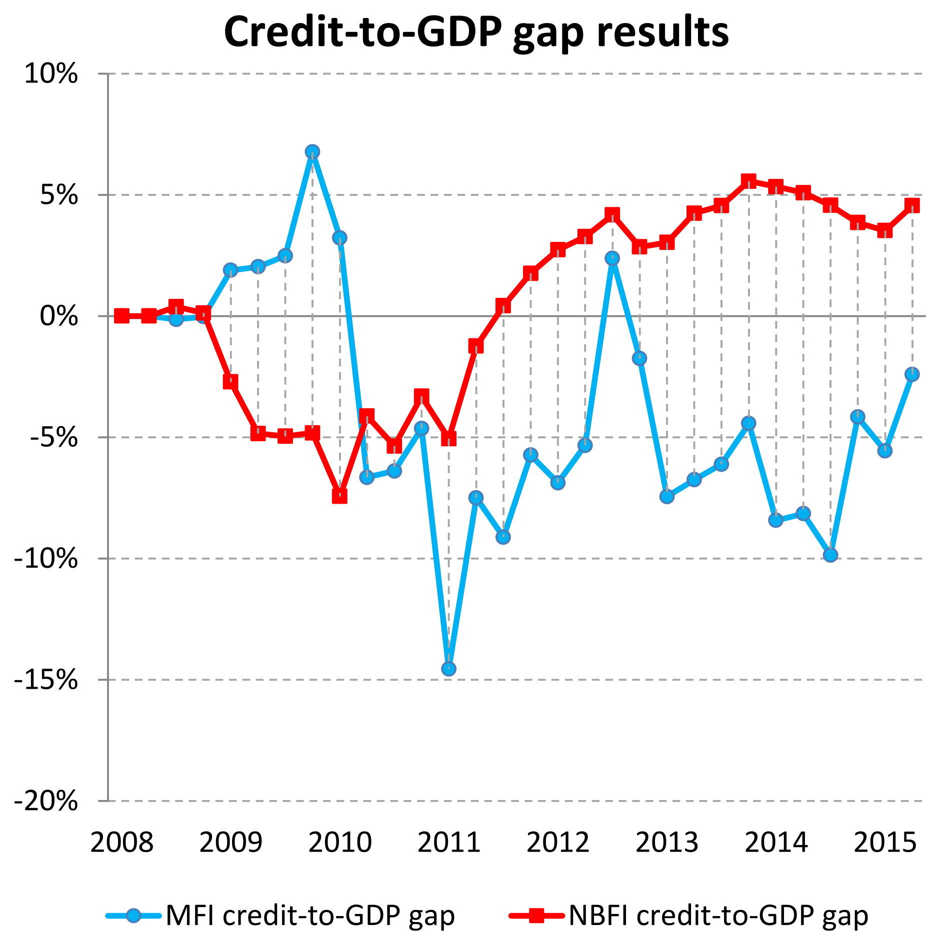
Accumulated IRFs to an interest rate shock (NFC sector)



Source: own estimation

3. Financial cycle synchronization

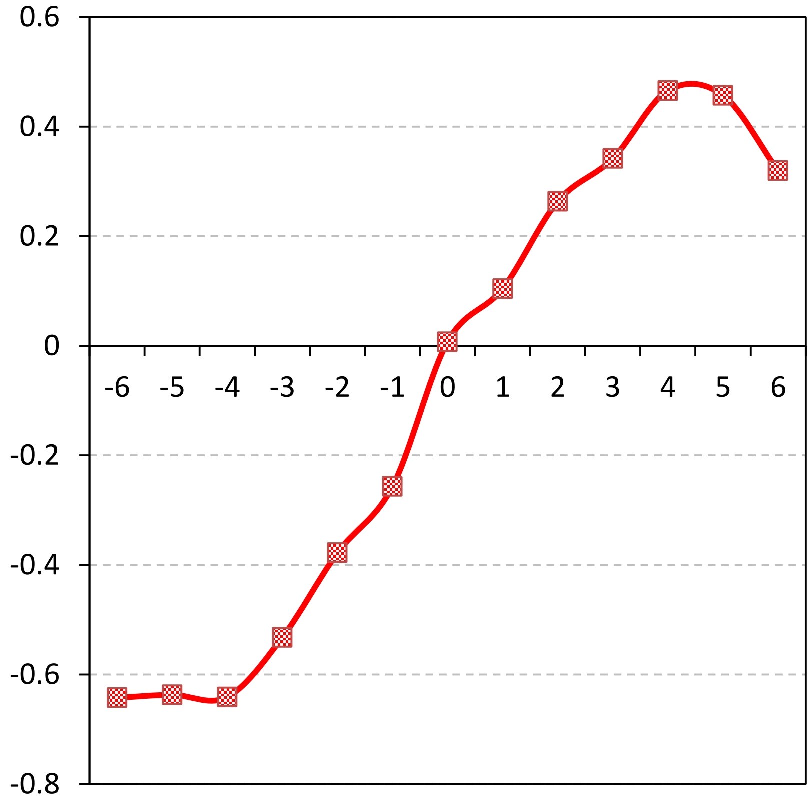
- Estimate **credit-to-GDP gap** for MFIs and NBFIs
- One-sided HP filter via Kalman Filter methodology
- Lead/lag correlations and Granger causality testing



Source: own estimation

3. Financial cycle synchronization

Lead/lag correlations between MFI and NBFI credit-to-GDP ratio



Source: own estimation

Granger causality tests results

Lag	Null Hypothesis	F-Statistic	Prob.
1	MFI → NBFI	**12.6999**	0.001
	NBFI → MFI	0.5718	0.456
2	MFI → NBFI	**5.38447**	0.012
	NBFI → MFI	1.28543	0.296
3	MFI → NBFI	**3.11829**	0.049
	NBFI → MFI	0.9848	0.42
4	MFI → NBFI	**3.63727**	0.026
	NBFI → MFI	1.22282	0.338
5	MFI → NBFI	**7.55563**	0.001
	NBFI → MFI	1.47323	0.26

Macroprudential tools for Investment Funds

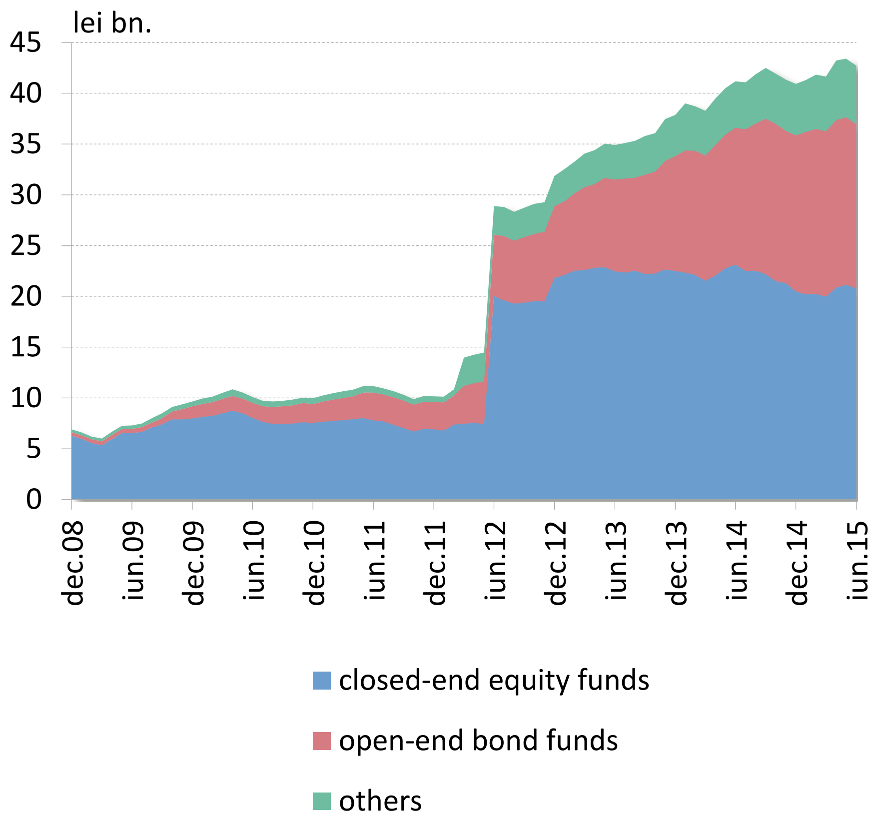
- Supervised by the Romanian **FSA** (Financial Supervisory Authority)

- Generate systemic risk through

✓ **Direct contagion** – financing other sectors

✓ **Indirect contagion** – short-term redemption risk (*fire sales*) and reputational risk (investment funds from large financial groups)

Total assets of investment funds

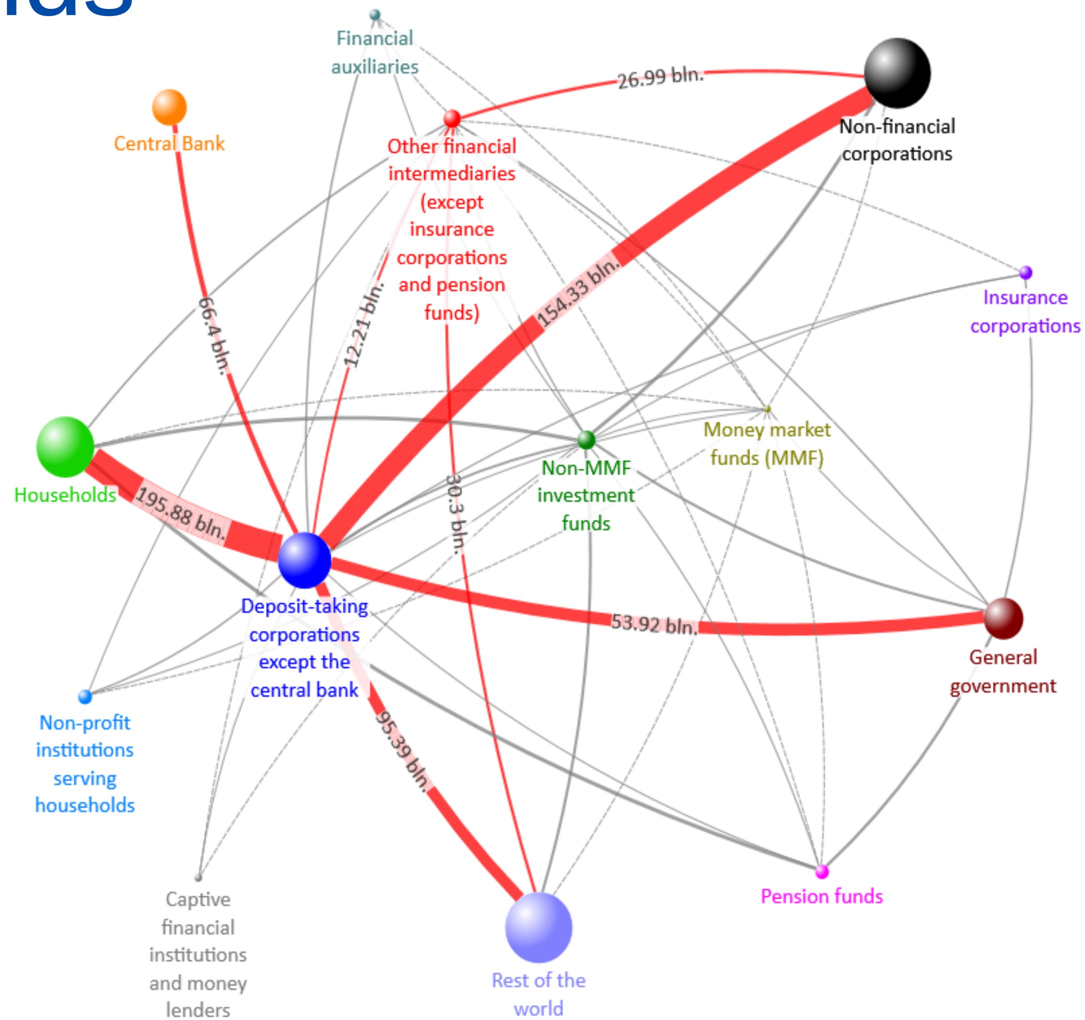


Source: NBR

Macroprudential tools for Investment Funds

- **Network analysis** of the financial sector, based on FNA and aggregated balance sheet data.

- Main financing channels, **growing importance** of NBFIs and IFs for the real economy.



Romanian financial system 2009

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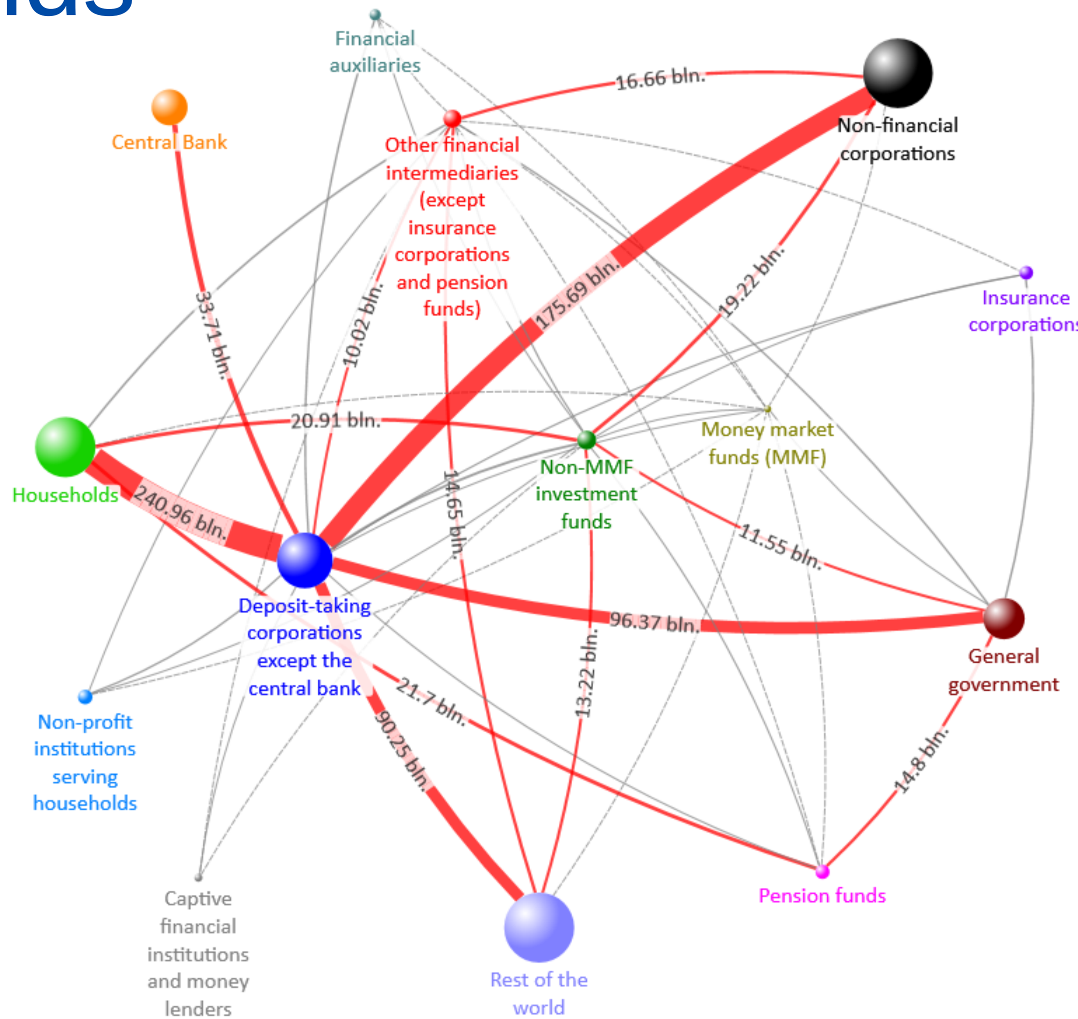

Romanian financial system 2015

3. Conclusions

Conclusions

- **Growing importance of shadow banking sector** → increased transparency and regulatory requirements
- **Calibration of macroprudential tools** → take into account NBFIs financial cycle stance and reaction to economic and financial conditions
- **Rapid development of investment fund sector** → close supervision of interconnectivity and common exposures
- **Romanian shadow banking sector** → low degree of systemic risk and positive effects on financial sector development (under financial stability principles)

Thank you for your attention!