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# Partial Credit Euroization in a DSGE Model Estimated for Romania

**Mihai Copaciu**, Valeriu Nalban, Cristian Bulete,  
National Bank of Romania

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The opinions expressed in this presentation are those of the author and do not necessarily reflect the views of the National Bank of Romania.

- ▶ **Motivation:**

- ▶ The relevance of credit euroization.

- ▶ **Objective:** build a DSGE model suitable for monetary policy analysis of the Romanian economy.

- ▶ **Main findings:**

- ▶ The model is able to capture the features of the data;
- ▶ The importance of financial frictions in explaining business cycle's fluctuations is augmented with the introduction of partial euroization  
⇒ *Role for other instruments/policies?*

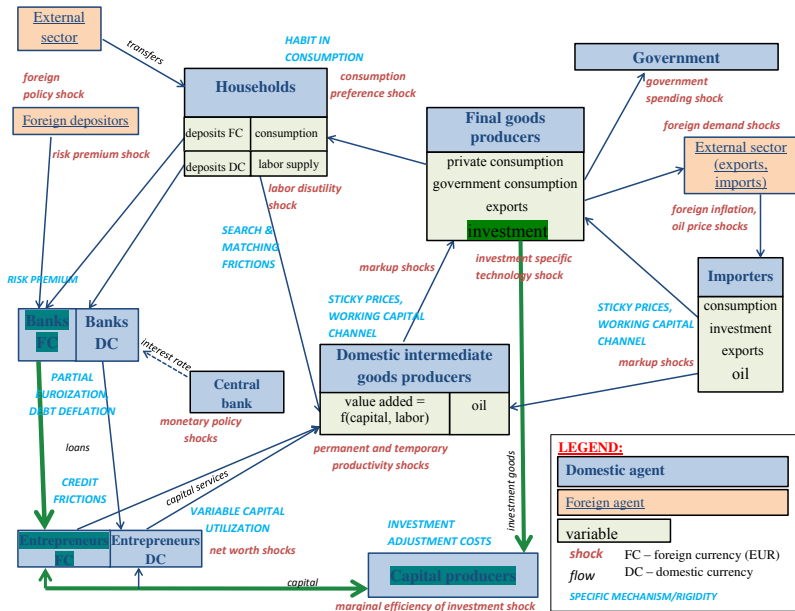
- ▶ **This presentation:**

- ▶ General structure of the model;
- ▶ Main results: shock processes, historical decomposition, IRFs;
- ▶ Sovereign risk premium shock when partial euroization is present;
- ▶ Implications of divergent monetary policies abroad.

## R.E.M. 2.0 - Romania's Economic Model

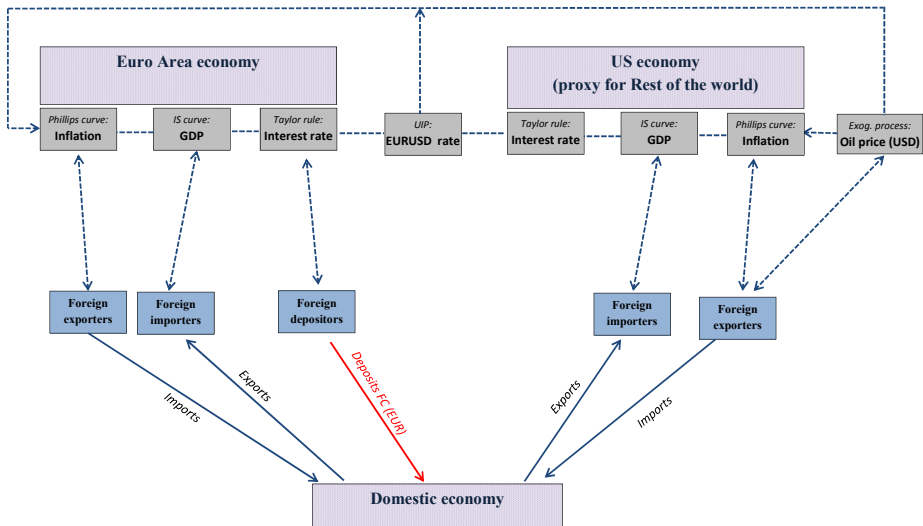
- ▶ **Christiano et al. (2011) - starting point:**
  - ▶ SOE New-Keynesian DSGE specific frictions
  - ▶ Financial accelerator (Bernanke et al., 1999)
  - ▶ Search and matching (Gertler et al., 2008)
- ▶ **Extensions - specific features of the Romanian economy:**
  - ▶ Oil as an input in the production of domestic intermediate goods;
  - ▶ Disaggregation of the CPI inflation rate;
  - ▶ National Accounts consistent measures for the real GDP and its deflator;
  - ▶ Introducing remittances as an additional income source for households;
  - ▶ Semi-structural, two open economies (Euro zone and US), model for the exogenous external block based on the currency invoice structure of Romania's external trade with goods and services;
  - ▶ **Partial euroization - around 45% of new loans to non-financial corporations over the analyzed period.**

# The environment



# The environment: external block

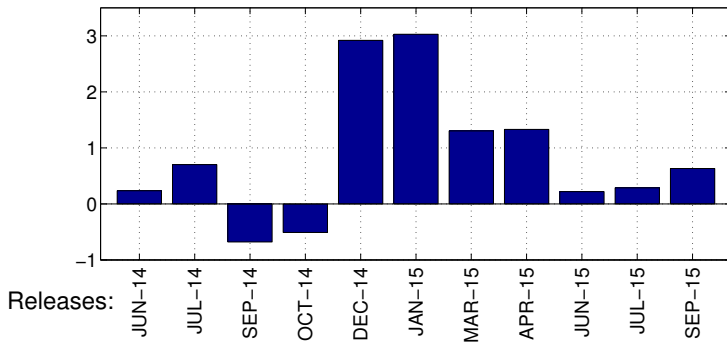
Similar to Pedersen and Ravn (2013), Juillard et al. (2008)



## Estimation

- ▶ **21 observable series belonging to the domestic sector + 8 to the external sector (estimated exogenously)**, most of them having excess trends/measurement errors;
- ▶ Short sample: 2005Q3:2014Q3 (37 observations for each series);
- ▶ Different growth rates, high volatility and **noise**.

GDP in 2014Q1 across consecutive NIS releases, % q-o-q annualized



## Matched moments and corresponding parameters

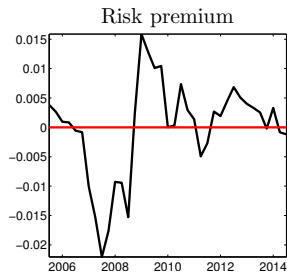
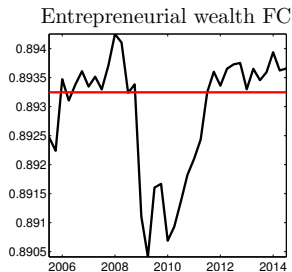
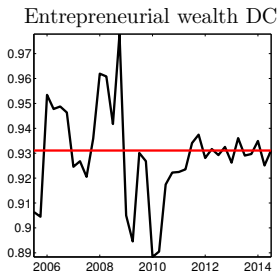
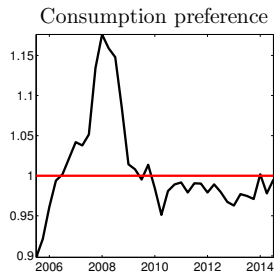
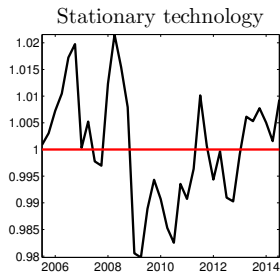
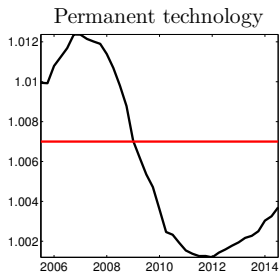
Param.	Description	Post. mean	Moment	Moment value
$\tilde{\varphi}$	REER	0.357	$\frac{S^{ef} P^X X}{P_{GDP} GDP}$	35.7%
$A_L$	Scaling of disutility of work	184715	$L_{\zeta}$	22.7%
$\delta$	Depreciation rate of capital	0.049	$\frac{P^i I}{P_{GDP} GDP}$	25%
$\gamma^{DC}$	Entrepreneurial survival rate	0.932	$\frac{N^{DC}}{P \cdot P_k, \bar{K}^{DC}}$	0.4
$\gamma^{FC}$	Entrepreneurial survival rate	0.892	$\frac{N^{FC}}{P \cdot P_k, \bar{K}^{FC}}$	0.4
$1 - \omega_k$	Share of FC entrepreneurs	$1 - 0.407$	$\frac{(1 - \omega_k) SL^{FC}}{(1 - \omega_k) SL^{FC} + \omega_k L^{DC}}$	45%
$p^{oil, USD}$	Price of oil in USD terms	2.990	$\frac{P^{oil} O_{il}^m}{P_{GDP} GDP}$	2%

## Selected data and model moments

Variable	Explanation	Standard deviation	
		Data	Model
$100*\Delta GDP$	GDP growth	1.6	1.2
$100*\Delta c$	Consumption growth	2.1	2.2
$100*\Delta i$	Investment growth	7.7	6.6
$100*\Delta x$	Export growth	4.4	5.1
$100*\Delta m$	Import growth	5.5	5.0
$400*\bar{\pi}^c$	Inflation target	1.1	1.4
$400*\pi^{GDP}$	Domestic inflation	7.1	6.6
$400*\pi^i$	Investment inflation	18.3	13.9
$400*\pi^x$	Exports inflation	14.4	13.3
$400*\pi^m$	Imports inflation	13.6	10.6
$400*\pi^c$	CPI inflation	3.0	3.0
$400*\pi^{core1}$	CORE1 inflation	3.3	3.3
$400*\pi^{adm}$	Adm. prices inflation	4.9	7.2
$400*R$	Nom. interest rate	2.3	2.8

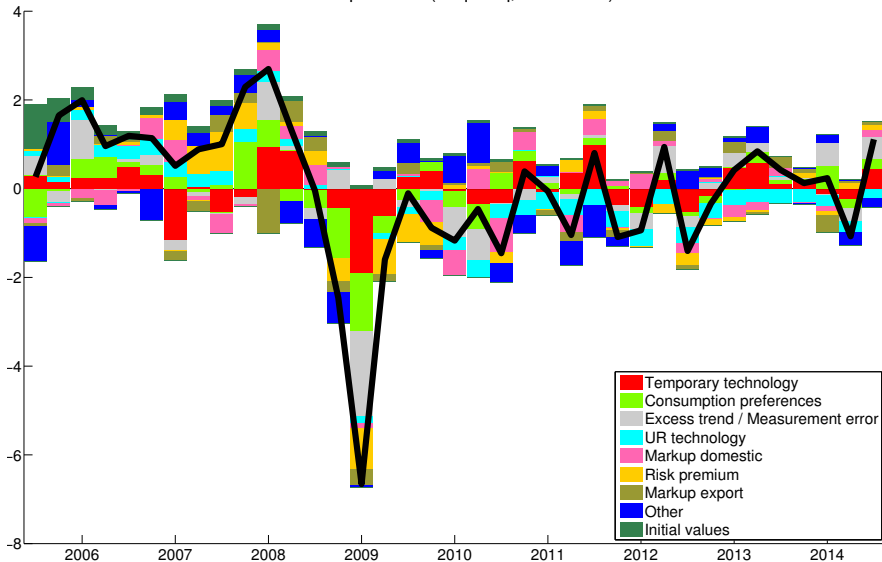


# Smoothed shock processes

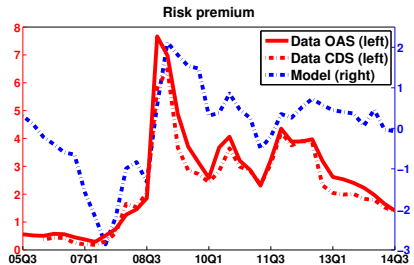
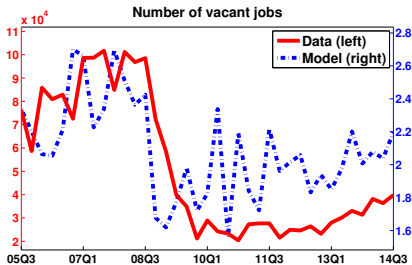
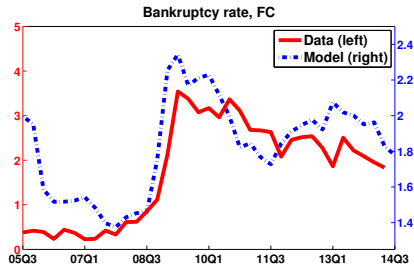
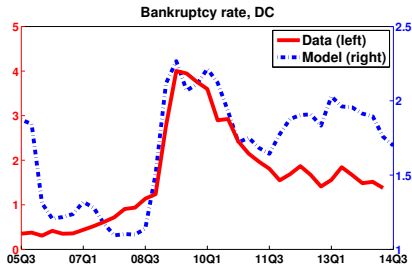


# Historical decomposition

Per capita GDP (% q-o-q, demeaned)

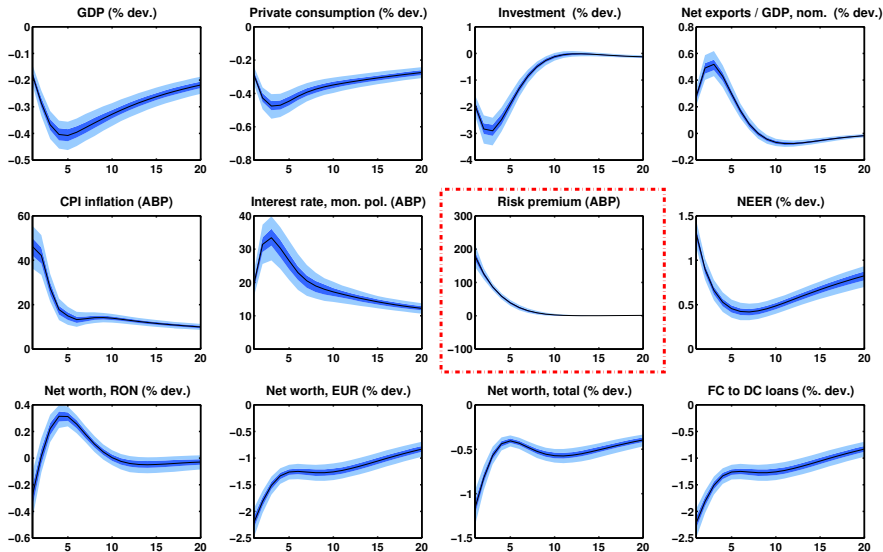


# Smoothed variables vs. data counterparts



# Impulse response functions

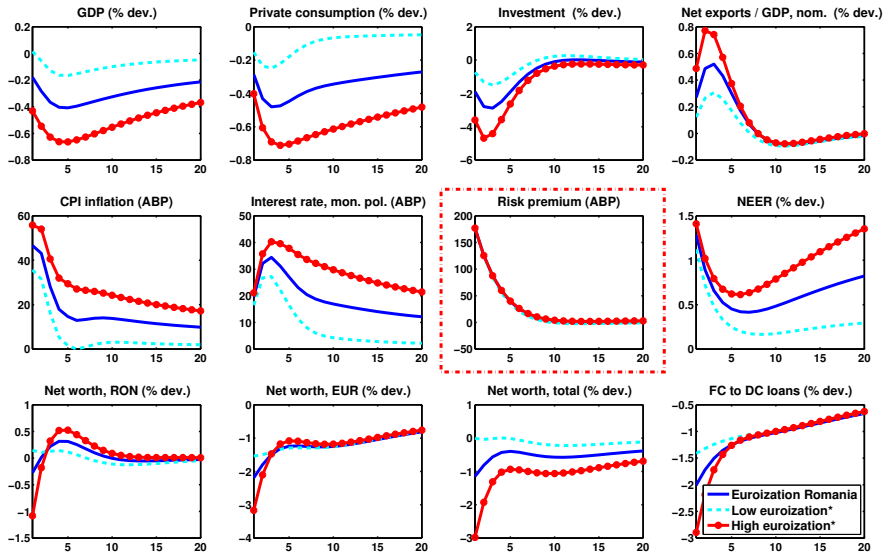
## Sovereign risk premium shock (1 standard deviation)



% dev. – percentage deviation from steady state; lev. dev. – level deviation from steady state; ABP – annualized basis points;  
Shaded areas represent 40 percent and 80 percent highest posterior densities

# The impact of euroization

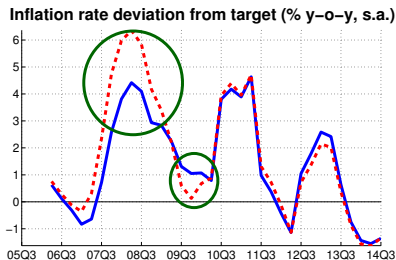
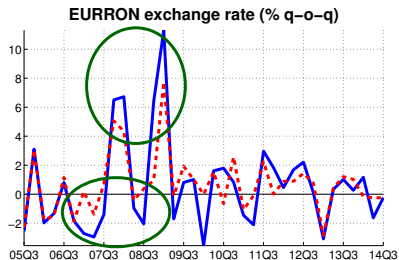
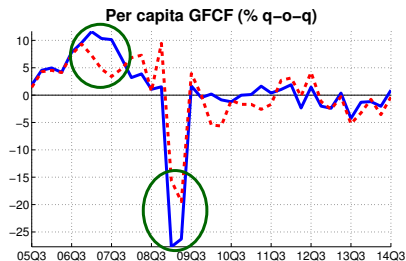
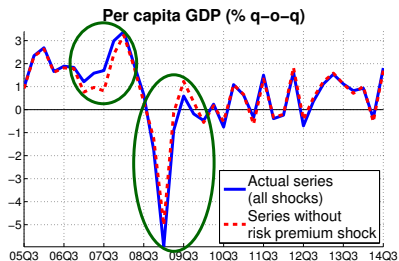
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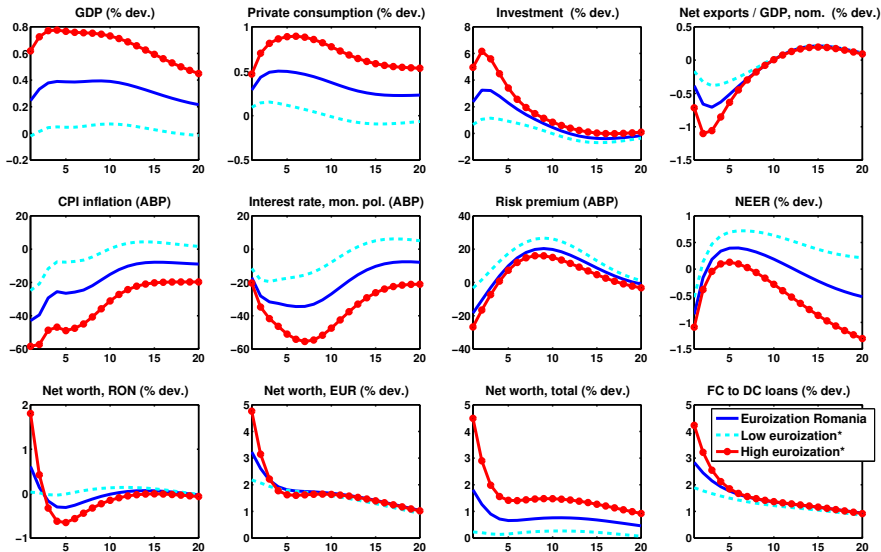
\*By changing only the share of foreign currency financed entrepreneurs and keeping the rest of the parameter values from the baseline model estimated for Romania

# Counterfactual exercise: the contribution of the sovereign risk premium shock



# When ECB and FED move in opposite directions

Simultaneous expansionary monetary policy in Euro area and contractionary in US



\*% dev. – percentage deviation from steady state; lev. dev. – level deviation from steady state; ABP – annualized basis points;

\*By changing only the share of foreign currency financed entrepreneurs and keeping the rest of the parameter values from the baseline model estimated for Romania

## Conclusions

- ▶ Incorporating an important feature of emerging economies (i.e. partial euroization/dollarization) using an otherwise standard way of introducing financial frictions in DSGE models;
- ▶ The model is able to efficiently match the moments displayed by the data and to generate consistent smoothed unobserved variables;
- ▶ The relevance of the sovereign risk premium shock for the Romanian economy over the analyzed period (2005Q3:2014Q3);
- ▶ Sensitivity analyses (i.e. by varying the euroization degree) illustrates the importance of the introduced channel;
- ▶ More instruments/policies are needed for mitigating the adverse effects of euroization.



