Financial Cycles and the Role for Macroprudential Policies in Emerging Economies

Mehmet Yörükoğlu
Koç University

Financial Cycles and Policy Response in Latin America Workshop
Financial Stability and Development (FSD) network of the IADB with the Consultative Council of the Americas (CCA) group of the BIS
Buenos Aires, November 21-22, 2016, Central Bank of Argentina

Would like to address:

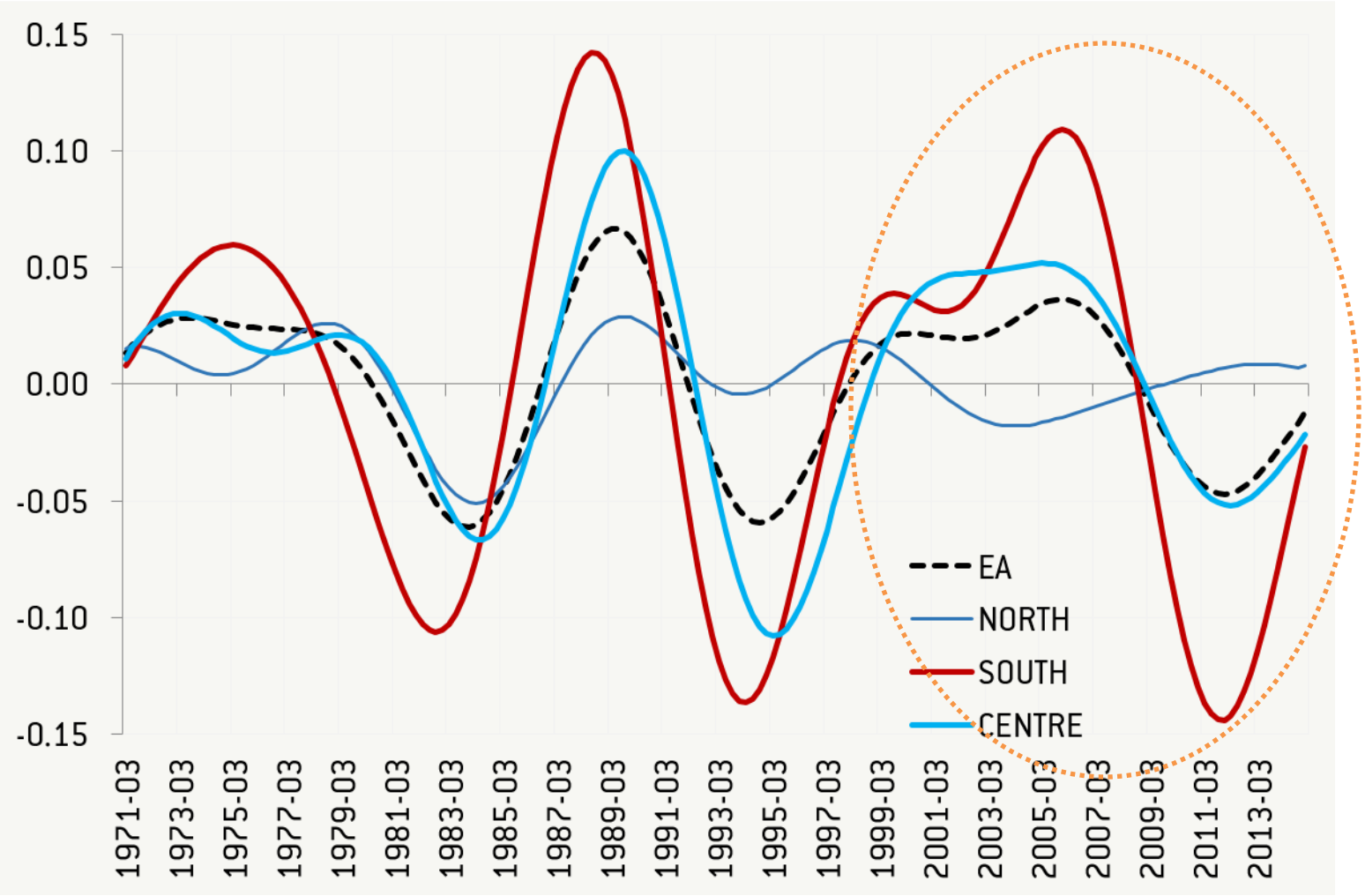
- Why should policy makers <u>not ignore</u> *financial cycles* ?
  - Policies appropriate for price stability vs. financial stability may deviate from each other.
    - The declining real and nominal interest rates and the increasing search for yield in the last two decades.
- Why do especially emerging economies need more effective *macroprudential tools* ?
  - Increasing monetary policy spillovers from major central banks.
  - The case of Euro Area; Merler (2016).
  - Capital flow-exchange rate-credit growth cycles
    - Bruno-Shin *amplifying balance-sheet-effect mechanism*
    - A recent extreme example: *Turkey; Kara (2016).*
  - Structural differences between advanced and emerging economies which increasingly create global imbalances
    - Yorukoglu (2016), 'On The Price Stability Performance of North vs. South: <u>*The Unconsicious Armwrestling*</u>'

The Case of Euro Area: *Decoupling* Financial Cycles

- The diverging needs for macroprudential policies of *North* and *South* in EA.
- Merler (2016), uses the methodology of Borio *et al* (2012) for Euro Area.
- Financial cycles are much more volatile in South compared to North.
- Since the early 2000's there has been a significant decoupling in financial cycles between North and South.

Financial cycles in Euro Area

(principal component of cycles in credit and real house prices in EA)

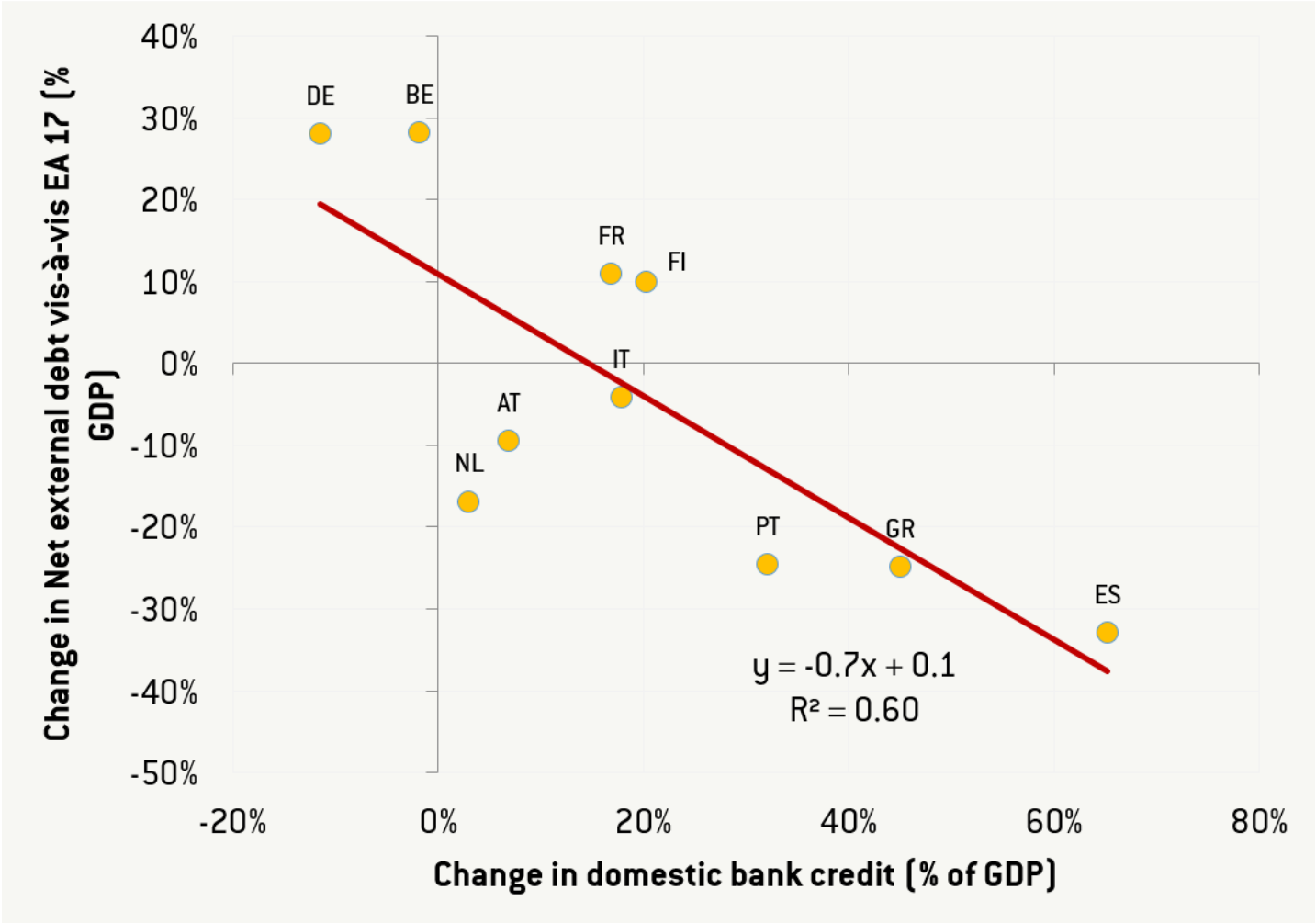


Source: Bruegel, Merler (2015)

Decoupling Financial Cycles in Euro Area

- The apparent diverging need for macroprudential policies between North and South in EA.
- Merler (2016), Bruegel.
- Financial cycles are much more volatile in South compared to North.
- Since the early 2000's there is a discord in financial cycles in EA especially between North and South.
- During the early 2000's upto the Global Financial Crises (GFC) South enjoyed a significant credit boom fueled by strong capital inflows from North, ending with a costly contraction after the GFC.

Domestic Bank Credit vs. Net External Debt in EA

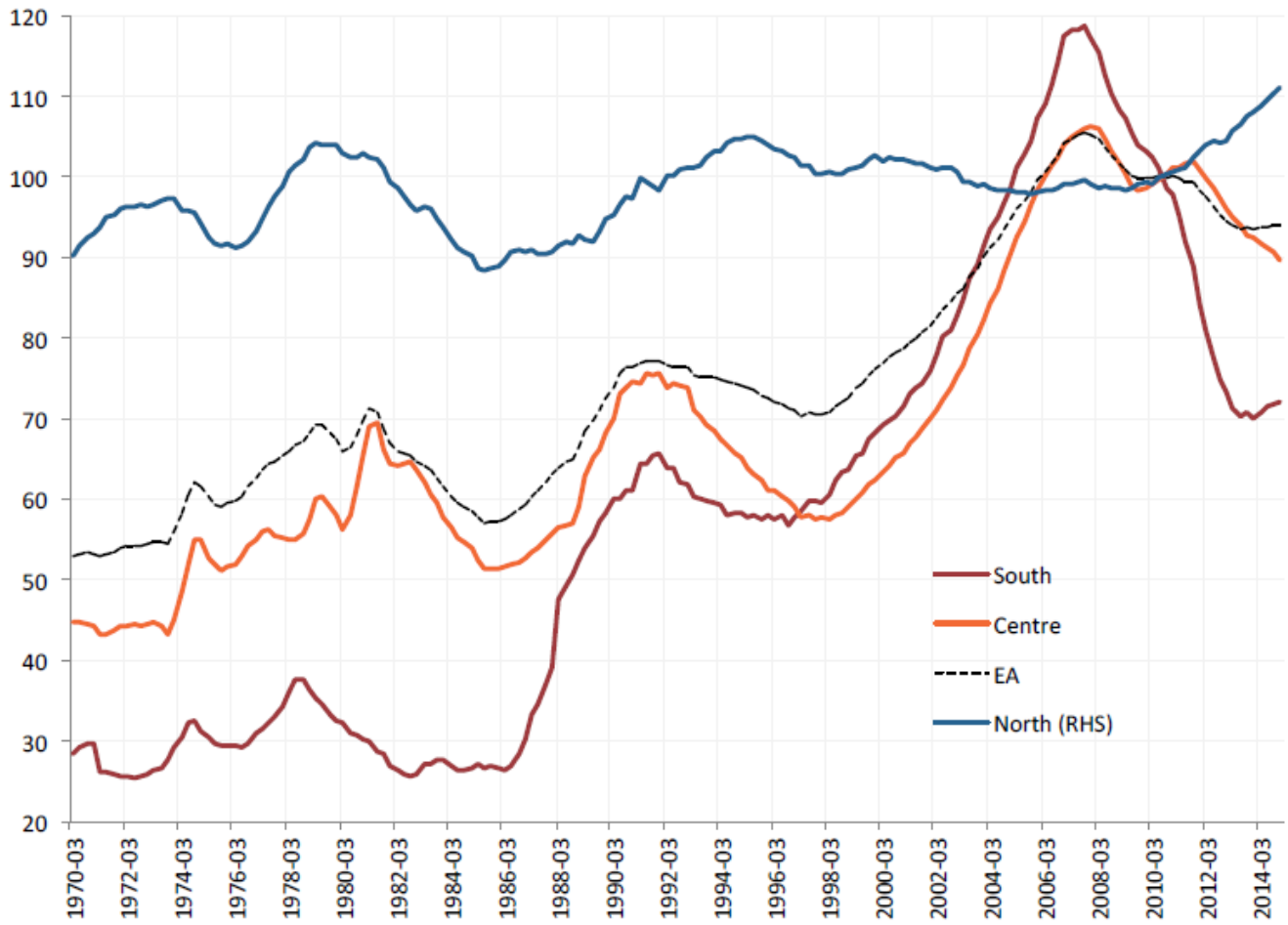


Source: Bruegel, Merler (2015)

Decoupling Financial Cycles in Euro Area

- The apparent diverging need for macroprudential policies between North and South in EA.
- Merler (2016), Bruegel.
- Financial cycles are much more volatile in South compared to North.
- Since the early 2000's there is a discord in financial cycles in EA especially between North and South.
- During the early 2000's upto the Global Financial Crises (GFC) South enjoyed a significant credit boom fueled by strong capital inflows from North, ending with a costly contraction after the GFC.
- It was accompanied by big housing price cycle.

Real House Prices in EA (2010=100)



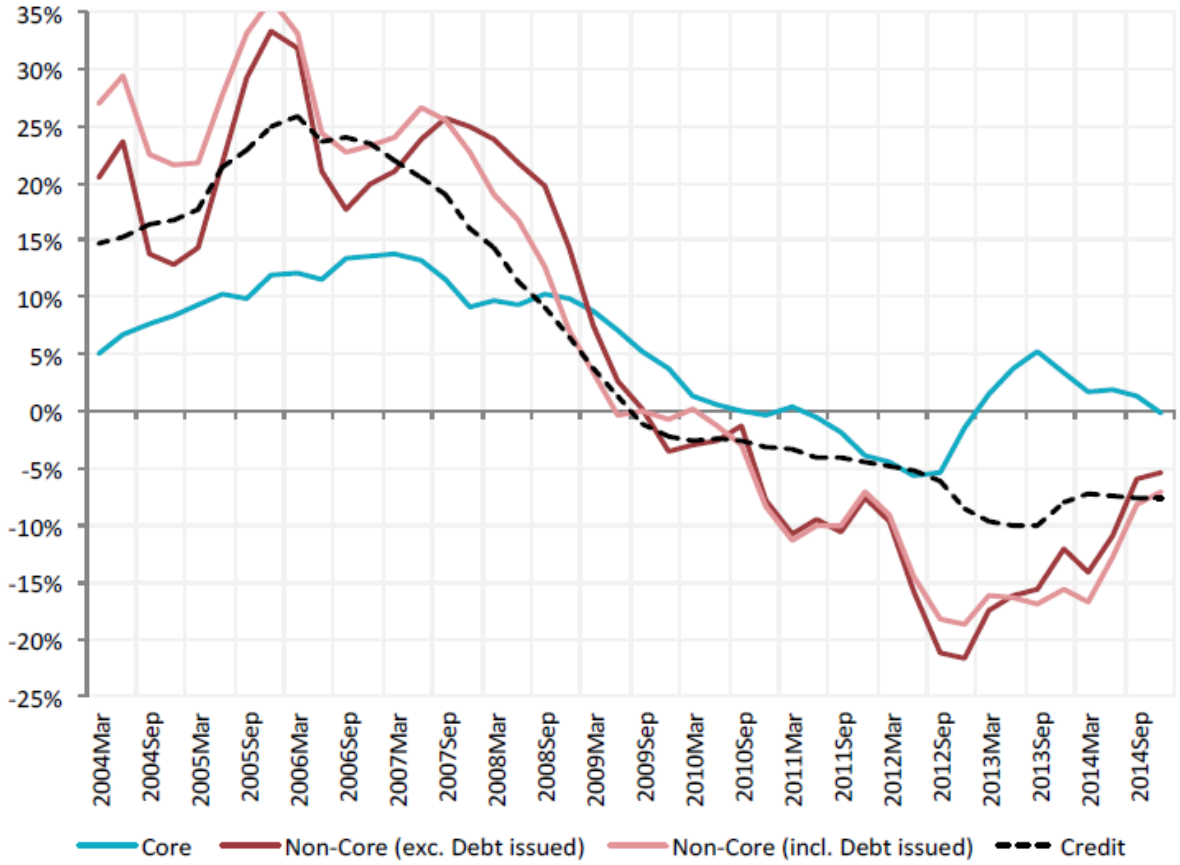
Source: OECD. Note: GDP-weighted aggregate of country indexes; time series ends in 2014-Q4 for all countries.

Source: Bruegel, Merler (2015)

Decoupling Financial Cycles in Euro Area

- The apparent diverging need for macroprudential policies between North and South in EA.
- Merler (2016), Bruegel.
- Financial cycles are much more volatile in South compared to North.
- Since the early 2000's there is a discord in financial cycles in EA especially between North and South.
- During the early 2000's upto the Global Financial Crises (GFC) South enjoyed a significant credit boom fueled by strong capital inflows from North, ending with a costly contraction after the GFC.
- It was accompanied by big housing price cycle.
- The boom was financed especially by non-core funding.

Funding Credit (core-noncore) South
(four quarter growth rate)



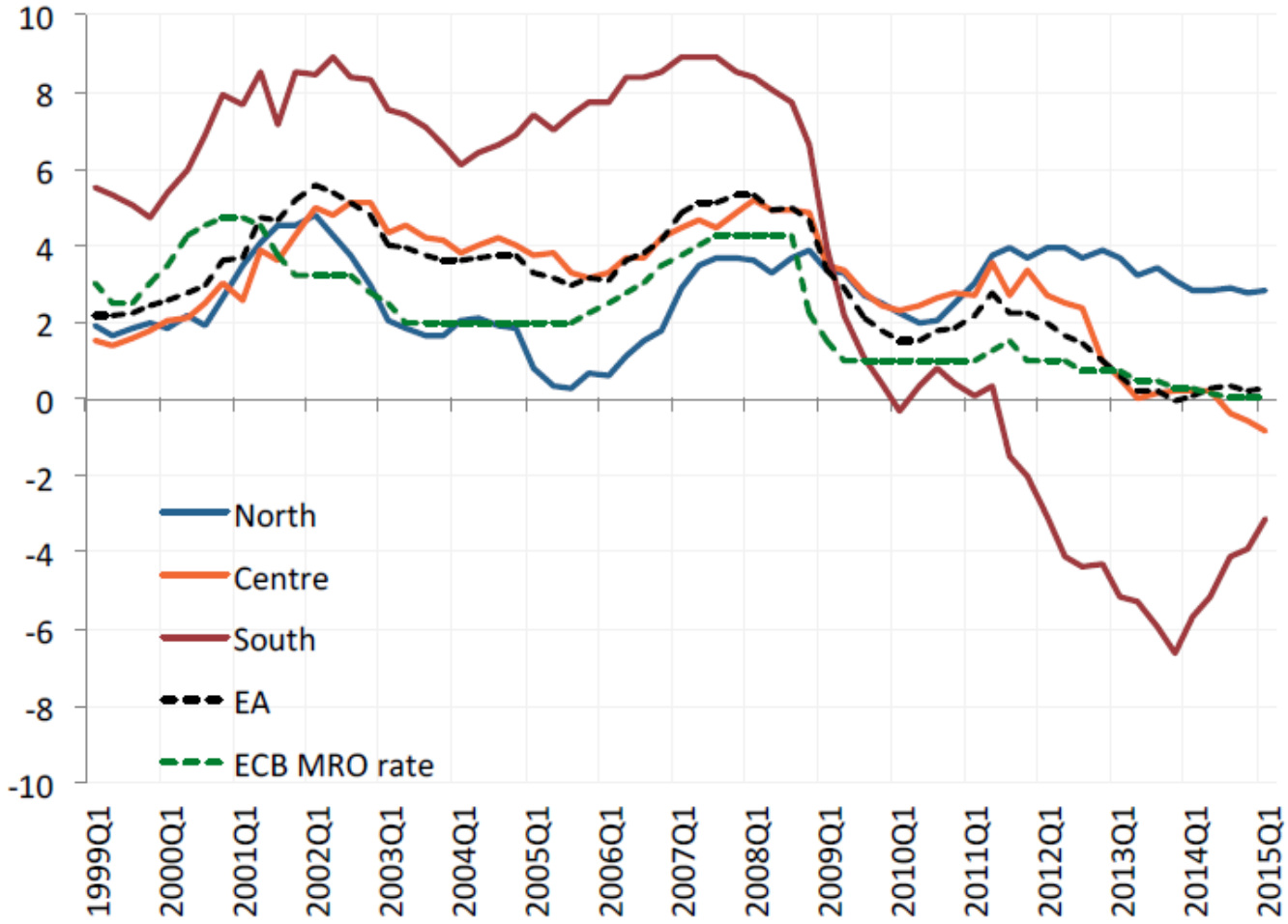
Source: Bruegel based on ECB and BIS data. Note: there are data limitations for Ireland, as highlighted in the previous figure. Since the growth rate would be significantly more sensible than the stock to the inclusion of a new country, only covers the period for which data for all countries are available (ie 2003 on).

Source: Bruegel, Merler (2015)

Decoupling Financial Cycles in Euro Area

- The apparent diverging need for macroprudential policies between North and South in EA.
- Merler (2016), Bruegel.
- Financial cycles are much more volatile in South compared to North.
- Since the early 2000's there is a discord in financial cycles in EA especially between North and South.
- During the early 2000's upto the Global Financial Crises (GFC) South enjoyed a significant credit boom fueled by strong capital inflows from North, ending with a costly contraction after the GFC.
- It was accompanied by big housing price cycle.
- The boom was financed especially by non-core funding.
- The need for diverging macroprudential policies are apparent in the *implied regional Taylor rule policy rates*.

Taylor rule policy rates vs. actual ECB policy rate



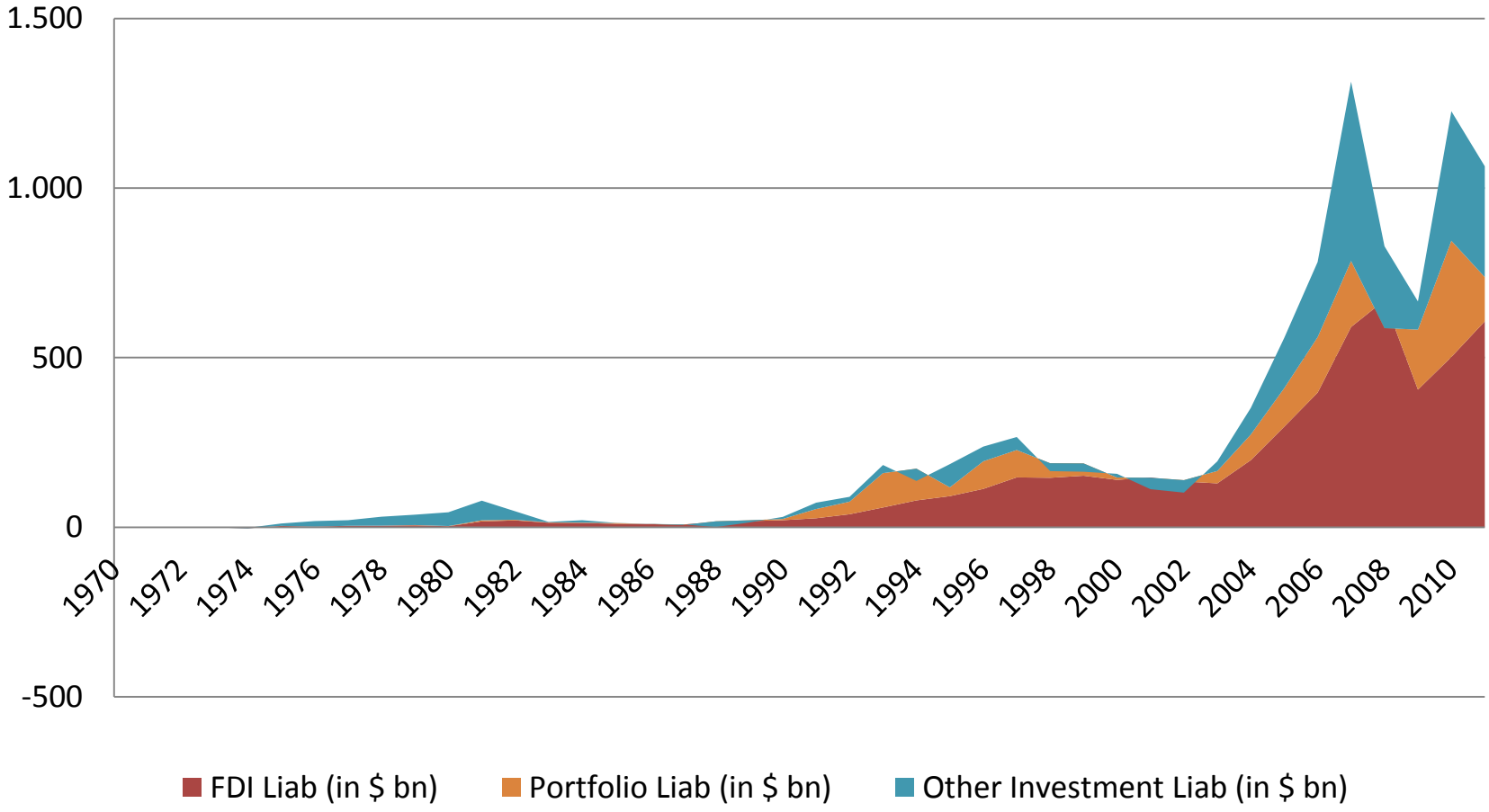
Source: Bruegel computation based on Darvas & Merler (2013).

Source: Bruegel, Merler (2015)

Financial Cycles Driven by Volatile Capital Inflows: A Challenge for Emerging Economies

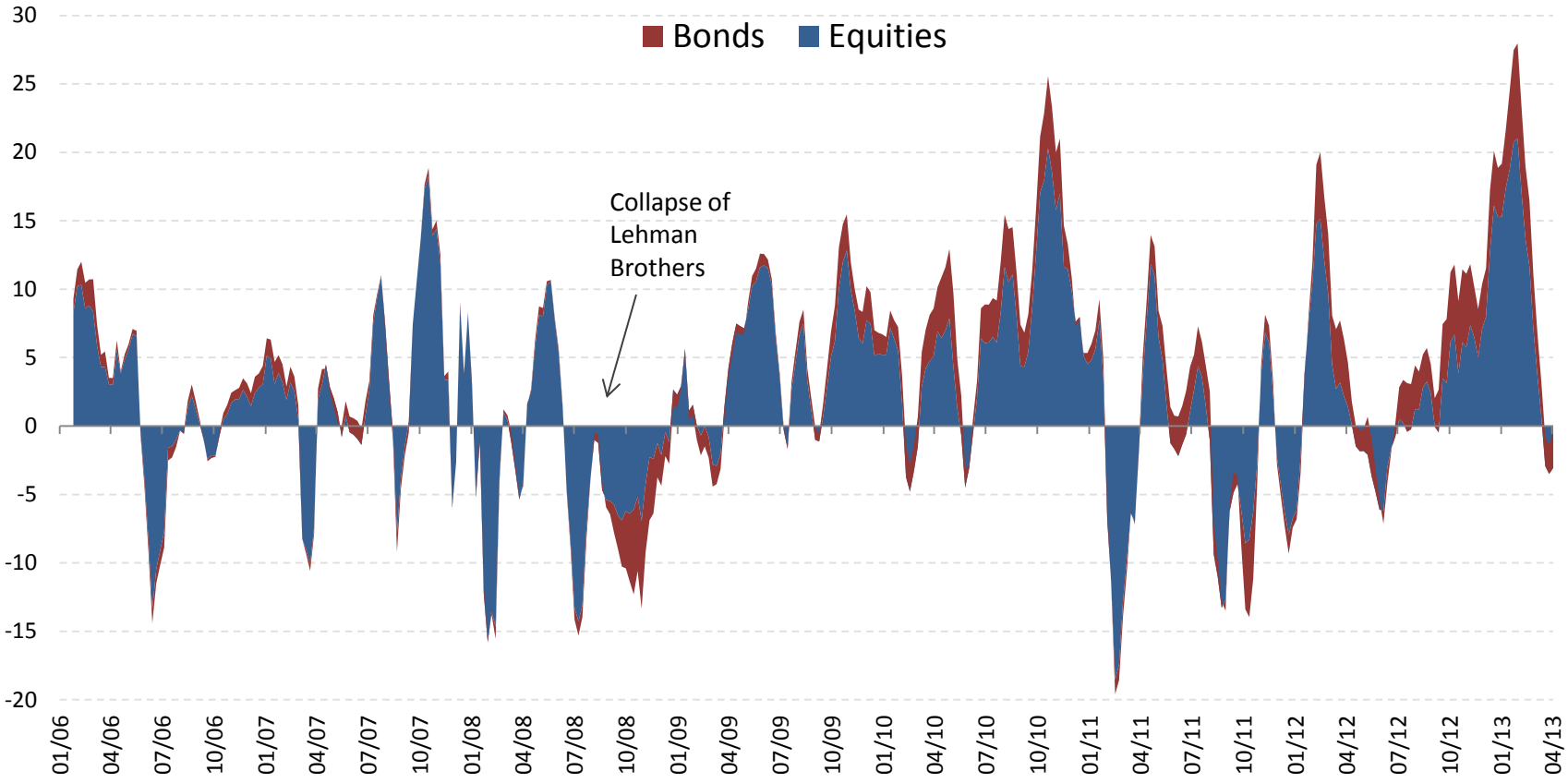
- Size and volatility of capital flows have increased even more in the post-crisis period.
- Capital flows have important benefits, but they may pose big challenges for macroeconomic policy as well.
- Sudden reversals (stops) can have very large adverse effects on real and/or financial sector.
- Procyclical flows amplify macro-financial fluctuations, rather than dampening them.
- If capital flows are mainly driven by global factors,
  - Less related to domestic fundemantals
  - It may be inefficient and distortionary

Gross Capital Flows to Emerging Economies



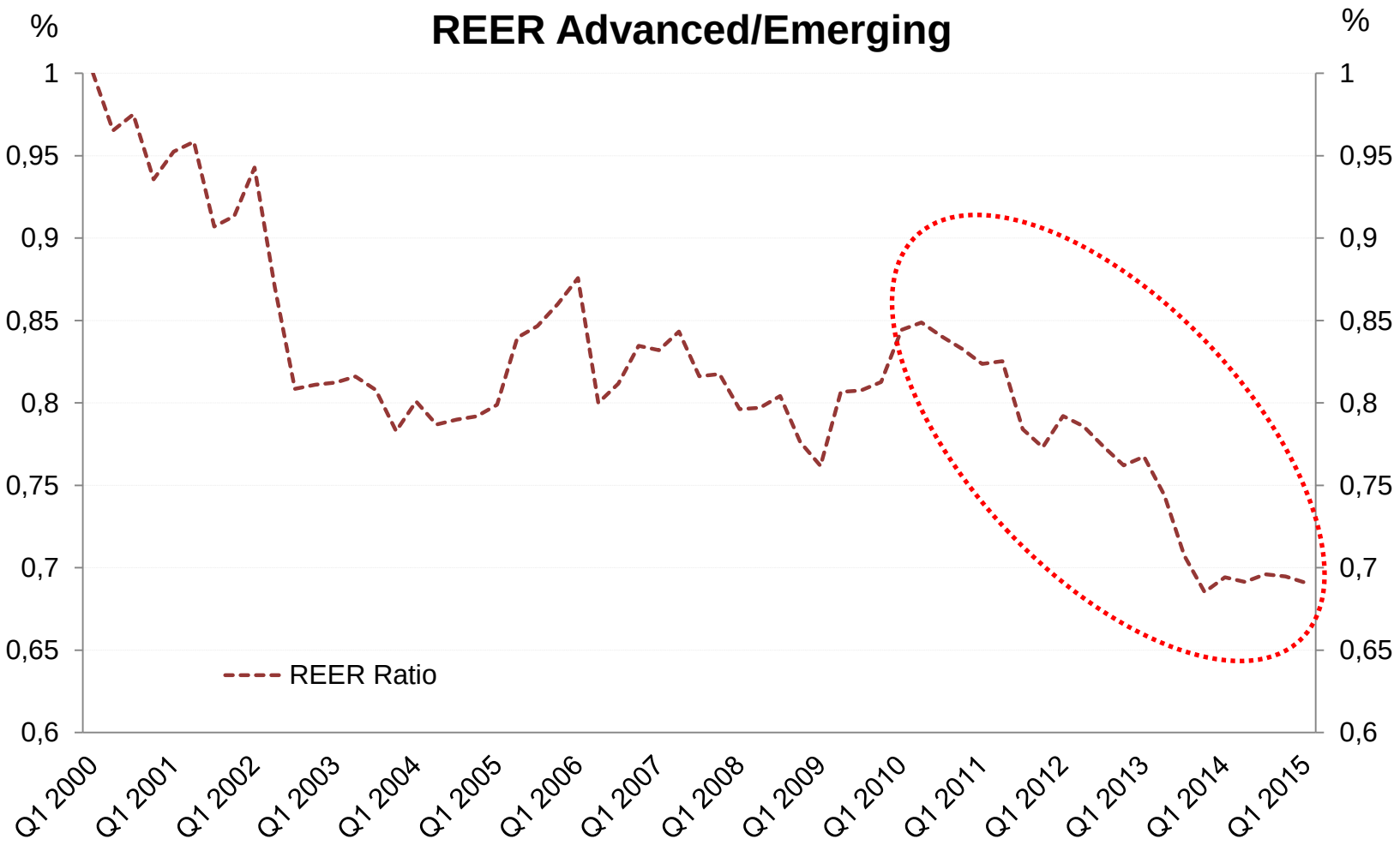
Source: Emerging Portfolio Fund Research (EPFR)

Portfolio Flows to Emerging Economies



Source: Emerging Portfolio Fund Research (EPFR)

REER Advanced vs. Emerging



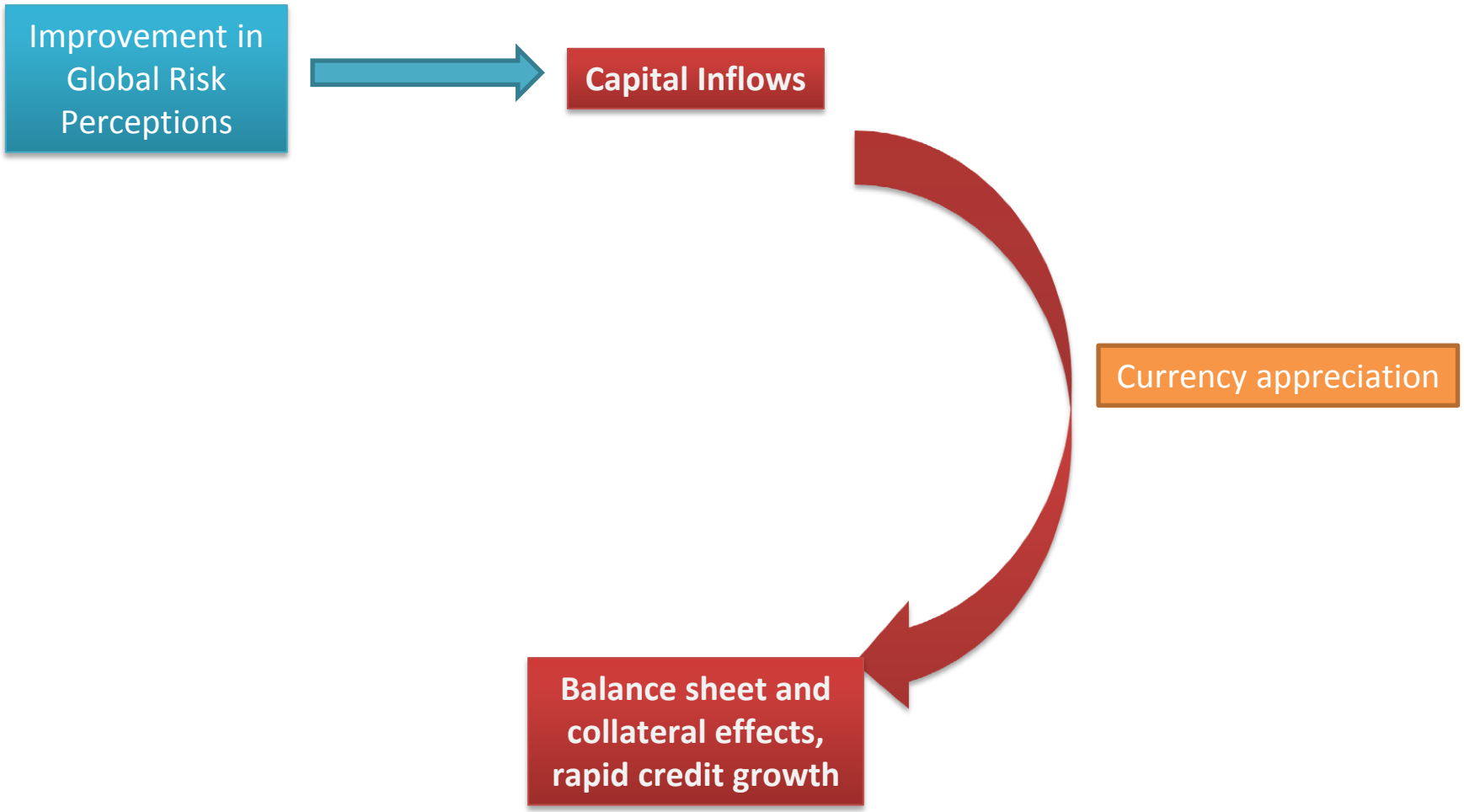
Yorukoglu (2016)

Amplifying Role of Cross Border Capital Flows

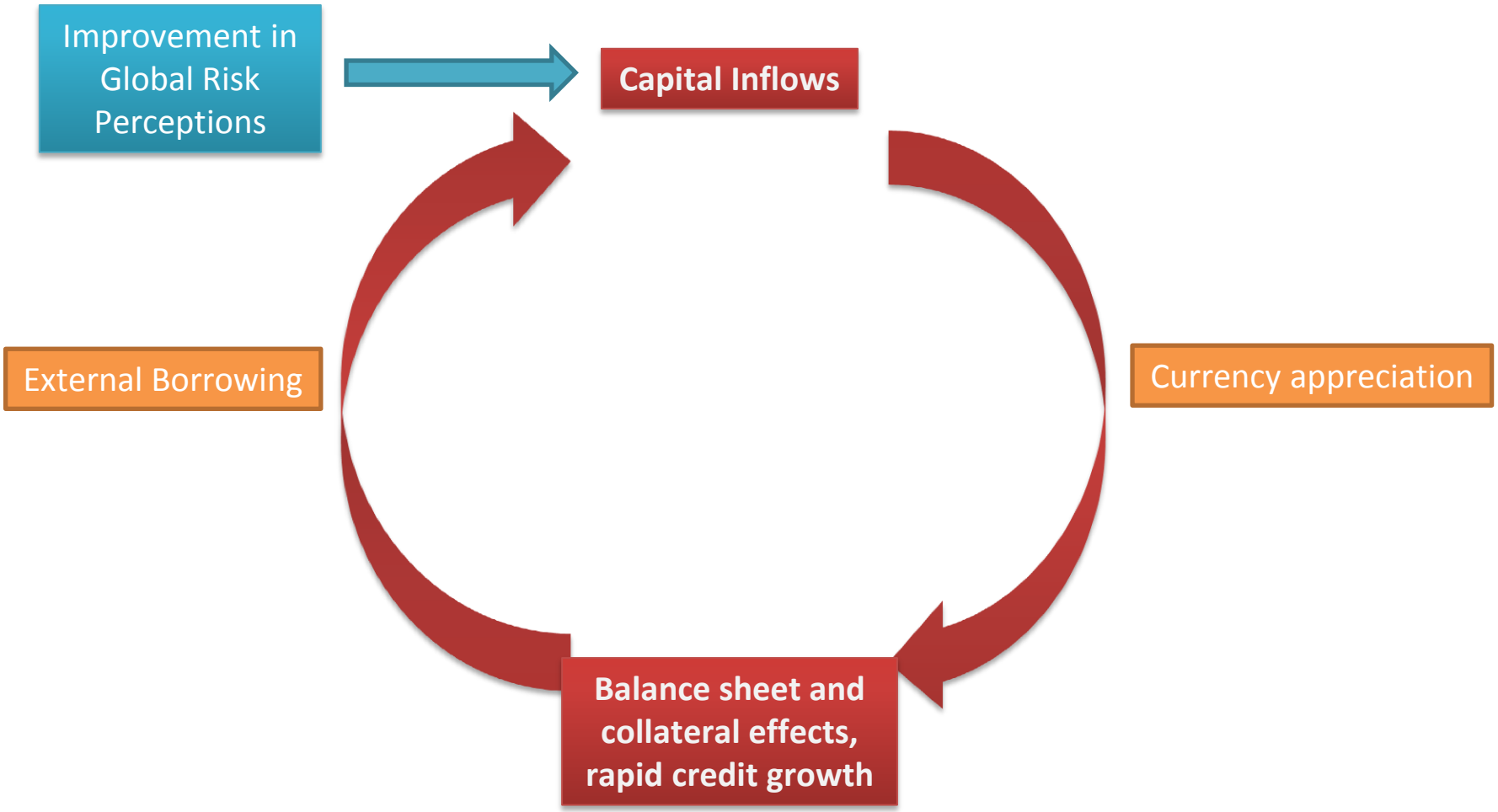
- Caballero and Krishnamurthy (2004), Lorenzoni (2008), Bianchi (2011), and others.
- Bruno and Shin (2013), *amplifying balance-sheet-effect mechanism*.
  - Capital flows lead to an appreciation in currency, which improves the balance sheets of firms and increase collateral values.
  - This leads to more credit growth, higher demand for nontradable goods and thus further appreciation.
  - Rapid credit growth is financed by external borrowing, leading to further inflows.

Amplifying Role of *Cross Border Capital Flows*

Amplifying Role of *Cross Border Capital Flows*



Amplifying Role of *Cross Border Capital Flows*

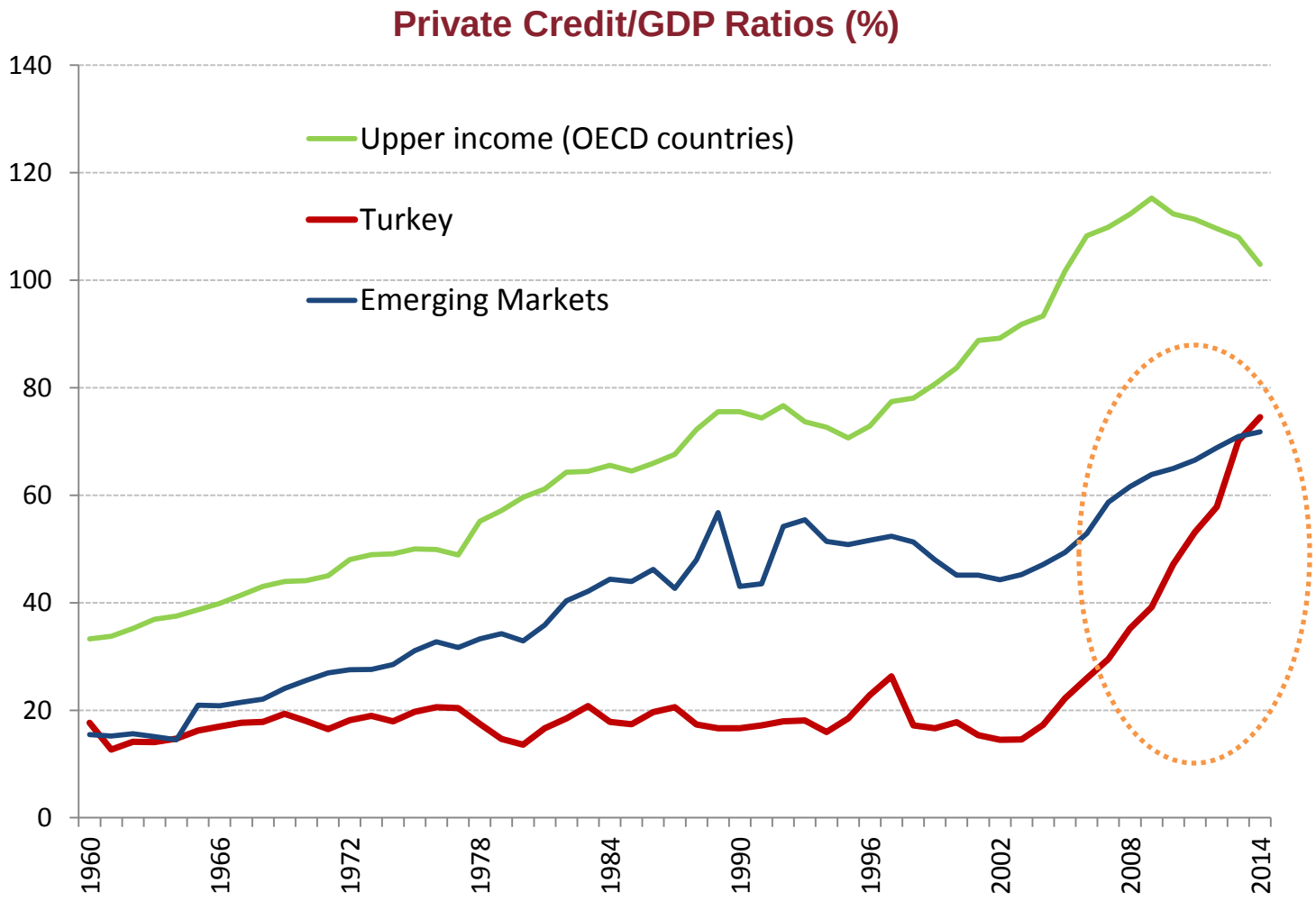


Source: Kara (2016)

Capital Flows, Rapid Credit Growth, and Increasing Need for Macroprudential Policies

Case: *Turkish economy as of late 2010*

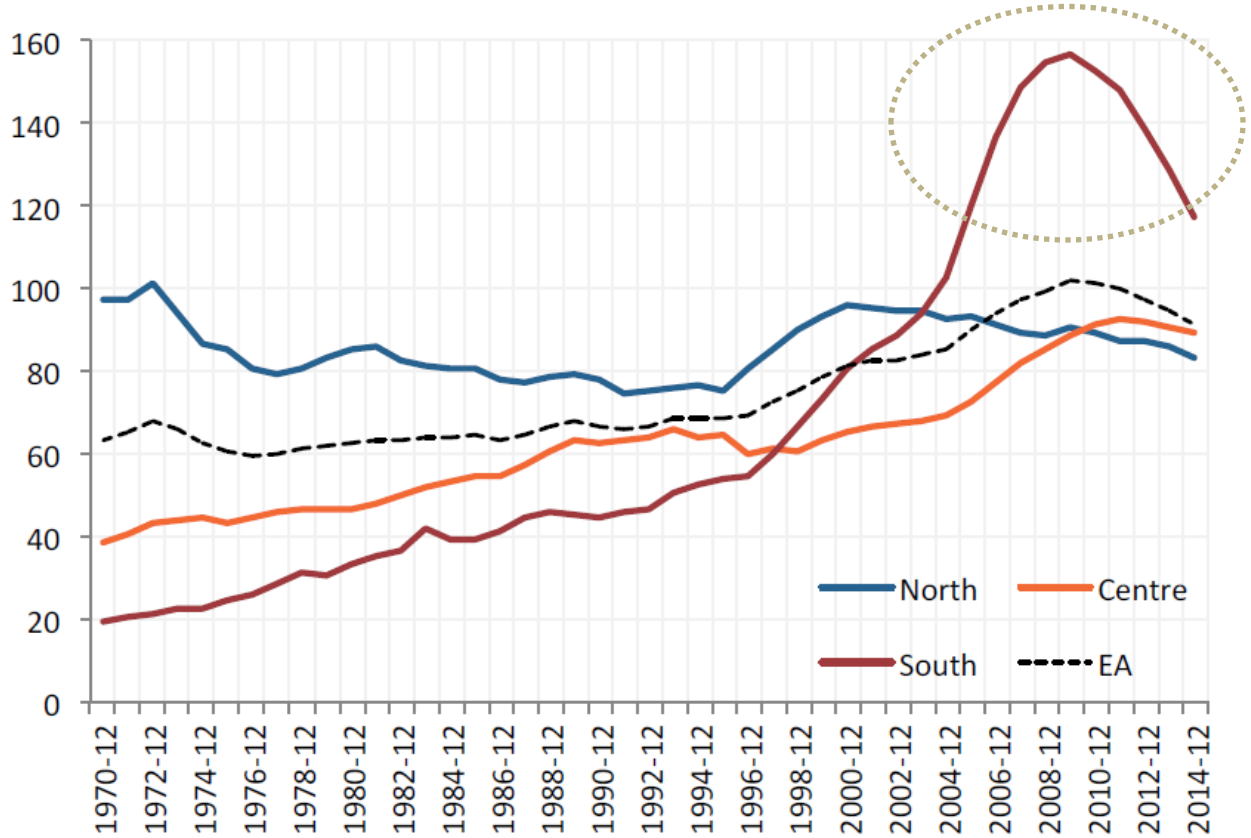
Very rapid credit growth since 2003 highlighted the need for macroprudential policies.



Source: World Bank, Kara (2016)

Avoiding a severe credit contraction . . .

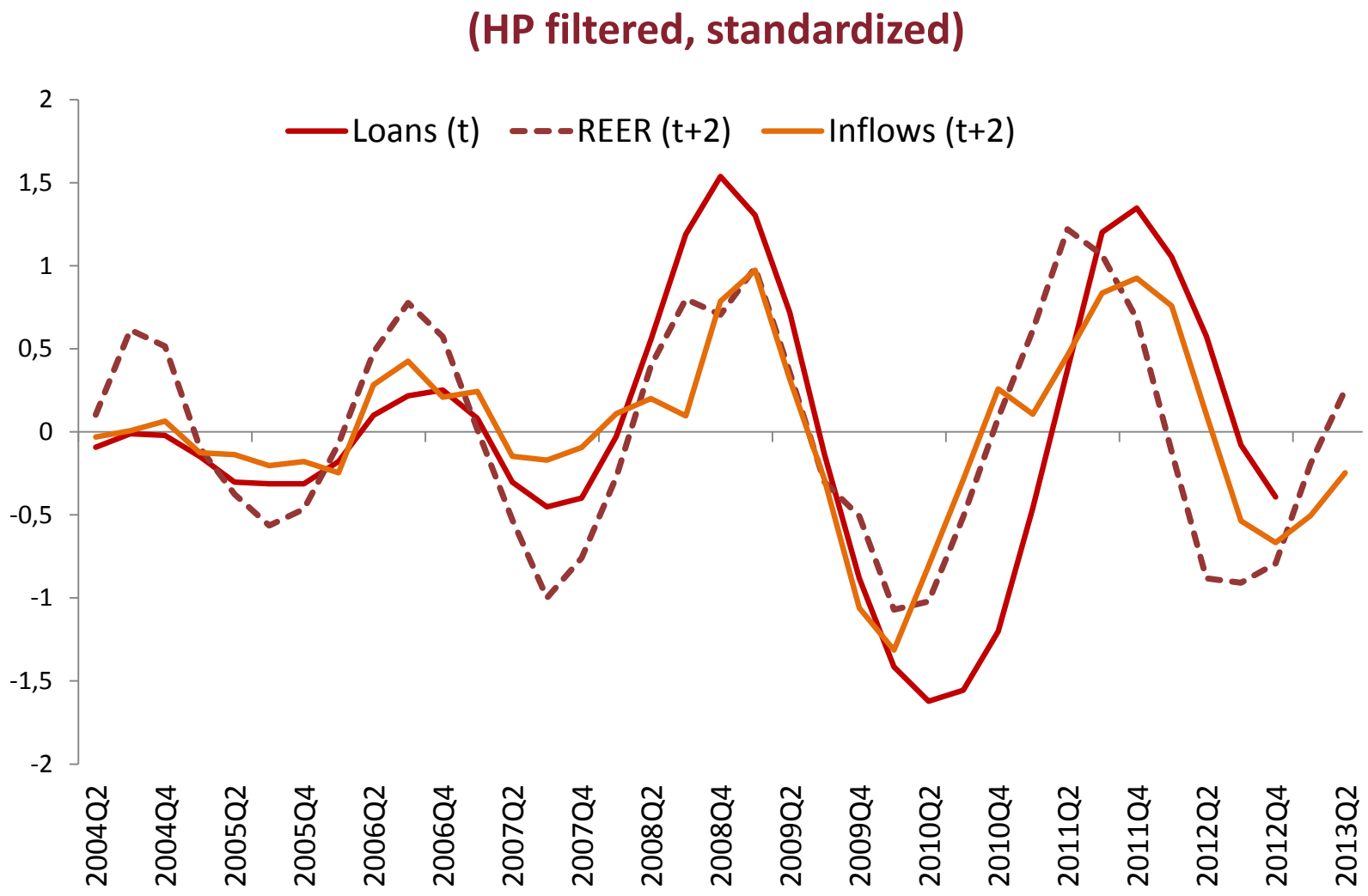
Figure 1: Bank credit to domestic private sector (% GDP)



Source: BIS; National Sources; IMF; AMECO.
Note: groups are defined as follows: North includes Austria, Belgium, Finland, Germany and the Netherlands; Centre includes France and Italy; South includes Greece, Ireland, Portugal and Spain.

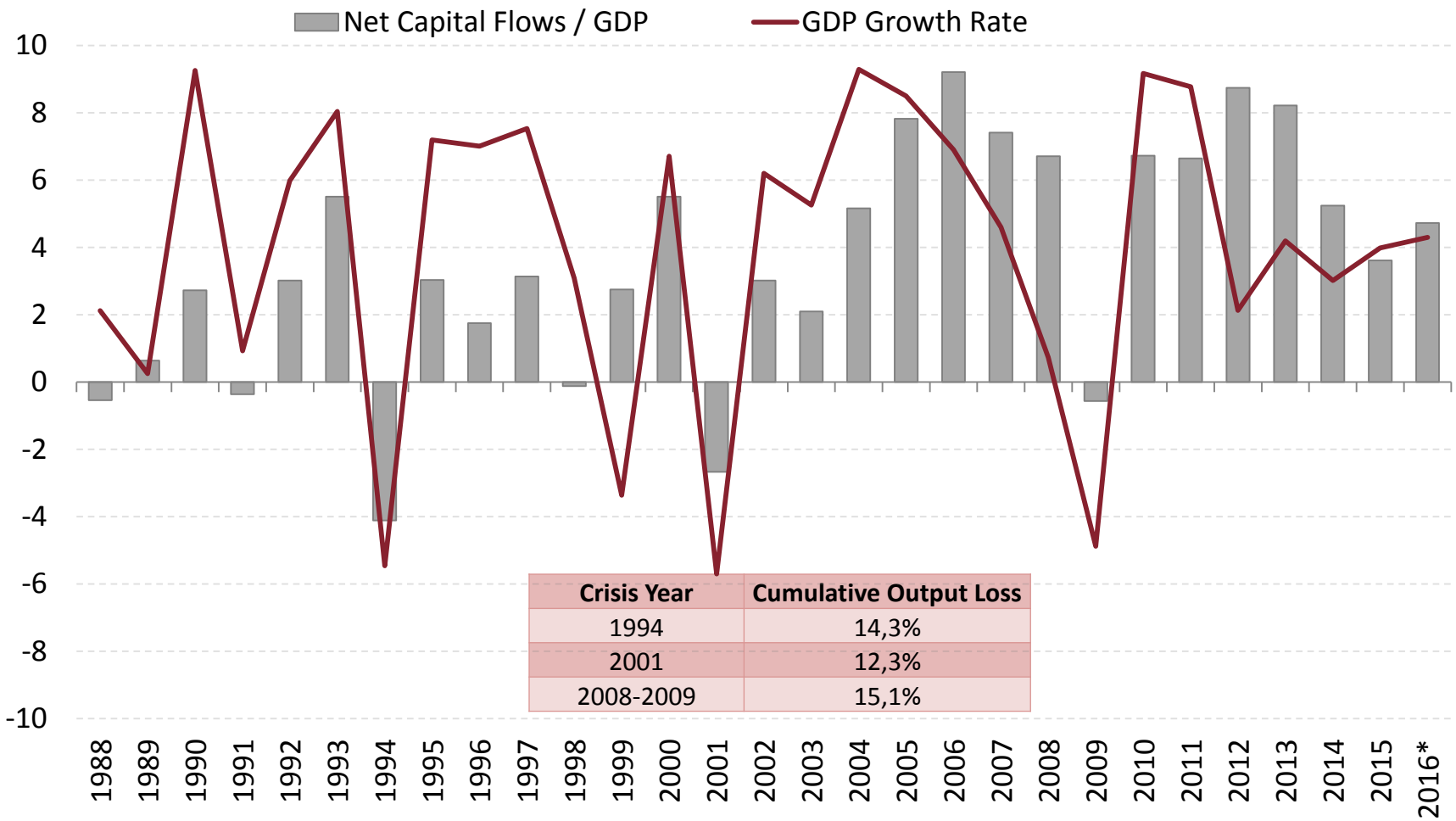
Source: Bruegel, Merler, 2015

Capital Flows, Credit , and Exchange Rate Cycles: *Turkish Data*



Source: CBRT, Kara (2016)

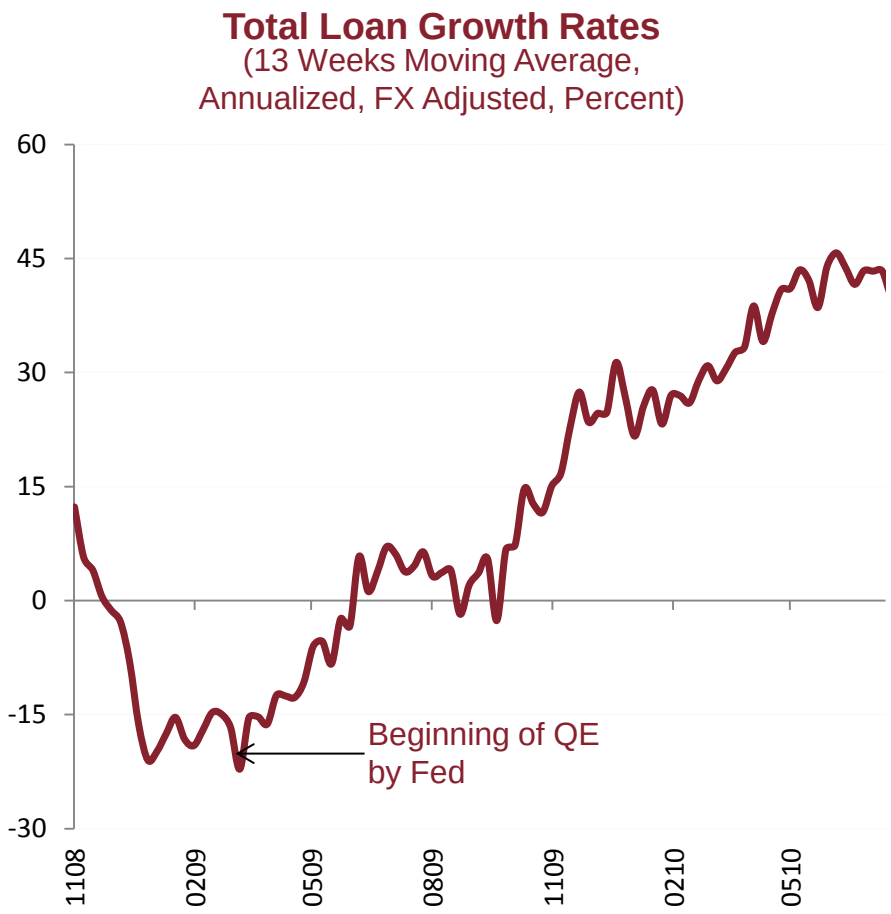
Sharp capital flow reversals (sudden stops) have been associated with large output losses.

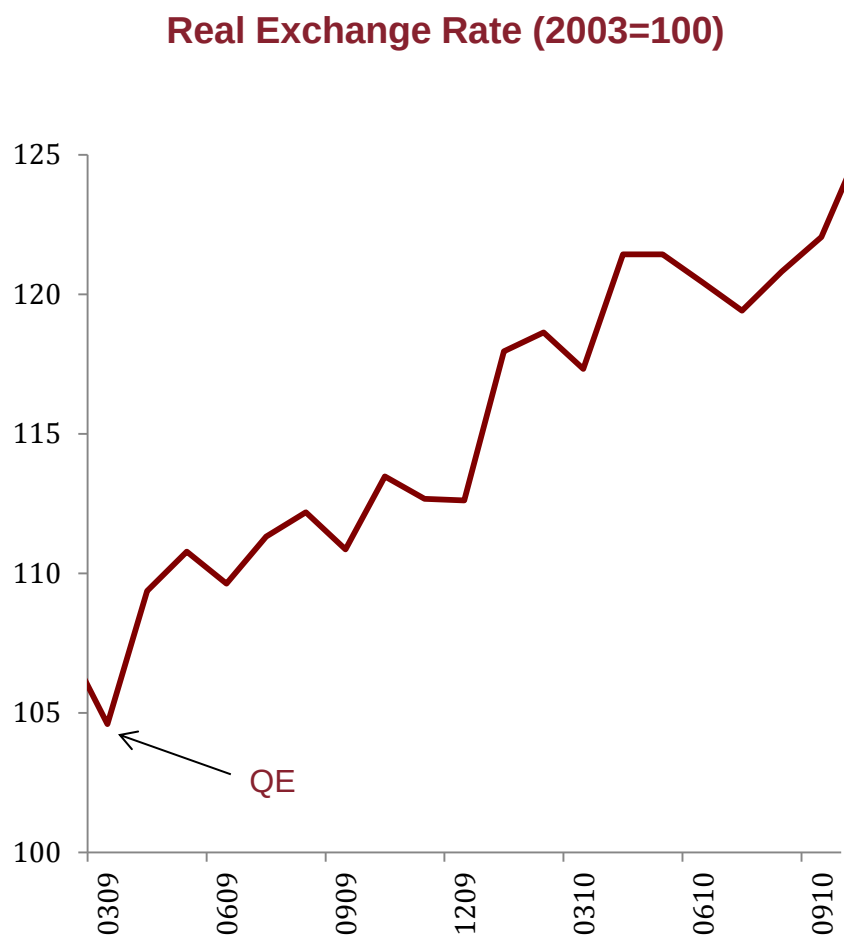


Crisis Year	Cumulative Output Loss
1994	14,3%
2001	12,3%
2008-2009	15,1%

. * As of Q2, annualized. Source: CBRT, Kara (2016)

The need for a stronger macroprudential approach have intensified after the QE, with rapid credit growth and marked currency appreciation.

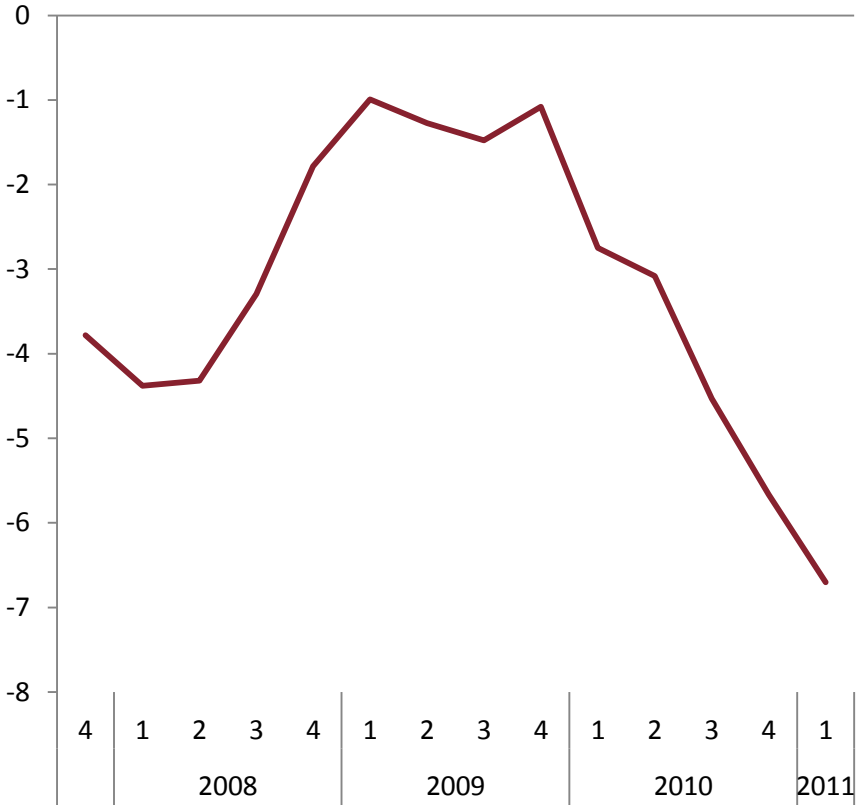




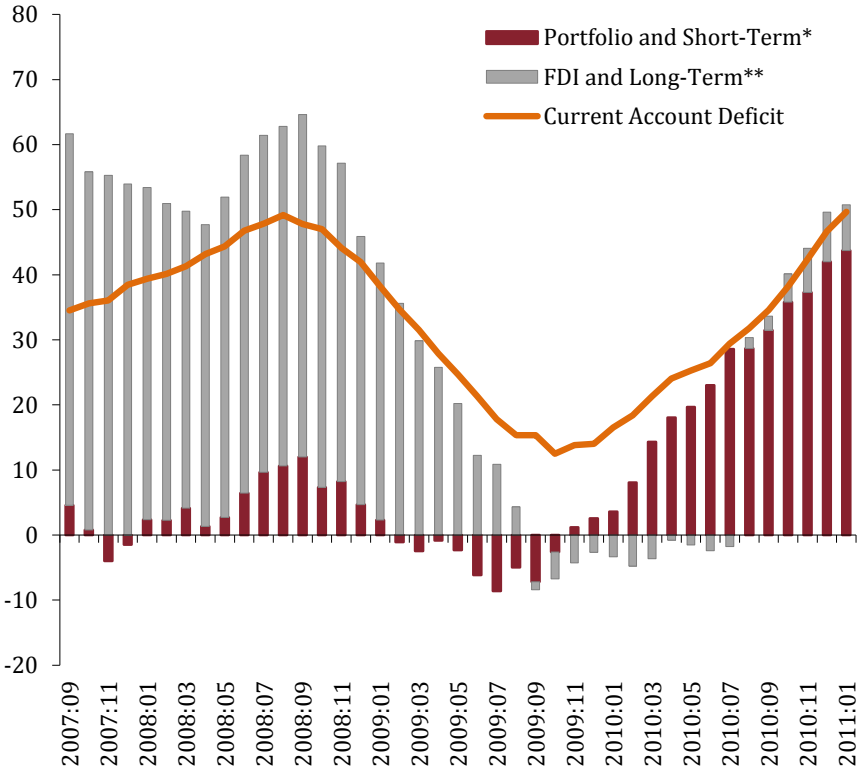
Source: CBRT

Rapid increase in current account deficit financed with short-term inflows

Current Account Balance
(Seasonally Adjusted, Quarterly Average, Billion USD)



Main Sources of External Financing*
(12-months Cumulative, Billion USD)



Source: TURKSTAT, CBRT.

*Short-term capital movements are sum of banking and real sectors' short term net credit and deposits in banks. Long-term capital movements are sum of banking and real sectors' long term net credit and bonds issued by banks and the Treasury.
Source: CBRT.

Increasing need for macroprudential tools

Using macroprudential tools to

- alleviate the impact of excessive volatility in capital flows on the domestic economy,
- correct the cyclical part of the current account deficit, by reducing overborrowing and overvaluation,
- reduce the sensitivity of credit and exchange rate cycles to capital flows,

without jeopordazing price stability objective.

Could single policy tool do it?

- When global liquidity shocks dominate, using single instrument under IT could exacerbate the trade-offs
- For example, during capital inflows there are two options:
  - $i\uparrow$ => further appreciation => wider CA deficit, sudden stop risks increase
  - $i\downarrow$ => overheating => higher inflation
- Macroprudential tools may solve this *trap*.

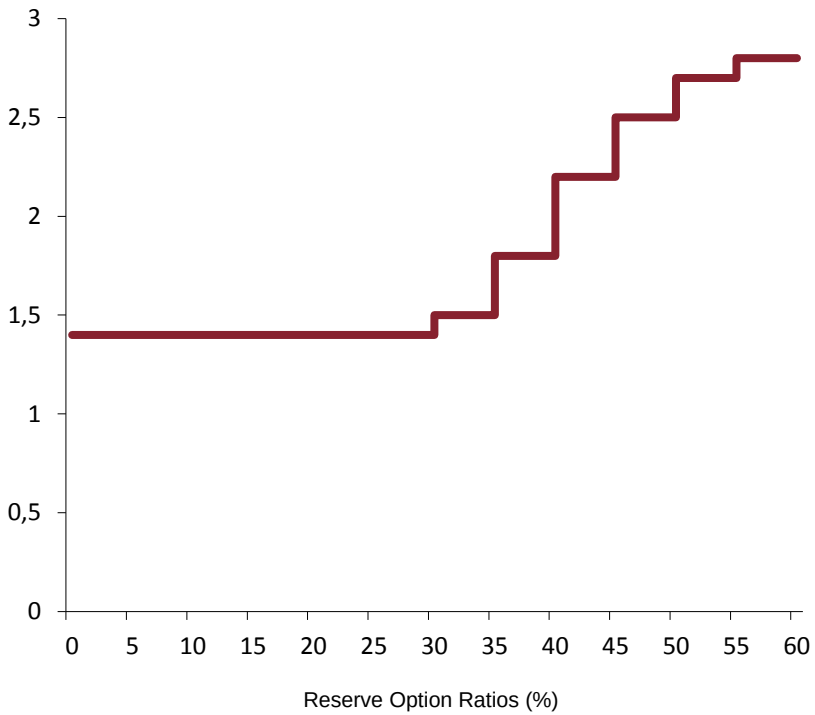
Reserve Options Mechanism (ROM): (an automatic stabilizer)

Definition of ROM

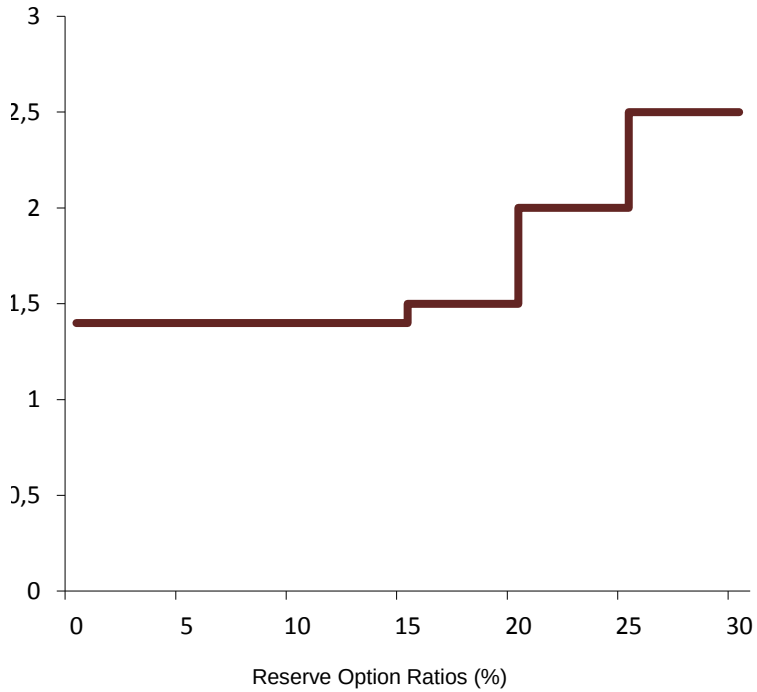
- ROM is a mechanism that provides the banks the option to hold a certain fraction of their TL RRs in FX and/or gold.
- ROM provides incentives for the banks to accumulate reserves in good times to use in bad times.
- To what extent the banks will use ROM will depend on the relative cost of using and not using the facility
  - The CBRT can change this cost through Reserve Option Coefficients (ROC)
  - The cost will also depend on relative interest rates on FX vs TL funding

Reserve Options Coefficients (ROC)

Reserve Option Coefficients for FX



Reserve Option Coefficients for Gold



Source: CBRT

Threshold ROC

For each bank, there is a "threshold ROC" ($\mathrm{ROC}^{\mathrm{tr}}$) that makes the bank indifferent between using and not using the facility.

This level will depend on the relative cost of FX vs TL funding:

$$\boldsymbol{ROC^{tr}} = \frac{\boldsymbol{r_t^{TL}}}{\boldsymbol{r_t^{FX}} * \frac{\boldsymbol{E(e_{t+1})}}{\boldsymbol{e_t}}}$$

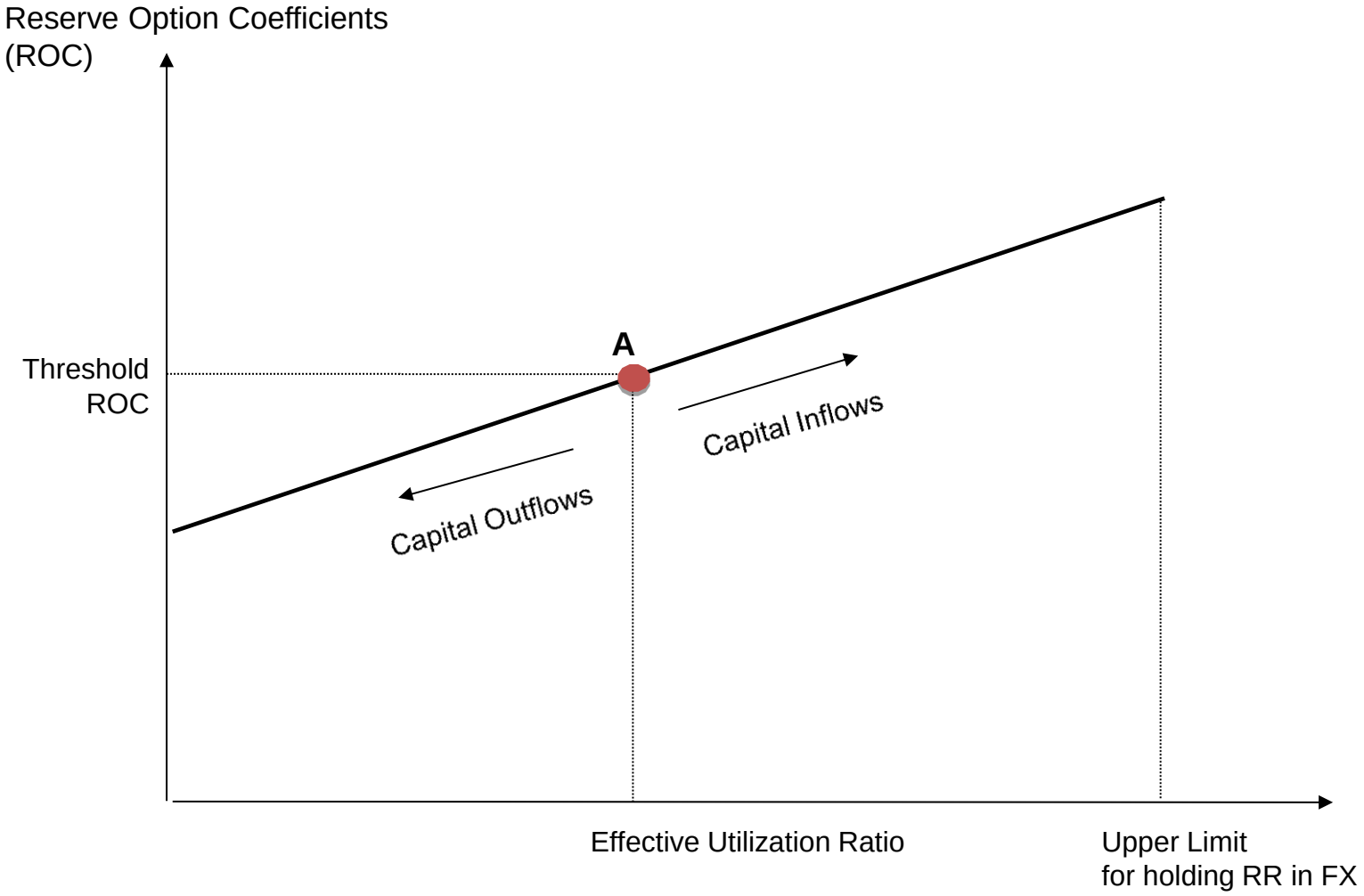
where,

r_t^{TL}: cost of TL funding, r_t^{FX}: cost of FX funding

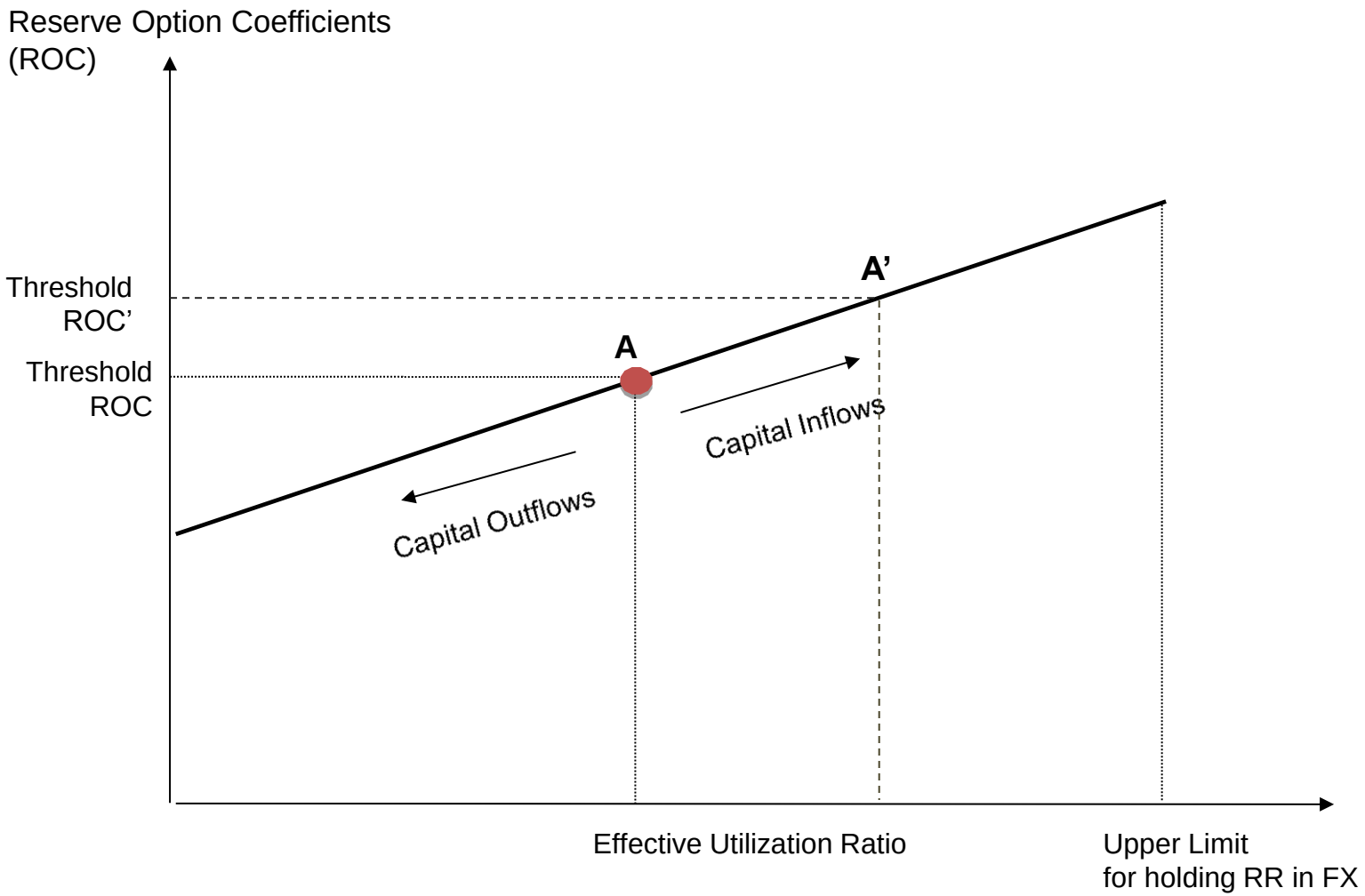
e_t: spot exchange rate at the beginning of the maintenance period

$E(e_{t+1})$: expected exchange rate for the end of the maint. period.

Reserve Option Mechanism: Automatic Stabilizer

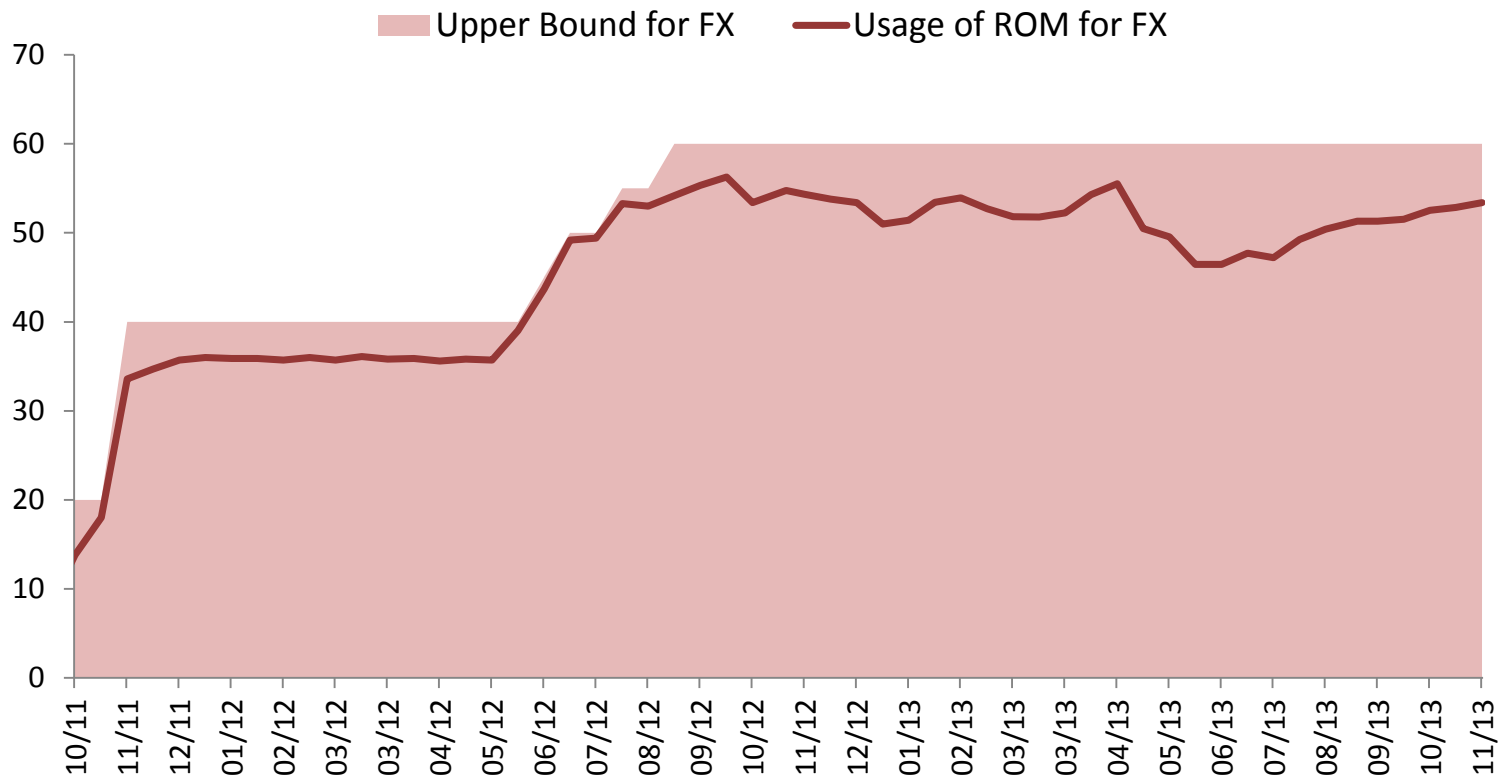


Reserve Option Mechanism: Automatic Stabilizer



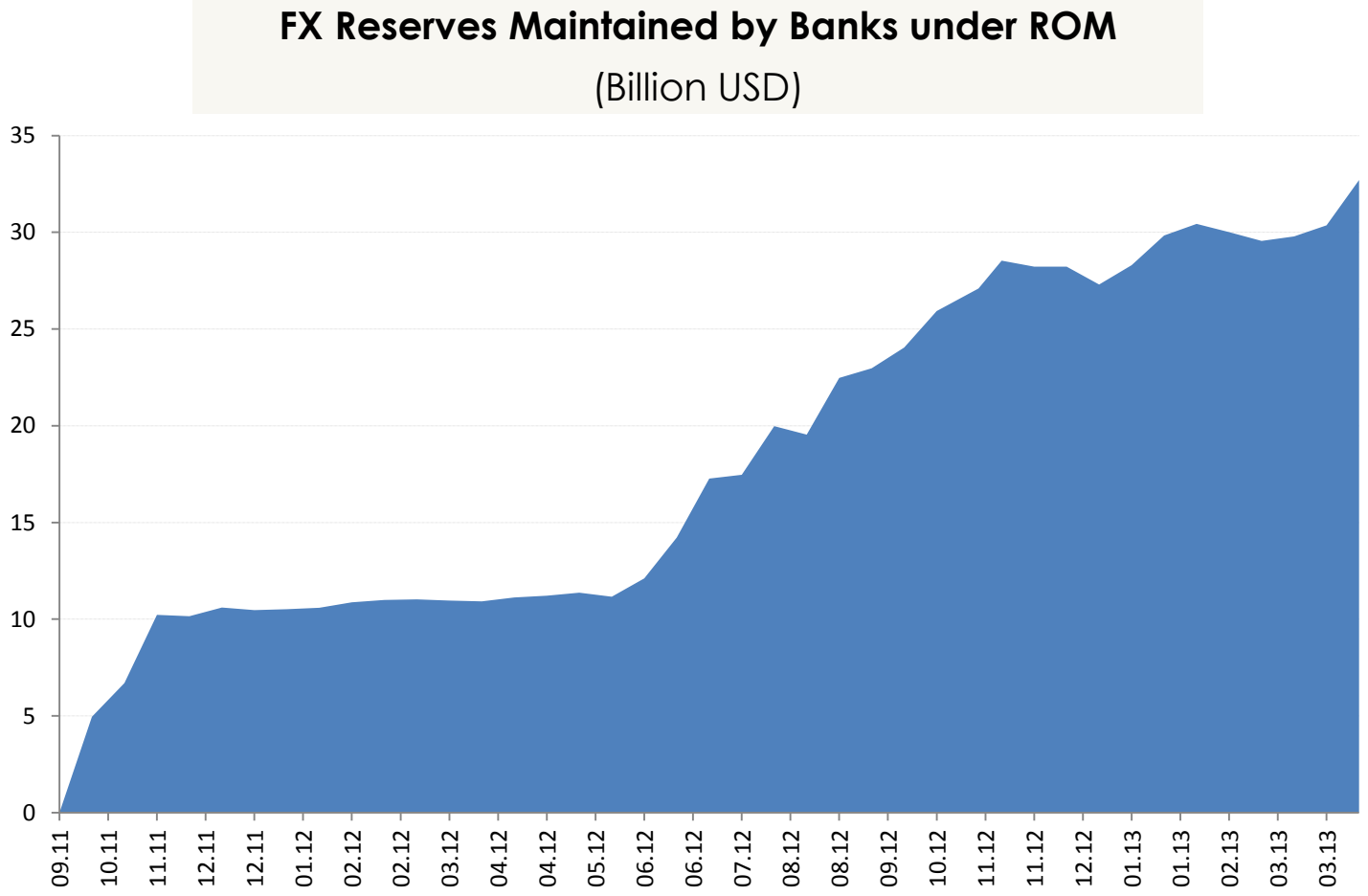
Kara (2016)

Utilization Ratio for ROM



Source: CBRT

FX Reserves Accumulated through ROM



Source: CBRT

Benefits of ROM

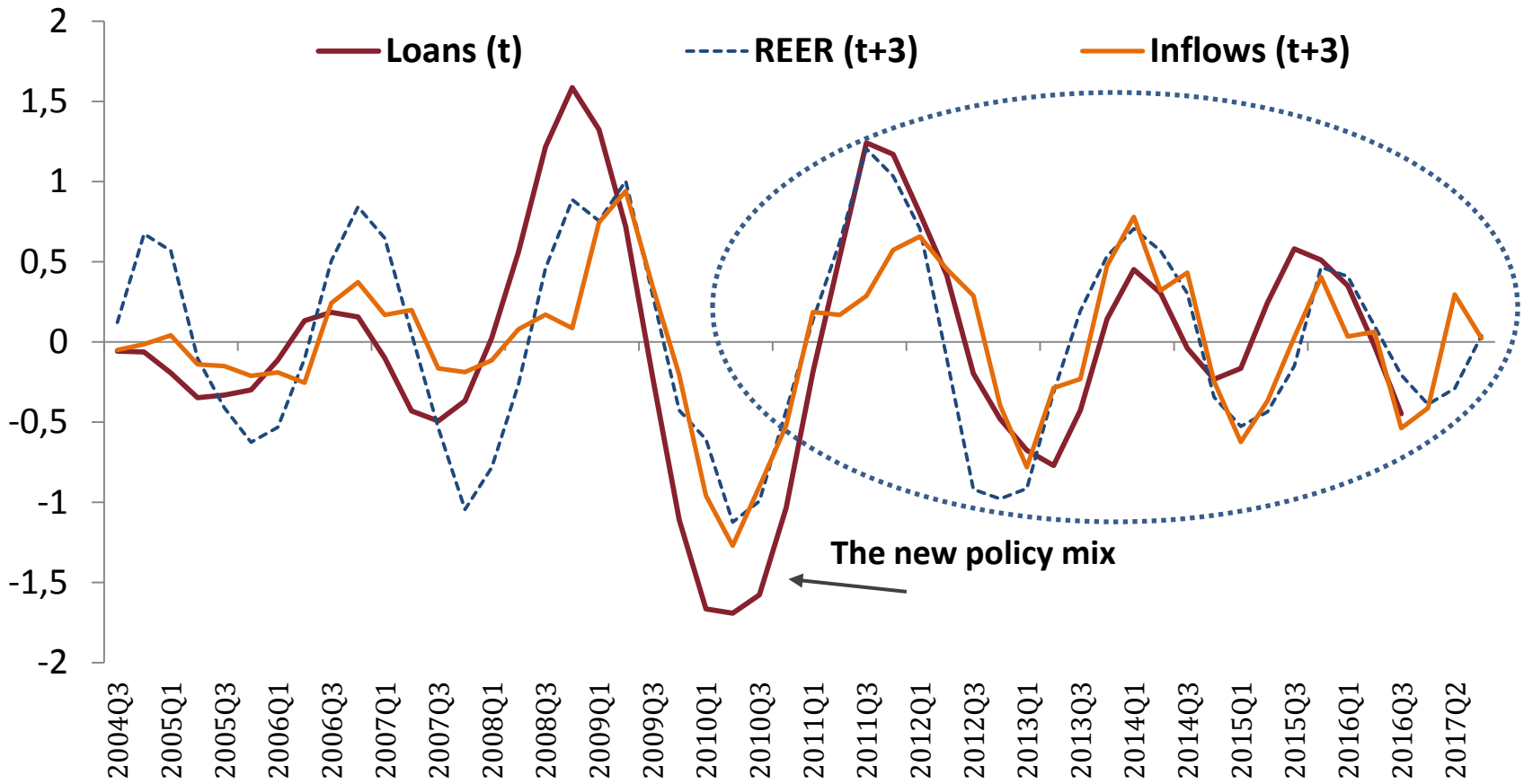
- Automatic stabilizer: dampens the impact of capital flow volatility on domestic macroeconomic variables
- Weakens the adverse feedback loop between capital flows, exchange rate, and bank lending
- Helps to build up reserves
- Less sterilization costs than FX intervention
- A market friendly and a more efficient mechanism

Macro Outcomes of MaP Implementations in Turkey

The interaction between capital flows, exchange rate and bank loans have been dampened considerably since the implementation of MaPs.

Capital flows, exchange rate, and credit cycles

(HP filtered, standardized)

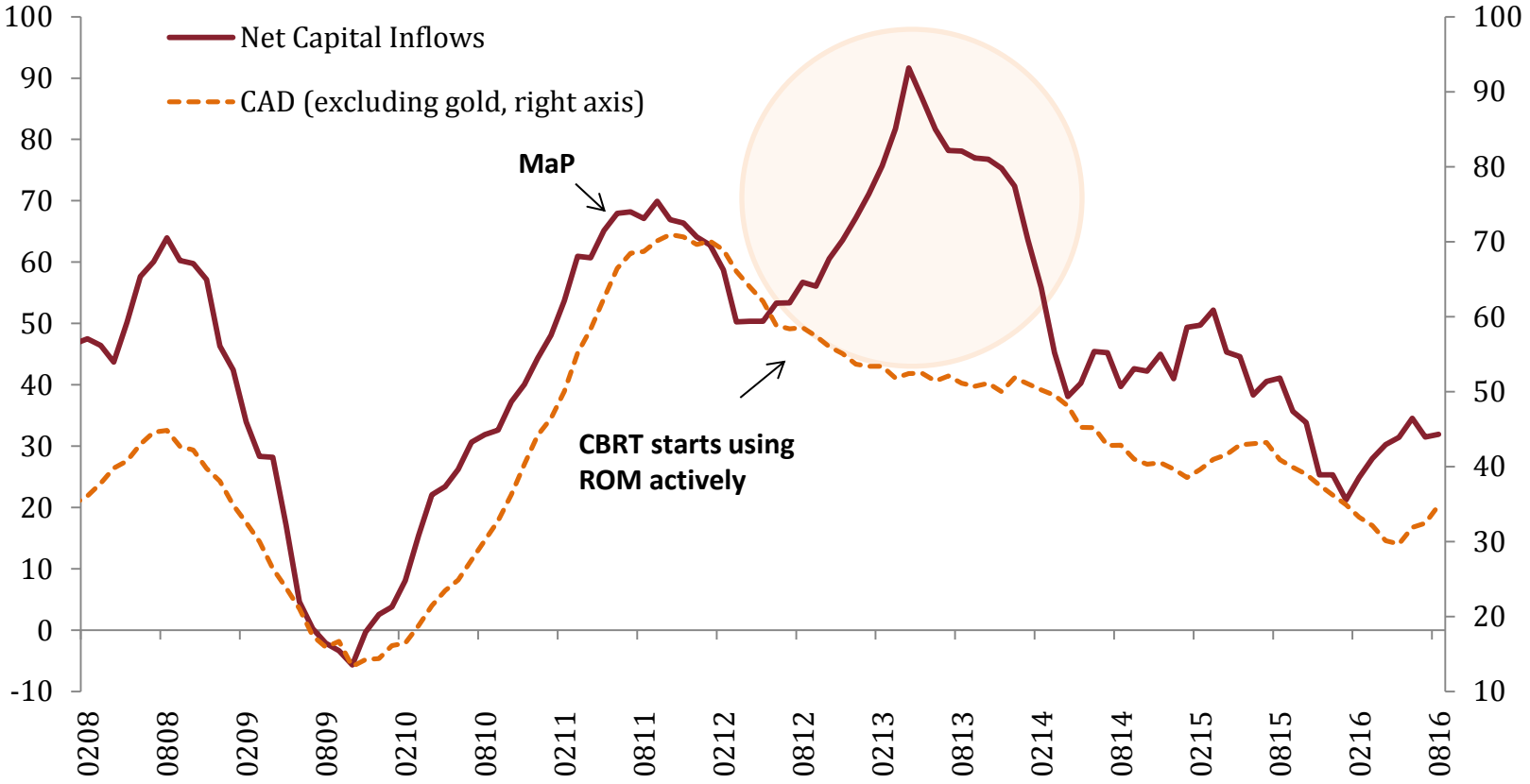


Source: CBRT, Kara(2016)

Current account balance has shown a persistent and sizeable improvement in recent years, despite the volatility in capital flows.

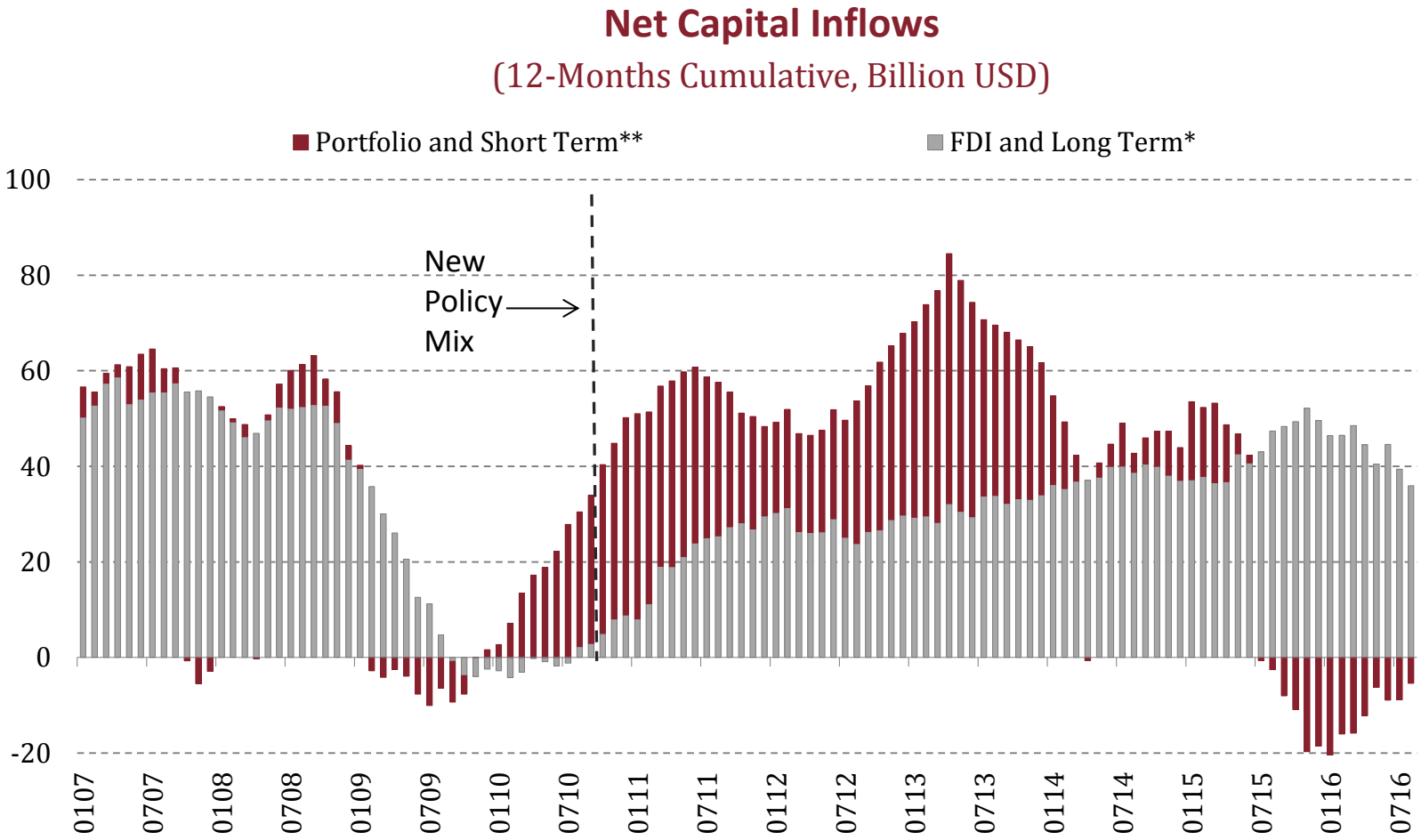
Current Account Deficit and Net Capital Inflows

(12 Month Cumulative, Billion USD)



Source: CBRT, Kara(2016)

The share of long-term and FDI inflows have increased since 2011.

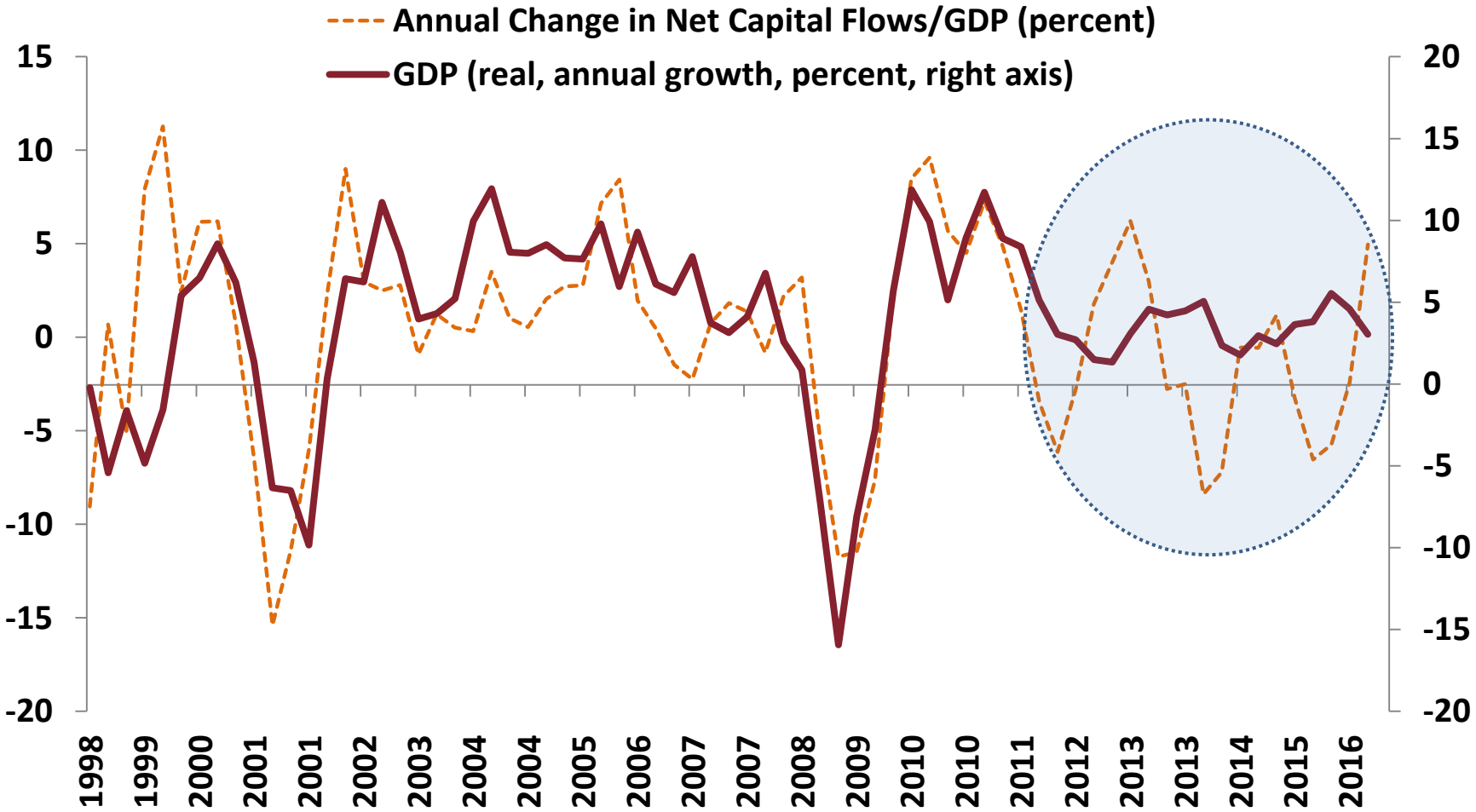


*Long term inflows are sum of banking and real sectors' long term net credit and bonds issued by banks and the Treasury.

**Short term capital movements are sum of banking and real sectors' short term net credit and deposits in banks.

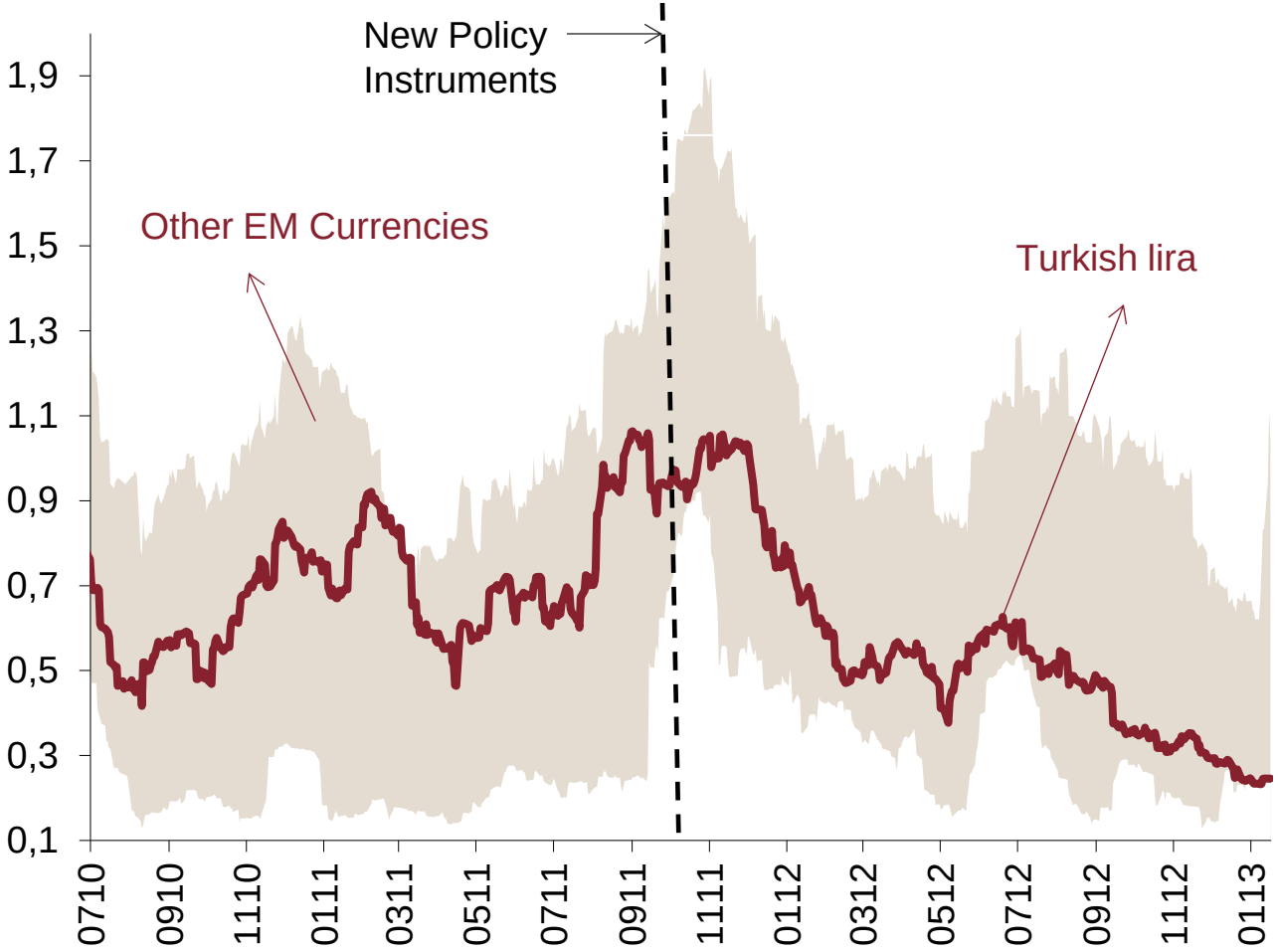
Source: CBRT, Kara(2016)

GDP growth stayed relatively stable since 2011, despite the heigthened volatility in capital flows.



Source: CBRT, Kara(2016)

Volatility of the Turkish lira dampened relative to EM currencies
(against USD, 30 days moving average)



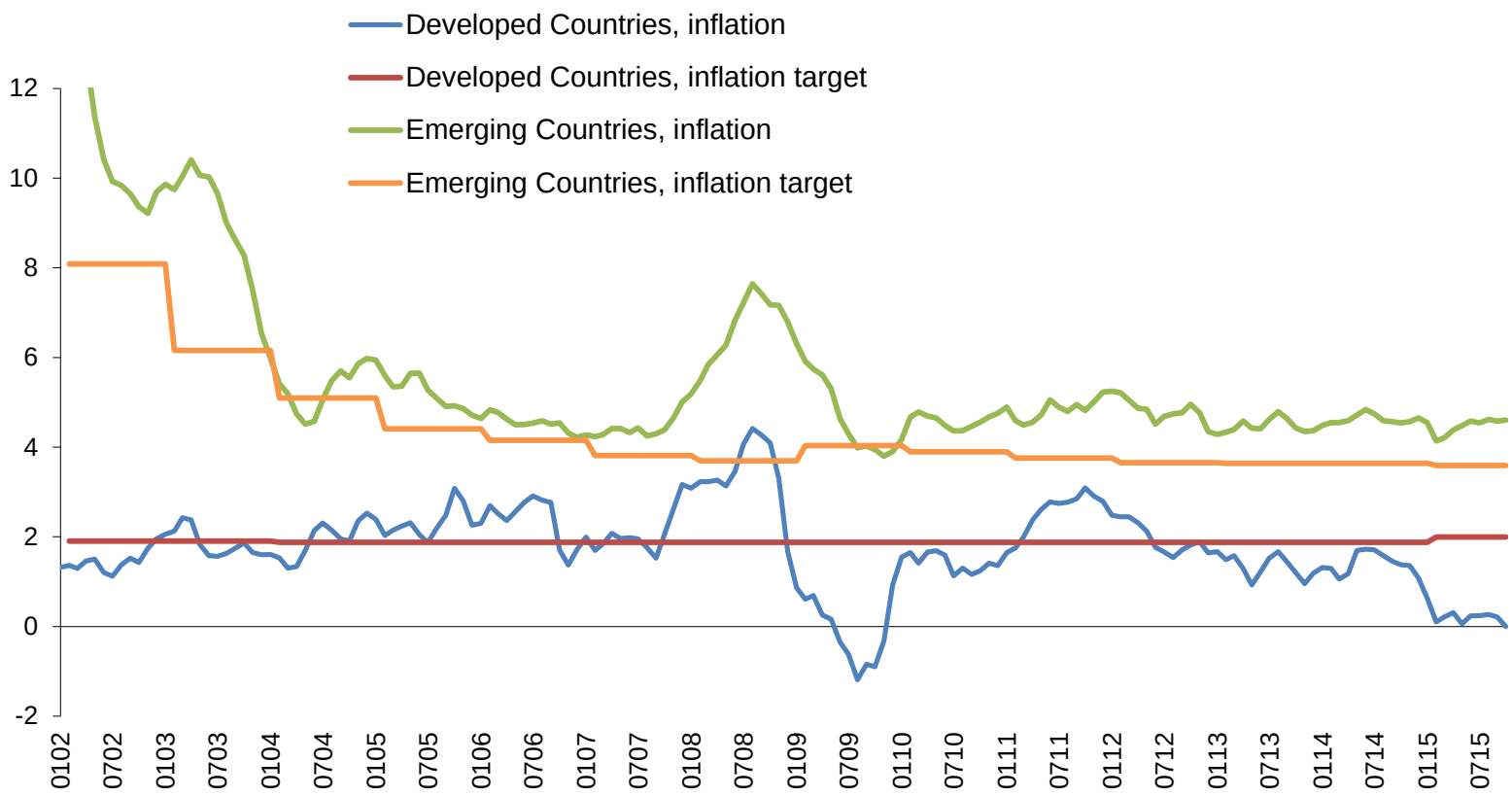
* Countries with current account deficits are Brazil, Chile, Columbia, Czech Republic, Hungary, Indonesia, Mexico, Poland, Romania, South Africa, and Turkey.

Source: CBRT

‘On The Price Stability Performance of North vs. South: *The Unconsicious Armwrestling*’, Yorukoglu (2016)

1. Historical difference in *price stability performance* of advanced and emerging economies.
2. Potential explanations.
3. Structural differences in consumer baskets: *the new good bias.*
4. Implications and conclusion.

Inflation and Targets
(inflation targeting countries)



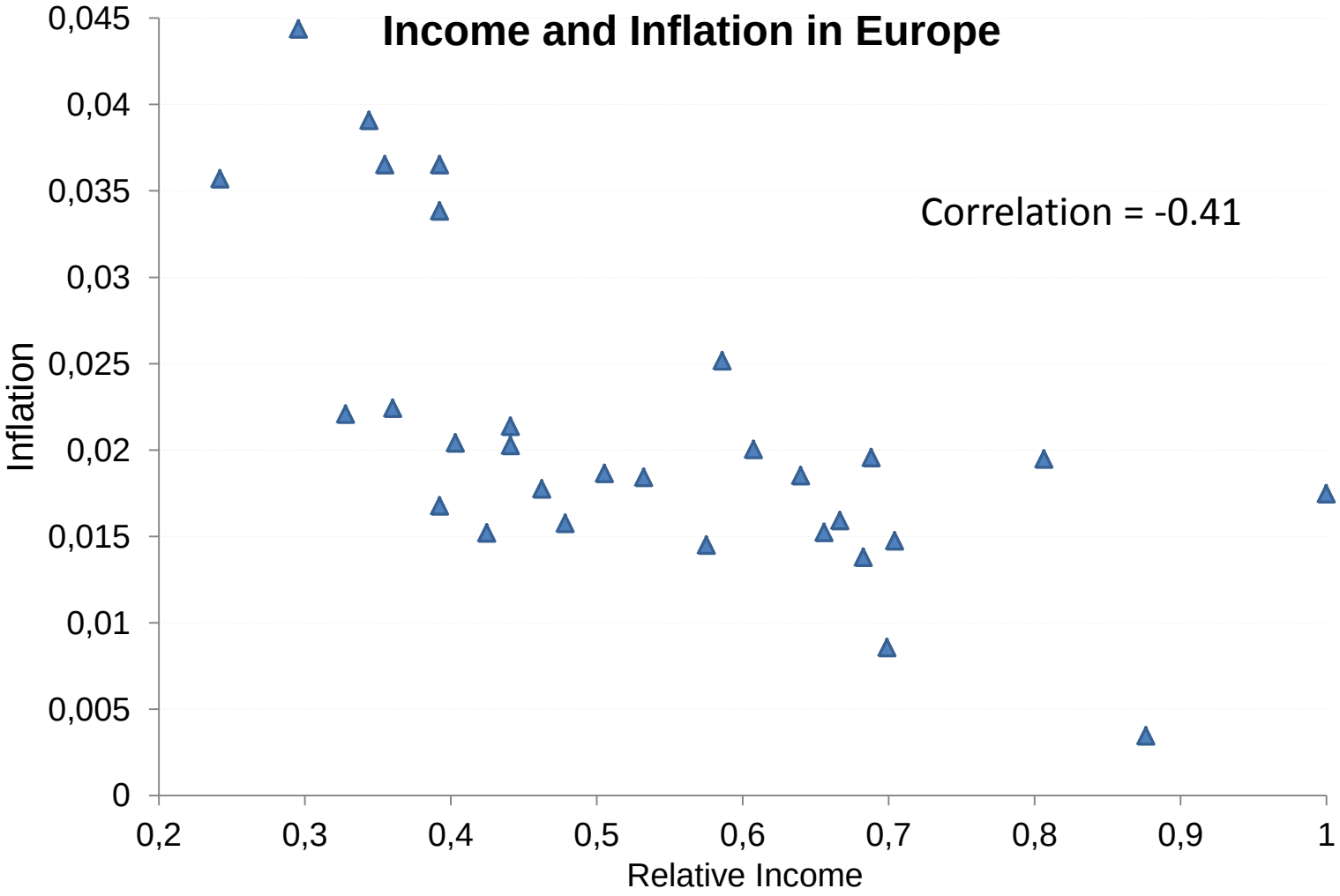
Developed Countries: USA, Euro Area, Japan, UK, Canada, Sweden, Switzerland, Norway, Israel.

Developing Countries: Brazil, Mexico, Turkey, Poland, Indonesia, S.Africa, Thailand, Czech Rep., Colombia, Hungary, Romania, Phillipines, Chile, Peru.

Source: Bloomberg, CBRT

Yorukoglu (2016)

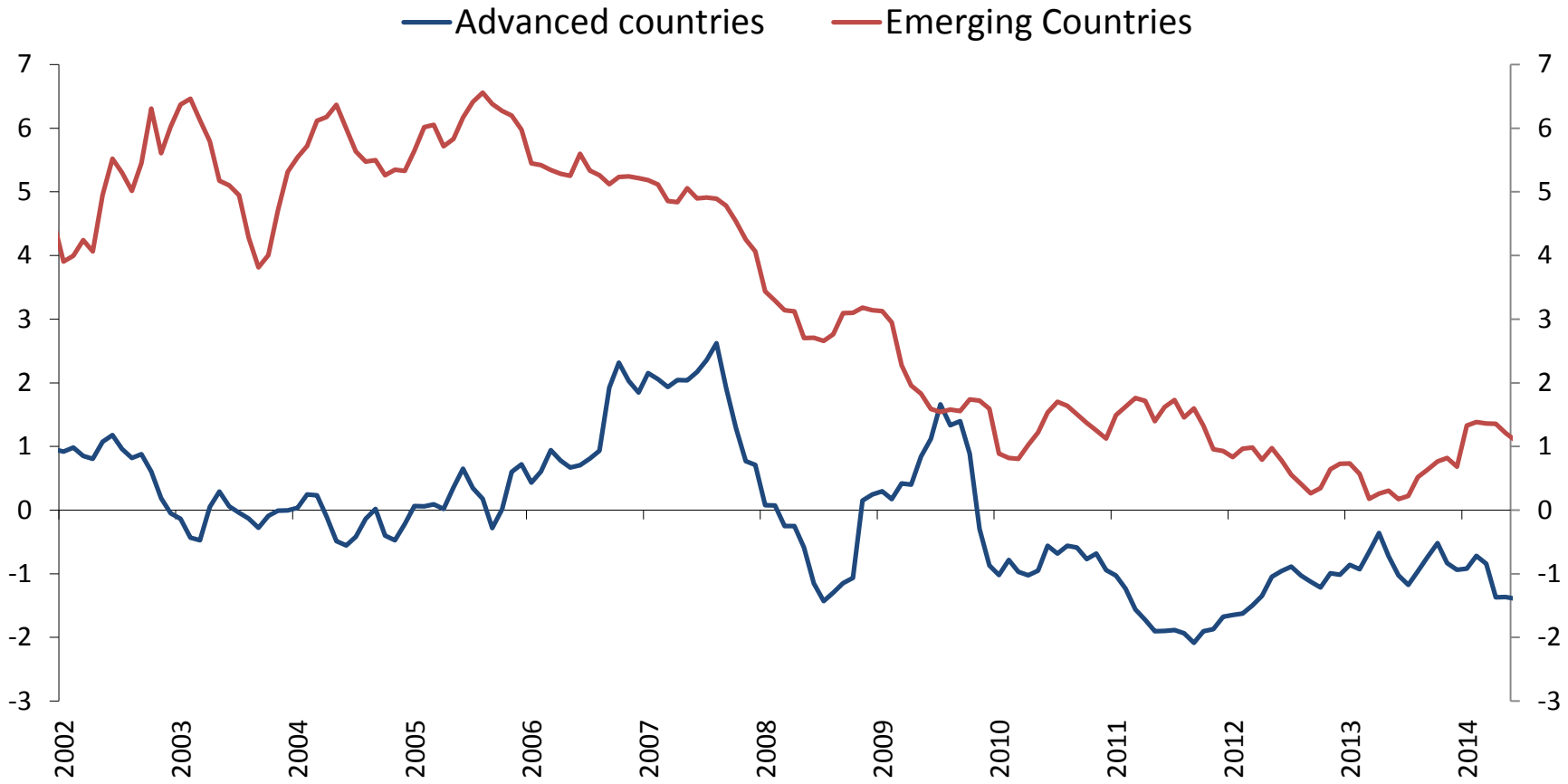
Income and Inflation Relationship



Source: Eurostat
Yorukoglu (2016)

Were Emerging Central Banks' Policies Loose?
What about the *real policy rates ?*

(per cent)



Source: Bloomberg.
Yorukoglu (2016)

* Emerging Countries: Brazil, Colombia, Czech Republic, Hungary, Indonesia, Mexico, Philippines, Poland, Romania, South Africa, Thailand, Turkey.
** Advanced Countries: Australia, Canada, Denmark, Eurozone, Israel, Japan, Norway, New Zealand, South Korea, Sweden, Switzerland, UK, US.

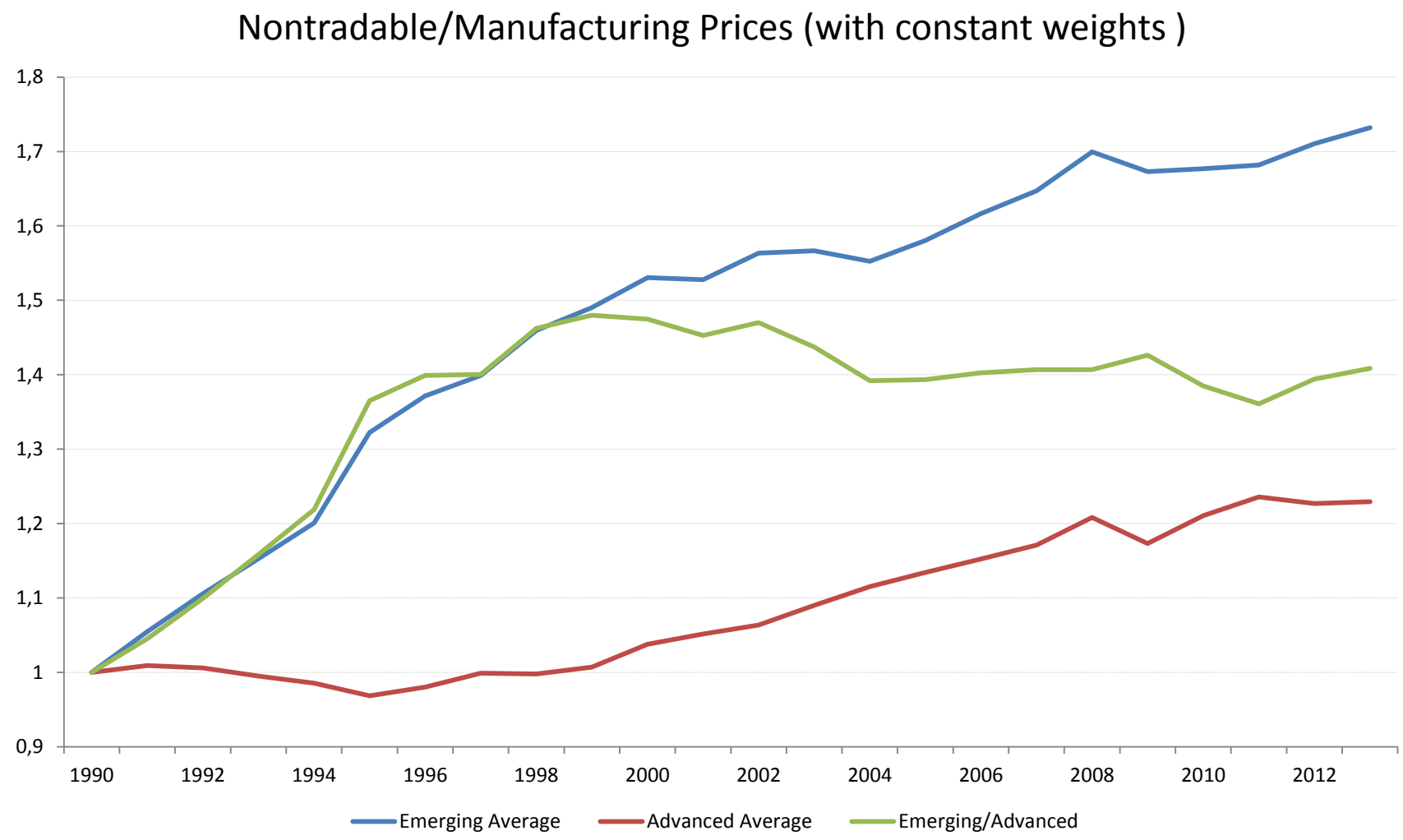
Were Emerging Central Banks' Policies Loose? What about the *real policy rates ?*

- Real policy rates used to be around 5 percent higher in emerging economies compared to advanced economies upto the global financial crisis. Since then, the wedge dropped to around 2 percent.

- Why doesn't inflation in emerging economies further come down?

- Why did emerging economy central banks' monetary stance become relatively looser?

Potential Explanations: *Balassa-Samuelson Effect?*



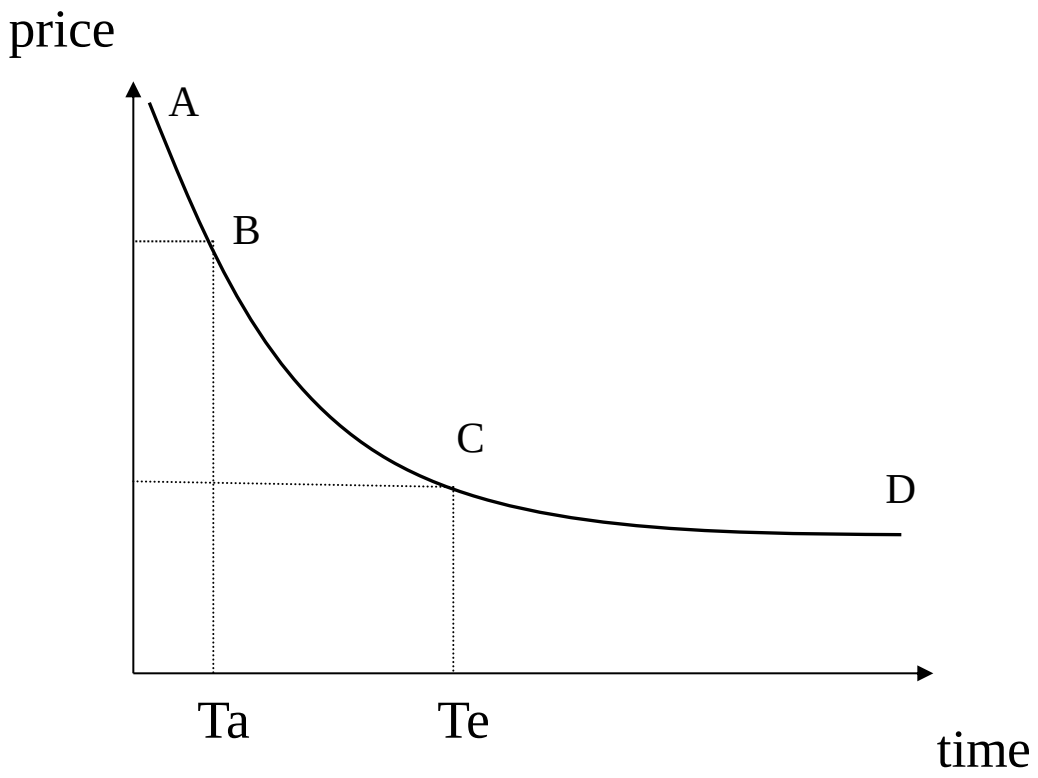
Source: Yorukoglu (2016)

Potential Explanations: *New-Good Bias*

- Yorukoglu (2016), ‘On the Price Stability Performance of North vs. South: *The Unconscious Armwrestling’*
  - Significant structural differences in CPI baskets between advanced and emerging economies.
  - The weight of new (usually *high-tech*) goods are higher in advance economy baskets. The price of new goods decline very rapidly: ***the new good bias*** in inflation.
  - Develops a simple North-South model to study the implications of the new good bias on inflation.

What's the *new-good bias*?

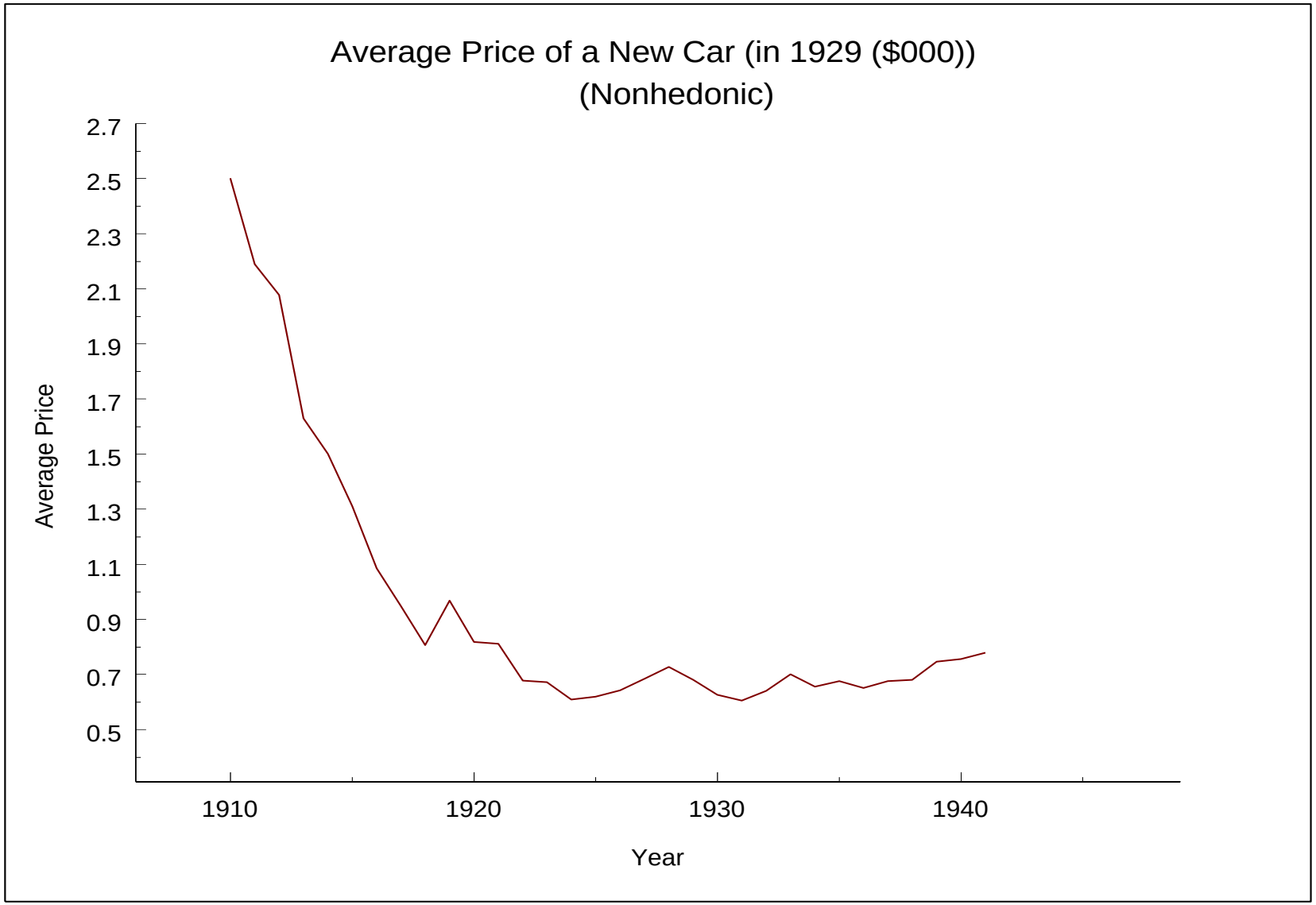
Price Profile after Innovation



- New good's price declines rapidly after its introduction to market. (curve AD)
- It enters into the CPI baskets of the advanced and developing economies at times Ta, and Te, respectively.
- The price decline along the curve (BC) is not accounted in EME's inflation measurement.

Yorukoglu (2016)

A Historical Example : Average Price of a New Car



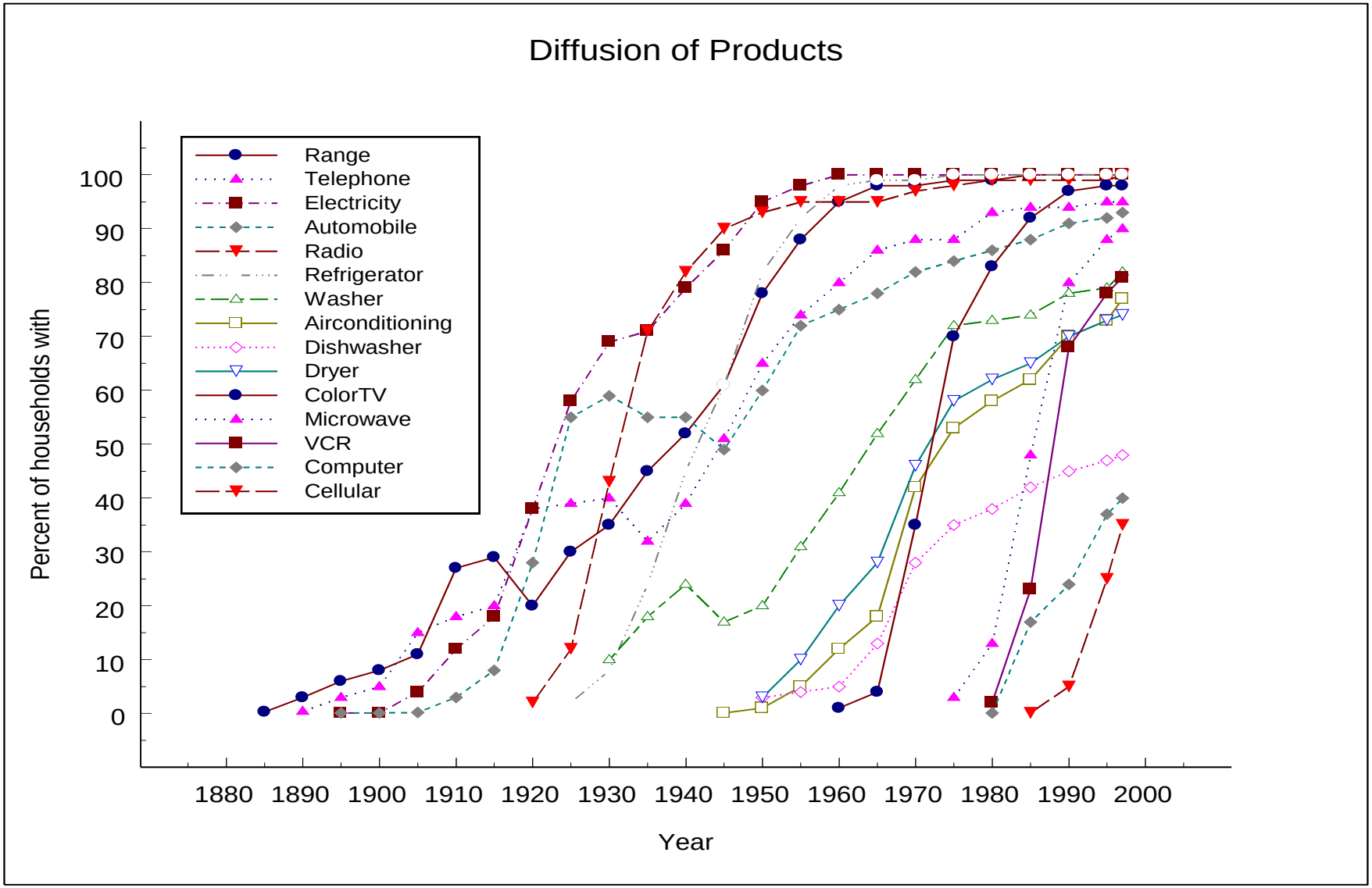
Yorukoglu (2016)

The *new-good bias* is becoming more significant

- In the last couple of decades:
  - Growth is mainly through innovation of new goods, i.e. speed of innovation has increased;
  - Diffusion of new goods is faster;
  - Price profile is steeper.

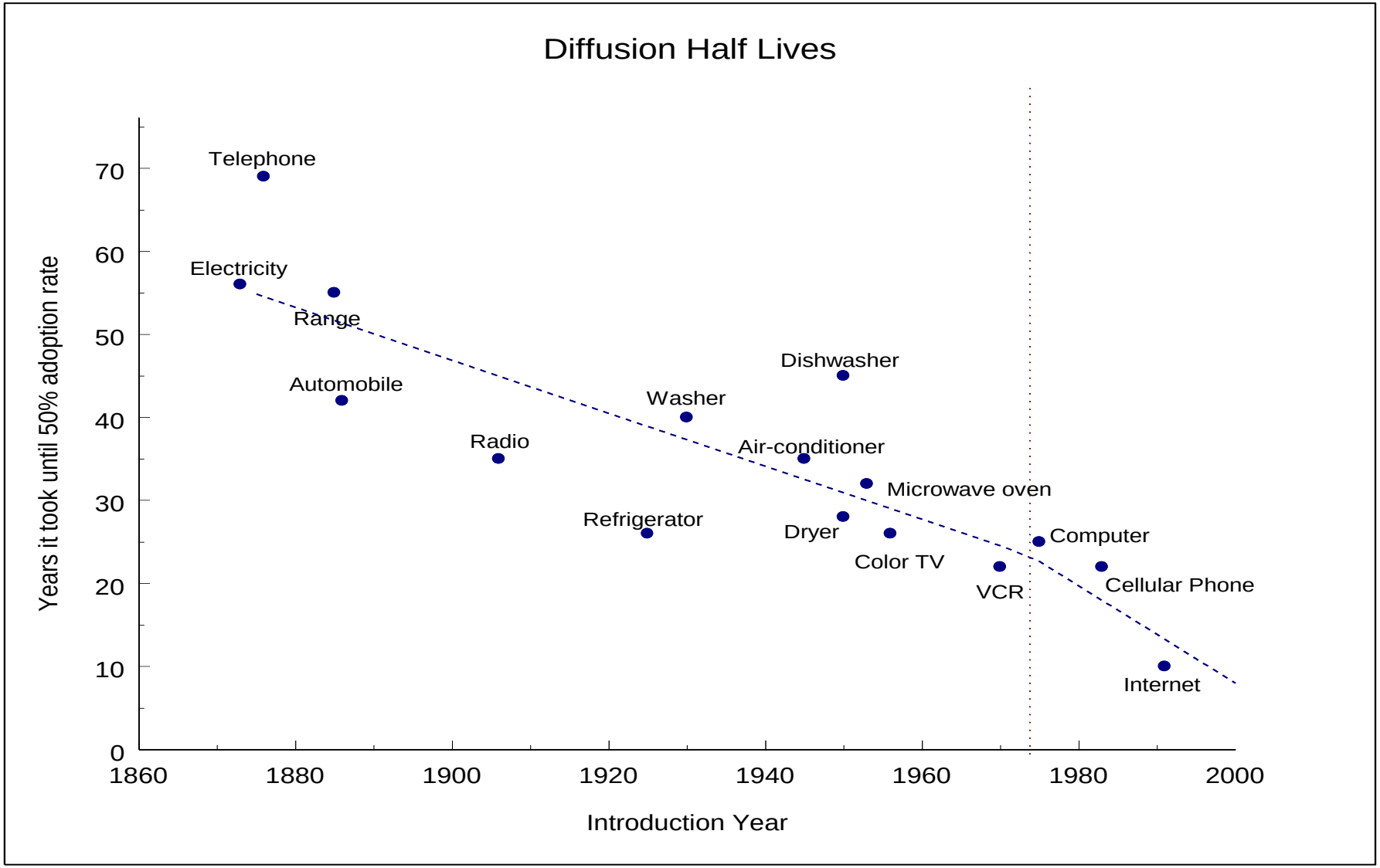
→ New-good bias has become more significant.

Diffusion of New Products



Yorukoglu (2016)

Diffusion Half Lives



Yorukoglu (2016)

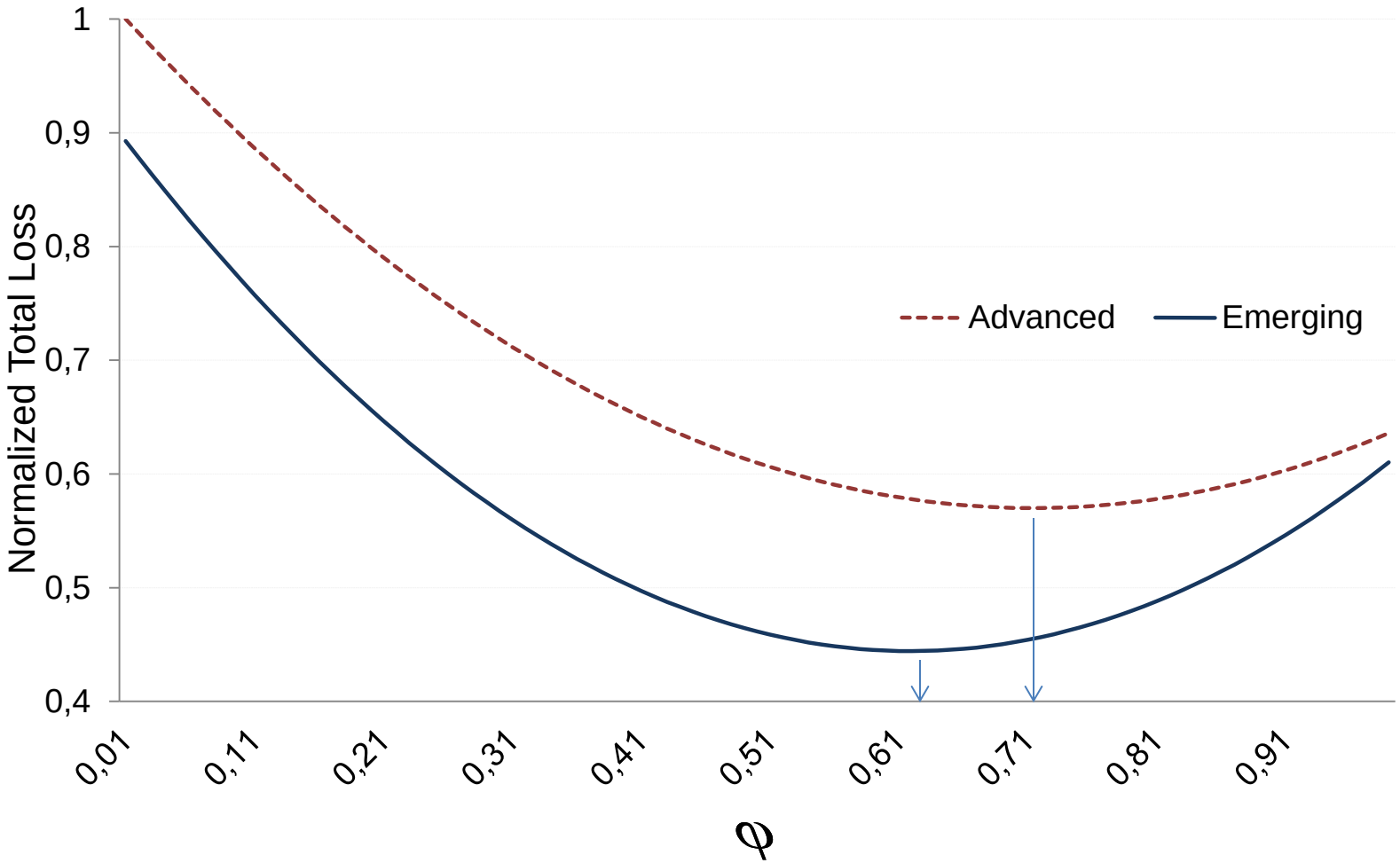
Impact of New Good Bias on Monetary Policy

- The disinflationary pressure created by the diffusion of new goods can be very significant.
  - This creates an assymmetric disinflationary pressure in North.
  - If central banks do not have *exchange rate concerns*, central banks in North and South target and achieve the same level of inflation, but the new good bias creates an appriciation pressure on Southern currency.
  - If central banks have exchange rate concerns, then Southern central banks try to eliviate the appreciation pressure, yielding relatively higher inflation levels in South.

Impact of New Good Bias on Monetary Policy

- Do central banks have exchange rate concerns?
  - Yorukoglu (2016) estimates *exchange rate augmented policy objective function* for advanced and emerging economies which follow IT.
  - Estimations show that central banks' estimated policy rules both in North and South exhibit significant exchange rate concerns.
  - Estimated exchange rate concern is stronger in South.
- Findings are parallel to
  - *Fear of float literature* a la Calvo and Reinhart.
  - *Trilemma indices* a la Aizenman.

Exchange-Rate-Augmented Policy Rule Parameters

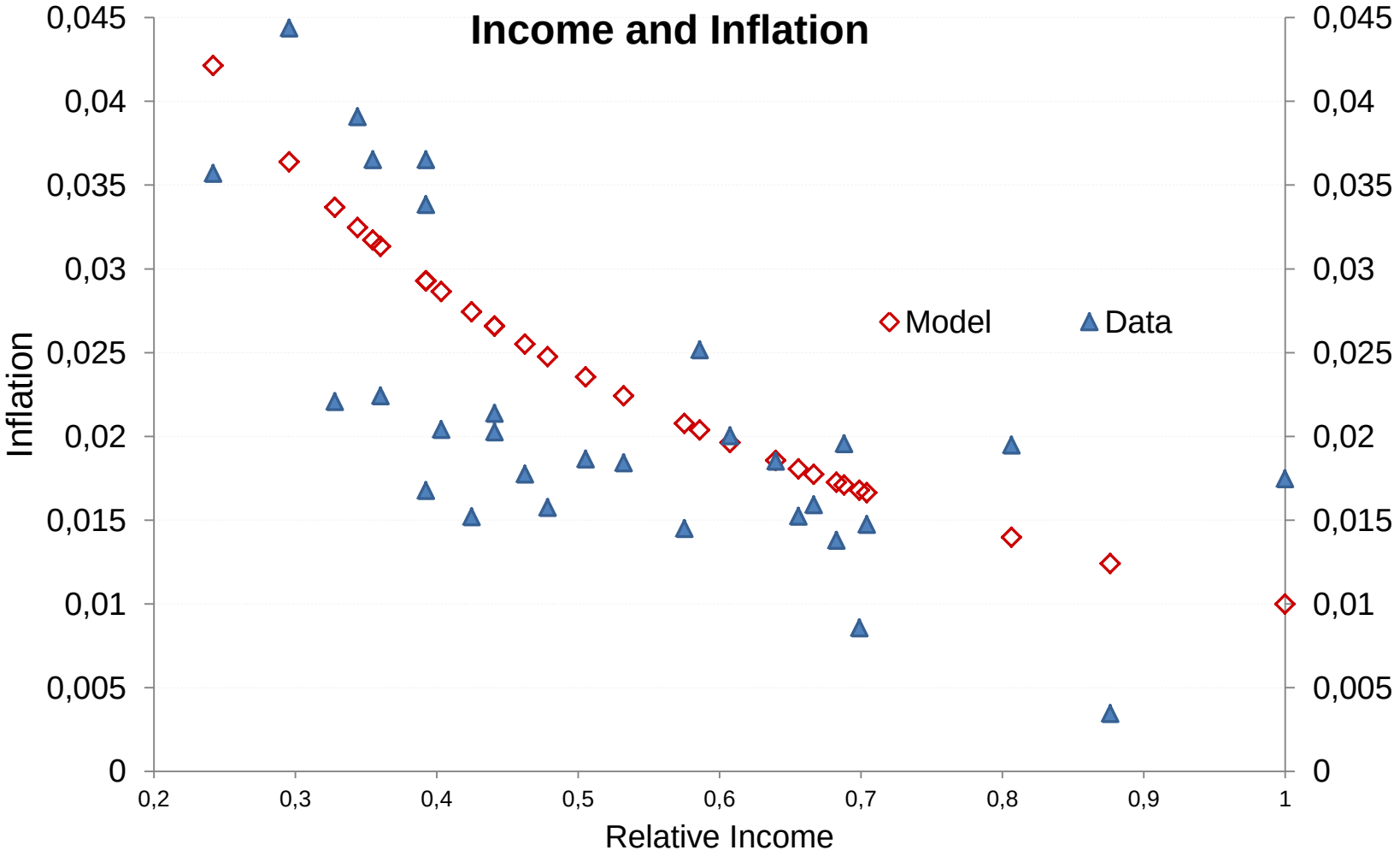


Yorukoglu (2016)

Impact of New Good Bias on Monetary Policy

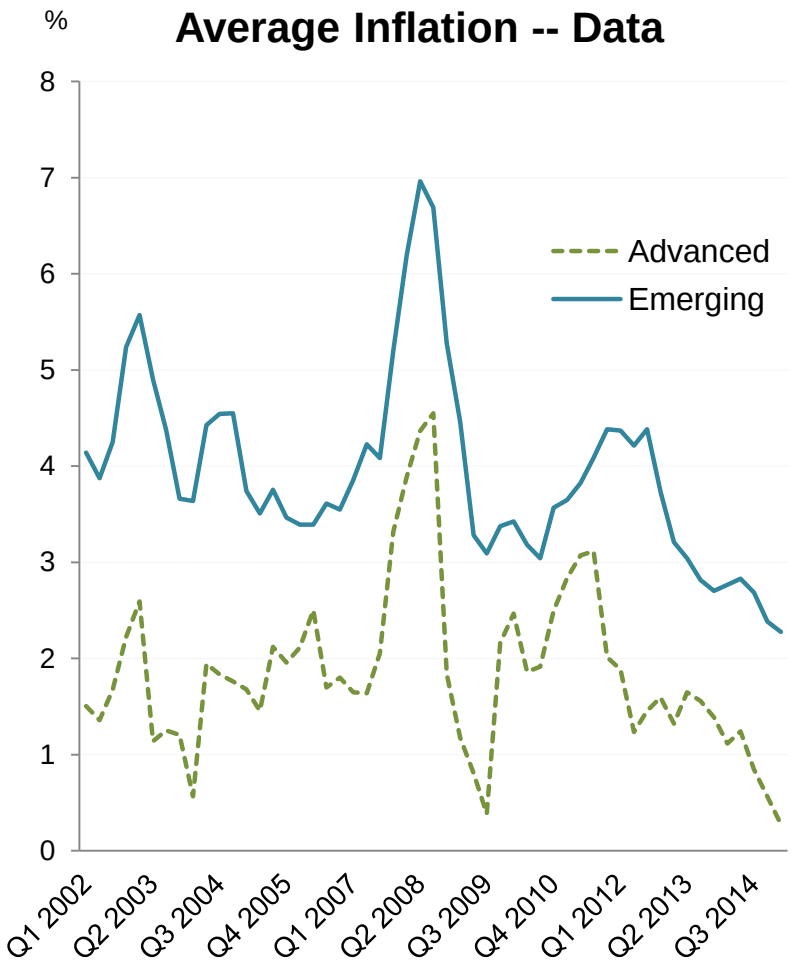
- With the estimated exchange-rate-augmented policy rules the model delivers a significant inflation wedge between North and South.
  - South has higher inflation compared to North.
  - Southern currency appreciates.
- Since both northern and southern central banks have exchange rate concerns, and their first best inflation level is the same (2%), there is an *unconsicious armwrestling* between North and South.
  - Northern central banks' monetary policies push southern inflation up.
  - Southern central banks' monetary policies push northern inflation down.

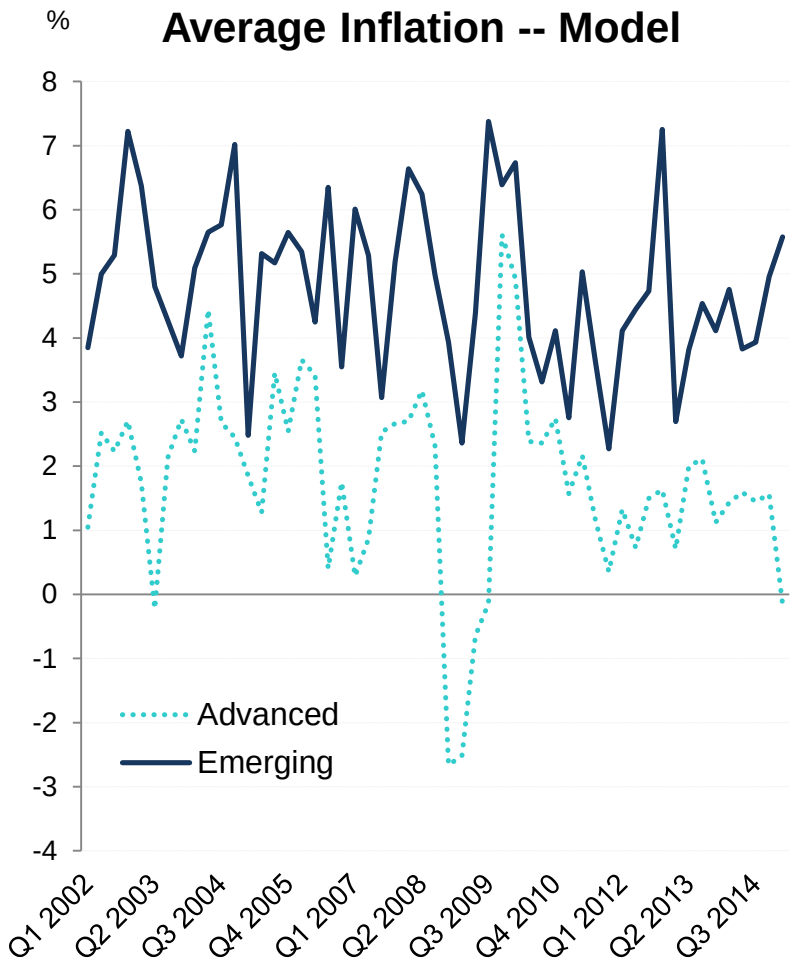
Income and Inflation Relationship



Yorukoglu (2016)

Average Inflation; Data vs. Model



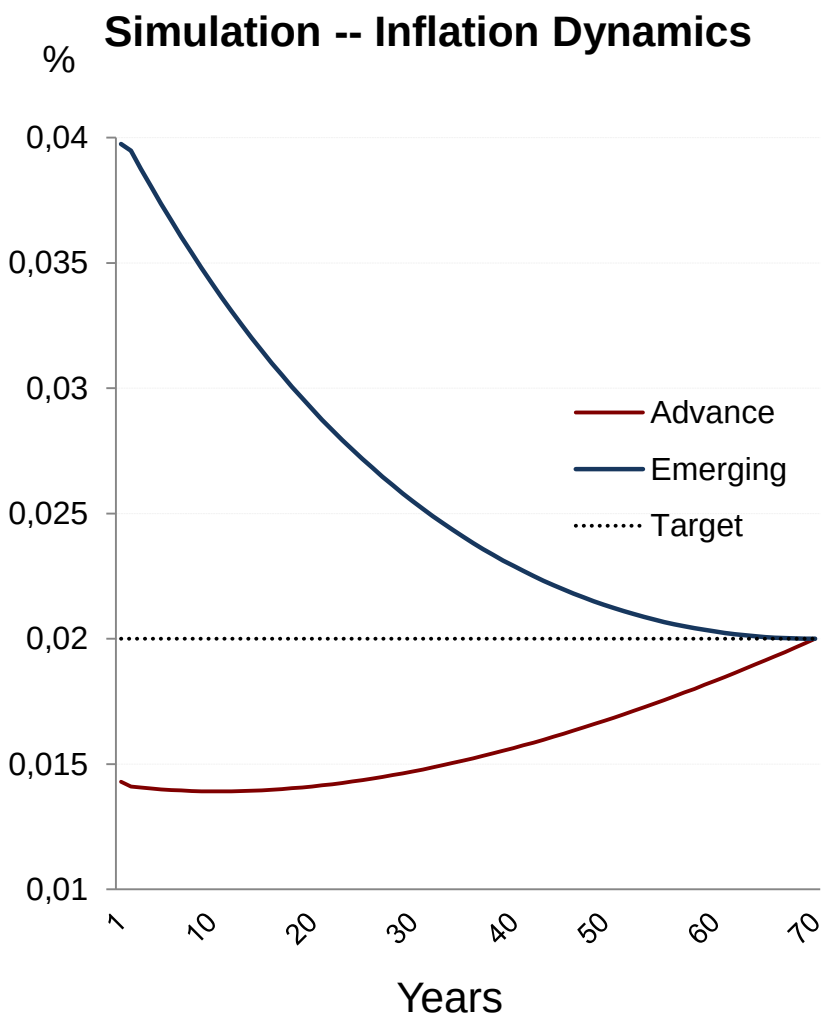


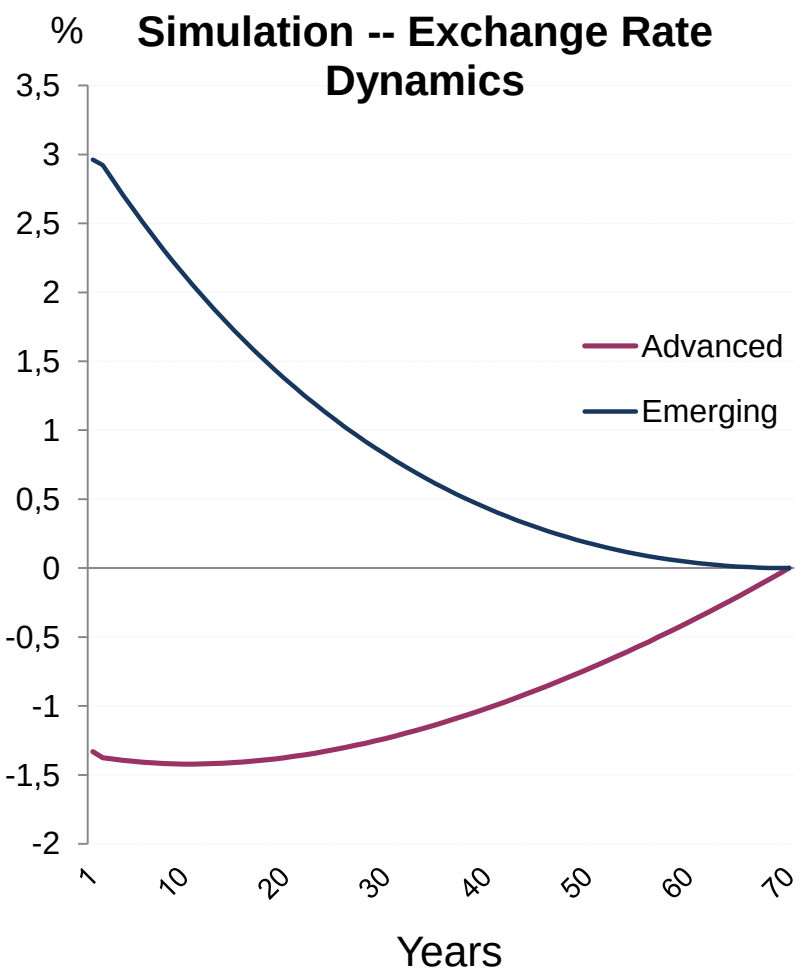
Yorukoglu (2016)

Impact of New Good Bias on Monetary Policy

- What happens to the North-South inflation wedge as convergence proceeds?
  - Let economic convergence between North and South continue so that there is complete convergence in the next 70 years.
  - The following graph exhibits inflation wedge, *unconsicious armwrestling* and exchange rate dynamics in the next 70 years.
  - Since South becomes more significant in the global economy, its push-down impact on Northern inflation becomes more severe in the next 10 years.
  - Northern inflation is pushed further down in the next decade and gradually goes up and converges to the best level (2%).
  - Southern inflation monotonically converges to the best level.

Simulation – The next 70 years:
The Unconsicious Armwrestling





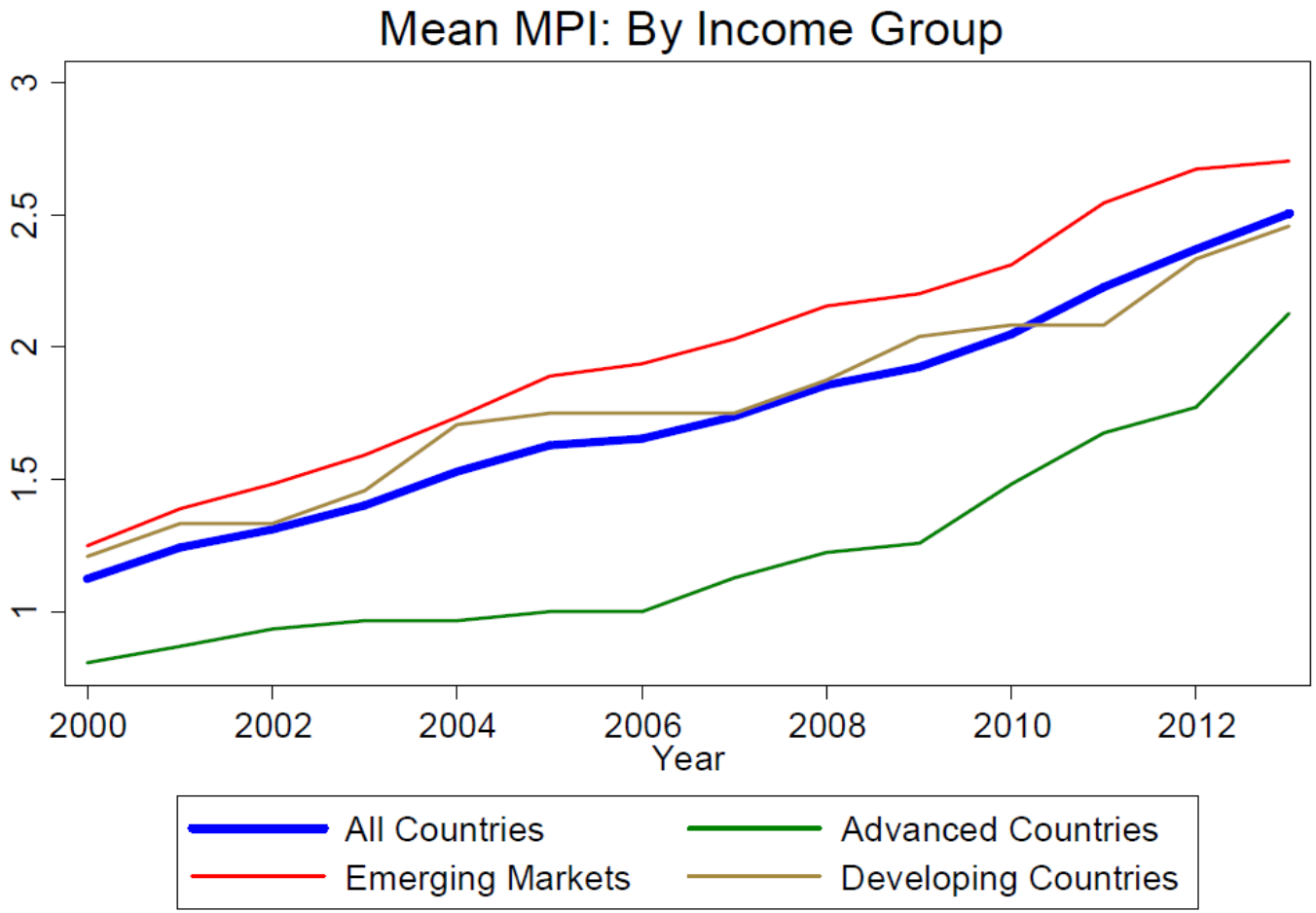
Yorukoglu (2016)

What can be done?

- A measurement issue after all.
- Try to overcome "*exchange rate concerns*".
- Emerging Economies should employ
  - higher inflation targets,
  - **macroprudential tools**,
  - tighter fiscal policy.

Use of Macroprudential Tools

Figure 1. The Macroprudential Policy Index by Income Level

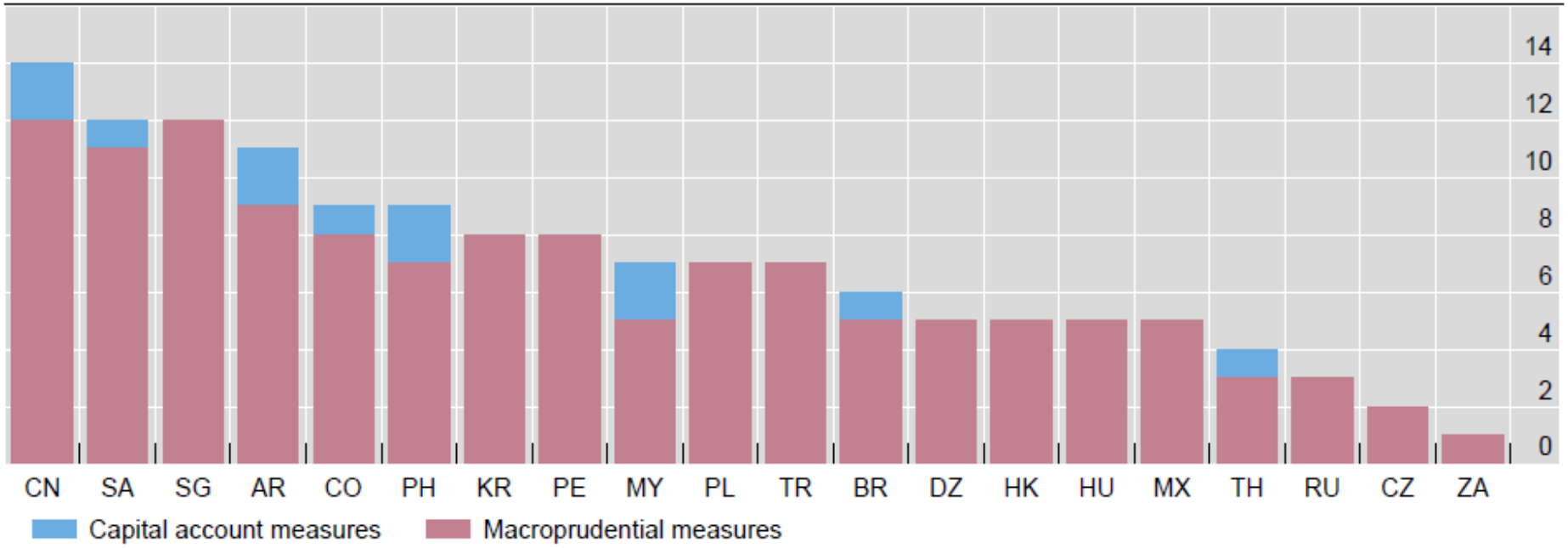


Source: Eugenio Cerutti, Stijn Claessens, and Luc Laeven, 2015.

Frequency of non-monetary policy measures among Emerging Economies

Number of non-monetary policy measures

Graph 3



[1] Sixteen measures are specified in the questionnaire. Replies from 11 central banks indicate measures in addition to the specified ones. See Annex Table A1 for details.

Source: BIS questionnaire, September 2013.

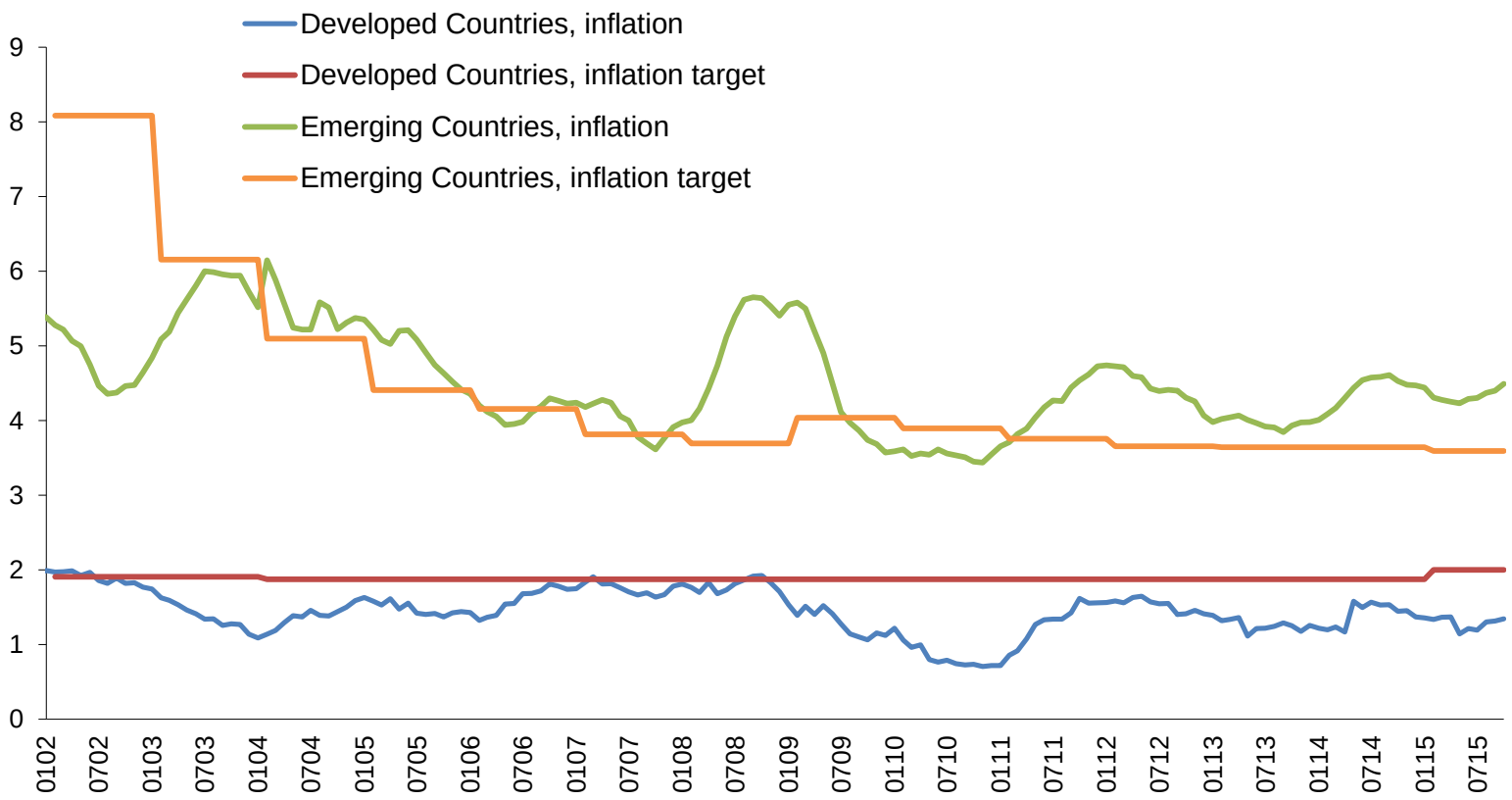
Source: Mohanty, BIS Papers 78.

Thank you.

Mehmet Yörükoğlu
Koç University

Financial Cycles and Policy Response in Latin America Workshop
Financial Stability and Development (FSD) network of the IADB with the Consultative Council of the Americas (CCA) group of the BIS
Buenos Aires, November 21-22, 2016, Central Bank of Argentina

Core Inflation and Targets
(inflation targeting countries)



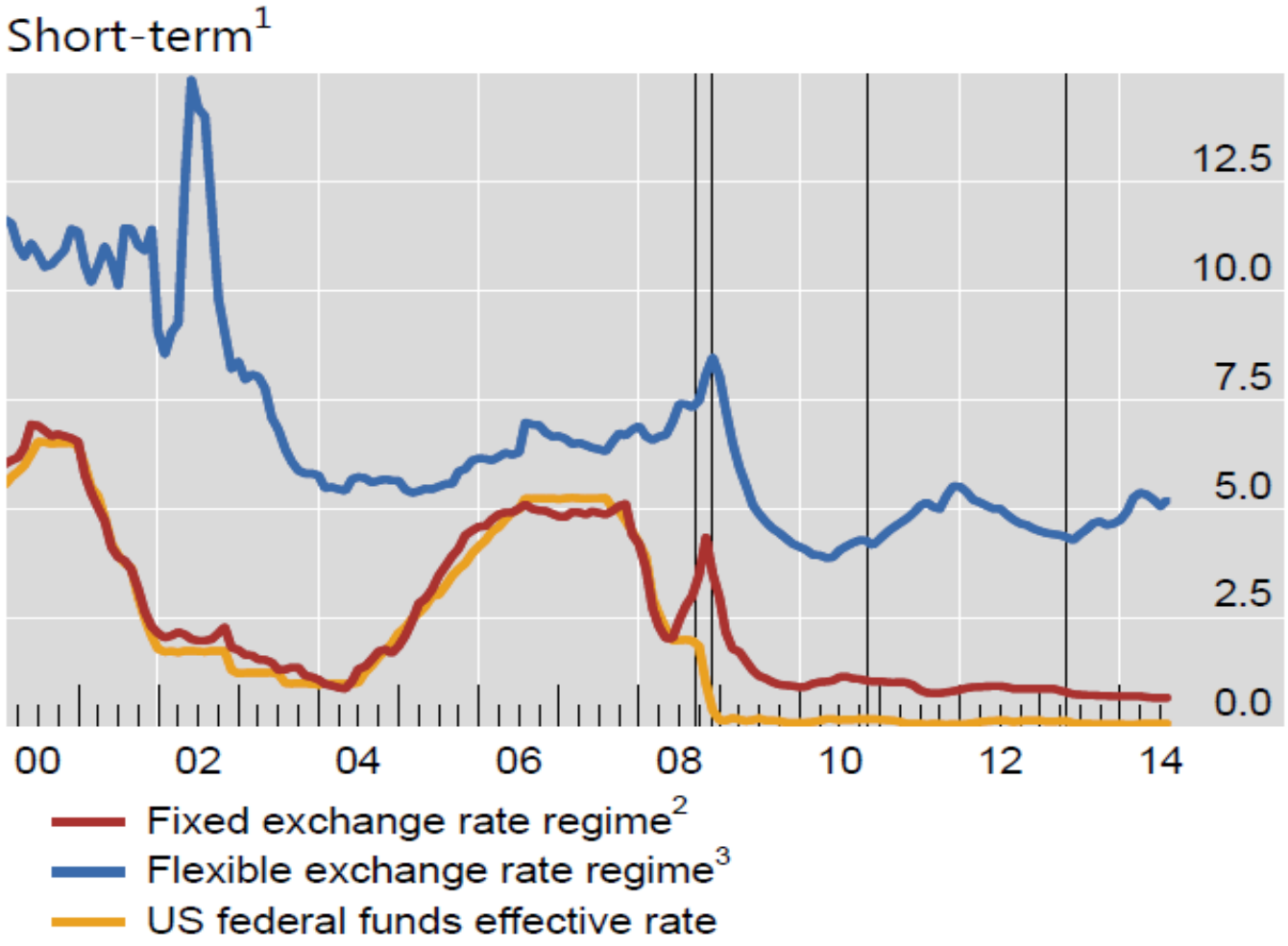
Developed Countries: USA, Euro Area, Japan, UK, Canada, Sweden, Switzerland, Norway, Israel.

Developing Countries: Brazil, Mexico, Turkey, Poland, Indonesia, S.Africa, Thailand, Czech Rep., Colombia, Hungary, Romania, Phillipines, Chile, Peru.

Source: Bloomberg, CBRT

Yorukoglu (2016)

Spillover from Fed's Policy



Source : Mohanty, BIS Papers 78