Responses to Monetary Policy Shocks in the East and the West of Europe

A Comparison

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Question: How different is the response of NMS, EA to monetary policy shocks?

Interesting; relevant for the decision on euro adoption by NMS

This paper:

- estimates structural VARs for
  - NMS: Czech Rep., Hungary, Poland, Slovenia
  - EA: Finland, France, Italy, Portugal, Spain
    sample 1987-1998, *before euro!*
- identifies responses to a Monetary Policy shock, compares them

Findings

- higher inflation in the NMS in the 1990's
  - theory: → less sticky prices → steeper Phillips curve
  - FINDING: indeed, steeper Phillips curve in NMS
- structural differences
  - (previous literature) small NMS financial sector → weaker transmission?
  - FINDING: no evidence of weaker transmission

Bottom Line: monetary transmission broadly similar; perhaps even stronger in NMS
Main Difference: steeper NMS Phillips curve (lower output cost of disinflation) when inflation was higher, after 2000 this effect disappeared

Question: Can we conclude that after euro adoption transmission will be broadly similar in NMS and current EA?

Caveat: VAR is a reduced form model

- NOT OK for predicting what happens when NMS adopt the euro (regime change)
- OK for stylized facts
- OK for comparing initial conditions (pre-euro)

Answer: Yes, *provided* transition to the euro regime similar in the NMS

Challenges:

- identification of MP shocks
- wide error bands (esp. with short samples) $\rightarrow$ exploit panel dimension to tighten them

VAR specification

- output (Index of Industrial Production)
- prices (CPI)
- interest rate (Money Market Interest Rate)
- exchange rate vs euro/DM

6 lags, monthly data

Identification

Choleski (recursive) $\rightarrow$ bad idea:

- found to produce price puzzle in open economies (e.g. Kim, Roubini 2000)
- in small open economies wrong to ignore simultaneity interest rate / exchange rate

Instead in this paper

- sign restriction: contractionary MP shock $\rightarrow$ currency appreciation
- Some recursivity retained: output and prices respond with a lag of at least 1 month $\rightarrow$
- Central Banks of open economies respond to external developments $\rightarrow$ so control for German, US and World variables (exogenous in the VAR)

$$y_t = C(L)x_t + B(L)y_{t-1} + u_t$$

$$\begin{pmatrix} + & 0 & 0 & 0 \\ \bullet & + & 0 & 0 \\ \bullet & \bullet & + & + \\ \bullet & \bullet & - & + \end{pmatrix} \begin{pmatrix} \upsilon_{it1} \\ \upsilon_{it2} \\ \widehat{\upsilon_{it3}} \\ \upsilon_{it4} \end{pmatrix} = \begin{pmatrix} u_{it1} \\ u_{it2} \\ u_{it3} \\ u_{it4} \end{pmatrix} \begin{matrix} \leftarrow \text{output innovation} \\ \leftarrow \text{price innovation} \\ \leftarrow \text{interest rate innovation} \\ \leftarrow \text{exchange rate innovation} \end{matrix}$$

Problem in interpreting the literature: hard to compare impulse responses from different papers - different VAR specifications, identification schemes.

Strategy of this paper

- variables, lags, identification *the same* for all countries
- similar sample length
- drop countries/periods when no data or identification not appropriate:
  (quasi-)fixed exchange rates (Austria, Belgium, Netherlands, Bulgaria, Baltic), start NMS samples when exchange regimes flexible, data problems (Ireland, Greece), thin interbank markets? (Slovakia, Romania), Germany exogenous

Exploiting the panel dimension

short samples $\Rightarrow$ wide error bands
this paper's strategy: use the panel dimension, focus on regions as a whole

Separate estimation for each panel (NMS and EA)

Within each panel: pooling information across countries

- NOT assuming that country VARs within region are the same $\Leftarrow$ inconsistent if in fact heterogeneity + time series model (Pesaran, Smith 1995); in practice poor fit
- Bayesian estimation with the prior that country VARs are 'similar'

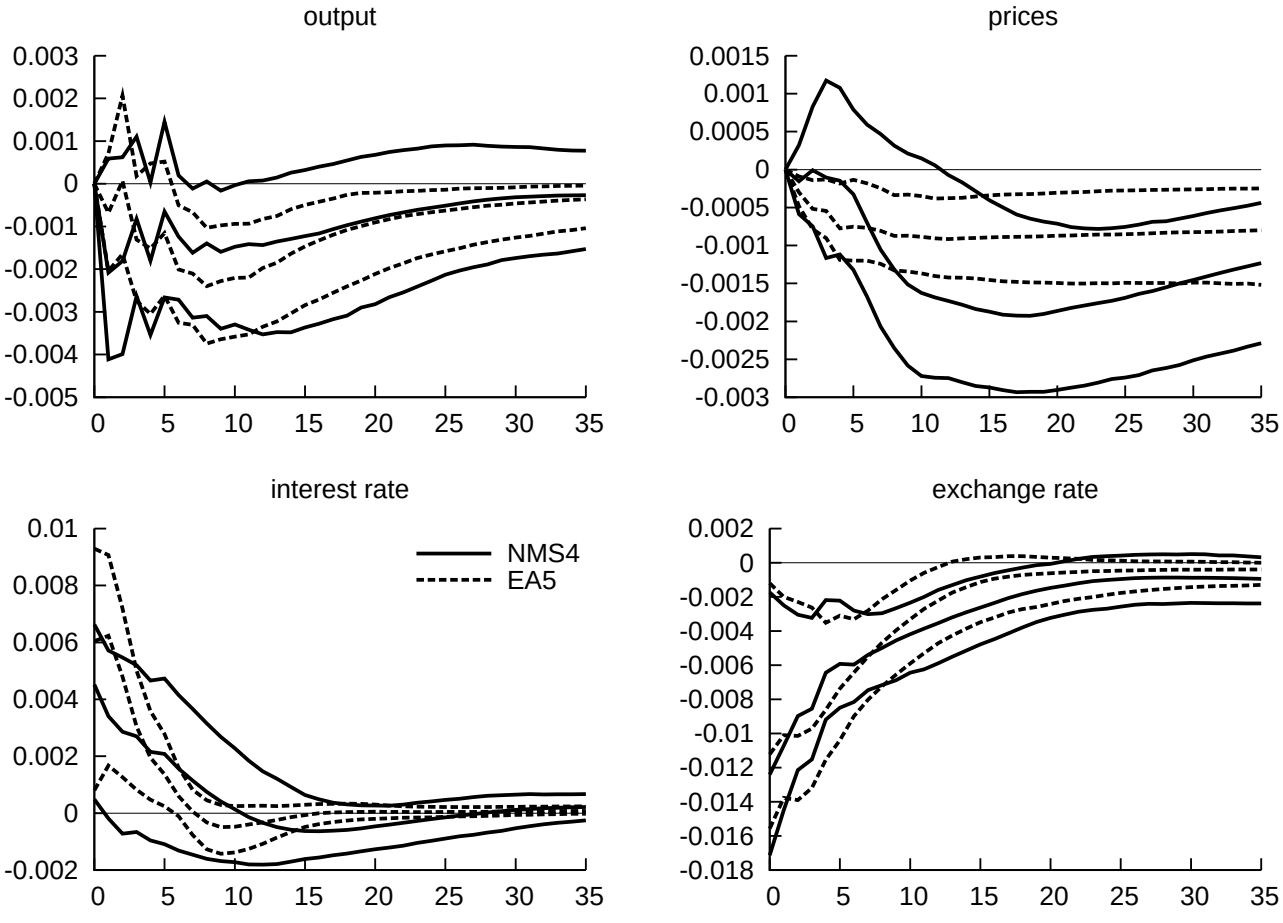
Prior

- β_i - a vector gathering coefficients from the reduced form VAR for country *i*
- exchangeable prior for β_i:

$$p(\beta_i) = N(\bar{\beta}, \lambda L) \tag{1}$$

- λ determines shrinking towards the common mean $\bar{\beta}$
  - $\lambda = 0$ - panel estimation
  - big λ - individual country estimation.
- noninformative prior for the common mean $\bar{\beta}$
- noninformative prior for λ! (Gelman, Carlin, Stern, Rubin 2005)

Mean impulse responses of regions ($\bar{\beta}$)

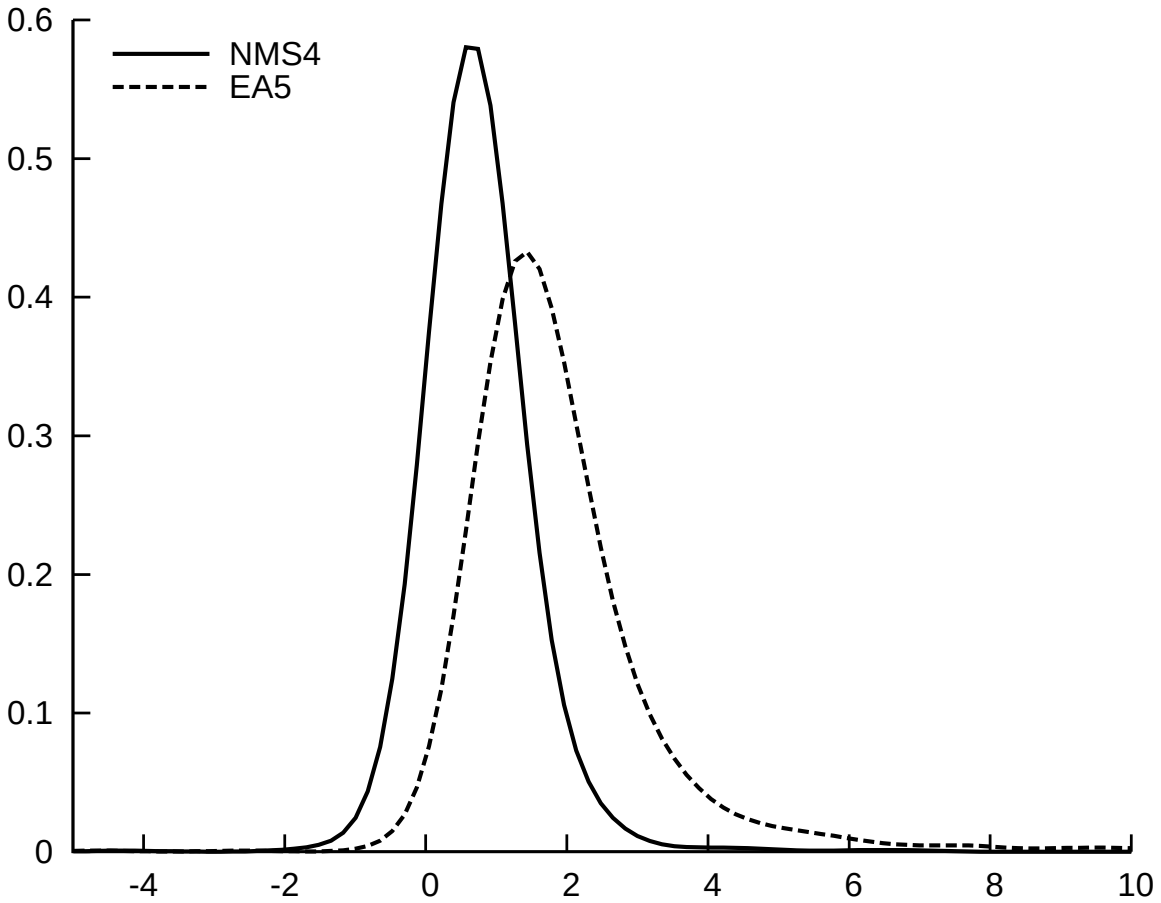


median, 90pct. band

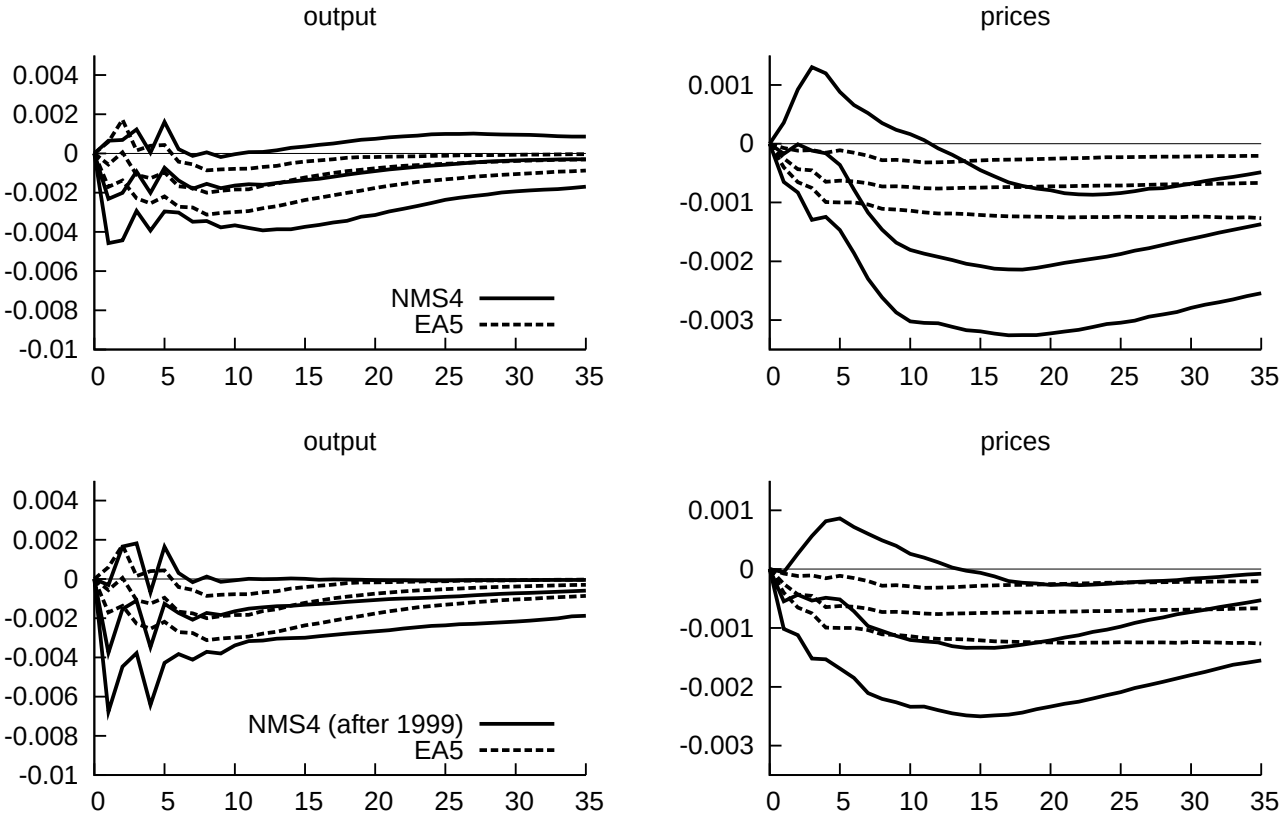
Output cost of disinflation
measured as: conditional on a MP shock,
...cumulative output loss in 24 months,
...divided by the response of prices after 24 months

a variation on Cechetti and Rich (2001)

Output cost of disinflation

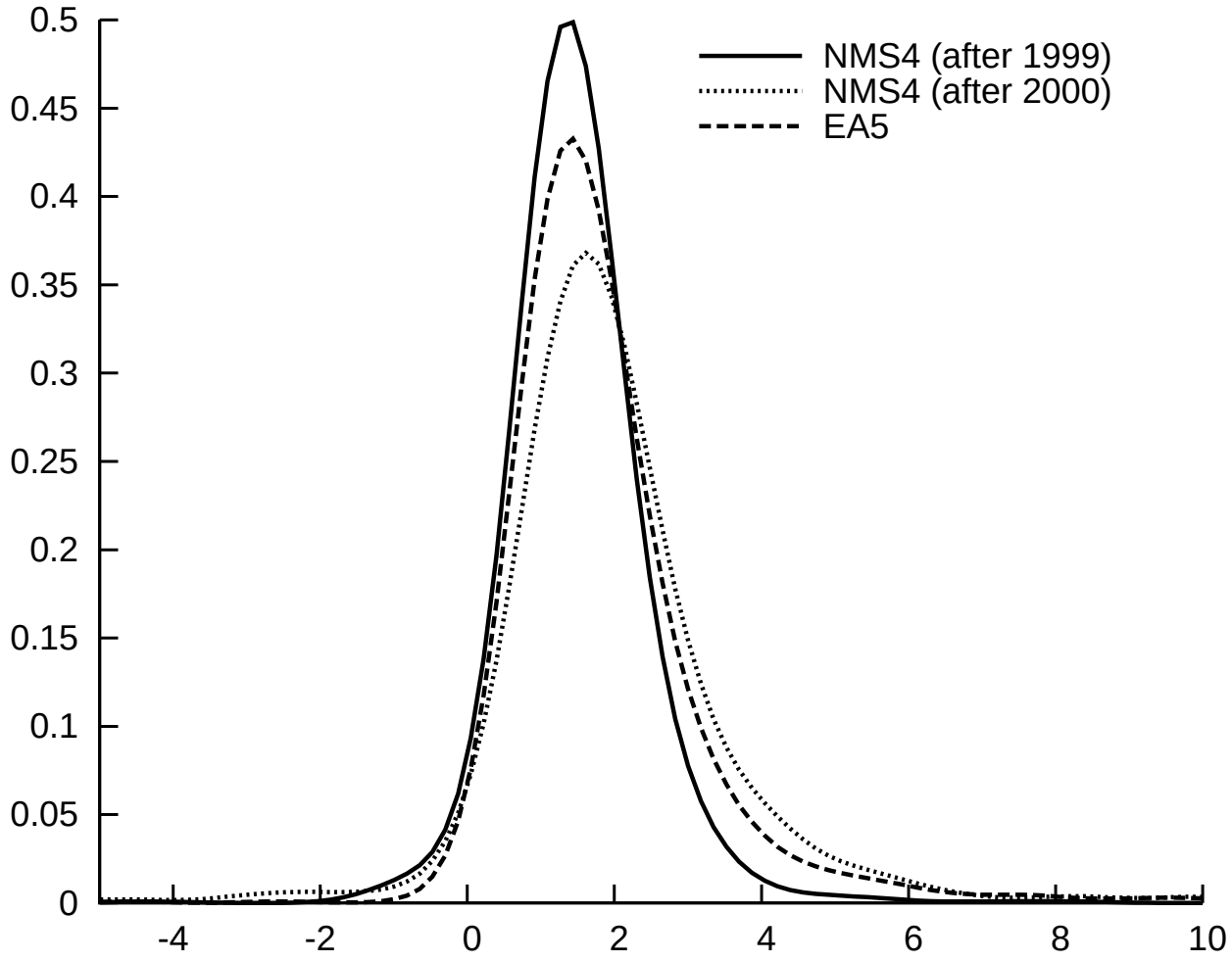


What happens when omit high inflation period (1990's):

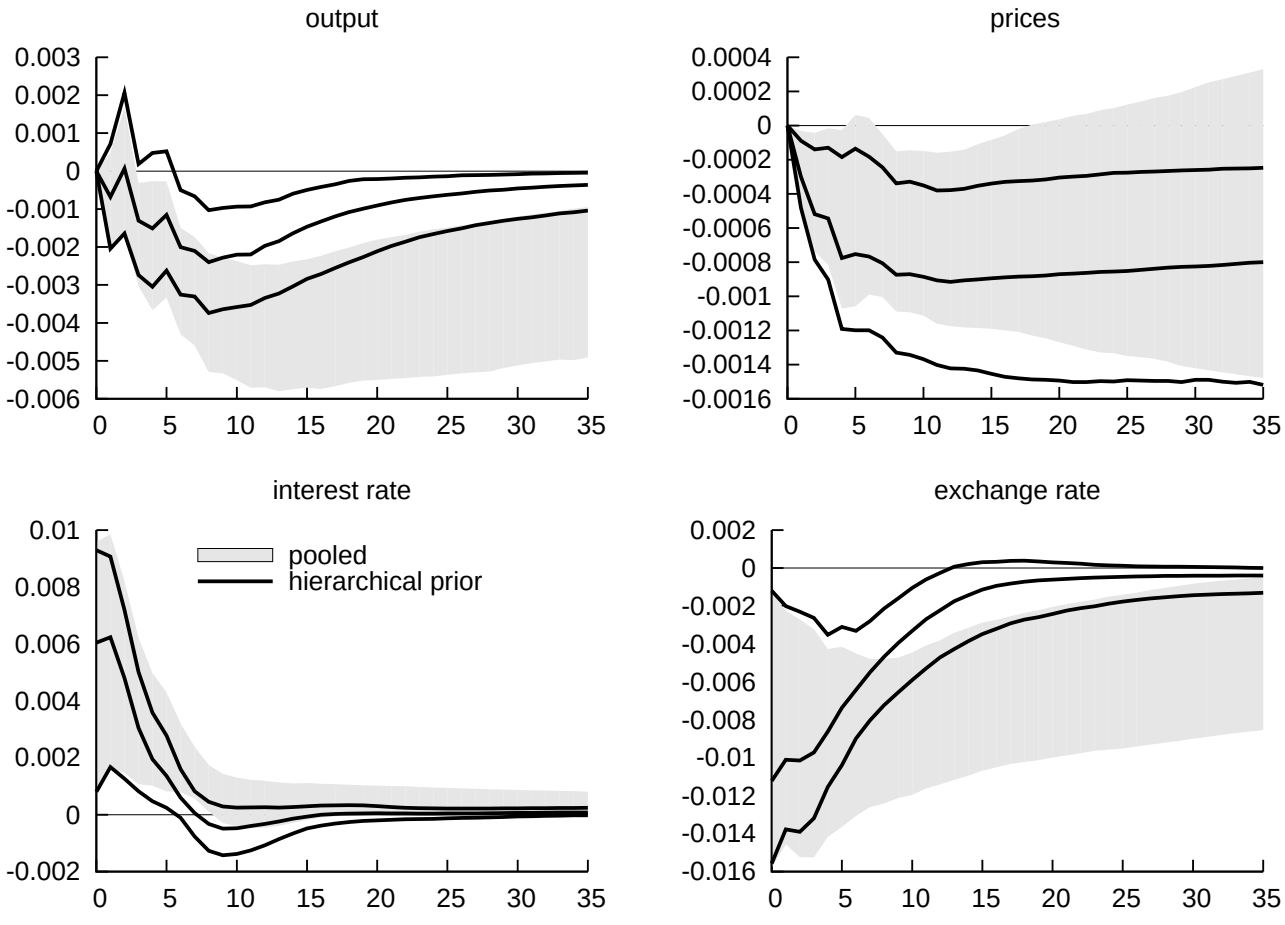


Mean impulse responses to a 50bp MP shock: full sample and sample after 1999

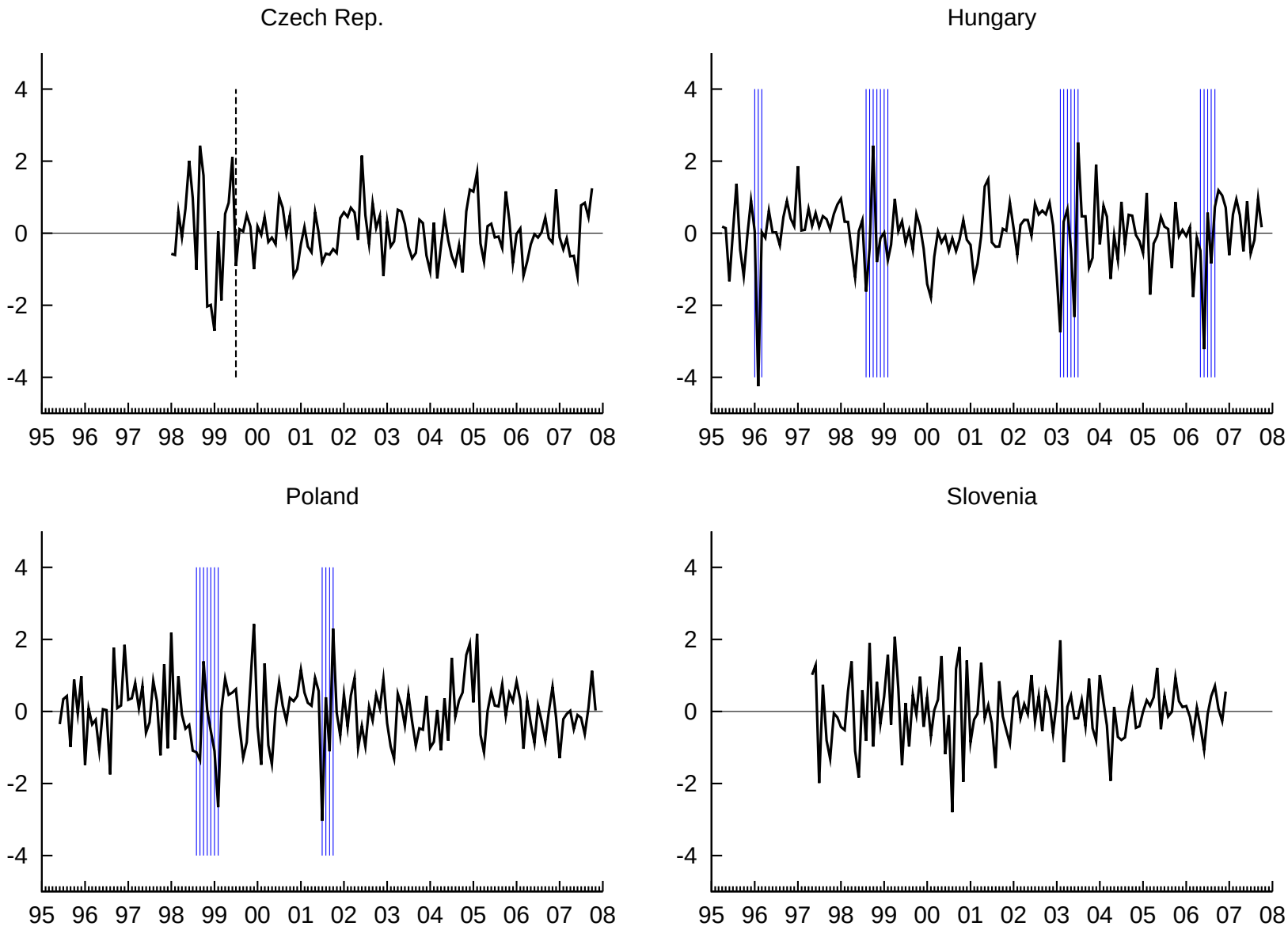
Comparing output cost of disinflation: NMS in late samples



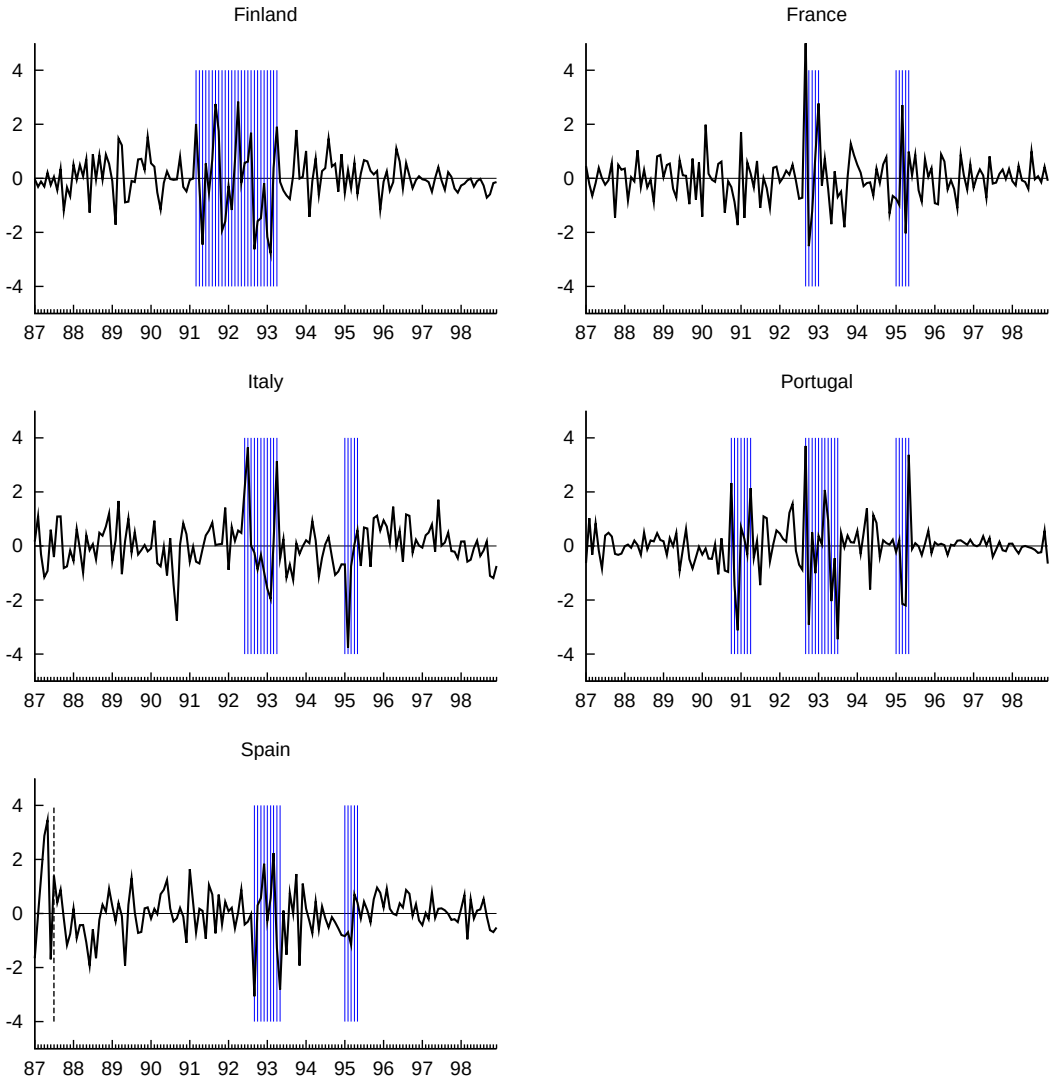
The dangers of assuming homogeneity: EA5



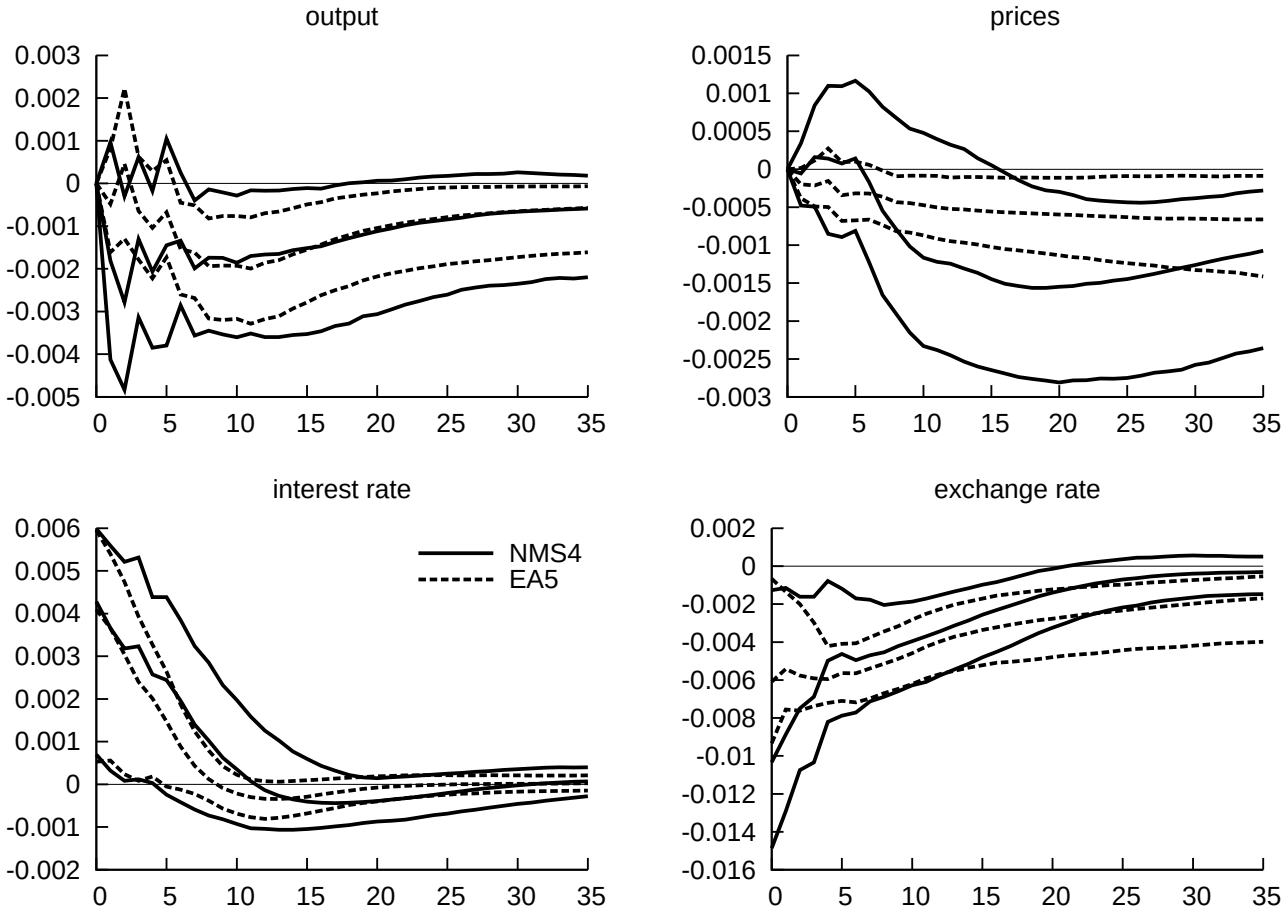
Volatile periods in the NMS



Volatile periods in the EA countries

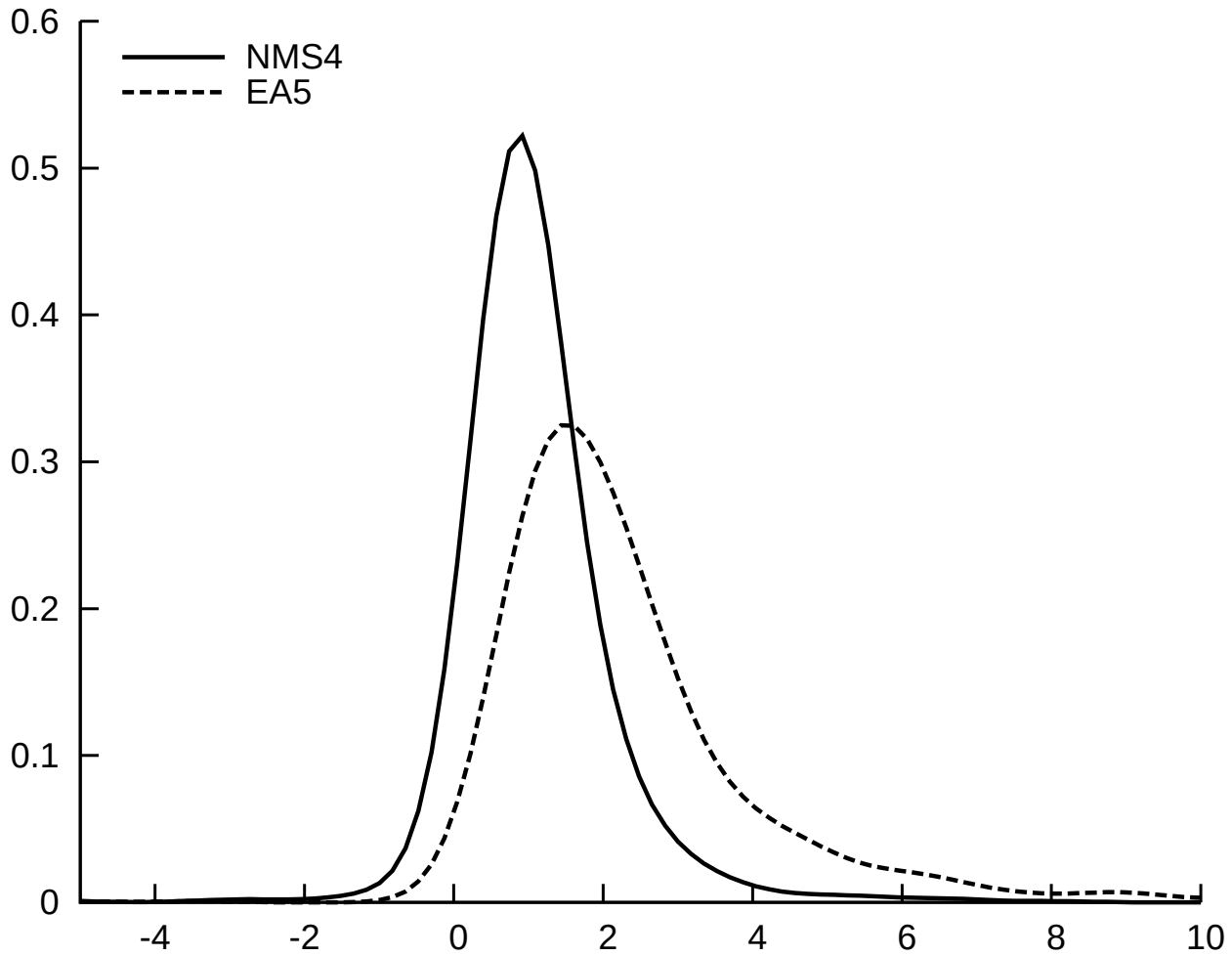


Impulse responses estimated with dummies in volatile periods



Mean impulse responses to a 50bp MP shock: full sample and sample after 1999

Comparing output cost of disinflation with dummies in volatile periods



Other robustness checks discussed in the paper

Conclusions

- high inflation periods in NMS $\rightarrow$ steeper Phillips curve in NMS (consistent with the prediction of models with endogenous price stickiness)
- rule of thumb 'smaller financial sector $\rightarrow$ weaker transmission' NOT CONFIRMED, monetary transmission in the NMS does NOT appear weaker than in EA

Further research needed on

- channels of transmission in NMS, EA (relative importance of the exchange rate channel)
- what changed in the EA countries after euro adoption