Constraints on Exchange Rate Flexibility in Transition Economies: a Meta-Regression Analysis of Exchange Rate Pass-Through

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Evolution of Exchange Rate Regimes in Transition Economies

- **Early transition, preferred monetary strategy - exchange rate pegging**
  - Weak or absent financial markets
  - Undeveloped market institutions
  - Deficient knowledge for conducting monetary policy
- **Initial success**
  - Inflation reduced
  - Credibility improved
- **Different subsequent choices by transition economies**
  - Several switched to more flexible ER systems
 - Many stuck to fixed ER systems
    - Widespread "fear of floating"

Volatility (SD) of exchange rates and foreign exchange reserves for transition countries versus Euro area (Germany) and Japan, January 1995 – December 2005

Country	SD of exchange rate	SD of foreign exchange reserves	Ratio of SD of foreign exchange reserves to SD of exchange rate
Albania	3.95	7.96	2.02
Bosnia & Herzegovina	-	9.82	-
Bulgaria	-	13.87	-
Croatia	1.85	3.82	2.06
Czech Republic	2.28	4.42	1.93
Estonia	-	7.47	-
Hungary	1.99	7.30	3.66
Macedonia	1.85	12.71	6.87
Latvia	1.99	5.61	2.81
Lithuania	-	7.24	-
Poland	2.69	7.30	1.55
Romania	5.27	12.71	1.71
Slovakia	1.55	5.61	5.25
Slovenia	0.93	7.30	5.81
Average	*2.44 (1.89)*	*7.69*	*3.37*
Germany (Euro area)	2.79	3.04	1.09
Japan	3.32	2.94	0.89

Determinants of "Fear of Floating" in Transition Economies

1. **Openness** (imports plus exports as a share of GDP) (average for 1995-2007)
   - Transition countries: 106% (↑17 p.p.)
   - Developed countries: 74% (↑7 p.p.)

2. **Euroisation**
   - High share of foreign currency deposits in total deposits - between 10% in Czech Republic and over 80% in Croatia (Figure)

- Higher openness + euroisation $\Rightarrow$ higher **exchange rate pass-through (ERPT)!**

- **Concern to the transition countries:**
  - **Variability of nominal ER $\Rightarrow$ Variability of domestic prices**
  - **The higher the ERPT, the higher the variability of domestic prices**
  - **Inconsistent with price stability**

- **Meta-regression analysis to inform policy**

Foreign currency deposits as a share of total deposits in transition countries 1995-2007

□ Average level of euroisation during 1995-2007

■ Highest level of euroisation during 1995-2007

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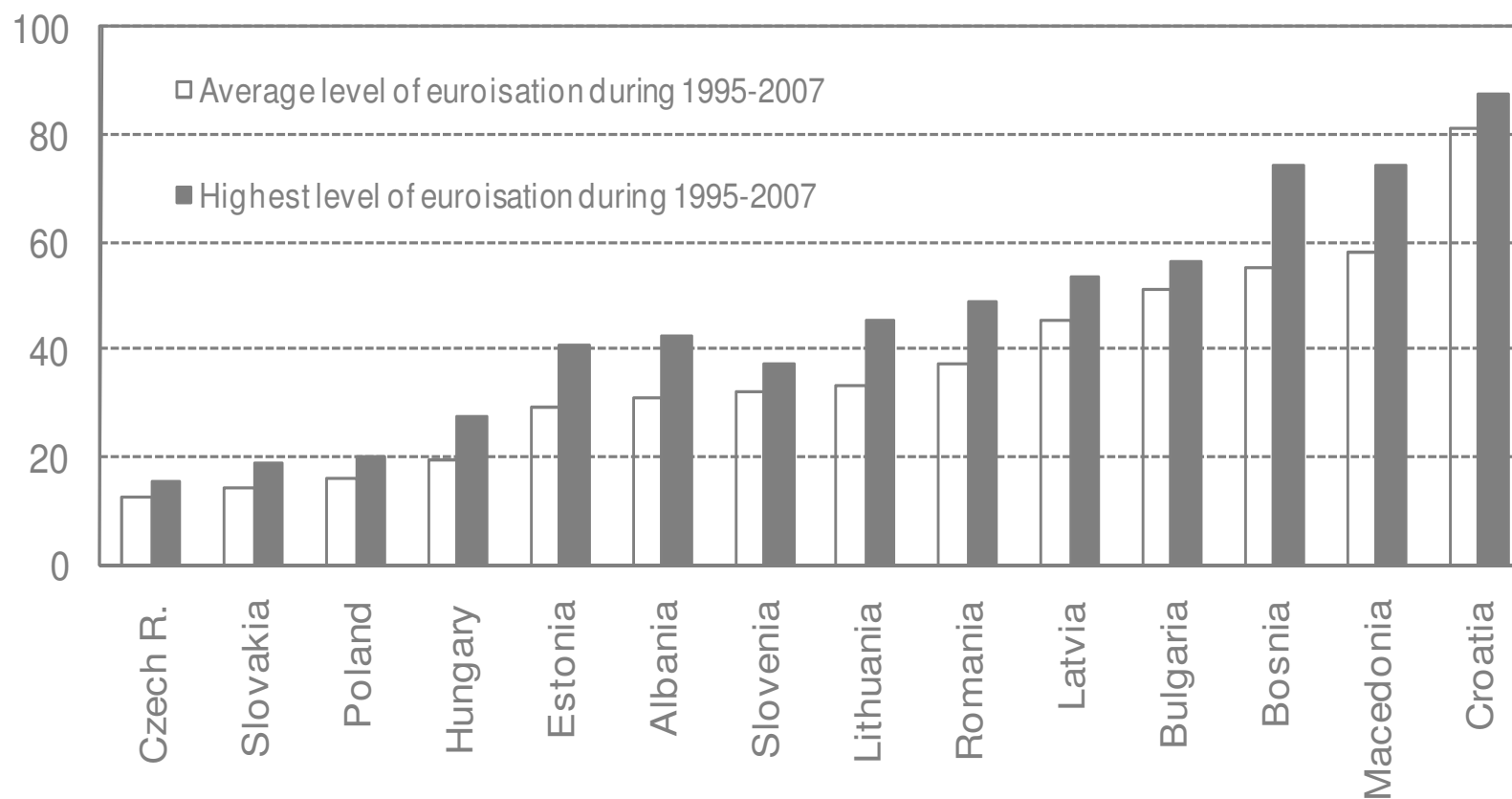
Meta-Regression Analysis

Meta-regression analysis used to investigate ERPT:

1. Review of 24 econometric studies
   - Typical primary study
     - Dependent variable: domestic prices
     - Independent of interest: nominal exchange rate
2. Choice of effect size (dependent variable):
   - t-values not available for each coefficient
   - Regression coefficients chosen
     - Typically ERPT estimated as a constant elasticity
3. Data:
   - 575 coefficients collected from 23 studies in total:
     - 448 for developed economies; 127 for transition economies
     - 202 for ERPT to import prices (IPI); 373 to consumer prices (CPI)
     - 331 for long-run ERPT; 244 for short-run ERPT

Number of ERPT coefficients

Developed countries	IPI		CPI		Transition countries	IPI		CPI	
	Long run	Short run	Long run	Short run		Long run	Short run	Long run	Short run
Australia	3	3	7	4	Bulgaria	-	-	2	2
Austria	3	3	6	3	Croatia	-	-	3	2
Belgium	3	3	6	3	Czech R.	3	3	7	7
Canada	8	6	11	6	Estonia	-	-	2	2
Denmark	3	3	3	3	Hungary	3	3	7	7
Euro area	1	1	2	2	Latvia	-	-	2	2
Finland	4	4	7	4	Lithuania	-	-	2	2
France	6	4	10	6	Macedonia	-	-	4	6
Germany	6	4	11	6	Poland	3	3	7	7
Greece	1	1	5	2	Romania	-	-	11	11
Iceland	3	3	-	-	Slovakia	-	-	3	4
Ireland	1	1	6	3	Slovenia	-	-	4	3
Italy	7	5	11	6					
Japan	8	6	10	5					
Netherlands	3	3	6	3					
New Zealand	3	3	6	3					
Norway	3	3	7	4					
Portugal	3	3	6	3					
Spain	5	5	9	6					
Sweden	4	4	8	5					
Switzerland	6	6	10	7					
UK	8	6	11	6					
US	7	5	10	5					
Total	**99**	**85**	**169**	**95**		**9**	**9**	**54**	**55**

Model – Meta-Regression Analysis

$$ERPTES_j = \sum_{k=1}^{K} \alpha_k Z_{jk} + u_j$$

- $ERPTES_j$ is the effect size of ERPT;
- Z_{jk} are k moderator variables;
- α_k are k meta-regression coefficients;
- $j = 1, \ldots$ 575 indexes the regressions estimating ERPT;
- $k = 1, \ldots K$ indexes the moderator variables (where K=12);
- u_j is the meta-regression disturbance term.
- Constant omitted
  - Coefficients directly estimate ERPT for each category

Results of the Model

	Regression 1: OLS (robust SEs)		Regression 2: OLS (robust SEs)		Regression 3: Weighted and Cluster-robust Least Squares	
	Coef	p-value	Coef	p-value	Coef	p-value
LR exchange rate pass-through to consumer prices in developed economies	0.33	0.000	0.17	0.000	0.21	0.000
LR exchange rate pass-through to consumer prices in transition economies	0.62	0.000	0.51	0.000	0.47	0.000
SR exchange rate pass-through to consumer prices in developed economies	0.23	0.001	0.09	0.000	0.10	0.000
SR exchange rate pass-through to consumer prices in transition economies	0.47	0.000	0.35	0.000	0.31	0.000
LR exchange rate pass-through to import prices in developed economies	0.79	0.000	0.70	0.000	0.64	0.000
LR exchange rate pass-through to import prices in transition economies	0.67	0.000	0.60	0.000	0.70	0.000
SR exchange rate pass-through to import prices in developed economies	0.63	0.000	0.56	0.000	0.52	0.000
SR exchange rate pass-through to import prices in transition economies	0.49	0.000	0.42	0.000	0.45	0.000
Coefficients estimated by VAR models	-0.06	0.328				
Coefficients estimated by OLS regressions	-0.07	0.293				
Coefficients estimated from monthly data	-0.05	0.413				
Coefficients estimated from quarterly data	-0.10	0.124				
	Degrees of freedom: 563		Degrees of freedom: 567		Degrees of freedom: 567	

Results of the Model (cont'd)

- Eight variables statistically significant
- Four variables statistically insignificant
  - Related to the type of methodology and data
  - Excluded in the parsimonious model
- Diagnostic tests
  - Linear functional form – well specified;
  - Normality – improved in parsimonious model;
  - Heteroscedasticity
    - White's heteroscedasticity adjusted standard errors
- Robustness checks
  - Cluster-robust SEs
  - Weighted
    - To give all studies equal influence
  - Estimates consistent
- Publication bias
  - The effects reported in the literature on ERPT are not unduly influenced by publication bias

Results of the Model (cont'd)

❶ **ERPT is not complete even in the long run!**

- Consumer prices
  - Developed economies - DEs (0.17)
  - Transition economies - TEs (0.51)
- Import prices
  - DEs (0.70)
  - TEs (0.60)

- Explanation
  - "Pricing to market" (Krugman, 1986)
  - Greater market power (Dornbusch, 1987).

Results of the Model (cont'd)

❷ **Stronger ERPT to import prices than to consumer prices!**

- DEs: significant difference
  - Long-run – by 0.53 (0.70-0.17)
  - Short-run – by 0.47 (0.56-0.09)

- TEs: non-significant difference
  - Long-run – by 0.09 (0.60-0.51)
  - Short-run – by 0.07 (0.42-0.35)

- The wedge in DEs
  - Local distribution costs
  - Adjustment of profit margins
  - Share of non-tradables in the consumer price index

- Lack of such a wedge in TEs
  - Related to high levels of openness and euroisation

Results of the Model (cont'd)

❸ **ERPT is higher in the long run than in the short run!**

- Consumer prices
    - DEs – by 0.08 (0.17-0.09)
    - TEs – by 0.16 (0.51-0.35)
- Import prices
    - DEs – by 0.14 (0.70-0.56)
    - TEs – by 0.18 (0.60-0.42)
- Most of the differences
    - As anticipated
        - prices may be sticky in the short run and take time to adjust
    - Statistically significant

Results of the Model (cont'd)

❹ Exchange rate change has similar effects on import prices in both developed and transition countries!

- Long-run
  - Higher in DEs – by 0.10 (0.70-0.60)
  - Not statistically significant difference
- Short-run
  - Higher in DEs – by 0.14 (0.56-0.42)
  - Not statistically significant difference

Results of the Model (cont'd)

❺ **ERPT to consumer prices is higher in TEs than in DEs!**

- Long-run
  - Higher in TEs by 0.34 (0.51-0.17)
- Short-run
  - Higher in TEs by 0.26 (0.35-0.09)
- Both differences statistically significant
- Relatively high ERPT in TEs consistent with relatively high levels of
  - Openness
  - Euroisation
- Both establish a more direct link between exchange rate changes and price changes

Conclusion

- ERPT is not complete in the long run even in TEs

- However, lack of wedge in TEs between ERPT to import prices and to consumer prices …

- … and, higher ERPT to consumer prices in TEs than in DEs (on average, 3 times)

Findings support the cautious exchange rate policies of many transition economies regarding exchange rate flexibility, because higher exchange rate variability may endanger the achievement of the main objective of monetary policy – stability of consumer prices.

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