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# Financial Stability Risks from Household and Corporate Lending

**What story does aggregate data tell?**

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# Overview

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- Introduction
  - Growth, profitability, and quality: The banking trinity
- Household credit
  - Vulnerabilities from collateral correlation and FX exposure
- Corporate credit
  - Imbalances and the incomplete credit cycle
- Financial stability implications
  - Parental support: Are foreign banks the primary caretaker?
  - Historic crisis experience
  - Data and risk management
  - FSAP as reality check?
  - Policy options: the lone soldier

# Credit Growth

- Convergence argument: safe haven?
- Tighter liquidity started to show an affect on credit growth.

	Private sector credit 2007 1/ (percent of GDP)	Annual domestic credit growth 2/ <hr/> 2004-07      since July 2007		Change in lending rates since July 2007 (ppt)	Current account 2007 (percent of GDP)
Baltics	96	35	14	1.6	-15.9
Czech Rep., Hungary, Poland, Slovak Rep., Slovenia	64	18	22	0.0	-4.5
Bulgaria, Romania	63	36	45	0.2	-17.9
Albania, BiH, Croatia, Macedonia, Serbia	55	31	30	-0.3	-9.8
<b>Average</b>		<b>28</b>	<b>26</b>		

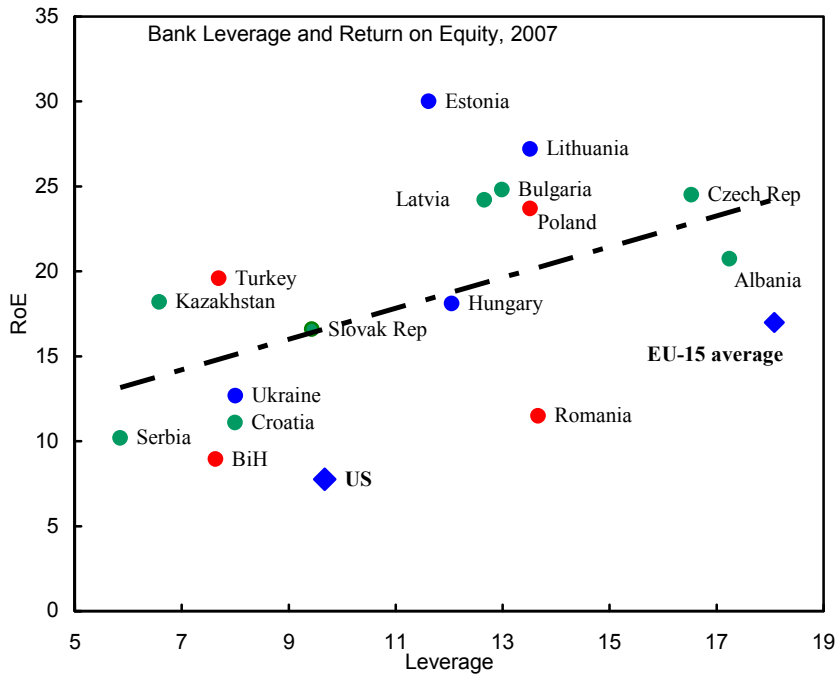
Source: National authorities, BIS, ECB, and IFS.

1/ Private sector credit includes domestic credit to non-financial corporations, households and cross-border loans to non-banks.

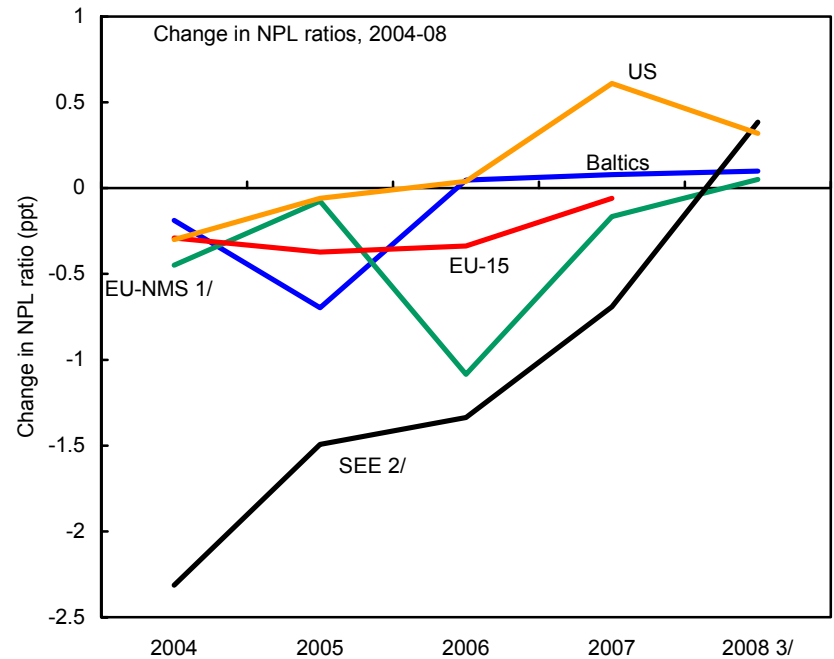
2/ Annualized private sector credit growth provided by domestic banks at constant prices.

# Profitability and Asset Quality

- Sound returns are boosted by lower equity buffers...
- ...while NPLs are starting to edge up.



Source: IMF Financial Soundness Indicators.



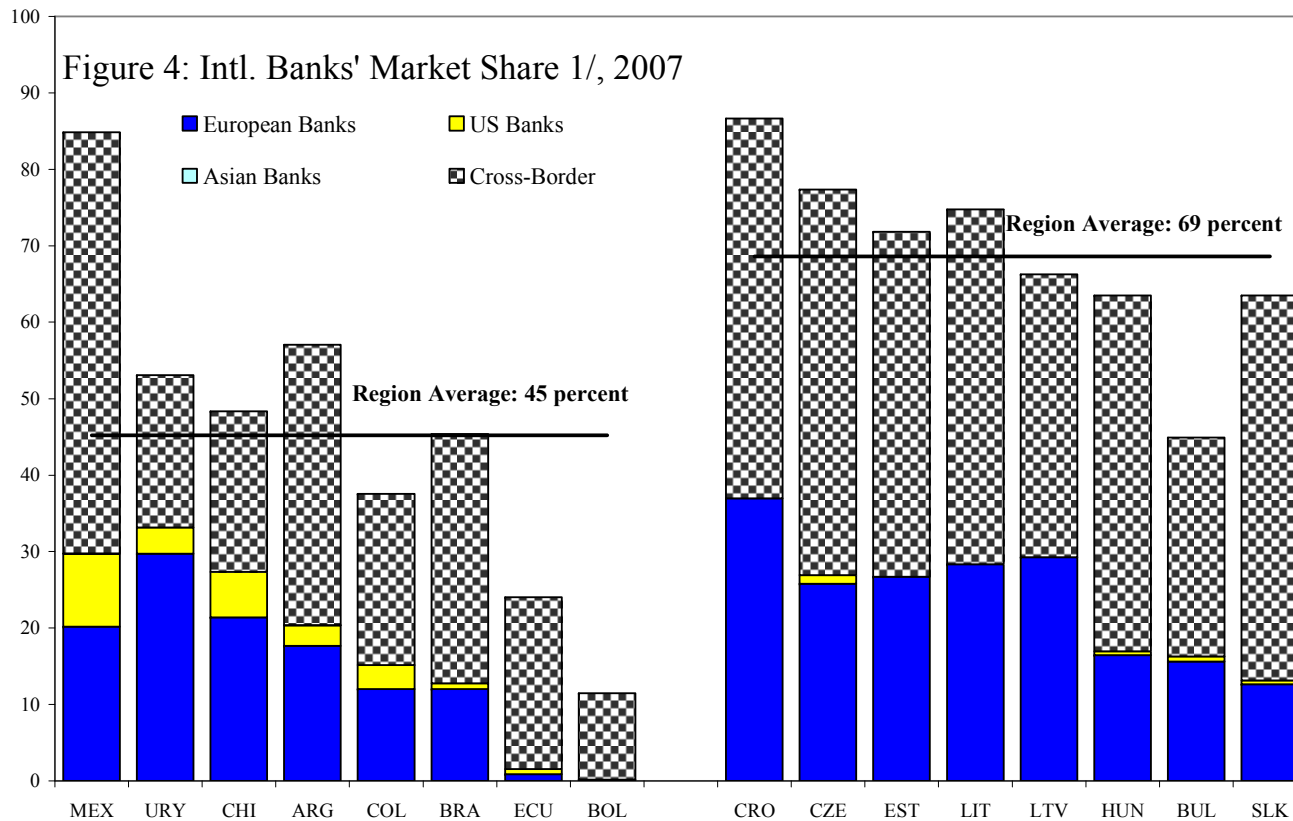
1/ Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovak Republic.

2/ Albania, BiH, Croatia, Macedonia, and Serbia (2006-08).

3/ If available.

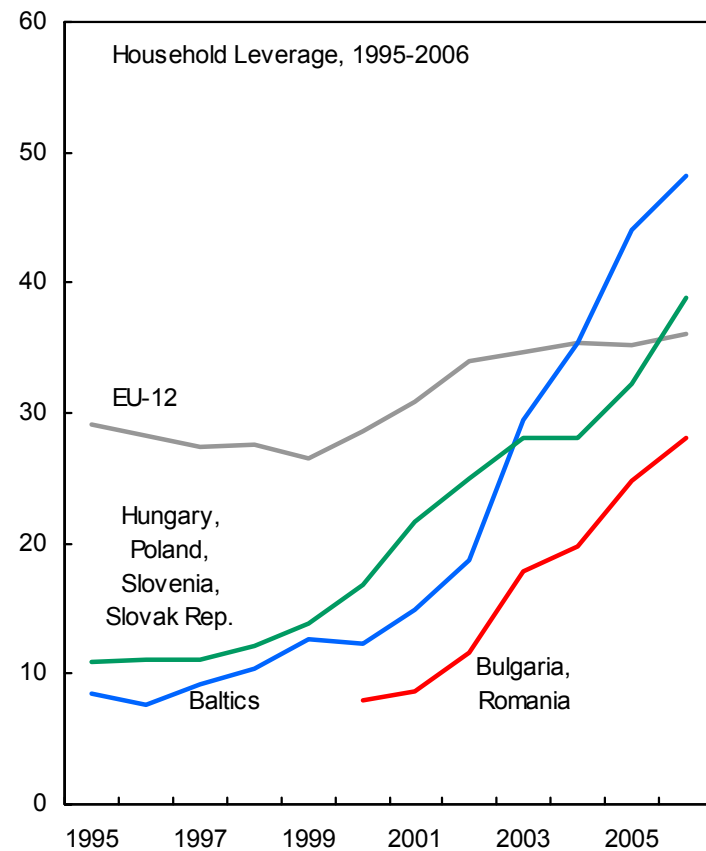
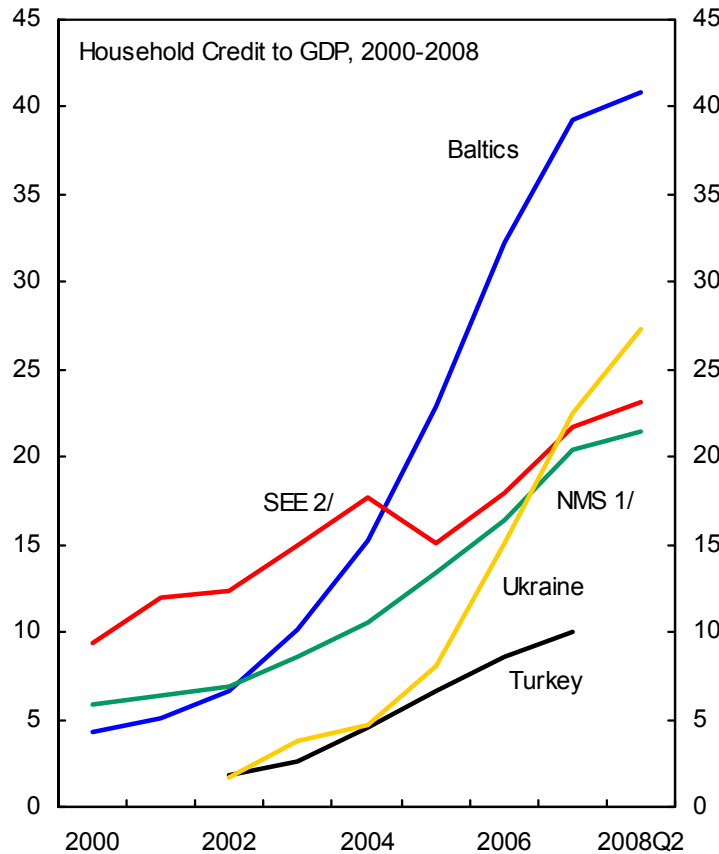
# Cross-Border Claims

- Direct cross-border lending is a common phenomenon in EME, complicating macro-prudential policies.



# Household Credit

- Expansion of household credit does not reflect higher net financial wealth...
- ...as household leverage increased significantly



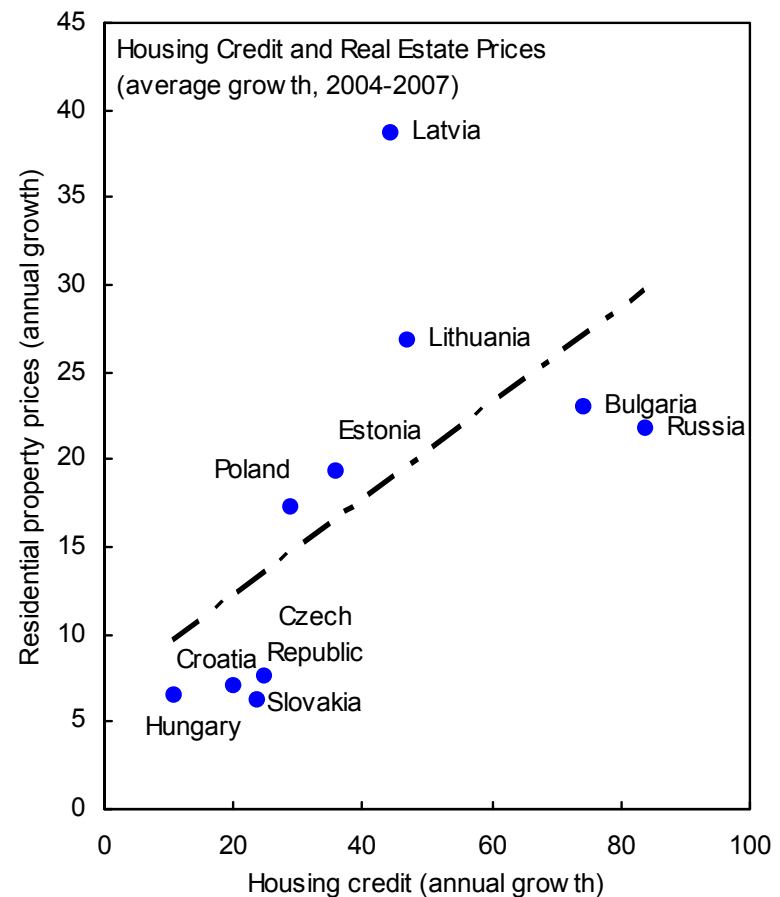
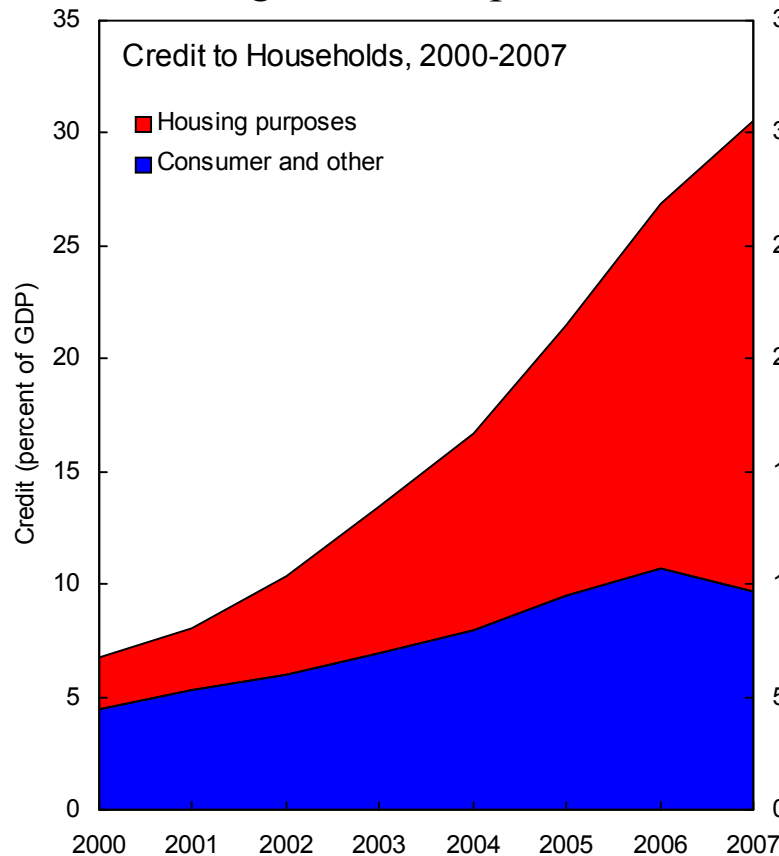
1/ Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovak Republic.

2/ Albania, BiH, Croatia, Macedonia, and Serbia.

Sources: Eurostat; IMF country desk data.

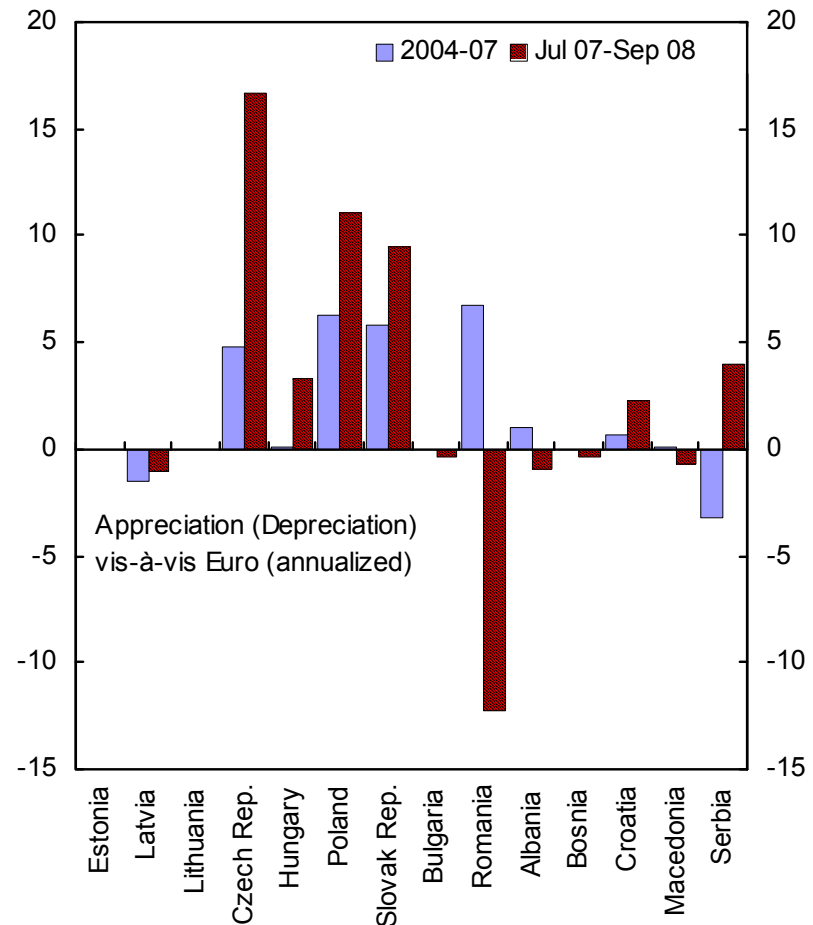
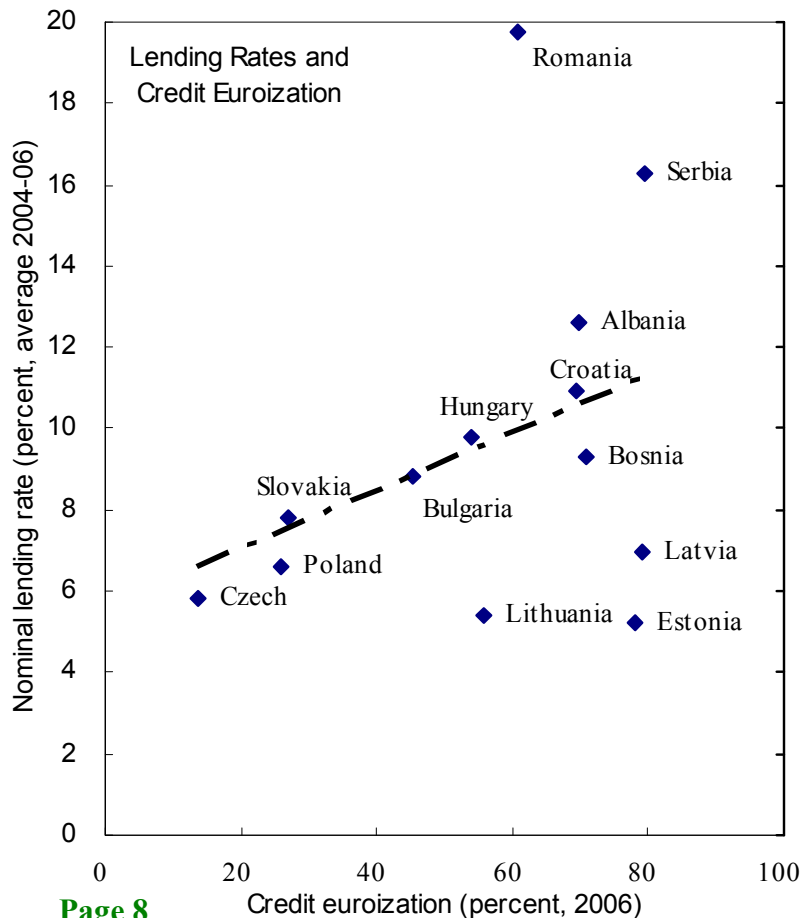
# Household Lending and Collateral Value

- Household lending is used predominantly for housing purposes...
- ...fuelling real estate prices. A two-way correlation?



# Drivers of FX Lending and Servicing Costs

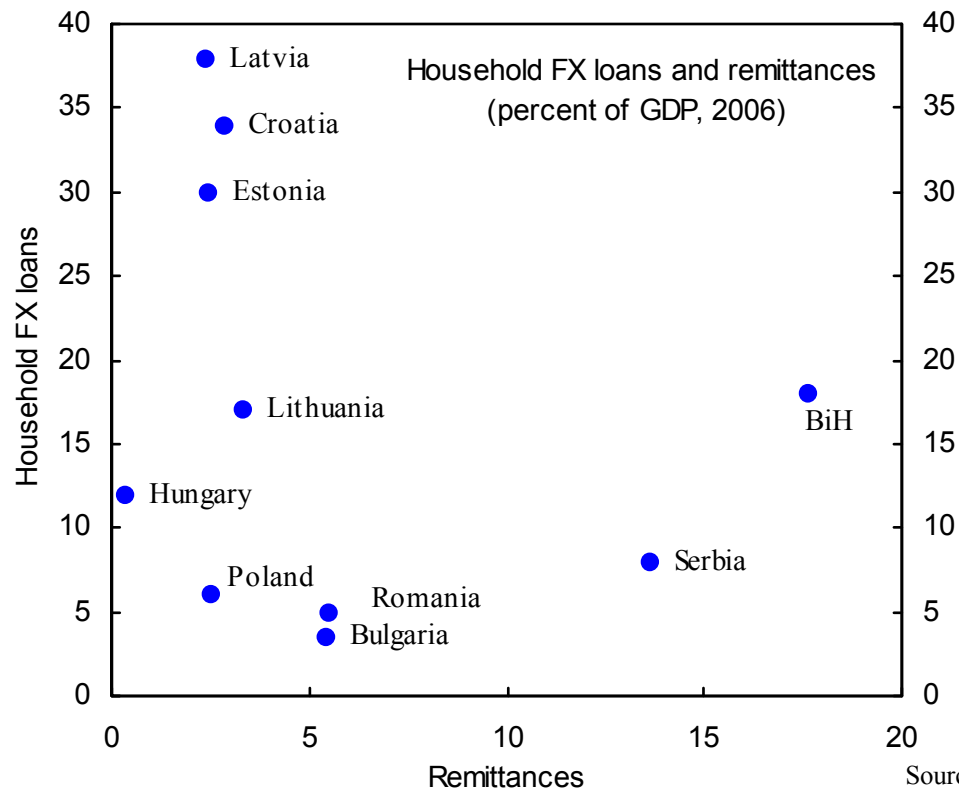
- FX lending is predominant in countries with traditionally high inflation and interest rates. Servicing costs have been affected by recent FX shifts.





# Household FX Hedging

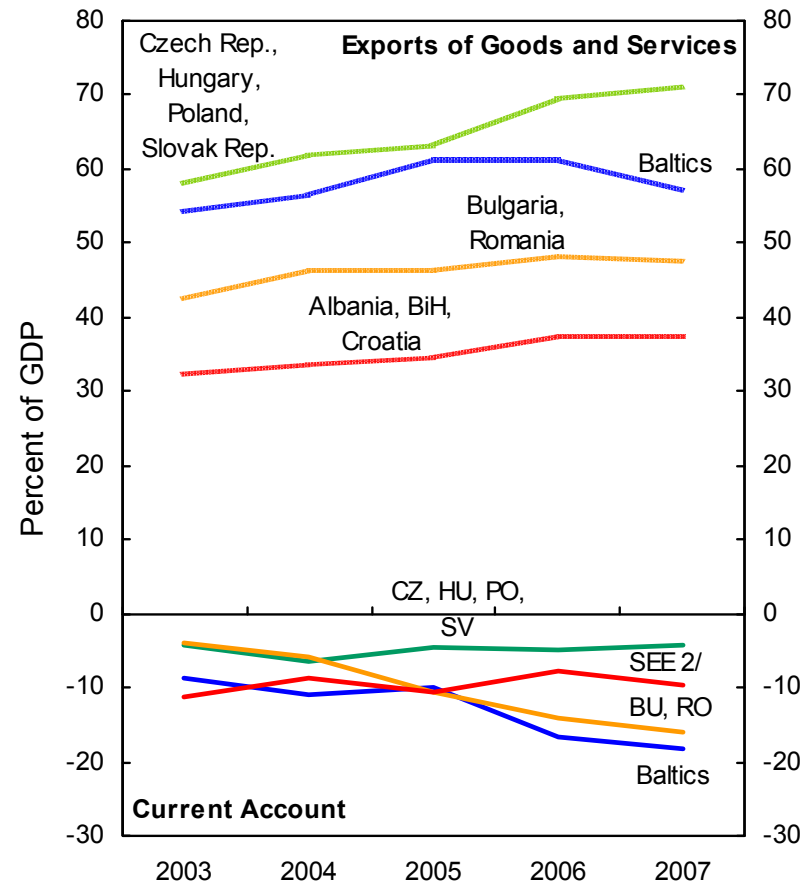
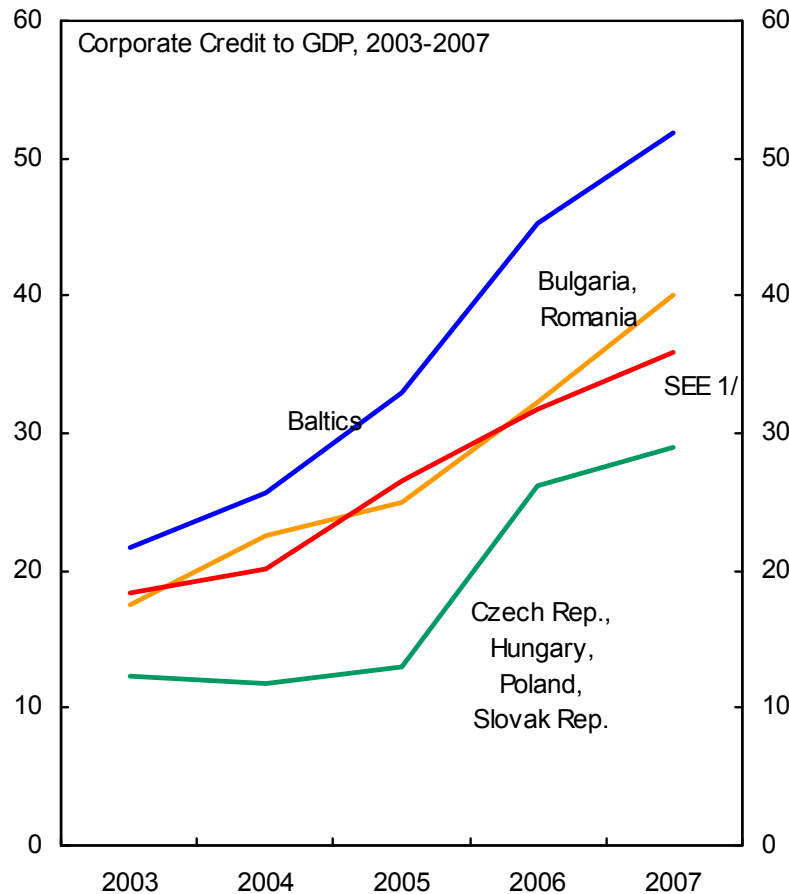
- Are households hedged?
  - Are remittances used to mitigate household currency mismatch?
  - Do households gamble on EMU entry?
- Data on FX exposure of households incomplete.



Sources: World Bank; IMF country desk data.

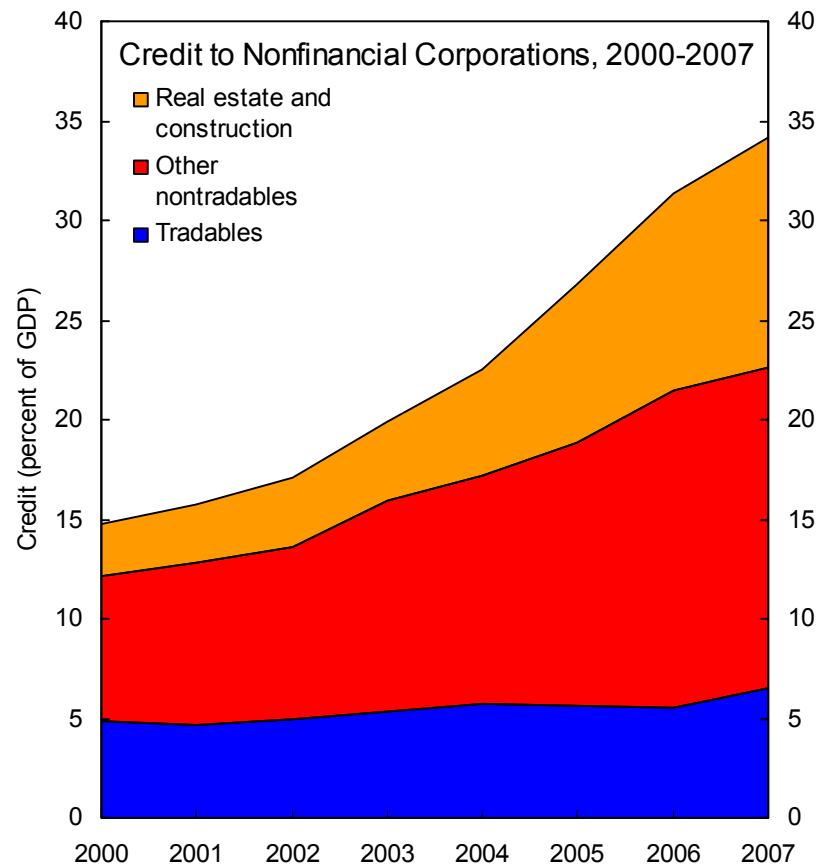
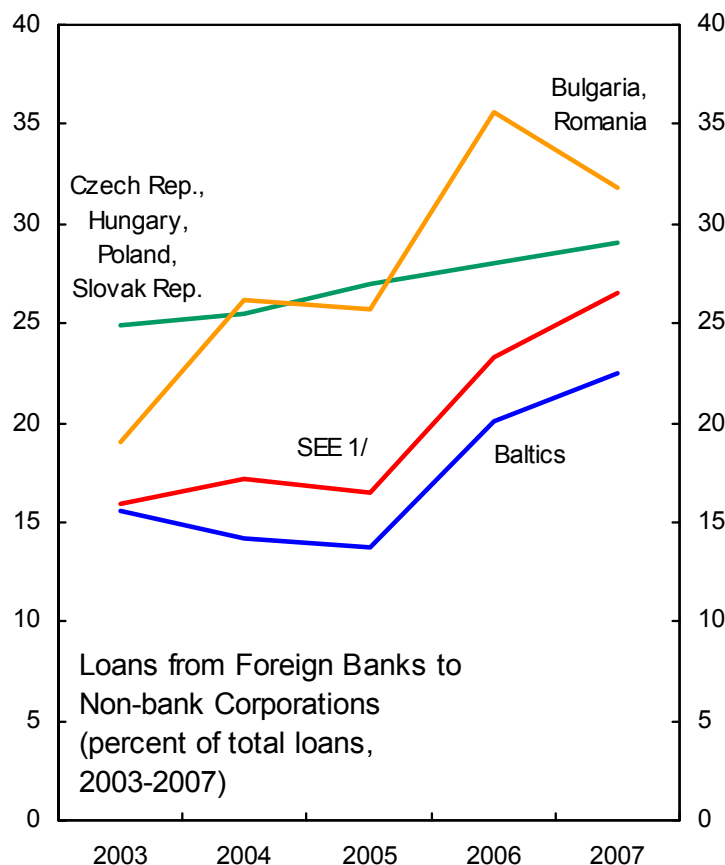
# Corporate Credit and External Imbalances

- Corporate credit continues to grow strongly.
- External imbalances remain a concern.



# Corporate Credit: Funding and Use

- Increasingly, lending is sourced directly from abroad...
- ...and directed towards the non-tradable sector.



# Corporate Credit Standing

- Based on our small sample, financial ratios appear to remain sound...
- ...however, stock market developments suggest a decline in earnings generation.

	Real Return on Assets 1/	Interest Cov. Ratio 2/	Default prob. (bps) 3/
Czech Republic	6.1	15.5	0.2
Hungary	-5.0	34.7	0.4
Poland	8.2	61.3	1.6
Russia	5.4	125.1	2.1
Slovak Rep.	13.5	96.9	0.0
Turkey	2.4	33.8	45.3
Global Median	5.6	29.4	7.9
Averages			
Emerging Asia	7.6	33.9	54.0
Emerging Europe	5.2	53.9	13.5
Latin America	3.0	20.0	14.3
Middle East & North Africa	3.5	75.4	6.9
All EMCs	5.4	40.9	23.8

Source: Worldscope and IMF (RES, Corporate Vulnerability Utility).

All 2007 figures, except for valuation measures.

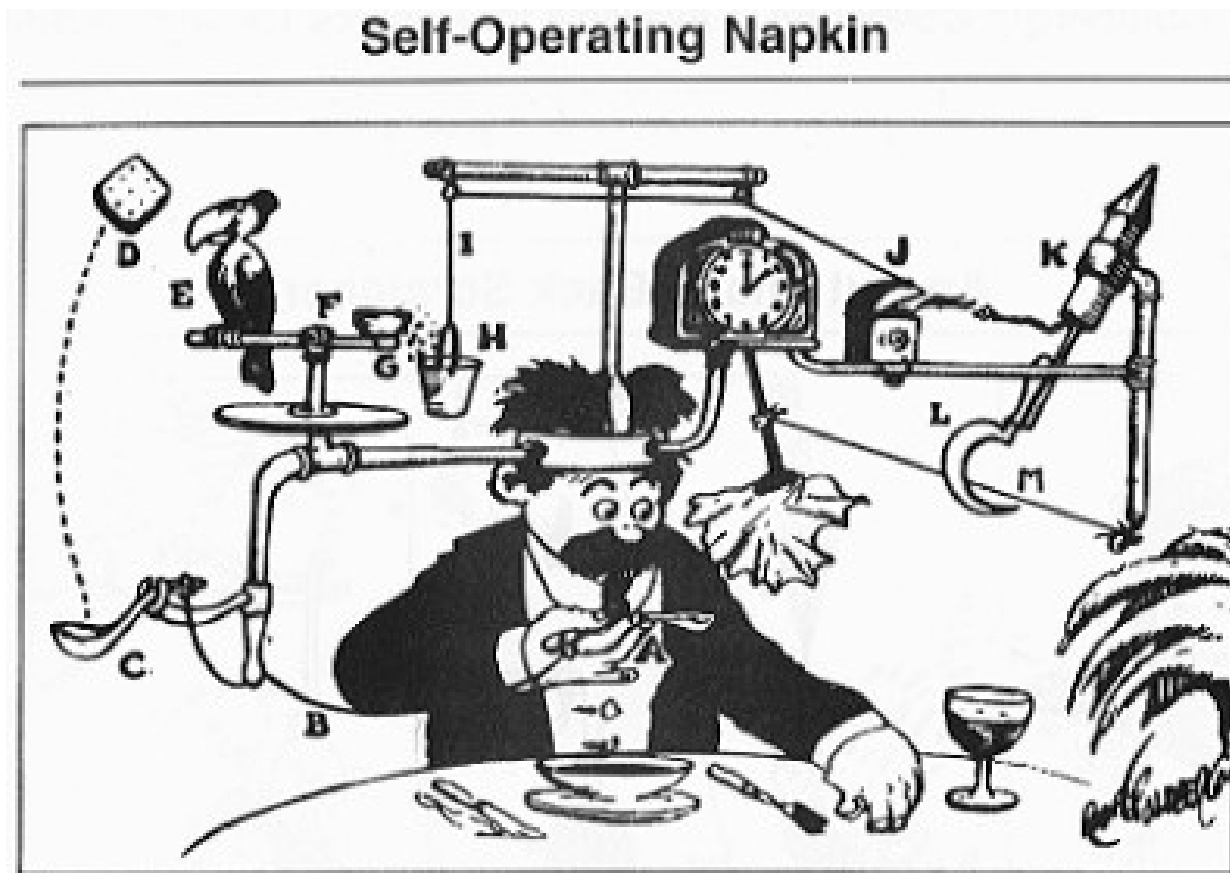
1/ Net income plus interest expense to last year's assets. Real RoA is adjusted for CPI inflation.

2/ Earnings before interest and taxes to interest expense.

3/ One-year Black-Scholes-Merton default probability in basis points based on stock price volatility.

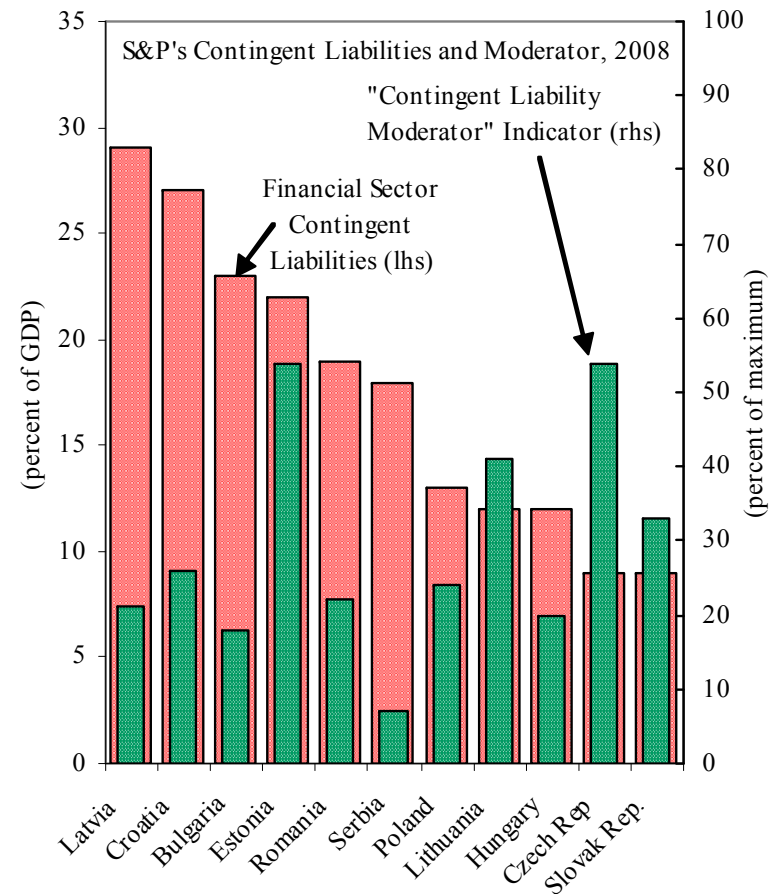
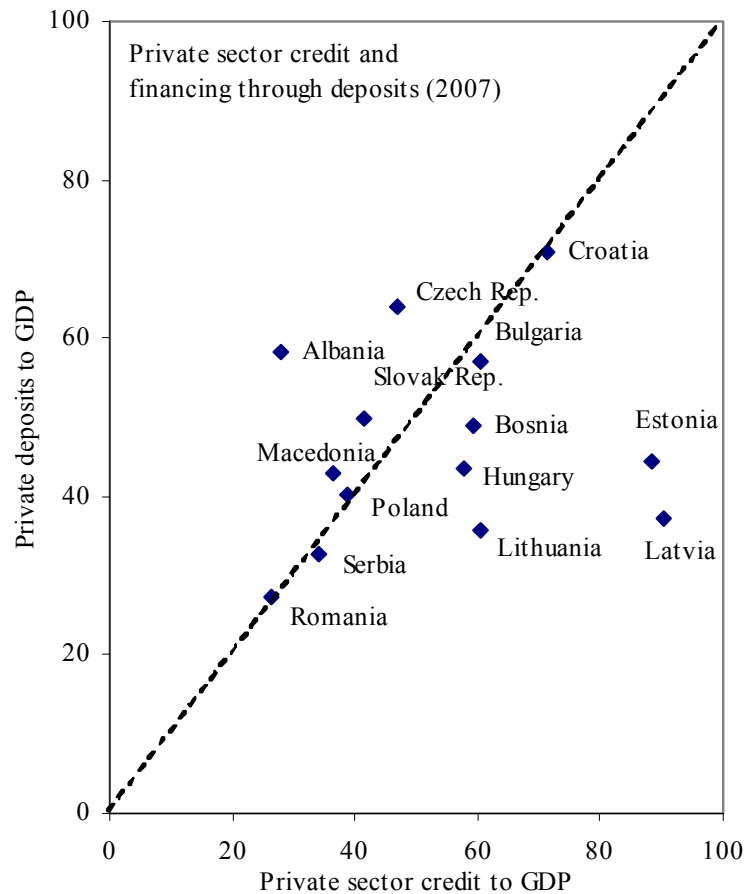
# Financial Stability Implications

- Triggers and transmission channels: *Spill*-overs?



# Bank Funding and Foreign Parent Support

- Strong credit expansion is mostly parent-funded from abroad...
- ...which must not be considered panacea.



# Funding Squeeze?

Table 1- Exposure to Foreign Bank Distress (EFD) by country

Country	International Bank Market Share 1/	Foreign Affiliates Non-deposit Funding 2/	Total Exposure 3/	EFD index			
				Pre-crisis 4/	Peak of crisis	Crisis Average 5/	Last Observ. 07-18-08
<i>Latin America</i>	45.2	18.2	31.3	2.7	51.4	19.9	31.9
MEX	84.8	26.4	62.9	5.2	105.0	40.2	63.5
URY	53.1	12.5	24.1	2.2	39.6	16.0	26.2
CHI	48.3	35.1	30.6	2.8	52.7	20.5	32.1
ARG	57.1	17.3	40.2	3.3	63.1	24.8	39.9
COL	37.5	17.7	25.1	2.1	40.9	15.9	24.7
BRA	45.4	4.3	33.2	2.8	53.6	20.2	33.9
ECU	24.0	23.0	22.8	1.9	38.4	14.3	23.1
BOL	11.5	9.2	11.3	1.0	18.2	6.9	11.3
<i>Eastern Europe</i>	68.6	37.9	54.7	5.5	90.8	37.6	60.0
CRO	86.7	36.5	63.2	7.8	130.3	53.3	82.5
CZE	77.4	30.2	58.0	5.7	90.3	36.9	55.9
EST	71.8	41.3	62.3	5.1	93.2	38.1	64.1
LIT	74.8	44.0	58.9	5.1	84.9	34.3	53.5
LTV	66.3	62.7	55.4	4.8	78.3	32.8	53.2
HUN	63.5	45.6	54.3	5.7	96.4	39.9	62.1
BUL	44.9	19.9	31.9	3.3	50.8	22.4	37.5
SLK	63.5	23.3	53.4	6.2	102.3	43.4	70.9

1/ In terms of total banking system loans plus cross-border claims (in percent).

2/ Weighted average non-deposit ratio of foreign affiliates (in percent).

3/ Average of non-deposit funding ratio (including cross-border) weighted by market shares (in percent).

4/ Average of June 2007 daily values.

5/ Crisis period covers 07/01/07-present.

Source:IMF.

- Data suggest limited pass-through of increased funding cost.

# Historic Crisis Experience (1)

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- Historic crisis precedence is not a good predictor...
- ...but provides some guidance:
  - The cost of “mopping up the mess”
  - Is prevention the best cure?

	No. of countries	Change in NPL ratios (ppt) 1/		Change in NEER (percent)		Output loss (T+1, percent)	
		Average	Stand. dev.	Average	Stand. dev.	Average	Stand. dev.
EM countries 2/	12	12.7	9.6	-39.2	24.9	-4.9	6.2
Asia	4	16.4	13.5	-40.5	26.2	-7.8	5.4
Europe	4	8.7	6.2	-29.7	33.7	-0.1	5.8
Latin America	4	11.8	8.9	-47.3	15.5	-6.8	5.6
Advanced countries	5	3.1	0.7	-18.4	4.2	-0.8	2.1
All countries (FSAP)	17	9.6	9.1	-33.1	22.9	-3.7	5.6

Sources: FSAP team calculations, based on *International Financial Statistics* and data collected in other missions. See: Schaeck, K. and Cihák, M., "How Well Do Aggregate Bank Ratios Identify Banking Problems?" IMF Working Paper No. 07/275, December 2007, (Washington DC: International Monetary Fund).

1/ Percent of loans overdue 90 days or more.

2/ Country samples are defined as follows: "Asia" includes crises Indonesia, Korea, Thailand, and Philippines. "Emerging Europe" includes Czech Republic, Russia, Slovak Republic, and Turkey. "Latin America" includes Argentina, Brazil, Mexico, and Uruguay.

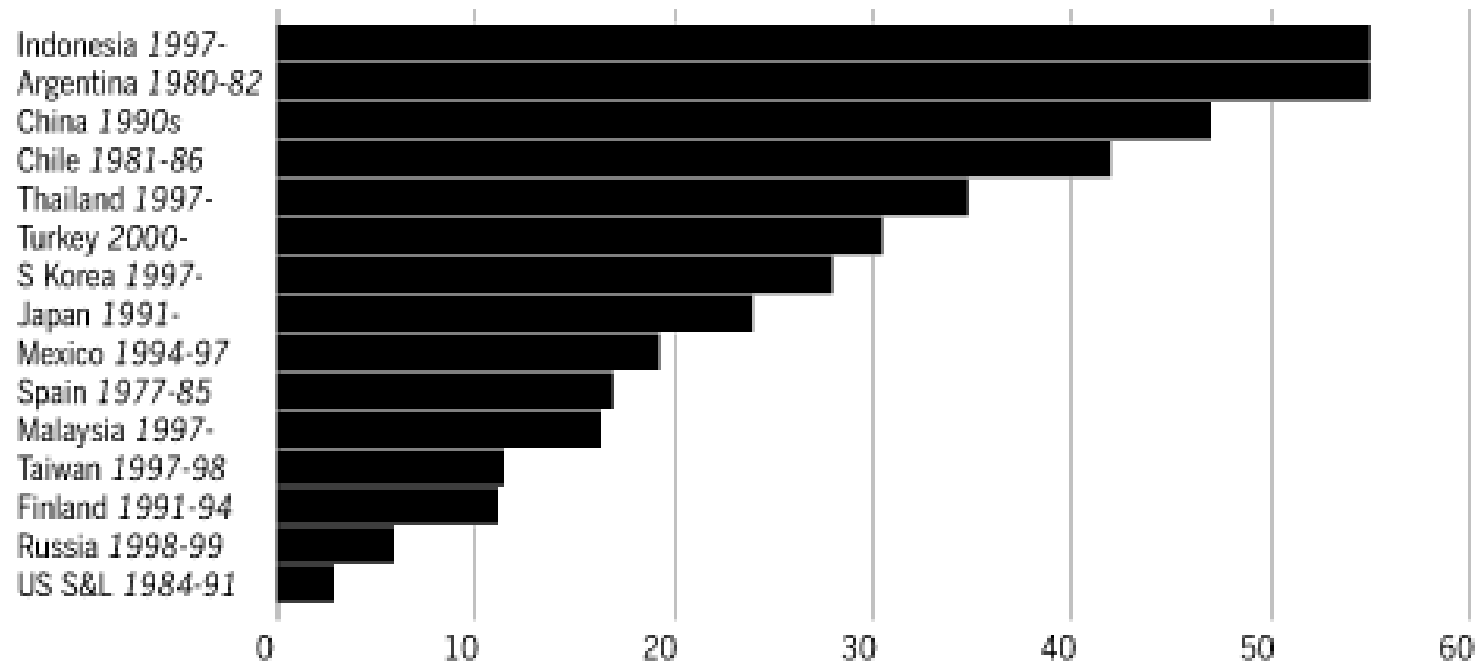


# Historic Crisis Experience (2)

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## Fiscal costs of bank bailouts

Per cent of GDP (selected countries)



Source: Caprio & Klingebiel, 'Episodes of Systemic and Borderline Financial Crises' (World Bank, 2003)

# Data and Risk Management Practices

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- Significant data shortcomings:
  - Incomplete credit cycle and lack of correlations
  - FX linked lending, direct foreign lending
  - Corporate and household balance sheet and income data
  - Data sharing with Financial Stability Units
- Risk management practices:
  - Credit portfolio modeling (overlay risk management)
  - RAROC models
  - Active credit portfolio management and transfer pricing
  - Regulatory capital arbitrage and Basel II
  - Loan valuation and mark-to-market under IFRS

# FSAP (1): Modeling HH and Corporate Risks

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- FSAPs are being applied to analyze risks arising from household and corporate lending.

Risk Modeling Approaches	FSAP
Shocks to probabilities of default (ad hoc)	Germany (2003), Netherlands (2003), Norway (2004), United Kingdom (2002)
Explicit analysis of sectoral shocks	Belarus (2004), Finland (2001), Greece (2005), Latvia (2007), Moldova (2007)
Analysis of LTV ratios, mortgage PDs	Croatia (2001), Sweden (2001)
Spread risk	Greece (2005), Russia (2007), Switzerland (2006)
Housing price shock	Ireland (2006), Lithuania (2007), Netherlands (2003), Norway (2004), Slovakia (2007), United Kingdom (2002), Ukraine (2002)
Interbank contagion (liquidity risk)	Austria (2003, 2007), Belgium (2004), Croatia (2007), Greece (2005), Luxembourg (2001), Netherlands (2003), Romania (2003), U.K. (2002)

# FSAP (2): Macro Scenario Stress Testing

- Macro stress testing is in its infancy.

## Banking system stress tests in selected countries 1/

	Shock scenario					Impact					
	Real GDP growth (ppt)	Interest rates		Currency depreciation (percent)	Shift in loan quality (percent) 2/	Decline in real estate prices (percent)	CAR		NPL		Decline in capital (percent)
		domestic (ppt)	foreign (ppt)				Baseline (percent)	Post-shock (percent)	Baseline (percent of loans)	Post-shock (percent of loans)	
	-4.2	13.0	2.0	30.0		33.0	11.3	9.6			
	-3.0			10.0			19.0	9.0		9.0 6/	1.9 5/
						50.0 7/					5.0
	-6.0						17.1	16.5			4.3
	-1.0 8/						17.7	17.1	4.1	7.4	
		5.0		20.0 9/		50.0	17.2	15.7	6.4	9.5	

Source: National authorities, Fund staff calculations.

1/ Impact of combined shocks on key indicators for the aggregate banking system.

2/ Percent of loan portfolio reclassified to non-performing loans, i.e. percent of loans downgraded from A and B into C, D, and E.

3/ Impact after one year on the five largest banks under a hard landing and depreciation scenario, entailing an average decline in real GDP of 4.2 percent, a house price decline of 70 percent over three years (corresponding to a 33 percent decline annually), depreciation of 30 percent, a domestic interest rate increase of 13 percent and a foreign interest rate increase of two percent.

4/ Shock scenario consisting of an increase in risk premium related to investors' higher risk aversion, lower growth in the euro area, and fall in consumer confidence in [redacted] combined with a 10 percent [redacted] depreciation.

5/ Loan losses, i.e. the annual average of net charges to provisions for irregular loans, increase from 8.7 to 10.6 percent of regulatory capital, corresponding to a decline in capital of about 1.9 percent.

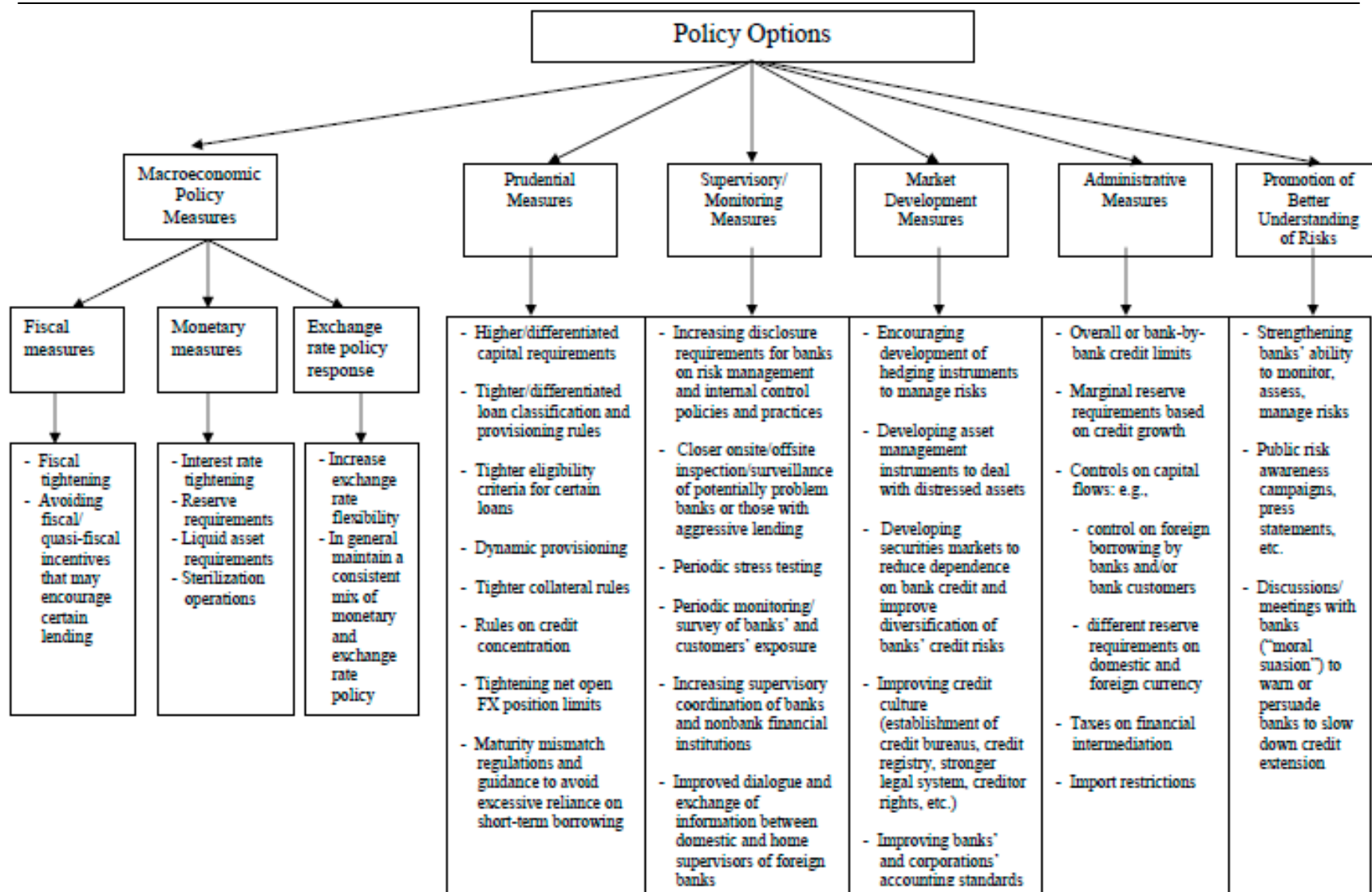
6/ Change in NPL.

7/ Fall in residential and commercial real estate prices.

8/ The growth shock of about one percentage point corresponds to a downward shift in asset quality of 15 percent, according to staff estimates of a bivariate regression between the change in NPL ratio and real GDP growth between 2001 and 2007. The estimated relationship is however only based on a short period in which the NPL ratio has only been falling.

9/ Depreciation vis-à-vis US dollar and euro.

# Policy Options



# Policy Measures (1)

- Macroeconomic measures are subject to constraints from different directions.

<i>Macroeconomic measures</i>	Estonia	Latvia	Lithuania	Czech	Hungary	Poland	Slovakia	Slovenia	Bulgaria	Romania	Albania	Bosnia	Croatia	Macedonia	Serbia
Fiscal tightening		○	○	○	✓	✓		○	✓	○	○		○		
Reduction of tax incentives for borrowers	✓	✓	✓												
Monetary tightening															
• Raising policy rates		✓		✓	✓	✓				✓	✓			✓	✓
• Increasing/broadening reserve requirements	✓	✓	✓			✓			✓	✓		✓	✓	✓	✓
Exchange rate flexibility				✓	✓					✓	✓				○

○ Further Action Needed

✓ Measures adopted

## Policy Measures (2)

- Prudential and administrative measures create regulatory arbitrage opportunities...

<i>Prudential and administrative measures</i>	Estonia	Latvia	Lithuania	Czech	Hungary	Poland	Slovakia	Slovenia	Bulgaria	Romania	Albania	Bosnia	Croatia	Macedonia	Serbia
Raise or differentiate risk weights or min. capital adequacy ratio	✓	○	✓						✓		✓		✓	✓	✓
Strengthen loan loss provisioning		○							✓	○	✓	○	✓	✓	✓
Raise risk weight of, provisioning for, or limit exposure to, FX risk		✓			○	✓	✓			✓		✓	✓		✓
Risk-based capital charge or marginal reserve requirement for excessive credit growth									✓				✓		
Mandatory loan-to-income or loan-to-value limits		✓					✓		○	✓			○		
Credit limits for Household lending									✓	✓					✓

## Policy Measures (3)

- ...accentuating needs for pan-European supervisory coordination.

<i>Supervisory and market development measures</i>	Estonia	Latvia	Lithuania	Czech	Hungary	Poland	Slovakia	Slovenia	Bulgaria	Romania	Albania	Bosnia	Croatia	Macedonia	Serbia
Strengthen monitoring, improve risk management, expand stress testing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Expand cross-border supervisory coordination	✓	○	✓	○	✓	✓		✓	✓	✓	✓	○	✓	✓	○
Improvements in credit registry		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓
Strengthening of property rights		○			○	○		○		✓			○	✓	
Capital market development for alternative funding sources and/or hedging							✓	✓		✓			○		
Transparency/moral suasion	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓



# The Hitchhikers Guide to the Financial Stability Galaxy



Dialogue

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"...and this is where we train our employees to think out of the box."

