

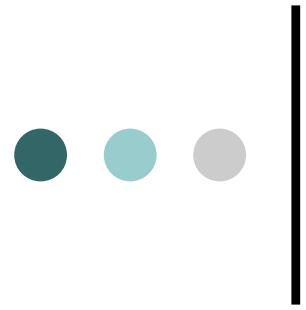


Credit Market Shocks, Systemic Risk, Household Stress Testing

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69th East Jour Fixe of the Oesterreichische Nationalbank
Credit to the Private Sector: Threat to or Opportunity for Growth in CESEE?

Vienna, Austria
Monday, June 20, 2011



Outline

1. Credit Market and Households

- ✓ Increase in Household Credit, especially Housing Loans
- ✓ Accumulation of Household Debt

2. Macroeconomic Risks

- ✓ Foreign Exchange (Exchange Rate Depreciation)
- ✓ Interest Rate Hike

3. Stress Testing Households

- ✓ Increase in Vulnerable Households due to the Economic Shocks

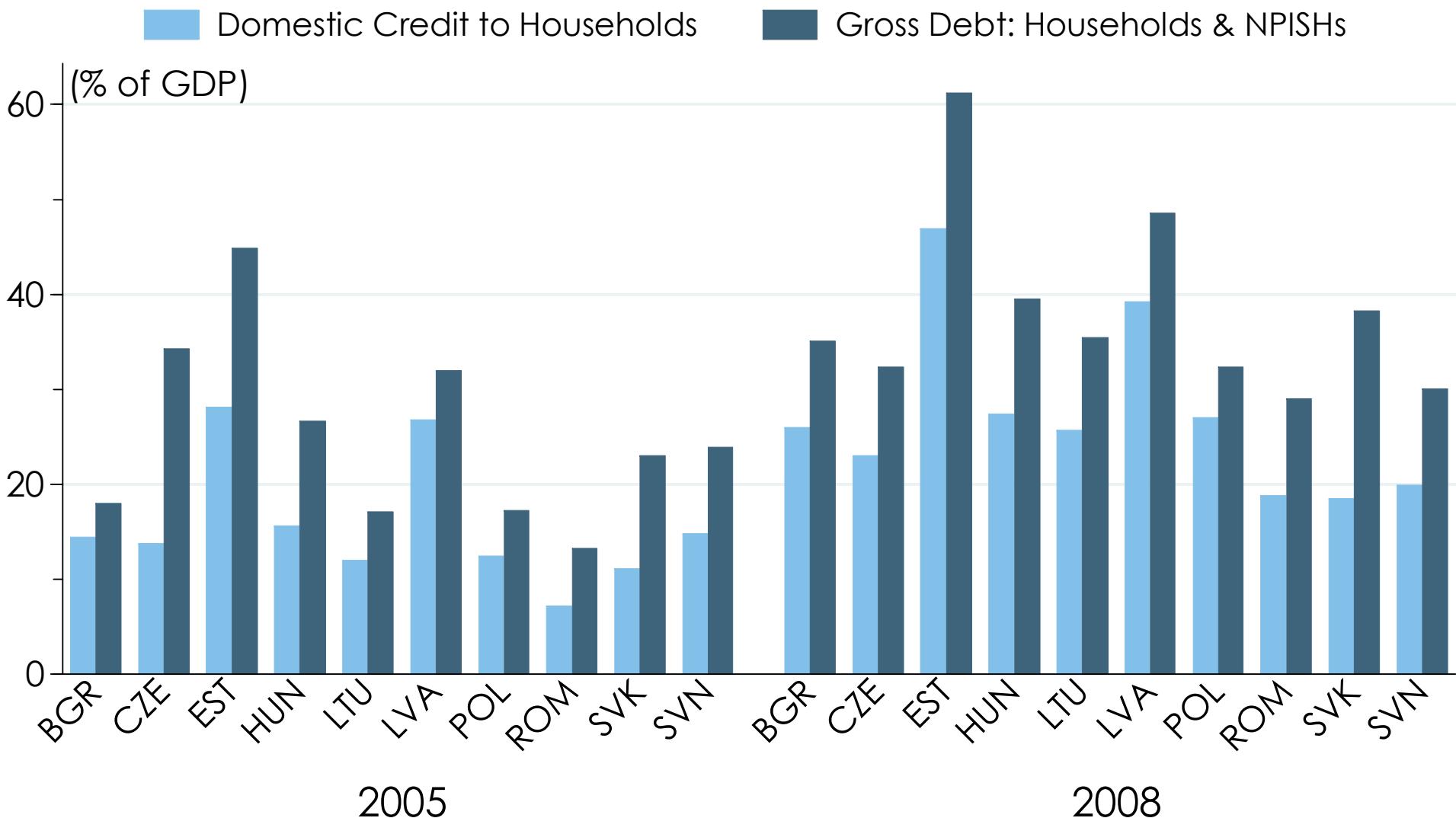
4. Conclusions



Credit Market Shocks,
Systemic Risk,
Household Stress Testing

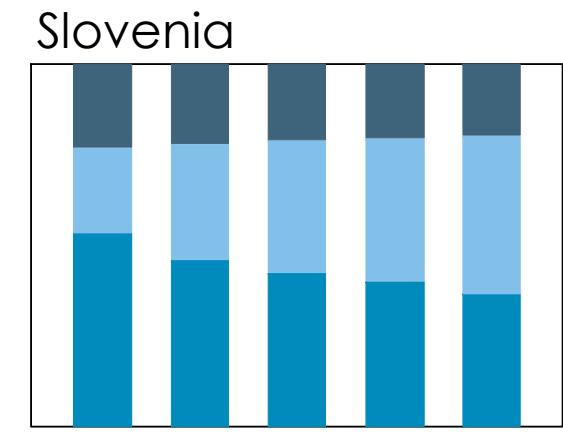
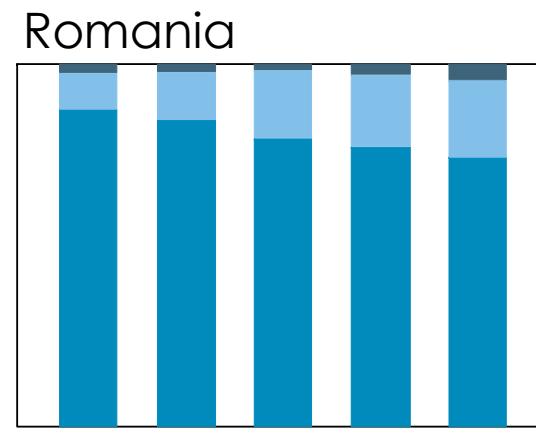
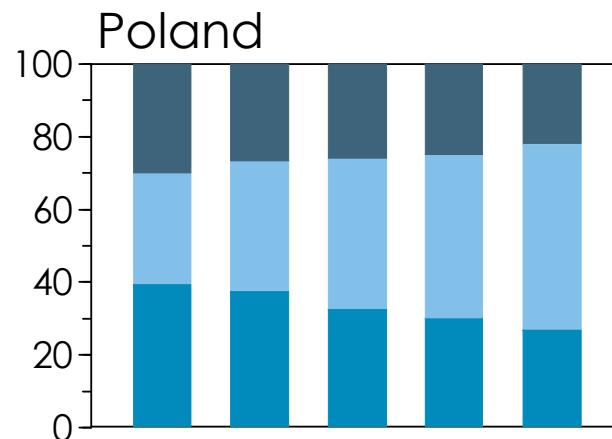
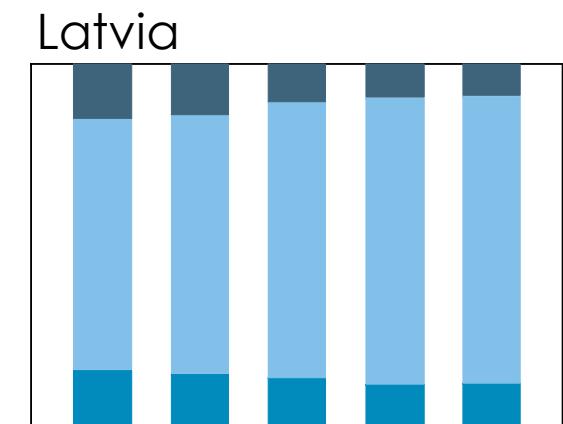
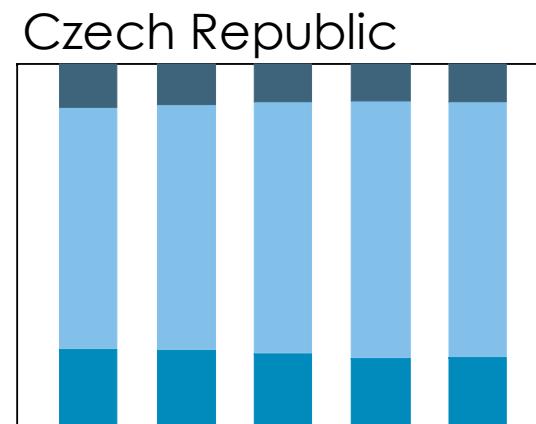
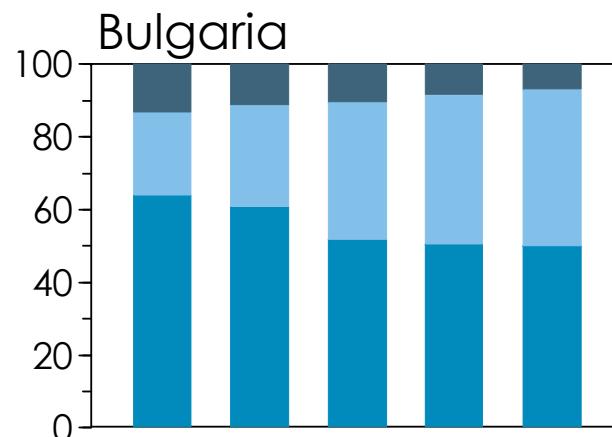
1. CREDIT MARKET AND HOUSEHOLDS

Household Credit and Debt EU10



Sources: EBRD Structural Change Indicators and Eurostat.

Composition of Household Lending, 2004-2008

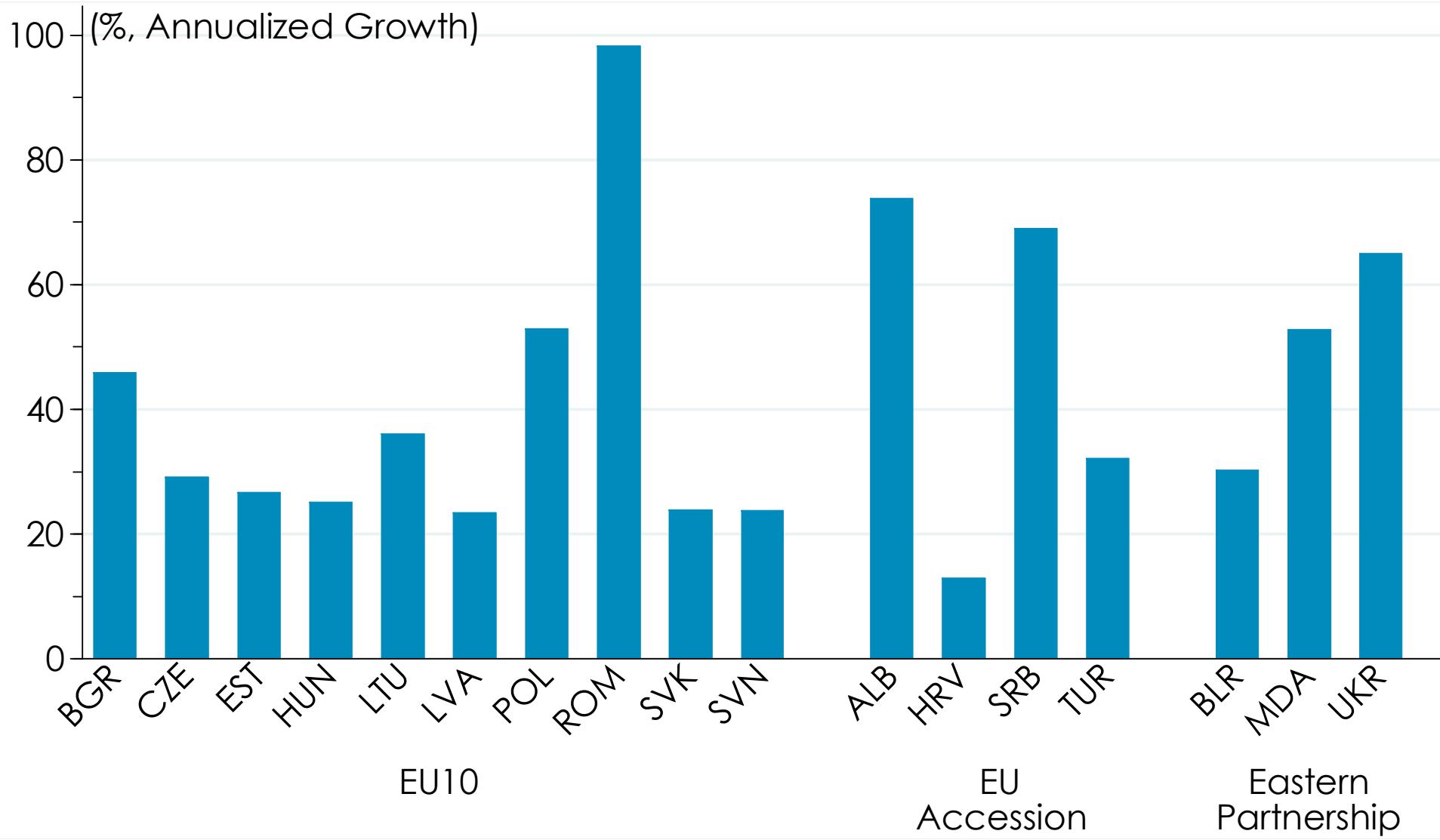


Credit for Consumption

Lending for House Purchase

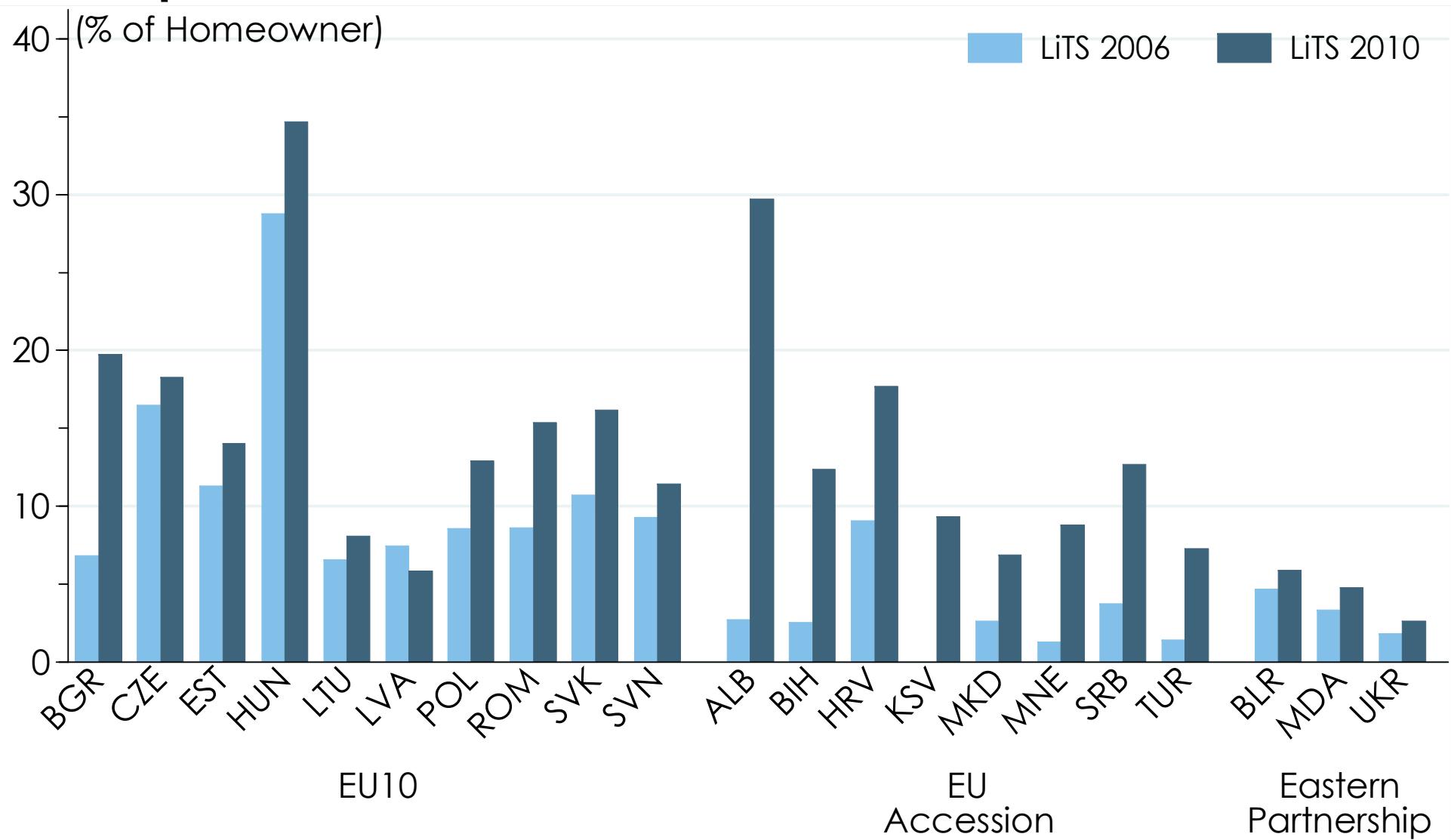
Other Lending

Growth in Mortgage Debt 2005-2008



Sources: EBRD Structural Change Indicators and Eurostat.

More Homeowners Use Mortgages, though Still Limited



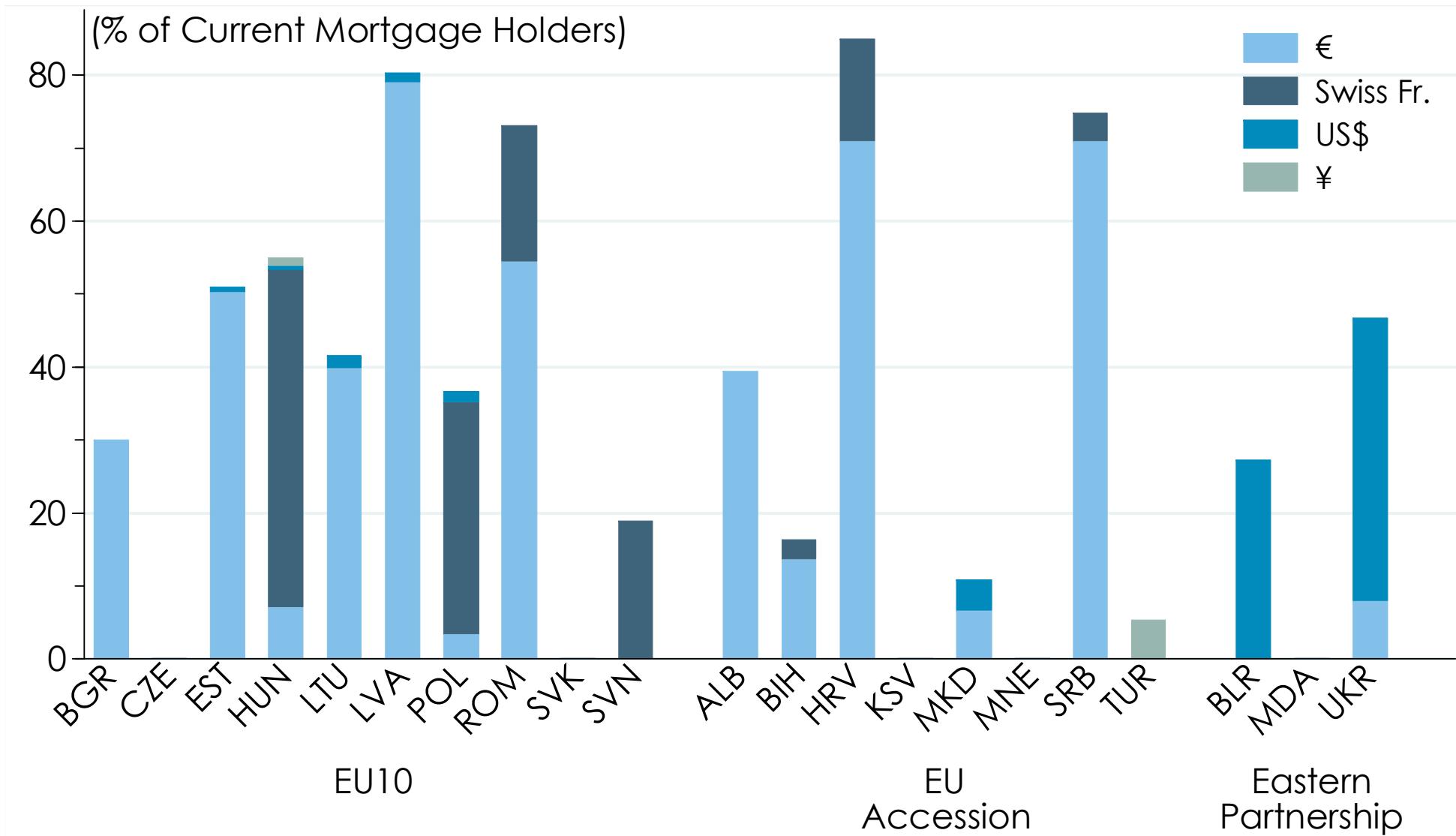
Sources: Life in Transition Surveys (LiTS), 2006 and 2010.



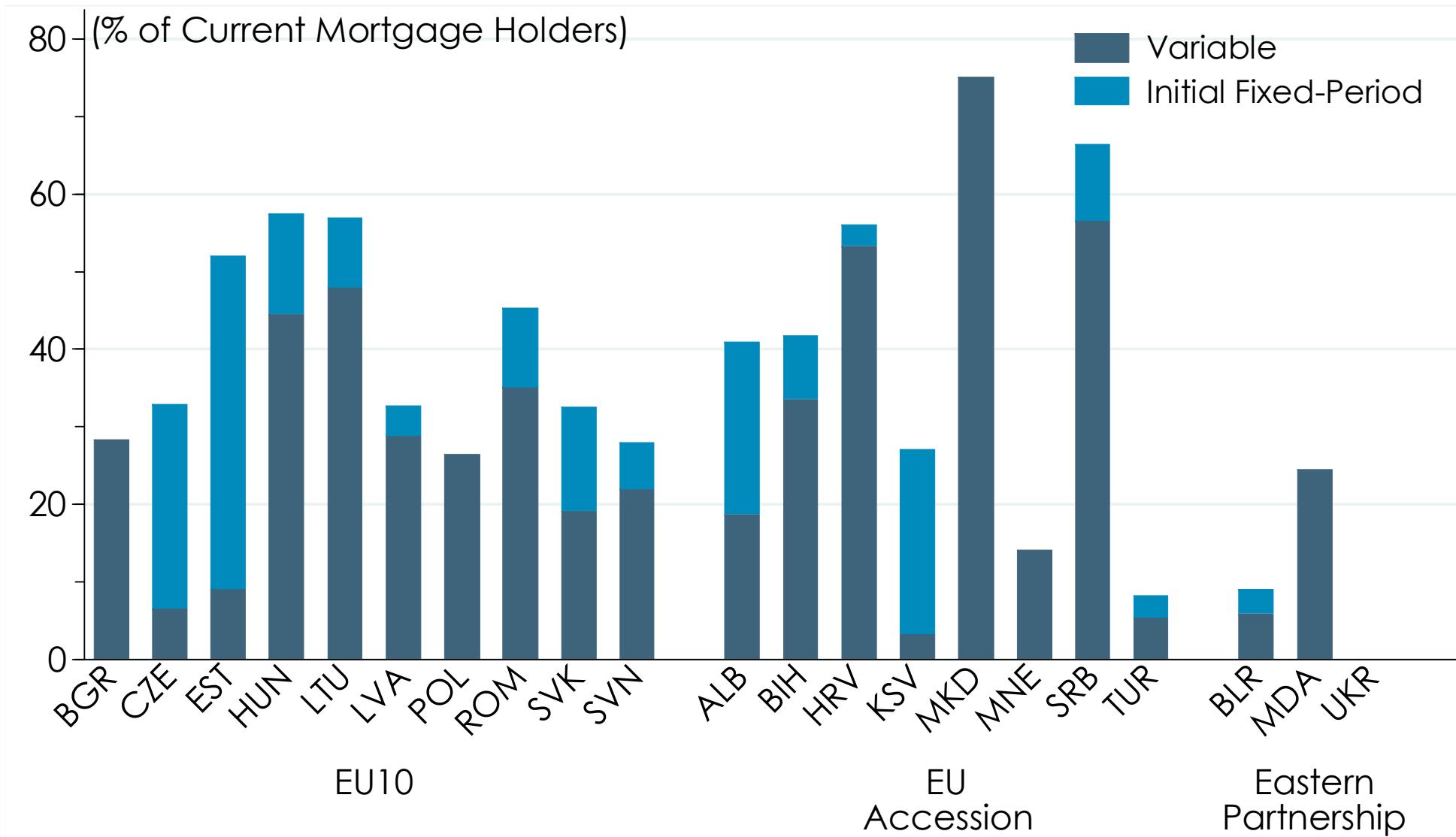
Credit Market Shocks,
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2. MACROECONOMIC RISKS

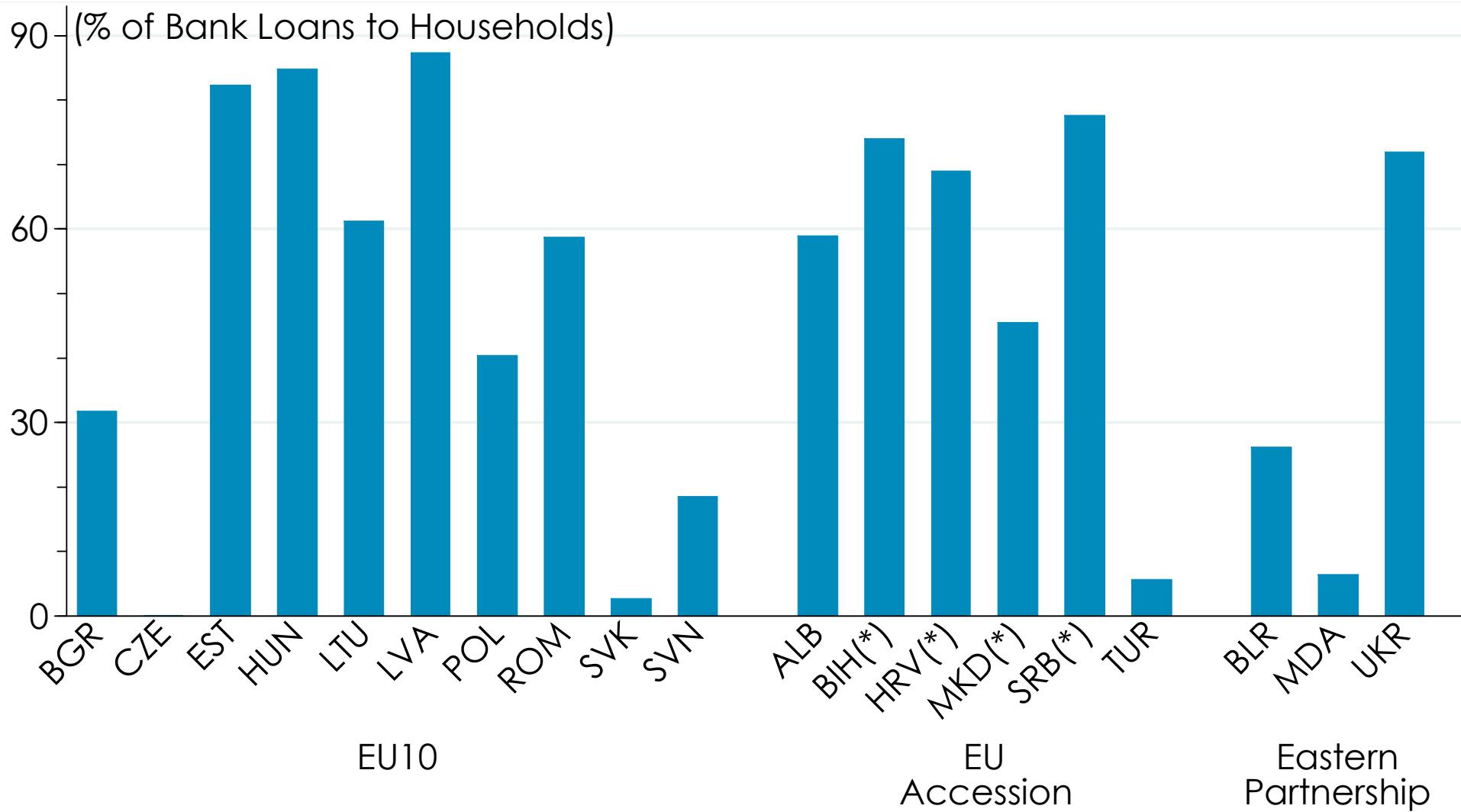
Mortgages Denominated to € and CHF (and US\$) in Europe



Adjustable Interest Rates Widely Available in Europe



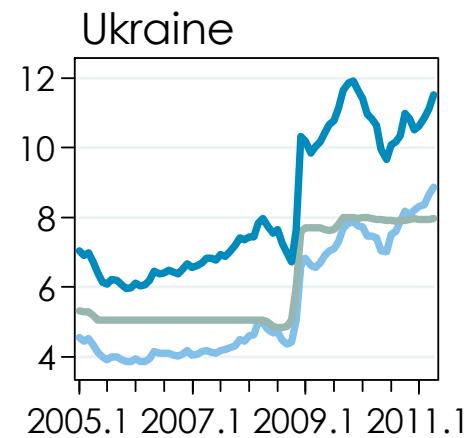
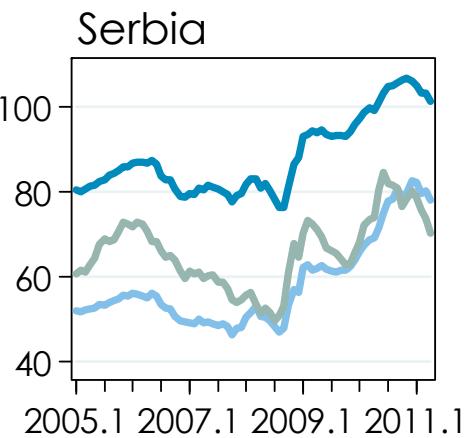
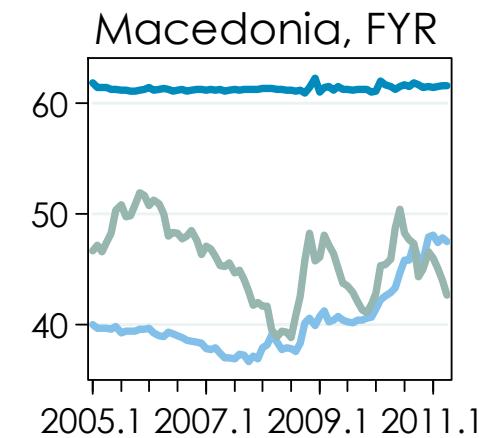
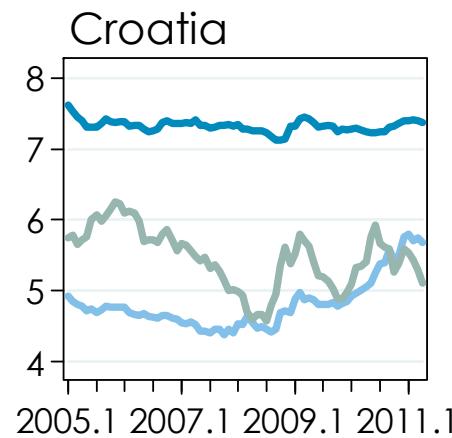
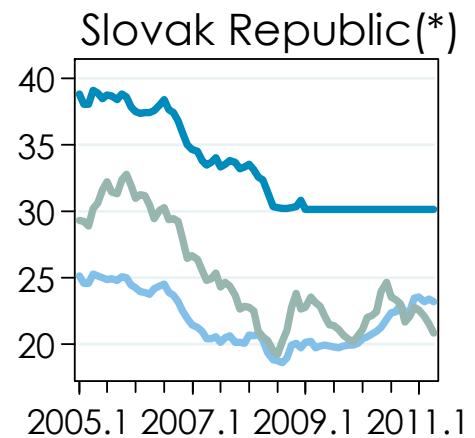
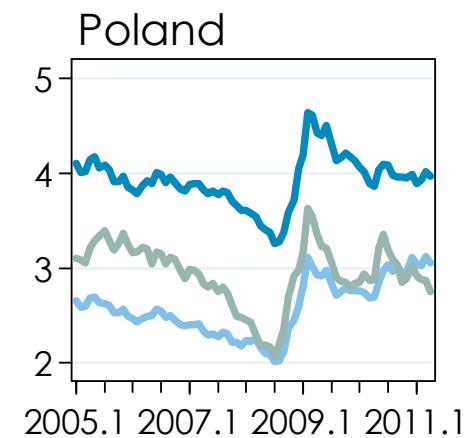
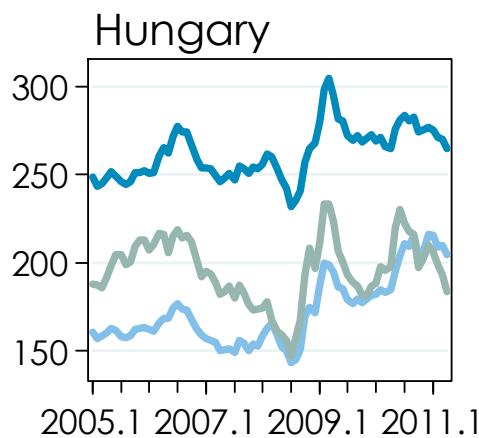
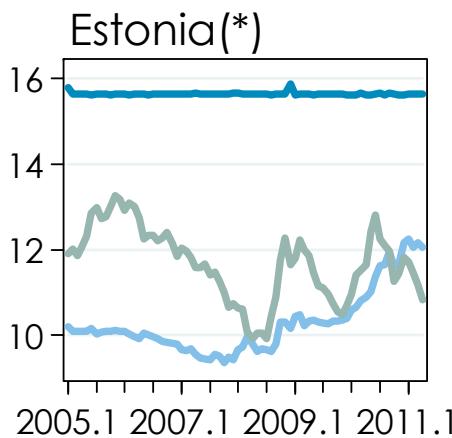
Foreign Currency-Denominated Loans, end-2008



(*) Loans indexed to foreign currencies are included.

Sources: Central Banks.

Sharp Depreciation of Local Currency in 2009

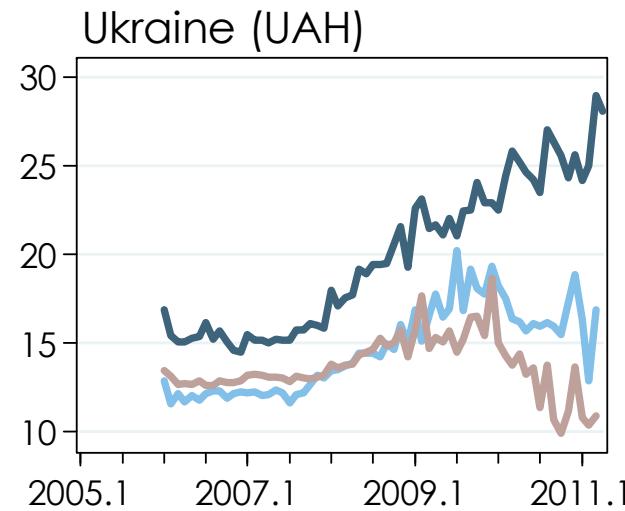
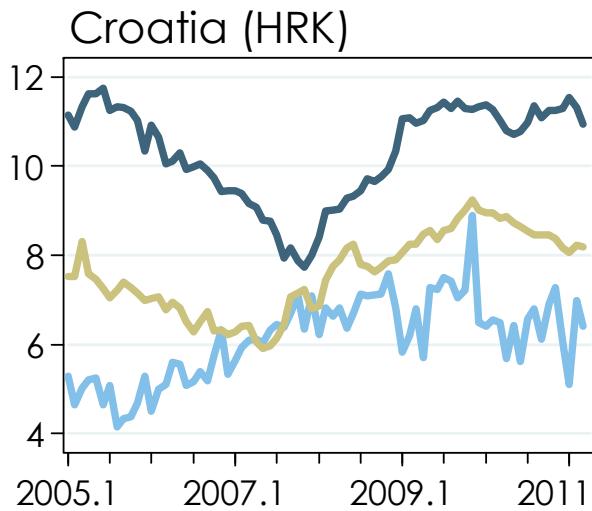
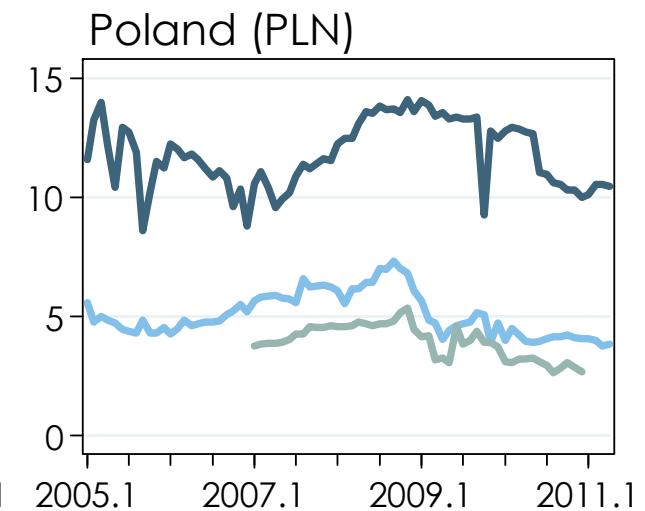
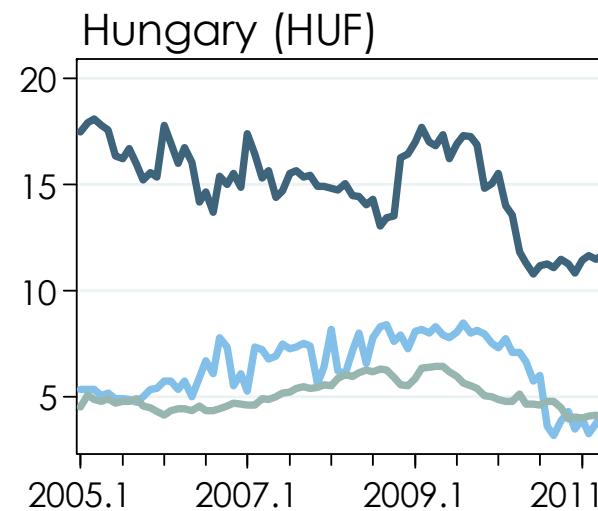
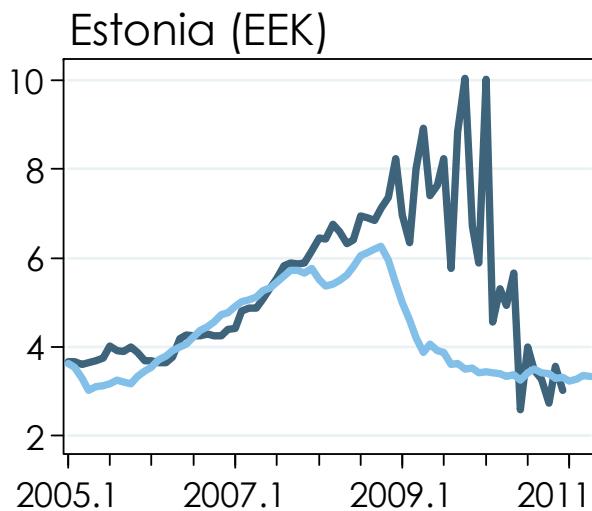


Local Currency per — € — Swiss Fr. — US\$

(*) Exchange rates are based on the old local currencies.

Source: IMF International Financial Statistics.

Rising in Interest Rate in Years Leading the Crisis

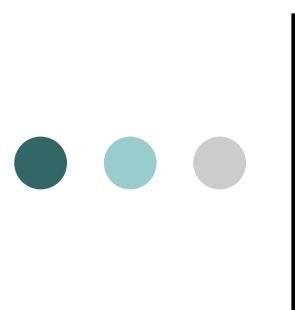


- Local Currency Unit
- €
- Swiss Fr.
- US\$
- Indexed to Foreign Currency



Credit Market Shocks,
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3. STRESS TESTING HOUSEHOLDS



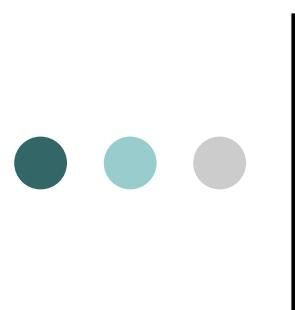
Methodology (1)

✓ **Debt service-income threshold approach**

- **Households are considered as “vulnerable” if their debt service-income ratios exceed 30% or they service debt with negative household income.**

✓ **Economic shocks**

- **Exchange rate shock**
 - **Depreciation of local currency vis-à-vis a foreign currency in which most of household loans are denominated.**
- **Interest rate shock (domestic and foreign)**
 - **Increases in interest rates of household loans in domestic and foreign currencies.**
- **Sizes of the shocks are defined as the largest depreciation / highest increase in interest rates over the maximum two-year period between 2007.1 and 2009.12.**



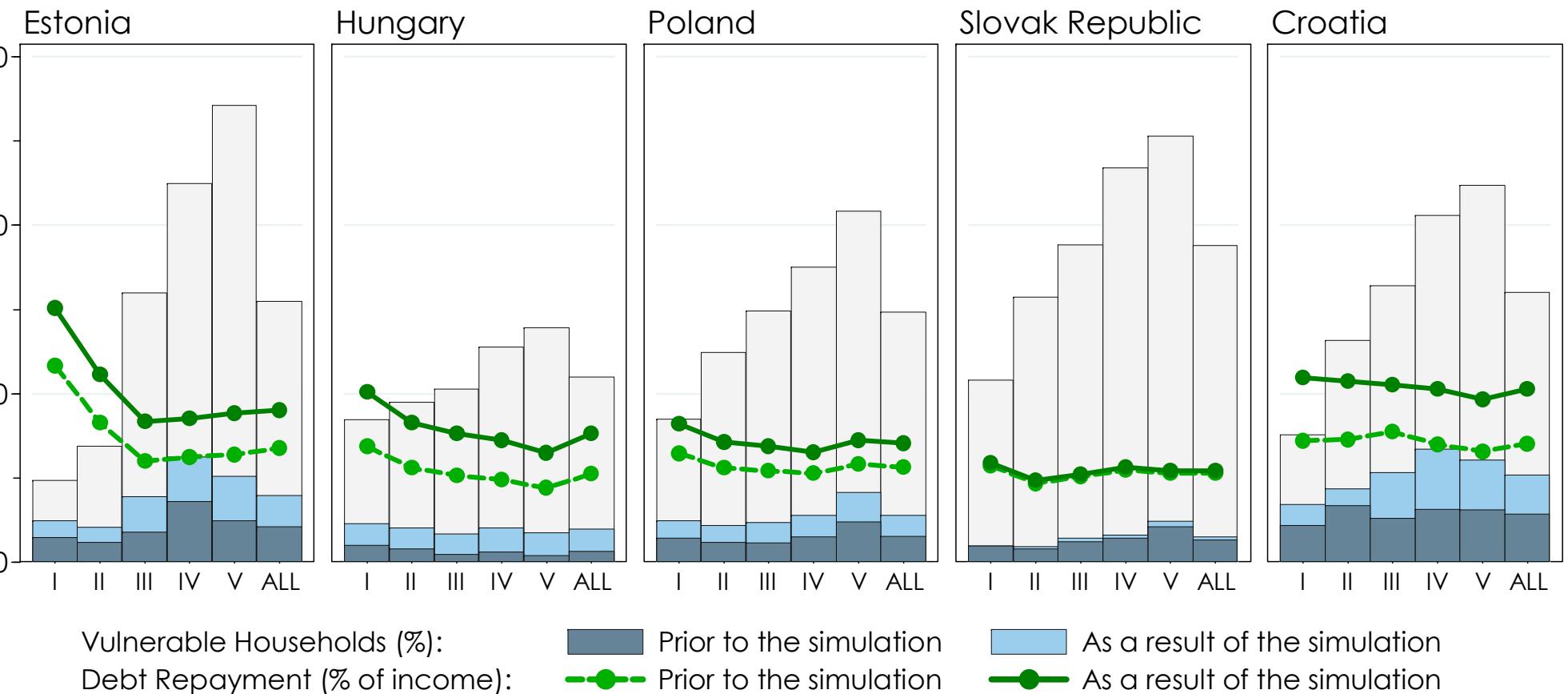
Methodology (2)

- ✓ Two shocks are imposed simultaneously—the 2-by-2 matrix structure:

		Interest Rate (IR) Shock	
		Variable rate	Fixed rate
Exchange Rate (XR) Shock	Loans:	Foreign currency	XR + Foreign IR
	Local currency	Domestic IR only	No shock

- ✓ Results of stress testing are shown as increases in vulnerable households and debt service-income ratios at the country level, as well as by income quintile.

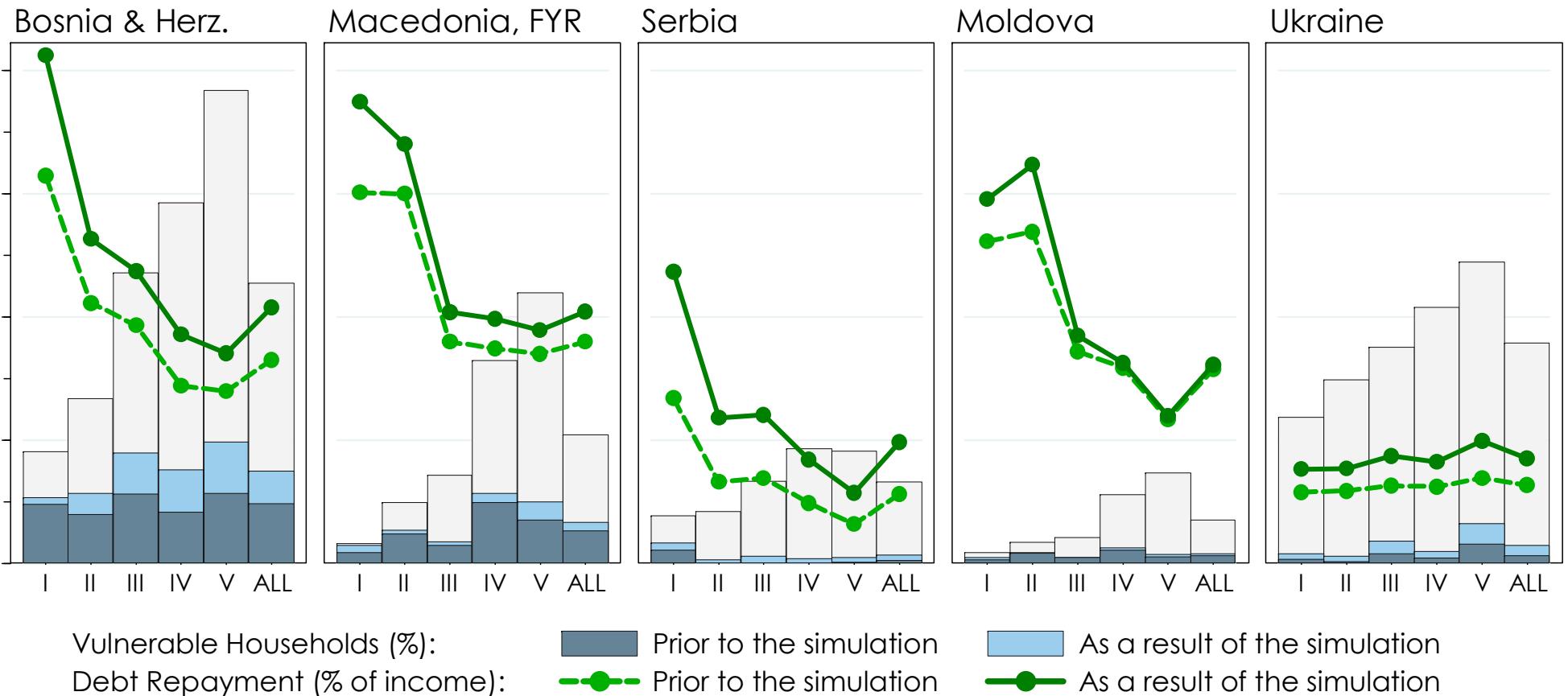
Results (1): EU10 + Croatia



Notes: Pre-crisis survey data (2004 to 2008; year varies by country) are used. Vulnerability is defined as 30% debt service-income threshold. All types of household loans are included in the calculation. The bar on the right in each panel ("ALL") shows the country-wide impact, while the other bars (from "I" to "V") are for households in the first to fifth income quintiles.

Sources: Household Budget Surveys (HBS) of respective countries.

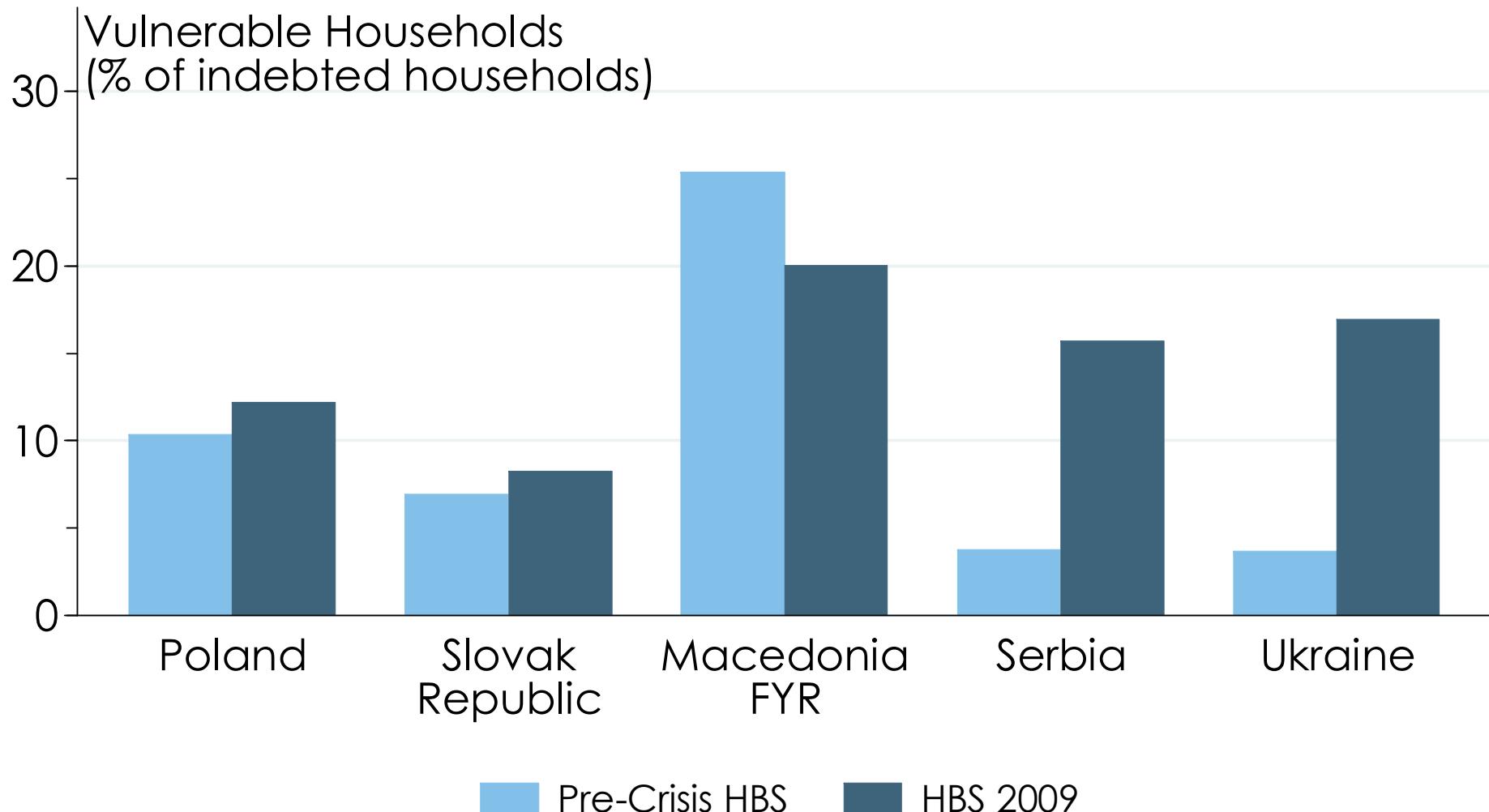
Results (2): Other CESEE Countries



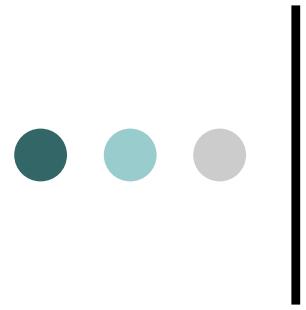
Notes: Pre-crisis survey data (2004 to 2008; year varies by country) are used. Vulnerability is defined as 30% debt service-income threshold. All types of household loans are included in the calculation. The bar on the right in each panel ("ALL") shows the country-wide impact, while the other bars (from "I" to "V") are for households in the first to fifth income quintiles.

Sources: Household Budget Surveys (HBS) of respective countries.

Increase in Vulnerable Households due to the Crisis

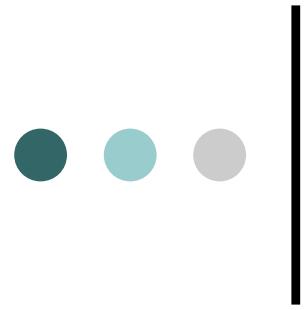


Sources: HBS of respective countries.



4. Conclusions

- ✓ The crisis has increased the share of vulnerable households from 7% to 16% of indebted households (median of the five survey data).
- ✓ It is shown that the impacts of the shocks are rather marginal from the perspective of the whole economy. In Estonia, 30% of all households are indebted and then the simulation has increased the vulnerability from 4% to 8% of all households.
- ✓ Proportionately, middle to upper income families are the most affected by shocks (e.g., rising interest rates and falling currencies).
- ✓ Because the number of households affected and the concentration of debt among wealthier households, the social considerations for government interventions are not particularly strong.
- ✓ Stress Testing is a useful tool to assess the risks households are exposed, but incorporating more country-specific information and possible countermeasures (e.g., selling durables) would be beneficial in the analysis.



References

- ✓ **Mitra, P., M. Selowsky, and J. Zalduendo (2010). *Turmoil at Twenty: Recession, Recovery, and Reform in Central and Eastern Europe and the Former Soviet Union*.** Washington, DC: The World Bank.
- ✓ **Sugawara, N., and J. Zalduendo (2009). "Public Monies and Mortgage Restructuring—The Need for Targeted Interventions."** ECAnomics Note 09/3. Washington, DC: The World Bank.
- ✓ **Tiongson, E., N. Sugawara, V. Sulla, A. Taylor, A. Gueorguieva, V. Levin, and K. Subbarao (2010). *The Crisis Hits Home: Stress-Testing Households in Europe and Central Asia*.** Washington, DC: The World Bank.
- ✓ **World Bank (forthcoming). *Golden Growth: Restoring the Lustre of the European Economic Model*.** 2011 World Bank ECA Flagship Report.



Household Share

Code	Country	Year (HBS)	Variable Interest Rate (%)	Foreign Currency (%)
EST	Estonia	2007	95.0	77.7
HUN	Hungary	2007	57.5	71.9
POL	Poland	2008	26.5	32.5
SVK	Slovak Republic	2007	78.0	2.6
BIH	Bosnia & Herzegovina	2007	41.8	74.0
HRV	Croatia	2004	85.0	69.1
MKD	Macedonia, FYR	2006	70.0	38.1
SRB	Serbia	2008	80.0	76.1
MDA	Moldova	2007	24.5	7.8
UKR	Ukraine	2007	0.0	65.8