

wiiw Spring Seminar, 7 April 2016

The Role of Financing Constraints for Innovation: Evidence for CESEE and CIS Firms

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Motivation: Innovation is a key engine of growth ...

- Theoretically, as advocated by Schumpeter (1934) and as corroborated empirically, innovation is a key engine of economic growth
- Hence, innovation is important for policy and has been put at the heart of national and supra-national initiatives to
 - foster growth and employment (job-rich growth)
 - address societal challenges (such as environment, energy, ageing society, poverty reduction, education etc.)

... but financing constraints are major obstacles to innovation

- Innovative activities are cost-intensive and risky
- Insufficient internal funds force innovators to look for additional external sources in capital markets
- Information asymmetries between innovators and uninformed outside investors result in financing constraints
- Financing constraints force innovators to postpone, scale down or abandon their innovation projects which retards growth

Objective: The role of financing constraints for innovations

- Group of CESEE and CIS (plus UA) countries where financing constraints may further unnecessarily retard catching-up processes with the rest of Europe
- Comparative analysis of pre- and post-crisis effects
 - Pre-crisis/bubble phase (FY2007): unprecedented credit boom; housing bubbles; sharp rise in private sector debt
 - Crisis phase (FY2010/11): temporary collapse of net capital inflows; slump in trade; partly dramatic slump in real GDP growth and soaring unemployment rates

Focus of the analysis

- 2 types of financing constraints
 - Credit constraints: banks reject credit applications
 - Discouragement: entrepreneurs abstain from applying for bank loans, despite the need for external funds

Data source: BEEPS – Business Environment and Enterprise Performance Survey

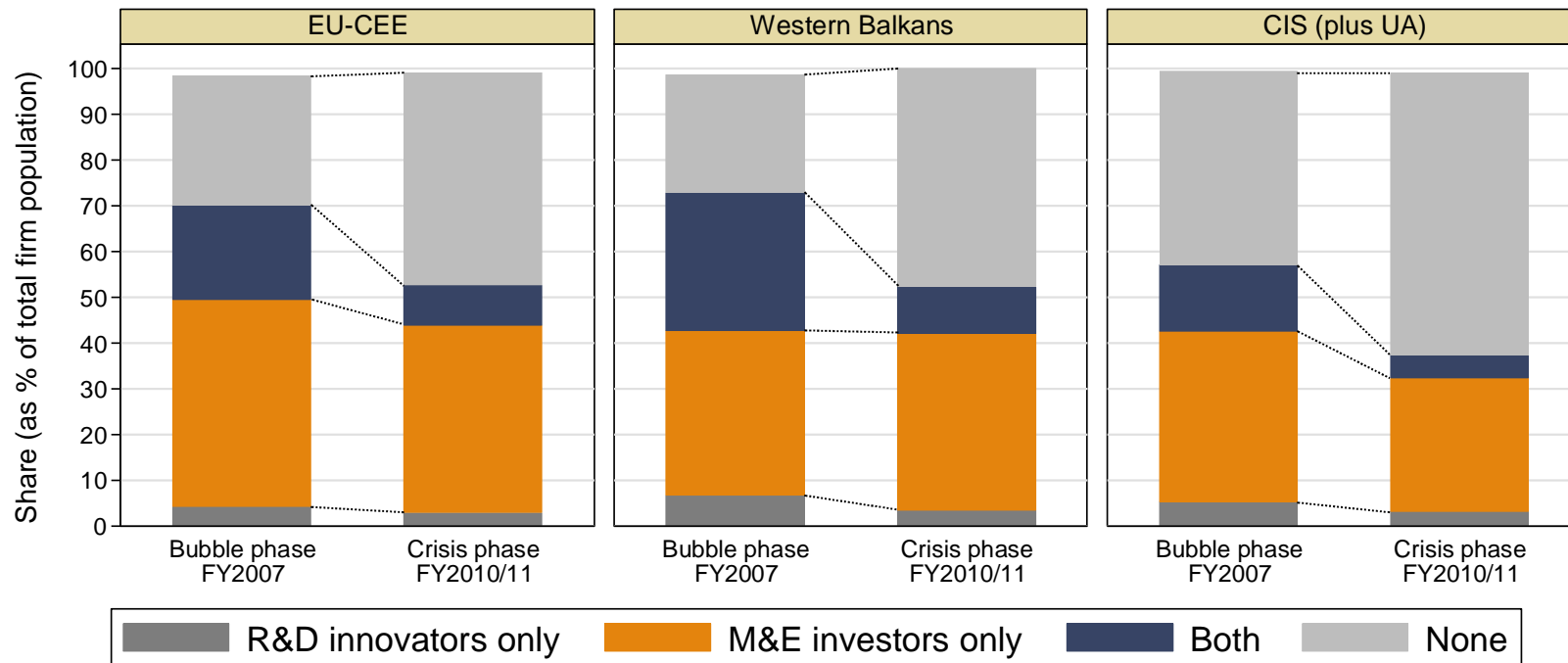
- Collects information about firms' business environment
 - captures how respondents perceived the business environment and its changes over time
 - identifies obstacles to firm performance and growth
- Standardised firm-level survey across countries
- Based on face-to-face interviews with managers, owners or directors of firms on a three- to four-year rotation
- Representative of the non-agricultural private sector
- Samples are stratified by firm size, industry and region

Different innovation strategies

- R&D-based innovation strategy
 - Dominant strategy in advanced economies
 - R&D expenditure (as % of GDP)
 - EU-15: 2-3%
 - EU-CEE: 1-2%
 - Western Balkans & CIS: below 1%
- Investments in machinery and equipment (M&E)
 - Key strategy in catching-up economies

Strong reliance on technology and know-how embodied in machinery and equipment (M&E) to develop innovations

Types of innovation strategies

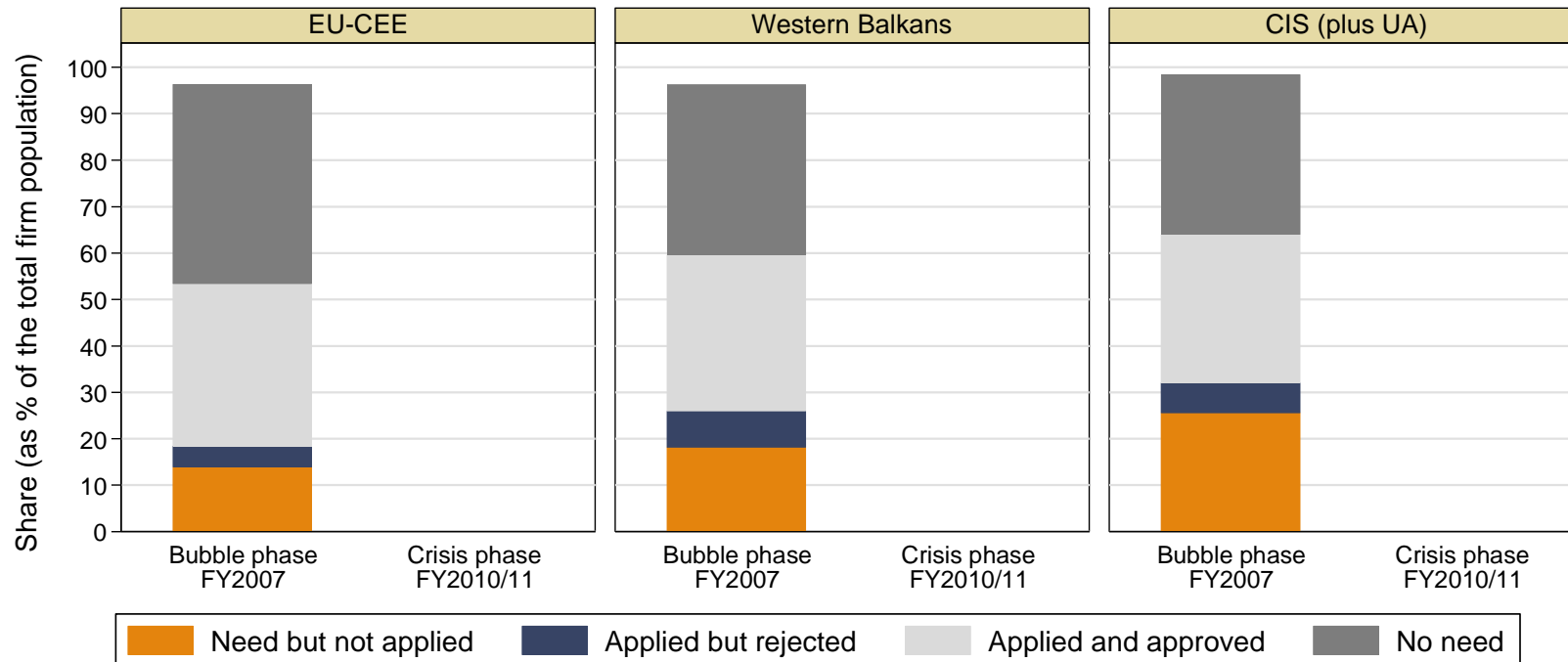


Source: BEEPS, own calculations.

EU-CEE comprises all Central and Eastern European countries but MT and CY, Western Balkans comprises all 7 Western Balkan countries, CIS (plus UA) comprises AM, AZ, BY, KZ, MD, TJ, UZ, RU and UA.

Non-negligible financing constraints: credit constraints matter little

The prevalence of financing constraints: before and after the crisis

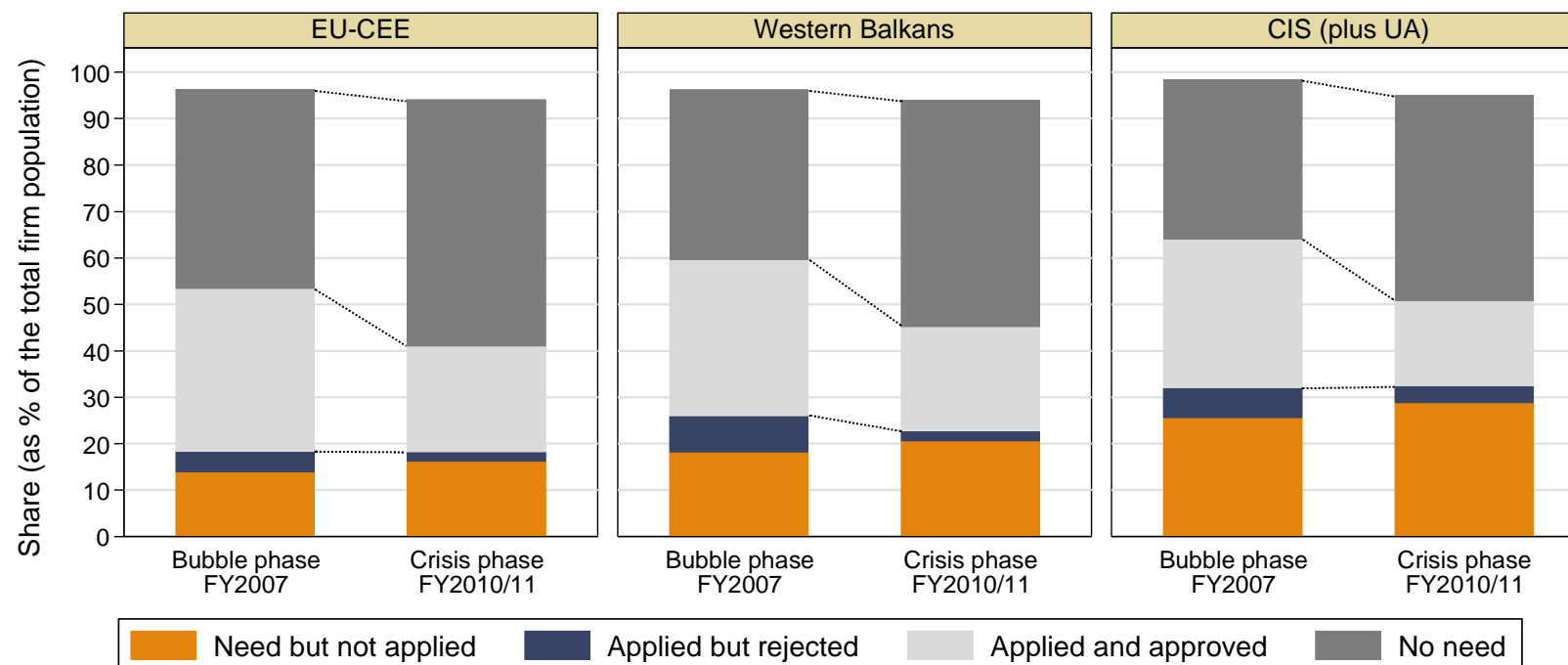


Source: BEEPS, own calculations.

Based on the survey questions: 'Did this establishment apply for any loans or lines of credit?'; 'What was the main reason why this establishment did not apply ...', '... what was the outcome of that application?'

Crisis: Strong drop in need for loans, almost unchanged financing constraints, credit constraints matter even less

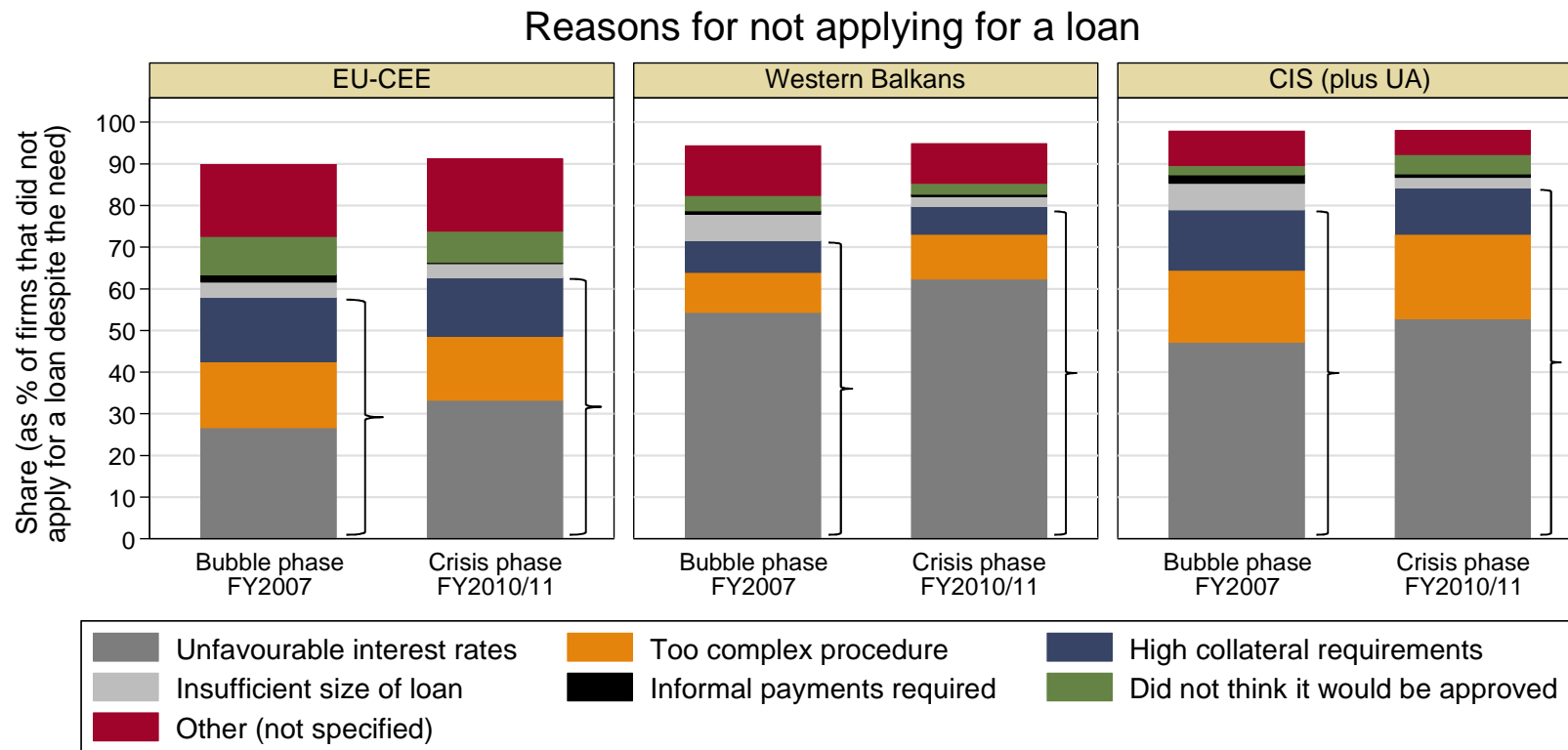
The prevalence of financing constraints: before and after the crisis



Source: BEEPS, own calculations.

Based on the survey questions: 'Did this establishment apply for any loans or lines of credit?'; 'What was the main reason why this establishment did not apply ...', '... what was the outcome of that application?'

Consistent pattern: unfavourable interest rates, complex procedures and high collateral requirements dominate



Based on the survey question: 'What was the main reason why this establishment did not apply for any line of credit or loan?'

Who faces financing constraints (FCs)? - Results from an empirical analysis

- Higher probability:
 - Smaller firms (for lack of collateral) (stronger in the pre- than the post-crisis period)
- Lower probability:
 - Exporters & importers (pre-crisis period only)
 - Recipients of gov't or EU subsidies (post-crisis period only)
- No evidence for a negative age effect, gender discrimination, or for access to finance being easier for foreign-owned firms or for firms with better human capital endowment

Who faces financing constraints (FCs)? - Results from an empirical analysis

- State and structure of the banking sector matter: firms are **more** likely to face financing constraints if located in economies with:
 - higher non-performing loans (NPLs) (both periods)
 - lower bank outreach* (pre-crisis period only)
 - lower foreign bank share (crisis-period only)

*Defined as the number of bank branches per 100,000 inhabitants

Financing constraints are detrimental to M&E-based innovation activities

- Decision to innovate as a two-stage process:
 - whether to pursue innovative activities
 - if so, how much to spend on these activities
- **FINDINGS:** Financially constrained entrepreneurs
 - are less likely to pursue M&E-based innovation activities (by around 30 pp, irrespective of period considered)
 - spend less on the acquisition of machinery and equipment by 4% (in the pre-crisis period) and 9% (in the crisis period)

Summary and conclusions

- Firms in CESEE and CIS are technological laggards, predominantly relying on technology embodied in machinery and equipment (M&E)
- Evidence for non-negligible financing constraints:
 - Strong evidence for discouragement effects
 - Bank rejections per se are of little importance
- Financing constraints are detrimental to innovative activities:
 - Entrepreneurs are less willing to pursue innovative activities
 - Entrepreneurs spend less on such activities

Possible policy implications

- Financing constraints should be reduced, subject to compliance with financial prudence, to ensure continuity in innovation activity and catching-up
- Areas of policy intervention:
 - Investment schemes and credit guarantee schemes (their implementation might be challenging though)
 - Non-performing loans (NPLs) resolutions

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Thank you for your attention

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Landesmann, M., S.M. Leitner and R. Stehrer (2016), Changing Patterns of M&E-Investment-Based Innovation Strategies in CESEE and FSU Countries: From Financial Normalcy to the Global Financial Crisis, wiiw Working Paper No. 123.

Country codes (in alphabetic order) and abbreviations

AL	Albania	LV	Latvia
AM	Armenia	ME	Montenegro
AZ	Azerbaijan	MK	Macedonia
BA	Bosnia and Herzegovina	PL	Poland
BG	Bulgaria	RO	Romania
BY	Belarus	RS	Serbia
CZ	Czech Republic	RU	Russia
EE	Estonia	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	TJ	Tajikistan
KG	Kyrgystan	UA	Ukraine
KZ	Kazakhstan	UZ	Uzbekistan
LT	Lithuania	XK	Kosovo

CESEE	Central, East and Southeast Europe
CIS	Commonwealth of Independent States
EU-CEE	European Union – Central and Eastern Europe
