

IGNITING INNOVATION: Rethinking the Role of Government in Emerging Europe and Central Asia

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What is the book's objective?

- Identify new trends in technology upgrading and innovation in the Europe and Central Asia region
- Focus on getting the policy design and implementation right, given the legacy issues and institutional failures
 - Building on the lessons from 10 years of analytic and operational work:
 - Poland 2020 Report
 - Croatia Science and Technology Project
 - Technical Assistance in Bulgaria, Romania, Russia, etc

Overview

Why Innovation Matters

- and what the government should do about it

Acquiring technology from abroad

- leveraging the resources of foreign investors and inventors

Connecting research to firms

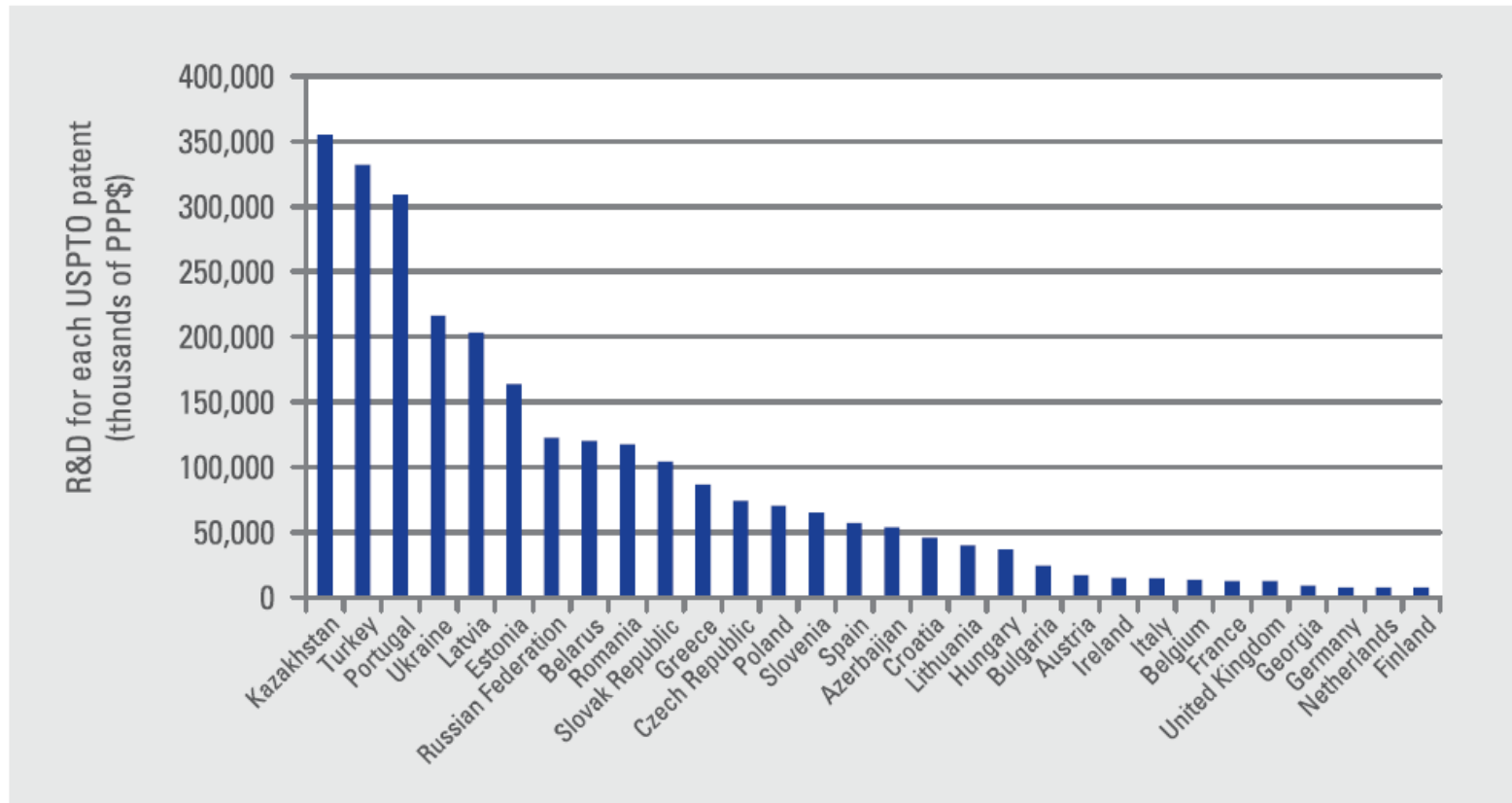
- options for reforming public R&D institutes

Bringing innovations to market

- boosting private incentives through public instruments

R&D Intensity in the region still low and generates limited outputs

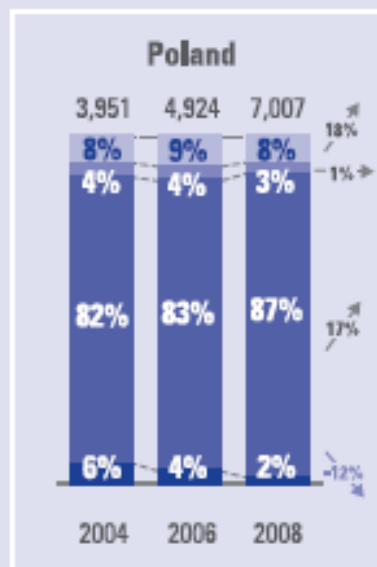
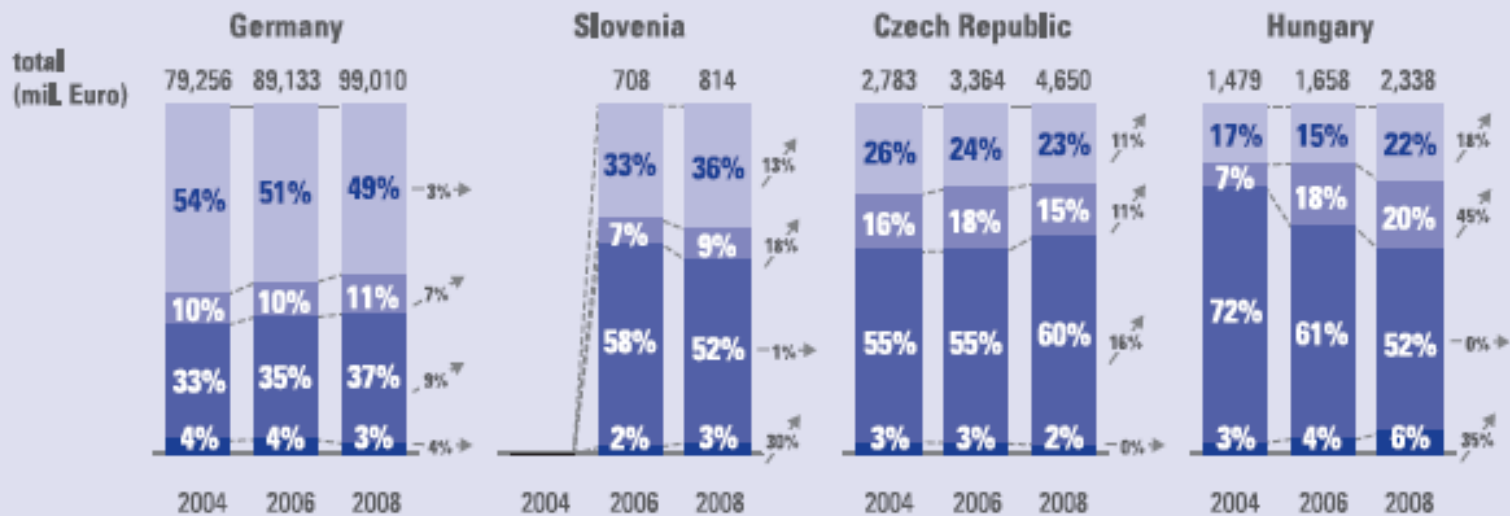
- R&D-to-GDP is 0.9%, half the OECD and EU27 averages
- And innovation outputs are comparatively low in light of inputs



Source: Authors' calculations based on UNESCO and USPTO data for 2007.

Interventions have not spurred private R&D and risk-taking

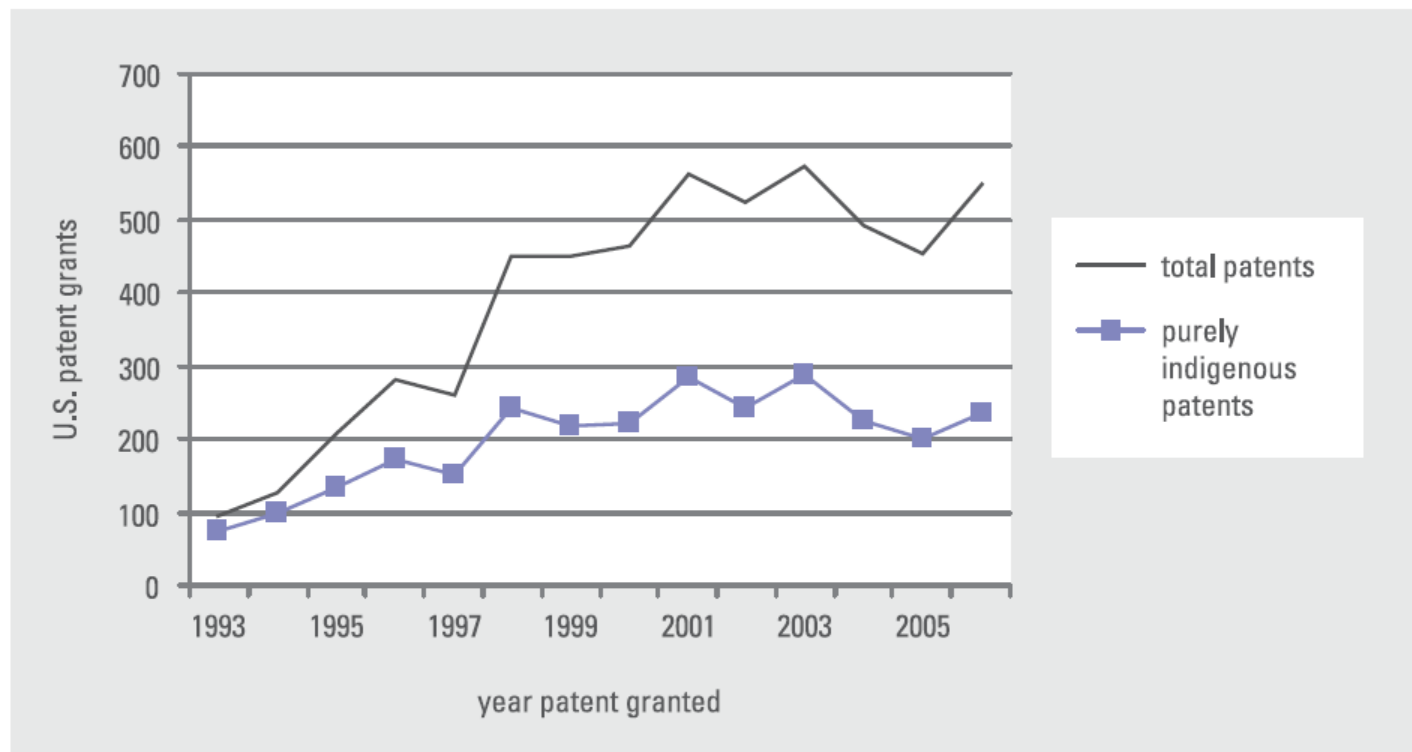
- Inciting private R&D investments has proven difficult
 - 63% of all R&D in OECD is funded by industry and 30% by government
 - In Europe and Central Asia, the proportions in financing are reversed
- Instruments put in place by governments have not been able to stimulate innovative activity
 - Pipeline for pure innovation falls flat as funding goes to absorption
 - 2008: 87% of private sector investment in Poland was directed to investment in machinery, equipment, etc



■ in-house R&D
 ■ extramural R&D
 ■ machinery, etc.
 ■ license, etc.

Inventive activity has increased, driven by international linkages

- International co-invention contributes to the quantity and quality of inventive efforts

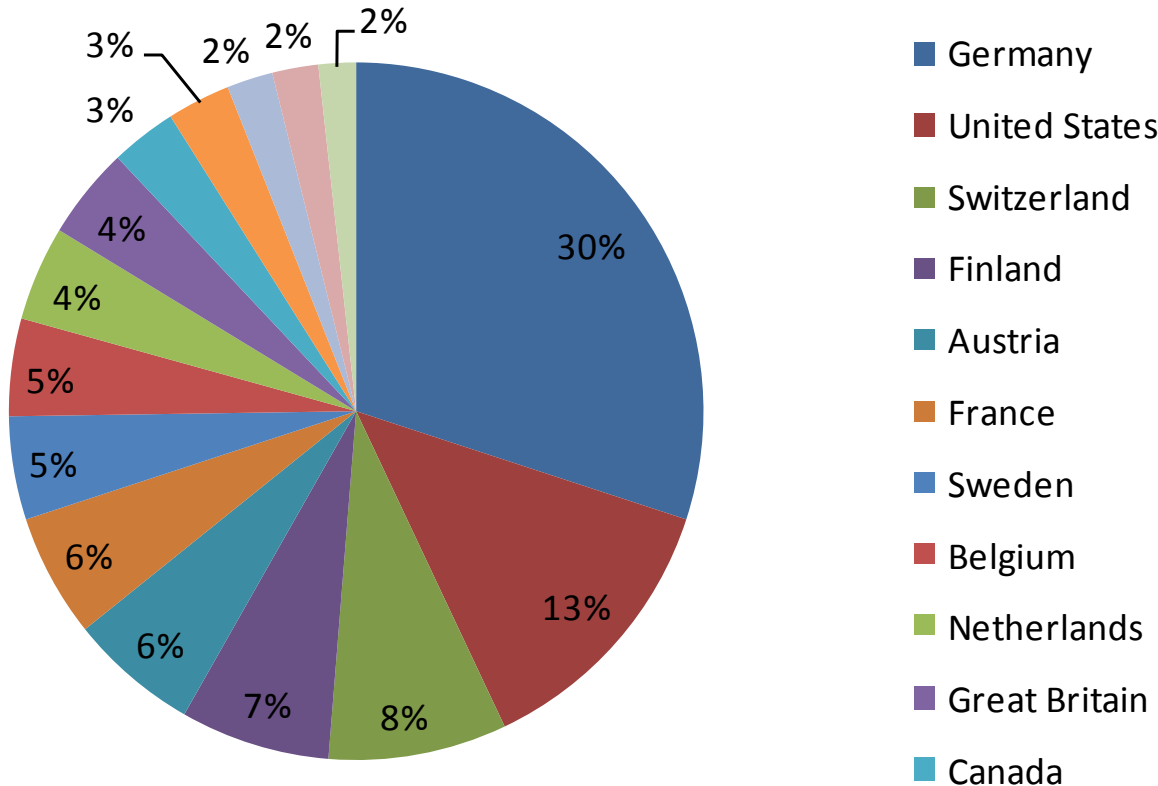


Note: The graph tracks total counts of patents in which at least one inventor is based in one of seven ECA countries: Bulgaria, the Czech Republic, Hungary, Poland, the Russian Federation, Slovenia, and Ukraine. "Purely indigenous patents" are those generated by a team whose members are all based in a single ECA country.

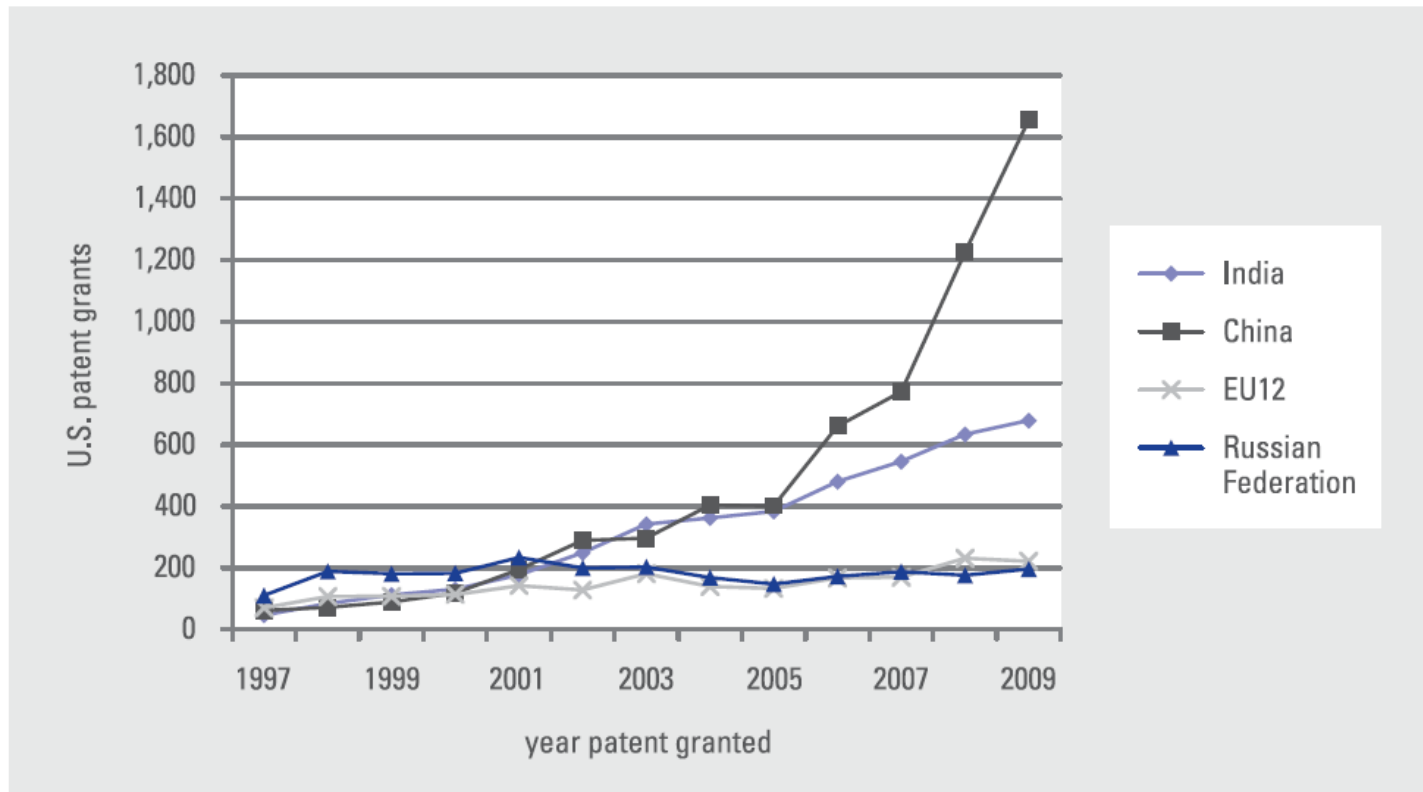
Source: Authors' calculations based on the USPTO Cassis CD-ROM, December 2006 version.

Germany plays a central role in new co-invention patterns

ECA Co-invention by partner country (using EPO data)



But the region is losing ground relative to China and India



Note: The graph compares counts of patents in which at least one inventor is based in one of the EU12 countries with those of China, India, and the Russian Federation.

Source: Authors' calculations based on the USPTO.

Acquiring Technology: What are the firm-level drivers?

- International linkages are hugely important
 - Transition to export status increases “absorption” by about 33%
 - Joint venture with a multinational increases absorption by 41%
- Corporate governance and organization

Connecting research to firms

- Prior to 1990, R&D institutes played a central role in connecting research to firms

What is the state of RDIs in the region?

- 1990s: Ad hoc overhaul of RDIs during the transition
- Case studies of 21 RDIs across Eastern Europe, Russia and Central Asia reveal:
 - Confusion between public and private roles.
 - Isolation from other innovation actors and market.
 - Governance, culture, staffing and incentives reflect another era.
 - Weak scientific and commercial output.

How to improve the relevance and impact of public research

- Difficult to restructure existing RDIs
- But, opportunities to introduce new models that:
 - Broker technology and redefine strategy continuously
 - Motivate performance through funding
 - Revitalize governance & management

RDIs need to be technology brokers, not lone inventors

- Impossible to stay on cutting edge for all customer needs
 - Work with global firms to acquire industrial knowledge
 - Focus competencies on market relevance and fit
 - Create internal competition to develop areas of strength
 - Enhance staff mobility with industry
 - Do not invent, co-invent
 - Transfer knowledge rather than “packaged” technology

Introduce funding schemes that motivate performance

- Competitive funding
- Performance contracts

○ Objective:



- Keep ratio of industry to institutional funding in a desired range.

○ Strategy

- Additional 0.4 euro of funding for each euro raised from industry.
- Falls to 0.1 euro if industry revenues fall outside 35-55% range.

Professionalize management

- Institutional autonomy
- Non-profit foundation
- Government-owned contractor operated

Bringing Innovations to Market

Vision



Reality

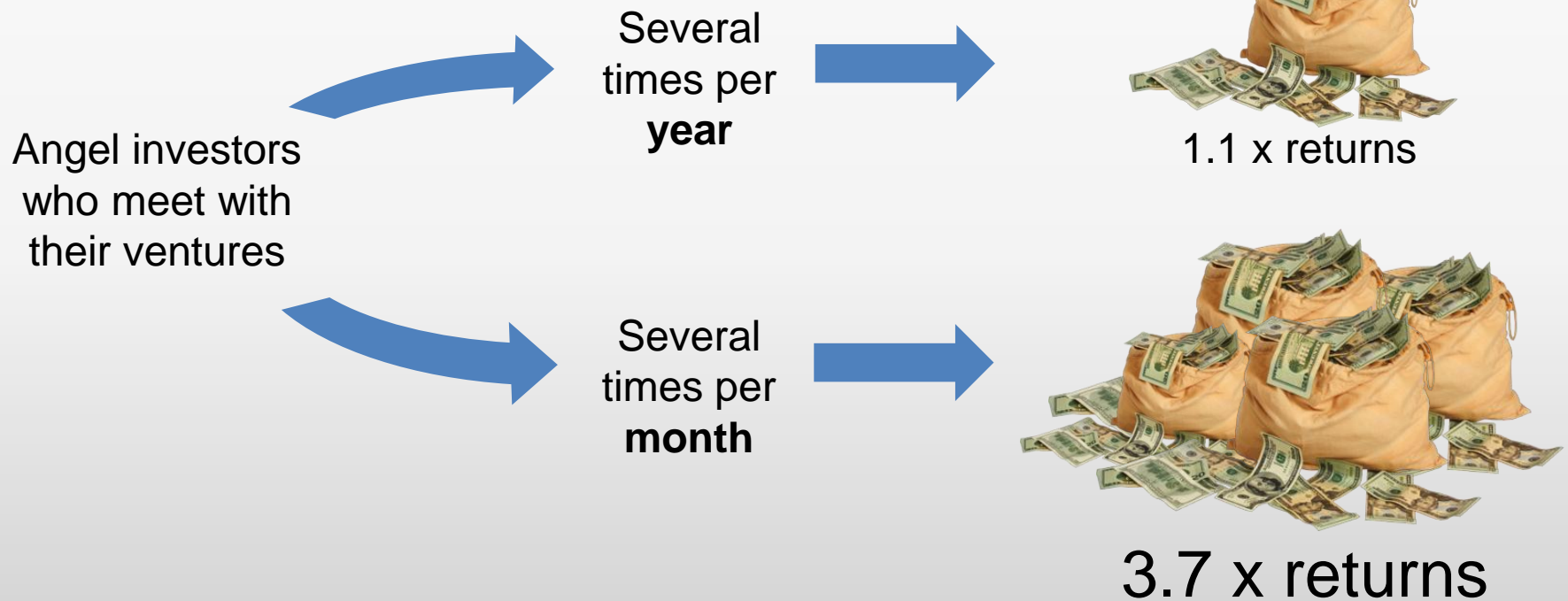


The *how*: financial support instruments

- *Matching grants*: Preserve private risk; additionality
- *Soft loans*: Only low-risk apply
- *Tax credits*: Start-ups have no profits to use credit
- How to subsidize *Venture Capital while preserving private risk?*

Conceptual failures due to lack of “smart” money in different countries

Mentoring has a positive effect on investment returns of early stage startups



Increasing the impact of innovation policy

Complementary assets:

Israel

- Office of the Chief Scientist
- Sequencing of instruments
- Tapping the Diaspora
- R&D grants and procurement

Finland

- Stakeholder ownership in policy-making
- Good institutional framework

Policy Implications

Acquire
Technology from
Abroad

- Facilitate trade, FDI and entrepreneurial start-ups and spinoffs
- Support collaboration of local researchers and foreign investors

Connect
Research to
Firms

- Restructure RDIs to better focus R&D efforts and commercialize outputs

Bring
Innovations to
Market

- Rethink support instruments
- Sequence instruments to meet different gaps

THANK YOU!



*Rethinking the Role of
Government in Emerging Europe
and Central Asia*