Key challenges of 'smart specialization' policies for CEE/CIS countries

Slavo Radosevic
UCL

SSS for Sustainable Development, UNECE Geneva
October 15, 2014

Key issues

1. Growth, technology upgrading and SSS: country specific challenges
2. 'Transnationalization' of SSS: opening to and use global value chains as levers
3. Institutional preconditions for SSS

Contradictions between the aims of SSS and its metrics

- The dominant metrics (cf. IUS) assumes identical technological paths and drivers of growth but the policy aims to push countries along divergent 'smart specialization' paths.
- …… to avoid so called 'adding up' problem (Spence 2011: 94-96) or situation that too many regions are aiming for similar technologies and markets and thus competing each other out.
- Its dominant metrics – IUS – which countries and regions are using as policy targets is actually reinforcing imitative policies towards R&D based growth.

- Outcome: the inadequate metrics, which captures mainly R&D based growth, determine policy instead of policy determining metrics

A stylized mainstream policy model of technology upgrading

Research and development ⇉ Innovation ⇉ Competitiveness ⇉ Economic growth ⇉ Employment growth

Underlying assumption: convergence in growth levels requires convergence in policies……

.....despite different sources of productivity improvements in countries behind technology frontier

- Diversity of the EU27 in terms of driving factors of growth (WEF 2008 GCR)
  - Efficiency driven (BG/RO); in transition (other NMS), Innovation driven (SI, EE and EU15)
- The sources of productivity improvements in FDI in CEE: Production capability (quality assistance), not technological capability (Majcen. Radosevic and Rojec et al, 2009;
- Production capability (ISO9001) as the most significant driver of productivity growth in transition economies (Kravtsova and Radosevic, 2011)

Different patterns of technology upgrading at different income levels

High income
- Upper high income
- Lower high income

Technology frontier activities

Middle income
- Upper middle income
- Lower middle income

Technology diversification

Low income

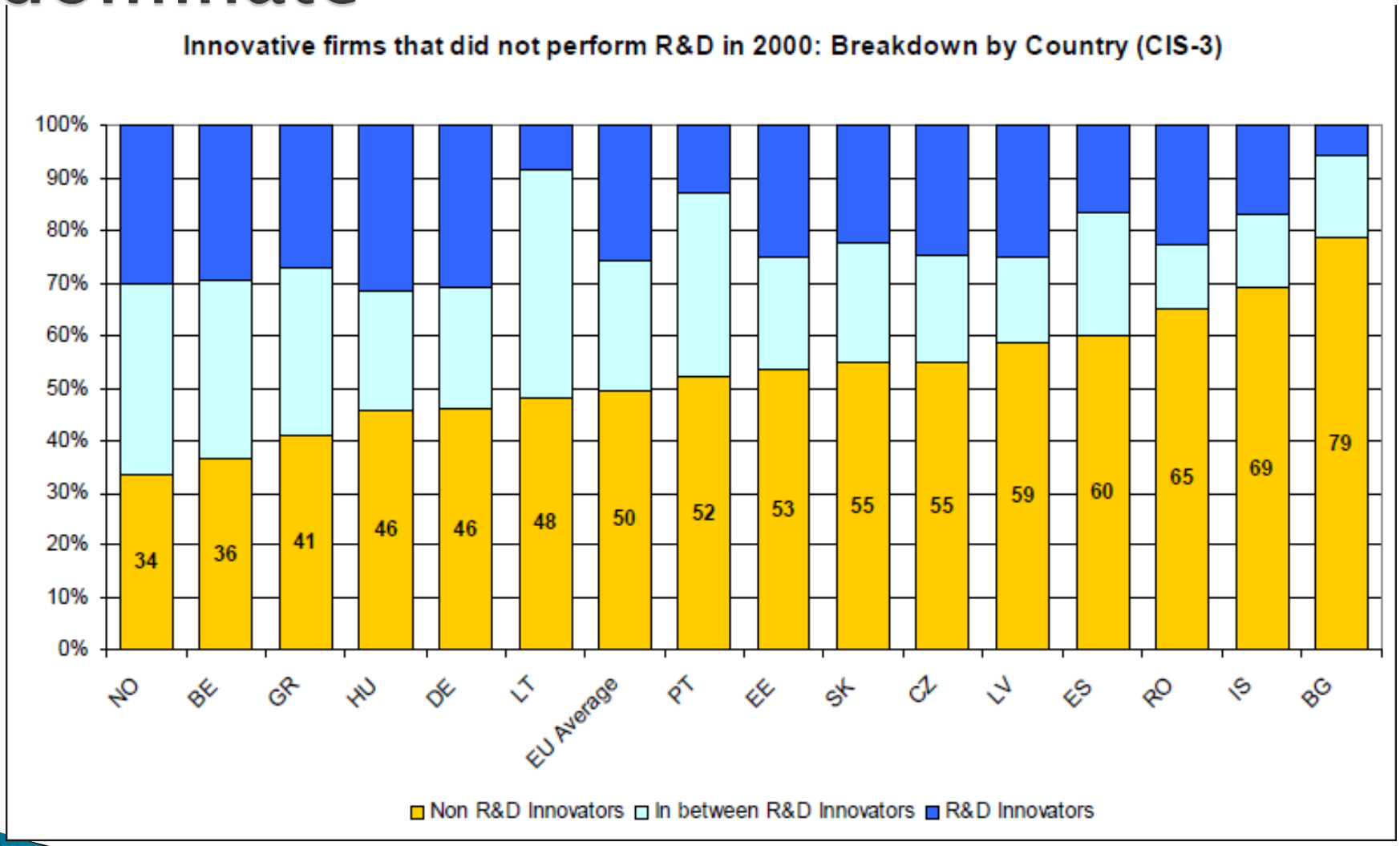
Imitative technology effort

Turnover from innovation as percentage of total turnover

	2004	2006
EU 10 New	12.5	12.4
EU15 Old	12.5	13.5

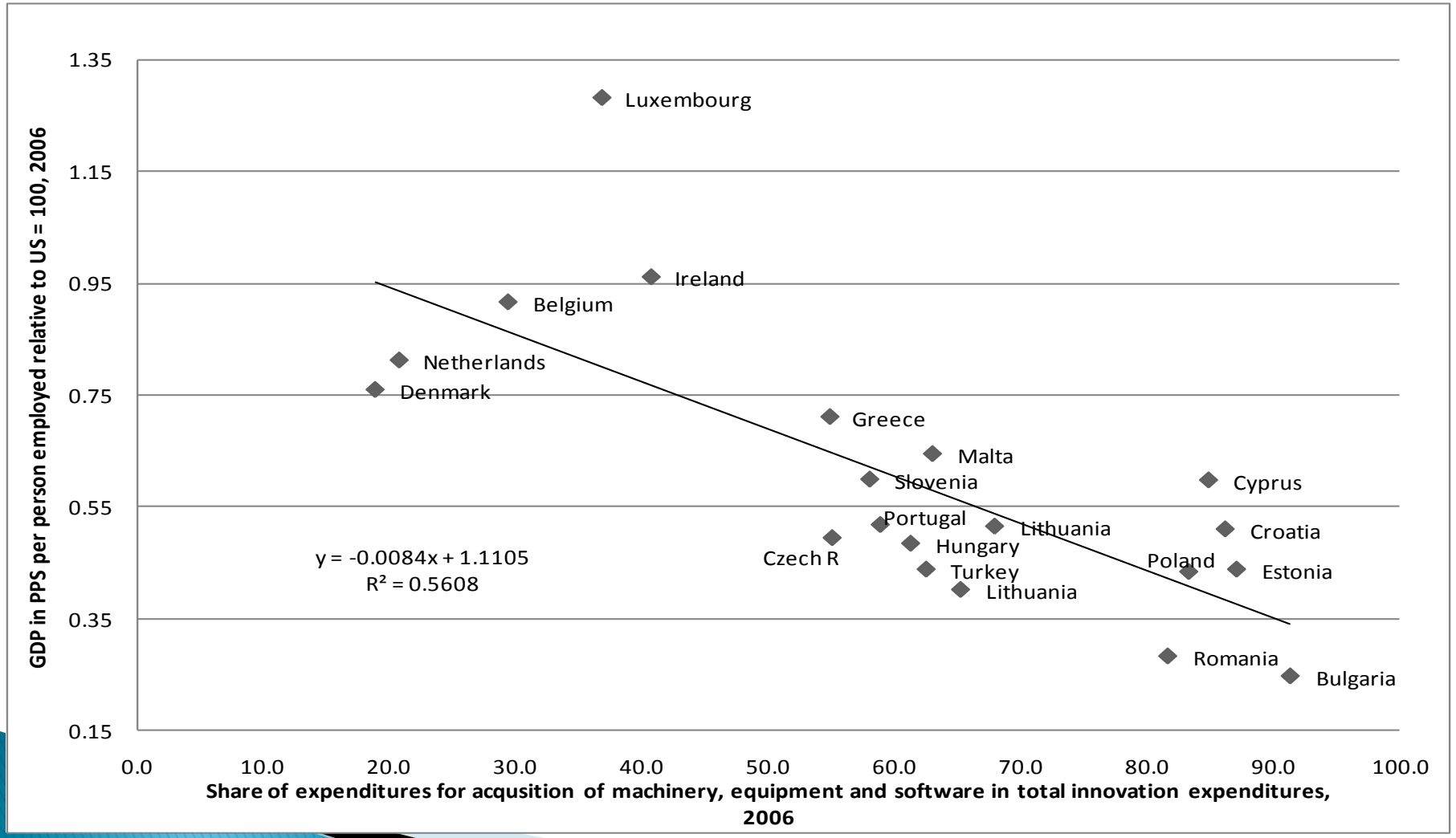
- Similar innovation dynamics but ... within different mode of innovation

In CEE... non-R&D innovators dominate



Source: Arundel, A., C. Bordoy and M. Kanerva (2008), 'Neglected innovators: how do innovative firms that do not perform R&D innovate? Results of an analysis of the Innobarometer 2007 survey No. 215', INNO-Metrics Thematic Paper

Relationship between embodied investments and labour productivity in European countries … Innovation at behind the frontier is about acquisition and effective adoption of machinery



Why SSS needs theory and alternative metrics of technology upgrading?

- A macro level what drives productivity or TFP very often is uncertain or controversial
- A recent example: a high TFP growth of CEEC/CIS in 1990s/2000s but without much RDI or technology upgrading

Industrial upgrading:

"a **process** of improving the ability of a firm or an economy to move to more profitable and/or technologically sophisticated capital and skill-intensive economic niches" Gereffi (1999:51-2).

- Industrial upgrading is '*a shift to higher value-added products and production stages through increasing specialization'* (Ernst, 1998).

Challenge: there is not theory of overall industrial/ technological upgrading …. exceptions Lin (2011, 2012) and Keun Lee (2013)… for some implicit theories see next slide

TOWARDS THEORY OF TECHNOLOGY UPGRADING

- A search for universal factors of growth is futile
- A key to economic growth is in improved technology capability, which cannot be reduced to a single variable (Lee, 2012) > a number of drivers.
- A multidimensional process
- Based on broader understanding of innovation, which goes well beyond R&D.
- A multi-level process = micro, mezzo and macro grounded
- At its core is structural change in various dimensions: technological, industrial, organisational.
- It is also an outcome of interaction between global forces (embodied in international trade and investment flows) and local strategies (pursued by host country firms and governments)

Country level upgrading taxonomies

- IUS upgrading: moderate innovators ….followers… leaders
- WEF upgrading: factor > efficiency > innovation based growth
- Ozawa: labor-driven> scale-driven> assembly driven> R&D driven > IT driven
- Hausman et al; Upgrading based on the complexity of export products
- Etc…….

Firm and Value Chain level upgrading taxonomies

Authors	Taxonomy / Trajectory	Locus of upgrading
Hobday (1995)	Original Equipment Manufacturing (OEM) Original Design Manufacturing (ODM) Original Brand Manufacturing (OBM)	International production networks
Gereffi (1998)	*within* -factories, -inter-firm networks, -local or national economies, and -supranational macro-regions	Global value chains
Ernst (2001)	*hierarchy of* -industries, -factors of production, -consumption, -value chain stages -forward and backward linkages	Global production networks (2001, 2006), Global knowledge networks (2008), Global innovation networks (2009)
Humphrey and Schmitz (2004)	Process upgrading Product upgrading Functional upgrading Inter-sectoral upgrading	Global value chains

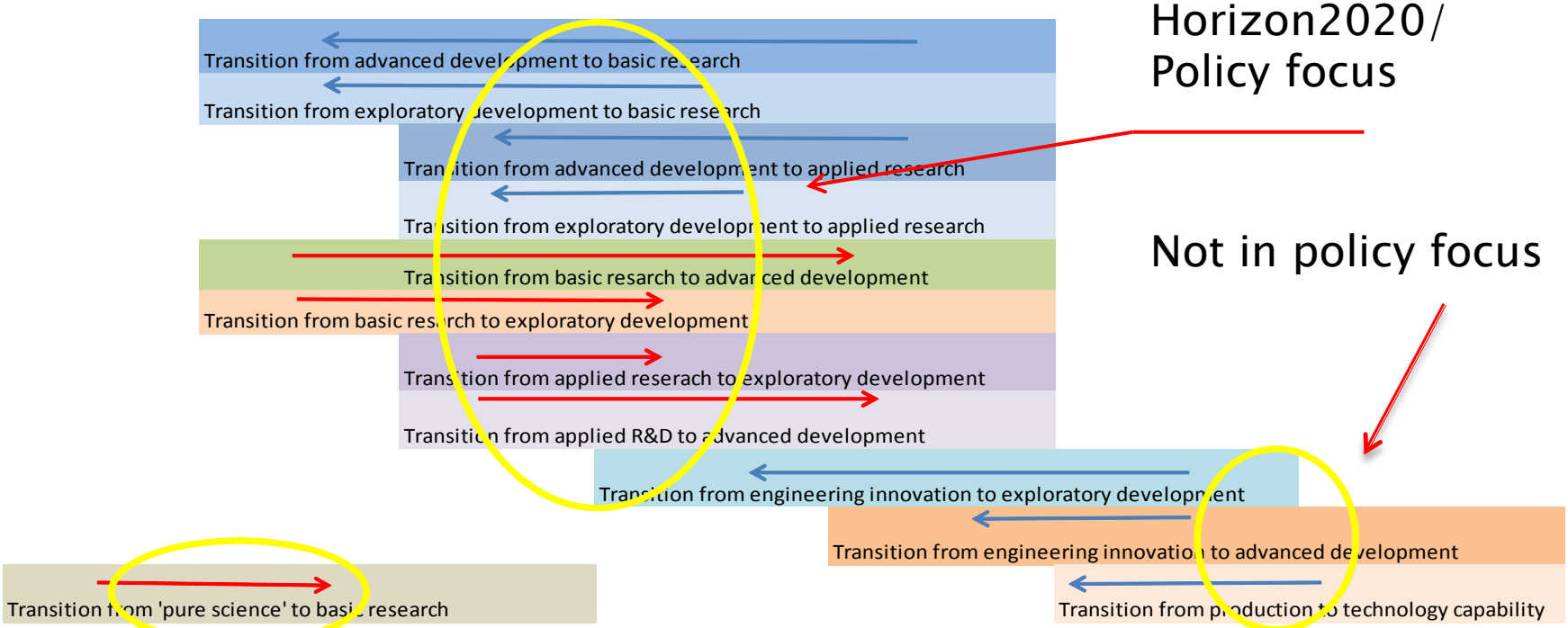
Research and development ⇒ Innovation ⇒ Competitiveness ⇒ Economic growth ⇒ Employment growth

This cannot be the only model of technology upgrading of relevance to CEE/CIS countries?!

Patterns of technology upgrading

Patterns of RTD upgrading: threshold area from applied research to development and vice versa

Western Balkan thresholds: from production capability to technology capability and from 'pure science' to basic research



Pure science	Basic research	Applied research	Exploratory development	Advanced development	Process and product engineering	Production capability
Intrinsic knowledge	New knowedge for radically new marketable product	Differentiated product 'on paper'	Prototype in a system	Prototype in manufacture	Improvements of existing products and processes	Improved quality of products and processes
	Own brand manufacturers		Own design manufacturers	Original equipment manufacturers		
PhD	PhD required with experience in R&D		PhD not required/ MSc and BSc required		Skilled engineers	Skilled technicians

The excessive R&D focused SS in modest/moderate innovators' countries > Alternative policy model for modest/moderate/latecomer innovators

- **Production capability (quality)** >
- **Process and product engineering (incremental innovations)** >
- **Advanced development for manufacture** >
- **Exploratory development (prototypes)** >
- **<Applied research < Basic research**

Patterns of industrial upgrading in Western Balkans in selected industries
– An example –

- ***Apparel***: from only CTM (42%) services to gradual introduction of Value Added services (OEM/OBM) + beyond imitation (design schools)
- ***Automotive suppliers***: to move out of subcontracting 'cost trap' towards improved quality standards, design and supply chain management skills
- ***BPIT Outsourcing***: from fragmented, diversified and local market oriented firms towards focus on core competencies (specialization) and creation of BPITO champions

Source: Based on OECD (2010)

Implications of technology upgrading patterns for SSS

- The irrelevance of **entirely R&D-led models of innovation and policies** for catching up countries
- Innovation policy in CEE is not concerned with **users and demand side factors** (see Edler, 2011) which based on our research seem to be **the major differentiating factors** in innovations in CEE (Radosevic and Yoruk, 2012).
- There is strong focus in CEE policies on science – industry linkages but largely **upstream oriented** – i.e. driven by technology push incentives and opportunities (Radosevic, 2011, SPP).
- A much greater relevance of **downstream R&D and innovation collaborations** which are driven by firms with the view of enhancing market led innovation.

Different views on 'transationalizing' SSS

- **Key challenge**: SSS should be the key to technology upgrading but …. how can the local production stage of GVC become a building block of RIS?
- View 1: GVCs are key to technology upgrading? Linking is everything.
- View 2: Link up only when you will be able to benefit: first build endogenous technological capability and only than link up

Why SSS should be internationally oriented?

- Catching up is about leveraging endogenous technology effort with foreign technology
- Linkages, leverages and learning (Mathews, 2008)
- A dominant feature of SSS: an inward orientation (domestic led modernization)
- Global Value Chains as levers of domestic technology upgrading …. but there are limits of only GVC upgrading

Modernisation trade offs

Foreign (GVC) led

- Quick international market and production integration
- Fast productivity improvements in production (operations)
- Significant expansion in volume

vs.

- Reduced strategic autonomy
- Limited functional / technological upgrading
- Unchanged subsidiary mandate
- Limited local networking

- Fast growth in short term but potential structural weakness in a long term

Domestic (SSS) led

- Broad strategic autonomy
- Full functional autonomy
- Local networking
- 'Preserved/enhanced' RIS/NIS

vs.

- Limited international market and production integration
- Slow productivity improvements and low efficiency
- Slow expansion in volume
- Poor operational performance
- Potentially high rent seeking costs and 'waste'

- Slow productivity growth in short term but structurally potentially more advantageous situation

Catching up is about integrating DLM and FLM ! > Policy tool box for enhancing synergies between GVC and SSS is required:

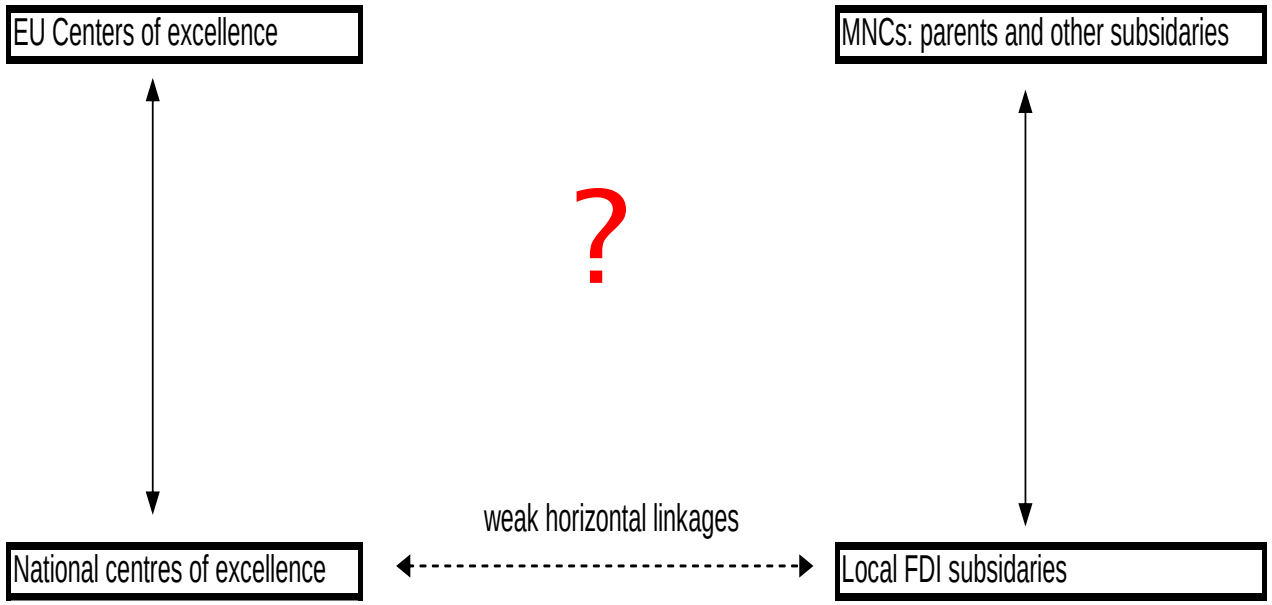
Critique of GVC approach

- By focusing on GVC only we may be missing the larger trends that may be emerging in the structure of value chains *across* various industries
- GVC alone do not ensure upgrading but actually firms and countries can be locked in specific stages of GVC
- *The internal firm level upgrading prospects* may be much more important when compared *to the chain links ie. how to get plugged in GVC*
- Upgrading does not necessarily lead to increased profits and sustainable incomes. GVC cannot answer how will lose and will gain in the globalisation process

But

- Leverage potential of GVC is potentially huge … 'either…. or' is false dilemma

The challenge for latecomers: Missing levers to growth?



Where should be the locus of smart specialization strategies?

SSS and their transnationalization

- View 1: SSS can be easily transationalized. There are numerous opportunities: macro-regional strategies, technology platforms, twinning agreements, networks, ……
- There is already a rich set of instruments for the EU inter-regional cooperation … just use it for SSS purposes
- View 2: We have not tried it yet?

Institutional capacity for SS is assumed to be non-problematic…….

- …….. ‘SS presumes different types of public – private coordination both in design and implementation than found in CEE’ (Karro and Kattel, 2014)

- Pre-requisite: analyze coordination capacities for SSS

Institutional capacity: 1990s

- ‘Minimalist state’
- Transition agenda> clear blueprint of the best practice and targets
- Regulatory policies
- Privatisation as implicit industrial policy not really used
- Innovation policy either non-existent or marginal
- Modernization of science policy

Institutional capacity: 2000s

- Building of generic innovation policy esp. after 2004
- Horizontal policies
- High-tech bias: commercialization of RD
- RTDI infrastructure (S&T parks, VC, TT offices)> (i)relevance?
- Technologically neutral
- 'Agencification' of innovation policy
- Extensive 'transational learning' > copying best practices (excessive homogeneity, JCMS 2014 forthcoming
- Passive internationalization

Institutional capacity: 2014>

- Public – private coordination mechanisms missing
- Mezzo level coordination mechanisms (sectors and value chains) vs. micro-focused agencies
- Vertical policies vs. horizontal mechanisms
- Sector and technology specific expertise vs. technology neutrality
- Tailor made policies vs. package of instruments
- 'Entrepreneurial discovery process' vs. public consultation of public sector stakeholders
- Institutional conditions for experimentation vs annual multi-year programming
- New metrics required vs. IUS

Lessons for non-EU countries that aim to embark on SS type initiatives

1. Focus on the whole innovation chain including production capabilities
2. Explore how to use GVC as linkage, leverage and learning mechanism and integrate with your SS activities
3. Create institutional context within which SSS can be effectively designed and implemented
4. Start from 3