

WHAT STRUCTURAL REFORMS FOR UPGRADING IN GVCS IN 21ST CENTURY EUROPE?



WORLD BANK GROUP
Trade & Competitiveness

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MODES OF INTERNATIONAL ENGAGEMENT HAVE CHANGED AND KEEP EVOLVING

Trade (from antiquity, from Silk Road to Wool for Wine)

- Imports
- Exports

FDI (from early 20th Century – e.g. Ford Model T)

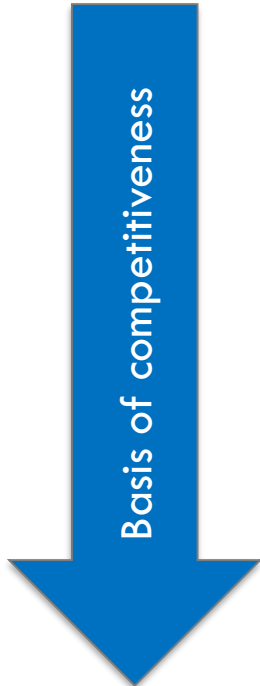
- Inward
 - Outward
- { *Local content requirements to drive development*

Global Value Chains (from late 1980s, especially after 2001)

- Vertical specialization in trade
(intermediate and final goods and services)
- Vertical specialization in FDI
(lead firms and suppliers)
- Trade in services
(software and other ICT-enabled services, e.g. BPO)
- Knowledge and innovation networks
(global fragmentation of R&D)

Fixed comparative advantage

Strong (goods)



Dynamic comparative advantage

Weak (services trade, enterprise characteristics, intangible assets)

NEW OPPORTUNITIES TO PARTICIPATING ECONOMIES

TFP Growth, CEE, 2003-2012

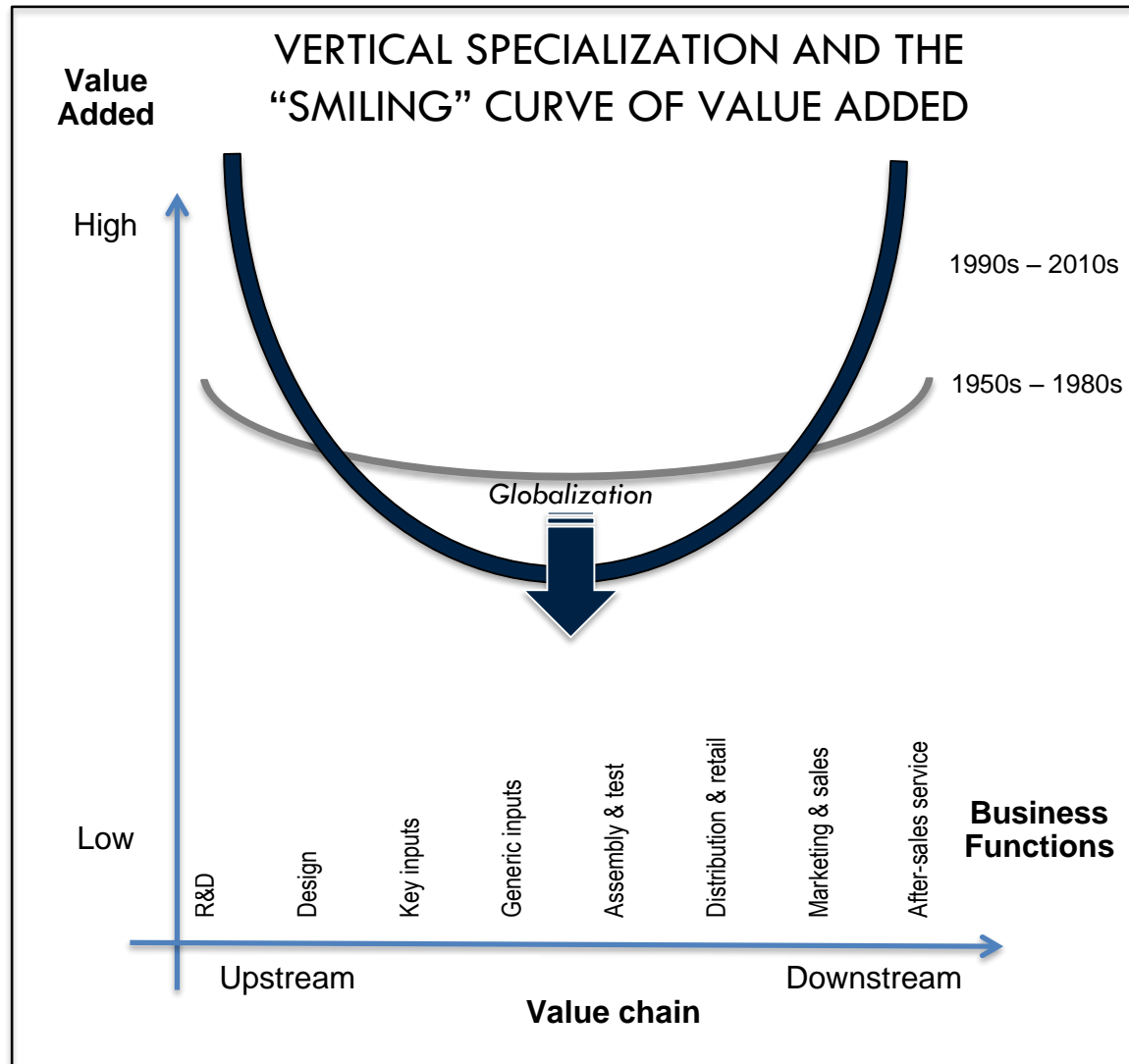
	(1)	(2)
2008-2010 dummy	-0.082*** (0.011)	-0.051*** (0.014)
Post-2010 dummy	-0.023** (0.010)	-0.001 (0.014)
TFP growth GVC frontier		0.483*** (0.063)
Lagged gap TFP GVC frontier to sector		0.521*** (0.136)
GVC participation growth		0.182* (0.105)
Constant	0.049*** (0.006)	-1.662*** (0.439)
Observations	613	613
Adjusted R-squared	0.062	0.345

- Both technology creation at the GVC frontier and catch-up matter for TFP growth
- Sectors where GVC participation grows relatively faster display larger TFP growth
- Sector TFP growth was lower relative to pre-crisis period both during the crisis and in the post-crisis, but once we control for GVC-related variables, post-crisis TFP growth was not significantly different than pre-crisis

9 CEE countries (all CEE countries but CZ and BG), 9 macro-sectors, period 2003-2012. Robust standard errors in parentheses, clustered at the country-sector level. Country-sector FE included. *** p<0.01, ** p<0.05, * p<0.10

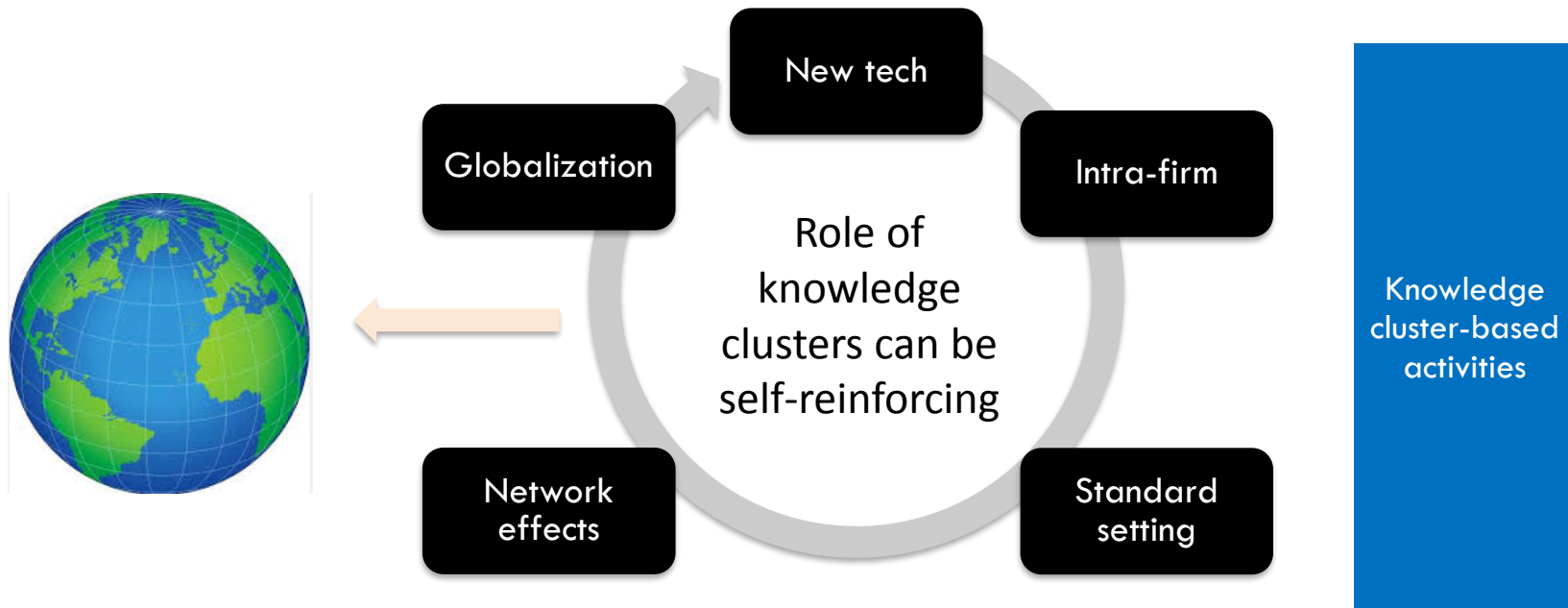
Source: Lopez-Garcia et al. (2017)

AND NEW CHALLENGES FOR ALL



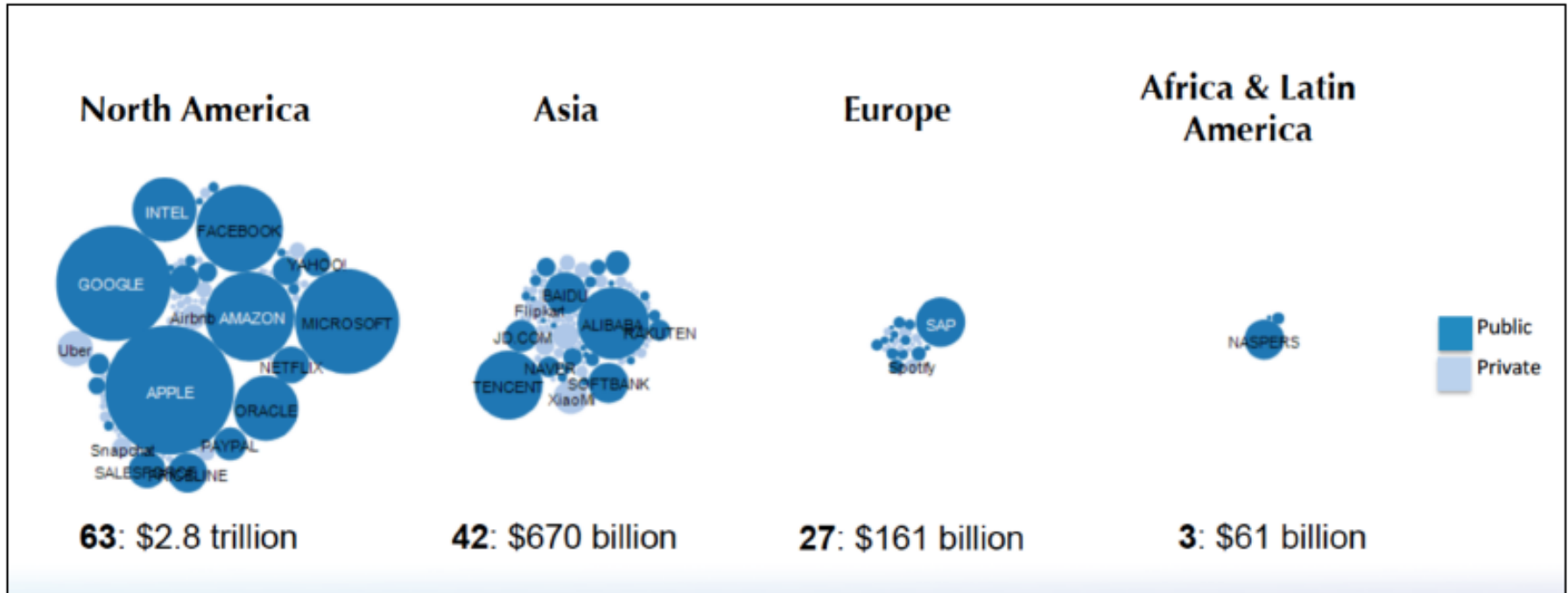
NEW BARRIERS TO INNOVATION

- New technology, new processes, and new product areas tend to arise from knowledge clusters (e.g. Silicon Valley),
- They force (re) integration (de-codification)
- They are also good at standard-setting the codification process begins anew



PLATFORM INNOVATION IS A RED FLAG FOR EUROPE

HQ REGION OF PLATFORM COMPANIES WITH > 1B, USD MARKET CAP



Source: Van Alstyne, 2016

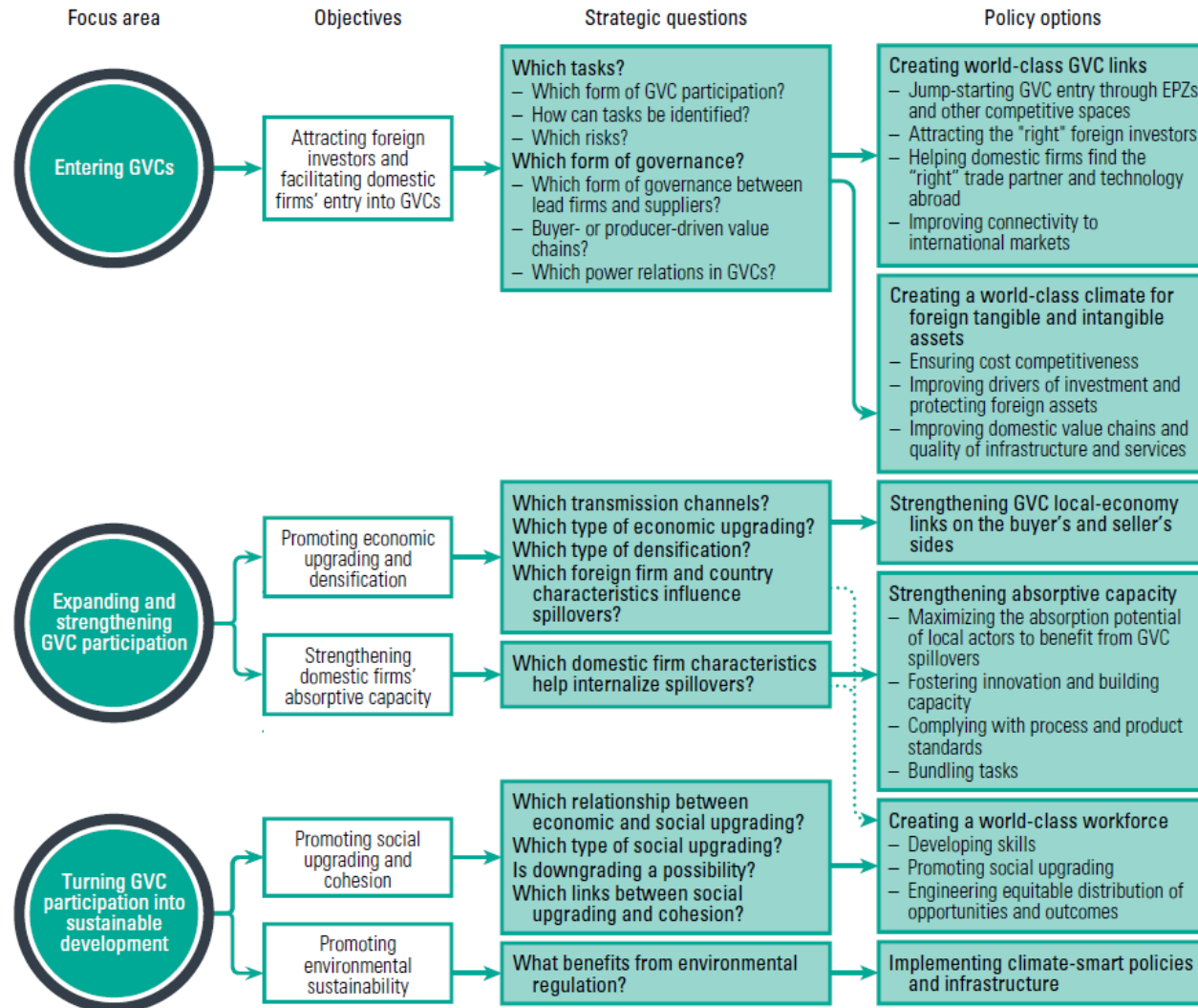
WHY PLATFORM INNOVATION MATTERS

- Process of developing new products and services by **leveraging globally available technology platforms**, often built on top of existing systems
- **Solve information problems** and provide new ways of linking users/consumers and producers
- Innovative business models, but **not science and technology based business models** as traditionally conceived
- Platform companies generate **network effects** through software that provides users with a good experience, but they can also substitute (and disrupt) traditional market segments
- Platform business models **raise significant questions** regarding employment, public safety, public good delivery, and broad social impacts...
- ...but they also generate wealth and allow rapid shift to “hyper-scale” where network effects **propel most successful platforms to market dominance**

SELECTED PLATFORM VS PRODUCT COMPANIES

Firm	Year Founded	Employment*	Market Cap	Market Focus
BMW	1916	116,000	\$53B	Personal mobility
GM	1908	216,000	\$60B	
Google**	1998	56,000	\$377B	
Uber	2009	5,000	\$60B	
Marriot	1927	200,000	\$17B	Accommodation
Airbnb	2008	3,000	\$21B	
Walt Disney	1923	185,000	\$165B	Media
Facebook	2004	12,691	\$315	
Kodak**	1888	145,000 (heyday)	\$30B	Consumer Photography
Instagram***	2010	13 (at acquisition)	\$1B	

A 'WHOLE OF SUPPLY CHAIN' APPROACH TO REFORMS



Source: Tagliani and Winkler (2016, 5).

MODEL BY KUMMRITZ, TAGLIONI AND WINKLER: THE ROLE OF POLICY FOR ECONOMIC UPGRADING IN GVCs

$$\ln \text{econup}_{cst} = \alpha + \beta_1 \text{GVC}_{cst} + \beta_2 (\text{GVC}_{cst} * \text{country}_c) + \gamma_1 (\text{GVC}_{cst} * \text{policy}_c) + \gamma_2 (\text{GVC}_{cst} * \text{policy}_c * \text{country}_c) + \delta \ln \text{control}_{cst} + \text{country}_c + D_{cs} + D_t + \varepsilon_{cst}$$

- **policy** is a proxy for national policies at the country level.
- We use **interaction terms** to assess the mediating impact of **national policy** (orange).
- The **total effect** of GVC integration on economic upgrading for country c is given by $\beta_1 + \beta_2 + (\gamma_1 + \gamma_2) * \text{policy}_c$.
- The **total effect** of GVC integration on economic upgrading in the rest of the country sample is given by $\beta_1 + \gamma_1 * \text{policy}_c$.

EXAMPLE: THE ROLE OF CONNECTIVITY FOR THE VALUE ADDED GAINS FROM GVC INTEGRATION AS A SELLER

- Data: OECD ICIO database, which cover 61 countries, 34 industries, and the years 1995, 2000, 2005, and 2008-2011.

VARIABLES	(1) DVA	(2) DVA	(3) DVA	(4) DVA	(5) DVA	(6) DVA
Forward linkages						
DVAR	0.183*** (0.0230)	0.0415 (0.0695)	0.0511 (0.0630)	0.0090 (0.0756)	0.306*** (0.0288)	0.275*** (0.0252)
FVADP	0.232*** (0.0259)	0.251*** (0.0227)	0.250*** (0.0227)	0.250*** (0.0227)	0.232*** (0.0258)	0.231*** (0.0260)
DVAR*Internet	0.0014** (0.0006)					
DVAR*LPI logistics		0.0593*** (0.0210)				
DVAR*LPI customs			0.0594*** (0.0202)			
DVAR*LPI overall				0.0686*** (0.0228)		
DVAR*Time to export					-0.0053*** (0.0017)	
DVAR*Time to import						-0.0033** (0.0013)
Constant	4.989*** (0.180)	4.773*** (0.156)	4.916*** (0.163)	4.854*** (0.161)	5.017*** (0.175)	4.901*** (0.178)
Observations	7,164	7,060	7,060	7,060	7,164	7,164
F-test ($\beta_1=\beta_3=0$)	102.1	120.7	117.1	120	120.2	109.4
R-squared	0.872	0.879	0.879	0.879	0.872	0.872

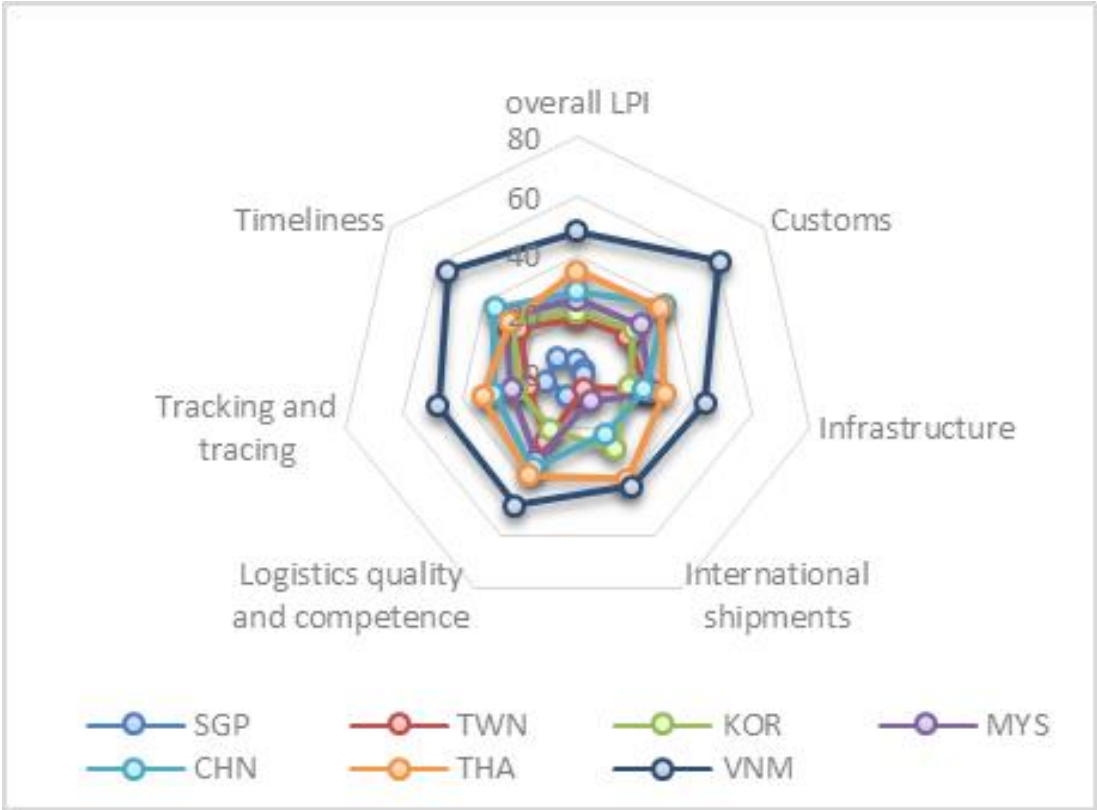
Source: Kummritz, Taglioni and Winkler (forthcoming).
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

CREATING WORLD-CLASS GVC LINKS: INTERNATIONAL CONNECTIVITY

- International connectivity influence the **predictability, reliability, and timeliness in GVCs.**
- Promoting international connectivity **tightens forward and backward links** within GVCs by securing the international flow of inputs and outputs, **lowers costs, increases speed, and reduces uncertainty.**
- **Measuring international connectivity:**
 - Logistics Performance Index (overall, customs, logistics, etc.) from World Bank
 - Expected time to export and import (in days) from World Bank WDI
 - Internet users per 100 inhabitants from World Bank WDI

INTERNATIONAL CONNECTIVITY

Logistics Performance Index, 2014 (rank



Data: World Bank LPI.

CREATING WORLD-CLASS GVC LINKS: TRADE AND INVESTMENT POLICY

- A country's **trade policy** shapes the amount and type of imports, exports, and foreign investment and, thus, the spillover potential.
- **Importers are larger and more productive** (Seker, 2012, Amiti & Konigs, 2007)
 - **Access to more diversified varieties** and ability to exploit **complementarities** between imported inputs and domestic production (Goldberg et al 2010; Halpern et al 2015)
 - **Learning effects and feedback loops in tacit knowledge** from using more sophisticated technology (Koren and Ksillag 2011; and MacGarvie 2006)
 - Domestic linkages generate **spillovers** to suppliers and firms linked to those suppliers (Kee 2015, Javorcik 2004)
 - **Import restrictions** can have largest negative effects for exports by most productive firms (Kasahara & Lapham 2013)
- **Exporting leads to positive productivity effects:**
 - **Skills upgrading:** learning from competition, learning by exporting (De Loeker, 2013), expansion of organization capital to deal with increasing complexity (Caliendo and Rossi-Hansberg 2012; Bloom et al 2016)
 - **Push to improve product appeal** (Sutton 2007, Brandt et al. 2008; Schott, 2008), including through marketing (Eslava et al. 2015), brand (Cage and Rouzet 2015), and customer search and retention (Fitzgerald et al. 2015)
 - **Destination market matters:** Greater product and process upgrading from exports to more sophisticated markets (Brambilla et al 2012; Verhoogen, 2008); income, quality valuation, distance, and transport cost affect firms decision on upgrading (Bastos and Silva 2010; Goerg et al 2010; Hummels and Skiba 2004; Manova and Zhang 2012)
- **Companies that both import and export are the most productive** due to **complementarities between importing and exporting**. And more likely to innovate (Guadalupe et al. 2012)

CREATING WORLD-CLASS GVC LINKS: TRADE AND INVESTMENT POLICY

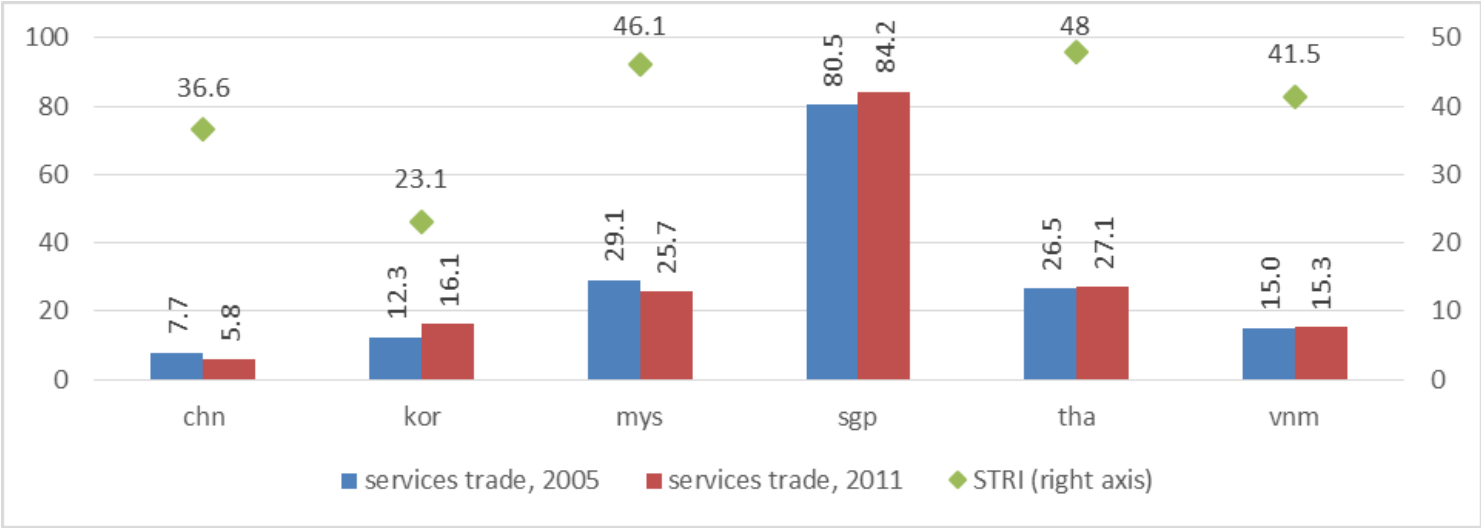
- **Investment policy and promotion** help attract foreign investment in general that should have higher spillover potential.
 - Foreign investors in open trade regimes are **less constrained by the size and efficiency of the local market**, and
 - are **more integrated globally** and, thus, tend to **adopt the newest technologies**.
- **Learning opportunities from FDI and MNC** engagement are greater than from trade
 - **Cost of transferring technology is reduced** in integrated companies (Arnold and Javorcik 2009; Ramondo, 2009; Crisculo and Martin, 2009)
 - **Magnification effects** are at play due to backward and forward linkages (e.g. demand for better inputs, lower prices of technology), if production exhibits internal or external economies of scale (Fieler et al. 2015)
 - These firms tend to be **better managed** (Bloom et al. 2016)
- Competition effects lead to **losses for weaker connectivity links** (Arkolakis, 2011)
- Home-market effects, competitive advantages of specific locations, and the type of power structures influence outcomes

MEASURING TRADE AND INVESTMENT POLICY

- **Trade policy:**
 - Exports of goods and services as % of GDP from the World Bank WDI
 - Index of Trade Freedom from Heritage Foundation
 - Services trade as % of GDP from the World Bank WDI
 - Services Trade Restrictiveness Index from the OECD/World Bank
- **Investment policy:**
 - FDI inflows as percentage of GDP from the World Bank WDI.
 - Index of Investment Freedom from Heritage Foundation

TRADE POLICY

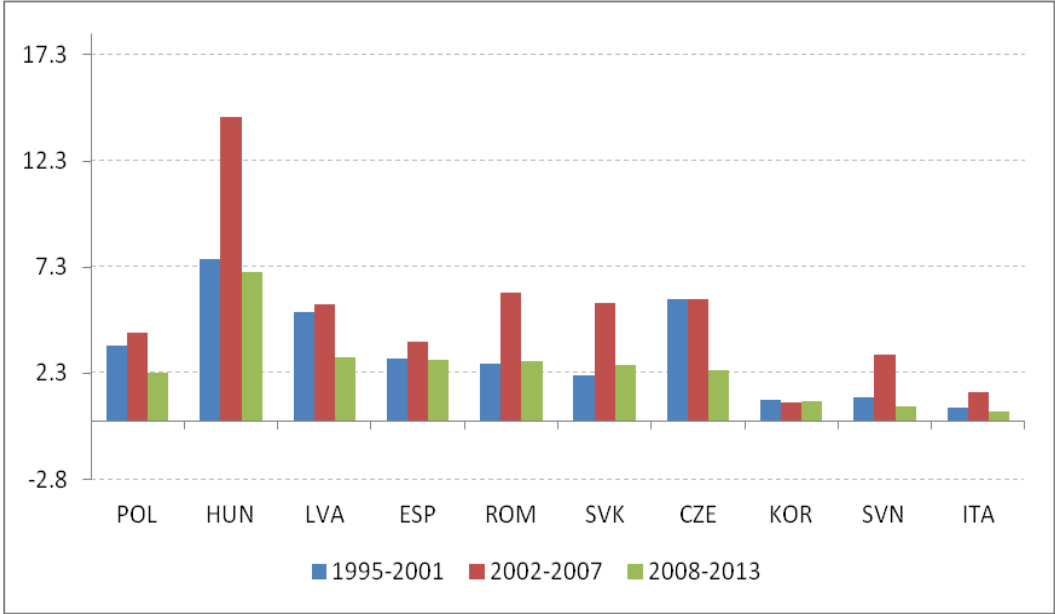
Services Trade and Trade Restrictiveness Index, Vietnam and Peer Countries



Data: WDI: services trade as percentage of GDP; WB Services Trade Restrictions, data collected 2008-2011. STRI for Singapore not available. STRI scales from 0 (open) to 100 (closed).

INVESTMENT POLICY

Foreign Direct Investment, Net Inflow, Averages (as % of GDP), Poland and Peer Countries



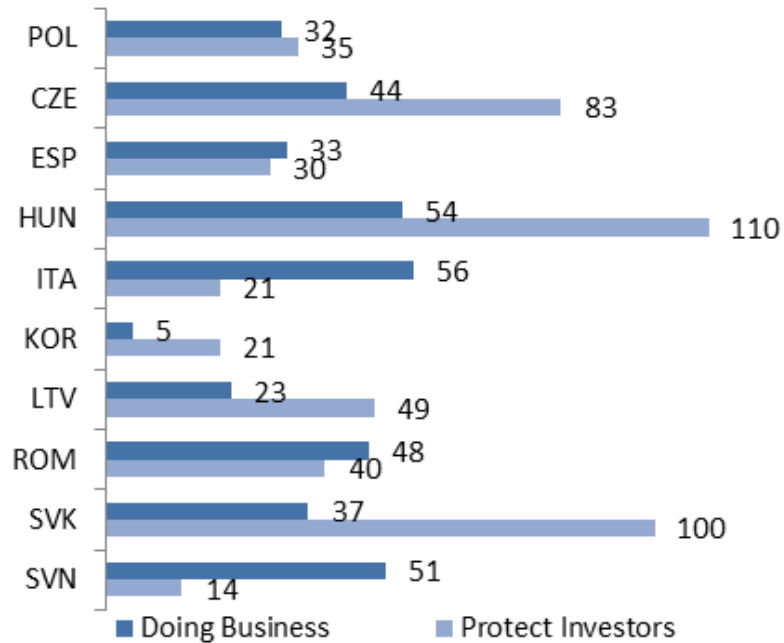
Source: World Development indicators

CREATING A WORLD-CLASS CLIMATE FOR FIRM ASSETS: BUSINESS CLIMATE AND INSTITUTIONS

- A country's **business climate**, particularly the protection of foreign assets, have a large influence on a country's location attractiveness.
- Weak **institutions** are linked to protection for local firms, network-driven business practices, and inefficient markets, which possibly constrain firms from fully exploiting their comparative advantage.
- **Measuring the business climate and institutions:**
 - Doing Business (overall, protecting investors, etc.) from World Bank WDI
 - Domestic and Foreign Competition from the World Economic Forum
 - Property Rights Index from the Heritage Foundation
 - Political Stability from the World Governance Indicators
 - Quality of Contract Enforcement from World Governance Indicators
 - Corruption Index from the Heritage Foundation

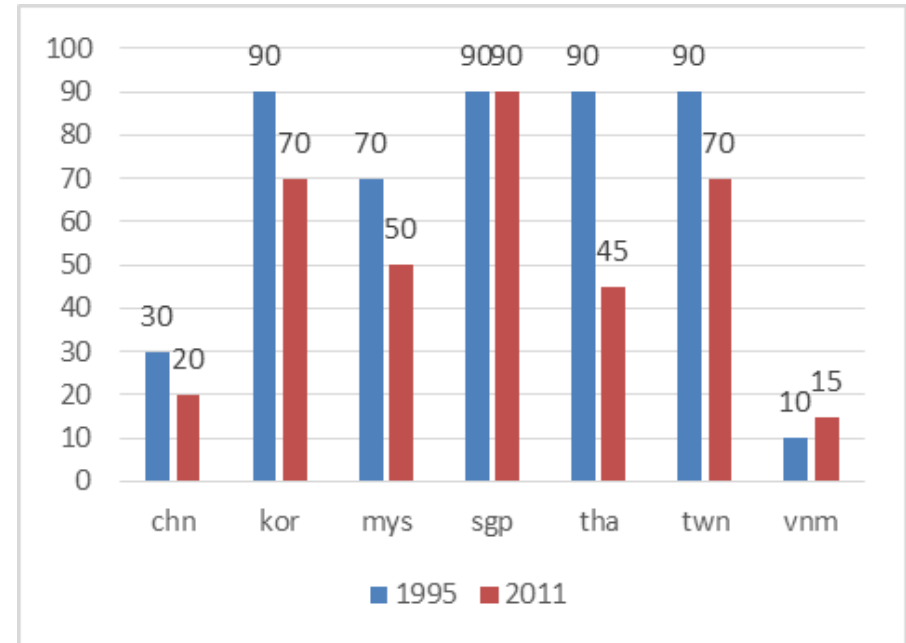
BUSINESS CLIMATE AND INSTITUTIONS

Ease of Doing Business Indicator, Overall and Protecting Investors, 2014 (rank)



Source: World Bank Doing Business Indicators.

Property Rights Index, 0 to 100 (best)



Source: Heritage Foundation.

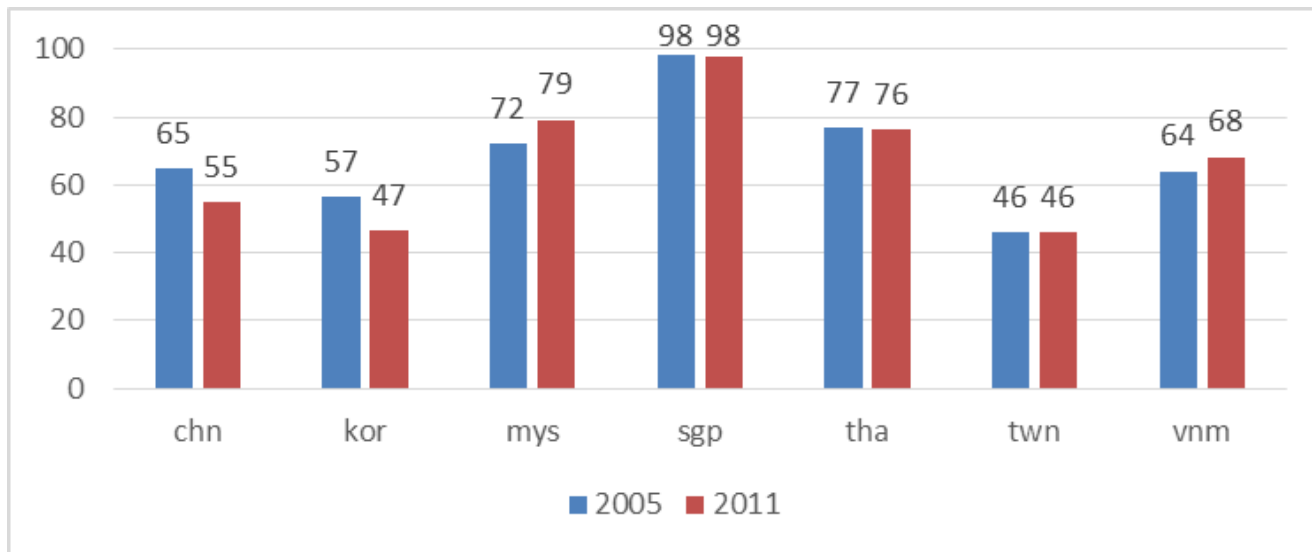
CREATING A WORLD-CLASS CLIMATE FOR FIRM ASSETS: OTHER POLICIES

- **Labor market policy** can affect skills in a firm, and hence their absorptive capacity.
- Well-developed **financial markets** may also facilitate a domestic firm's absorptive capacity links to GVCs.
- The **quality of domestic value chains, infrastructure and domestic services** is crucial for GVC entry, as they enable GVC sectors to access inputs and improve the predictability, reliability, and timeliness in GVCs.

LABOR MARKET POLICY

- **Measuring labor market policy:**
 - Labor Freedom Index from Heritage Foundation
 - Index of Unit Labor Costs from the OECD
 - Female workers as % of total workforce from the World Bank WDI

Labor Freedom Index, 0 to 100 (best)

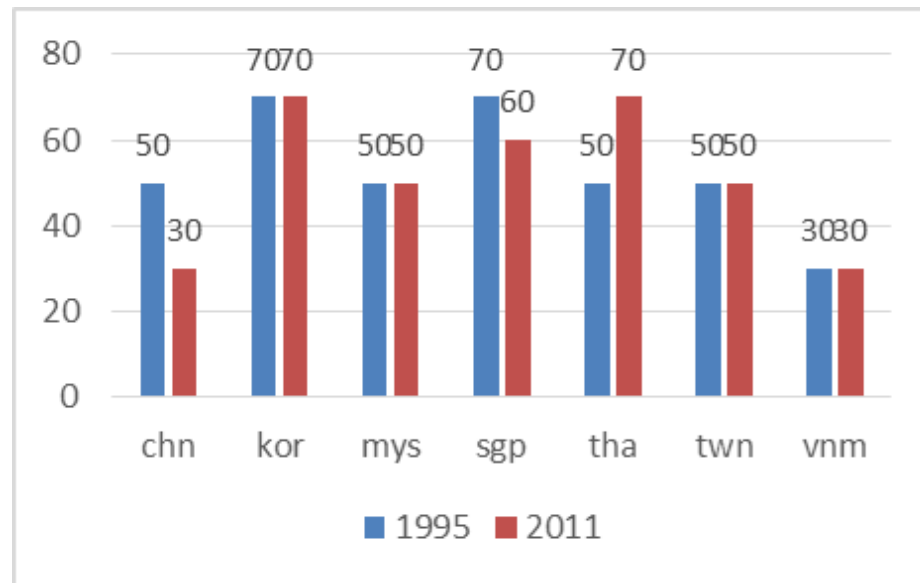


FINANCIAL DEVELOPMENT

- **Measuring financial development:**

- Value of credit given to the private sector as % of GDP from the World Bank WDI
- Financial Freedom Index from the Heritage Foundation

Financial Freedom Index, 0 to 100 (best)



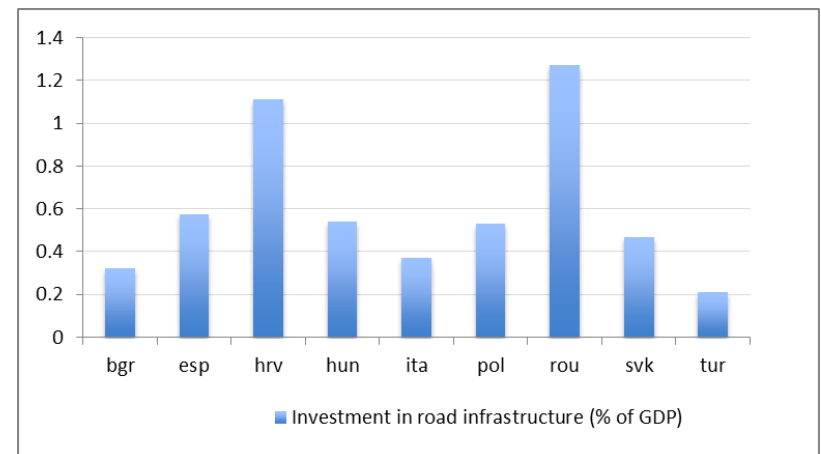
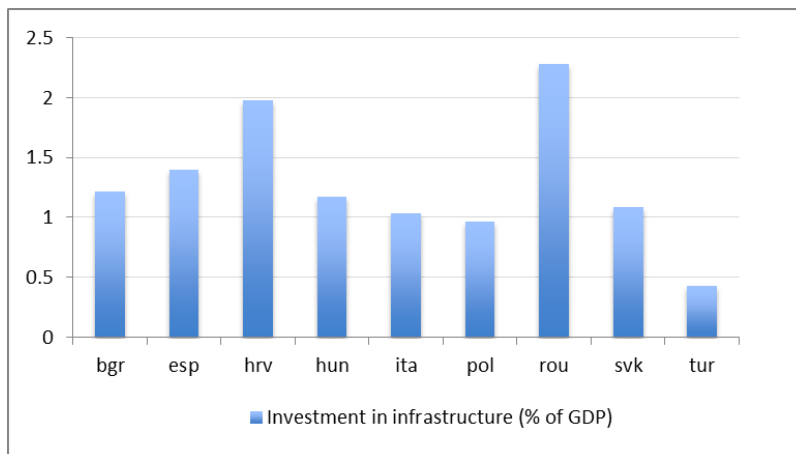
Source: Heritage Foundation.

INFRASTRUCTURE

- **Measuring infrastructure:**

- Rail line coverage (kilometers of rail lines per person) from World Bank WDI
- Air freight volume (value of air cargo as % of GDP) from World Bank WDI
- Quality of infrastructure (overall, road, port, air transport from Global Competitiveness Report of World Economic Forum
- Investment in infrastructure as % of GDP (overall, road, rail, airport) from OECD

Investment in infrastructure (% of GDP), Poland and peer countries, 1998-2010 (average)



QUALITY OF DOMESTIC SERVICES

- **Measuring the quality of domestic services:**
 - Domestic Logistics Performance from World Bank

Domestic Logistics Performance, 2014

	Vietnam	China	Taiwan	Thailand	Korea, Rep.	Malaysia	Singapore
Quality of Infrastructure: Evaluate the quality of trade and transport related infrastructure (e.g. ports, roads, airports, information technology) in your country of work	<i>Percent of respondents answering low/very low</i>						
Ports	57.14%	5.41%	0%	0%	0%	33.33%	0%
Airports	42.86%	0.0%	0%	0%	0%	0%	0%
Roads	71.43%	0%	0%	0%	0%	0%	0%
Rail	71.43%	5.26%	0%	50%	0%	0%	40%
Warehousing/transloading facilities	42.86%	0%	0%	0%	0%	0%	0%
Telecommunications and IT	14.29%	5.26%	0%	0%	0%	0%	0%
Competence and Quality of Services: Evaluate the competence and quality of service delivered by the following in your country of work	<i>Percent of respondents answering high/very high</i>						
Road	28.57%	28.21%	100%	50%	100%	33.33%	42.86%
Rail	14.29%	15.79%	0%	0%	0%	0%	33.33%
Air transport	28.57%	43.59%	100%	50%	100%	66.67%	57.14%
Maritime transport	28.57%	50%	100%	50%	100%	100%	71.43%
Warehousing/transloading and distribution	28.57%	38.46%	100%	50%	100%	66.67%	71.43%
Freight forwarders	71.43%	44.74%	100%	100%	0%	100%	71.43%
Customs agencies	28.57%	33.33%	50%	50%	100%	66.67%	83.33%
Quality/standards inspection agencies	28.57%	18.42%	0%	0%	100%	33.33%	66.67%
Health/SPS agencies	14.29%	23.68%	50%	100%	100%	0%	66.67%
Customs brokers	28.57%	28.95%	100%	100%	100%	66.67%	85.71%
Trade and transport associations	42.86%	34.21%	50%	100%	100%	0%	66.67%
Consignees or shippers	42.86%	35.90%	100%	50%	0%	33.33%	66.67%

CREATING A WORLD-CLASS WORKFORCE: EDUCATION

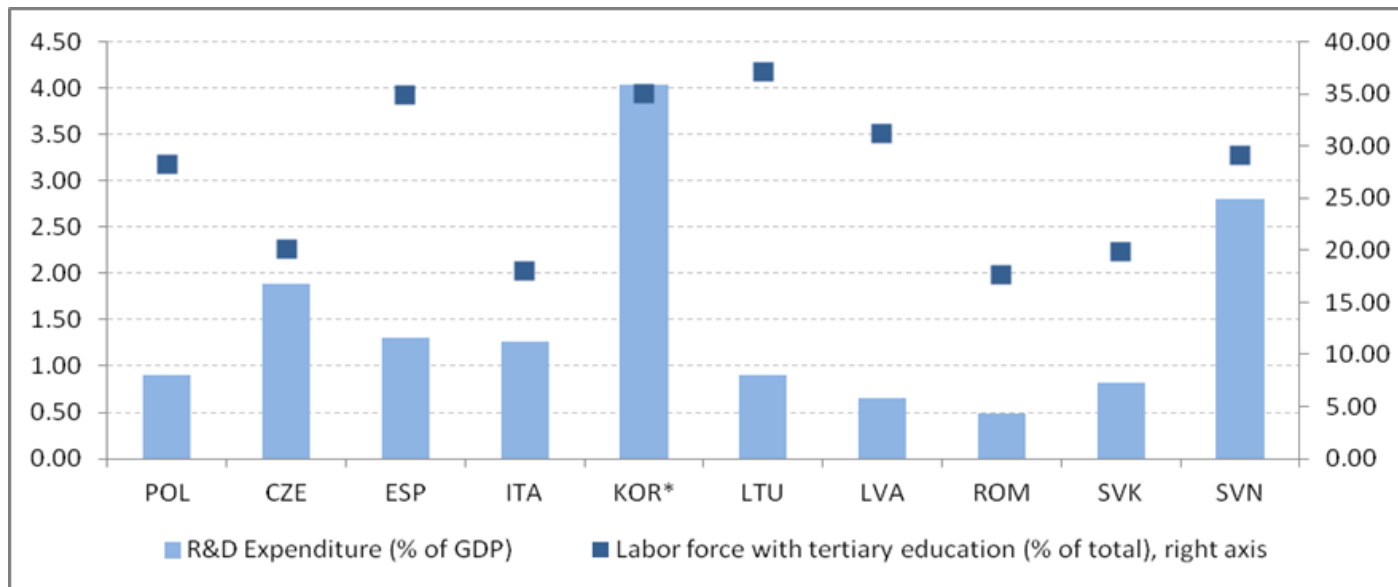
- The local **learning infrastructure** influences the **share of human capital in firms** and is particularly important for expanding GVC participation and economic upgrading.
- **Measuring education:**
 - Expected years of schooling from Barro and Lee (2013)
 - People with completed secondary/tertiary degree % of population from Barro and Lee (2013)
 - Workers with secondary/tertiary degree % of total workforce from the World Bank WDI
 - Government spending on education as % of GDP from the World Bank WDI

STRENGTHENING ABSORPTIVE CAPACITY: INNOVATION

- The local **innovation infrastructure** influences the **absorptive capacity of firms** (e.g. their technology/skills intensity) and is particularly important for expanding GVC participation and economic upgrading.
- **Measuring innovation:**
 - R&D intensity % of GDP from World Bank WDI
 - Share of firms using internationally recognized quality certifications from World Bank Enterprise Surveys
 - Patent Applications from World Bank WDI

EDUCATION AND INNOVATION

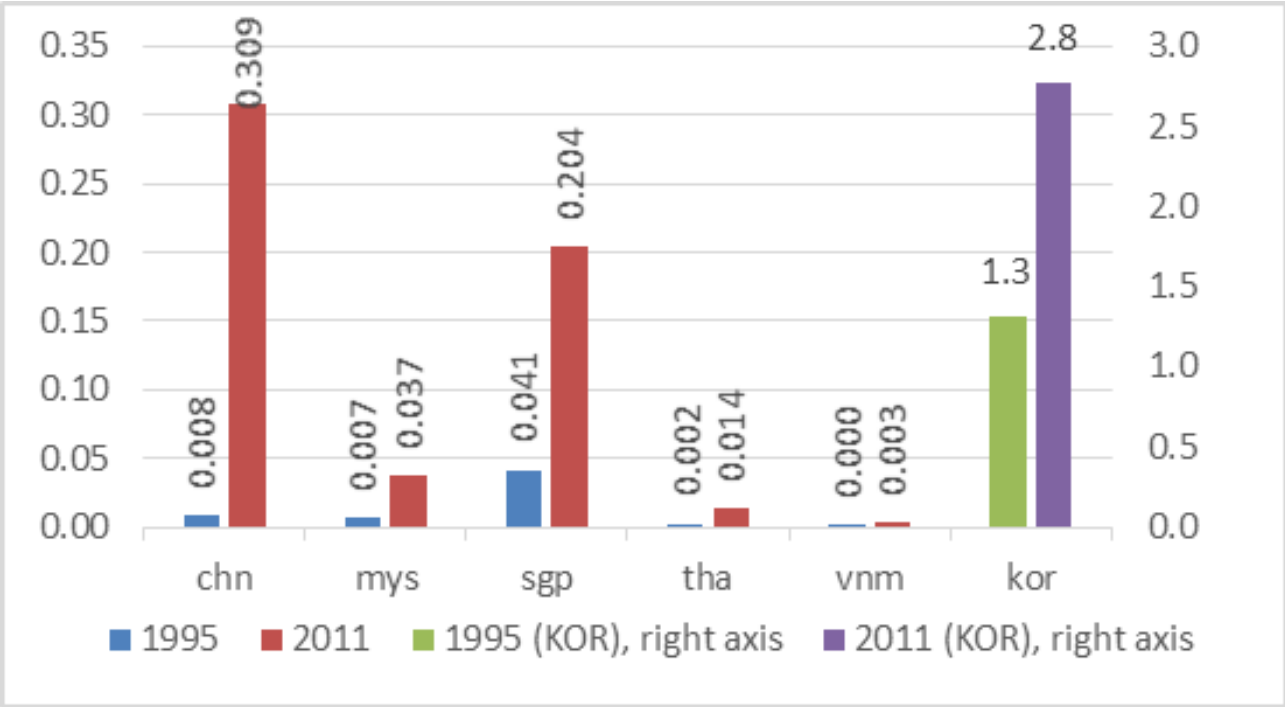
Innovation capacity and skills, 2012, Poland and peer countries



Data: World Development Indicators. Note: for Korea (KOR) last available year for labor force education is 2007, for R&D expenditure is 2011.

INNOVATION

Patent applications (per 1,000 inhabitants), 1995 and 2011



Data: World Development Indicators. Average 1995-2011. Note: Korea plotted on right axis.

EXAMPLE: THE ROLE OF GLOBAL VALUE CHAINS IN THE RISE OF POLAND AND THE NEW HIGH-INCOME ECONOMIES

- We **categorize a subset** of these countries into:
 - **9 NHICs:** Chile, Croatia, Czech Republic, Estonia, Hungary, Republic of Korea, Malaysia, and Slovakia (Poland is analyzed separately);
 - **6 TMICs:** Argentina, Brazil, Mexico, Romania, Turkey, and South Africa;
 - **18 OHICs:** Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Finland, France, UK, Ireland, Italy, Japan, Netherlands, Norway, New Zealand, Sweden, and USA.
- We apply the model to **(i) Poland + TMICs + NHICs, and (ii) OHICs to detect:**
 - Which policies are of particular importance for either of these country groups?
 - Why have the NHICs grown faster than the TMICs, and which policies will matter for the NHICs in the future?

EXAMPLE: THE ROLE OF GLOBAL VALUE CHAINS IN THE RISE OF POLAND AND THE NEW HIGH-INCOME ECONOMIES

- Connectivity & Infrastructure

Groups	<i>Internet</i>	<i>Customs LPI</i>	<i>Time to export</i>	<i>Air transport</i>	<i>Rail network</i>
OHICs	49.6	3.7	9.3	2.5	597.0
NHICs	34.3	3.0	15.3	4.6	520.6
Poland	28.1	3.0	17.0	0.3	540.4
TMICs	14.5	2.7	16.3	1.2	377.5

- Trade & Investment

Groups	<i>Investment freedom</i>	<i>FDI inflows</i>	<i>Trade openness</i>	<i>Foreign comp.</i>	<i>Services trc</i>
OHICs	73.9	4.3	75.3	5.0	20.3
NHICs	67.7	5.4	113.1	5.1	22.1
Poland	63.1	3.7	66.6	4.5	12.2
TMICs	58.1	2.5	46.8	4.1	7.5

Note: Includes only policies which showed a significant interaction term with GVC integration in either country group.

Red: Poland's performance is statistically significant below NHICs and OHICs. Green: Poland's performance is not significantly different from OHICs and its policy value is above the value of both NHICs and TMICs. Yellow: All other policies.

We determine statistical significance by comparing Poland's values with the respective 95% confidence intervals of the country groups.

EXAMPLE: THE ROLE OF GLOBAL VALUE CHAINS IN THE RISE OF POLAND AND THE NEW HIGH-INCOME ECONOMIES

- Institutions & Business Climate

Groups	<i>Financial freedom</i>	<i>Property rights</i>	<i>Corruption</i>	<i>Doing business</i>	<i>Domestic Compet.</i>
OHICs	73.1	86.2	81.6	79.5	5.0
NHICs	65.9	65.5	51.5	71.0	4.6
Poland	60.0	60.2	48.1	64.0	4.3
TMICs	51.9	46.6	37.1	62.9	4.0

- Quality, Innovation & Skills

Groups	<i>Quality ISOs</i>	<i>Innovation</i>	<i>Technology adopt.</i>	<i>Years of schooling</i>	<i>Quality of educ.</i>	<i>Workforce second.</i>
OHICs	4420.8	4.9	5.7	8.7	5.3	75.3
NHICs	2103.8	3.8	5.3	7.9	4.6	82.1
Poland	768.5	3.3	4.7	8.0	4.3	86.2
TMICs	537.4	3.2	4.9	4.8	3.6	49.3

Note: Includes only policies which showed a significant interaction term with GVC integration in either country group.

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EXAMPLE: THE ROLE OF GLOBAL VALUE CHAINS IN THE RISE OF POLAND AND THE NEW HIGH-INCOME ECONOMIES

- Social & Environmental Standards

Groups	<i>Eco ISOs</i>	<i>Pension Insurance</i>	<i>Unemploy. Ins.</i>	<i>Wage dispersion</i>
OHICs	575.7	93.5	58.4	1.9
NHICs	351.0	79.9	24.0	2.1
Poland	107.5	88.8	15.6	1.9
TMICs	91.8	37.3	6.0	2.4

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LOOKING FORWARD: THREE ISSUES OF IMPORTANCE

- Trade policy, investment policy, and competition policy need to be carefully sequenced
- Importance of nurturing a local manufacturing base at the time of industry 4.0
- Sustainable (ESG) business models