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Effects of Industry 4.0 on FDI in Czechia

Visegrad project: Effects of Industry 4.0 on FDI in the Visegrád countries

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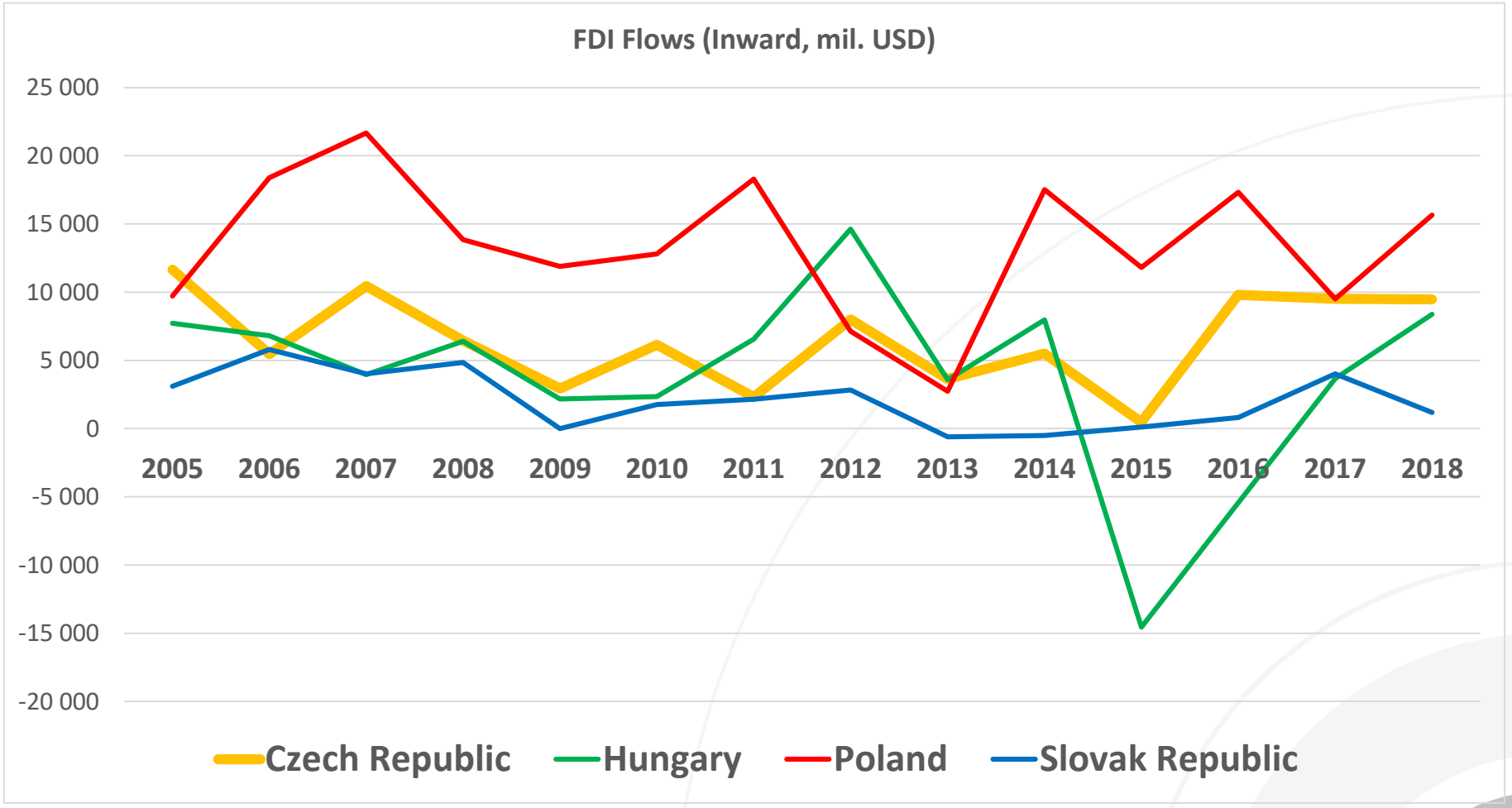
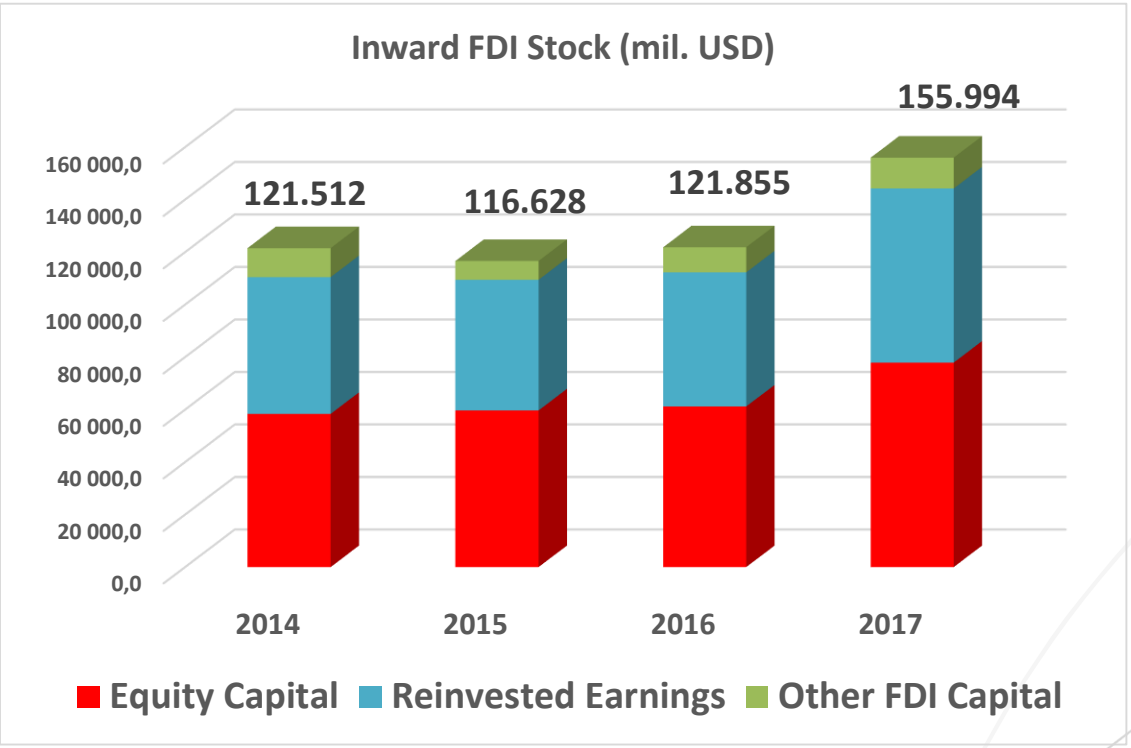
2020

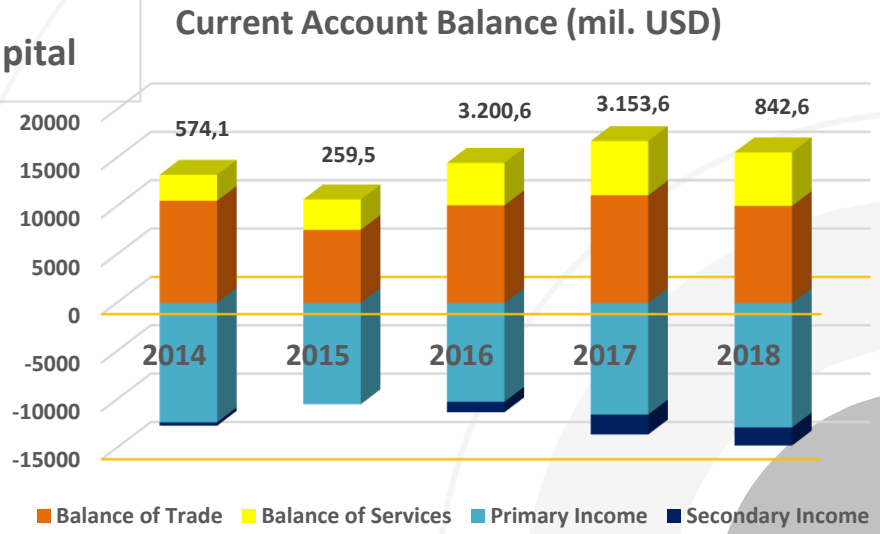
Foreign direct investments in CEE



Source: OECD, 2020

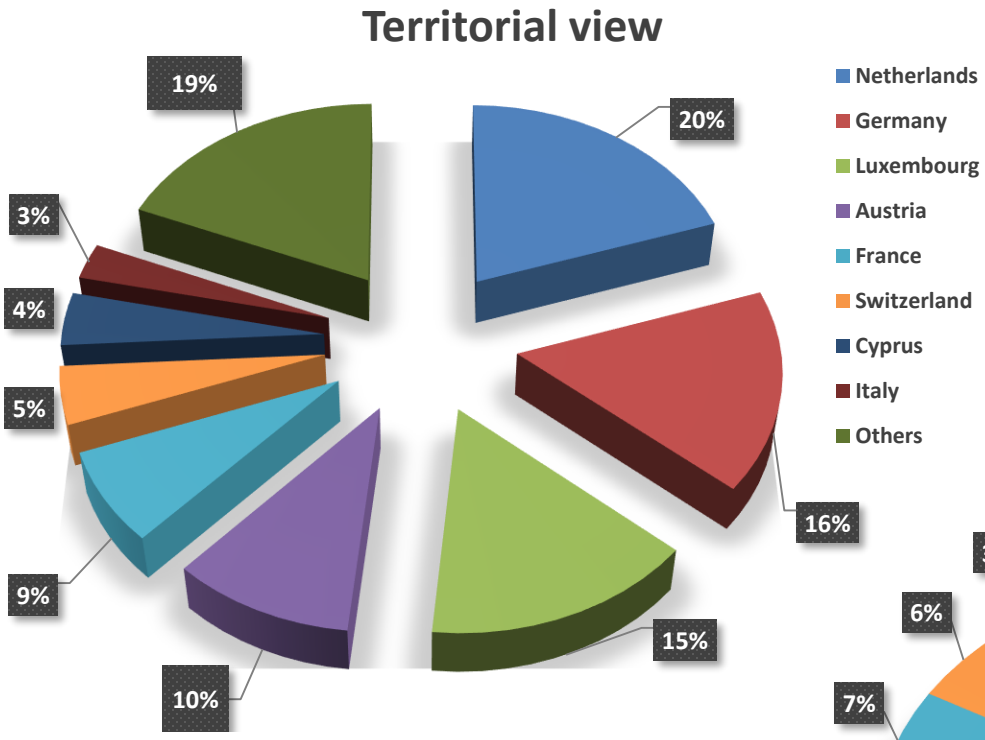
FDI Stock in Czechia

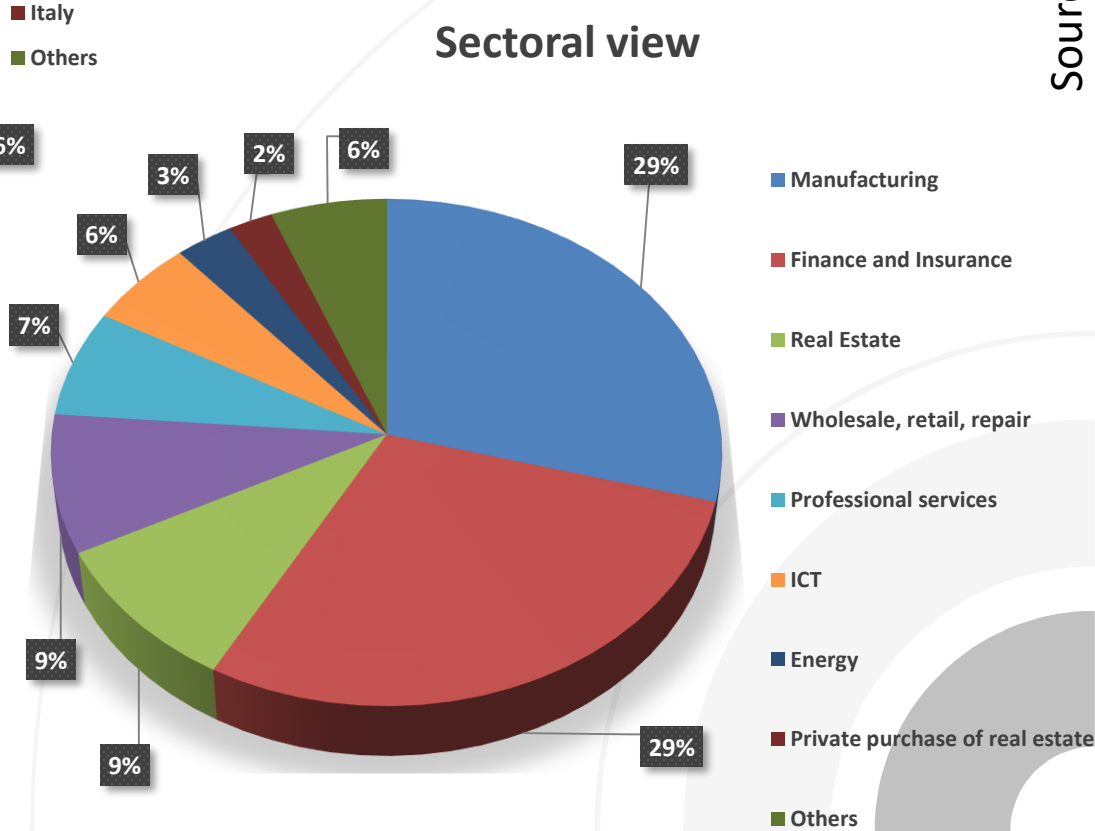




Source: ČNB, 2020

FDI Stock in Czechia





Source: ČNB, 2020

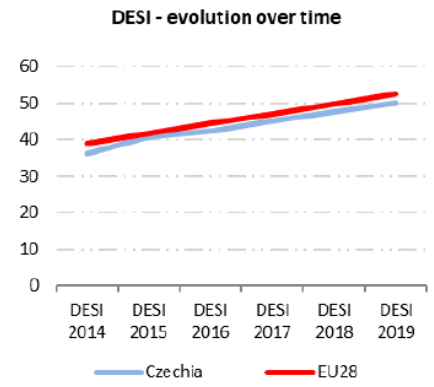
Major technological changes affecting GVCs and FDI

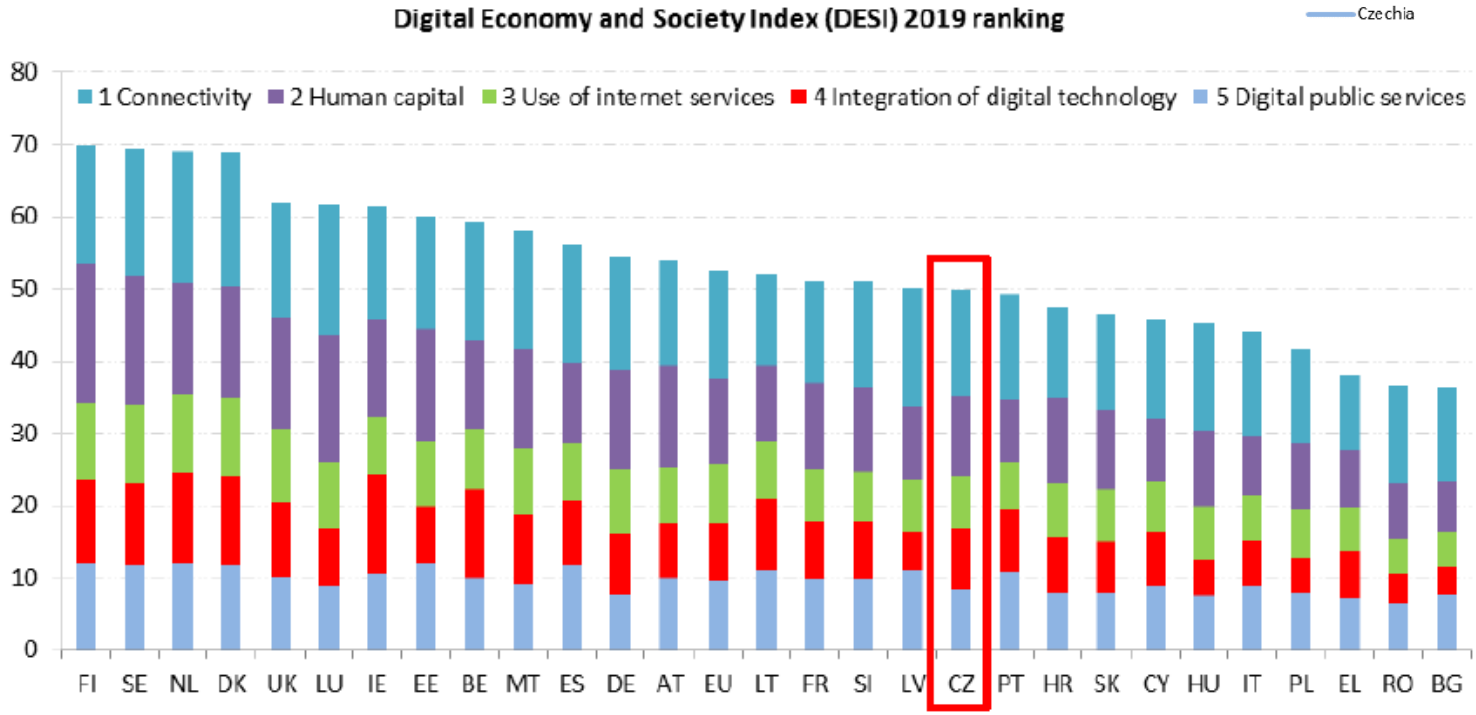
- Internet of Things - real-time data allows preventive maintenance, inventory monitoring, usage evaluation and product functionality
- Big data - tracking trends and opportunities, optimization
- 3D printing - flexibility of production, possibility of customization
- Robotics - Replacing work, improving system performance
- Augmented and virtual reality - the possibility of control and production management, remote planning, etc.
- Artificial Intelligence - the ability to automate moderately demanding activities
- Blockchain

Czechia and Industry 4.0 – challenges, risks and readiness

What's Czechia digital competitiveness?

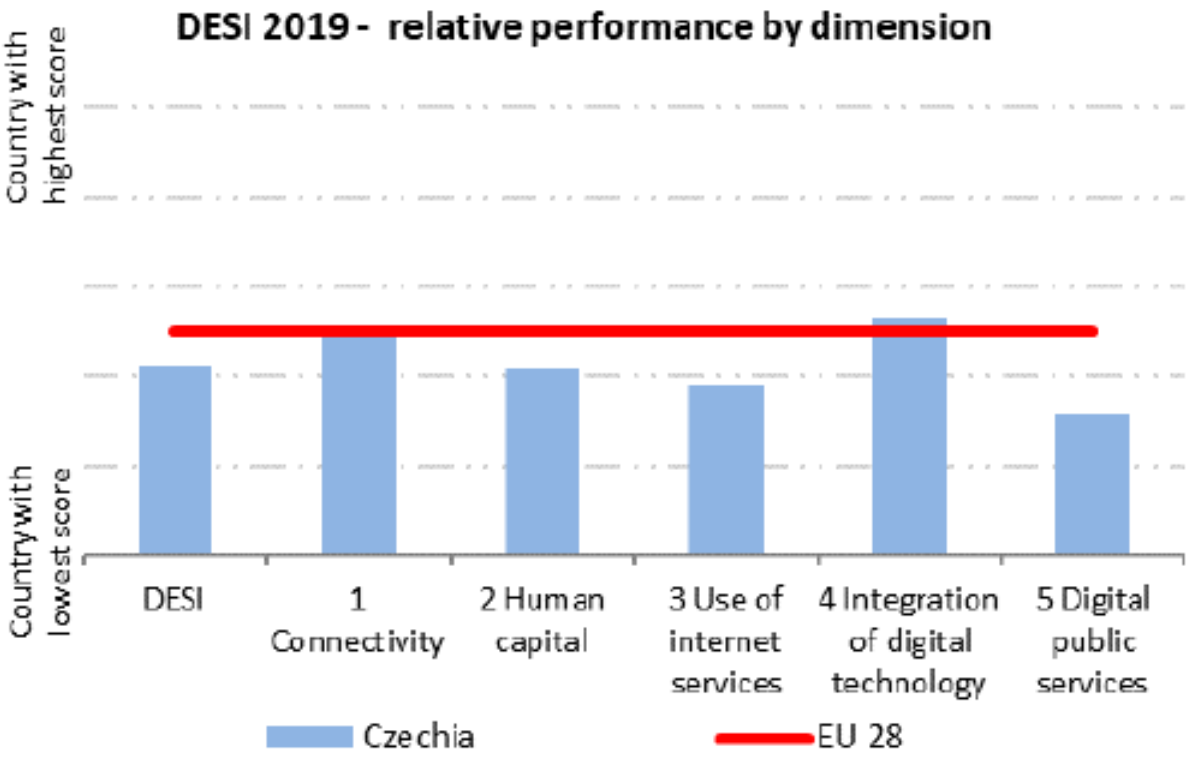
	Czechia		EU
	rank	score	score
DESI 2019	**18**	**50.0**	**52.5**
DESI 2018	17	47.6	49.8
DESI 2017	15	45.3	46.9





Czechia and Industry 4.0 – challenges, risks and readiness

- Czechia strongly underperforms in 3 areas…



Readiness Overall Assessment

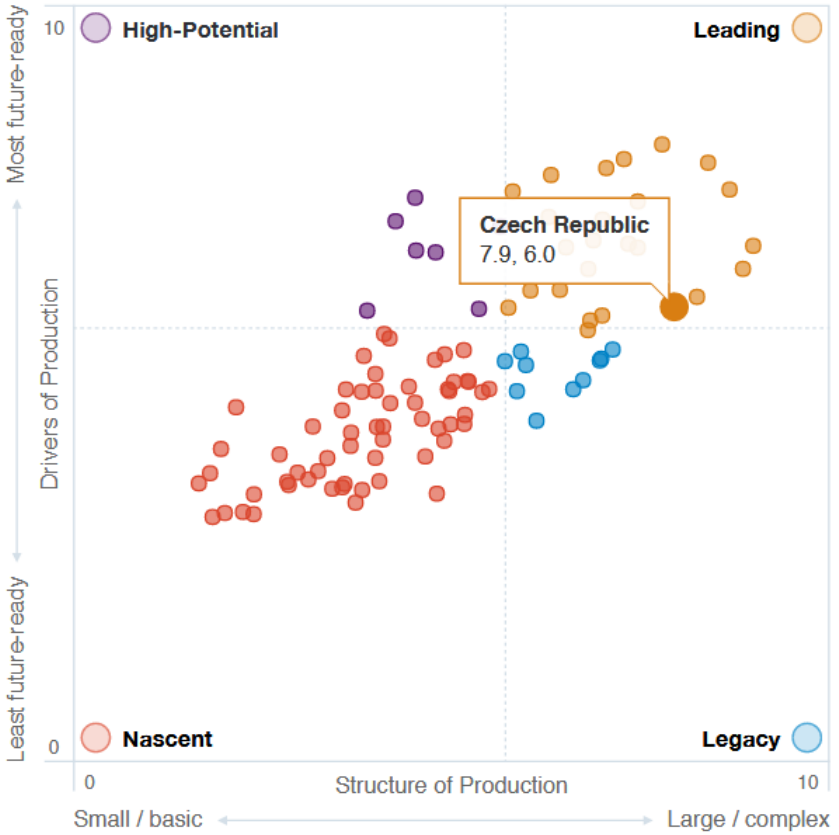
Drivers of Production 6.0

Driver	Weighting	Rank	Score /10
Technology & Innovation	20%	31st	5.1
Human Capital	20%	22nd	6.5
Global Trade & Investment	20%	26th	6.2
Institutional Framework	20%	29th	6.7
Sustainable Resources	5%	18th	7.6
Demand Environment	15%	43rd	5.0

Structure of Production 7.9

Structure	Weighting	Rank	Score /10
Complexity	60%	5th	8.7
Scale	40%	8th	6.8

Archetype



Zdroj: WEF, 2018

Czechia and Industry 4.0 – survey I

- Survey realised by the Czech Confederation of Industry:
  - Czech business knows, what Industry 4.0 is…
  - Companies already have own digital strategy or have started to elaborate..
  - Firms don't have a Chief Digital Officer position…
  - Only less than 1/10 Czech companies were forced to introduce Industry 4.0 aspects by their foreign owner or clients
  - Main motivation to introduce Industry 4.0 aspects is to improve own market position (in relation to competitors) and to increase productivity per employee
  - Industry 4.0 is mainly used (or will be used) in production process (further administration, logistics, R&D, customer relationship etc.)
  - Nearly ½ of Czech companies intend to increase Industry 4.0 investments, more than 1/3 of firms are being to retain these investments

Czechia and Industry 4.0 – survey II

- Survey (cont.):
  - 1/5 of Czech companies invest in training and human development (and next 1/5 of firms are preparing Hum. Dev. strategy)
  - Czech firms only use traditional data tools… (non-autonomous, non-machine learning)
  - Czech firms don’t use real-time energy operation…
  - Cyber security in Czech companies isn’t well prepared…

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Governmental strategies

Year	Institution	Document
2014	Ministry of Education, Youth and Sports (MSMT)	Strategy of Education Policy of the Czech Republic until 2020
2015	Ministry of Transport (MD)	Action Plan for the Development of Intelligent Transport Systems in the Czech Republic (ITS) by 2020 (with a view to 2050)
2016	MD	Implementation Plan for ITS
2016	Ministry of Industry and Trade (MPO)	Industry 4.0 (Initiative)
2017	Government	Action Plan for Society 4.0
2017	MD	Vision for Autonomous Mobility Development
2017	Government	Strategic framework Czech Republic 2030
2018	Ministry of Labour and Social Affairs	Action Plan for Job 4.0
2018	R&D&I Council (RVVI) / MPO	National Research and Innovation Strategy for Smart Specializations of the Czech Republic 2014-2020 - update 2018
2019	RVVI	Innovation Strategy of the Czech Republic 2019-2030 (Strategic Framework Plan)
2019	RVVI	Digital Czech Republic (strategy)
2019	RVVI	National strategies of artificial intelligence in Czechia

Expected impacts of technological change on GVCs:

GVC Reconfiguration:

- shortening GVC
- key proximity to the final customer?
- changes in power distribution in GVCs
- the role of MNEs
- the emergence of new players?

- decreasing importance of labor costs
- differences between sectors
- reshoring?
- upgrading or downgrading?

Possible impacts of 4th industrial revolution on Czechia

- one of the highest participations in GVCs
- upgrading – selective

Possible scenarios:

a) retention - leaving capacities and introducing new technologies
b) selection - consolidation and concentration of production activities into several selected locations
c) reconfiguration - reshoring part of activities and creating new plants

Decisive role of:

- previous specialization in GVC
- how fast economies respond to change
- development of infrastructure, knowledge and appropriate institutional environment

- so far rather the introduction of new technologies than reshoring – retention
- smart specialization?

Interviews

- so far 4 interviews (public agency, MNE, industry association)
- very varigated answers
- respondents sometimes not able to choose one answer
- possibility to adjust aswers?

Challenges for Czechia in terms of industry 4.0

- dependence on foreign capital – MNEs (and accompanying capital outflow)
- low digitization of domestic supplying firms
- electromobility
- wage growth regardless of productivity developments
- too high dependence of public investment on the EU resources
- legislation
- unprepared education system
- ….

Reader/resources

- Brun, L., Gereffi, G., & Zhan, J. (2019). The “lightness” of Industry 4.0 lead firms: implications for global value chains. In *Transforming Industrial Policy for the Digital Age*. Edward Elgar Publishing.
- ČNB (2020): FDI statistics
- DICKEN (2011): Global Shift - Mapping the changing contours of the world economy. – The Guilford Press; Sixth Edition edition. – Chapter 14
- COE, N., KELLY, P., YEUNG, H. (2012): Economic Geography – A Contemporary Introduction (Second Edition). Wiley. – Chapter 5
- OECD (2013): Interconnected Economies: Benefiting from Global Value Chains. Available at: <http://www.oecd.org/sti/ind/interconnected-economies-GVCs-synthesis.pdf>
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Thank you for the attention.

Questions ?