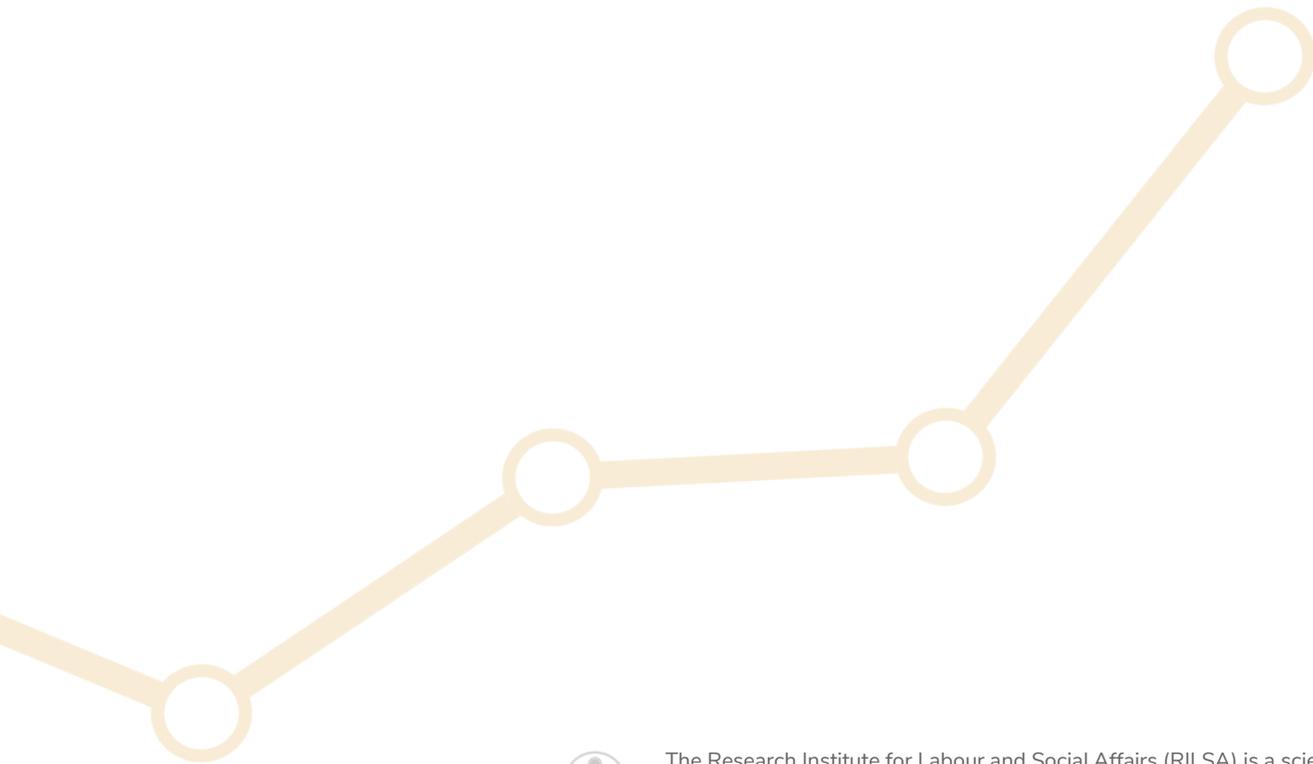


The driving forces of labour
productivity discrepancies
between Czech regions

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Umut Ünal



The Research Institute for Labour and Social Affairs (RILSA) is a scientific and research institution that conducts independent research in the field of labour and social affairs at the regional, national and international levels. In addition to scientific and research activities, the Institute provides professional advice and consultation and information services in all its areas of activity.

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Summary

- This policy brief provides a description of a rigorous examination of labour productivity convergence patterns at the regional and sectoral levels across the Czech Republic, thus building upon and extending the research previously conducted by Ůnal and Špeciánová (2023).
- The results revealed no evidence of convergence across the Czech Republic; rather, widespread evidence was discovered of divergence, thus supporting the existence of convergence clubs across regions. The manifestation of diverse convergence clubs that traverse various sectors in Czech regions serves to highlight the intricacy and heterogeneity of the country's regional economic evolution.
- Sectoral discrepancies concerning the rhythm and inclination of regional economic convergence are thrown into relief by the variability in the number of regions in each club. The identification of non-converging cohorts depends on the localization of areas that are deficient in terms of progress, thereby enabling policymakers to design targeted intervention measures that promote economic development and convergence.
- Further, an investigation was conducted of the factors that drive convergence clubs. The results revealed that physical capital plays a more important role than human capital across Czech regions. Based on the findings, the following recommendations were proposed: (i) To prioritize investment in physical capital by offering tax incentives, subsidies and infrastructure improvements so as to encourage the formation of gross fixed capital for businesses, (ii) To focus on enhancing the development of human capital in specific sectors by improving access to tertiary education, vocational training and tailored skill development programmes, (iii) To encourage interdisciplinary cooperation, knowledge exchange and the alignment of education with the needs of industry, emphasizing the creation of partnerships between educational institutions and businesses.

Importance of the research

The clarification of labour productivity convergence and its driving factors at the regional and sectoral levels in the Czech Republic is important for at least three reasons. Primarily, given the heterogeneity of the impacts of both public policies and exogenous shocks on various economic sectors, the investigation of labour productivity convergence at the sectoral and regional levels allows for the critical investigation of income dynamics. Secondly, it helps in terms of determining the productivity schemes of the heterogeneous sectors and regions of the country, thereby enabling the identification of those regions or sectors that require targeted policy intervention. Finally, it facilitates the formulation of more efficacious policies and programmes, as well as the identification of opportunities to promote productivity and, therefore, economic development at the local scale.

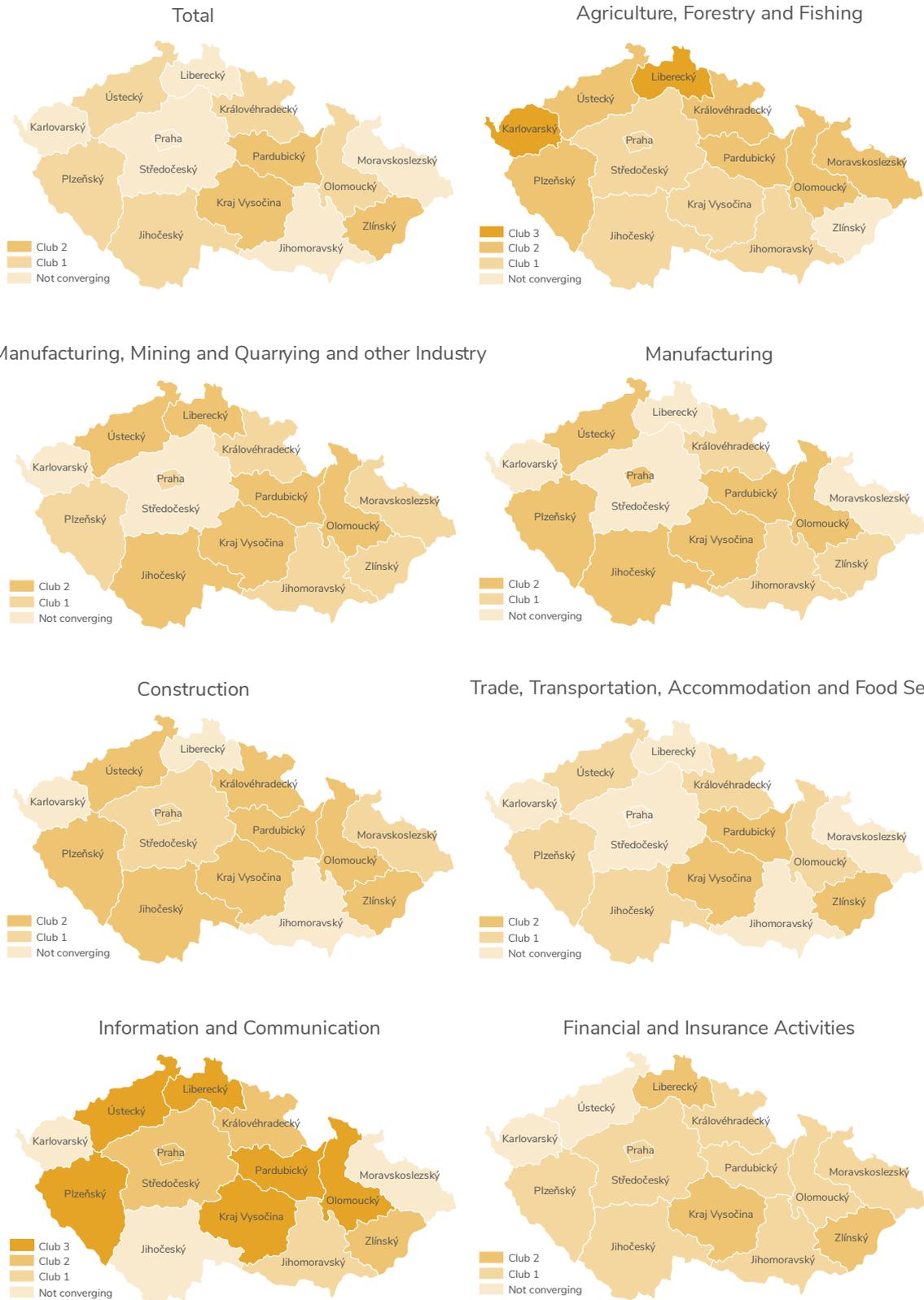
Main findings

The sample consists of data on 14 regions in the Czech Republic for the period 1996–2021 published by the Czech Statistical Office. The data on labour productivity, measured as the real value added for each sector, the formation of gross fixed capital and the tertiary education enrolment rate was also obtained from the Czech Statistical Office.

Phillips and Sul (2007) presented an innovative methodology for the examination of economic transition behaviour, which takes into account diverse temporal trajectories and variations. This approach has proved to be particularly efficacious in terms of gauging progress towards a sustained long-term growth trajectory and shared equilibrium. The authors emphasise that the absence of the detection of convergence within panels does not necessarily indicate the absence of convergence within its constituent subgroups. The phenomenon via which distinct groups converge towards disparate steady-state levels is termed 'club convergence.' (Ünal et al., 2022). Aimed at the subsequent determination of the driving factors of the various convergence clubs, this policy brief further employed an ordered logit model.

Maps that highlight regional convergence are presented in Figure 1. The presence of multiple convergence clubs across various sectors in the regions of the Czech Republic highlights the complexity and heterogeneity of the country's regional economic development. The existence of these clubs suggests that regions within the same sector may follow different development paths, thus leading to varying levels of economic growth and convergence.

Figure 1 Convergence Club Maps for Labour Productivity



Real Estate Activities



Professional, Scientific, Technical and Administrative Activities



Public Administration, Education, Health and Social Work



Other Service Activities



Table 1 provides a summary of the estimated coefficients of the ordered logit model along with their associated marginal effects, which reveal the marginal impact of the formation of gross fixed capital and the tertiary education enrolment rate on the likelihood of belonging to a specific club.

Table 1 Estimation Results obtained from the Ordered Logit Model (Average Marginal Effects)

	Gross fixed capital formation											
	All Sectors	Agriculture, Forestry, Fishing	Manufacturing Mining and Quarrying and Other industry	Manufacturing	Construction	Trade, Transportation, Accommodation and Food Services	Information and Communication	Financial and Insurance Activities	Real Estate Activities	Professional, Scientific, Technical and Administrative Activities	Public Administration, Education, Health and Social Work	Other Service Activities
Club 1	0.02*** (0.01)	0.01*** (0.00)	0.01** (0.00)	-0.00 (0.01)	0.01** (0.01)	0.02*** (0.01)	0.01*** (0.00)	0.01** (0.00)	0.01 (0.01)	0.01** (0.01)	0.02*** (0.00)	0.01*** (0.00)
Club 2	-0.01*** (0.00)	0.03*** (0.01)	0.01** (0.00)	-0.00 (0.00)	0.00** (0.00)	-0.01*** (0.00)	0.00** (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Club 3	-0.02*** (0.00)	-0.02*** (0.01)	-0.01** (0.01)	0.00 (0.01)	-0.02** (0.01)	-0.02*** (0.00)	0.00 (0.00)	-0.01** (0.00)	-0.01 (0.01)	-0.02** (0.01)	0.00** (0.00)	0.00 (0.00)
Club 4		-0.01*** (0.00)					-0.02*** (0.01)				-0.04*** (0.01)	-0.03*** (0.01)

continued

	Tertiary School Enrolment Rate											
	All Sectors	Agriculture, Forestry, Fishing	Manufacturing Mining and Quarrying and Other industry	Manufacturing	Construction	Trade, Transportation, Accommodation and Food Services	Information and Communication	Financial and Insurance Activities	Real Estate Activities	Professional, Scientific, Technical and Administrative Activities	Public Administration, Education, Health and Social Work	Other Service Activities
Club 1	-0.97	1.66***	-0.23	2.41***	-0.36	-0.97	2.01***	-1.13	-0.82	-0.17	1.03*	2.78***
	(0.97)	(0.36)	(0.49)	(0.84)	(0.83)	(0.97)	(0.64)	(0.70)	(0.93)	(0.84)	(0.61)	(0.52)
Club 2	0.33	7.30***	-0.23	0.55**	-0.08	0.33	0.80***	0.00	-0.08	-0.04	0.47	2.34***
	(0.33)	(1.05)	(0.49)	(0.24)	(0.18)	(0.33)	(0.30)	(0.15)	(0.09)	(0.18)	(0.29)	(0.51)
Club 3	0.64	-5.49***	0.47	-2.95***	0.44	0.64	0.25	1.12	0.90	0.21	0.19	0.64
	(0.64)	(1.01)	(0.98)	(1.03)	(1.01)	(0.64)	(0.18)	(0.69)	(1.02)	(1.02)	(0.13)	(0.49)
Club 4		-3.47***					-3.06***				-1.69*	-5.76***
		(0.55)					(0.99)				(1.01)	(0.94)

Notes: The dependent variable takes a value of 1 for the series in convergence Club 1, and so on up to a value of 4 for the series in Club 4. To save space, the threshold parameters are not reported here. Heteroscedastic standard errors are shown in parentheses. *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.10$.

Recommendations

The existence of multiple convergence clubs indicates the necessity for the introduction of focused policies and intervention measures that acknowledge the distinct characteristics of, and the difficulties experienced by, individual regions and sectors. The identification of divergent groups is also of major significance since it signifies the absence of comparable advancement in terms of economic growth and convergence when compared to other regions for the same sector. The ordered logit results indicated that physical capital plays a more important role than human capital.

Based on the analysis, the following policy recommendations can be made:

1. To increase investment in physical capital: Given that physical capital has been identified as playing a more important role than human capital, policies should be implemented aimed at promoting and facilitating the formation of gross fixed capital. This should include measures such as providing tax incentives or subsidies for businesses to invest in new equipment and technology or improving infrastructure so as to attract investment.

2. To enhance the development of human capital in certain sectors: The results indicate that a higher tertiary school enrolment rate positively impacts labour productivity in several sectors including agriculture, forestry-fishing, manufacturing, information and communication, public administration, education and health and social work. Policies that focus on improving access to tertiary education, vocational training and skills development programmes specifically tailored to these sectors have the potential to help boost productivity.
3. To promote interdisciplinary cooperation and knowledge exchange: Given the wide range of sectors affected by human capital, the introduction of policies that promote cooperation between different sectors would be beneficial. This should include initiatives such as establishing innovation hubs and knowledge exchange programmes that facilitate the sharing of information and inter-industry cooperation.
4. To align the needs of education and industry: Aimed at ensuring the relevance of tertiary education to the labour market, policymakers should work with businesses and educational institutions so as to better align the curricula with the needs of industry. This should involve the creation of partnerships between universities and businesses, the conducting of regular skill-gap assessments and the design of programmes that provide students with practical and industry-relevant training.
5. To monitor and evaluate the outcomes of policies: It is crucial that the impact of the policies introduced be regularly monitored and evaluated so as to determine their effectiveness. This should involve the setting up of mechanisms for the collection of the relevant data on productivity levels and human capital development in the various sectors of the economy, which can be used in the formation and adjustment of future policy decisions.

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Author

Dr. Umut Ünal

(umut.unal@rilsa.cz) is a researcher at the Research Institute for Labour and Social Affairs (RILSA) where he currently holds the Head of Macroeconomic Analyses department position. His research interests lie within the broad field of open economy macroeconomics, primarily in macroeconomics with a focus on empirical applications. He regularly presents his work at international conferences and seminars around the world. He is the recipient of the "2023 McGraw-Hill/Irwin Distinguished Paper Award" at the "Southwestern Society of Economists in association with the Federation of Business Disciplines" conference, in Houston, TX, USA.



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RILSA

Dělnická 213/12, 170 00 Prague 7

T: +420 211 152 711

E: rilsa@rilsa.cz

W: <https://www.rilsa.cz>

Data box: xy9n88n

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