

# Successful Convergence in the Visegrád Region: the Example of Czechia\*

Zsolt Becsey, Jr. – Áron Máté

*Czech economic development has been characterised by a steady convergence process over the last almost three decades, with Czech GDP per capita now almost reaching the EU average. In our study we present the factors behind this development in relation to the V4 region and especially to Hungary. Our main finding is that the source of economic growth over the past 20 years has been efficiency and technology improvements, along with improving labour market conditions and a high, favourably structured investment rate. The important factors in this regard include high domestic ownership in most priority sectors, investment in human capital, a relatively balanced regional structure, support for R&D and the rise of digitalisation. The stability of the Czech economy suggests that Western European living standards will be achieved and maintained.*

## 1. Relative level of development of the Czech economy

*In 2000, the relative level of development of Czechia was similar to that of Hungary today, and over the last 20 years it has managed to break out of the medium development level to reach 94 per cent of the EU average. In the following, we look at the cornerstones of this success by the Czech economy. Per capita value added in the Czech economy<sup>1</sup> reached 94 per cent of the EU average (Figure 1). Compared to the other three V4<sup>2</sup> countries, Czechia had a higher level of development at the start. It has not lost this developmental advantage over the last three decades and has continuously maintained it. Although the Hungarian economy has experienced strong growth in recent years, the Czech economy (and for that matter the Polish economy as well) has shown similar economic dynamics. This shows that although Hungary has come significantly closer to the EU average, it has not caught up with Czechia.*

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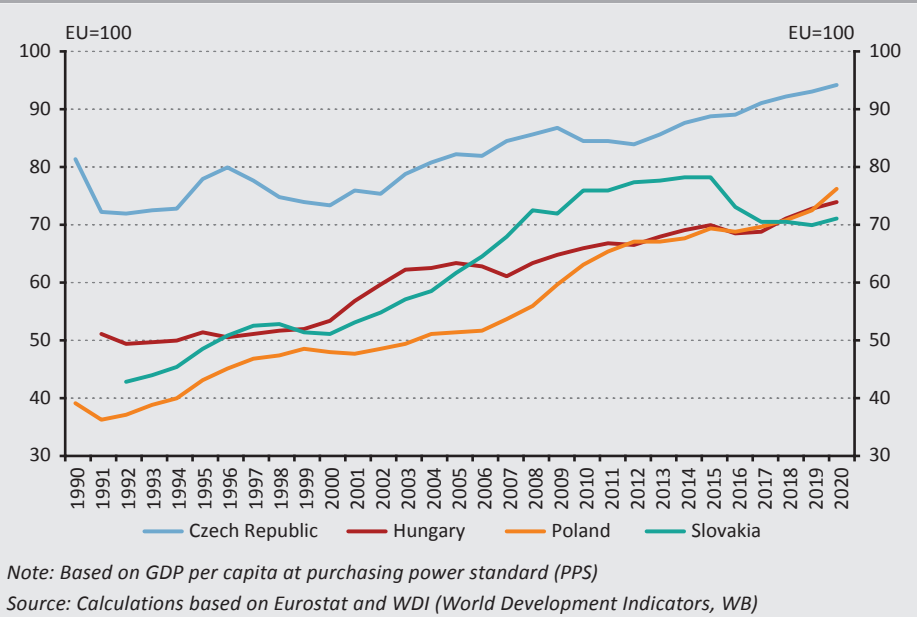
\* The papers in this issue contain the views of the authors which are not necessarily the same as the official views of the Magyar Nemzeti Bank.

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<sup>1</sup> Value calculated at purchasing power standard (PPS).

<sup>2</sup> Visegrád or V4 countries: Czech Republic, Poland, Hungary and Slovakia.

**Figure 1**  
Development per capita in the V4 countries compared to the EU average between 1990 and 2019

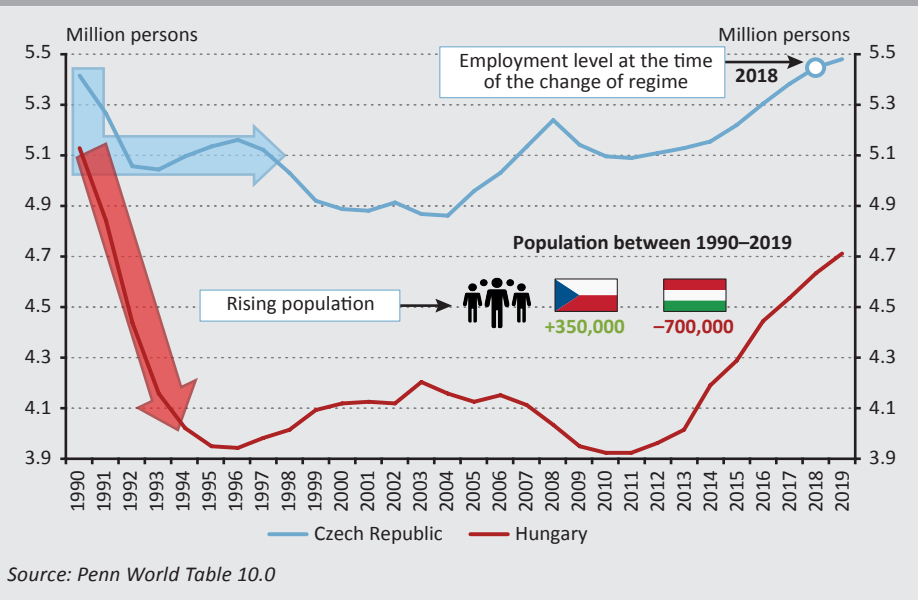


Even before the change of regime, Czechia enjoyed favourable economic conditions, mainly due to its high level of industrialisation. Even during the Habsburg Empire, the Czech provinces had considerable industrial capacities, supported by the “division of tasks” within the empire and the system of internal customs duties, in contrast to the agricultural dominance of the Hungarian territories. Before the outbreak of the Second World War, Czechoslovak industry already accounted for 53 per cent of the total economy, nearly one and a half times the 36 per cent of the Hungarian economy (Solimano 1991). The Czechs maintained their industrial base during the socialist period, which was a favourable starting position also at the time of the regime change, although during this period economic development stagnated in relative terms.

The transition in the Czech labour market in the early 1990s was much milder than in Hungary (Figure 2). While in the years immediately after the regime change employment in Hungary fell by more than 1 million in four years, the Czechs had only about 300,000 fewer workers. Then, after several cycles and an upswing in the labour market in recent years, in 2019 the number of people employed in Czechia still exceeded the Hungarian level by almost 800,000. This is partly explained by the fact that during the same period, the population in Czechia declined significantly less than in Hungary due to natural processes. The roughly 800,000 difference in employment between the two countries is explained by the 500,000 higher working-age population (in this case, the 15–64 age group), while the composition of the population is also

more favourable in Czechia because the share of lower-skilled workers is lower, about two-thirds of that in Hungary (Table 1). Unemployment reached a lower level by the end of the decade, with a rate of 2.6 per cent in 2020 for the 15–74 age group. The labour market has been tight for years: the number of vacancies has been consistently high, above the EU average since 2015. In 2020, job vacancies accounted for 5.3 per cent of all jobs, a record at the EU level and more than three times the EU average. The current higher employment in Czechia is therefore due to the size of the population and the lower share of people with primary education.

**Figure 2**  
Employment in Czechia and Hungary (1990–2019)



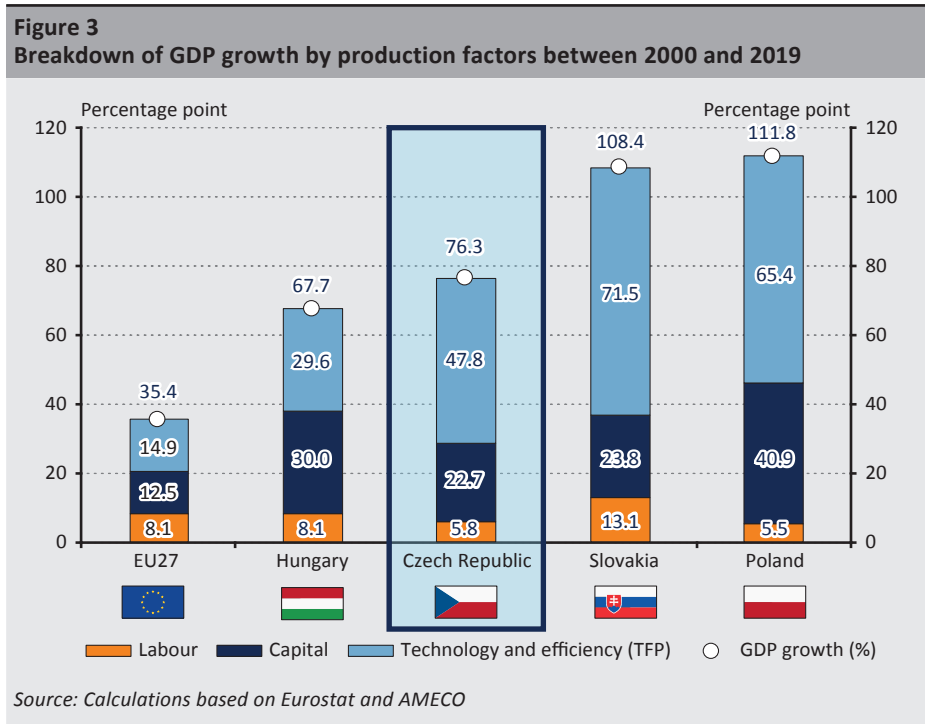
**Table 1**  
Key labour market figures for Czechia and Hungary (2020)

	CZ	HU
<b>Population (million)</b>	<b>10.7</b>	<b>9.7</b>
15–64 age group (million)	6.8	6.3
Employed (million)	5.1	4.4
Employment rate (15–64 age group, per cent)	74.4	69.7
<b>Share of people with primary education (per cent)*</b>	<b>12.3</b>	<b>19.7</b>
Share of people with secondary education (per cent)*	65.6	56.7
Share of people with tertiary education (per cent)*	22.1	23.6

Note: \* as a share of the 15–64 age group.

Source: Calculations based on Eurostat (LFS)

Looking at the developments from the side of production factors, improvements in technology and efficiency have accounted for more than half of the growth in Czechia over the past 20 years (Figure 3), while total cumulative growth has also exceeded the Hungarian figure by almost 9 per cent between 2000 and 2019. A breakdown of growth by production factors shows that the structure of economic expansion in Czechia has been favourable. With the tight labour market, the contribution of labour to growth may have been capped, and firms have been able to boost production by increasing efficiency. As a result, the Czech economy is characterised by strong growth. GDP growth still lagged behind Slovakia and Poland, but those two countries started from significantly lower levels of development than the Czech Republic.

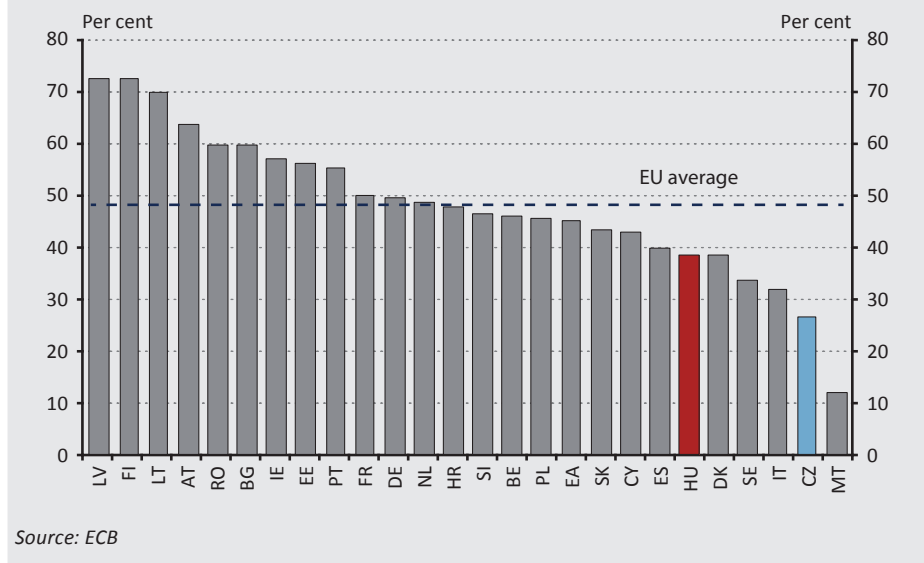


## 2. Structural factors underpinning Czech growth

*Historical factors and fiscal discipline have played a crucial role in Czechia's convergence process.* Already between the two world wars, the Czech economy was on a different path from the rest of the region, with an external debt ratio of less than 20 per cent in 1930 (56 per cent in Hungary at the same time). This was due to the fact that the Czechoslovak territories in the region suffered the least war damage and the country had no reparations obligations. Even after the change of

regime, there was no change of direction in the Czech economy. In 1995, Czechia’s debt-to-GDP ratio was only 14 per cent, a much better level not only compared to countries in the region, but also compared to most EU Member States. Even during the European sovereign debt crisis following the 2008–2009 financial crisis, public debt did not exceed 50 per cent of GDP. The composition of debt, similarly to the ratios seen in the 1920s, remained favourable after the change of regime, with the dominance of domestic financing despite the fact that the majority of the Czech banking system was foreign-owned. Over the past 25 years, Czechia has had the second-lowest share of foreign funding in the EU (Figure 4).

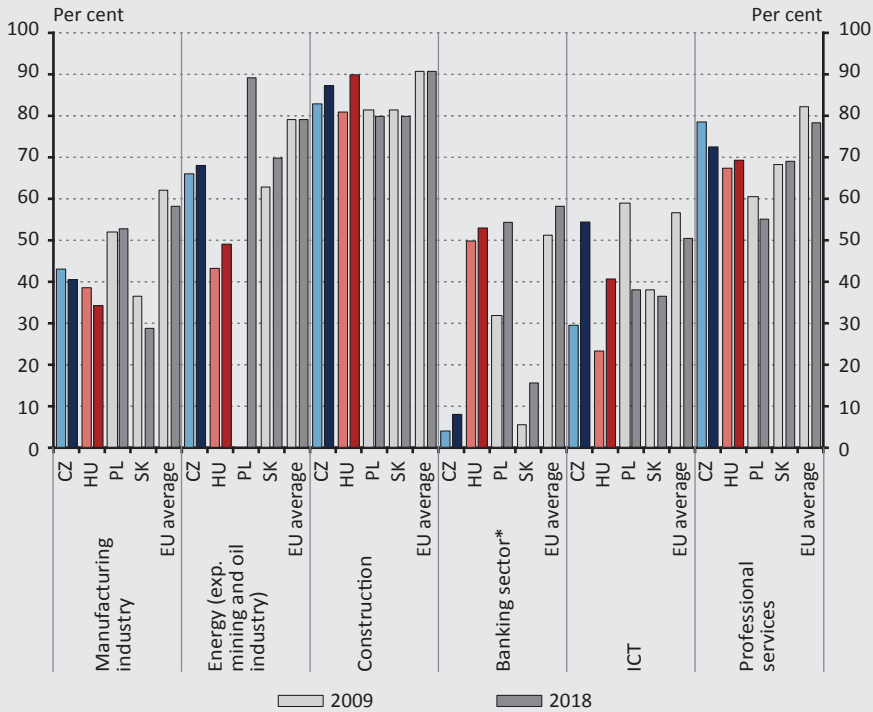
**Figure 4**  
Public debt held by foreign agents as a percentage of total debt (average 1995–2020)



Since the First World War, the current account balance has been continuously supported by a broad industrial base. As a result, the Czech economy can operate with lower spreads (risk premiums) than other former socialist countries.

*Domestic ownership is in the minority in the banking system, while in other key sectors domestic ownership is typically higher than in Hungary (Figure 5). Counterintuitively, higher domestic ownership does not result in a lower GNI/GDP margin in Czechia than in Hungary, which is due to the fact that Czechia had a higher implicit rate of return on foreign direct investment (FDI) income and consequently a higher allocation of FDI income (Balogh et al. 2018).*

**Figure 5**  
Evolution of domestic ownership share in some sectors, in terms of value added



Note: \* Based on the assets of the banking sector



Source: Eurostat or, for the banking sector, ECB

Higher domestic ownership compared to Hungary has resulted in greater embeddedness, higher production multipliers and higher capital exports for Czechia. Production multipliers mean the additional domestic production that is generated through production links as a consequence if the economy produces one forint worth of a product. The multiplier of the Czech processing industry is almost 0.3 higher than the Hungarian multiplier, which means that the use of domestic production inputs as a share of output is twice as high (Figure 6).<sup>3</sup> On the one hand, Czech industry already provided a strong base for the economy before the forced communist industrialisation, and thus, due to historical circumstances, domestically-owned industry is stronger than in Hungary. On the other hand, the Czech privatisation technique during the change of regime was more conducive to

<sup>3</sup> The meaning of the multiplier in the case of Czechia is: one unit increase in gross output results in an additional 0.6 units of output. The multiplier is calculated from the input-output balance generated from the tables of use of resources for 2017, using a Leontief inverse. On multiplier models, see for example Koppány (2017): *Makrogazdasági és regionális hatáselemzés multiplikátor modellekkel (Macroeconomic and regional impact analysis with multiplier models)*.

keeping a significant part of key companies in domestic hands (for more details see *Tóth et al. 2003*). As a result, the share of imports in the manufacturing industry is also lower than in Hungary, but the lower share is also due to the fact that Czechia has a better supply of raw materials than Hungary (ores and mining materials). Due to the higher wage share ratio, the multiplier effect through income channels is also higher than in Hungary (*Figure 6, last row*).<sup>4</sup> The wage share is higher in Czechia, despite the fact that the share of knowledge-intensive (probably highly paid) workers is lower than here.

**Figure 6**  
Indicators explaining the multiplicative characteristics of the Czech manufacturing industry (2017)

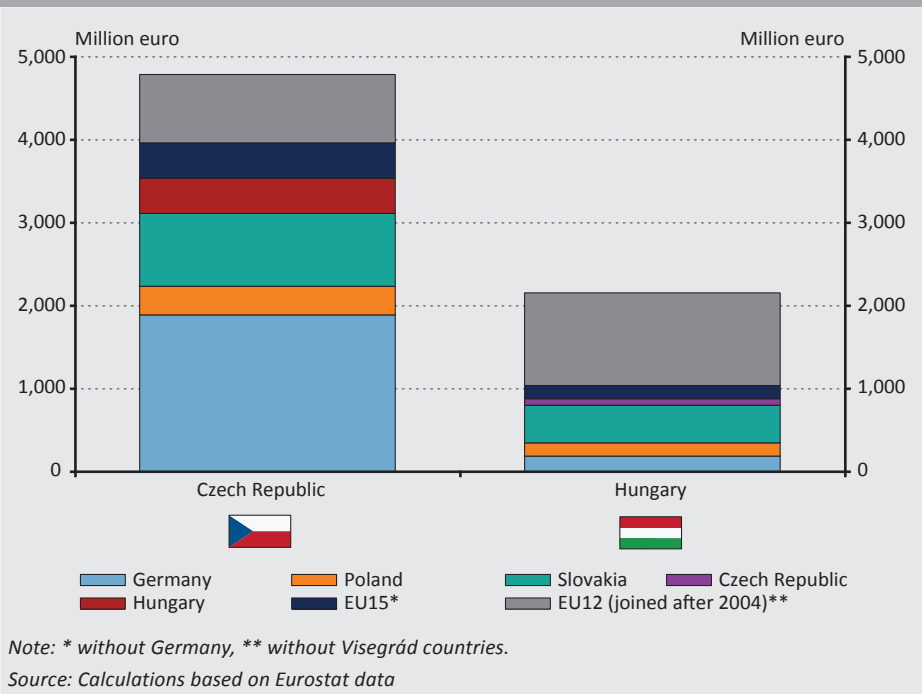
				EU27*
<b>PRODUCTION</b>	<b>Multiplicator (output)</b>	1.6	1.3	–
	Proportion of knowledge-intensive workforce (%)	9.6	12.1	16.2
	Import ratio (output) (%)	36.6	51.3	33.1
	Proportion of domestic ownership in manufacturing (%)	40.5	34.2	65.8
<b>INCOME</b>	Wage share (%)	56.4	50.1	57.7

Note: \*EU27 import share based on data from 19 Member States  
Source: Calculations based on Eurostat data

In terms of capital exports, although neither country has experienced large FDI outflows, Czech firms generate a significant amount of value added abroad, amounting to around EUR 5 billion. Foreign affiliates of Czech entrepreneurs generate more than twice as much value added as Hungarian companies abroad (*Figure 7*). Germany is unsurprisingly the top destination for Czech investment, accounting for 40 per cent of the production (in terms of value added) of Czech companies' foreign interests. In Germany, Czech companies generate about the same value added as Hungarian companies abroad combined. Czech companies are also active in Slovakia, which is explained by historical and cultural factors.

<sup>4</sup> The indicator is not corrected for differences in the tax systems between the two countries, so the wage share as measured by disposable income may give different results.

**Figure 7**  
**Value added generated abroad by Czech- and Hungarian-controlled companies in the largest destination countries (2018)**

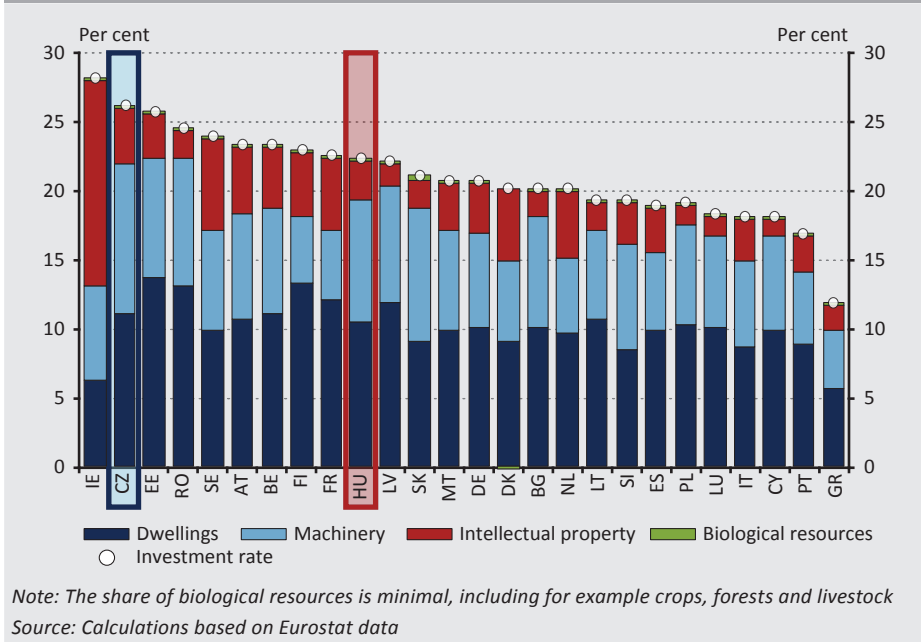


In addition to high domestic ownership, smart investments have been another important pillar of the Czech convergence process. On the one hand, this is reflected in the fact that the share of intangible assets (e.g. software, databases, R&D assets) has been higher on average over the last 10 years than in Hungary (Figure 8). On the other hand, according to the survey of the directorate of the European Commission examining state aids, the Czech Republic has spent a significant share of state aids on environmental protection purposes in the recent period, which shows that these aids are designed with a long-term perspective.<sup>5</sup>

<sup>5</sup> A large proportion of environmental aid was spent on infrastructure investments aimed at reducing pollution (e.g. railway construction).



**Figure 8**  
**Decomposition of investment rate between EU Member States in the average of 2010–2020**



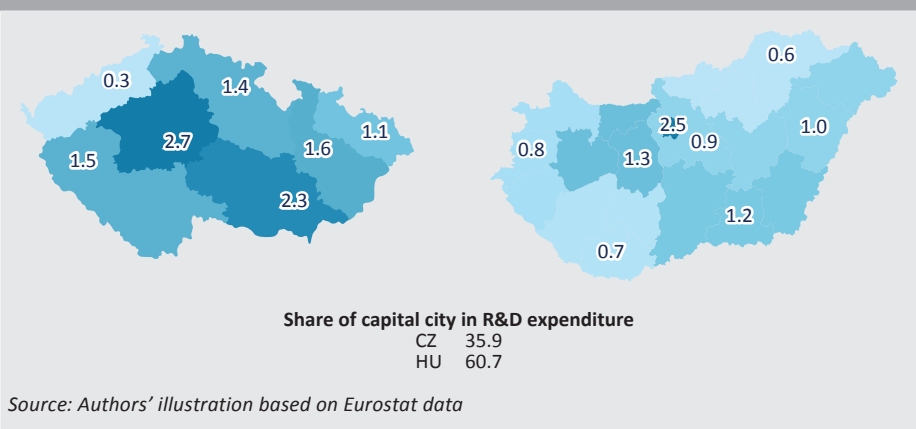
The third important pillar of Czech economic policy was investment in human capital. Although the share of public spending on education has been lower than in Hungary or the EU over the past 20 years, Czechia is ahead of the EU and OECD averages as well as of many developed Western European countries (Austria, the Netherlands and Switzerland) in the PISA tests. The country currently has 3 universities in the world’s top 500, the best ranking among the countries that joined the EU after 2004.<sup>6</sup> In a survey measuring adults’ competences, Czechia ranked in the top third of EU Member States (see MNB 2021, Chapter 4.9). The researchers’ relative labour income exceeds the UK’s per capita expenditure as well as the EU average (expenditures calculated in purchasing power standard). However, there is potential for improvement in health care and disease prevention in Czechia. The adult obesity rate is the 5th highest in the EU, and life expectancy at birth is below the EU average, as in other countries in the region.

<sup>6</sup> Based on QS Rankings, taking all disciplines together. The best Czech university, Charles University, ranked 266th.

### 3. More favourable innovation environment and higher digitalisation in Czechia

Czechia's competitiveness has a broader territorial base than that of Hungary. Prague accounts for 39 per cent of the country's gross value added, while the Brno–Ostrava–Plzen trio together account for 25 per cent. By contrast, Budapest contributes 47 per cent to the country's value added, while the Miskolc–Székesfehérvár–Debrecen trio together only adds another 13 per cent. As a result, the Czech Republic not only has one global competitiveness centre, but at least two (Prague and Brno). This can also be seen in the R&D expenditure data. R&D data are a good indicator of regional competitiveness because R&D should by definition be world-class, and a high level of expenditure indicates a high-quality local ecosystem (possibly with a favourable support system). In the Czech Republic, the Brno region's R&D expenditure as a share of value added (2.3 per cent) was close to Prague's (2.7 per cent), and the region around Prague (Středočeský kraj) also spent 2.7 per cent of its value added on R&D. By contrast, although Budapest's R&D expenditure is similar to the leading Czech regions (2.5 per cent), Pest County is below 1 per cent and the gap between the capital and the countryside is generally wider in Hungary than in the Czech Republic (Figure 9). Funding is also more organic in the Czech Republic, where only 15 per cent of corporate R&D expenditure comes from state support, while in Hungary the share is more than double (32 per cent<sup>7</sup>); thus, Czech R&D companies rely more on their own resources than on state funding.

**Figure 9**  
R&D expenditures as a share of regional GDP by NUTS2 region (2018, %)



<sup>7</sup> <https://stats.oecd.org/Index.aspx?DataSetCode=RDTAX>

*Czech companies are characterised by a high level of digitalisation, especially in online commerce (Figure 10). The digitalisation of Czech businesses is above the EU average – they are ranked 9th – and significantly higher than in Hungary. New technology can help every job in a different way. Solutions that support the flow of information, such as a dedicated web site, e-commerce, the use of computers and communication tools, customer relationship management and business management software are all digital technologies that can significantly raise the productivity of businesses. Czechia is well placed in these technologies.*

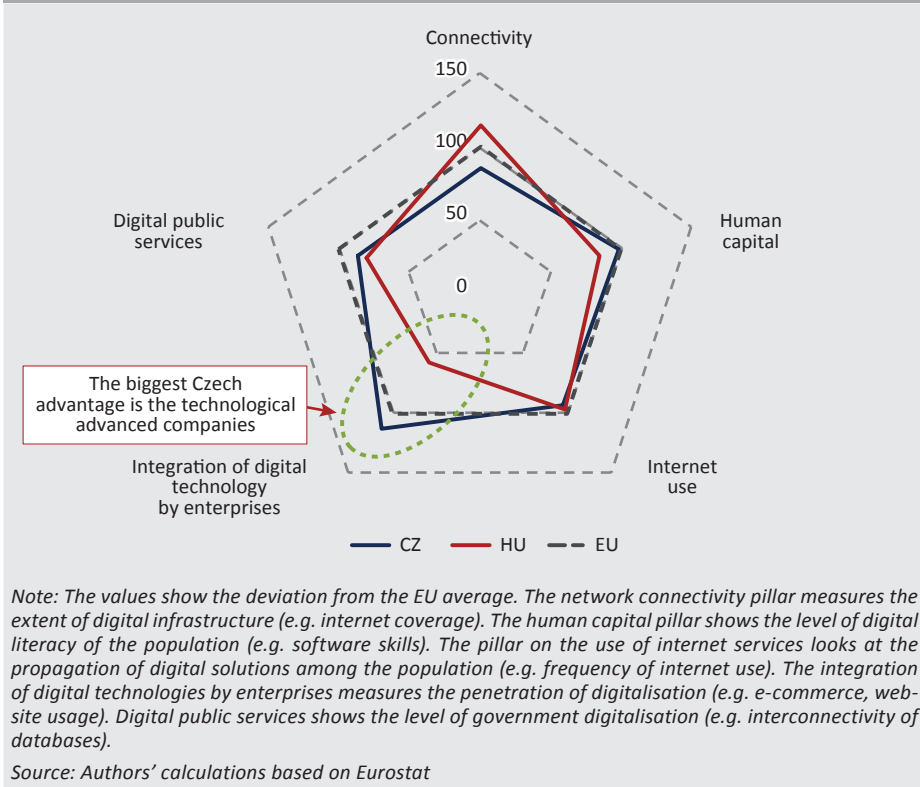
*It is worth noting that e-commerce accounts for one fifth of SMEs' total turnover, the second highest in the EU (Eurostat 2020). 28 per cent of SMEs use online commerce, which also facilitates export activity. Czechia has a high share of digitally intensive SMEs, which provides a pull factor for other companies. The situation is nuanced by the fact that the use of big data and cloud computing is not yet widespread, with between 8 and 16 per cent of companies, which is below the EU average, but the government's strategic programmes are intended to change this in the future.<sup>8</sup> The latter is much needed in Czechia as there is a shortage of digital professionals, which alone may have represented a loss of EUR 11 billion for Czech companies in 2019.<sup>9</sup>*

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<sup>8</sup> The Czech digital strategy for 2020–2027 would receive EUR 361 million to support high-tech start-ups, infrastructure development and artificial intelligence-based digital services, innovative solutions and digital training.

<sup>9</sup> PwC (2019): *Central and Eastern Europe Private Business Survey 2019*. <https://www.pwc.com/gx/en/entrepreneurial-and-private-companies/emea-private-business-survey/cee-epbs-report.pdf> and [https://blog.pwc.cz/pwc\\_ceska\\_republika\\_news/2019/07/nedostatek-zam%C4%9Bstnanc%C5%AF-bude-%C4%8Desk%C3%A9-soukrom%C3%A9-firmy-letos-st%C3%A1t-p%C5%99es-280-miliard-.html](https://blog.pwc.cz/pwc_ceska_republika_news/2019/07/nedostatek-zam%C4%9Bstnanc%C5%AF-bude-%C4%8Desk%C3%A9-soukrom%C3%A9-firmy-letos-st%C3%A1t-p%C5%99es-280-miliard-.html). Downloaded: 30 August 2021.

**Figure 10**  
Pillars of the Digital Economy and Society Index (DESI) compared to the EU average (2019)



#### 4. Summary and conclusions

*In this article, we examined the structural and historical factors behind the Czech economy's steady recovery since the mid-1990s. After the change of regime, the transition of the labour market in the Czech economy was more successful (partly thanks to a more favourable form of privatisation), which resulted in Czechia's growing at least as fast as the other former socialist countries, despite its relatively higher level of development. Over the past 20 years, the source of growth has been the improvement of efficiency, in parallel with a tightening labour market and a more favourable investment structure. From a macro-financial point of view, the prudent management of the Czech state (in line with its historical traditions), the fact that the majority of public debt was held by domestic actors and the stable industrial base provided sufficient support for the current account balance provided favourable fundamentals for growth.*

The Czech economy is also structurally well positioned for further growth. The share of domestic ownership in key sectors is higher than in other countries in the Visegrád region (except banking), which may play a role in maintaining the quality of Czech production networks and helping the country to generate nearly EUR 5 billion of value added from Czech companies operating abroad (Hungarian companies produce EUR 2.2 billion abroad). On the innovation side, a more even spatial distribution of R&D expenditure, relatively high researcher wages and a high share of internal resources support Czech economic growth. Czech companies have responded well to the challenges of the 21st century by adapting online sales platforms relatively quickly. A survey also shows that 91 per cent of Czech SMEs have introduced sustainability measures, which is much better than the 77 per cent in Hungary (EC 2020). As a result, we believe it is fair to say that the Czech growth stands on a solid footing and has many lessons for other former socialist countries to learn.

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