



CEE Economic Monthly

June 2023

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► The pandemic and the introduction of energy allowances have made it more difficult to measure household income. In Poland, survey-based estimates point to a much bigger contraction than that implied by national accounts.. We discuss this in the section *Poland: The riddle of disposable income*.

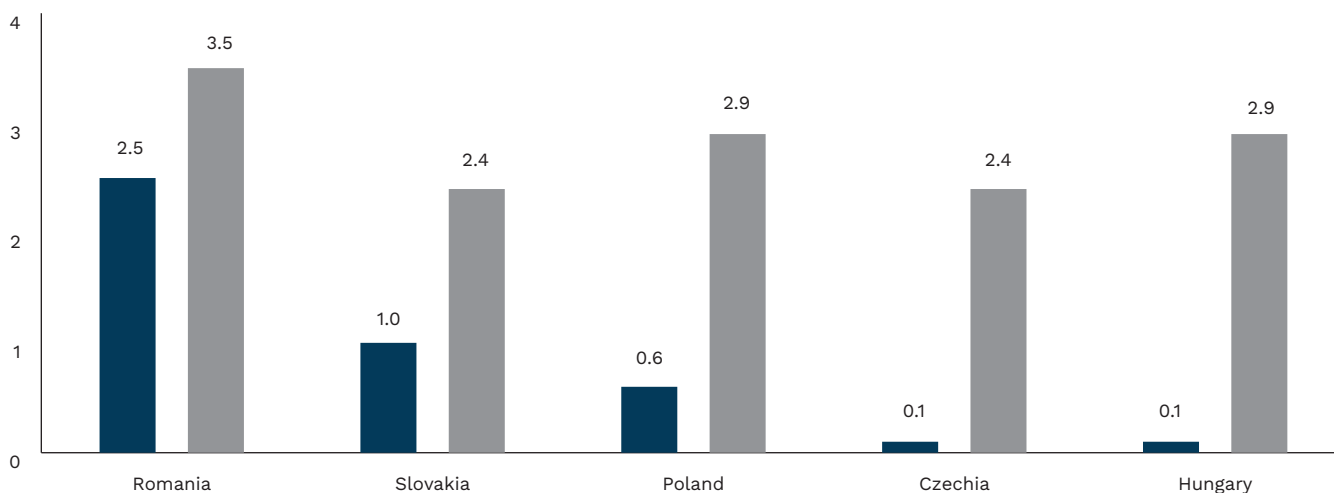
► The CEE countries are steadily converging with the Eurozone. Poland outperformed the region in terms of productivity growth. We estimate that total factor productivity (TFP) there grew by 19% in 2015-2022. Similar estimates for Czechia, Slovakia and Hungary vary from 2.9% to 5.4%. In Germany, it was 7%. We present the decomposition in the section *Rapid growth in productivity in CEE*.

► In recent years, fiscal policy has become expansive worldwide. The global Covid-19 pandemic and the war in Ukraine have created many new challenges, resulting in an increase in budget deficits in CEE. We review fiscal spending and the current budget conditions in the section *CEE countries' fiscal spending*.

► Economists use utility functions to model household behaviour. It enables them to mathematically describe the behaviour of a consumer who wants to maximise life satisfaction. Estimates of these parameters for the CEE countries are heterogenous. We present examples in the section *Measuring consumers' decisions in CEE — discussion*.

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GDP growth in CEE (%)



Source: Focus Economics – consensus of forecasts.

Poland: The riddle of disposable income

-4.6%

Decline in real disposable income in 2022, according to GUS BBDG

5.2 pp

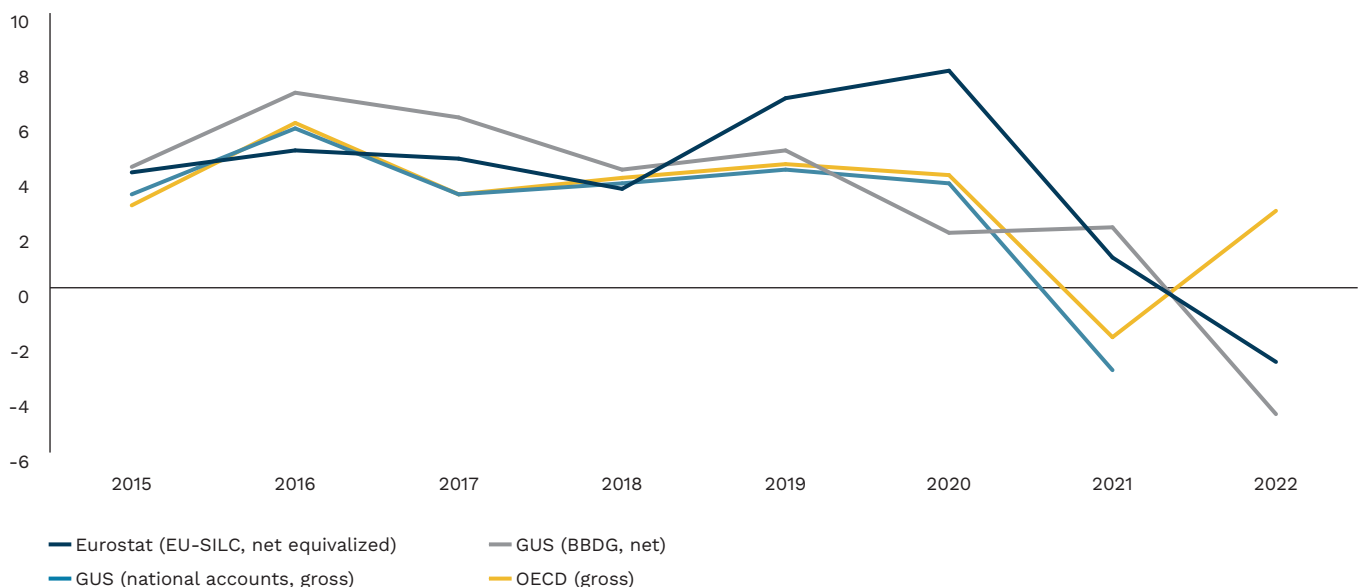
Difference in real disposable income growth in 2021, according to GUS measures

► The pandemic and the introduction of energy allowances have made it more difficult to measure household income. In Poland, survey-based estimates point to a much bigger contraction than that implied by national accounts.

► There are a number of surveys on disposable income in Poland. These include the household income surveys (BBDG) conducted by Poland Statistics (GUS) and the EU-SILC by Eurostat. Alternatively, disposable income can be inferred from national accounts; these kinds of estimates are made by GUS and the OECD. However, the measures above reveal divergent income dynamics in recent years. We argue that the GUS BBDG survey reflects income growth in richer households more poorly. However GUS data still provides a good proxy for measuring future consumption due to the high marginal propensity to consume among poorer households.

► **Statistics provide opposite conclusions about growth in disposable income in Poland.** In 2015-2019, the GUS BBDG survey pointed to the highest growth in disposable income: 5.4% per year. Slightly lower growth was observed in Eurostat's sister survey, the EU-SILC: 4.9% per year, on average. The problem is the discrepancy from year to year, with the BBDG reporting the largest increases in 2016 and 2017, and the EU-SILC in 2019 and beyond. In contrast, GUS's alternative measure inferred from national accounts and the OECD's estimates point to a different income path, with average growth of around 4.2% in 2015-2019, 1.2 pp lower than in the BBDG.

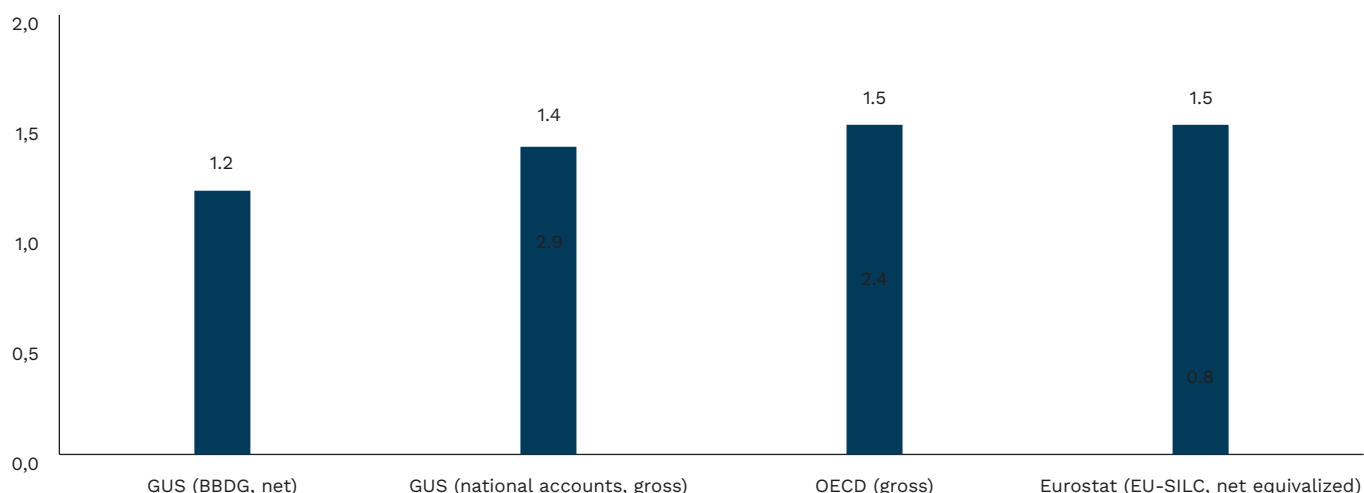
Fig. 1.1. Different measures of growth in real disposable income in Poland (%)



Source: GUS, Eurostat, OECD.

► **This discrepancy further increased during the pandemic.** The EU-SILC survey suggests a record increase in real disposable income in 2020, reaching 7.9%. In contrast, the BBDG survey saw incomes rise by just 2.0%, 5.9 pp less. Other discrepancies were evident in 2021: the difference between GUS's estimate from the BBDG and from national accounts reached 5.2 pp. Both surveys point to a decline in disposable income in 2022, while the OECD estimate shows an increase.

Fig. 1.2. Difference in growth in disposable income and private consumption (2015-2019 average)

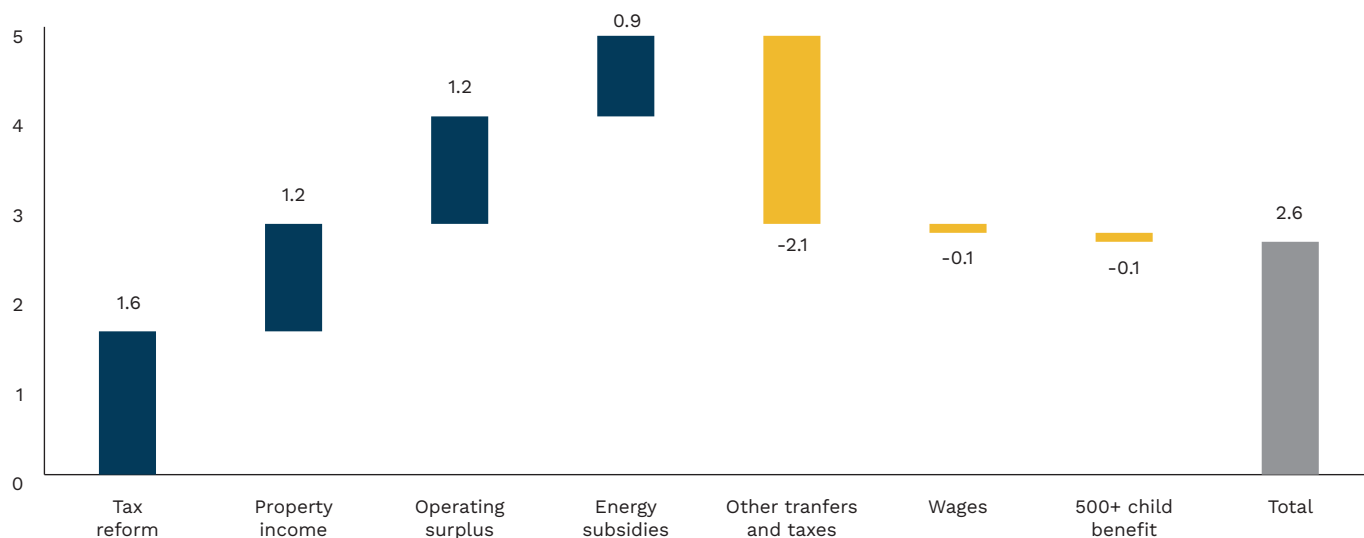


Source: GUS, Eurostat, OECD. Mean absolute difference.

► **The BBDG survey was most strongly associated with growth in private consumption.** We calculated the average absolute difference between the growth in disposable income and private consumption. For example, if household income grew by 4.5% and consumption by 3%, the difference is 1.5 pp. The GUS BBDG estimates are the most strongly correlated, and the OECD and Eurostat EU-SILC ones the least, although the differences are small (1.2-1.5 pp).

► **Part of the explanation may be the structure of the respondents.** In the BBDG survey, the largest proportion of respondents are low-income households; this explains the weak result in 2020 and the stronger link to growth in consumption. In contrast, the other estimates reflect slightly better returns on business activity and financial assets, which might be saved, rather than spent immediately.

Fig. 1.3. Decomposition of disposable income growth in 2022, according to NBP (%)



Source: NBP. Data scraped from the chart.

► **The increase inferred from national accounts by the OECD and the National Bank of Poland (NBP) is linked to extraordinary events.** The NBP estimates that incomes grew by 2.6% in 2022, and shows the structure of the increase. The income tax cut (+1.6 pp), operating surplus and property income (1.2 pp each) were responsible for much of the growth. Allowances linked to the higher energy costs (+0.9 pp) also contributed. The lack of indexation of certain social benefits and tax rates subtracted 2.2 pp from the growth rate. The NBP's estimates diverge from the EU-SILC and CSO BBGD surveys for several reasons:

- Energy allowances were paid in selected months; the survey data may reflect them poorly.
- An increase in property income and operating surplus is most likely among richer households; the BBGD survey faces the problem of higher earners' refusal to respond.
- It is unclear how the NBP estimated the impact of the tax reform of 2022. Many of the gains from the reform did not translate into household budgets until the following year due to the tax refund scheme. Failure to account for this problem would overstate the result in 2022 and understate it accordingly in 2023.

Rapid growth in productivity in CEE

19%

Total sum of TFP growth in Poland in 2015-2022

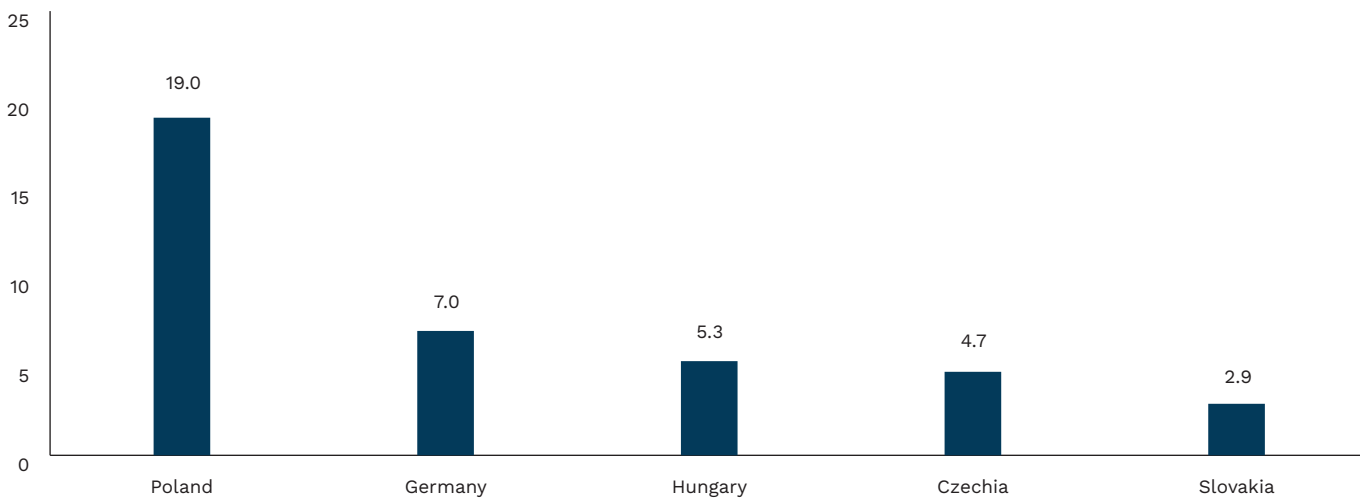
► **The CEE countries are steadily converging with the Eurozone.** Poland outperformed the region in terms of productivity growth. We estimate that total factor productivity (TFP) there grew by 19% in 2015-2022. Similar estimates for Czechia, Slovakia and Hungary vary from 2.9% to 5.4%. In Germany, it was 7%.

► We analysed the standard Cobb-Douglas production function. GDP is a function of two inputs: capital (K) and labour (L), described by the formula:

$$Y = AK^\alpha L^{1-\alpha}$$

where Y denotes GDP, A is total factor productivity, and α is the output elasticity of capital. We calibrated the α parameter at 0.35 for each country. This amount is consistent with the literature; estimates usually vary between 0.3 and 0.4. For a list of selected papers, see Table 2.1.

Fig. 2.1. TFP cumulative growth in the V4 countries and Germany in 2015-2022



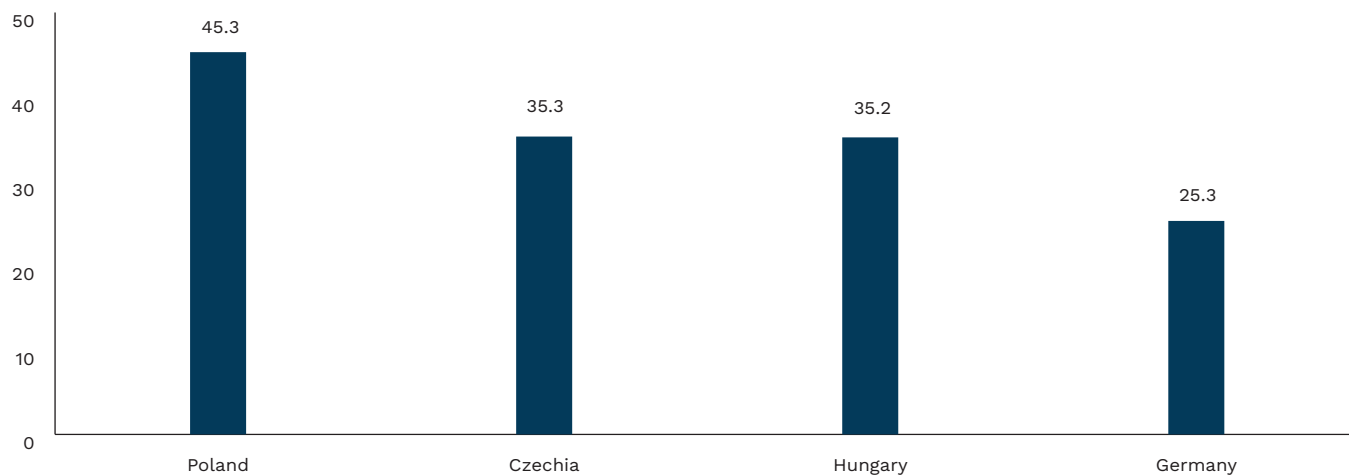
Source: Estimated by the authors.

Table 2.1. Estimates of alpha parameters for CEE countries

Country	Alpha parameter	Paper
Slovakia	0.30	Zeman, Senaj, Vyskrabka (2012)
Czechia and Slovakia	0.33	Nemec (2013)
Hungary	0.34	Jakab, Kónya (2016)
Poland	0.35	Brzoza-Brzezina, Kolasa, Makarski (2010)
Poland	0.43	Metelski, Sobieraj (2021)

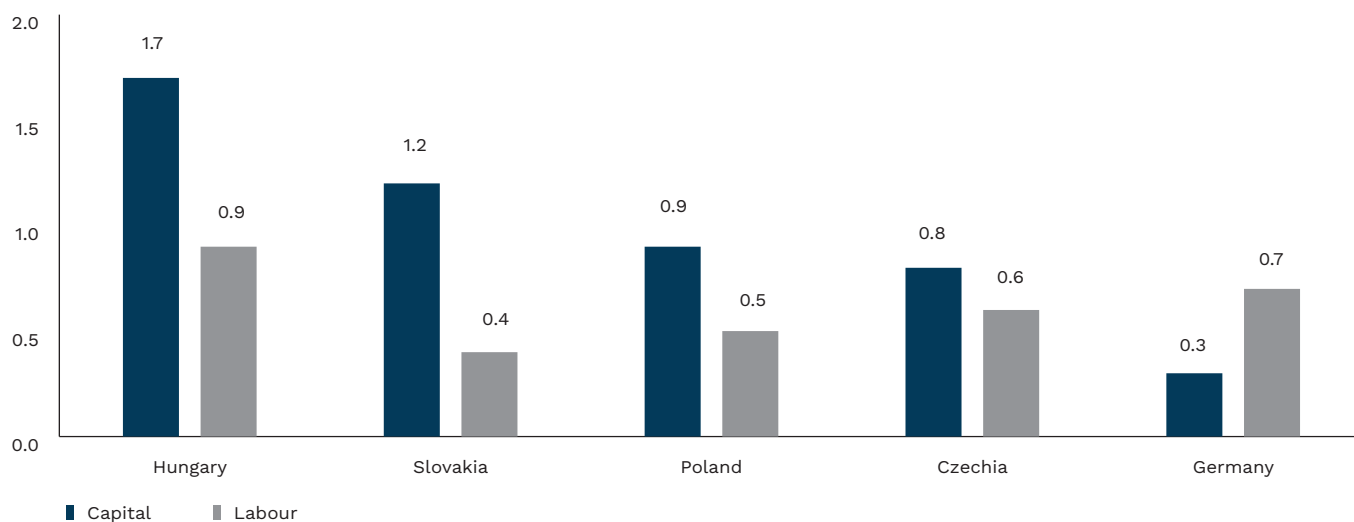
► **The rapid productivity growth is related to advances in manufacturing.** Since 2015, industrial production in Poland has increased by more than 51%, followed by an increase of 20% in Hungary and almost 10% in Czechia. In contrast, Germany, which is known as the manufacturing powerhouse of Europe, has seen relatively flat industrial production over the past seven years. The high-tech manufacturing sector in CEE frequently performed better than the overall headline figures, suggesting technical advancement.

Fig. 2.2. High-tech manufacturing growth since 2015 (%)



Source: Estimated by the authors based on Eurostat data.

Fig. 2.3. Average contributions of capital and labour in 2015-2022



Source: Calculated by the authors.

► **Poland's outperformance is somehow inflated by mismeasurement.** We discussed the problems with measuring actual number of migrant workers in the [March CEE Monthly](#) and evidence related to the accounting of investments in the [May CEE Monthly](#).

► **CEE still offers greater marginal benefit for capital compared to Western Europe.** The average annual contribution of capital to GDP growth oscillates between 0.8 and 1.2 pp in most CEE countries, three times as high as in Germany. At the same time, contributions related to demography are equalised across the countries.

CEE countries' fiscal spending

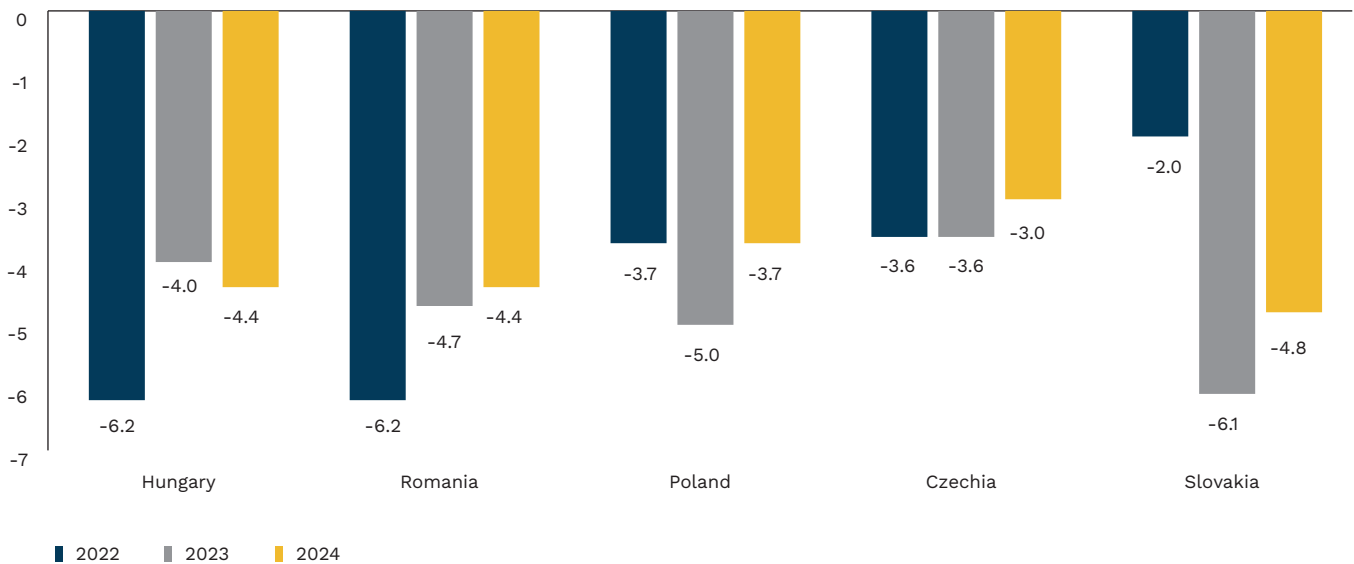
3.8

Fiscal deficit projected in the CEE countries in 2022 (% of GDP)

► In recent years, fiscal policy has become expansive worldwide. The global Covid-19 pandemic and the war in Ukraine have created many new challenges, resulting in an increase in budget deficits in CEE. We review fiscal spending and the current budget conditions.

► **Fiscal deficits are projected to decrease slowly.** Since the pandemic, deficits in CEE have reached around 4% (Figure 3.1). These values exceed the EU deficit threshold. The forecasts for the coming years show little room for improvement. This non-compliance may raise the problem – for now, fiscal rules are suspended throughout the EU. However, a return to consolidation seems imminent.

Fig. 3.1. Fiscal deficit (% of GDP) – European Commission's Spring forecasts

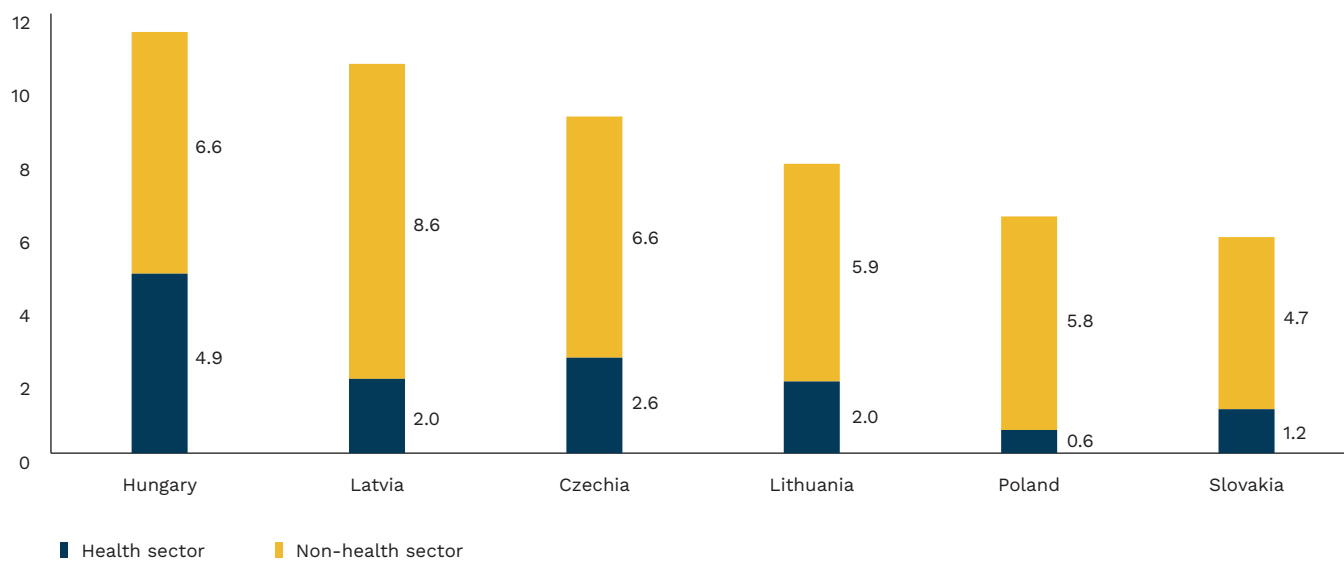


Source: [European Commission](#).

► **The first big shift in spending was linked to the pandemic.** Additional fiscal spending can be divided into two categories: those linked to healthcare and those to support the economy. The significant increase in cases of Covid-19 required an increase in spending on strained healthcare systems. Of the CEE countries, Hungary spent the most during the first 18 months of the pandemic: 11.5% of GDP. A bigger share of total additional spending generally went towards supporting the economy. The [IMF](#) estimates that the non-healthcare sector in Poland received noticeably higher support. Although most of these burdens no longer exist, spending on healthcare has increased permanently.

► **The energy crisis led to another significant fiscal stimulus.** The war in Ukraine and its repercussions across Europe triggered another government intervention, primarily due to the sharp increase in commodity prices. The actions sought to protect households. Bruegel estimates that the fiscal response varied from 2% to 5% of GDP, depending on the country (Figure 3.3). These are only estimates; actual spending in Hungary or Poland was probably higher. The governments should start moving away from these measures in 2024, but this is likely to be gradual. Ending them abruptly would be likely to increase energy inflation.

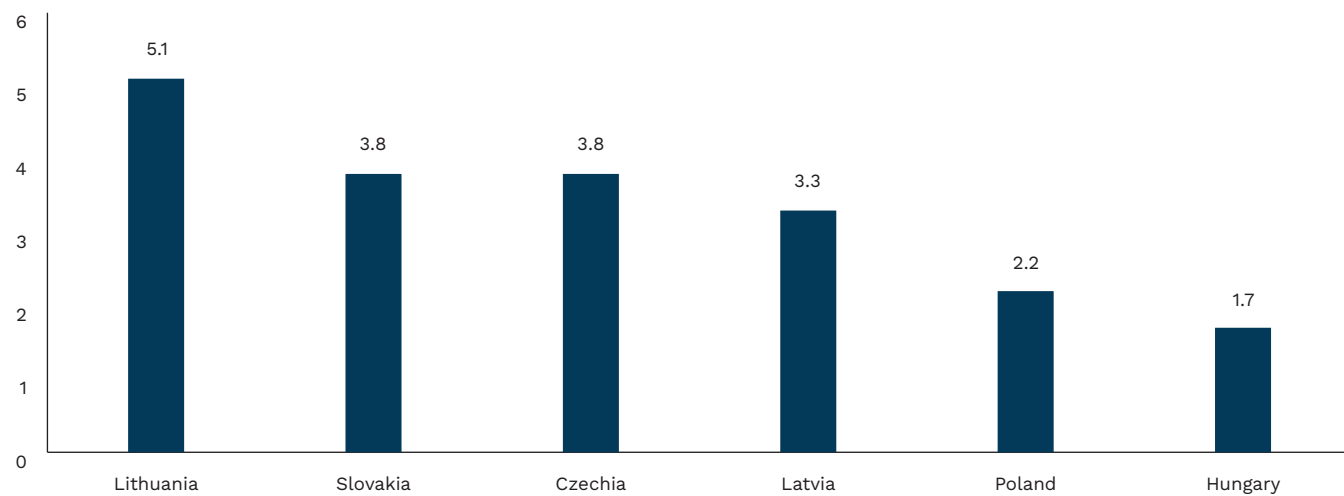
Fig. 3.2. CEE countries' spending linked to the Covid-19 pandemic (% of GDP)



Data from March 2020 to October 2021.

Source: [IMF](#).

Fig. 3.3. Fiscal spending linked to the energy crisis (% of GDP)



Source: [Bruegel](#).

Measuring consumers' decisions in CEE — discussion

► **Economists use utility functions to model household behaviour. It enables them to mathematically describe the behaviour of a consumer who wants to maximise life satisfaction.** Typically, a standard utility function for the average household incorporates two key variables: consumption and leisure time (e.g. [LINK](#)). Consequently, households face two decisions: how much time to allocate to work, thereby determining the amount of leisure time, and how much of their income to allocate to current consumption versus future consumption.

► **These household decisions depend on a set of parameters.** In typical economic models, four primary parameters influencing these choices are considered:

- *The habit parameter* – households' adherence to their habits, even in the face of changes in prices or wages.
- *The Frisch elasticity of labour supply* – the responsiveness of labour supply to changes in wages.
- *The elasticity of intertemporal substitution* – how households respond to changes in prices over time.
- *The discount factor* – another parameter that shapes households' reaction to changes in prices and interest rates over time.

► **The value of these parameters can vary between countries, depending on characteristics of their economies,** including wealth levels and prevailing habits (see Table 4.1). Researchers determine these parameters using various methods, such as estimating auxiliary models, analysing observations of similar economic variables, or drawing upon previous studies.

Table 4.1. Range of main parameters in utility functions in the CEE countries (min – max) based on examples of research

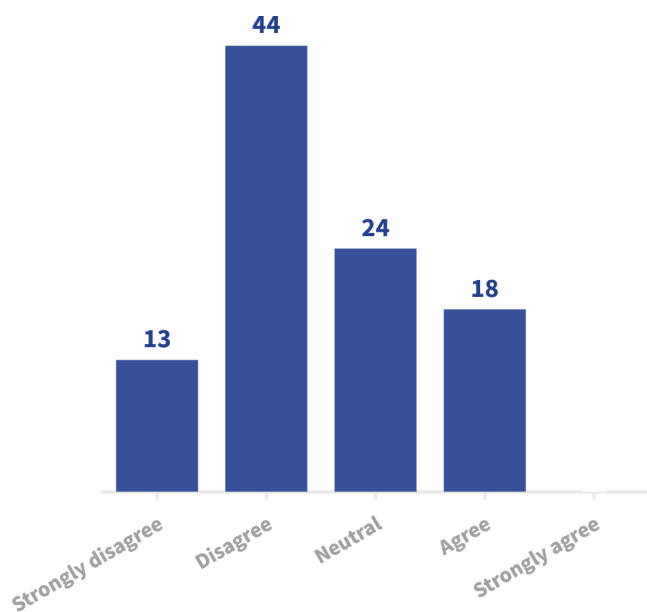
Country	Habit parameter	Frisch elasticity of labour supply	Elasticity of intertemporal substitution	Discount factor	Examples of research
Czechia	0.42 – 0.89	0.67 – 1.55	0.82 – 1.00	0.990 – 0.998	LINK LINK LINK LINK
Hungary	0.39 – 0.75	1.00 – 2.00	1.81 – 2.24	0.970 – 0.990	LINK LINK LINK LINK
Poland	0.50 – 0.80	0.55 – 2.01	0.82 – 1.95	0.985 – 0.999	LINK LINK LINK LINK
Slovakia	0.60 – 0.69	0.67 – 2.50	1.10 – 1.82	0.991 – 0.998	LINK LINK LINK LINK

► **Moreover, some models assume the presence of two types of households in the economy: Ricardian and non-Ricardian** ([LINK](#)). Ricardian households engage in capital markets – allowing them to borrow money and invest their savings – to maximise utility over their lifetime. The aforementioned parameters are employed to describe their behaviour. In contrast, non-Ricardian households behave in a simpler way. They spend exactly what they earn as disposable income during a given period, without saving for the future or taking on loans. For instance, in its model, the National Bank of Slovakia assumes that half of all households are non-Ricardian ([LINK](#)).

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European Economic Panel

Inflation rates of 3-4 percent will be the new normal.
(% of respondents)



Source: Polish Economic Institute and IfW Kiel.
Survey conducted from 29 Mar to 14 Apr. Sample includes 45 responses

► The European Economic Panel is a regular survey conducted among European economists representing academia, think tanks and the financial sector in all EU countries.

► Panel address the most significant problems of the functioning of the European Union.

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