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**Article**

# What drives inflation in times of weak economic recovery? : disentangling the sources of recent inflationary spike in Slovakia

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# What Drives Inflation in Times of Weak Economic Recovery? Disentangling the Sources of Recent Inflationary Spike in Slovakia

*David HOJDAN* – Menbere WORKIE TIRUNEH***

**Abstract**

*In contrast to the pre-Covid-19 pandemic and post-Great Recession periods, when a significant part of mainly advanced economies experienced a low-growth, low-inflation macroeconomic landscape, the post-Covid-19 pandemic period has seen a dramatic shift, with notable increases in the inflation rate while economic growth has remained largely sluggish. In this study, we estimate the underlying causes of the recent inflation spikes and quantify the contributions of individual factors such as production costs, imported consumption and corporate profits to consumer price inflation in Slovakia over the period 2021 – 2023. This is done by using the methodology of the adjusted input-output (IO) price model, which was adopted from Dhingra (2023). The results suggest that excessive corporate mark-ups and profits, input prices and imported inflation have played the most profound role in the overall rising trend of consumer price inflation in the recent period.*

**Keywords:** *inflation, inflation decomposition, cost-push, demand-pull, energy crisis, input-output analysis*

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## Introduction

The recent rise in global consumer price inflation (CPI), despite the sluggish economic recovery following the global financial crisis and the Covid-19 pandemic, has sparked interest in examining both the underlying causes and the adverse macroeconomic effects of this phenomenon. Research in identifying the causes and effects of inflation has been a long-term agenda among economists and policymakers. The broader ramifications of inflation on various macroeconomic variables have been extensively studied in the previous literature, such as the effect of inflation on exchange rate (Fisera et al., 2021; Koráb et al., 2023), on capital movements (Sayek, 2009), or on financial sector performance (Boyd et al., 2001), and on economic growth (Barro, 2013; Ostrihon et al., 2023), and on the causes and costs of the global financial crisis (Workie et al., 2010), among others.

However, the recent sharp rise in global inflation has taken many by surprise (Ball et al., 2022). It is argued that such an increase in inflation has not been seen in advanced economies for decades, including the US (di Giovanni et al., 2023) and euro area countries (Nickel, 2022; Ascari et al., 2023). Moreover, such a surge in the prices of global goods and services has occurred during a period of sluggish economic recovery from the Great Recession, which was followed by the Covid-19 pandemic and the resulting gloomy global economic outlook. As argued in Finck and Tillmann (2022), inflation has decoupled from the performance of real economy, as observed during the Great Recession, where the slump in the global economy was not followed by a significant decline in inflation, which they refer to as the „missing deflation“ phenomenon.

Previous and more recent studies examine the sources of inflation, primarily focusing on whether inflation is driven by rising demand for goods and services (demand pull) or rising costs of production (cost push), with conclusions that differ depending on the time period of the study as well as the types of economies studied (Barth and Bennett, 1975; Holzman, 1960; Schwarzer, 2018; Rio-Chanona et al., 2020; Eickmeier and Hofmann, 2022). Some studies emphasise the decomposition of inflation in order to identify the key drivers of consumer price inflation (Bauer et al., 2004; Shapiro, 2022; Hansen et al., 2023; Bernanke and Blanchard, 2023). Other studies underscore the heterogeneity in the dynamic of demand and supply across industries during the Covid-19 pandemic (Rio-Chanona et al., 2020).

The recent hike in inflation, despite of weak economic growth, is largely attributed to external factors. There is a general consensus on the adverse impact of the global Covid-19 pandemic, which culminated in the introduction of mobility restriction measures and a significant shift in household consumption from services to goods. The increase in demand for goods and the different timing of lockdowns around the world has led to component shortages in production, increased

lead times and ultimately to price increases. Thus, the combined pressures of rising inflation and weaker economic recovery in recent years undoubtedly pose a major challenge for policymakers in the years ahead, and further research both to identify the underlying causes and to suggest mitigating factors will remain an important contribution to the ongoing debate. Nevertheless, the existing cross-country inflation differentials also expose the structural weaknesses of some countries and their dependence on the external sector for both economic growth and labour market regulation.

The objective of this study is to identify and disentangle the role of rising energy and other input prices in conjunction with higher wages and corporate profits in the recent rise in consumer price inflation in Slovakia. This is important because inflation in Slovakia in recent years has reached levels not seen since the turn of the millennium. This is particularly alarming due to the fact that, it has occurred despite a weak economic recovery after the Great Recession, followed by the Covid-19 pandemic (Table 1).

Disentangling the contribution of different factors should help policymakers tailor appropriate policies to combat one of the most dominant policy challenges of the recent period. In the case of small and open economies such as Slovakia, this is particularly important to examine the sources of inflation in order to introduce policies that help mitigate the adverse effects of soaring prices on real income, foreign investment and economic growth. Previous studies document that excessively high level of inflation could, among other things, lead to a decline in FDI inflows and, consequently, lower economic growth. Such studies document that Multinational enterprises (MNEs) tend to shift their investments based on the dynamics of the host country's macroeconomic environment. For example, using a formal theoretical model, Sayed (2009) shows the „investment-smoothing behaviour" of MNEs that respond to higher inflation by shifting their investments to a more stable macroeconomic environment, thus using FDI as a hedging instrument.

While our estimates suggest that much of Slovakia's consumer price inflation is imported due to Slovakia's low self-sufficiency in food production, higher corporate mark-ups and profits have also played an important role in driving consumer price inflation, especially since the second half of 2022. The latest IMF country report on Slovakia (2024) and Casalis (2023) confirm our findings that headline inflation and its components are largely driven by food inflation, which is well above the euro area average. As reported in the latest IMF publication, inflation in Slovakia, while declining in 2023, remains higher than the average EA inflation. Therefore, it is important to further examine the sources of such divergent inflation dynamics in Slovakia, where food inflation remains in the forefront

largely reflecting the lack of food self-sufficiency. As argued in Casalis (2023, p. 2), this is squarely important as the „median Slovak household declares to spend about 26% of their income, almost 10% more than the EA average, to purchase food".

In our robustness estimates, the results suggest that if profits across the food supply chain increased at the same pace as wages, food inflation would be 5 – 6 percentage points lower in the first half of 2023. These findings suggest an alarming level of exposure to external shocks in Slovakia, particularly in the food industry, and call for a review of agricultural policies aimed at food self-sufficiency and/or regulations to monitor price setting in the food industry. However, as emphasized in Casalis (2023), such regulation should be handled so as it won't lead to severe market distortion. To the best of our knowledge, no study has yet examined the sources of inflation for Slovakia by decomposing the main drivers of inflation episodes in these turbulent times.

In contrast to previous studies focusing on corporate profits (e.g. Casalis, 2023), this study provides a detailed examination of inflation developments in Slovakia based on input-output tables and by disentangling the contribution of corporate profits, input costs and imported consumption to overall consumer price inflation in Slovakia during the Covid-19 pandemic.

The rest of the study is structured as follows. Part one presents the relevant literature. Part two describes the methodology used to investigate the research question and part three presents the variables used in the study. Part four presents and discusses the results. The last part concludes.

## 1. Literature Review

There is a long list of literature examining the multitude macroeconomic ramifications of Covid-19 pandemic including, but is not limited to, soaring global consumer price inflation. Studies have also made an important contribution in terms of identifying whether such a hike in global consumer price inflation has been driven by shocks on the supply side or demand side of the economy. Such studies identify a number of mainly external factors that contributed to the sudden rise in global inflation. The global Covid-19 pandemic undoubtedly led to the introduction of measures restricting labour mobility and a significant shift in household consumption from services to goods (Barrot et al., 2020). The increase in demand for goods and the different timing of lockdowns around the world has led to component shortages in production, longer lead times and ultimately to price increases (Bekaert et al., 2020; Brinca et al., 2020; Guerrieri et al., 2022; Bernanke and Blanchard, 2023).

Adding oil to the fire, from mid-2021, Russia began to restrict gas supplies to Europe, which led to soaring energy prices. This has been further exacerbated by sanctions imposed on Russia and Belarus following Russia's occupation of Ukraine, leading to even higher prices for agricultural commodities on top of energy prices (Arndt et al., 2023; Fang and Shao, 2022; Ihle et al., 2022). The energy crisis in Europe reached its peak already in August 2022, when spot electricity prices peaked at 17 times its 2019 average (European Commission, 2022). Naturally, the high prices of energy, raw materials and other inputs began to feed through significantly into the final prices of goods and services, with Slovakia's annual inflation rate peaking at around 15 percent in early 2023. As in most of the world, such significant price increases occurred in the food sector, where inflation climbed to 28 percent, making Slovakia's food inflation one of the highest in the EU (see Table 1).

T a b l e 1

**Consumer Inflation in Selected EU Countries (year-on-year growth)** (in %)

| Country | 2021 | | | 2022 | | | 2023h | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Overall HICP* | *Food* | *Energy* | *Overall HICP* | *Food* | *Energy* | *Overall HICP* | *Food* | *Energy* |
| Slovakia | 2.8 | 2.9 | 0.1 | 12.1 | 16.1 | 18.8 | 13.8 | 21.5 | 8.8 |
| Austria | 2.8 | 1.1 | 10.8 | 8.6 | 9.0 | 39.8 | 9.6 | 12.3 | 16.9 |
| Czech Republic | 3.3 | 3.4 | 1.7 | 14.8 | 13.5 | 31.5 | 15.2 | 15.7 | 27.0 |
| Germany | 3.2 | 2.9 | 10.1 | 8.7 | 10.6 | 34.7 | 7.8 | 15.8 | 11.3 |
| Poland | 5.2 | 2.7 | 12.2 | 13.2 | 12.6 | 29.5 | 14.2 | 18.7 | 19.2 |

*Note:* Energy contains Electricity (04.5.1), Gas (04.5.2), Liquid Fuels (04.5.3), Solid Fuels (04.5.4), Heat Energy (04.5.5), and Fuels and Lubricants for Personal Transport Equipment (07.2.2). Food category also includes beverages, alcohol and tobacco.

*Source:* Eurostat.

Differences among countries notwithstanding, the surge in inflation in recent period, driven mainly by exogenous factors, has become a global policy concern. In a comprehensive study, Hansen et al. (2023) show the importance of imported inflation in euro area countries. Using a new decomposition of consumption deflator, their study confirms that import prices account for 40 percent of the average change in the consumption deflator over 2022Q1 – 2023Q1, while domestic profits account for 45 percent. The increase in nominal profits was largest in sectors benefiting from rising international commodity prices and those exposed to recent supply-demand mismatches. This is consistent with earlier findings in the growing literature on the role of corporate profits, where it has been confirmed that firms have fared relatively better than workers even in the absence of large increases in mark-ups. For the Euro Area, Arce et al. (2023) and Capolongo et al. (2023) as well as the European Commission in its Spring 2023 Forecast have shown that unit profits rose significantly in 2022, leading to an increase in the corporate profit share.

From a different perspective, Finck and Tillmann (2022) estimate a series of VAR models for a set of six emerging Asian economies, identifying a battery of domestic and global shocks using sign restrictions. Their results seem to suggest that global shocks explain large parts of inflation and output dynamics in these economies.

## 2. Methodology

Several methodological approaches can be used to study inflation using the input-output (IO) price model (Miller and Blair, 2009). The primary method uses IO tables of current and previous year prices to decompose changes in the consumption deflator, which is particularly useful for ex post analysis due to the inherent time lag in IO tables (Przybyliński and Gorzałczyński, 2022). Another application by the European Commission (2023) indexed IO tables with several price indices to decompose recent inflation spikes in Europe into imported cost-push inflation and a residual domestic value-added component. As a further extension of the IO price model, Dhingra (2023) has indexed the use table with both input price indices and wage indices to enhance the decomposition of inflation. This approach also projects the IO price model into the consumer price indices, facilitating the study of specific baskets of consumption, such as food and core inflation. In our study, we build on the approach of Dhingra (2023) to decompose the recent inflation spikes in Slovakia.

We can decompose CPI inflation into the contributions of individual factors using input-output tables, which provide information on the cost inputs used in the production of goods and services in the economy. In addition to material inputs, they also record data on compensation of employees, taxes, subsidies and gross profits. By combining data on the cost inputs used in the production of goods in the economy with domestic producer prices, import prices and compensation of employees, we can simulate how much producers' unit costs (costs per euro of turnover generated in the industry) have increased. The data in the use table, compensation and price data are broken down by CPA product classification and NACE industrial classification respectively. However, the CPI inflation is in the classification of individual consumption by purpose (COICOP). In order to decompose consumer inflation into contributions, a conversion from CPA to COICOP classification is necessary, using the UK converter. Following this conversion, the increased costs of producing and selling the products that households consume can then be estimated, and the unexplained difference between final prices and prices that reflect the increased costs can then be attributed to the increase in profits in the economy.

The methodology used to estimate the contributions to inflation is based on the adjusted input-output (IO) price model of Dhingra (2023). The consumer price index (CPI) can be expressed as the sum of unit costs and residual profits of sellers *V:*

$$C = A_d D + A_m M + A_w W + A_t T + V \tag{1}$$

where matrix *C* contains quarterly data on CPI indices according to the two-digit COICOP classification. $A_d$ and $A_m$ are matrices of technical coefficients of domestic and import use, where the rows are products transposed to the COICOP classification and the columns represent inputs to the production of services goods according to the CPA. $A_w$ and $A_t$ are the unit cost matrices for compensation and for taxes net of subsidies. Matrix *D* contains quarterly data on domestic producer prices, matrix *M* consists of import prices, matrix *W* contains data on average labour prices and *T* contains indices of taxes net of subsidies. To calculate the contribution of more expensive energy inputs to inflation, we need to exclude the vector of energy inputs (in our case, refinery products and electricity, gas, steam and cold air supplies) from the matrices $A_d$ and $A_m$:

$$C = A_{dxe} D_{xe} + A_{mxe} M_{xe} + A_e E + A_w W + A_t T + V \tag{2}$$

In this case, we consider the impact of increased energy prices to be exogenous, i.e. that energy prices themselves are set outside the model and are not affected by increased material costs or higher wages in the domestic energy sectors.

We can decompose the Producer Price Index (PPI) in a similar way:

$$D_{xe} = B_{dxe} D_{xe} + B_{mxe} M_{xe} + B_e E + B_w W + B_t T + V_d \tag{3}$$

where we explain the increase in producer prices by their increased unit costs and the producers' residual profit $V_d$. In this decomposition, we do not need to transpose products into the COICOP classification, and the *B* use matrices are all in the CPA classification, with outputs in the rows and inputs to production in the columns. From this equation, we can then express $D_{xe}$ as the sum of other contributions:

$$\begin{aligned} D_{xe} = &\left[I - B_{dxe}\right]^{-1} B_{mxe} M_{xe} + \left[I - B_{dxe}\right]^{-1} B_e E + \left[I - B_{dxe}\right]^{-1} B_w W + \\ &\left[I - B_{dxe}\right]^{-1} B_t T + \left[I - B_{dxe}\right]^{-1} V_d \end{aligned} \tag{4}$$

which we can then plug into equation (2) to link consumer prices to the factors that affect producer prices:

$$\begin{aligned} C = &A_{dxe} \left[I - B_{dxe}\right]^{-1} \left[B_{mxe} M_{xe} + B_e E + B_w W + B_t T + V_d\right] \\ &+ A_{mxe} M_{xe} + A_e E + A_w W + A_t T + V \end{aligned} \tag{5}$$

From the residual profits of producers and sellers, we can express the profit margins of sellers: $\pi = \left[A_v\right]^{-1} V$ and the profit margins of producers: $\pi_d = \left[B_v\right]^{-1} V_d$. The matrices $A_v$ and $B_v$ contain the gross profit as a share of total sales obtained from the use tables.

The final step is to split the consumption basket into domestic and imported products, which we can estimate from the data from the final demand matrix in the use tables and then convert to the COICOP classification. This split can be made by assuming the same evolution of domestic and imported final prices (we make this assumption because data on import prices of final goods and services are not available). We denote the share of imported consumption by each consumption good as $F_m$ and the share of domestic consumption as $F_d$. Subsequently, by decoupling final energy consumption by households, we then obtain a decomposition of CPI inflation. Subsequent decomposition of final energy consumption by households then yields a decomposition of CPI inflation into final imports, final energy consumption, the direct and indirect impact of energy inputs, the direct and indirect impact of other non-energy imported inputs, the impact of labour costs, the contribution of residual profits, and the contribution of taxes net of subsidies:

$$\begin{aligned} C = F_m C + F_d \Big[ & F_e E_c + A_e E + A_{dxe} \left(I - B_{dxe}\right)^{-1} B_e E \\ & + A_m M + A_{dxe} \left(I - B_{dxe}\right)^{-1} B_m M \\ & + A_w W + A_{dxe} \left(I - B_{dxe}\right)^{-1} B_w W \\ & + A_v \pi + A_{dxe} \left(I - B_{dxe}\right)^{-1} B_v \pi_d \\ & + A_t T + A_{dxe} \left(I - B_{dxe}\right)^{-1} B_t T \Big] \end{aligned} \tag{6}$$

This exercise allows us to see the disaggregation of each of the COICOP categories, but results at this level of disaggregation would not be very meaningful. For instance, meat products and beverages would have exactly the same mix of unit costs due to the fact that both products are included in the same CPA category. Therefore, we report the results at a higher level of aggregation as a decomposition of total and food inflation, which gives us more reliable estimates.

## 3. Data

For the cost mix data for the production of specific CPA products, the latest available Eurostat use table for 2020 was used. These data allow, for example, to see how many euros of agricultural inputs are needed to produce 1 euro of food

for final consumption. In addition to the intermediate consumption in a given CPA category, the use table also provides information on compensation paid, gross profits or total sales. Based on data on the supply of domestic and imported products for household consumption, we have also estimated the share of imports in consumption (Table 2 and Figure A1).

As the use table is from 2020, the cost mix had to be adjusted for price increases that have occurred since then. A constant technology assumption was used (the same amount of energy and labour is needed to produce 1 euro worth of textiles in 2023 as in 2020) and a combination of price indices available from the data of the Statistical Office of the Slovak Republic was used to take into account for the increase in input costs. The main data source for industry prices was the quarterly domestic output indices of producer prices by NACE sectors. Construction products were indexed using construction price data. Quarterly market services price indices were used for services. Public administration was indexed by the government consumption deflator and price developments for education, health and cultural services were reflected by the consumer price index for the corresponding COICOP categories.

For some CPA categories for which no data were available, price developments were taken into account by using a similar product category (e.g. activities auxiliary to financial services and insurance, which includes insurance, reinsurance and pension funding, except compulsory social security). However, a relatively small number of categories that do not have a large weight in consumption were added in this way. To take account of import prices, the CPA divisional foreign trade price indices were used, which cover in detail the whole of agriculture, industry and mining. However, data on import prices of services are completely missing, so the same price trend was assumed for imported services as for domestic services. This assumption does not affect the resulting estimate as the imported services account for only about 3% of total imported consumption. Quarterly labour cost price indices have been calculated from the microdata of the Social Insurance Institution by NACE sector.

In order to link the data on increasing unit costs of production of each category in the economy to the final prices paid by consumers, it is necessary to use a converter from the CPA product classification to the COICOP use classification used in the CPI consumer price indices. According to the information available, there is no converter compiled for Slovakia or any other similar country in Central Europe. Therefore, the only available source is a converter based on data from the United Kingdom, which has also been used in this analysis. It is regularly compiled and updated for individual years by the Office for National Statistics. The use of the converter allows us to project the cost mix to individual COICOP items.

For most the items in the consumption basket, their production takes place in a single industry, which should also be the case for Slovakia (i.e. meat consumption is only a food product – CPA10). However, for some items, consumption is broken down into several categories, with slight differences between countries due to different consumer preferences (e.g. part of the COICOP category fish is a food product (fish salad) and the other part is a fishery product (whole carp)). Detailed CPI data were used as final prices and consumer basket weights for each year were used to calculate headline and food inflation. The harmonised HICP and the corresponding harmonised basket weights have been used for the comparison of inflation within the EU.

## 4. Results and Discussion

In this section, we summarise our findings. First, we discuss the role of imports in Slovak consumption. Second, we present our estimates of price increases for different types of consumer goods and services. Third, we show the decomposition of headline and food inflation in Slovakia. Fourth, we discuss the appropriateness of the increase in corporate profits in the context of wage compensation growth and periods of low profitability during the pandemic. Fifth, assuming an immediate pass-through, we present simulated scenarios of the extent to which increases in various cost items are reflected in higher final prices. Sixth, as a robustness check, we abandon the assumption that imported final prices follow the same path as Slovak inflation.

### 4.1. Role of Imported Consumption

Slovak households consume many goods and services imported from abroad, the prices of which are not influenced by domestic factors. Part of domestic inflation can be attributed to rising material prices, rising wages or rising profits, but the pricing of a significant part of the consumer basket is not in the hands of domestic companies. In 2020, the consumption of electricity, gas, heat and fuel accounted for 13 percent of the average household's expenditure. Around 65% was spent on other domestic goods and services and 19 percent on other imported goods (Table 2).

For food, beverages and tobacco, the ratio is even more skewed in favour of imports. Only 56 percent of the total consumption of food, beverages and tobacco is domestically produced, making Slovakia the third worst performer in the EU for this indicator (Figure A1). The high share of imported consumption means that a large part of inflation is not influenced by domestic factors.

T a b l e 2

**Structure of Slovak Consumption (share of categories in the consumer basket)** (in %)

| Category | Whole consumer basket | Food, drinks and tobacco |
|---|---|---|
| Domestic products and services | 64.9 | 55.6 |
| Imported products and services | 19.0 | 44.4 |
| Energy and fuels | 13.2 | – |
| Unidentified | 2.9 | – |
| **Total** | **100.0** | **100.0** |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

The available data do not provide sufficient information to determine the final consumer prices of imported goods in Slovakia. To compensate for this, it is assumed that the prices of imported consumer goods and services follow the Slovak consumer price index (CPI).

For example, if the CPI statistics show that the price of cabbage had increased by 12 percent year on year, it is assumed that the price of imported cabbage has also increased by the same amount. Using consumer price developments in Slovakia's main trading partners as a reliable indicator, it can be concluded that import prices are likely to rise more slowly than average consumer prices in Slovakia. This is because Slovak inflation has been higher than the EU average. Thus, the contribution of import prices to headline and food inflation is likely to be an upper bound and does not overestimate the contribution of residual corporate profit in the economy.

### 4.2. Estimated Price Growth

Table 3 compares the estimated price growth of selected COICOP categories with the actual price rise (more detailed categories are shown in Figure A2). Part of the estimated price increase is due to the consumption of imports. The other part of the price increase is modelled via the pass-through of increased costs. For the estimated prices, we also assume zero growth in nominal profits, which means that the contribution of so-called residual profits to annual inflation can be calculated by subtracting the estimated price growth from the actual price growth.

In most consumer categories we can see that the modelled price increases are relatively close to reality. In transport, for example, we see that almost all of the price increase in 2021 and 2022 can be explained as cost-push, and it is likely that the profit growth of companies in this category was rather subdued in this highly inflationary period. The culture and recreation category, which was affected by the restrictive measures imposed during the Covid-19 pandemic, follows a similar dynamic, which may be explained by the continued decline in demand and therefore limited opportunities for profit growth. In particular, food, beverages and tobacco and hotels and restaurants showed the largest difference between estimated and

actual price increases. The scissors starts to open in 2022 and continues in 2023, when up to a third of the price increase in food, beverages and tobacco cannot be explained by final prices and rising costs. This category accounts for up to 29% of the consumer basket, which also has a significant impact on the results of the decomposition of headline inflation discussed in the following section.

T a b l e 3

**Comparison of Estimated and Actual Prices by COICOP Category (year-on-year growth)** (in %)

| Category | 2021 | | 2022 | | 2023h | |
|---|---|---|---|---|---|---|
| | *Estim. price* | *Actual price* | *Estim. price* | *Actual price* | *Estim. price* | *Actual price* |
| Food, drinks and tobacco | 3.3 | 2.7 | 11.5 | 14.7 | 14.3 | 22.0 |
| Clothing and footwear | 2.8 | 1.2 | 7.0 | 4.1 | 8.5 | 7.5 |
| Furniture, furnishings and house maintenance | 4.5 | 2.8 | 10.6 | 10.4 | 8.9 | 12.1 |
| Transport | 9.7 | 9.2 | 16.7 | 15.9 | 0.5 | 1.9 |
| Postal services and telecommunication | 1.8 | 7.0 | 5.5 | 5.5 | 6.6 | 5.5 |
| Culture and recreation | 4.0 | 4.1 | 8.4 | 7.9 | 7.6 | 8.9 |
| Restaurants and accommodation | 5.2 | 6.2 | 12.6 | 15.1 | 11.7 | 17.4 |
| Miscellaneous goods and services | 3.7 | 2.8 | 8.3 | 9.0 | 8.8 | 13.1 |

*Note:* The estimated prices assume no growth in nominal profits in the economy. Categories such as education and health care, which are largely managed by the state, have been left out. We also do not report the housing, due to the fact that most of this category consists of energy, which is highly regulated and is considered exogenous in our model.

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

### 4.3. Decomposition of Consumer Inflation

In 2021, inflation is estimated to be driven mainly by rising costs in the economy, with a negligible contribution from rising profits. Inflation peaks in early as 2022, as the Russian-Ukraine conflict pushes up the prices of many agricultural and energy commodities, and further acceleration continues through the rest of 2022. More expensive energy consumption (fuel, electricity, gas and heat) for households contributes 2.3 pp to average annual inflation in 2022, and other imported consumption contributes a similar amount. The contribution of higher profits in the economy becomes more pronounced after the Russian aggression, adding around 2.6 pp to annual inflation in 2022. The contribution of residual profits increases further in the first half of 2023, and higher costs cannot explain about a third of the total inflation rate (contribution of higher profits – 4.7 pp). Food inflation is dominated by the contribution of imported consumption, mainly due to Slovakia's low food self-sufficiency.

However, the contribution of higher profits to inflation also increases significantly at the end of 2022, rising to 7.7 pp in the first half of 2023, but rising costs also account for a large part of food inflation.

T a b l e 4

**Overall CPI and Food, Drinks and Tobacco Inflation Decomposition in Slovakia**
(contributions to % year-on-year growth, in pp)

| | **Overall CPI inflation** | | | **Food inflation** | | |
|---|---|---|---|---|---|---|
| | *2021* | *2022* | *2023h* | *2021* | *2022* | *2023h* |
| Imported consumption | 0.55 | 2.40 | 3.57 | 1.39 | 7.11 | 9.60 |
| Energy consumption | –0.02 | 2.27 | 0.80 | – | – | – |
| Input costs | 2.29 | 5.21 | 4.97 | 2.25 | 5.66 | 4.69 |
| Residual profit | 0.26 | 2.64 | 4.67 | –0.70 | 3.54 | 7.73 |
| **Total** | **3.08** | **12.52** | **14.00** | **2.94** | **16.31** | **22.02** |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

The contribution of inputs can be further broken down into the contribution of labour costs, energy inputs (fuel, electricity, gas, heat and water), imported inputs and the contribution of net taxes on production. The impact of more expensive domestic inputs is not shown, as more expensive input prices for domestic producers must result either from their higher costs (which may be caused by higher compensations, taxes, the price of imported inputs or more expensive energy) or from higher profits. The contributions of these factors can be seen as the main causes of price increases for the output of domestic producers.

T a b l e 5

**Detailed Overall CPI Quarterly Inflation Decomposition in Slovakia**
(contributions to year-on-year % growth, in pp)

| | **Contribution to overall CPI year-on-year inflation in pp** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Q1 21* | *Q2 21* | *Q3 21* | *Q4 21* | *Q1 22* | *Q2 22* | *Q3 22* | *Q4 22* | *Q1 23* | *Q2 23* |
| Imported consumption | 0.19 | 0.36 | 0.72 | 0.93 | 1.40 | 2.10 | 2.69 | 3.39 | 3.91 | 3.25 |
| Energy consumption | –0.49 | 0.09 | 0.12 | 0.28 | 2.13 | 2.57 | 2.36 | 2.04 | 1.08 | 0.56 |
| Input costs | 0.31 | 3.02 | 2.56 | 3.24 | 4.64 | 5.03 | 5.60 | 5.48 | 5.68 | 4.25 |
| Labour costs | 0.32 | 2.53 | 1.60 | 1.77 | 2.04 | 1.64 | 1.69 | 1.94 | 2.33 | 2.24 |
| Energy inputs | –0.03 | 0.09 | 0.21 | 0.44 | 1.32 | 1.77 | 2.21 | 1.89 | 1.72 | 1.03 |
| Imported inputs | 0.02 | 0.39 | 0.72 | 0.98 | 1.21 | 1.51 | 1.58 | 1.50 | 1.41 | 0.79 |
| Net taxes | 0.01 | 0.02 | 0.02 | 0.04 | 0.07 | 0.10 | 0.12 | 0.15 | 0.22 | 0.20 |
| Residual profit | 0.98 | –1.30 | 0.44 | 0.97 | 0.90 | 2.59 | 3.03 | 4.05 | 4.97 | 4.41 |
| **Total** | **0.99** | **2.17** | **3.83** | **5.41** | **9.07** | **12.29** | **13.68** | **14.96** | **15.63** | **12.47** |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

The annual rate of both headline and food consumer inflation peaks in the first quarter of 2023. Our estimations seem to suggest that 3.9 pp of headline inflation in the first quarter of 2023 is caused by imported consumption and a further 1.4 pp by more expensive inputs (excluding energy inputs) imported by Slovak firms from abroad. Energy price caps for households dampened the contribution of more expensive energy consumption, which contributed 1.1 pp in the first quarter. Unlike households, firms in Slovakia were not subject to energy price caps and their higher energy costs contributed 1.7 pp to headline inflation. High inflation put

upward pressure on wage growth, which may have added 2.3 pp to headline inflation in the first quarter. From the second half of 2022, residual profits are a significant contributor to food price growth. However, we also know from the 2022 accounts that significant increases in profits did not occur at all levels of the food chain. In particular, farmers and food manufacturers experienced strong profit growth, while retail profits grew only modestly.

T a b l e 6

**Detailed Food, Drinks and Tobacco Quarterly Inflation Decomposition in Slovakia**
(contributions to year-on-year % growth, in pp)

| | **Contribution to overall CPI year-on-year inflation in pp** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Q1 21* | *Q2 21* | *Q3 21* | *Q4 21* | *Q1 22* | *Q2 22* | *Q3 22* | *Q4 22* | *Q1 23* | *Q2 23* |
| Imported consumption | 0.23 | 0.95 | 2.01 | 2.40 | 4.11 | 6.08 | 7.98 | 10.17 | 10.71 | 8.59 |
| Input costs | 0.34 | 2.72 | 2.62 | 3.34 | 4.98 | 5.43 | 6.11 | 6.10 | 5.62 | 3.83 |
| Labour costs | 0.40 | 2.14 | 1.51 | 1.57 | 1.91 | 1.45 | 1.55 | 2.02 | 2.19 | 2.01 |
| Energy inputs | –0.05 | 0.12 | 0.25 | 0.50 | 1.36 | 1.82 | 2.26 | 1.94 | 1.67 | 0.90 |
| Imported inputs | 0.00 | 0.46 | 0.84 | 1.25 | 1.66 | 2.06 | 2.18 | 2.01 | 1.62 | 0.80 |
| Net taxes | 0.00 | 0.01 | 0.01 | 0.02 | 0.05 | 0.10 | 0.11 | 0.13 | 0.15 | 0.11 |
| Residual profit | –0.33 | –1.94 | –0.13 | –0.31 | 0.31 | 2.39 | 4.19 | 7.17 | 8.32 | 7.22 |
| **Total** | **0.25** | **1.73** | **4.50** | **5.43** | **9.39** | **13.89** | **18.28** | **23.44** | **24.65** | **19.64** |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

If profits in the Slovak economy had not grown in the first quarter of 2023, headline consumer inflation would have been around 5 pp lower and food inflation would have been up to 8.3 pp lower. However, the assumption of zero profit growth may be too restrictive and the question is what is a reasonable level of profits is.

### 4.4. Adequate Profit Growth

If profits grew at the same rate as compensation of employees, the share of these variables in GDP would not change. The comparison made here is between actual inflation and the inflation rate in the hypothetical scenario where profits grow at the same rate as wages. We model this in the same way as in the previous section through rising costs and imported inflation, but in this case we add the so-called adequate corporate profit growth, which evolves in line with the growth of wage costs.

For much of 2021 and 2022, the growth rate of wages exceeds the growth rate of nominal profits. This suggests that the recent upturn in corporate profits may be due, at least in part, to compensating for lost profits during the pandemic and restoring profit margins to pre-pandemic levels. With headline inflation expected to be lower than wage growth for most of 2021 and 2022, the recent rise in profit growth is unlikely to be a major issue.

However, in the case of food inflation, profit growth appears excessive. Firms in the food supply chain have been making excessive profits since the end of 2022, which could have added around 6 pp to inflation in the fourth quarter of 2022 and the first quarter of 2023.

A possible explanation for the significant increase in profits above costs could be less competition in the food supply chain. In addition, specific conditions such as the rise in agricultural commodity prices on international markets may have played a role. Following the Russian invasion of Ukraine, there was a sharp increase not only in energy prices but also in agricultural commodity prices. This increase in market prices affected Slovak farmers, whose product prices increased more than their costs, leading to a significant increase in agricultural profits, as reflected in the 2022 financial statements.

We also observed significant profit increases in the food manufacturing sector, while the retail sector's profit growth in 2022 was only moderate (FinStat, 2023). Based on these data, we attribute the substantial contribution of profits to food inflation in 2022 primarily to the agriculture and food manufacturing sectors (2023 accounts are not yet available).

In response to high food prices, the Slovak government introduced measures to monitor food prices more closely in 2023. The government focused on examining the prices of basic food items in an international context and on the domestic market at each level of the food supply chain in order to detect significant increases in profit margins. These efforts aimed to ensure that price increases were justified by real cost increases and not excessive profit taking (Ministry of Finance of the Slovak Republic, 2023).

T a b l e 7

**Overall CPI and Food Inflation Simulation if Profits Grew at the Same Rate as Wages** (year-on-year growth, %)

| Quarter | Overall CPI year-on-year inflation | | | Food, drinks and tobacco year-on-year inflation | | |
|---|---|---|---|---|---|---|
| | *CPI Inflation (%)* | *Inflation if profits grew like wages (%)* | *Difference in pp* | *Food Inflation (%)* | *Food inflation if profits grew like wages (%)* | *Difference in pp* |
| Q1 2021 | 0.99 | 0.43 | –0.56 | 0.25 | 0.91 | 0.66 |
| Q2 2021 | 2.17 | 6.81 | 4.64 | 1.73 | 5.44 | 3.71 |
| Q3 2021 | 3.83 | 5.36 | 1.53 | 4.50 | 5.84 | 1.34 |
| Q4 2021 | 5.41 | 6.45 | 1.04 | 5.43 | 7.04 | 1.61 |
| Q1 2022 | 9.07 | 11.71 | 2.63 | 9.39 | 10.86 | 1.46 |
| Q2 2022 | 12.29 | 12.28 | –0.01 | 13.89 | 12.89 | –1.00 |
| Q3 2022 | 13.68 | 13.02 | –0.66 | 18.28 | 15.51 | –2.77 |
| Q4 2022 | 14.96 | 13.66 | –1.30 | 23.44 | 18.11 | –5.33 |
| Q1 2023 | 15.63 | 12.87 | –2.76 | 24.65 | 18.05 | –6.60 |
| Q2 2023 | 12.47 | 10.97 | –1.50 | 19.64 | 14.15 | –5.49 |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

### 4.5. Implied Elasticities

In this section, we simulate the impact on consumer prices of an increase in the price of energy inputs to firms and an increase in wages across the economy. Since we know the cost mix for the supply of individual goods and services to final consumption, we can model the impact on final consumer prices of a change in the prices of specific cost items, assuming full and immediate cost pass-through.

Table 8 shows the impact of a 10% increase in the prices of energy inputs to businesses (prices of electricity, gas, steam, water and refinery products) on headline consumer inflation and on selected categories. We estimate that a 10% increase in energy input prices would add 0.37 percentage points to headline inflation, including the direct and indirect effects of this increase. With the exception of hotels and restaurants, we observe similar effects across all consumer categories. This is a consequence of the high direct intensity of electricity and heating in this segment, while the indirect intensity is comparable to other categories. Such an increase in energy prices could therefore increase prices in hotels and restaurants by more than 1 pp in the case of immediate and full pass-through.

T a b l e 8

**Effect of 10% Increase in Price of Energy Inputs and 10 % Increase in Labour Costs on Prices of Consumer Categories** (contribution to year-on-year price growth, pp)

| Category | 10% increase in energy inputs | | | 10% increase in labour costs | | |
|---|---|---|---|---|---|---|
| | *Direct* | *Indirect* | *Total* | *Direct* | *Indirect* | *Total* |
| Overall CPI inflation | 0.29 | 0.08 | 0.37 | 1.60 | 0.63 | 2.24 |
| Food, drinks and tobacco | 0.26 | 0.11 | 0.38 | 1.42 | 0.69 | 2.12 |
| Clothing and footwear | 0.22 | 0.06 | 0.28 | 1.77 | 0.53 | 2.30 |
| Furniture, furnishings and house maintenance | 0.29 | 0.09 | 0.38 | 2.17 | 0.76 | 2.93 |
| Transport | 0.25 | 0.09 | 0.34 | 1.35 | 0.68 | 2.04 |
| Postal services and telecommunication | 0.27 | 0.10 | 0.37 | 2.09 | 1.05 | 3.14 |
| Culture and recreation | 0.30 | 0.10 | 0.39 | 2.02 | 0.85 | 2.86 |
| Restaurants and accommodation | 1.08 | 0.10 | 1.18 | 3.65 | 0.66 | 4.31 |
| Miscellaneous goods and services | 0.35 | 0.12 | 0.47 | 2.21 | 1.03 | 3.24 |

*Note:* Energy inputs consist of refinery products, electricity, gas, steam, water and cold air supplies.

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

In the second scenario, we simulate a 10% increase in labour costs across the economy. As labour costs are generally a much larger proportion of total costs than energy costs for firms, the impact on consumer prices is also an order of magnitude larger. Such a widespread wage increase would add 2.2 percentage points to headline inflation. Significantly higher impacts are observed in hotels and restaurants, recreation and culture and other miscellaneous goods and services due to higher labour intensity that is particularly characteristics of service industries.

### 4.6. Robustness Check – Imported Inflation

In the analysis so far, we have assumed that the price of imported consumption rises in line with CPI inflation in Slovakia. We have made this assumption due to the lack of data on the prices of domestic and imported goods and services, but it may be a considerable simplification due to the endogeneity of headline inflation. Different developments in domestic and imported items may affect inflation in one direction or the other, which may distort the part of domestically generated inflation that we are trying to decompose. In this robustness check, we have tried to estimate the prices of imported goods and services for consumer consumption based on a weighted average of the prices of Slovakia's main trading partners. In this case, we assume that the HICP statistics are a good proxy for the prices at which we import from a given country. We have therefore estimated the matrix of prices of imported goods and services for consumption in this way, and the way in which inflation is decomposed needs to be slightly adjusted for this differentiation of consumption prices. In equations (1), (2) and (5), instead of the CPI matrix $C$, the estimated domestic CPI matrix $C_d$ will appear on the left-hand side:

$$\begin{aligned} C_d &= A_{dxe}\left[I - B_{dxe}\right]^{-1}\left[B_{mxe}M_{xe} + B_e E + B_w W + B_t T + V_d\right] \\ &+ A_{mxe}M_{xe} + A_e E + A_w W + A_t T + V \end{aligned} \tag{7}$$

however, we do not know the matrix of domestic CPIs, but it can be expressed from a relationship that implies that the CPI is the weighted average of the imported CPI $C_m$ and the domestic CPI $C_d$:

$$C = F_m C_m + F_d C_d \tag{8}$$

where the diagonal matrices $F_m$ and $F_d$ represent the shares of imported and domestic goods and services in final consumption. Since we know the values of these components as well as the imported consumer price index, we caexpress the domestic consumer price indices $C_d$ from this equation as:

$$C_d = F_d^{-1}\left[C - F_m C_m\right] \tag{9}$$

After obtaining the values of the domestic consumer price index, we can then rewrite the final decomposition of headline consumer inflation as:

$$\begin{aligned} C = F_m C_m + F_d[&F_e E_c + A_e E + A_{dxe}\left(I - B_{dxe}\right)^{-1} B_e E \\ &+ A_m M + A_{dxe}\left(I - B_{dxe}\right)^{-1} B_m M \\ &+ A_w W + A_{dxe}\left(I - B_{dxe}\right)^{-1} B_w W \\ &+ A_v \pi + A_{dxe}\left(I - B_{dxe}\right)^{-1} B_v \pi_d \\ &+ A_t T + A_{dxe}\left(I - B_{dxe}\right)^{-1} B_t T] \end{aligned} \tag{10}$$

A comparison of the estimated domestic CPI with the imported CPI (Figure A3) shows that in the vast majority of categories, price increases exceed price increases for imported goods and services. This implies that the contribution of imported consumption to headline inflation in the previous sections was correctly treated as an upper bound. Assuming that imported prices move at a similar pace to those in the country of origin, then the contribution of imported consumption to headline inflation would be 2.2 pp in 2022 and 3.0 pp in the first half of 2023 (compared with 2.4 and 3.6 in the initial estimates). For food inflation, the differences are larger; imported consumption could have pushed up price growth by 6.0 and 7.9 pp in 2022 and the first half of 2023 (compared with 7.1 and 9.6 pp). Due to the lower contribution of imports, it is therefore possible that the role of profitability growth in driving inflation was higher than we had originally assumed.

T a b l e 9

**Decomposition Based on Different Final Import and Domestic Prices. Overall CPI and Food, Drinks and Tobacco Annual Inflation Decomposition in Slovakia**
(contributions to % year-on-year growth, pp)

| Category | Overall CPI inflation | | | Food inflation | | |
|---|---|---|---|---|---|---|
| | *2021* | *2022* | *2023h* | *2021* | *2022* | *2023h* |
| Imported consumption | 0.48 | 2.17 | 2.99 | 1.12 | 6.02 | 7.92 |
| Energy consumption | –0.02 | 2.27 | 0.80 | – | – | – |
| Input costs | 2.29 | 5.21 | 4.97 | 2.25 | 5.66 | 4.69 |
| Labour costs | 1.56 | 1.83 | 2.28 | 1.40 | 1.73 | 2.10 |
| Energy inputs | 0.18 | 1.80 | 1.37 | 0.20 | 1.85 | 1.27 |
| Imported inputs | 0.53 | 1.47 | 1.11 | 0.63 | 1.98 | 1.20 |
| Net taxes | 0.02 | 0.11 | 0.21 | 0.01 | 0.10 | 0.13 |
| Residual profit | 0.33 | 2.86 | 5.24 | –0.43 | 4.63 | 9.41 |
| **Total** | **3.08** | **12.52** | **14.00** | **2.94** | **16.31** | **22.02** |

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

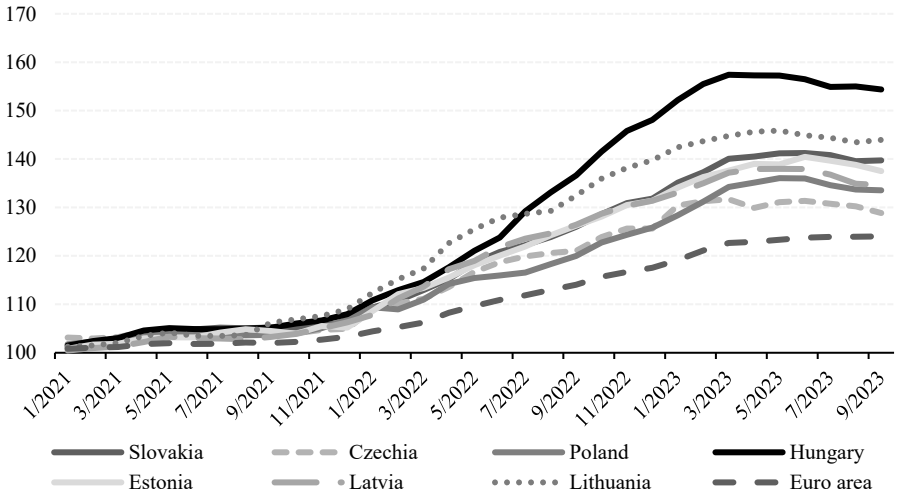
### 4.7. Underlying Causes of Inflation Differentials in the EU

Differences in inflation across EU countries are likely to be multifactorial. The differences between the Central and Eastern European (CEE) countries and Western Europe are mainly due to higher food inflation rates in the CEE region. One possible explanation for these differences is the difference in initial price levels. Countries with higher initial food prices experience a smaller percentage increase in final prices for the same monetary increase in energy and commodity prices than countries with lower initial price levels.

Among EU countries, the regulation of household energy prices is an important factor contributing to inflation differences. In Slovakia, for example, household energy prices rose the least as a result of strict regulation (Table 1), even though this approach resulted in significant fiscal costs. Conversely, countries with less regulated energy markets experienced higher inflation rates as energy prices rose sharply.

F i g u r e 1

**HICP Prices in CEE Countries and the Euro Area** (index 100 = 12/2020)




*Source*: Eurostat.

Exchange rate movements are another factor that may explain inflation differences. For example, Hungary had the highest inflation among the CEE countries, which may be partly due to the significant depreciation of the Hungarian forint. This depreciation may have made imports of inputs and final goods more expensive, thereby exacerbating inflation. Differences in monetary policy could also play an important role. Countries outside the euro area, such as Poland, the Czech Republic and Hungary, have raised interest rates to varying degrees. These different monetary policy approaches may also have contributed to the divergence in inflation rates among these economies.

While it would be beneficial to conduct our analysis at the cross-country level, this task is challenging due to data availability issues. In addition to various price indices, key information on labour costs is often unavailable or subject to significant time lags. In the case of Slovakia, we had access to confidential microdata from the Social Insurance Institution, which allowed us to conduct this analysis. Without such detailed data, replicating our analysis for other CEE countries remains difficult, if not impossible.

## Conclusion

In this study we have disentangled the contribution of corporate profits, input costs and imported consumption to overall consumer price inflation in Slovakia during the Covid-19 pandemic. While our estimates suggest that much of Slovakia's

consumer price inflation is imported due to Slovakia's low self-sufficiency in food production, higher corporate mark-ups and profits also played an important role in driving consumer price inflation, especially from the second half of 2022 onwards. Our results also suggest that if profits across the food supply chain increased at the same pace as wages, food inflation would be 5 – 6 percentage points lower in the first half of 2023.

As a robustness estimate, we have tried to estimate the prices of imported goods and services for final consumption, based on a weighted average of the prices of Slovakia's main trading partners. In this case, we assume that the HICP statistics are a reasonable proxy for the prices at which we import from a given country. Therefore, we have estimated the matrix of prices of imported goods and services for consumption, and the way in which inflation is decomposed needs to be slightly adjusted for this differentiation of consumption prices.

A comparison of the estimated domestic CPI with the imported CPI suggests that in the vast majority of categories, domestic price increases exceed price increases for imported goods and services. This implies that the contribution of imported consumption to overall inflation was correctly treated as an upper bound in the previous sections. Assuming that imported prices move at a similar rate to those in the country of origin, the contribution of imported consumption to headline inflation would be 2.2 pp in 2022 and 3.0 pp in the first half of 2023. For food inflation, the differences are larger: imported consumption could have added 6.0 and 7.9 pp to price growth in 2022 and the first half of 2023, respectively (compared with 7.1 and 9.6 pp). Given the lower contribution of imports, it is therefore possible that the role of profitability growth in driving inflation is higher than we had initially assumed.

Our results seem to suggest several interesting policy implications. First, food inflation turns out to be the main driver of overall inflation in Slovakia during the period of sluggish economic growth and significant fiscal pressure. This may confirm the already known fact that Slovakia has a lower degree of self-sufficiency in the food industry and, consequently, is more exposed to exogenous shocks in the food industry than the average euro area country. This may call for a revision of the agricultural policy aimed at reducing food dependence on foreign producers. Second, our results and previous findings (Casalis, 2023; IMF, 2024) suggest that corporate profits play an important role in driving food inflation. This may call for some monitoring of price setting in this industry, without introducing highly distortionary policy instruments. Finally, future research should focus on using a broader set of countries in a panel framework to provide more generalizable policy implications.

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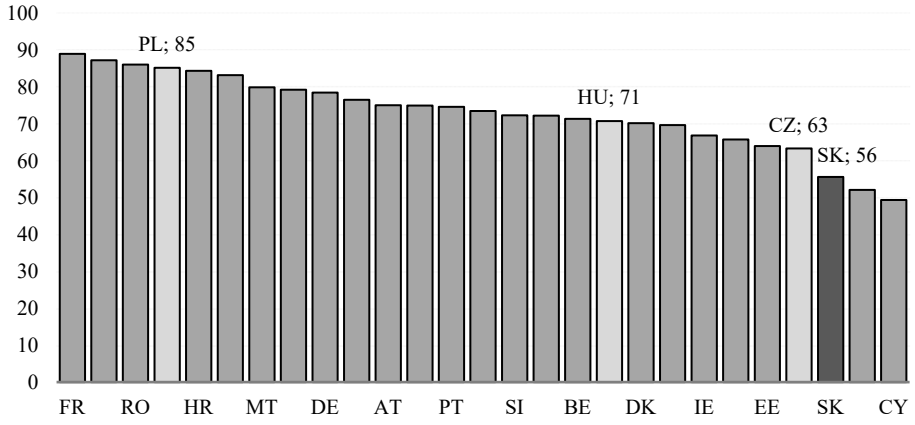
# Appendix

Figure A1

**Share of Domestic Food Consumption in Total Food Consumption in the European Union** (%)

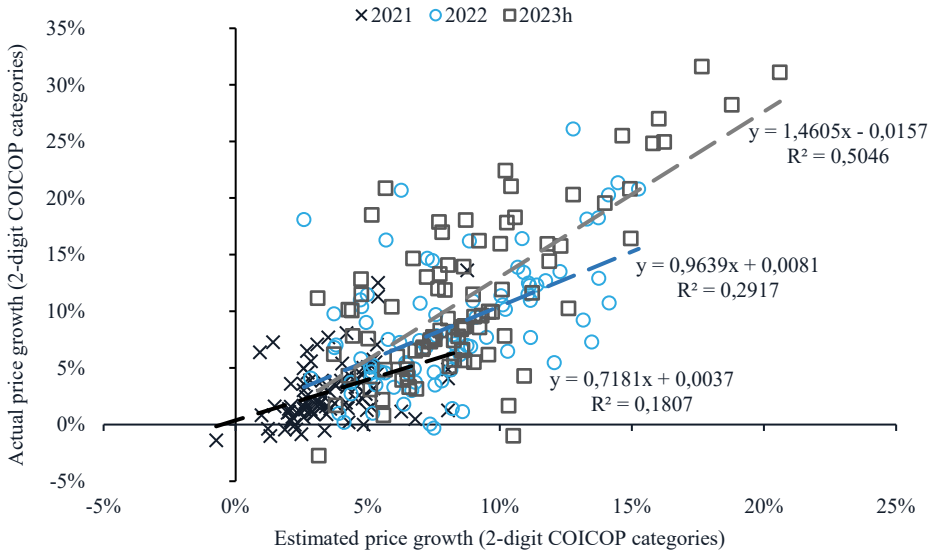



*Note:* A converter constructed from UK data was used to convert from CPA to COICOP classification. For each EU country, the weights of the HICP consumption baskets for the year 2020 have been used.

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

Figure A2

**Estimated and Actual Price Growth by COICOP Categories** (year-on-year growth, %)

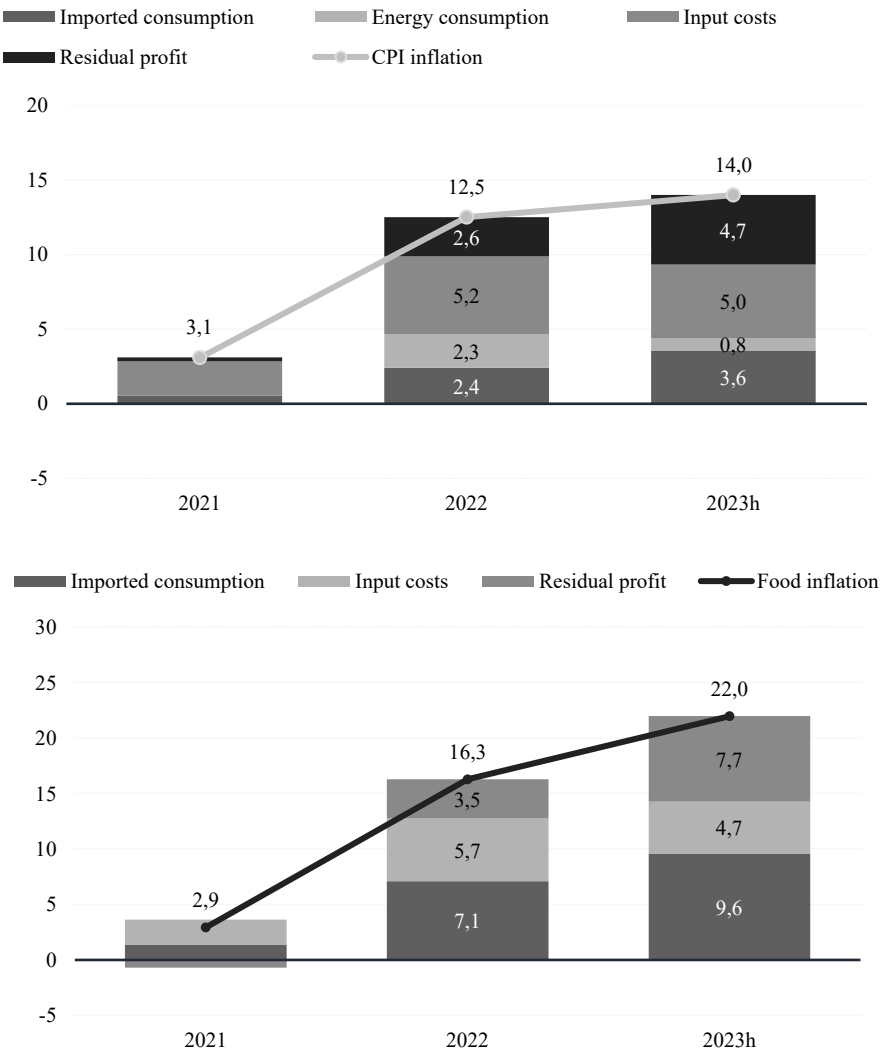



*Note:* We do not report energy categories, which are highly regulated and considered as exogenous in our model. A couple of outliers were left out that greatly affected relationships (2021: 7.2.2, 7.3.3; 2022: 1.1.5, 7.2.2; 2023h: 7.2.2).

*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A3

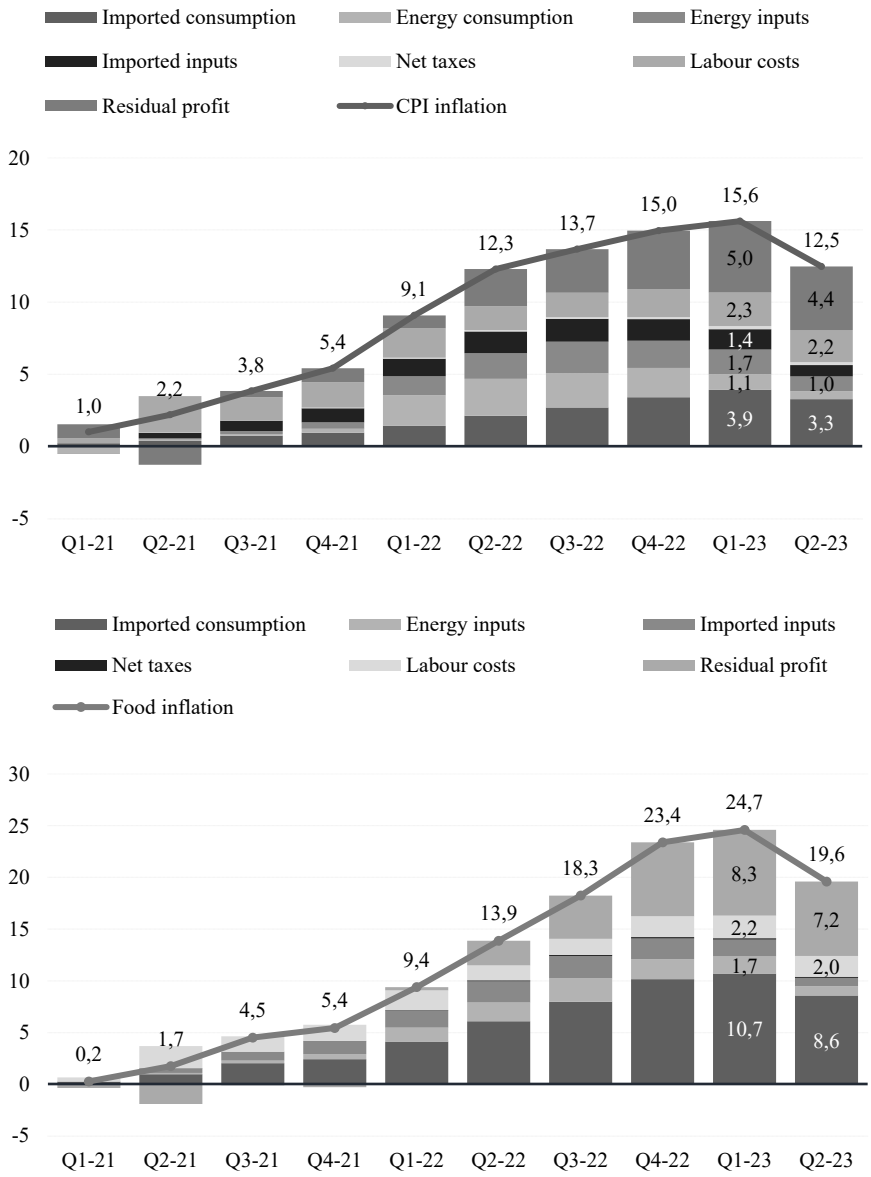
**Overall CPI (left) and Food, Drinks and Tobacco (right) Annual Inflation Decomposition in Slovakia** (contributions to % year-on-year growth, pp)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A4

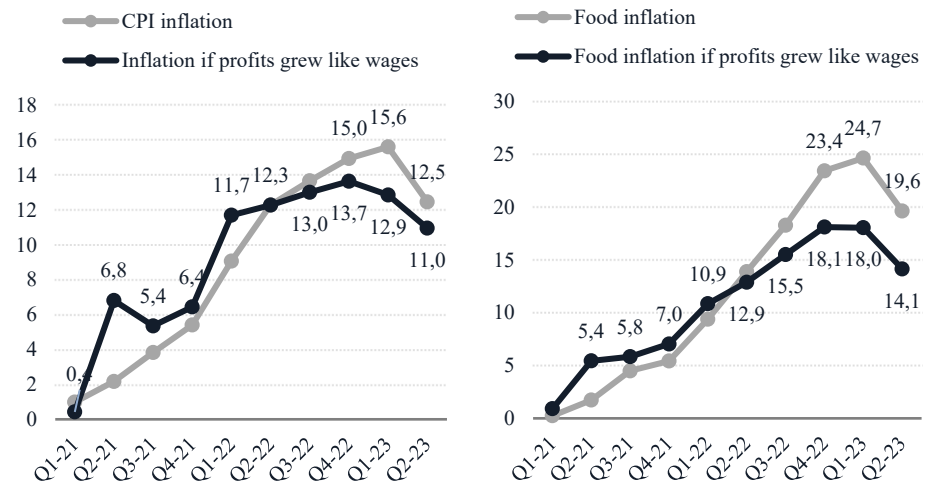
**Detailed Overall CPI (left) and Food, Drinks and Tobacco (right) Quarterly Inflation Decomposition in Slovakia** (contributions to year-on-year growth, pp)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A5

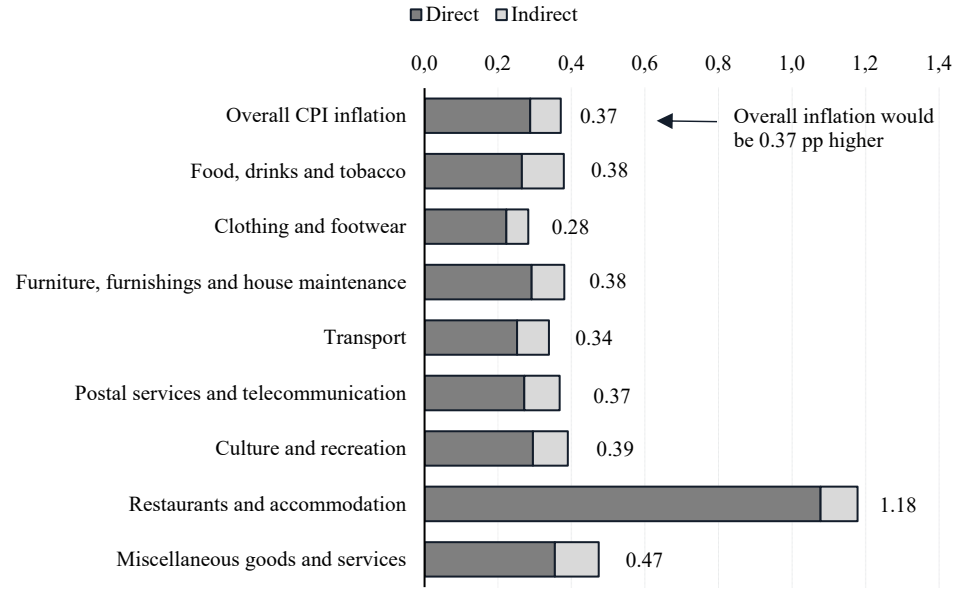
**Overall (left) and Food (right) Inflation Simulation if Profits Grew at the Same Rate as Wages** (year-on-year growth, %)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A6

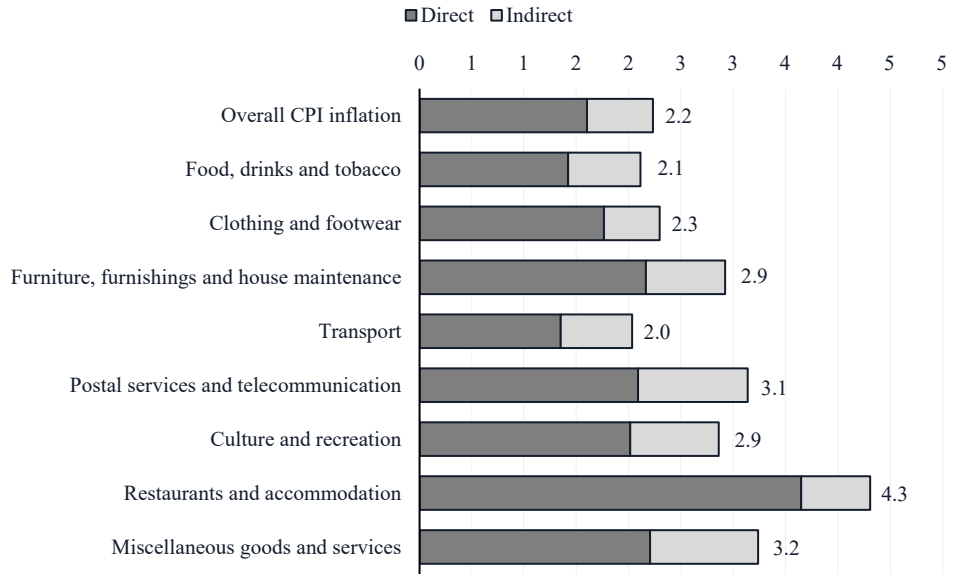
**Effect of 10% Increase in Price of Energy (refinery products, electricity, gas, steam, water and cold air supplies) on Prices of Consumer Categories**
(contribution to year-on-year price growth, pp)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A7

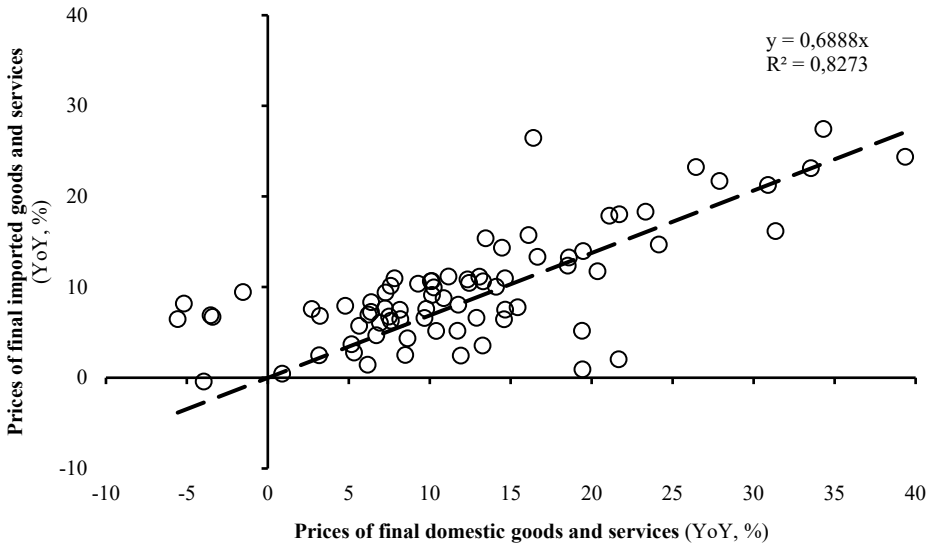
**Effect of 10% Increase in Labour Costs across the Economy on Prices of Consumer Categories** (contribution to year-on-year price growth, pp)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

F i g u r e A8

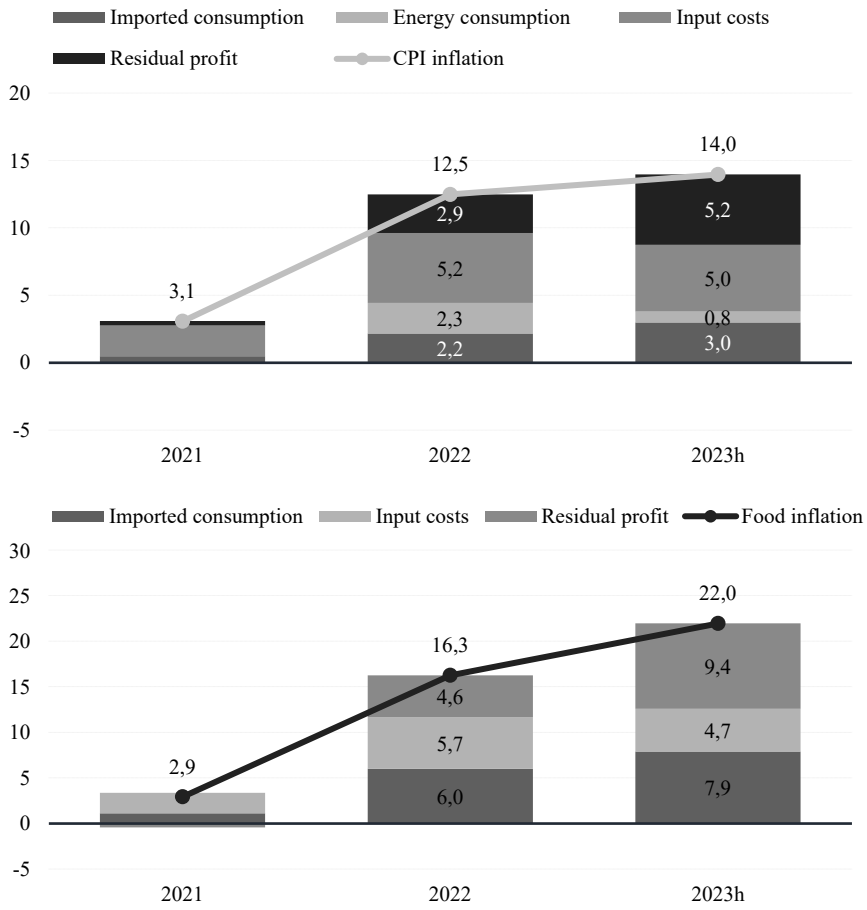
**Comparison of the Estimated Domestic CPI with the Imported CPI in 1st Half of 2023** (year-on-year growth, %)




Source: Own calculations; Eurostat; Statistical Office SR.

F i g u r e A9

**Decomposition Based on Different Final Import and Domestic Prices. Overall CPI (left) and Food, Drinks and Tobacco (right) Annual Inflation Decomposition in Slovakia** (contributions to % year-on-year growth, pp)




*Source:* Own calculations; Eurostat; Statistical Office SR; Office for National Statistics UK.

T a b l e A1

**Data Used in Study**

| Variable description | Source |
|---|---|
| IO FIGARO use table in current prices | Eurostat |
| Domestic producer price indices by industry sector | Statistical Office SR |
| Market services price indices by service sector | Statistical Office SR |
| Government consumption deflator | Statistical Office SR |
| Import price indices by industry sector | Statistical Office SR |
| Construction sector price indices | Statistical Office SR |
| Consumer Price Indices (CPI) by COICOP category | Statistical Office SR |
| Quarterly labour cost indices by sector | Statistical Office SR |
| CPA to COICOP conversion table | Statistical Office SR |
| Harmonised Index of Consumer Prices (HICP) by COICOP category and country | Eurostat |