

ANALYSIS

10 November 2022

Development of international trade in goods price indices in the Q3 2022

In the Q3 2022, compared to the Q2 2022, export prices increased by 3.3%. In the year-on-year (y-o-y) comparison, export prices increased by 14.9% in the Q3 2022. Import prices increased by 5.4% in the Q3 2022 compared to the Q2 2022. In the y-o-y comparison, import prices increased by 21.8% in the Q3 2022. The terms of trade reached the value of 98.0% in the Q3 2022 compared to the Q2 2022. In the year-on-year comparison, the terms of trade reached the value of 94.3% in the Q3 2022.

Export prices

Quarter-on-quarter (q-o-q; the Q3 2022 compared to the Q2 2022), they increased by 3.3%. The following prices increased the most: prices of 'mineral fuels, lubricants and related materials' by 27.4% (prices of electric current and gas), prices of 'beverages and tobacco' by 3.6%, and prices of 'manufactured goods classified chiefly by material' (especially manufactures of metals, rubber, paper, and textile yarn) and 'chemicals and related products' (especially chemical materials (detergents/cleaners), inorganic chemicals, medicinal and pharmaceutical products) both grew the same by 2.4%. Only prices of 'crude materials, inedible, except fuels' decreased by 10.9% (metalliferous ores, oil-seeds, and wood).

Year-on-year, in the Q3 2022, they increased by 14.9% (in the Q2 2022 it was by 15.1%). The highest increase of prices was in 'mineral fuels, lubricants and related materials' by 168.4% (prices of electric current, gas, petroleum products, and coal), 'food and live animals' by 24.7% (mainly prices of cereals), 'chemicals and related products' by 19.2%, and 'manufactured goods classified chiefly by material' by 18.5% (mainly prices of manufactures of metals, iron and steel). Prices did not decrease in any of the surveyed SITC 1 groups.

Import prices

Quarter-on-quarter (the Q3 2022 compared to the Q2 2022), they increased by 5.4%. Prices of 'mineral fuels, lubricants and related materials' increased by 30.6% (primarily prices of gas and electric current), 'food and live animals' by 5.2% (primarily prices of vegetables and fruit, coffee, tea, cereals, dairy products, and sugars), and 'miscellaneous manufactured articles' by 3.8% (especially footwear and articles of apparel and clothing accessories). Prices of 'crude materials, inedible, except fuels' decreased by 2.7% (primarily prices of metalliferous ores and wood) and prices of 'manufactured goods classified chiefly by material' decreased by 1.4% (prices of iron and steel and of non-ferrous metals).

Year-on-year, in the Q3 2022, they increased by 21.8% (in the Q2 2022 it was by 20.0%). The highest increase of prices was in 'mineral fuels, lubricants and related materials' by 147.2% (prices of gas, electric current, petroleum and petroleum products, and coal), in 'food and live animals' by 19.1% (mainly prices of meat and meat preparations and of dairy products and birds' eggs), in 'beverages and tobacco' by 17.4%, in 'manufactured goods classified chiefly by material' by 15.0% (primarily prices of iron and steel, non-ferrous metals, and paper), and in 'chemicals

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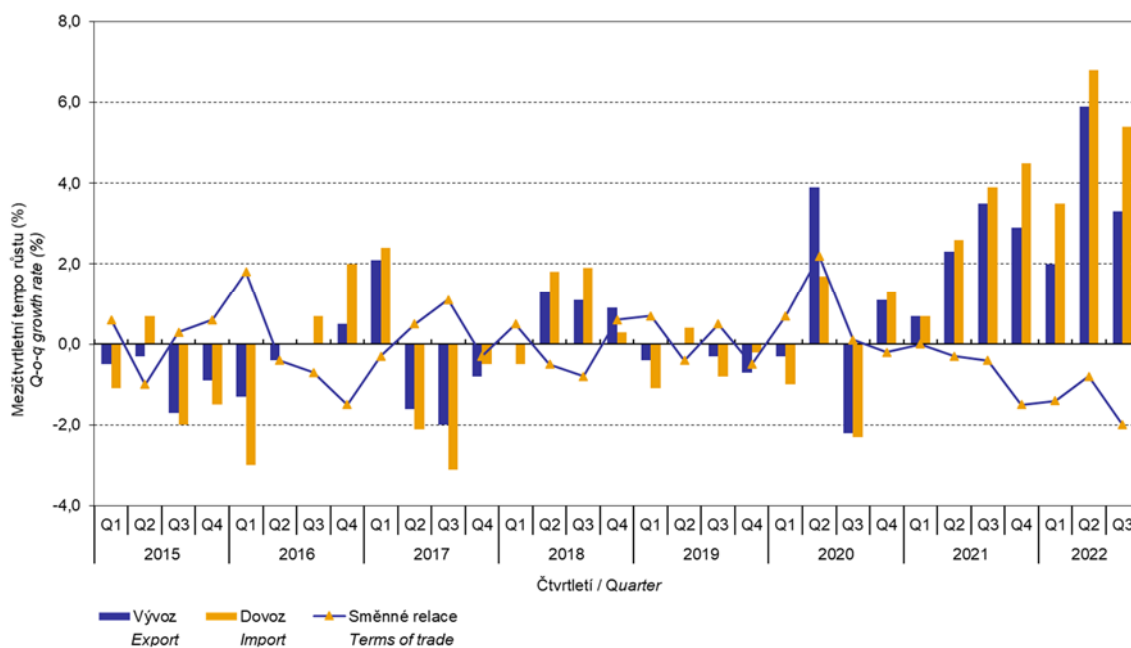
and related products' by 13.6% (especially prices of inorganic chemicals, plastics, and fertilizers). Prices did not decrease in any of the surveyed groups.

The terms of trade

Quarter-on-quarter (the Q3 2022 compared to the Q2 2022), they decreased to the value of 98.0%. The lowest negative value of the terms of trade was reached by 'crude materials, inedible, except fuels' (91.6%), the highest positive value was recorded by 'manufactured goods classified chiefly by material' (103.9%).

Year-on-year, in the Q3 2022, they decreased to the value of 94.3% (in the Q2 2022 the value was 95.9%) and for the sixth quarter they remained in the negative values – see the Chart No 2. The lowest negative values of the terms of trade were reached by 'beverages and tobacco' (91.5%) and the highest positive value of the terms of trade was recorded by 'mineral fuels, lubricants and related materials' (108.6%).

Graf č. 1 Vývoj indexů cen v zahraničním obchodě se zbožím mezičtvrtletně
Chart No 1 Trend of price indices in international trade in goods, q-o-q



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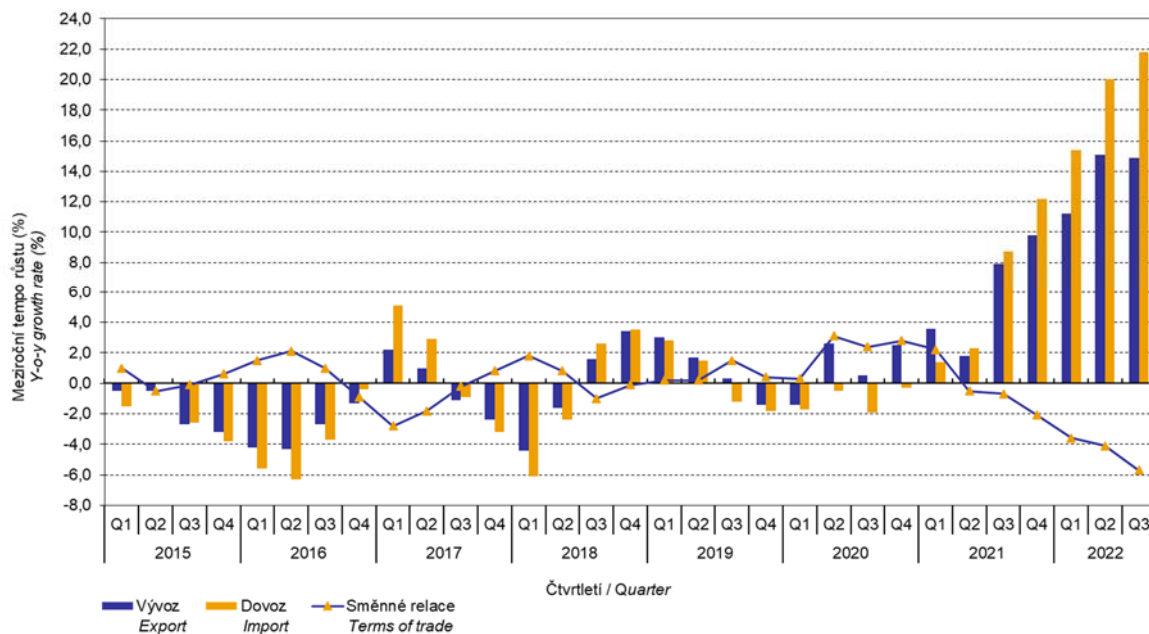
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Graf č. 2 Vývoj indexů cen v zahraničním obchodě se zbožím meziročně
Chart No 2 Trend of price indices in international trade in goods, y-o-y



The international trade in goods (change of ownership) price development was also significantly influenced by the CZK exchange rate to the major foreign currencies. **The q-o-q** exchange rate **index** includes two most important currencies in terms of the Czech Republic's international trade, i.e. EUR and USD. Q-o-q indices of the CZK exchange rate to these currencies were weighted by the respective weight, which pertains to those foreign currencies in the export price index and in the import price index.

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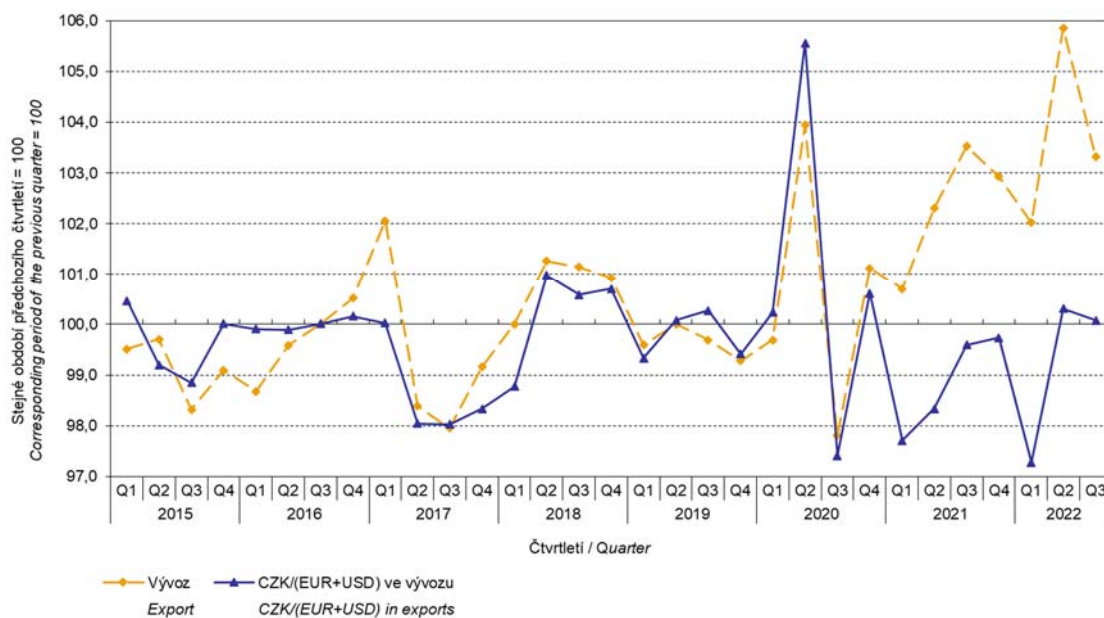
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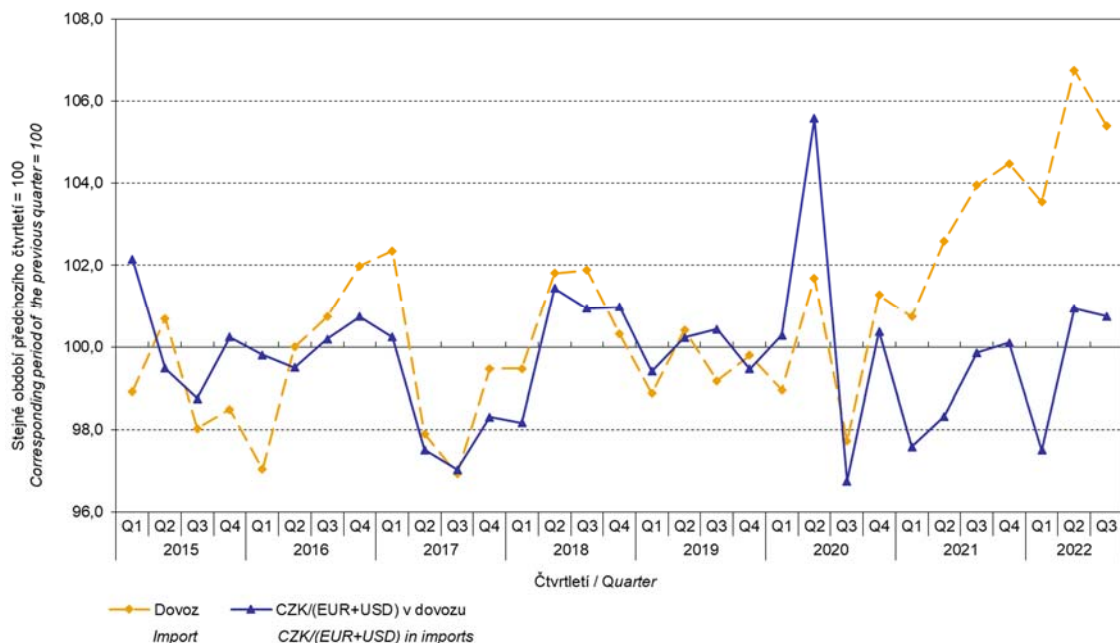
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Graf č. 3 Indexy cen vývozu a vývoj kurzu mezičtvrtletně
Chart No 3 Export price indices and exchange rate development, q-o-q



Graf č. 4 Indexy cen dovozu a vývoj kurzu mezičtvrtletně
Chart No 4 Import price indices and exchange rate development, q-o-q



It is apparent from the Chart No 3 and the Chart No 4 above that in both exports and imports, international trade in goods prices have a relation to exchange rate impacts. Contracts with foreign entities are usually concluded for a longer period of time and the longer the contract period is, the stronger the relation to exchange rates is.

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International trade in goods price indices, year-on-year, adjusted for exchange rate influence

The Czech Statistical Office also calculates year-on-year international trade in goods price indices adjusted for effects of exchange rate. It is carried out as follows: prices in foreign currencies reported in the current month are **converted** to Czech crowns **by the exchange rate** of the same month **of the previous year**. Then they are used for the weighted mean calculation together with prices reported in CZK. This exchange rate adjusted base price index of a month is related to the non-adjusted base price index of the corresponding month of the previous year and thus the year-on-year adjusted price index for a month is calculated. Adjusted quarter-on-quarter price indices have been calculated similarly since 2017. **Differences between adjusted and non-adjusted price indices may be considerable**; they are obvious in the Chart No 6 and the Chart No 7, for example, in the Q2 2021.

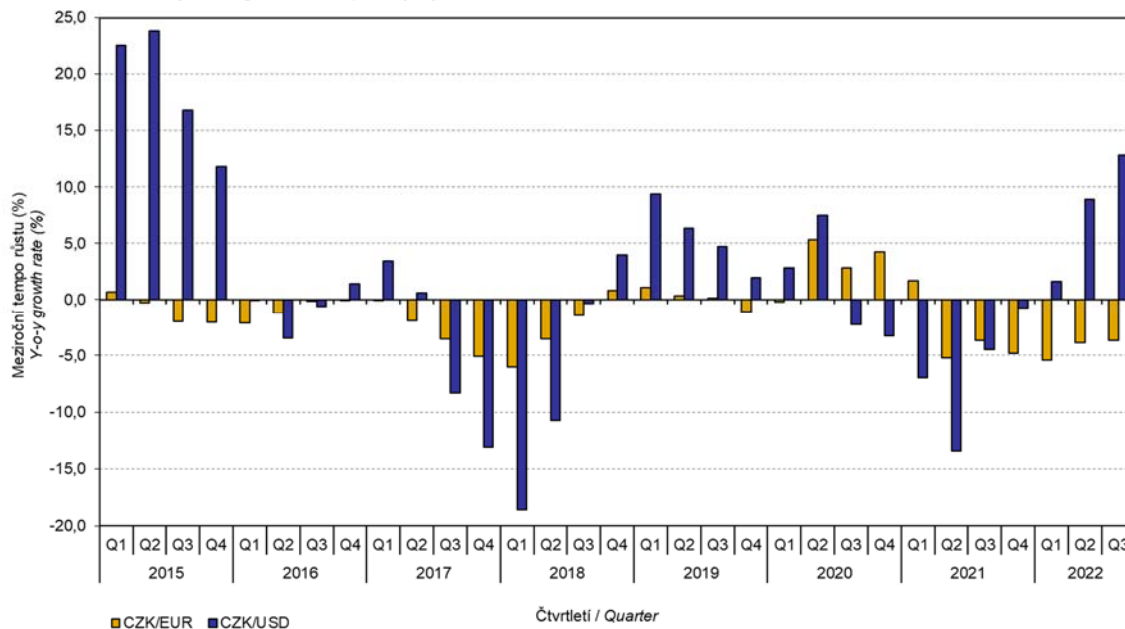
The method employed does not enable to make a 100% exchange rate adjustment because not all trade transactions made in foreign currencies are also reported in foreign currencies; the proportion does not exceed 30%. From the aforementioned it follows that **at the full exchange rate adjustment, differences** between the price indices published and the exchange rate adjusted price indices **would** probably further **increase**.

The exchange rate adjusted indices described above can also be used to make the exchange rate adjusted breakdown of increments of price indices. The Table 1 gives the **published and exchange rate adjusted breakdown of increments** of export and import price indices, supplemented by the most important two-digit code groups of the SITC 7. The breakdown illustrates well how many percentage points each of the groups “exchange rate contributed” to the index.

It is generally true that the exchange rate effect decreases the value of price indices in international trade in goods if CZK is strengthening to foreign currencies in total. Conversely, the exchange rate effect pushes the price indices up if CZK is weakening to foreign currencies in total.

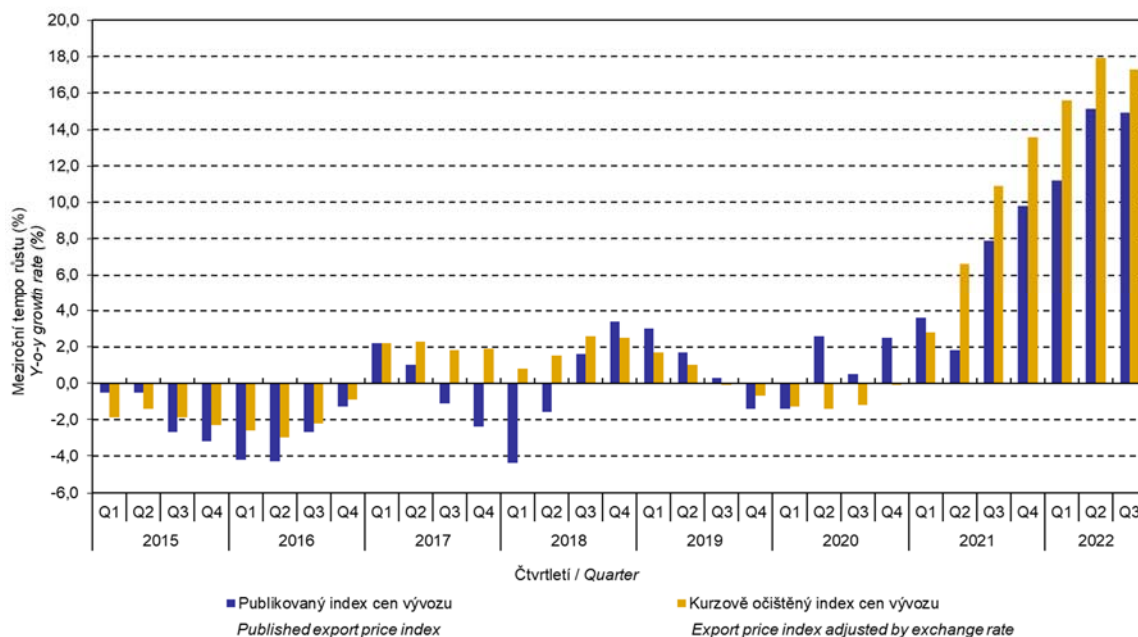
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Graf č. 5 Vývoj čtvrtletních kurzů meziročně
Chart No 5 Quarterly exchange rates development, y-o-y



It is apparent from the Chart No 6 and the Chart No 7 below how significant the exchange rate influence on the value of the export and import price indices was.

Graf č. 6 Vývoj indexů vývozních cen meziročně
Chart No 6 Trend in export price indices, y-o-y



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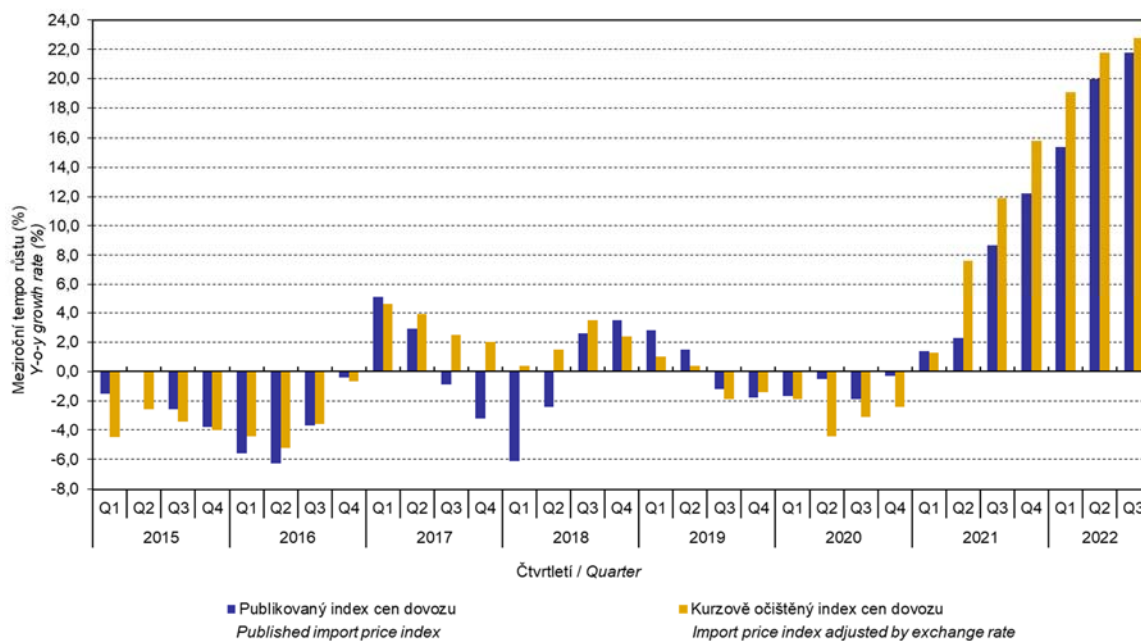
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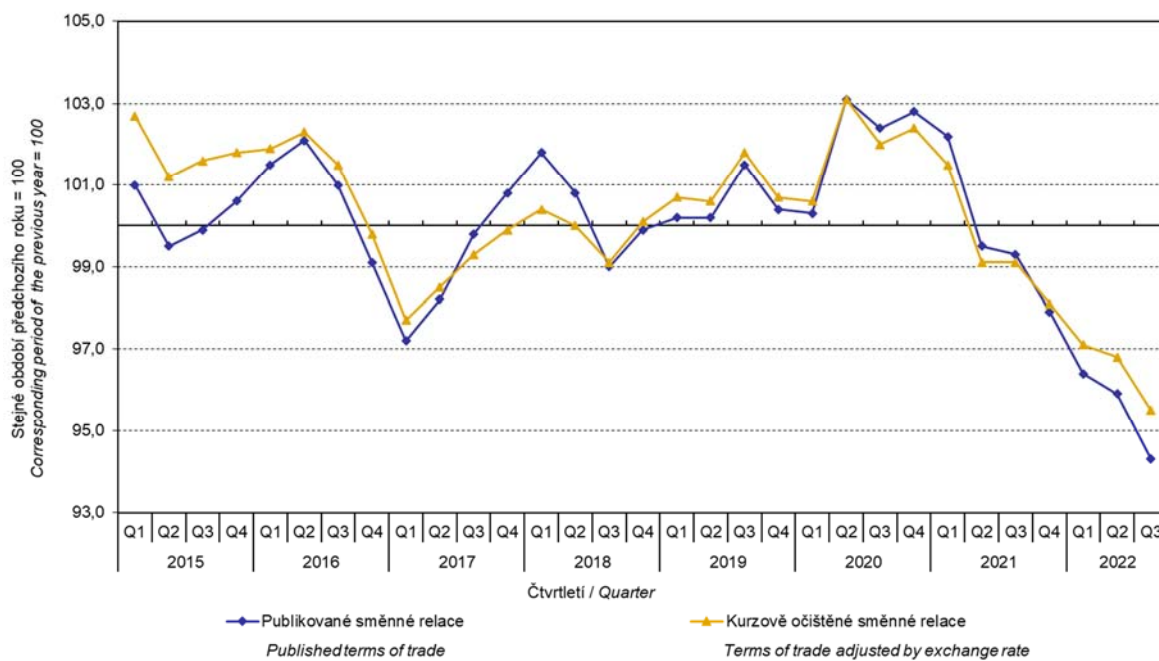
Graf č. 7 Vývoj indexů dovozních cen meziročně
Chart No 7 Trend in import price indices, y-o-y



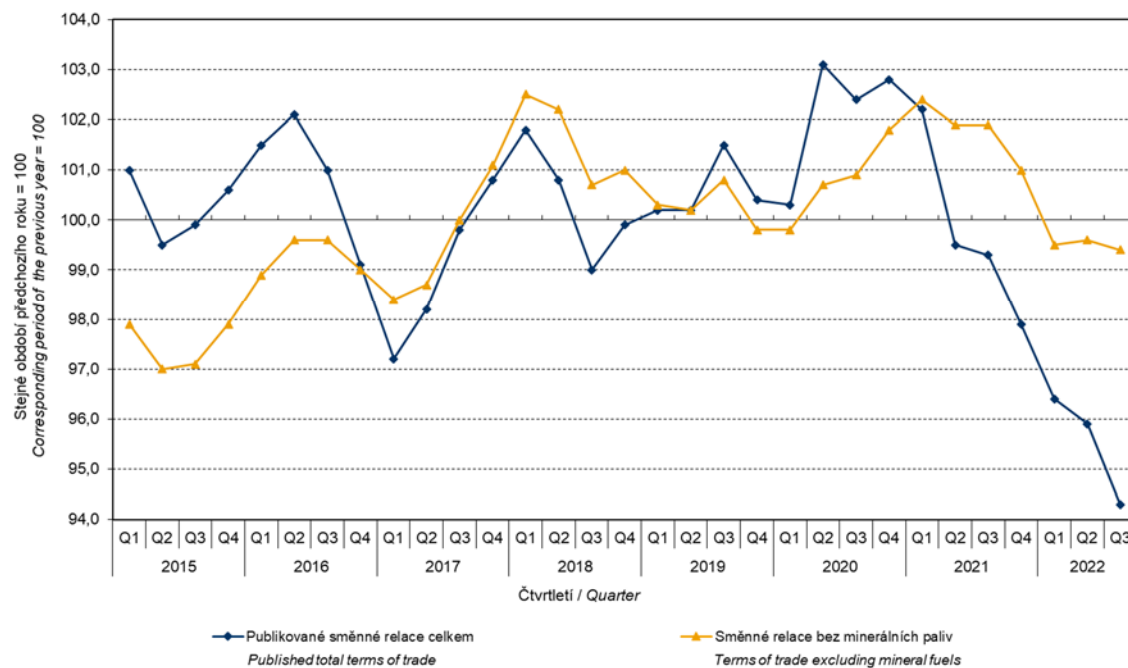
The Chart No 8 shows the exchange rate influence on the value of the year-on-year terms of trade.

ANALYSIS

Graf č. 8 Směnné relace meziročně
Chart No 8 Terms of trade, y-o-y



Graf č.9 Publikované směnné relace a směnné relace s vyloučením minerálních paliv meziročně
Chart No 9 Published terms of trade and terms of trade excluding mineral fuels, y-o-y



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The Chart No 9 shows the development of the value of the terms of trade when the group of 'mineral fuels, lubricants and related materials' is excluded. In this chart, the effect of 'mineral fuels, lubricants and related materials' can be observed; it has an influence on the total value of the y-o-y terms of trade. Since the Q3 2019, 'mineral fuels, lubricants and related materials' were increasing the value of the terms of trade; however, in the Q1 2021, there was a turnabout and 'mineral fuels, lubricants and related materials' started to decrease the value of the terms of trade. Naturally, it is related to the world market price development, especially as for petroleum prices. Import prices, which, compared to export prices, have a higher proportion of crude materials, respond in a more sensitive way to price turbulences. Therefore, the terms of trade are usually increasing when prices of crude materials are decreasing, and, vice versa, when prices of crude materials are increasing, the terms of trade are decreasing.

Final summary

In the Q3 2022, the exchange rate effect decreased both the export price index and the import prices index, year-on-year. Import prices were increasing faster than export prices and therefore the terms of trade reached negative values. After elimination of the exchange rate effect, the terms of trade were higher than the published terms of trade; despite that, they remained in negative values. Values free of the exchange rate effect correspond to the exchange rate adjusted indices – see the Charts Nos. 6, 7, and 8.

ANALYSIS

Tabulka 1 Rozklad přírůstků publikovaných a kurzově očištěných indexů cen vývozu a dovozu za 3. čtvrtletí 2022
Table 1 Breakdown of increments of export and import price indices - published and exchange rate adjusted for Q3 2022

SITC	Název Name	Publikované Published					Očištěné o kurzové míry Exchange rate adjusted				
		Meziroční Year-on-year					Meziroční Year-on-year				
		Q2/2022	07/2022	08/2022	09/2022	Q3/2022	Q2/2022	07/2022	08/2022	09/2022	Q3/2022
Rozklad přírůstků indexů vývozních cen <i>Breakdown of increments of export price indices</i>											
	Celkem <i>Total</i>	15,1	14,2	16,1	14,3	14,9	17,9	17,1	18,5	16,6	17,3
0	Potraviny a živá zvířata <i>Food and live animals</i>	1,1	1,0	1,0	1,0	1,0	1,2	1,1	1,1	1,1	1,1
1	Nápoje a tabák <i>Beverages and tobacco</i>	0,0	0,0	0,1	0,0	0,0	0,0	0,1	0,1	0,1	0,1
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	1,1	0,3	0,1	0,0	0,2	1,2	0,3	0,2	0,2	0,2
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	5,1	5,9	7,5	6,1	6,5	5,2	6,1	7,7	6,2	6,7
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	1,1	1,3	1,3	1,2	1,3	1,3	1,5	1,4	1,3	1,3
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	5,0	4,1	3,8	3,7	3,9	5,6	4,7	4,3	4,2	4,4
7	Stroje a dopravní prostředky - z toho: <i>Machinery and transport equipment - thereof:</i>	1,0	1,1	1,6	1,6	1,4	2,5	2,5	2,8	2,7	2,7
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	0,4	0,5	0,6	0,6	0,6	0,7	0,8	0,8	0,8	0,8
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	0,4	0,3	0,3	0,3	0,3	0,5	0,4	0,4	0,4	0,4
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	-0,3	-0,2	0,0	0,0	-0,1	0,6	0,8	0,8	0,8	0,8
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	0,7	0,5	0,7	0,7	0,6	0,9	0,8	0,9	0,8	0,8
Rozklad přírůstků indexů dovozních cen <i>Breakdown of increments of import price indices</i>											
	Celkem <i>Total</i>	20,0	21,3	24,0	20,0	21,8	21,8	22,8	25,1	20,4	22,8
0	Potraviny a živá zvířata <i>Food and live animals</i>	0,7	1,0	1,2	1,3	1,2	0,9	1,1	1,3	1,4	1,3
1	Nápoje a tabák <i>Beverages and tobacco</i>	0,1	0,1	0,1	0,1	0,1	0,2	0,1	0,2	0,2	0,2
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	0,4	0,3	0,0	0,1	0,1	0,4	0,3	0,0	0,0	0,1
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	10,1	12,6	15,6	11,4	13,2	10,0	12,4	15,5	11,0	13,0
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	2,0	1,8	1,8	1,5	1,7	2,4	2,2	2,0	1,7	2,0
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	4,8	3,3	3,1	3,1	3,2	5,4	3,9	3,6	3,5	3,6
7	Stroje a dopravní prostředky - z toho: <i>Machinery and transport equipment - thereof:</i>	1,1	1,2	1,2	1,5	1,3	1,6	1,7	1,5	1,5	1,5
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	0,1	0,1	0,1	0,1	0,1	0,3	0,2	0,2	0,2	0,2
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	0,3	0,4	0,4	0,5	0,4	0,2	0,2	0,3	0,2	0,2
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	0,2	0,2	0,2	0,2	0,2	0,4	0,3	0,3	0,2	0,3
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	0,2	0,3	0,2	0,3	0,2	0,5	0,6	0,4	0,5	0,5
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	0,8	1,0	1,0	1,0	1,0	0,9	1,1	1,0	1,1	1,1

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The closing table gives published **non-adjusted** international trade in goods price indices.

Tabulka 2 Indexy cen vývozu a dovozu ve 3. čtvrtletí 2022

Table 2 Export and import price indices in Q3 2022

SITC	Název Name	Stejně období předchozího roku = 100 Corresponding period of the previous year = 100				
		Q2/2022	07/2022	08/2022	09/2022	Q3/2022
		Indexy vývozních cen <i>Export price indices</i>				
	Celkem <i>Total</i>	115,1	114,2	116,1	114,3	114,9
0	Potraviny a živá zvířata <i>Food and live animals</i>	126,0	125,3	124,0	124,9	124,7
1	Nápoje a tabák <i>Beverages and tobacco</i>	103,8	107,2	107,7	107,4	107,4
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	136,6	109,3	103,3	100,4	104,3
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	251,3	260,6	304,9	243,7	268,4
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	117,3	119,9	119,6	118,1	119,2
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	124,8	119,6	118,0	117,9	118,5
7	Stroje a dopravní prostředky <i>Machinery and transport equipment</i>	102,0	102,0	103,2	103,2	102,8
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	105,9	107,0	108,4	108,4	107,9
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	104,7	103,9	103,7	103,8	103,8
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	98,9	99,2	99,9	99,8	99,6
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	106,5	105,2	106,4	106,4	106,0
		Indexy dovozních cen <i>Import price indices</i>				
	Celkem <i>Total</i>	120,0	121,3	124,0	120,0	121,8
0	Potraviny a živá zvířata <i>Food and live animals</i>	111,8	115,8	119,4	122,2	119,1
1	Nápoje a tabák <i>Beverages and tobacco</i>	115,7	116,4	117,5	118,4	117,4
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	117,5	109,7	100,5	103,0	104,4
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	234,0	245,9	280,4	218,6	247,2
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	115,8	114,6	114,1	112,1	113,6
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	123,0	115,9	114,5	114,5	115,0
7	Stroje a dopravní prostředky <i>Machinery and transport equipment</i>	102,8	103,2	103,2	103,8	103,4
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	101,9	101,0	101,4	101,9	101,5
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	108,1	109,3	110,7	111,1	110,4
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	102,6	102,1	102,5	101,7	102,1
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	102,1	103,0	101,4	103,0	102,4
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	108,0	110,4	109,9	111,2	110,5

Note: For internal reasons, the Czech decimal comma is used instead of the English decimal point as a decimal separator in tables and charts of this analysis.

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