

ANALYSIS

11 May 2023

Development of international trade in goods price indices in the Q1 2023

In the Q1 2023, compared to the Q4 2022, export prices decreased by 1.3%. In the year-on-year (y-o-y) comparison, export prices increased by 6.3% in the Q1 2023. Import prices decreased by 4.3% in the Q1 2023 compared to the Q4 2022. In the y-o-y comparison, import prices increased by 3.2% in the Q1 2023. The terms of trade reached the value of 103.1% in the Q1 2023 compared to the Q4 2022. In the year-on-year comparison, the terms of trade reached the value of 103.0% in the Q1 2023.

Export prices

Quarter-on-quarter (q-o-q; in the Q1 2023 compared to the Q4 2022), they decreased by 1.3%. The following prices decreased the most: prices of 'chemicals and related products' by 4.4% (especially of plastics and organic chemicals), prices of 'crude materials, inedible, except fuels' by 4.2% (mainly of waste paper) and prices of 'manufactured goods classified chiefly by material' by 3.5% (chiefly of iron and steel and of manufactures of metals). The following were increasing the most: prices of 'beverages and tobacco' by 10.9% and prices of 'mineral fuels, lubricants and related materials' by 1.3% (prices of electric current and gas).

Year-on-year, in the Q1 2023, they increased by 6.3% (in the Q4 2022 it was by 9.8%). The highest increase of prices was in 'mineral fuels, lubricants and related materials' by 40.5% (prices of electric current and gas), 'beverages and tobacco' by 19.9%, 'food and live animals' by 12.1% (mainly dairy products and birds' eggs), and 'manufactured goods classified chiefly by material' by 6.9% (chiefly of manufactures of metals). Only prices of 'crude materials, inedible, except fuels' decreased by 9.9% (mainly of metal scrap and waste paper).

Import prices

Quarter-on-quarter (in the Q1 2023 compared to the Q4 2022), they decreased by 4.3%. Prices of 'mineral fuels, lubricants and related materials' decreased by 16.4% (prices of petroleum and petroleum products, gas, electric current, and coal), prices of 'chemicals and related products' by 3.9% (especially of plastics), prices of 'manufactured goods classified chiefly by material' by 2.9% (mainly of iron and steel), and prices of 'machinery and transport equipment' by 2.4% (mainly of telecommunications and sound-recording equipment). Only the prices of the following increased: 'beverages and tobacco' by 13.5% and 'food and live animals' by 0.5% (especially prices of vegetables and fruit).

Year-on-year, in the Q1 2023 they increased by 3.2% (in the Q4 2022 it was by 11.8%). The highest increase of prices was in 'beverages and tobacco' by 23.9%, 'food and live animals' by 15.8% (mainly of meat and meat preparations), 'miscellaneous manufactured articles' by 8.4%, and 'mineral fuels, lubricants and related materials' by 5.6% (prices of gas and electric current). Only prices of 'chemicals and related products' decreased by 0.3% (especially prices of plastics).

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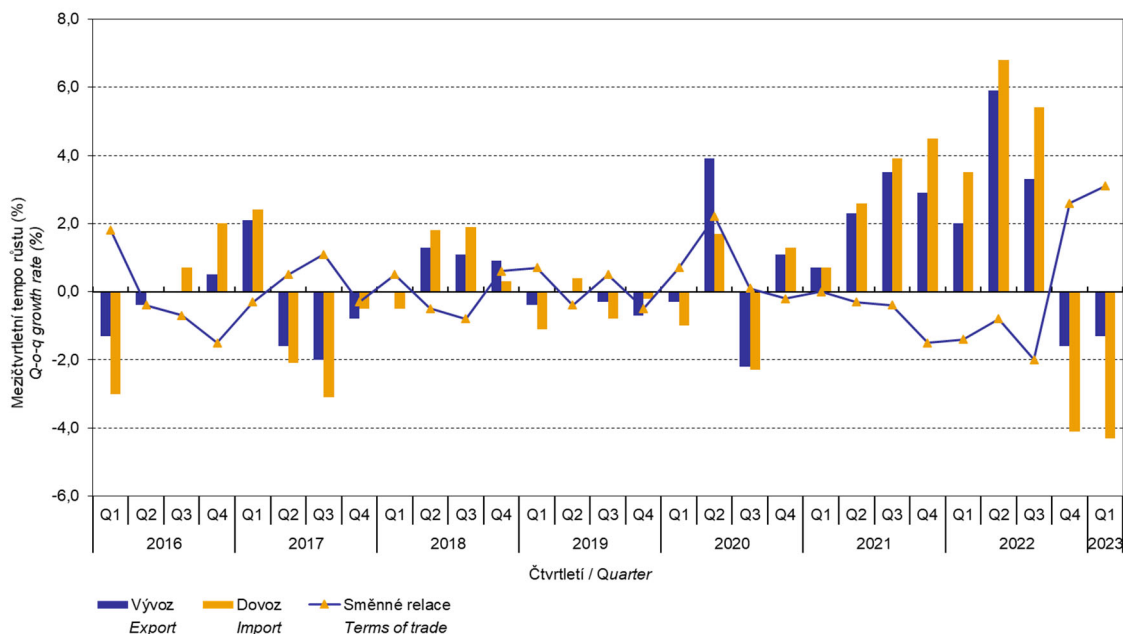
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The terms of trade

Quarter-on-quarter (in the Q1 2023 compared to the Q4 2022), they increased to the value of 103.1%. The highest positive value of the terms of trade was reached by 'mineral fuels, lubricants and related materials' (121.2%), the lowest negative value was recorded by 'food and live animals' (97.1%).

Year-on-year, in the Q1 2023, they increased to the value of 103.0% (in the Q4 2022 the value was 98.2%) and after seven successive quarters they headed to positive values – see the Chart No 2. The highest positive value of the terms of trade was recorded by 'mineral fuels, lubricants and related materials' (133.0%) and the lowest negative value of the terms of trade was reached by 'crude materials, inedible, except fuels' (88.9%).

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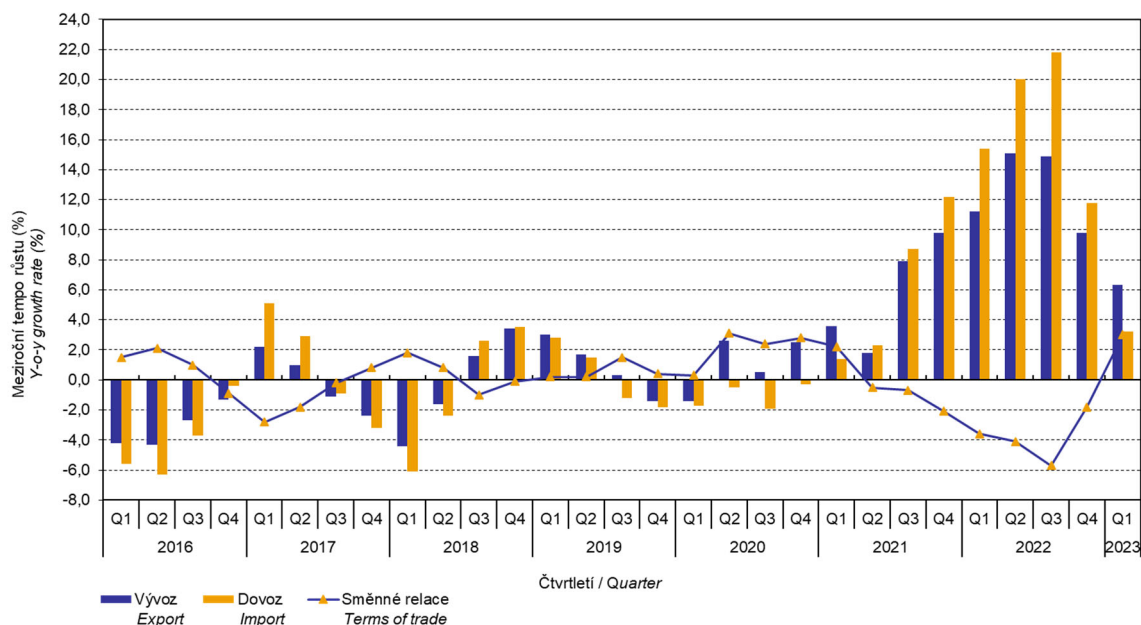
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Graf č. 2 Vývoj indexů cen v zahraničním obchodě se zbožím meziročně
Chart No 2 Trend of price indices in international trade in goods, y-o-y



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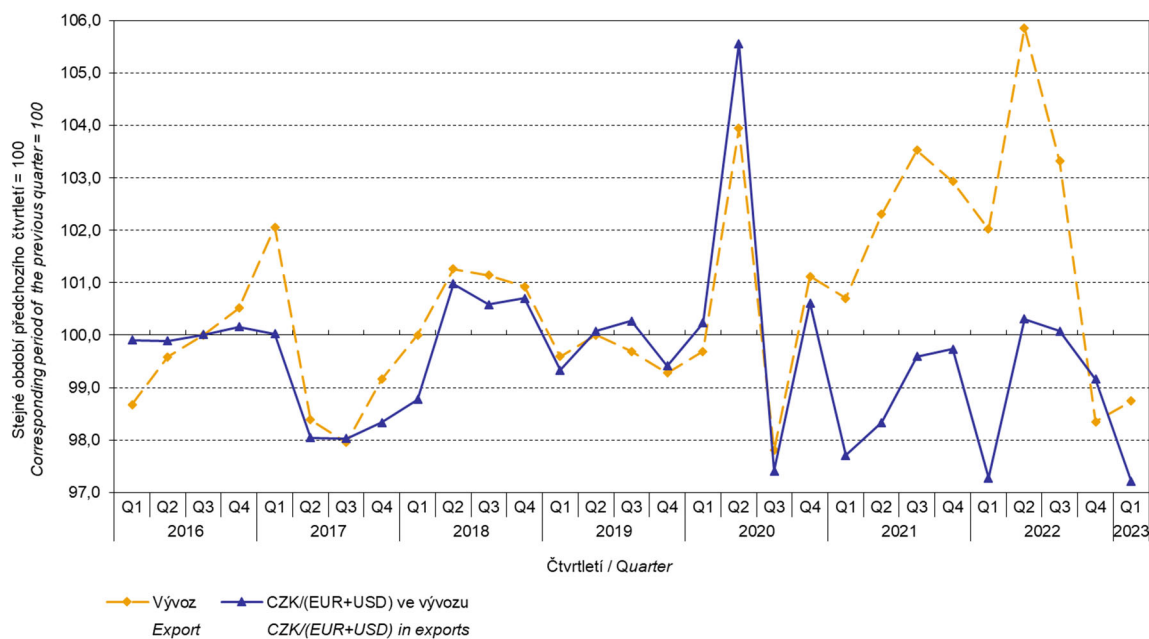
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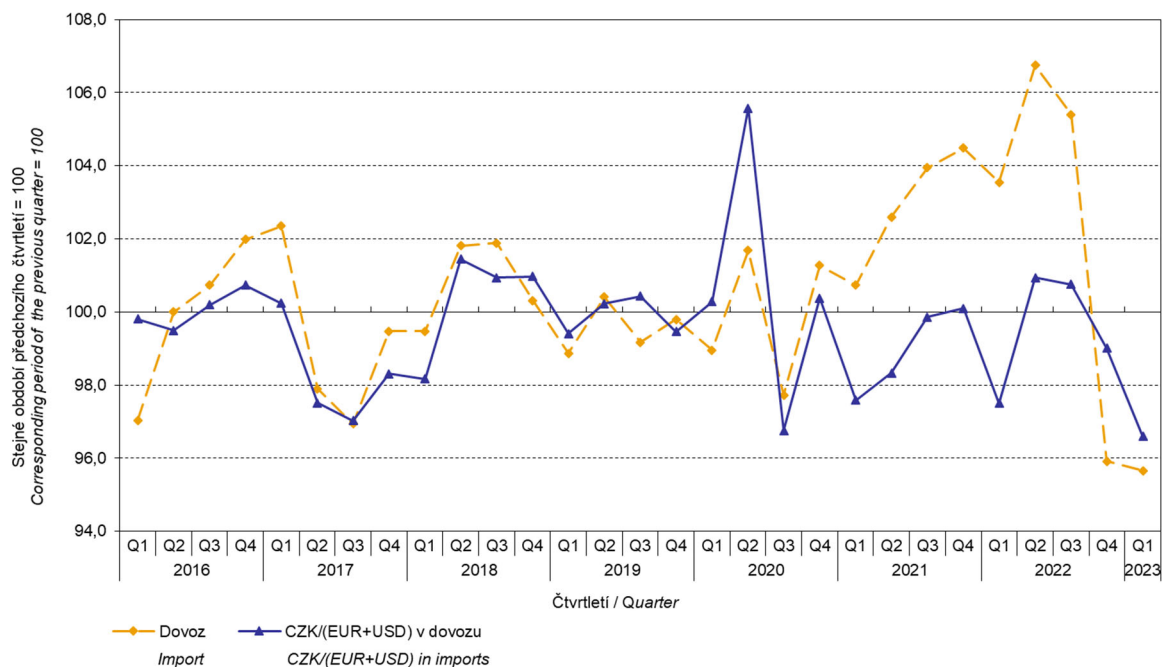
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Graf č. 3 Indexy cen vývozu a vývoj kurzu mezičtvrtletně
Chart No 3 Export price indices and exchange rate development, q-o-q



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



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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 longer periods of time and the longer the contract period is, the stronger the relation to exchange rates is.

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

The Czech Statistical Office (CZSO) 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 Q1 2018 and 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.

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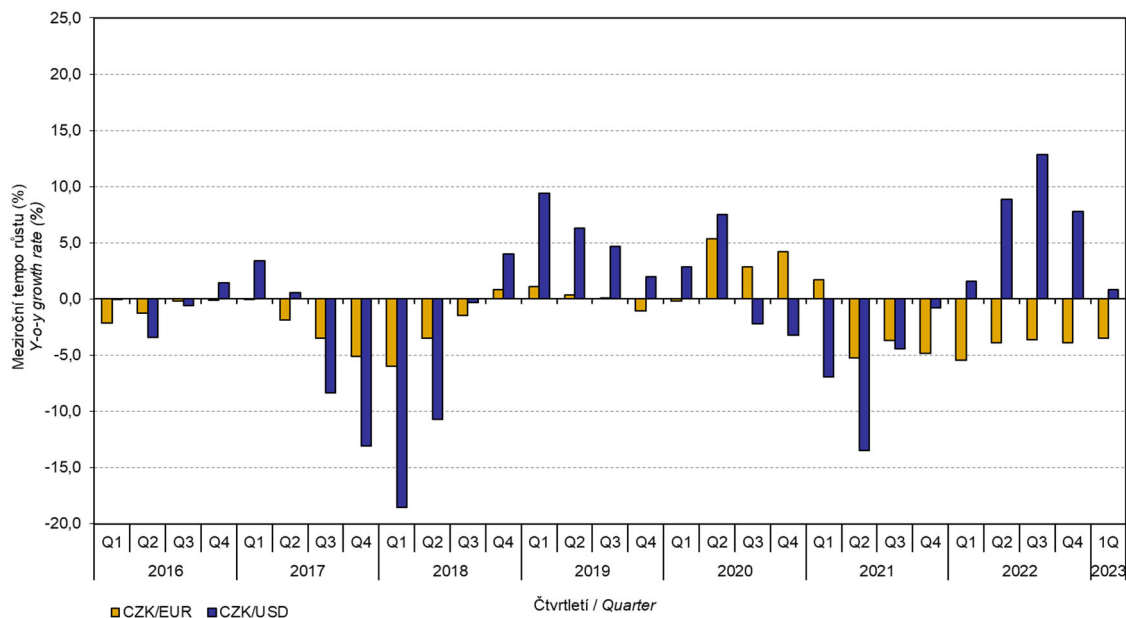
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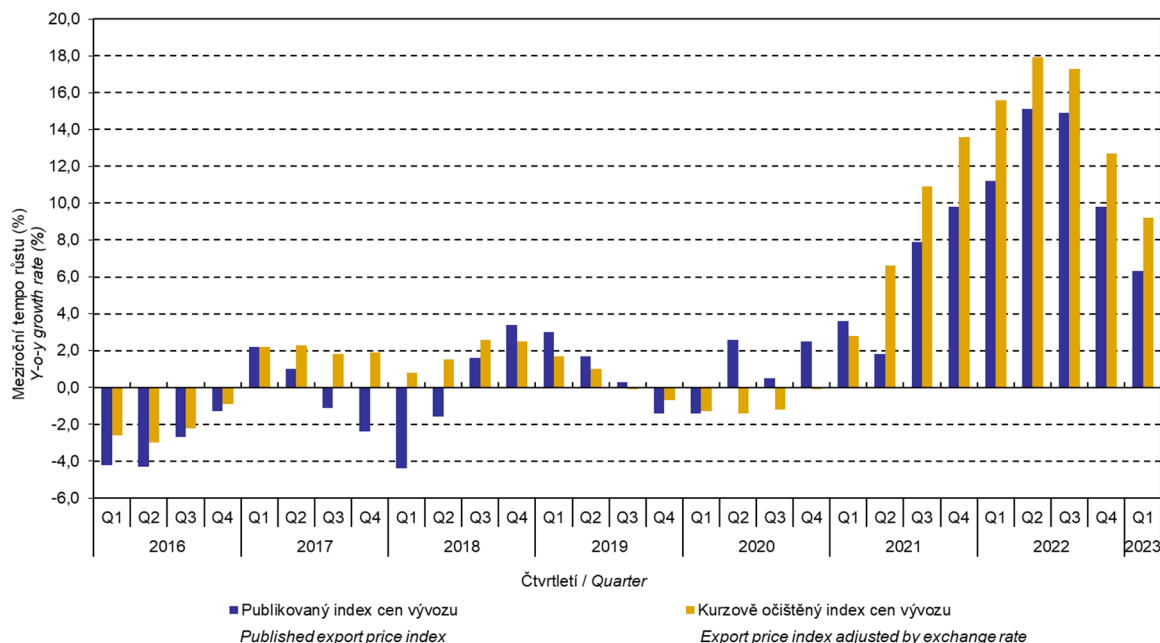
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Graf č. 5 Vývoj čtvrtletních kurzů meziročně
Chart No 5 Quarterly exchange rates development, y-o-y



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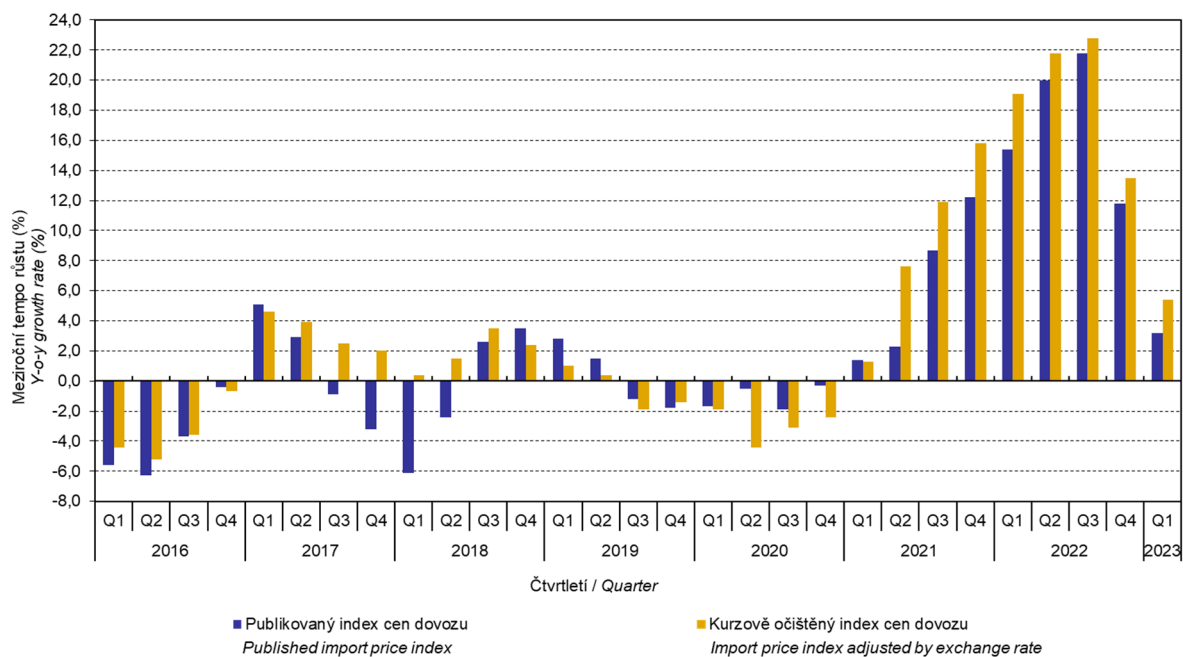
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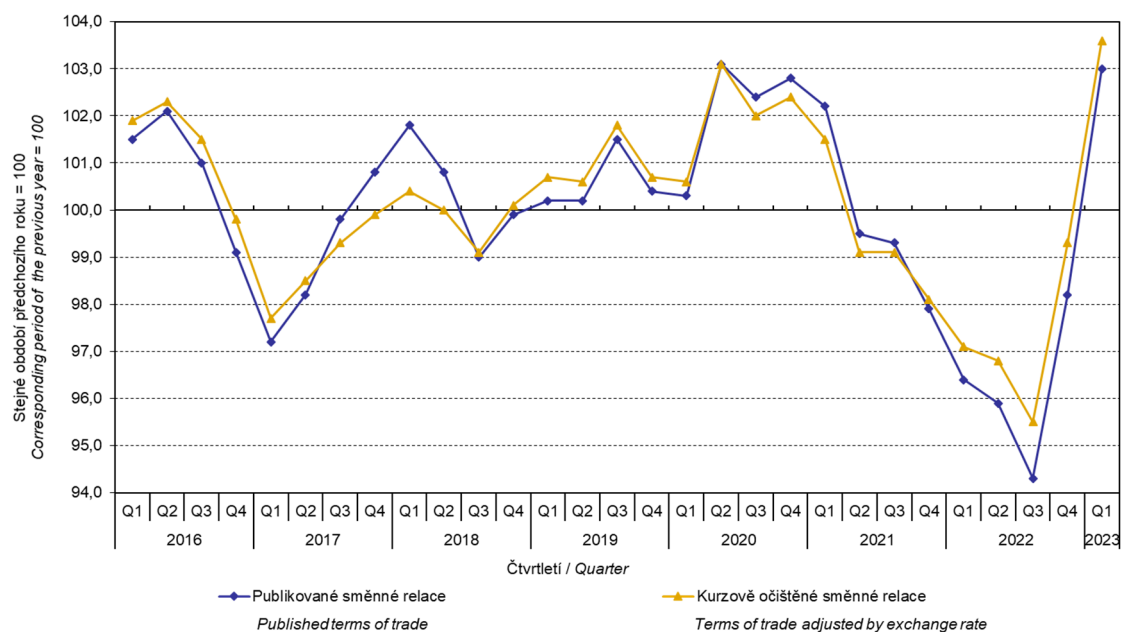
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Graf č. 7 Vývoj indexů dovozních cen meziročně
Chart No 7 Trend in import price indices, y-o-y



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

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



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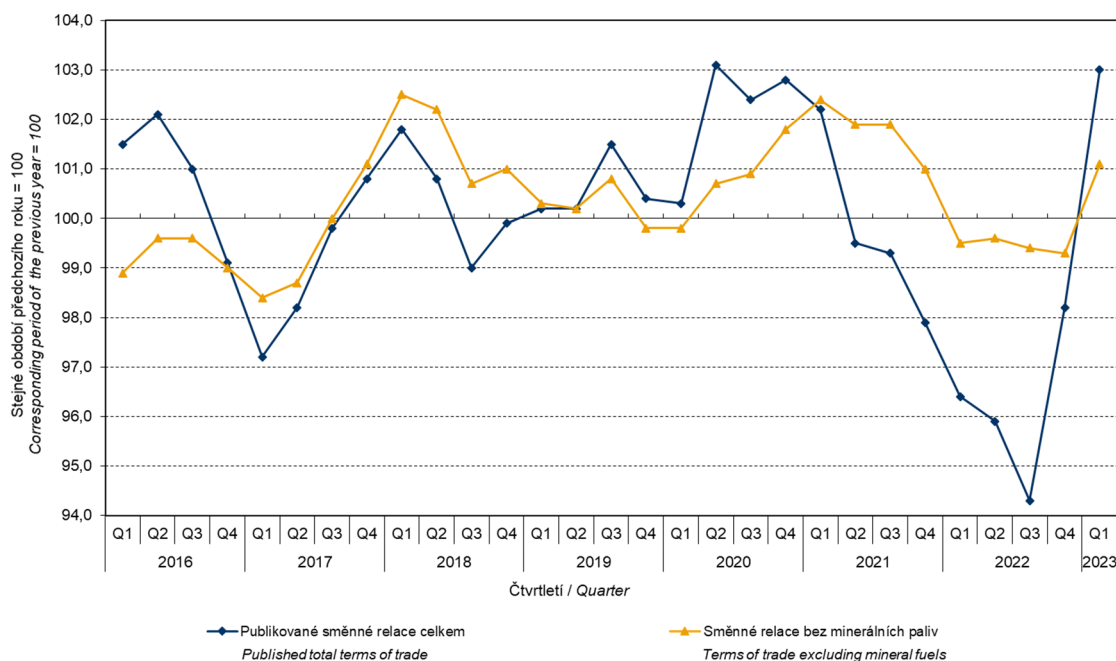
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Graf č.9 Publikované směnné relace a směnné relace s vyloučením minerálních paliv meziročně
Chart No 9 Published terms of trade and terms of trade excluding mineral fuels, y-o-y



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 Q1 2021, 'mineral fuels, lubricants and related materials' were decreasing the value of the terms of trade; however, in the Q1 2023 there was a turnaround and 'mineral fuels, lubricants and related materials' started to increase 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 Q1 2023, the exchange rate effect decreased both the export price index and the import prices index, year-on-year. Export prices were increasing faster than import prices and therefore the terms of trade reached positive values. After elimination of the exchange rate effect, the terms of trade were higher than the published terms of trade; however, in both cases, they headed to positive values for the first time since the Q2 2021. Values free of the exchange rate effect correspond to the exchange rate adjusted indices – see the Charts Nos. 6, 7, and 8.

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Tabulka 1 Rozklad přírůstků publikovaných a kurzově očištěných indexů cen vývozu a dovozu za 1. čtvrtletí 2023
Table 1 Breakdown of increments of export and import price indices - published and exchange rate adjusted for Q1 2023

SITC	Název Name	Publikované Published					Očištěné o kurzové míry Exchange rate adjusted				
		Meziroční Year-on-year					Meziroční Year-on-year				
		Q4/2022	01/2023	02/2023	03/2023	Q1/2023	Q4/2022	01/2023	02/2023	03/2023	Q1/2023
Rozklad přírůstků indexů vývozních cen <i>Breakdown of increments of export price indices</i>											
	Celkem <i>Total</i>	9,8	8,6	7,6	2,7	6,3	12,7	10,4	10,1	7,0	9,2
0	Potraviny a živá zvířata <i>Food and live animals</i>	0,9	0,8	0,6	0,2	0,5	1,0	0,8	0,7	0,3	0,6
1	Nápoje a tabák <i>Beverages and tobacco</i>	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	-0,1	-0,1	-0,3	-0,6	-0,3	0,0	-0,1	-0,3	-0,5	-0,3
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	3,6	3,1	3,2	1,7	2,6	3,7	3,2	3,3	2,0	2,9
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	0,8	0,3	0,2	-0,1	0,2	1,0	0,4	0,4	0,2	0,3
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	2,9	2,1	1,7	0,6	1,4	3,5	2,5	2,2	1,3	2,0
7	Stroje a dopravní prostředky - z toho: <i>Machinery and transport equipment - thereof:</i>	1,2	1,8	1,6	0,6	1,4	2,7	2,8	3,0	2,9	2,9
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	0,4	0,5	0,4	0,4	0,5	0,7	0,7	0,6	0,7	0,7
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	0,2	0,2	0,2	-0,1	0,1	0,3	0,3	0,3	0,1	0,3
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	0,0	0,4	0,3	0,0	0,2	1,0	1,0	1,1	1,2	1,1
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	0,4	0,5	0,5	0,2	0,4	0,7	0,7	0,7	0,7	0,7
Rozklad přírůstků indexů dovozních cen <i>Breakdown of increments of import price indices</i>											
	Celkem <i>Total</i>	11,8	8,1	4,9	-2,8	3,2	13,5	9,2	6,6	0,9	5,4
0	Potraviny a živá zvířata <i>Food and live animals</i>	1,3	1,2	1,1	0,6	1,0	1,4	1,3	1,2	0,8	1,0
1	Nápoje a tabák <i>Beverages and tobacco</i>	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	0,1	0,2	0,1	-0,1	0,0	0,2	0,2	0,1	0,0	0,1
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	5,4	3,3	1,7	-2,5	0,7	5,4	3,3	1,8	-2,0	1,0
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	0,7	0,3	0,1	-0,5	0,0	1,1	0,5	0,3	0,0	0,3
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	2,1	1,2	0,3	-0,7	0,2	2,6	1,5	0,8	0,1	0,8
7	Stroje a dopravní prostředky - z toho: <i>Machinery and transport equipment - thereof:</i>	0,9	0,8	0,6	-0,3	0,3	1,4	1,2	1,2	1,0	1,1
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	-0,1	-0,1	0,0	-0,1	-0,1	0,1	0,1	0,1	0,2	0,1
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	0,3	0,2	0,0	-0,1	0,0	0,2	0,1	0,0	0,0	0,0
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	0,0	0,0	0,1	-0,1	0,0	0,2	0,1	0,2	0,2	0,2
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	0,4	0,5	0,4	0,2	0,4	0,7	0,7	0,7	0,5	0,6
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	1,1	0,9	0,8	0,5	0,8	1,2	1,0	1,0	0,8	0,9

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

Tabulka 2 Indexy cen vývozu a dovozu v 1. čtvrtletí 2023

Table 2 Export and import price indices in Q1 2023

SITC	Název Name	Stejně období předchozího roku = 100 Corresponding period of the previous year = 100				
		Q4/2022	01/2023	02/2023	03/2023	Q1/2023
		Indexy vývozních cen <i>Export price indices</i>				
	Celkem <i>Total</i>	109,8	108,6	107,6	102,7	106,3
0	Potraviny a živá zvířata <i>Food and live animals</i>	120,8	119,0	114,7	103,6	112,1
1	Nápoje a tabák <i>Beverages and tobacco</i>	111,3	121,8	119,2	118,8	119,9
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	98,4	95,7	91,2	84,2	90,1
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	164,3	149,7	151,9	123,5	140,5
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	112,1	105,4	103,3	99,1	102,5
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	114,0	110,2	108,1	102,7	106,9
7	Stroje a dopravní prostředky <i>Machinery and transport equipment</i>	102,3	103,9	103,4	101,4	102,9
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	105,9	107,8	106,3	105,6	106,5
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	102,3	103,0	102,7	98,8	101,5
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	100,1	101,8	101,3	99,9	101,0
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	104,3	105,1	105,1	102,3	104,2
		Indexy dovozních cen <i>Import price indices</i>				
	Celkem <i>Total</i>	111,8	108,1	104,9	97,2	103,2
0	Potraviny a živá zvířata <i>Food and live animals</i>	121,5	120,2	118,1	109,7	115,8
1	Nápoje a tabák <i>Beverages and tobacco</i>	120,6	123,5	123,5	124,6	123,9
2	Suroviny nepoživatelné, s výjimkou paliv <i>Crude materials, inedible, except fuels</i>	106,6	107,5	102,9	94,8	101,4
3	Minerální paliva, maziva a příbuzné materiály <i>Mineral fuels, lubricants and related materials</i>	146,8	127,5	114,0	82,8	105,6
5	Chemikálie a příbuzné výrobky <i>Chemicals and related products</i>	105,9	102,4	100,6	96,2	99,7
6	Tržní výrobky tříděné hlavně podle materiálu <i>Manufactured goods classified chiefly by material</i>	110,0	105,6	101,7	96,6	101,2
7	Stroje a dopravní prostředky <i>Machinery and transport equipment</i>	102,4	102,1	101,6	99,0	100,9
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	98,6	99,4	99,3	97,7	98,8
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	106,7	103,9	100,3	96,5	100,2
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	100,1	99,7	100,9	98,9	99,8
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	104,5	105,8	104,8	101,8	104,1
8	Průmyslové spotřební zboží <i>Miscellaneous manufactured articles</i>	111,6	110,2	108,9	106,2	108,4

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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