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## **Vývoj indexů cen v zahraničním obchodě - 4. čtvrtletí 2017**

Klimesš, Vladimír  
2018

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## ANALYSIS

16 February 2018

### External Trade Price Indices Development in Q4 2017 and in the Year 2017

In Q4 2017, compared to Q3 2017, export prices and import prices decreased by 0.8% and by 0.5%, respectively. Terms of trade reached the value of 99.7%. Compared year-on year (y-o-y), in Q4 2017 export prices fell by 2.4%, import prices declined by 3.2%, and terms of trade reached the value of 100.8%.

#### Quarter-on-quarter (q-o-q) comparison

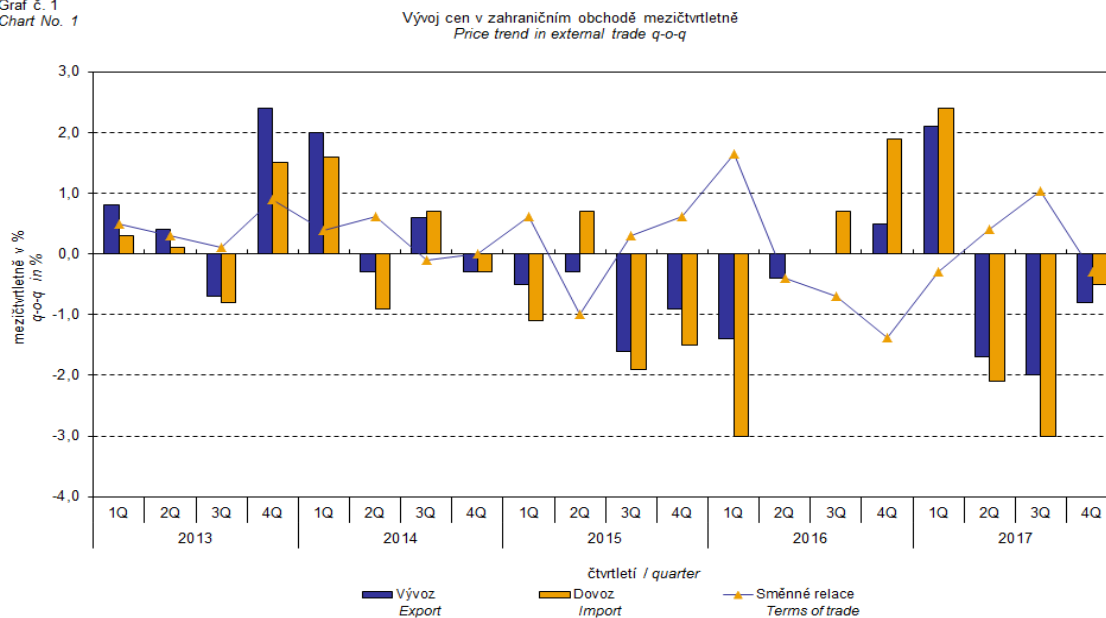
Export prices in Q4 2017, compared to Q3 2017, decreased by 0.8% (in Q3 2017 they fell by 2.0%). Price decreases were observed in 'food and live animals' by 1.9%, 'miscellaneous manufactured articles' by 1.8%, and in 'machinery and transport equipment' by 1.2%. Price increases were recorded in 'mineral fuels lubricants and related materials' by 4.5% and in 'crude materials, inedible, except fuels' by 0.5%.

Import prices in Q4 2017, compared to Q3 2017, decreased by 0.5% (in Q3 2017 they decreased by 3.0%). Price decreases were recorded for 'crude materials, inedible, except fuels' by 4.9%, 'food and live animals' by 3.5%, and for 'machinery and transport equipment' by 1.4%. A highest price increase was recorded for 'mineral fuels, lubricants and related materials' by 7.1%.

The terms of trade figures in Q4 2017, compared to Q3 2017, reached the value of 99.7% (in Q3 2017 they stayed at 101.0%). Negative values of terms of trade were recorded namely for 'mineral fuels, lubricants and related materials' (97.6%), 'miscellaneous manufactured articles' (99.0%), and for 'chemicals and related products' (99.6%). Positive values of terms of trade were recorded for 'crude materials, inedible, except fuels' (105.7%), 'food and live animals' (101.7%), and for 'machinery and transport equipment' (100.2%).

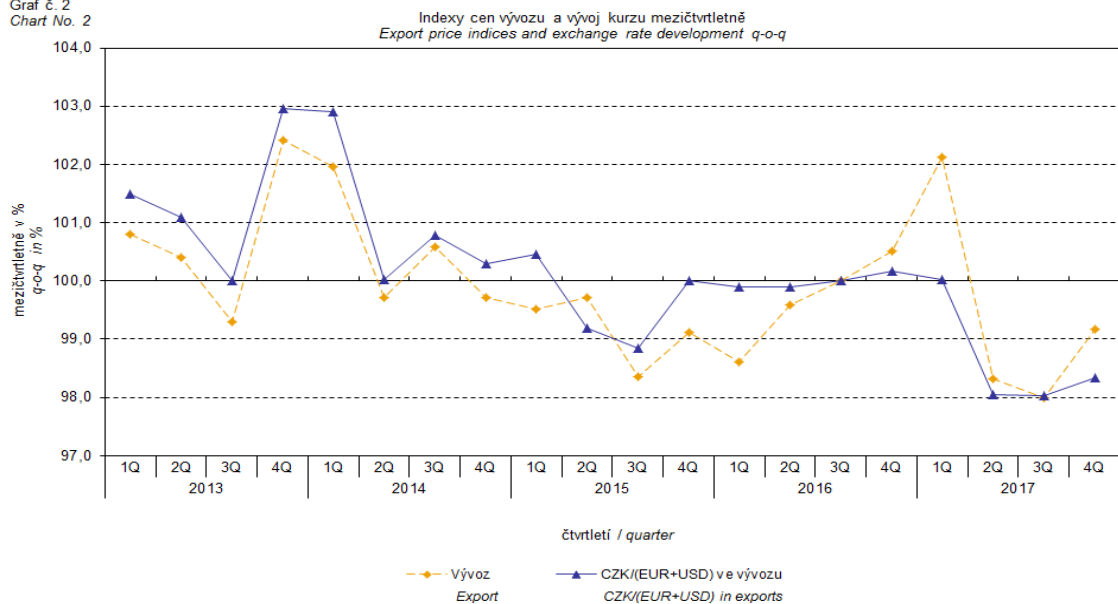
## ANALYSIS

Graf č. 1  
Chart No. 1



The external trade price development was also significantly affected by the CZK exchange rate to the major foreign currencies. The q-o-q exchange rate index includes two most important currencies from the Czech Republic's external trade point of view, i.e. EUR and USD. Q-o-q indices of the CZK exchange rate to these currencies were weighted by the weight, which pertains to those foreign currencies in the export price index and import price index, respectively.

Graf č. 2  
Chart No. 2



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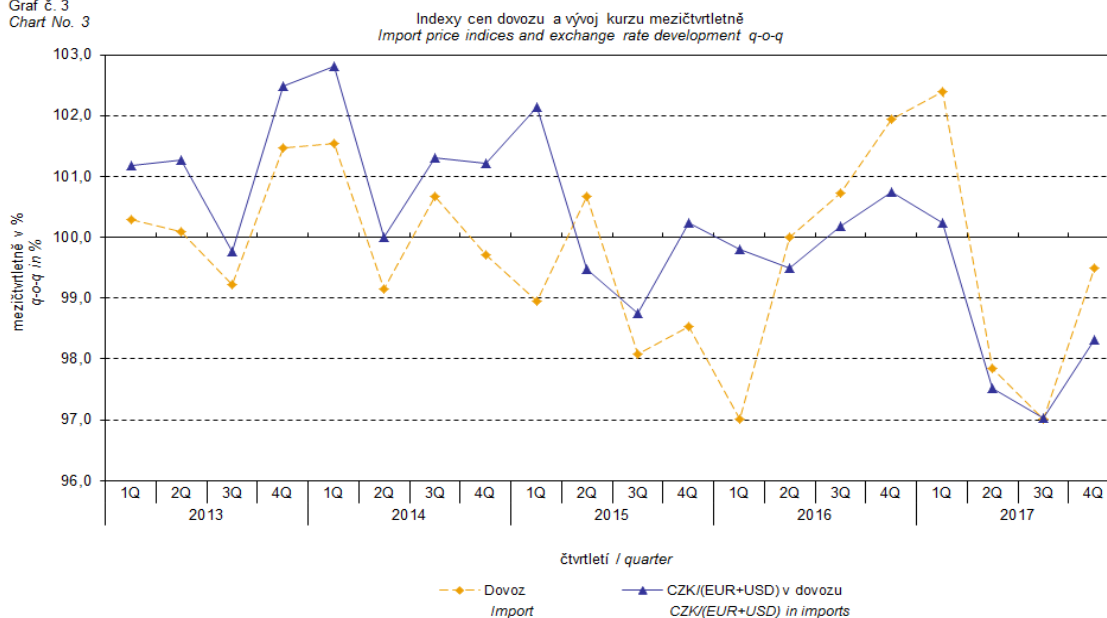
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Graf č. 3  
Chart No. 3



It can be seen from the aforementioned Graphs Nos. 2 and 3 that in both cases of imports and exports external trade prices have a strong relation to exchange rate impacts. Contracts with foreign entities are, as a rule, signed for a longer period of time and the longer the contract period is, the stronger the relation to exchange rates is.

### Year-on-year (y-o-y) comparison

Export prices in Q4 2017 decreased by 2.4% (in Q3 2017 they fell by 1.1%), year-on-year. Declines were recorded for prices of 'machinery and transport equipment' by 4.4%, 'miscellaneous manufactured articles' by 4.1%, and of 'chemicals and related products' by 1.7%. The most growing prices were namely those of 'crude materials, inedible, except fuels' by 6.4%, and 'mineral fuels, lubricants and related materials' by 4.5%.

Import prices in Q4 2017 declined by 3.2% (in Q3 2017 they declined by 0.9%), year-on-year. Prices that declined were those for 'machinery and transport equipment' by 6.5%, 'miscellaneous manufactured articles' by 5.1%, and for 'food and live animals' by 3.0%. Prices grew most for 'manufactured goods classified chiefly by material' by 2.1% and for 'mineral fuels, lubricants and related materials' by 1.6%.

Terms of trade in Q4 2017 increased year-on-year to reach the value of 100.8% (in Q3 2017 they were 99.8%) and they moved into positive values after four consecutive quarters being in negative ones, see Graph No. 4 below. Positive values of terms of trade were recorded namely for 'crude materials, inedible, except fuels' (108.7%), 'mineral fuels, lubricants and related materials' (102.9%), and for 'machinery and transport equipment' (102.2%). The lowest negative

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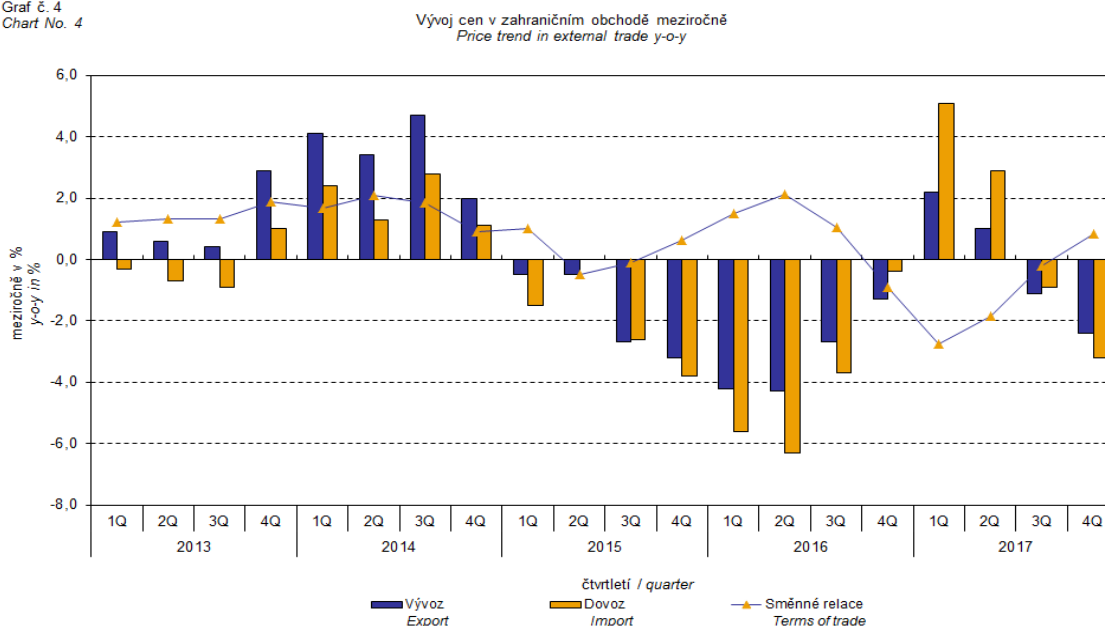
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values of terms of trade was recorded for 'manufactured goods classified chiefly by material' (98.5%), followed by those for 'chemicals and related products' (99.6%).

Graf č. 4  
Chart No. 4



### Price development in 2017

On average over the whole year 2017, compared to the year 2016, export prices decreased by 0.1% (in 2016 they declined by 3.1%). Import prices increased by 0.9% (in 2016 they dropped by 4.0%).

In export prices decreases were noticed in groups of 'machinery and transport equipment' by 2.2% and of 'miscellaneous manufactured articles' by 1.0%. Growing prices were namely those of 'mineral fuels, lubricants and related materials' by 16.3%, 'crude materials, inedible, except fuels' by 10.3%, and of 'food and live animals' by 2.2%.

In import prices significant price increases were recorded in 'mineral fuels, lubricants and related materials' by 13.9%, 'crude materials, inedible, except fuels' by 10.3%, and in 'manufactured goods classified chiefly by material' by 4.9%. Price declines were recorded most in 'machinery and transport equipment' by 2.9% and in 'miscellaneous manufactured articles' by 2.2%.

Terms of trade reached in total in 2017 the value of 99.9% (they were 100.9% in 2016).

### External trade price indices adjusted y-o-y for exchange rate influence

The CZSO also carries out calculations of year-on-year external trade price indices adjusted for effects of exchange rate. The method is prices in foreign currencies reported in the current month are **converted** into Czech crowns by the **exchange rate** of the same month **of the last**

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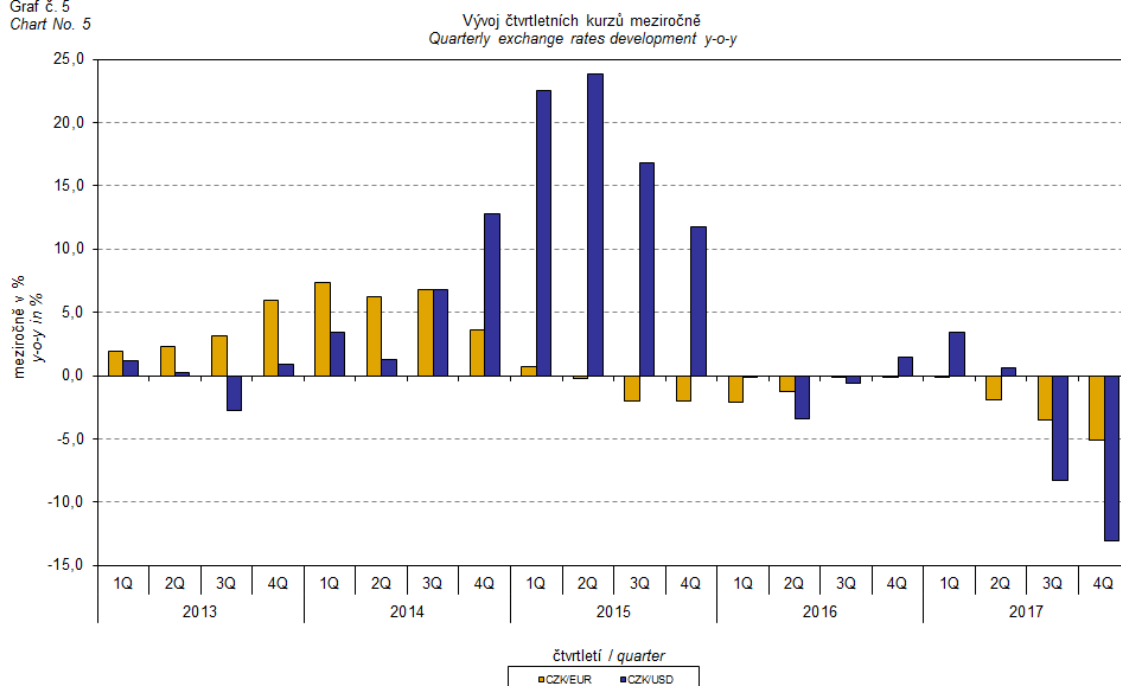
year. Then they are used for the weighted mean calculation along with prices reported in CZK. The year-on-year adjusted price index for a month is then calculated the way that this exchange rate adjusted base price index of a month is related to the non-adjusted base price index of the same month of the last year. Adjusted quarter-on-quarter price indices are calculated in an analogous way since 2017. **Differences among adjusted and non-adjusted price indices may be substantial.** They can be clearly seen in Graphs Nos. 6 and 7 for Q3 2014, for instance.

The method employed does not enable, for many practical reasons, to carry out 100% exchange rate adjustment because all trade transactions concluded in foreign currencies are not reported in foreign currencies. This share is up to 30%. It follows from the aforementioned, that **at the full exchange rate adjustment differences** in between the price indices published and the exchange rate adjusted price indices **would be even larger.**

The aforementioned exchange rate adjusted indices can be used to form the exchange rate adjusted breakdown of price indices increments. Table 1 gives the **published and exchange rate adjusted breakdowns of increments** of export and import price indices, expanded to the most important two-digit code groups of the SITC 7. These breakdowns illustrate, in a good manner, how many percentage points each of the groups “exchange rate contributed” to the index.

It holds in general, that the effects of exchange rate decrease the value of price indices in external trade if CZK is strengthening to foreign currencies in total. Conversely, the effects of exchange rate push the price indices up if CZK is weakening to foreign currencies in total.

Graf č. 5  
Chart No. 5



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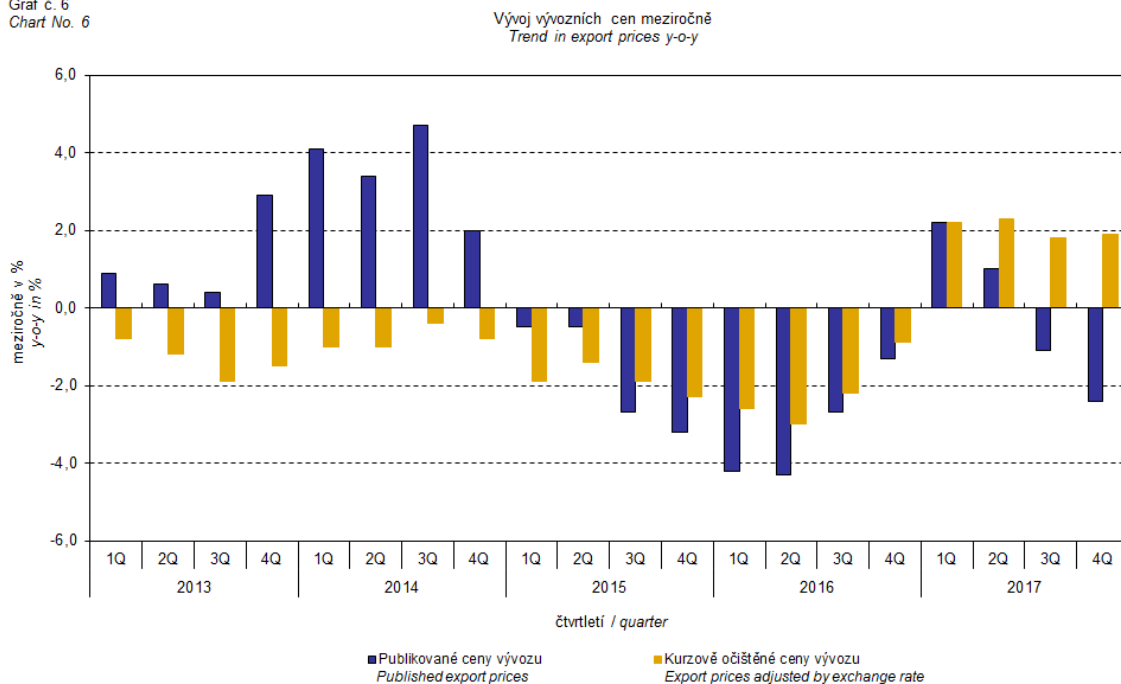
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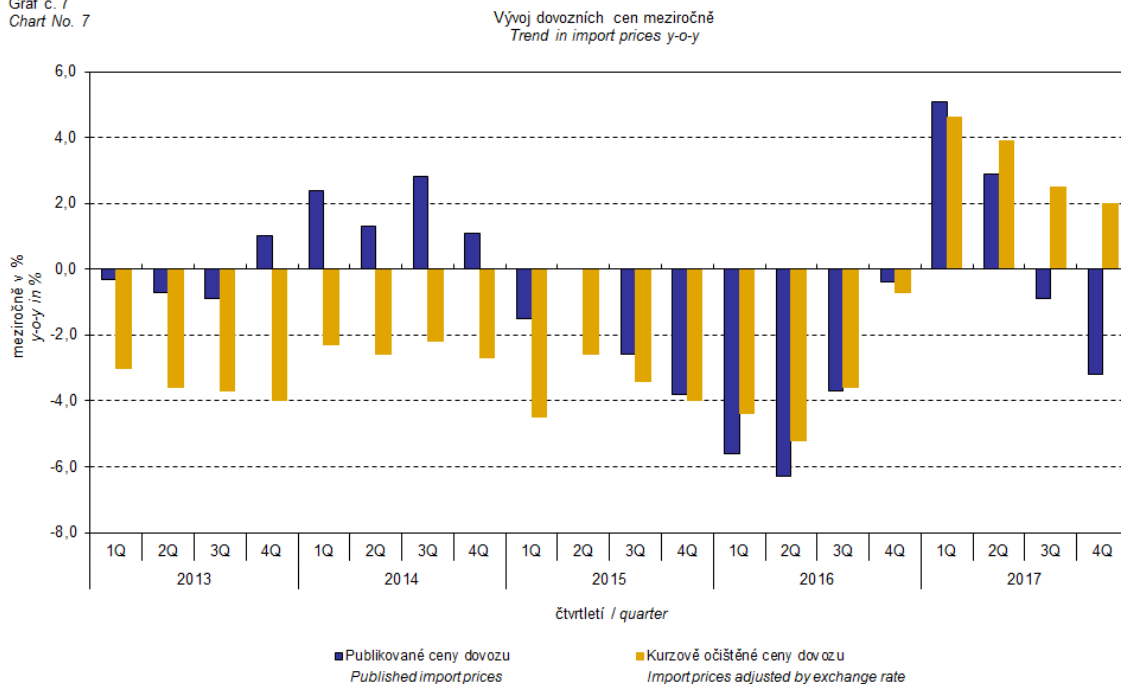
## ANALYSIS

It is obvious from the following Graphs Nos. 6 and 7, how significant was the exchange rate impact on the value of export and import price indices.

Graf č. 6  
Chart No. 6



Graf č. 7  
Chart No. 7



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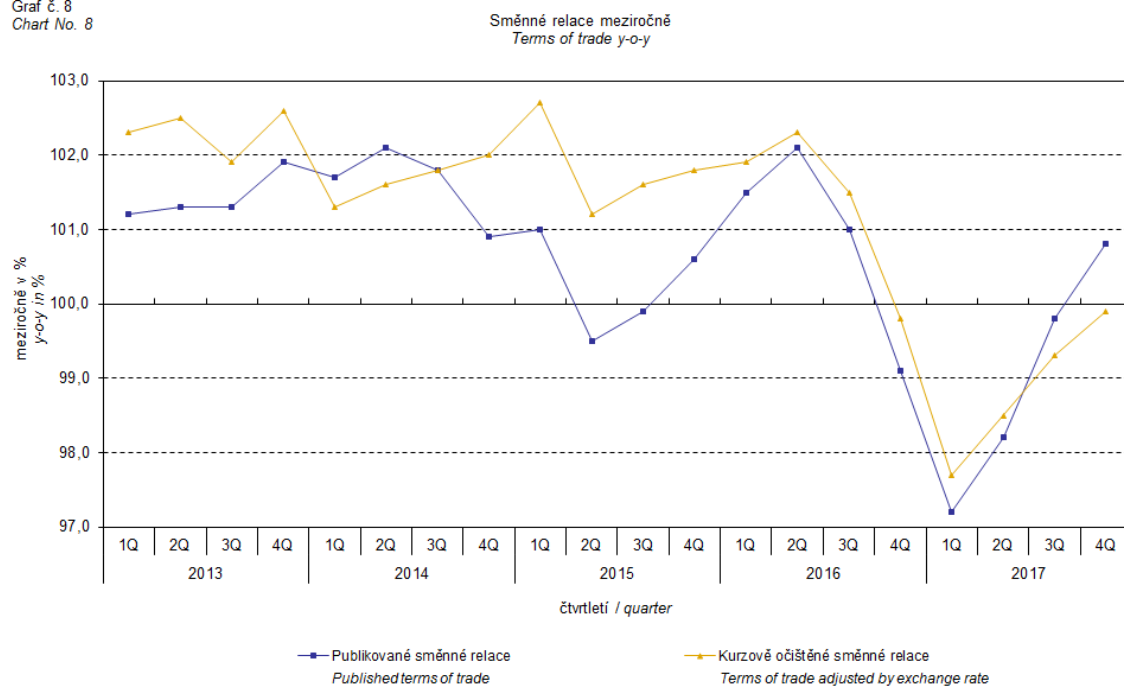
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Graph No. 8 shows exchange rate influence on the value of year-on-year terms of trade.

Graf č. 8  
Chart No. 8



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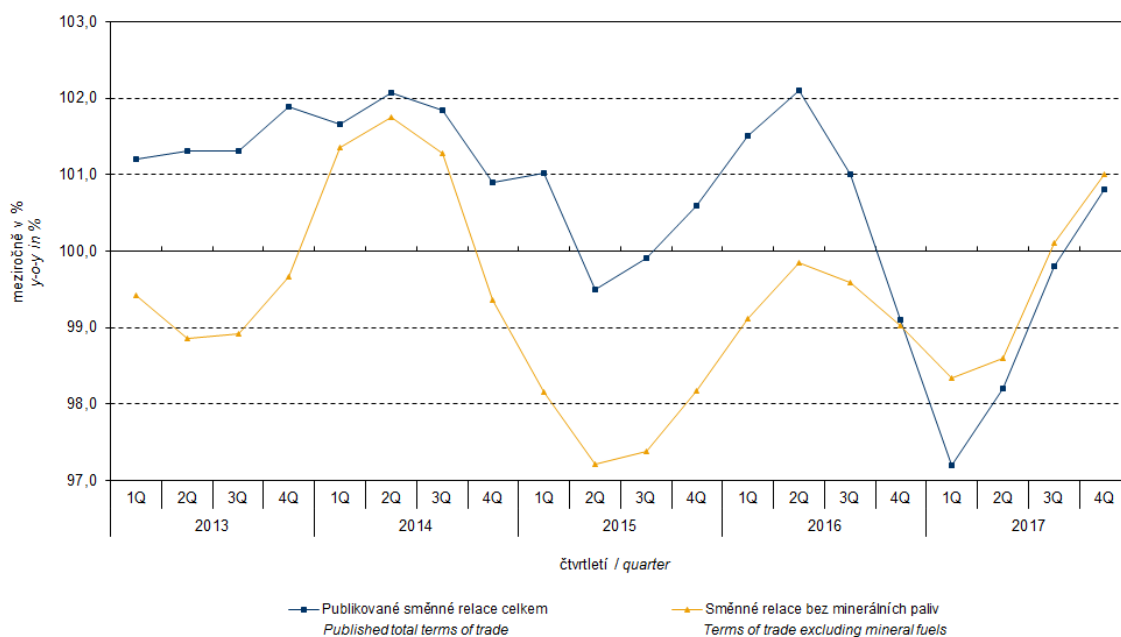


## ANALYSIS

Graph No. 9 demonstrates how the value of terms of trade would develop if the observed groups of goods would not include that of 'mineral fuels, lubricants and related materials'.

Graf č.9  
Chart No. 9

Publikované směnné relace a směnné relace s vyloučením minerálních paliv meziročně  
Published terms of trade and terms of trade excluding mineral fuels y-o-y



It can be observed in Graph No. 9 that the effects of 'mineral fuels, lubricants and related materials' were increasing the overall value of y-o-y terms of trade till Q4 2016. In Q1 2017 the situation began to reverse and 'mineral fuels, lubricants and related materials' have had a downward effect on the value of terms of trade. It is, of course, related to the world market price development, especially in crude oil. Import prices, which, compared to export prices, include a higher proportion of crude materials, respond in a more sensitive way to price turbulences and therefore when prices of crude materials go up, terms of trade, as a rule, go down, and, conversely, when prices of crude materials fall, terms of trade grow.

### Closing summary

The exchange rate effects in Q4 2017 caused a decline in export and import prices year-on-year. If there were no exchange rate effects the indices would be growing. Export prices declined less than import prices, year-on-year, and therefore terms of trade reached positive values. If exchange rate unadjusted, terms of trade would be negative. Values free of the exchange rate effects correspond to exchange rate adjusted indices, see Graphs Nos. 6, 7, and 8.

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**Tabulka 1: Rozklad přírůstků publikovaných a kurzově očištěných indexů cen vývozu a dovozu za 4. čtvrtletí 2017**  
**Table 1: Breakdown of export and import price indices - published and exchange rate adjusted for 4Q 2017**

SITC	Název Name	Publikované Published				Očištěné Adjusted					
		Meziroční Year-on-year				Meziroční Year-on-year					
		3Q/2017	10/2017	11/2017	12/2017	4Q/2017	3Q/2017	10/2017	11/2017	12/2017	4Q/2017
<b>Rozklad přírůstků indexů vývozních cen</b> <i>Breakdown of export price indices</i>											
	<b>Celkem</b> <i>Total</i>	-1,1	-1,7	-2,7	-2,8	-2,4	1,8	2,1	2,0	1,6	1,9
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	0,1	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,0	0,0
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,1
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	0,2	0,3	0,1	0,1	0,2	0,3	0,4	0,2	0,2	0,3
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	0,3	0,2	0,2	0,1	0,1	0,4	0,3	0,3	0,2	0,3
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	-0,1	-0,1	-0,2	-0,1	-0,1	0,1	0,2	0,2	0,3	0,2
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	0,2	0,2	0,1	0,1	0,1	0,7	0,8	0,8	0,8	0,8
7	<b>Stroje a dopravní prostředky - z toho:</b> <i>Machinery and transport equipment - thereof:</i>	-1,6	-1,9	-2,4	-2,6	-2,3	0,1	0,3	0,3	0,0	0,2
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	-0,2	-0,2	-0,3	-0,2	-0,2	0,1	0,2	0,2	0,2	0,2
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	-0,1	-0,2	-0,3	-0,5	-0,3	0,1	0,1	0,0	-0,1	0,0
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	-0,7	-0,8	-0,9	-0,9	-0,8	-0,1	0,0	0,0	0,0	0,0
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	-0,2	-0,4	-0,5	-0,4	-0,4	0,1	0,0	0,0	0,0	0,0
<b>Rozklad přírůstků indexů dovozních cen</b> <i>Breakdown of import price indices</i>											
	<b>Celkem</b> <i>Total</i>	-0,9	-2,2	-3,3	-4,2	-3,2	2,5	2,3	2,2	1,4	2,0
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	0,1	-0,1	-0,2	-0,2	-0,2	0,2	0,1	0,0	-0,1	0,0
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	0,0	0,0	0,0	0,0	0,0	0,1	0,0	0,0	0,1	0,0
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	0,1	0,0	0,0	-0,1	0,0	0,2	0,1	0,1	0,0	0,1
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	0,4	0,2	0,3	-0,1	0,1	0,8	0,7	1,0	0,7	0,8
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	0,0	-0,1	-0,2	-0,1	-0,1	0,2	0,3	0,3	0,3	0,3
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	0,7	0,6	0,3	0,1	0,4	1,2	1,3	1,2	0,9	1,1
7	<b>Stroje a dopravní prostředky - z toho:</b> <i>Machinery and transport equipment - thereof:</i>	-1,9	-2,4	-3,0	-3,2	-2,9	-0,2	-0,2	-0,4	-0,4	-0,3
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	-0,2	-0,3	-0,3	-0,3	-0,3	0,1	0,0	0,0	0,0	0,0
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	-0,4	-0,5	-0,5	-0,7	-0,6	-0,1	-0,1	-0,1	-0,2	-0,1
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	-0,5	-0,5	-0,7	-0,7	-0,7	0,0	0,1	0,0	0,0	0,0
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	0,0	-0,2	-0,3	-0,2	-0,2	0,2	0,0	0,0	0,1	0,0
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	-0,3	-0,4	-0,5	-0,6	-0,5	0,0	0,0	0,0	-0,1	0,0

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**ANALYSIS**

Closing table gives published external trade price indices **without adjustment**.

**Tabulka 2: Indexy cen vývozu a dovozu ve 4. čtvrtletí 2017**
**Table 2: Export and import price indices in Q4 2017**

SITC	Název Name	Stejně období předchozího roku = 100 Corresponding period of previous year = 100				
		3Q/2017	10/2017	11/2017	12/2017	4Q/2017
<b>Indexy vývozních cen</b> <i>Export price indices</i>						
	<b>Celkem</b> <i>Total</i>	98,9	98,3	97,3	97,2	97,6
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	102,4	100,6	99,2	97,9	99,2
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	99,9	101,4	104,8	105,2	103,8
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	108,6	110,2	104,4	104,6	106,4
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	109,6	105,9	106,1	101,7	104,5
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	102,2	95,6	91,1	92,7	93,1
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	99,3	98,8	97,6	98,7	98,3
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	101,1	101,1	100,4	100,4	100,6
7	<b>Stroje a dopravní prostředky</b> <i>Machinery and transport equipment</i>	97,0	96,3	95,5	95,1	95,6
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	98,2	96,4	95,6	95,8	95,9
<b>Indexy dovozních cen</b> <i>Import price indices</i>						
	<b>Celkem</b> <i>Total</i>	99,1	97,8	96,7	95,8	96,8
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	102,0	98,1	97,1	95,7	97,0
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	101,9	99,1	100,3	102,7	100,7
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	105,4	101,3	98,5	94,1	97,9
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	105,2	101,6	104,3	99,0	101,6
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	96,7	94,0	92,4	92,6	93,0
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	99,4	99,0	98,3	98,9	98,7
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	103,8	103,5	102,1	100,7	102,1
7	<b>Stroje a dopravní prostředky</b> <i>Machinery and transport equipment</i>	95,7	94,6	93,2	92,7	93,5
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	96,5	95,8	94,8	94,0	94,9

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