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### **Vývoj indexů cen v zahraničním obchodě - 3. čtvrtletí 2017**

Klimeš, Vladimír  
2017

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## ANALYSIS

16 November 2017

### External Trade Price Indices Development in Q3 2017

In Q3 2017 compared to Q2 2017, export prices and import prices decreased by 2.0% and by 3.0%, respectively, and terms of trade reached the value of 101.0%. Compared year-on-year (y-o-y), in Q3 2017 export prices fell by 1.1%, import prices declined by 0.9%, and terms of trade reached the value of 99.8%.

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

**Export prices** in Q3 2017, compared to Q2 2017, decreased by 2.0% (in Q2 2017 they fell by 1.7%). Price decreases were observed in 'mineral fuels, lubricants and related materials' by 4.9%, 'chemicals and related products' by 3.2%, 'machinery and transport equipment' by 2.3%, and in 'miscellaneous manufactured articles' by 1.6%. A price increase was recorded in none of the groups measured.

**Import prices** in Q3 2017, compared to Q2 2017, decreased by 3.0% (in Q2 2017 they decreased by 2.1%). Price decreases were recorded for 'crude materials, inedible, except fuels' by 10.6%, 'mineral fuels, lubricants and related materials' by 4.5%, 'machinery and transport equipment' by 3.3%, and for 'chemicals and related products' by 2.9%. A price increase was recorded in none of the groups measured.

The **terms of trade** figures in Q3 2017, compared to Q2 2017, reached the value of 101.0% (in Q2 2017 they stayed at 100.4%). Among the more important groups of goods higher positive values of terms of trade were recorded in 'crude materials, inedible, except fuels' (108.6%), 'food and live animals' (101.6%), and in 'machinery and transport equipment' (101.0%). Negative values of terms of trade were recorded in 'mineral fuels, lubricants and related materials' (99.6%), and in 'chemicals and related products' (99.7%).

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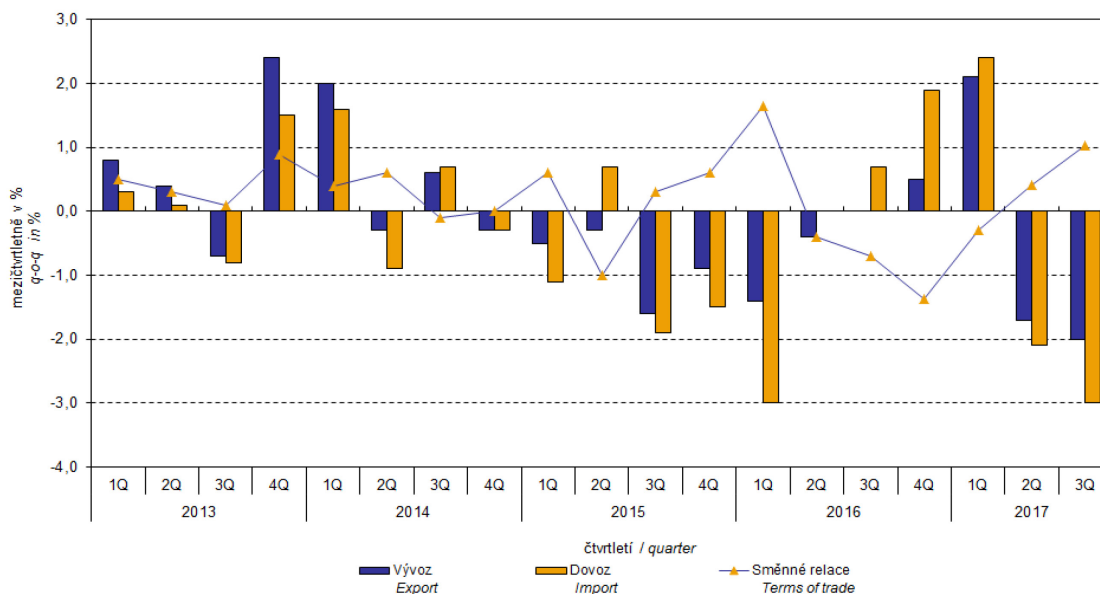
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## ANALYSIS

Graf č. 1  
Chart No. 1

Vývoj cen v zahraničním obchodě mezičtvrtletně  
Price trend in external trade q-o-q



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.

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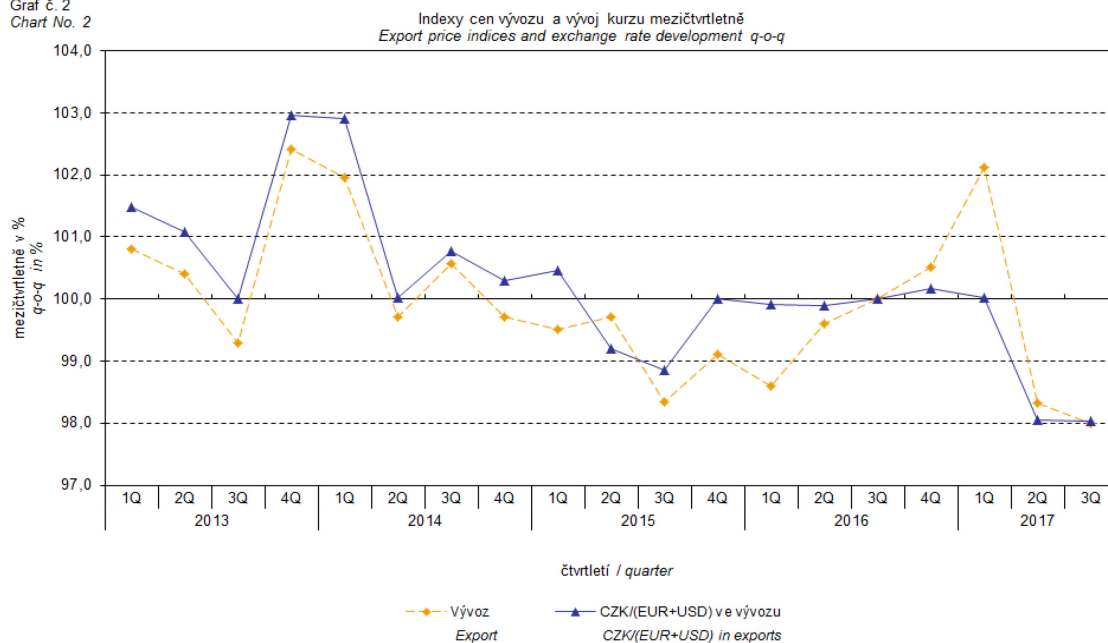
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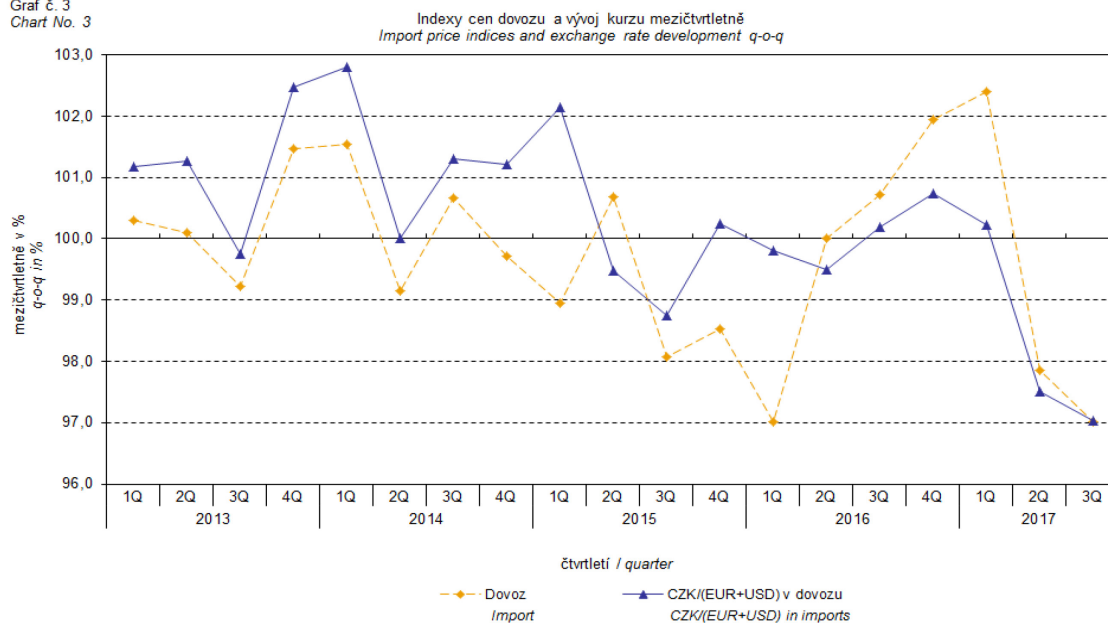
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Graf č. 2  
Chart No. 2



Graf č. 3  
Chart No. 3



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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 Q3 2017 decreased by 1.1% (in Q2 2017 they grew by 1.0%), year-on-year. Deeper declines were recorded for prices of 'machinery and transport equipment' by 3.0%, 'miscellaneous manufactured articles' by 1.8%, and 'chemicals and related products' by 0.7%. The growing prices were namely those of 'mineral fuels, lubricants and related materials' by 9.6%, 'crude materials, inedible, except fuels' by 8.6%, and 'food and live animals' by 2.4%.

**Import prices** in Q3 2017 declined by 0.9% (in Q2 2017 they increased by 2.9%), year-on-year. Prices that declined were those for 'machinery and transport equipment' by 4.3%, 'miscellaneous manufactured articles' by 3.5%, and for 'chemicals and related products' by 0.6%. Prices grew most for 'crude materials, inedible, except fuels' by 5.4%, 'mineral fuels, lubricants and related materials' by 5.2%, and for 'manufactured goods classified chiefly by material' by 3.8%.

**Terms of trade** in Q3 2017 increased year-on-year to reach the value of 99.8% (in Q2 2017 they were 98.2%) yet nevertheless they stayed in negative values in the fourth consecutive quarter, see Graph No. 4 below. Rather important negative values of terms of trade were recorded for 'manufactured goods classified chiefly by material' (97.4%), and for 'chemicals and related products' (99.9%). A positive value of terms of trade was recorded namely for 'mineral fuels, lubricants and related materials' (104.2%), 'crude materials, inedible, except fuels' (103.0%), and for 'machinery and transport equipment' (101.4%).

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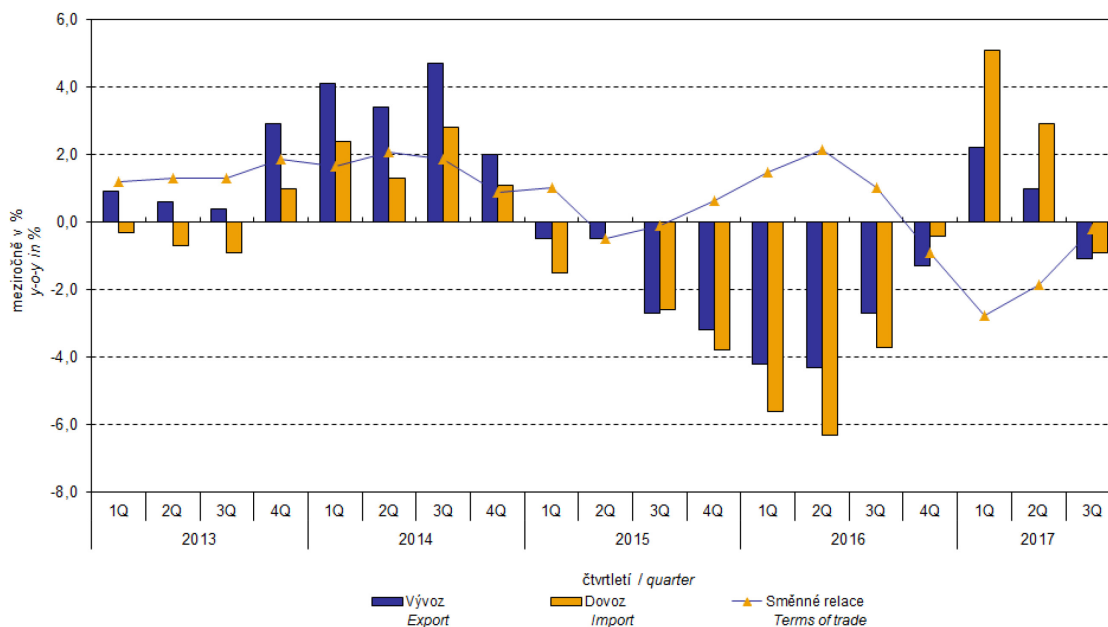
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## ANALYSIS

Graf č. 4  
Chart No. 4

Vývoj cen v zahraničním obchodě meziročně  
Price trend in external trade y-o-y



### 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 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

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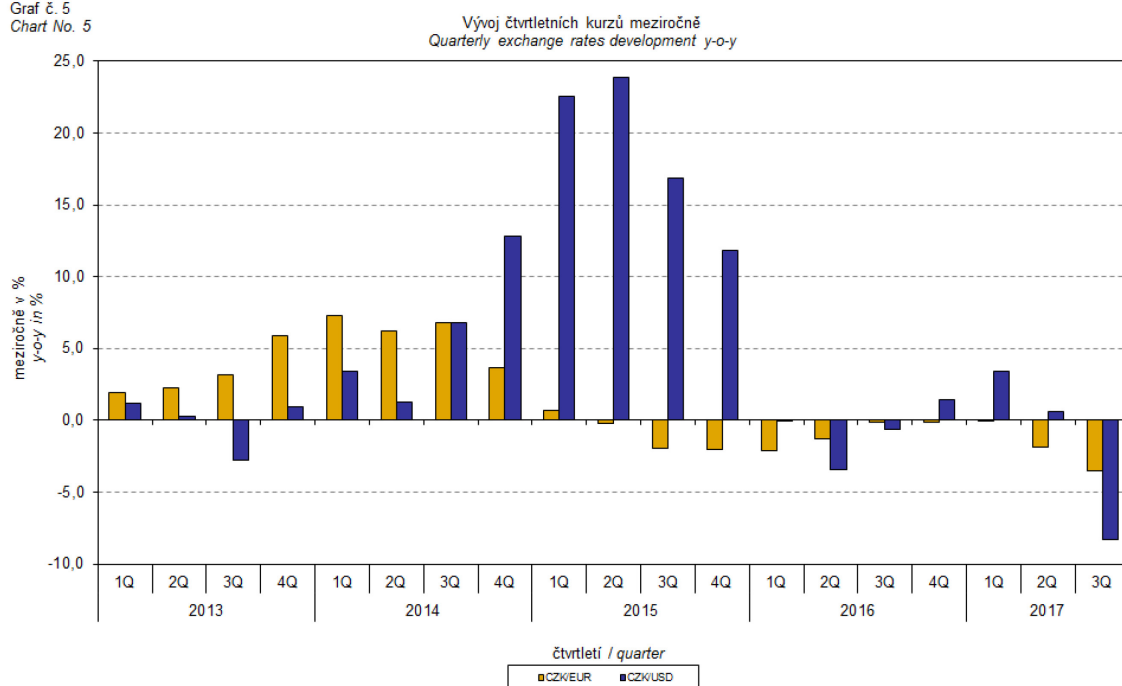
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## ANALYSIS

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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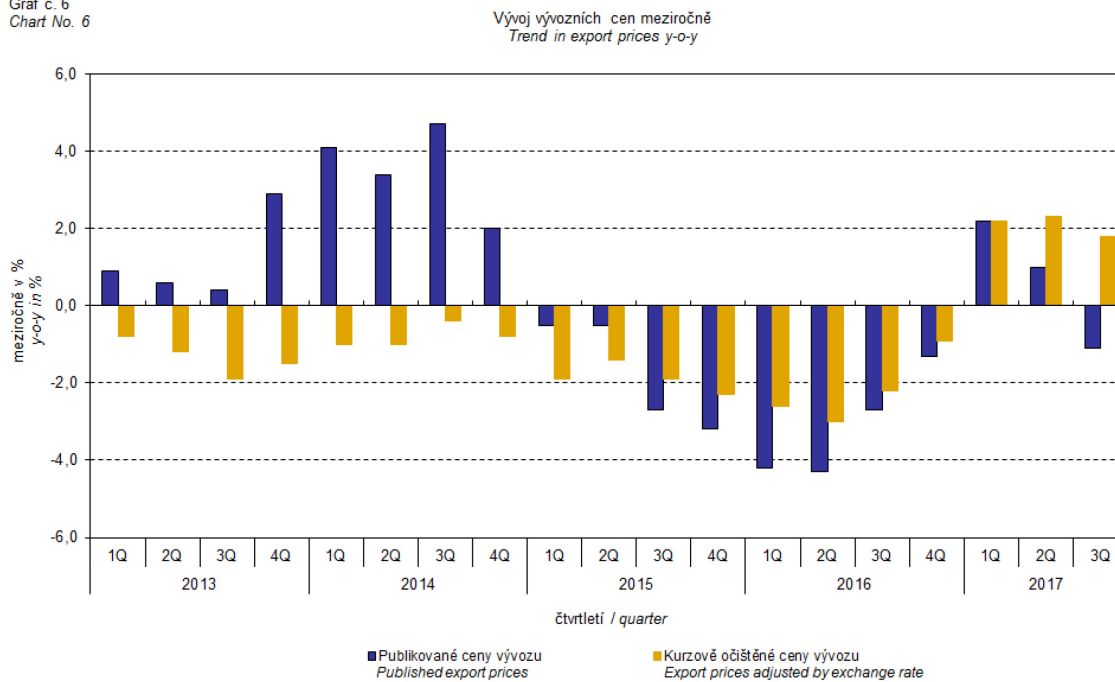
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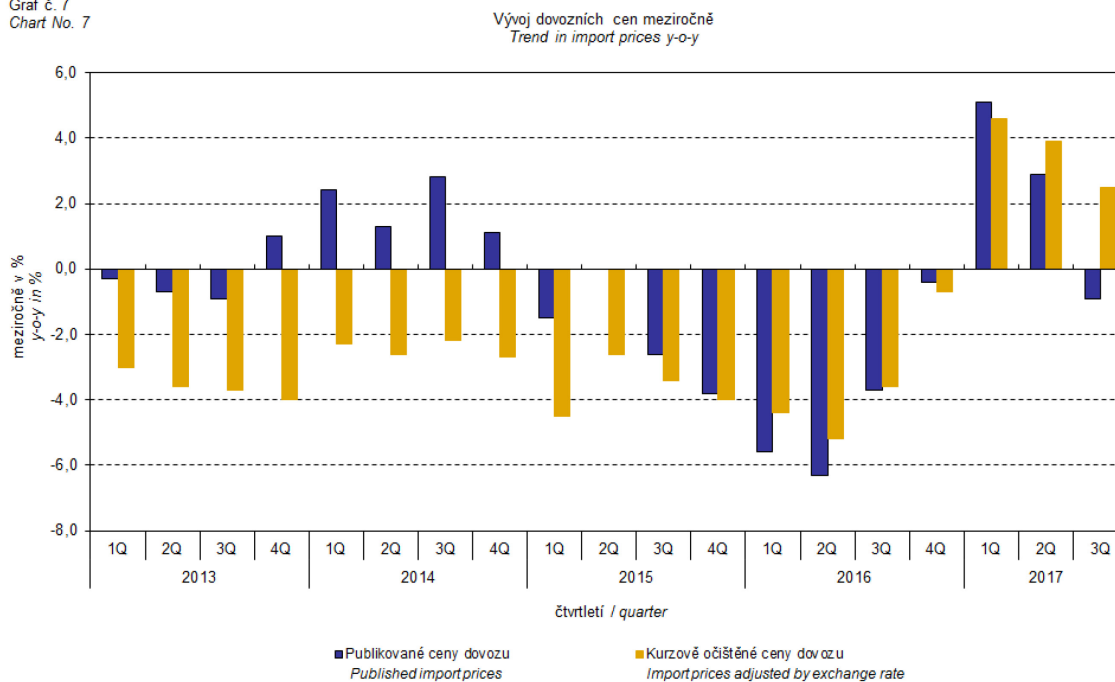
## ANALYSIS

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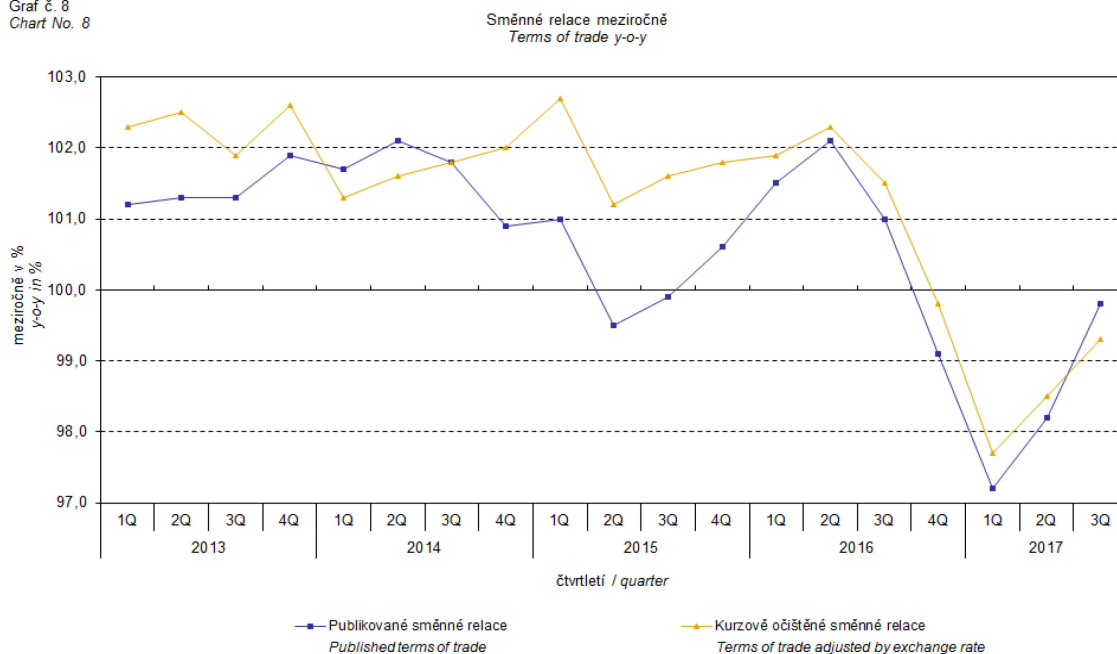
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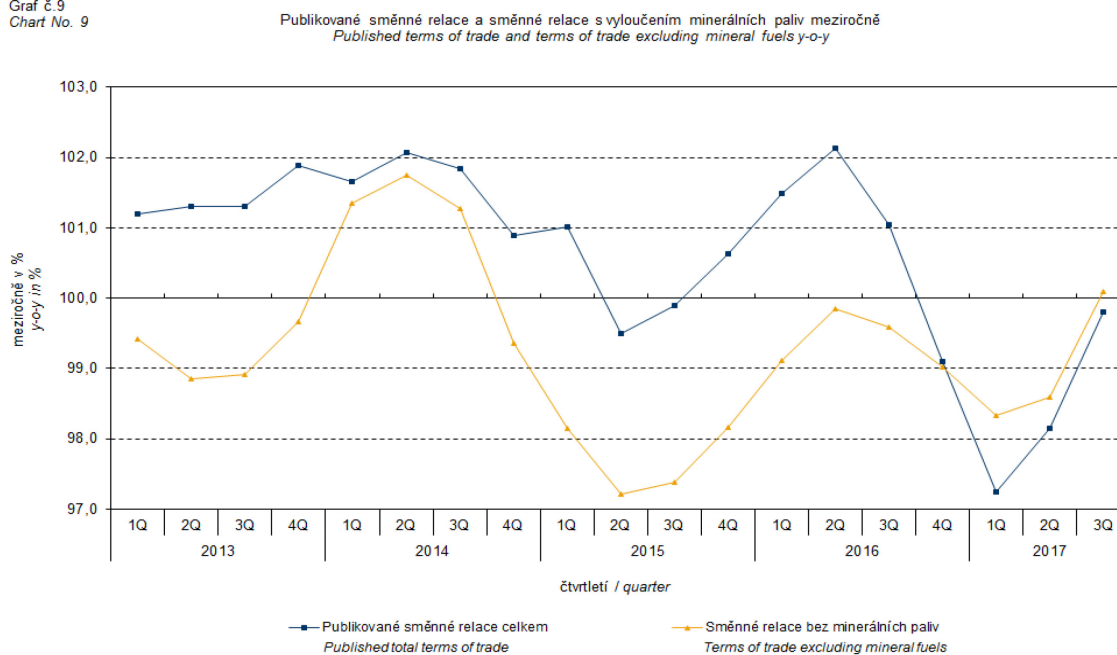
Graph No. 8 shows exchange rate influence on the value of year-on-year terms of trade.

Graf č. 8  
Chart No. 8



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



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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 Q3 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 more than import prices, year-on-year, and therefore terms of trade remained in negative values. If exchange rate unadjusted, terms of trade would remain negative as well. Values free of the exchange rate effects correspond to exchange rate adjusted indices, see Graphs Nos. 6, 7, and 8.

## ANALYSIS

**Tabulka 1: Rozklad přírůstků publikovaných a kurzově očištěných indexů cen vývozu a dovozu za 3. čtvrtletí 2017**  
**Table 1: Breakdown of export and import price indices - published and exchange rate adjusted for 3Q 2017**

SITC	Název Name	Publikované Published					Očištěné Adjusted				
		Meziroční Year-on-year					Meziroční Year-on-year				
		2Q/2017	07/2017	08/2017	09/2017	3Q/2017	2Q/2017	07/2017	08/2017	09/2017	3Q/2017
<b>Rozklad přírůstků indexů vývozních cen</b> <i>Breakdown of export price indices</i>											
	<b>Celkem</b> <i>Total</i>	1,0	-1,2	-1,2	-0,9	-1,1	2,3	1,7	1,7	2,2	1,8
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	0,1	0,1	0,1	0,0	0,1	0,2	0,1	0,1	0,1	0,1
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	0,0	0,0	0,0
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	0,3	0,2	0,2	0,3	0,2	0,4	0,3	0,3	0,4	0,3
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	0,5	0,2	0,3	0,3	0,3	0,5	0,3	0,4	0,4	0,4
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>	0,2	0,0	-0,1	0,0	-0,1	0,2	0,2	0,1	0,2	0,1
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	0,5	0,2	0,1	0,3	0,2	0,7	0,6	0,6	0,7	0,7
7	<b>Stroje a dopravní prostředky - z toho:</b> <i>Machinery and transport equipment - thereof:</i>	-0,7	-1,7	-1,6	-1,5	-1,6	0,1	0,0	0,1	0,3	0,1
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	-0,2	-0,3	-0,2	-0,2	-0,2	0,0	0,0	0,1	0,1	0,1
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	0,1	-0,1	-0,2	-0,1	-0,1	0,2	0,1	0,1	0,1	0,1
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	-0,4	-0,7	-0,7	-0,7	-0,7	-0,1	-0,1	-0,1	-0,1	-0,1
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	0,1	-0,2	-0,2	-0,3	-0,2	0,2	0,2	0,1	0,1	0,1
<b>Rozklad přírůstků indexů dovozních cen</b> <i>Breakdown of import price indices</i>											
	<b>Celkem</b> <i>Total</i>	2,9	-0,8	-1,1	-0,8	-0,9	3,9	2,5	2,3	2,7	2,5
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	0,3	0,2	0,1	0,0	0,1	0,4	0,3	0,2	0,1	0,2
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	0,0	0,1
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	0,5	0,2	0,1	0,1	0,1	0,5	0,3	0,2	0,2	0,2
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	1,2	0,3	0,3	0,5	0,4	1,3	0,7	0,7	0,9	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>	0,3	0,0	-0,1	0,0	0,0	0,4	0,3	0,2	0,3	0,2
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	1,2	0,6	0,7	0,8	0,7	1,4	1,1	1,2	1,3	1,2
7	<b>Stroje a dopravní prostředky - z toho:</b> <i>Machinery and transport equipment - thereof:</i>	-0,6	-1,8	-1,9	-1,9	-1,9	-0,1	-0,2	-0,3	-0,1	-0,2
74	Stroje a zařízení všeobecně užívané v průmyslu, j.n. <i>General industrial machinery and equipment, n.e.s.</i>	0,0	-0,2	-0,2	-0,2	-0,2	0,0	0,1	0,1	0,0	0,1
75	Kancelářské stroje a zař. k automat. zpracování dat <i>Office machines and automatic data-processing machines</i>	-0,1	-0,4	-0,4	-0,4	-0,4	0,1	-0,1	-0,1	-0,1	-0,1
77	Elektrická zařízení, přístroje a spotřebiče, j.n. <i>Electrical machinery, apparatus and appliances, n.e.s.</i>	-0,2	-0,6	-0,5	-0,5	-0,5	0,0	-0,1	-0,1	0,0	0,0
78	Silniční vozidla <i>Road vehicles (including air-cushion vehicles)</i>	0,0	0,0	0,0	0,0	0,0	0,1	0,2	0,2	0,2	0,2
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	0,0	-0,3	-0,3	-0,3	-0,3	0,0	0,0	0,0	0,0	0,0

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

Tabulka 2: Indexy cen vývozu a dovozu ve 3. čtvrtletí 2017

Table 2: Export and import price indices in Q3 2017

SITC	Název Name	Stejně období předchozího roku = 100 Corresponding period of previous year = 100				
		2Q/2017	7/2017	8/2017	9/2017	3Q/2017
<b>Indexy vývozních cen</b> <i>Export price indices</i>						
	<b>Celkem</b> <i>Total</i>	101,0	98,8	98,8	99,1	98,9
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	104,1	102,7	102,4	102,1	102,4
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	98,5	97,2	100,8	102,0	99,9
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	111,1	106,8	107,7	111,4	108,6
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	116,8	109,1	109,8	110,0	109,6
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	106,0	104,7	103,1	98,7	102,2
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	102,4	99,5	98,9	99,4	99,3
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	102,8	100,9	101,0	101,5	101,1
7	<b>Stroje a dopravní prostředky</b> <i>Machinery and transport equipment</i>	98,7	96,9	96,9	97,2	97,0
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	100,4	98,5	98,4	97,6	98,2
<b>Indexy dovozních cen</b> <i>Import price indices</i>						
	<b>Celkem</b> <i>Total</i>	102,9	99,2	98,9	99,2	99,1
0	<b>Potraviny a živá zvířata</b> <i>Food and live animals</i>	105,9	104,1	101,4	100,4	102,0
1	<b>Nápoje a tabák</b> <i>Beverages and tobacco</i>	104,0	102,0	102,1	101,7	101,9
2	<b>Suroviny nepoživatelné, s výjimkou paliv</b> <i>Crude materials, inedible, except fuels</i>	121,8	108,8	104,6	102,8	105,4
3	<b>Minerální paliva, maziva a příbuzné materiály</b> <i>Mineral fuels, lubricants and related materials</i>	117,5	104,4	104,5	106,9	105,2
4	<b>Živočišné a rostlinné oleje</b> <i>Animal and vegetable oils, fats and waxes</i>	100,9	99,4	96,0	94,9	96,7
5	<b>Chemikálie a příbuzné výrobky</b> <i>Chemicals and related products</i>	102,4	99,7	98,8	99,7	99,4
6	<b>Tržní výrobky tříděné hlavně podle materiálu</b> <i>Manufactured goods classified chiefly by material</i>	106,7	103,3	103,8	104,2	103,8
7	<b>Stroje a dopravní prostředky</b> <i>Machinery and transport equipment</i>	98,8	95,8	95,6	95,7	95,7
8	<b>Průmyslové spotřební zboží</b> <i>Miscellaneous manufactured articles</i>	99,5	96,4	96,7	96,4	96,5

Developed by: Vladimír Klimeš, Prices Statistics Department

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