



# ENERGY SECTOR IN MACROECONOMIC STATISTICS

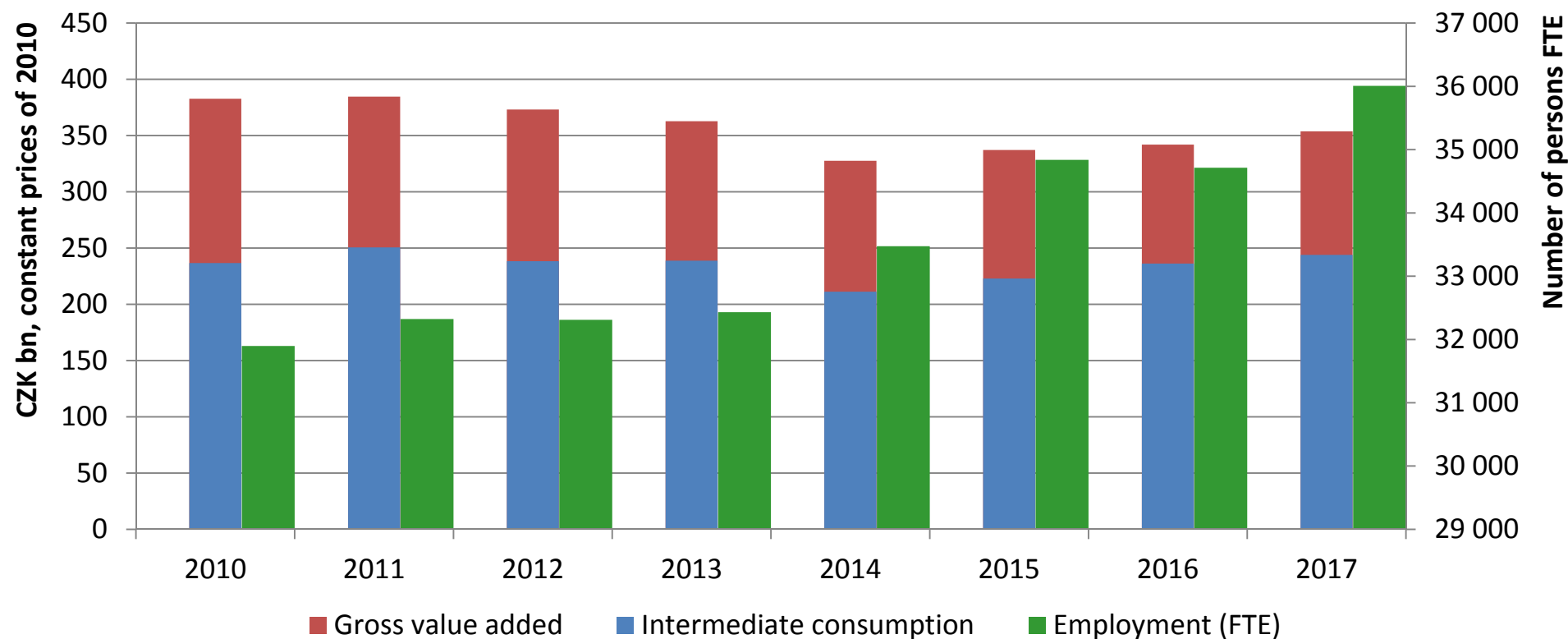
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Macroeconomic statistics section

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# Energy branches in the Czech national accounts

- **Statistical units operating in energy sector classified in CZ-NACE 35**
  - 351 - Electric power generation, transmission and distribution**
  - 352 - Manufacture of gas; distribution of gaseous fuels through mains**
  - 353 - Steam and air conditioning supply**

# Energy branches in the Czech national accounts

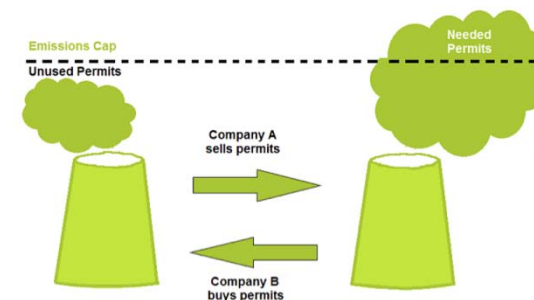


	2010	2011	2012	2013	2014	2015	2016	2017
Labour productivity development in %	-3,9	-9,4	0,6	-8,5	-8,9	-5,8	-7,1	0,2

# Consolidation in Energy branches

- **Following liberalization of energy markets in the Czech Republic at January 1, 2006**
  - Directive of the European Parliament and of the Council 2003/54/ES
- **Unbundling**
  - Separation of production and distribution activities
    - Increase in output and intermediate consumption by margins of traders in the distribution (discrepancy between accounting and physical volume)
    - Without impact on gross value added in current prices
- **Consolidation in branches of electricity and gas**
  - Adjustment of output and intermediate consumption by the same value
  - The value of adjustment  $\leftarrow$  margins of all traders in distribution
  - Estimation based on volume projection
  - Positive impact on input-output analysis (interpretation, exclusion of internal turnover)

# Emission trading permits



... means of controlling total emissions of polluting materials into the environment and as an alternative to direct taxation of pollution

- provided for free[1] or sold at a price [2]
- [1] – no enter into accounts
- [2] – tax accrued in a period when emission permit is surrendered  
... difference between cash and accrual transaction treated as liability of government („inflating“ the balance of government)
- capturing of ETP's traded internationally is ... challenging
- in the Czech G's accounts it has a lower importance ..

# Emission trading permits

CZK mil.	2010	2011	2012	2013	2014	2015	2016	2017
Value of allocated EP	36 949	29 152	16 637	7 562	8 499	10 718	5 561	4 627
Value of surrendered EP	-26 313	-24 621	-12 201	-5 381	-10 489	-12 109	-6 644	-4 503
Net acquisition of EP	-8 178	-331	3 366	-4 349	-1 990	-830	1 655	4 121
Purchases of EP	10 398	7 505	14 241	2 008	4 213	7 470	6 296	23 720
Sale of EP	-18 576	-7 836	-10 875	-6 357	-6 203	-8 300	-4 641	-19 599
Taxes				747	432	1 883	2 946	5 220

- All values expressed in CZK mil.
- The value of allocated and surrendered EP ← average market value made by Energy Regulatory Office

# Foreign trade



- **Export and import of electricity and natural gas do not have to be recorded in Intrastat due to VAT legislation**
  - Electricity and natural gas are recognized as service
- **Since 2014 majority of natural gas is imported by non-resident that is not obliged to be registered in the CZ**
- **Issue was identified within balancing supply and use tables for the year 2014**
  - Resources and uses of each product are compared
  - Resources of natural gas were apparently missing

# Foreign trade

- **Missing (hidden) Import to be estimated**
  - Energy statistics (export and import of natural gas in m<sup>3</sup>) applied
  - Price quantity method used

- **Formula:**

$$A = (C - B) \times q,$$

where

$A$  stands for the adjustment to import,


$q$  is unit price of natural gas (Intrastat),

$C$  stands for balance (in m<sup>3</sup>) in energy statistics and

$B$  is balance (in m<sup>3</sup>) in Intrastat/Extrastat



# National accounts

- **A wide range of applications**
  - Estimates of expenditures on energy
  - Adjustments for unbundling (so called consolidation of energy industries)
  - Balancing supply and use tables
- **Balancing supply and use tables**
  - Appropriate allocation of the balancing difference
  - Estimation of structure of output matrix (industry x product)
  - Estimation of structure of intermediate consumption matrix (industry by product)
    - Energy intensity can be derived
- **As a result both statistics are consistent**

# Price statistics

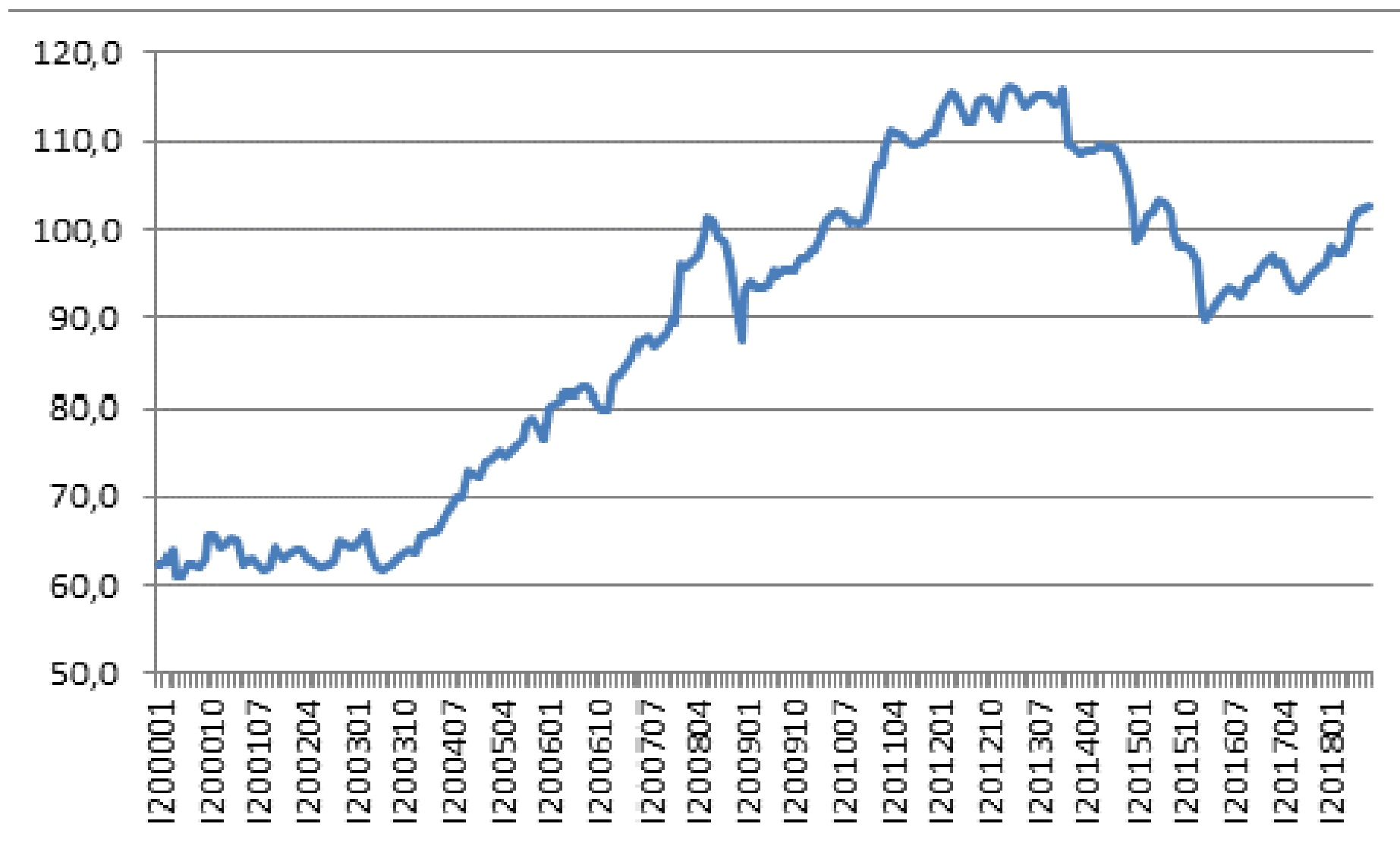
Energy prices in Industrial producer price indices

Prices in the branches according to CZ-CPA 2015

- \* mining and quarrying – coal (black and brown), crude oil, natural gas
- \* coke, refined petroleum products
- \* electricity, gas, steam, air conditioning
- \* water supply

Indices are observed and published monthly

# Industrial producer price indices according Main Industrial Groupings – Energy (2015 = 100)



# Price statistics

## Average prices

Act: Regulation (EU) 2016/1952 of the European parliament and of the Council of 26 October 2016 on European statistics on natural gas and electricity prices and repealing Directive 2008/92/EC

Calculation: prices in total and for individual consumption bands

Prices: all taxes excluded

VAT and other recoverable excluded

all taxes + VAT included

Consumption bands are defined in Regulation 2016/1952

# Price statistics

- **Average prices for Industry**

- Questionnaires Electricity: Ceny Elek 1-12 & Ceny Elek 11-01  
Natural gas: Ceny E6-04

- Reporting units: the largest traders
- Regulated prices: Energy regulatory office
- Calculation: weighted average

Weights: yearly consumption of the previous year

- Prices for industry in total and for consumption bands
- Publication
  - Eurostat: prices on January 1 and July 1 - halfyearly
  - IEA: quarterly – in total
  - CZSO: Industrial producer price indices on the web pages

# Price statistics

- **Average prices for households**

- Source of prices: price lists

  - web pages of the largest traders

  - Energy regulatory office

- Calculation: weighted average

  - Weights: yearly consumption of the previous year

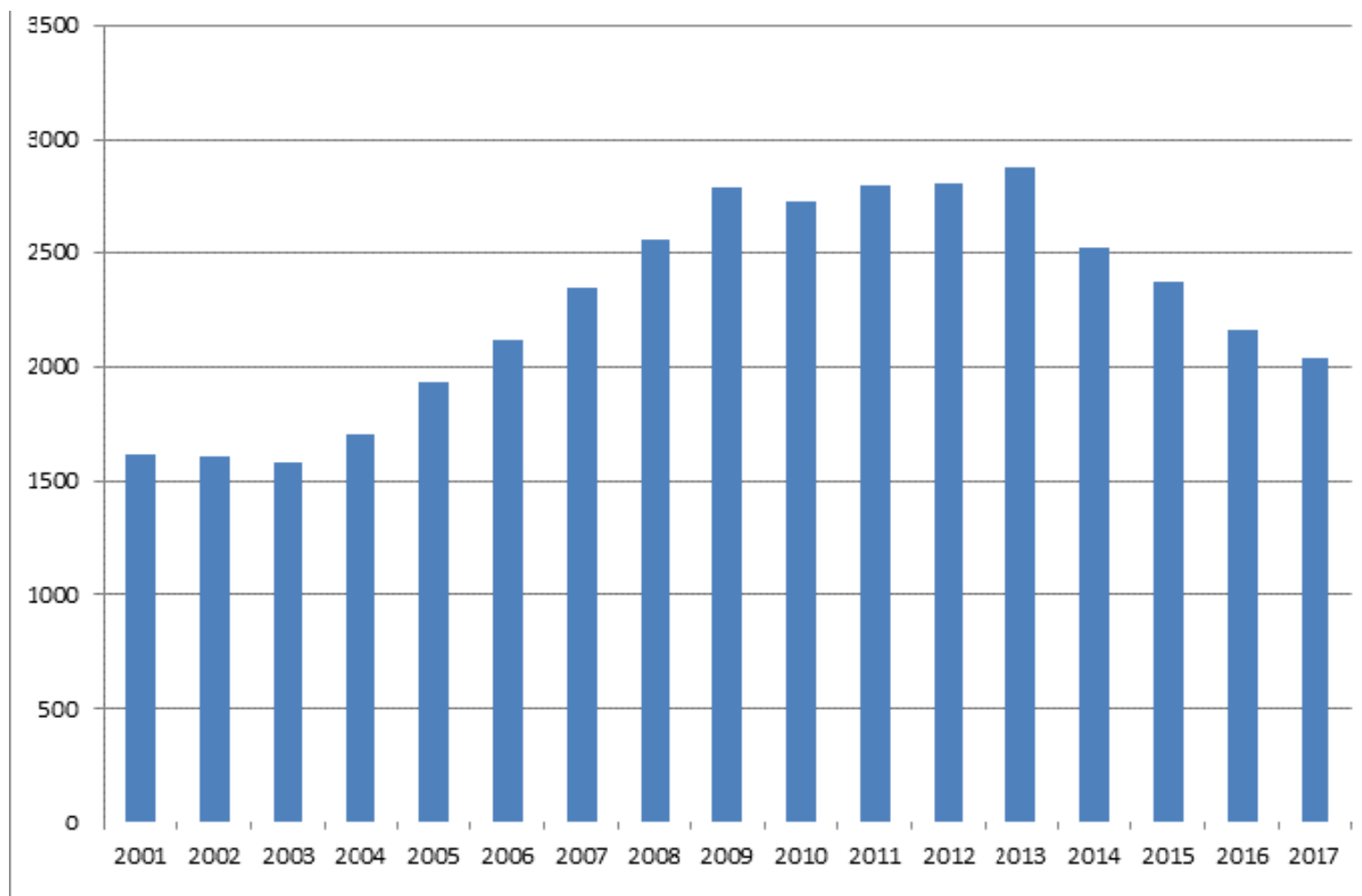
- Prices for households in total and for consumption bands

- Publication

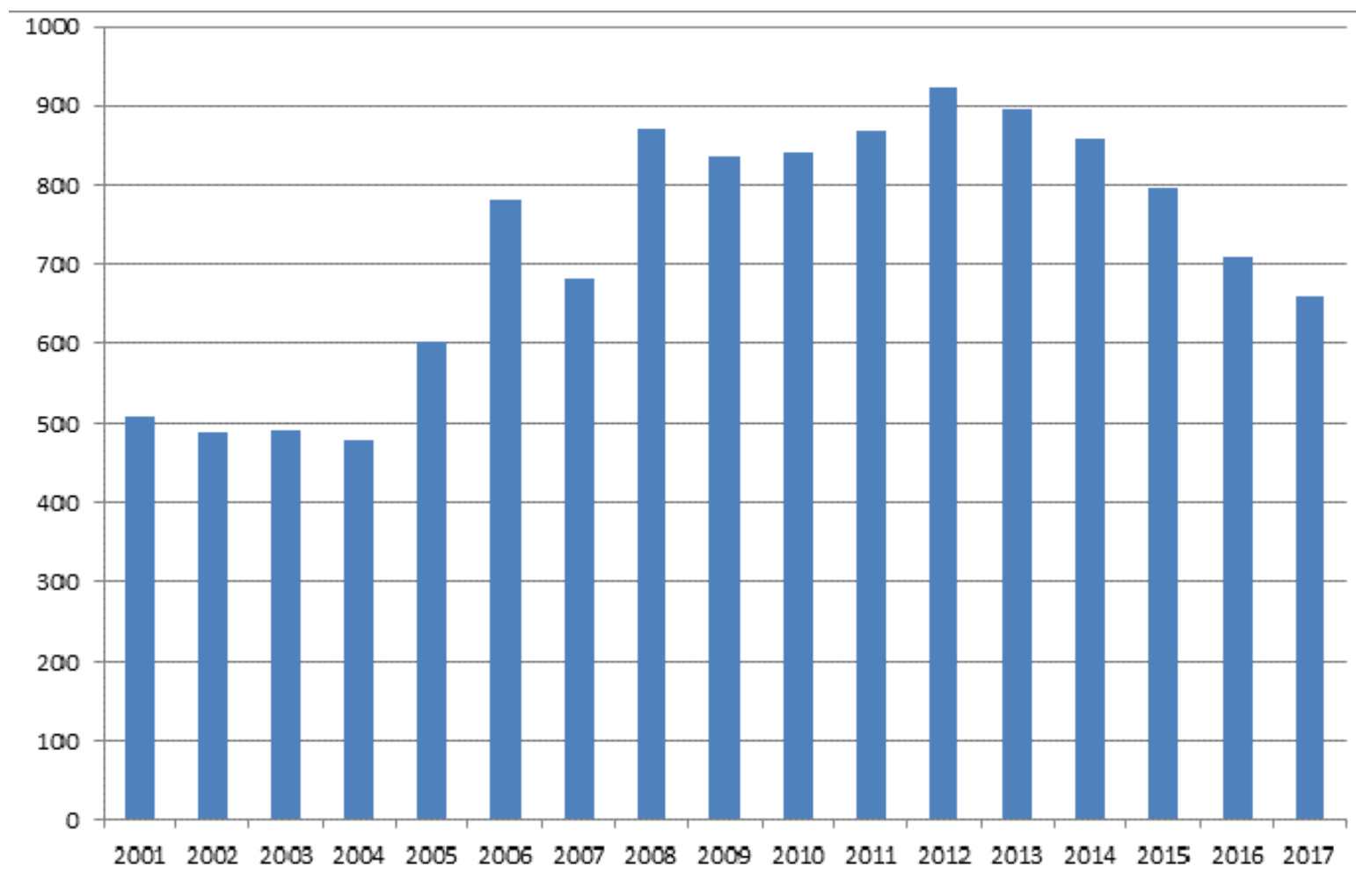
  - Eurostat: prices on January 1 and July 1 - halfyearly

  - IEA: quarterly – prices for households in total

# Average yearly prices of electricity supply for industry total in CZK / MWh



# Average yearly prices of natural gas supply for industry total in CZK / MWh





# Average quarterly prices of electricity supply for industry for the consumption bands in the Czech Republic

Price in CZK/MWh, net of VAT and other taxes

Standard consumption bands	Band - IA	Band - IB	Band - IC	Band - ID	Band - IE	Band - IF	Band - IG *)	Total
Annual consumption (MWh)	< 20	21 - 500	501 - 2 000	2 001 - 20 000	20 001 - 70 000	70 001 - 150 000	> 150 000	
2Q 2016	4 319,96	3 127,28	1 937,53	1 680,67	1 734,95	1 786,79	-	2 151,02
3Q 2016	4 324,01	3 121,54	1 943,15	1 669,45	1 721,73	1 777,44	-	2 144,19
4Q 2016	4 331,74	3 121,87	1 955,22	1 673,21	1 726,63	1 814,83	-	2 151,95
1Q 2017	4 338,26	2 959,95	1 807,92	1 645,75	1 608,37	1 701,91	-	2 054,10
2Q 2017	4 338,82	2 965,36	1 817,63	1 618,93	1 580,11	1 676,86	-	2 038,17
3Q 2017	4 340,25	2 987,16	1 802,13	1 607,31	1 569,34	1 662,27	-	2 030,65
4Q 2017	4 338,26	3 091,43	1 815,07	1 597,67	1 589,55	1 650,57	-	2 040,04
1Q 2018	4 510,69	3 136,34	1 847,66	1 588,78	1 585,76	1 646,36	-	2 047,67

\*) Note: Individual data.



**Thank you for your  
attention**