CZECH STATISTICAL OFFICE

# INFORMATION ECONOMY IN FIGURES

## 2016

## CZECH REPUBLIC AND WORLD

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# Content

# Introduction

The role of **information and communication technologies (ICT)** has received considerable attention in the last decade or so due to their exceptional role in enhancement of economic growth and social change. Even though the production and the expansion of ICT varies significantly among countries, a general agreement prevails that it is necessary to collect reliable and comprehensive ICT indicators in order to assess the impact of these technologies on growth, productivity or innovation.

The aim of **ICT statistics** is, on one hand, to provide data on the production of advanced ICTs, including data on investments, external trade or qualified human resources in this field **(information economy)** and, on the other hand, to track data on the penetration and usage of these technologies in particular sectors of society such as households, enterprise sector or public administration **(information society).**

This brochure, its **ninth edition**, was compiled in order to provide again a comprehensive overview of statistical indicators about the development of the information economy in the Czech Republic and where possible also in other, mainly EU, countries.

The brochure consists of the following **five chapters**:

- Chapter A: **'ICT specialists'** provides population estimates both ICT professionals and ICT technicians together with their average monthly gross incomes. Data on the **students** of tertiary education and tertiary **graduates in the field of ICT** is also included there.
- Chapter B: **'ICT expenditure and investment'** includes information about total ICT investment and about household consumption expenditures on ICT equipment and services.
- Chapter C: **'ICT research and development'** provides both data on the total financial resources invested in research and development of ICT equipment and software and data about R&D expenditures and personnel in enterprises with the main economic activity that belongs to the ICT sector.
- Chapter D: **'ICT external trade'** includes detail data about exports and imports both in the ICT goods and ICT services.
- Chapter E: **'ICT sector'** consists of main economic indicators for industries that are primarily engaged in the production of ICT goods and services.

Data given in this brochure were acquired, in most cases, from regular statistical surveys or databases of the Czech Statistical Office. International comparisons were compiled by the Czech Statistical Office based on freely available Eurostat, OECD or UN data sources.

Whenever possible, the data used in this brochure are based on the standards included in **The OECD Guide to Measuring the Information Society** (Paris, 2011). This publication summarizes the statistical standards and definitions developed by the OECD Working Party on Indicators for the Information Society.

If you need any further information, do not hesitate to contact us directly. Your suggestions will be incentives for future releases.

**In Prague, December 2016**

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# A ICT specialists

### A.1 ICT specialists

Since 2011 the **ICT specialists** in the Czech Republic have been divided into two main groups according to the **International Standard Classification of Occupations (ISCO-08):**

- **ICT professionals, managers and engineers** include ICT service managers (133); Software and apps developers and analysts (251); Database and network professionals (252); ICT sales professionals (2434) and Electronics&Telecommunications engineers (2152+2153).
- **ICT technicians** include ICT operations and user support technicians (351); Telecommunications and broadcasting technicians (352); Computer hardware installers (7422).

In a narrower definition ICT specialists are divided to **ICT professionals (only ISCO 25)** comprising analysts and software and computer applications developers, specialists in the field of databases and computer networks, and **ICT technicians (only ISCO 35)** comprising ICT operations and user support technicians (including networks administrators) and telecommunications&broadcasting technicians. Such definition is in this publication used for international comparisons and for information on earnings of ICT specialists in the Czech Republic.

Data on the **numbers and structure** of ICT specialists come from the **Labour Force Sample Survey (LFS)** of the Czech Statistical Office (CZSO). Tables present average annual data for given years. Data since 2011 are not fully comparable with data for the previous years because of transition to the ICT specialists' definition by the CZ-ISCO in 2011. Further information on the Czech LFS can be found at:
https://www.czso.cz/csu/czso/employment-and-unemployment-as-measured-by-labour-force-survey-annual-averages

The **Eurostat Labour Force Survey Database** was used as a data source for the international comparison. For more information see:
http://ec.europa.eu/eurostat/statistics-explained/index.php/EU_labour_force_survey

Data on **earnings** (**average monthly gross wages)** of ICT specialists come from the **Structural Earnings Statistics (SES)** and are available in a comparable time series since the ref. year 2012. For further information see: https://www.czso.cz/csu/czso/structure-of-earnings-survey-2015

**Further information on ICT specialists can be found at:**
https://www.czso.cz/csu/czso/ict-odbornici

### A.2 Tertiary students and graduates in ICT field of education

ICT field of education (Computing: ISCED 48) is according to the international classification ISCED 97 divided into two detailed fields: **Computer science** (ISCED 481) and **Use of computers** (ISCED 482).

In the Czech Republic tertiary education includes **Higher professional education and University education**. Higher professional education includes education at higher professional schools (ISCED 655). University education is provided by Universities at Bachelor's or equivalent level (ISCED 6), Master's or equivalent level (ISCED 7) and Doctoral or equivalent level (ISCED 8).

Data on ICT field of education come from the **Ministry of education, youth and sports in the Czech Republic** data sources**.**

**Further information on ICT field of education can be found at:** https://www.czso.cz/csu/czso/studenti_a_absolventi_vysokoskolskeho_studia_v_oboru_informatika

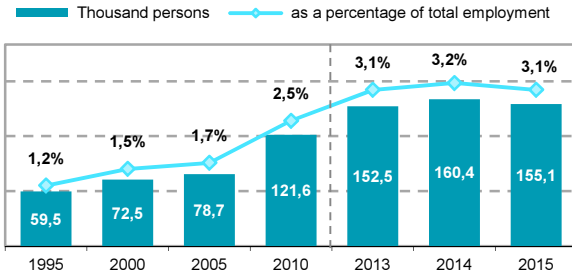
# A ICT specialists

## Table A1 ICT specialists in the Czech Republic

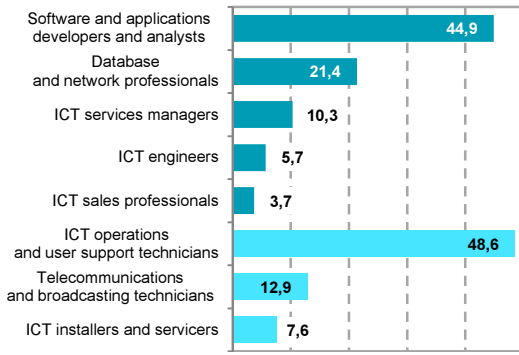
Thousand persons

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **152,5** | **160,4** | **155,1** |
| Women | 14,7 | 14,3 | 14,7 |
| ***Occupation*** | | | |
| ICT Professionals, managers and engineers, total | 73,3 | 83,6 | 86,0 |
| Software and apps developers and analysts | 41,3 | 44,9 | 44,9 |
| ICT technicians, installers and servicers, total | 79,0 | 76,9 | 69,1 |
| ICT operations and user support technicians | 57,5 | 52,5 | 48,6 |
| ***Age group*** | | | |
| 20-29 years | 33,9 | 31,8 | 34,1 |
| 30-39 years | 62,5 | 65,7 | 57,5 |
| 40-49 years | 34,0 | 37,4 | 40,6 |
| 50+ years | 22,0 | 25,5 | 22,9 |
| ***Highest level of education attainment*** | | | |
| Tertiary | 88,1 | 91,9 | 93,8 |
| Secondary with A-level examination | 56,8 | 61,5 | 57,0 |
| Other (lower) | 7,4 | 7,0 | 4,3 |

## Figure A1 ICT specialists



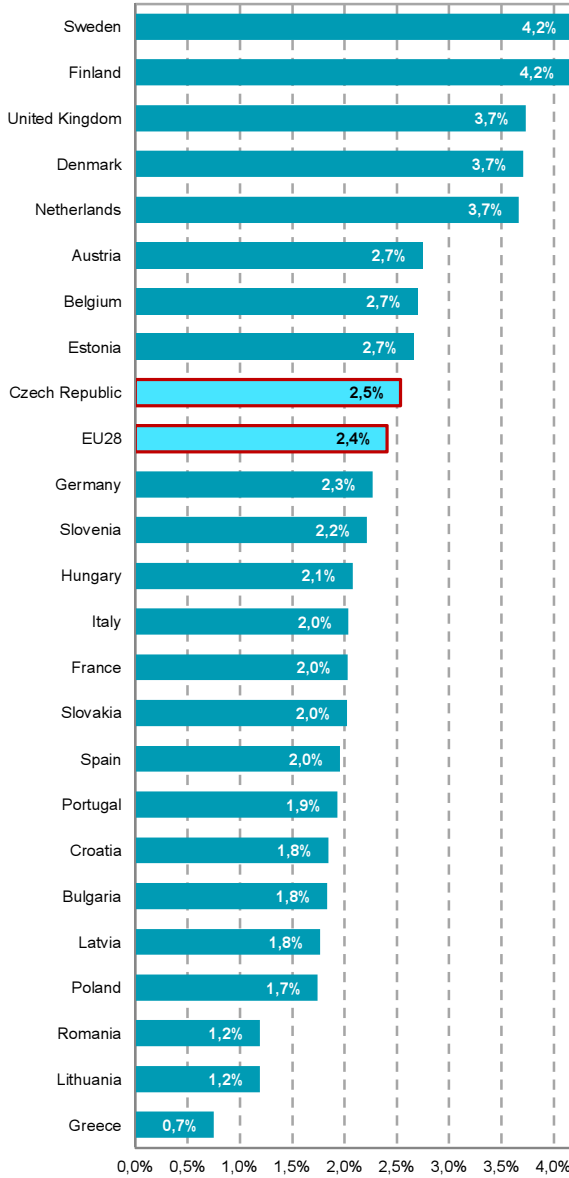

## Figure A2 ICT specialists by occupation (thous.); 2015




*Source: CZSO, Labour Force Survey*

# A ICT specialists

**Figure A3 ICT professionals and technicians*; 2015 (as a percentage of total emloyment)**




** Only ISCO 25: ICT professionals and ISCO 35: Information and communications technicians*

*Source: Eurostat, European Labour Force Survey*

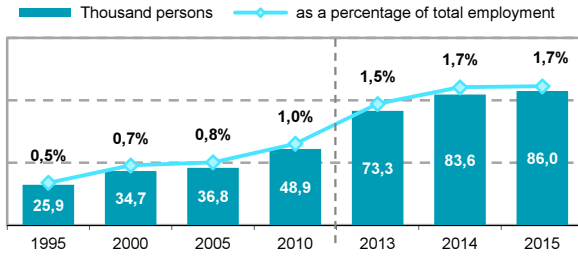
# A ICT specialists

## Table A2 ICT professionals, managers and engineers in the Czech Republic

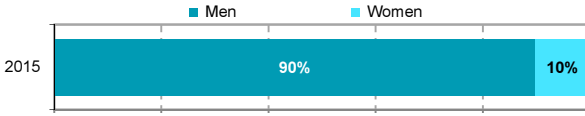
Thousand persons

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **73,3** | **83,6** | **86,0** |
| Women | 8,4 | 8,2 | 8,8 |
| ***Occupation*** | | | |
| Software and apps developers and analysts | 41,3 | 44,9 | 44,9 |
| Database and network professionals | 15,8 | 18,4 | 21,4 |
| ICT services managers | 6,5 | 10,1 | 10,3 |
| ICT engineers | 4,9 | 5,4 | 5,7 |
| ICT sales professionals | 4,7 | 4,8 | 3,7 |
| ***Age group*** | | | |
| 20-29 years | 13,5 | 16,0 | 17,1 |
| 30-39 years | 30,4 | 31,8 | 32,5 |
| 40-49 years | 16,6 | 18,9 | 22,5 |
| 50+ years | 12,7 | 16,8 | 14,0 |
| ***Highest level of education attainment*** | | | |
| Master's and Doctoral | 51,1 | 59,2 | 60,9 |
| Bachelor's and Higher professional | 11,2 | 12,4 | 11,5 |
| Other (lower) | 11,1 | 12,6 | 13,6 |

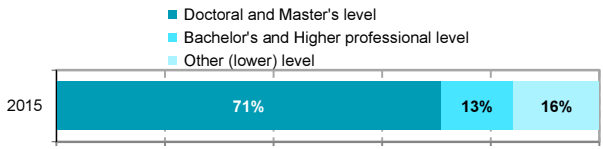
## Figure A4 ICT professionals, managers and engineers




## Figure A5 ICT professionals by sex in 2015

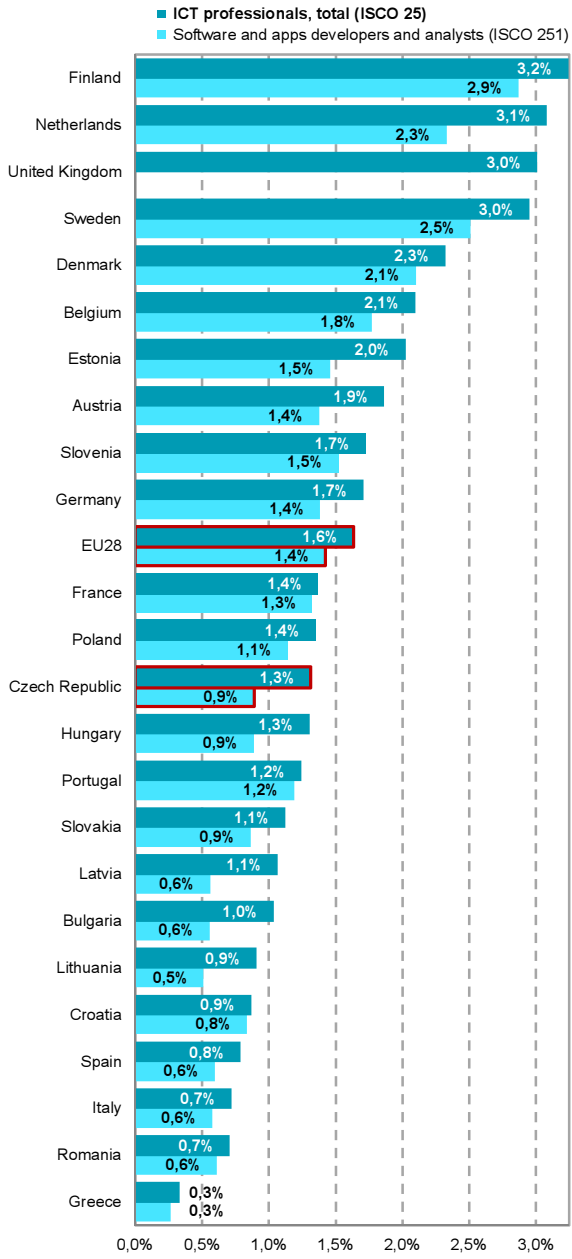



## Figure A6 ICT professionals by level of education in 2015




*Source: CZSO, Labour Force Survey*

**Figure A7 ICT Professionals; 2015**
**(as a percentage of total employment)**




*Source: Eurostat, European Labour Force Survey*

# A ICT specialists

**Table A3 ICT technicians, installers and servicers in the Czech Republic**

Thousand persons

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **79,0** | **76,9** | **69,1** |
| Women | 6,3 | 6,1 | 5,9 |
| ***Occupation*** | | | |
| ICT operations and user support technicians | 57,5 | 52,5 | 48,6 |
| Telecommunications and broadcasting technicians | 15,2 | 16,4 | 12,9 |
| ICT installers and servicers | 6,3 | 7,9 | 7,6 |
| ***Age group*** | | | |
| 20-29 years | 20,4 | 15,8 | 17,0 |
| 30-39 years | 32,1 | 33,9 | 25,0 |
| 40-49 years | 17,3 | 18,5 | 18,2 |
| 50+ years | 9,3 | 8,7 | 8,9 |
| ***Highest level of education attainment*** | | | |
| Tertiary | 27,0 | 20,9 | 21,4 |
| Secondary with A-level examination | 44,7 | 49,4 | 44,4 |
| Other (lower) | 7,3 | 6,5 | 3,4 |

**Figure A8 ICT technicians, installers and servicers**

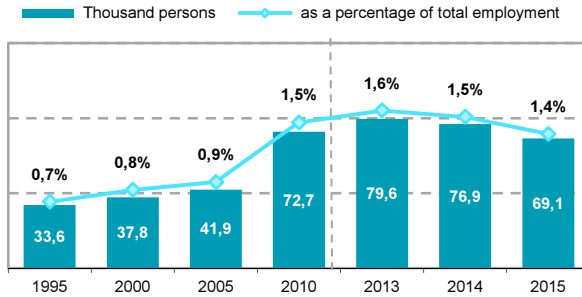



**Figure A9 ICT technicians, installers and servicers by sex**

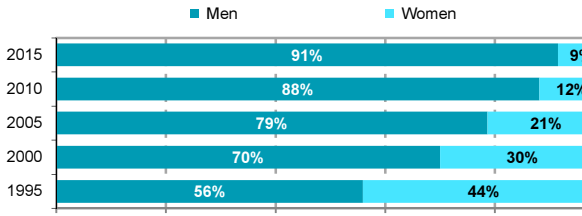
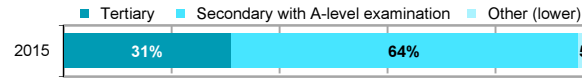
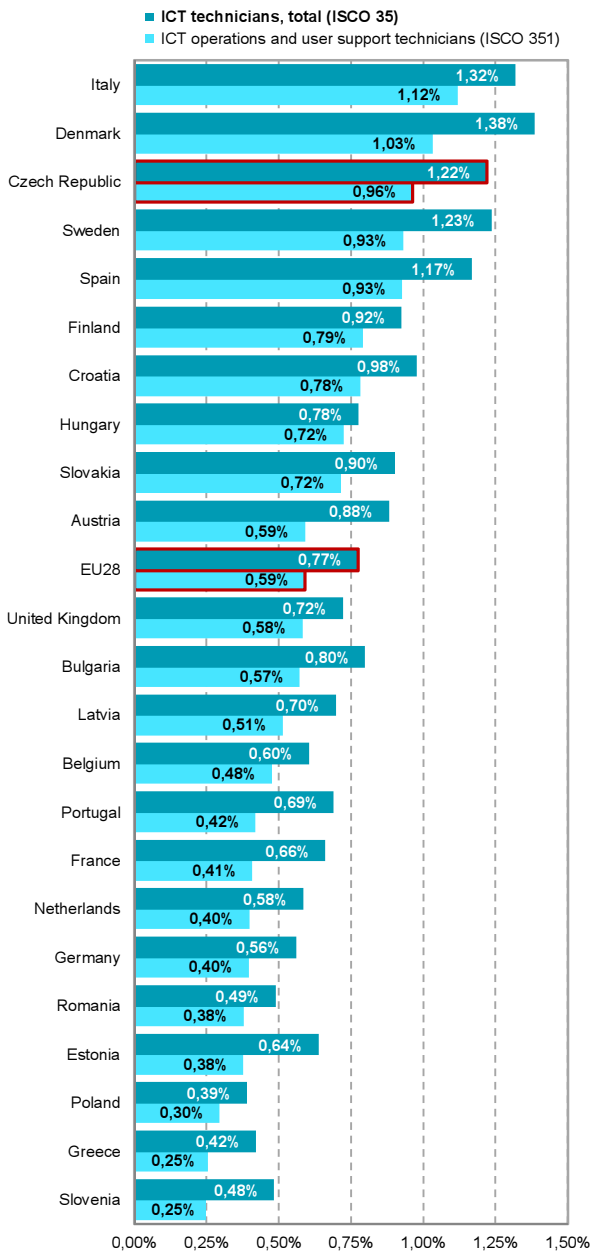



**Figure A10 ICT technicians, installers and servicers by level of education**




*Source: CZSO, Labour Force Survey*

**Figure A11 ICT technicians; 2015**
**(as a percetage of total employment)**




*Source: Eurostat, European Labour Force Survey*

**Table A4 Earnings of ICT professionals in the Czech Republic**

average (mean) gross monthly wage in CZK

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **46 933** | **49 259** | **51 319** |
| Men | 47 868 | 50 206 | 52 296 |
| Women | 40 574 | 42 381 | 43 701 |
| ***Age group*** | | | |
| 25-34 years | 43 200 | 45 124 | 47 296 |
| 35-44 years | 54 440 | 56 903 | 58 751 |
| 45-54 years | 49 102 | 50 431 | 52 543 |
| 55+ years | 43 345 | 45 441 | 46 338 |
| ***Highest level of education attainment*** | | | |
| Master's and Doctoral | 52 428 | 54 387 | 56 172 |
| Bachelor's and Higher professional | 41 681 | 43 611 | 46 238 |
| Secondary with A-level examination | 42 029 | 43 324 | 44 930 |
| ***Field of activity (sector)*** | | | |
| Business (business enterprise sector) | 48 278 | 50 558 | 52 643 |
| Non-business (government sector) | 30 756 | 32 006 | 33 607 |
| ***Industry (NACE Sections)*** | | | |
| Manufacturing (NACE: C) | 43 085 | 43 760 | 45 769 |
| Transportation and storage (NACE: H) | 41 308 | 42 627 | 47 189 |
| Information and communication (NACE: J) | 50 802 | 54 238 | 56 457 |
| Financial and insurance activities (NACE: K) | 59 827 | 59 932 | 61 962 |
| Public administration (NACE: O) | 31 680 | 33 055 | 34 929 |

**Figure A12 Average gross monthly wage of ICT professionals**

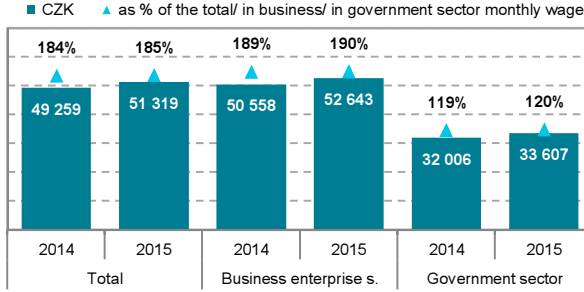
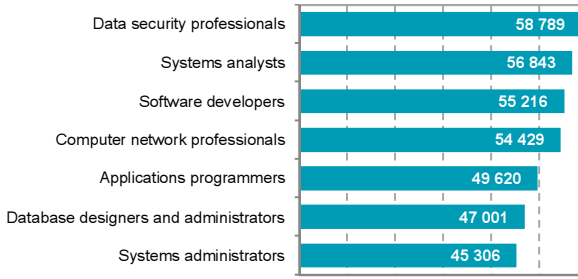



**Figure A13 Average gross monthly wage of ICT professionals in selected occupations in 2015 (CZK)**




*Source: CZSO, Structural Earnings Statistics*

**Table A5 Earnings of ICT operations and user support technicians in the Czech Republic**

average (mean) gross monthly wage in CZK

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **35 204** | **36 080** | **36 724** |
| Men | 35 757 | 36 657 | 37 297 |
| Women | 31 596 | 32 282 | 32 899 |
| ***Age group*** | | | |
| 25-34 years | 33 022 | 33 626 | 33 884 |
| 35-44 years | 38 142 | 39 492 | 40 234 |
| 45-54 years | 35 706 | 35 939 | 37 771 |
| 55+ years | 38 196 | 38 587 | 38 352 |
| ***Highest level of education attainment*** | | | |
| Master's and Doctoral | 42 427 | 43 325 | 44 126 |
| Bachelor's and Higher professional | 34 789 | 35 143 | 37 345 |
| Secondary with A-level examination | 31 764 | 32 936 | 33 150 |
| ***Field of activity (sector)*** | | | |
| Business (business enterprise sector) | 36 152 | 36 877 | 37 437 |
| Non-business (government sector) | 25 862 | 27 047 | 28 377 |

**Figure A14 Average gross monthly wage of ICT operations and user support technicians by sector**

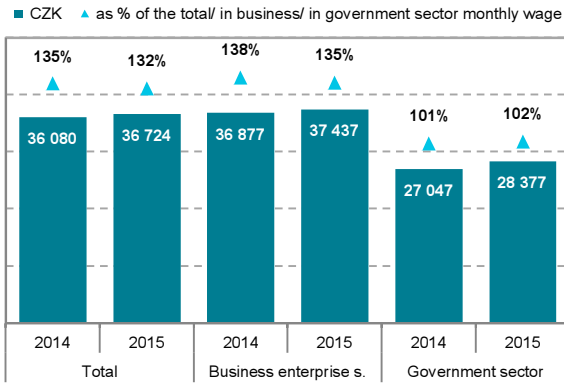
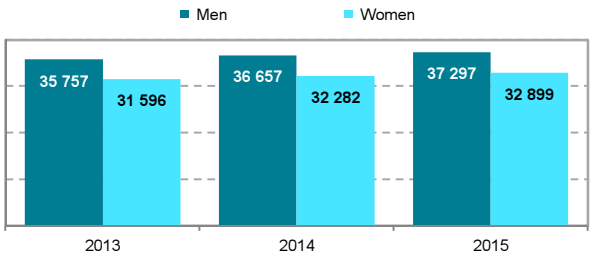



**Figure A15 Average gross monthly wage of ICT operations and user support technicians by sex (CZK)**




*Source: CZSO, Structural Earnings Statistics*

**Table A6 Tertiary education students in the field of ICT (Computing) in the Czech Republic**

number of students

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **23 897** | **22 899** | **21 935** |
| Women | 3 913 | 3 982 | 3 830 |
| ***Field of education*** | | | |
| Computer science | 18 416 | 17 770 | 17 122 |
| Computers usage | 5 521 | 5 159 | 4 832 |
| ***Education level*** | | | |
| Higher professional | 1 260 | 1 173 | 1 000 |
| Bachelor programmes | 15 876 | 14 976 | 14 295 |
| Master programmes | 5 681 | 5 683 | 5 576 |
| Doctoral programmes | 1 096 | 1 081 | 1 077 |
| ***Nationality*** | | | |
| Czech Republic | 20 042 | 18 803 | 17 559 |
| Foreign | 3 855 | 4 096 | 4 376 |

**Figure A16 Tertiary education students of Computing**

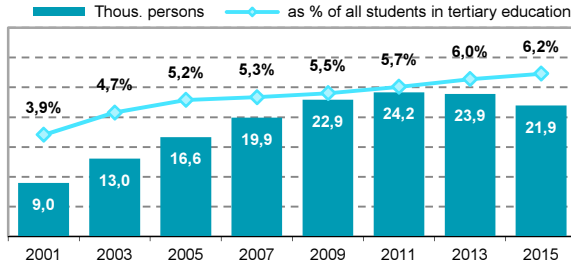



**Figure A17 Tertiary students of Computing by educ. level**

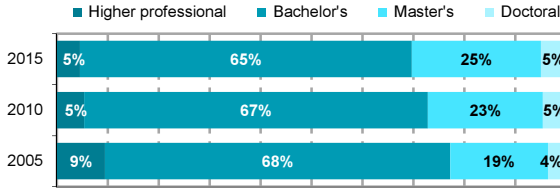
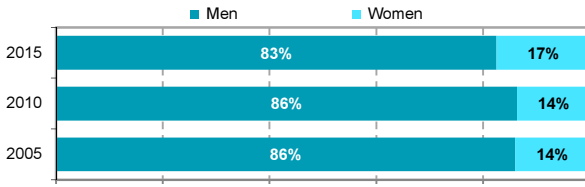



**Figure A18 Tertiary students of Computing by sex**




*Source: The Ministry of Education, Youth and Sports*

**Figure A19 Tertiary education students of Computing; 2014 (as a % of all students in tertiary education)**

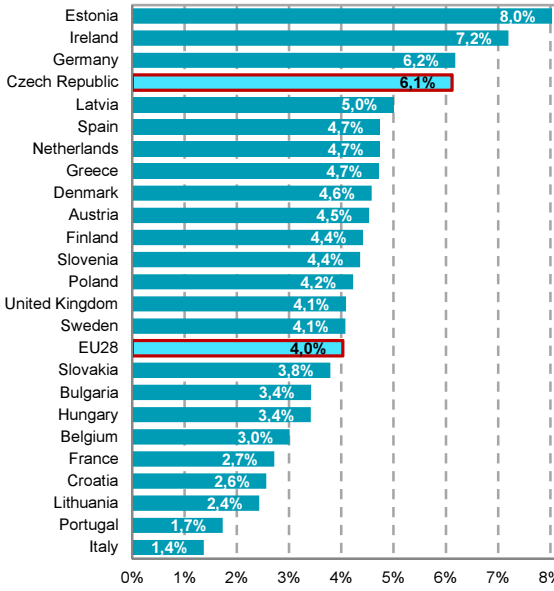
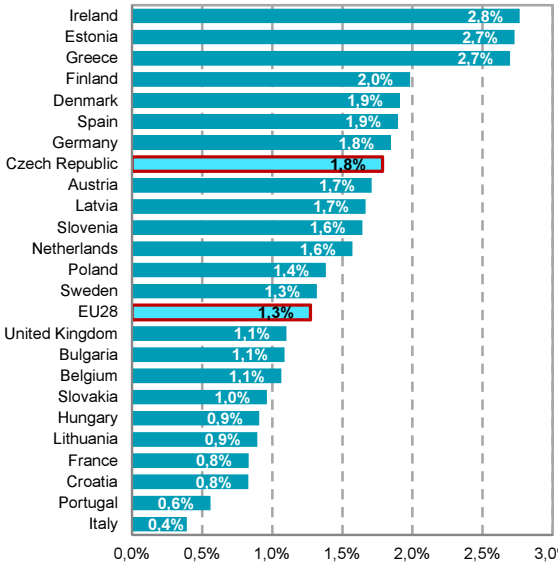



**Figure A20 Tertiary education students of Computing; 2014 (as a % of total population aged 20 to 29 years)**




*Source: Eurostat*

**Table A7 Students of ICT field of education (Computing) at Bachelor´s level in the Czech Republic**

number of students

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **15 876** | **14 976** | **14 295** |
| Women | 2 476 | 2 456 | 2 288 |
| ***Field of education*** | | | |
| Computer science | 12 444 | 11 969 | 11 575 |
| Computers usage | 3 443 | 3 017 | 2 727 |
| ***Nationality*** | | | |
| Czech Republic | 13 128 | 12 062 | 11 195 |
| Foreign | 2 748 | 2 914 | 3 100 |

**Figure A21 Bachelor's students of Computing, total**

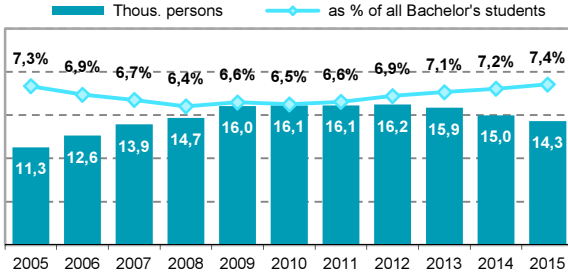



**Figure A22 Bachelor's students of Computing - Men**

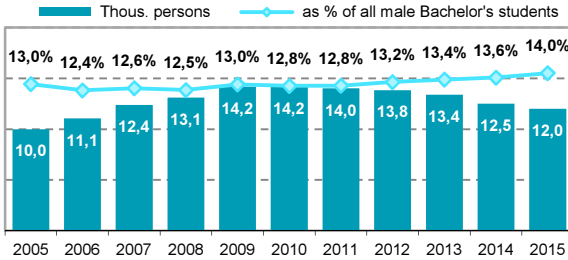
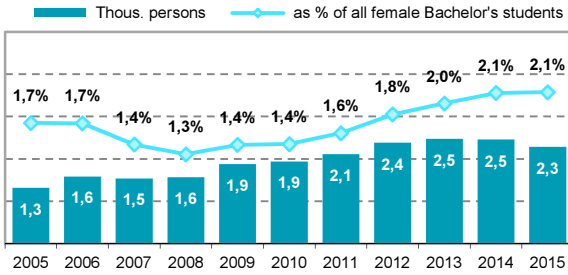



**Figure A23 Bachelor's students of Computing - Women**




*Source: The Ministry of Education, Youth and Sports*

**Figure A24 Students of Computing at Bachelor's or equivalent level of education*; 2014 (as a % of all Bachelor's students)**

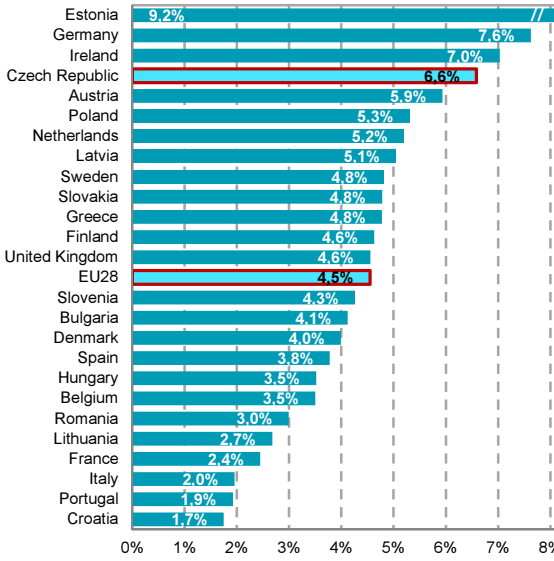
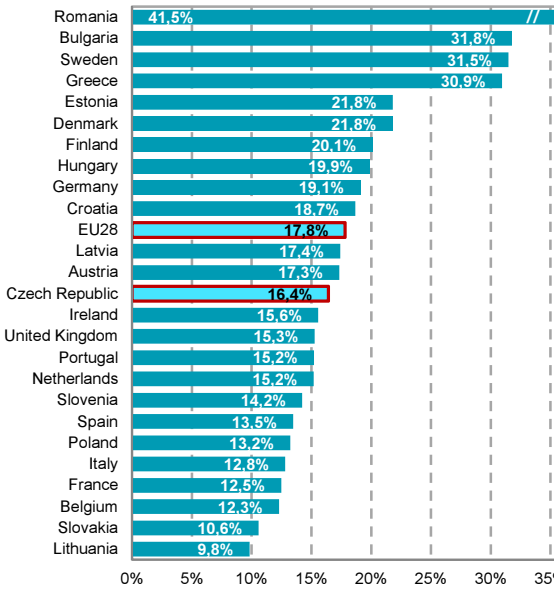



**Figure A25 The proportion of women among all students of Computing at Bachelor's or equivalent level*; 2014 (%)**




** ISCED level 6*

*Source: Eurostat*

# A ICT specialists

**Table A8 Students of ICT field of education (Computing) at Master´s level in the Czech Republic**

number of students

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **5 681** | **5 683** | **5 576** |
| Women | 892 | 980 | 1 070 |
| ***Field of education*** | | | |
| Computer science | 3 852 | 3 791 | 3 711 |
| Computers usage | 1 847 | 1 907 | 1 870 |
| ***Nationality*** | | | |
| Czech Republic | 4 784 | 4 701 | 4 517 |
| Foreign | 897 | 982 | 1 059 |

**Figure A26 Master's students of Computing, total**

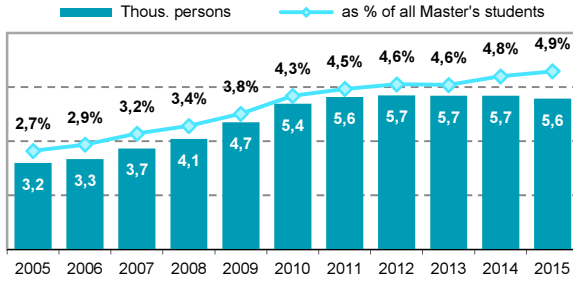



**Figure A27 Master's students of Computing - Men**

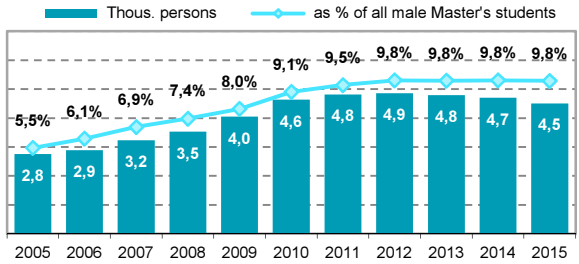
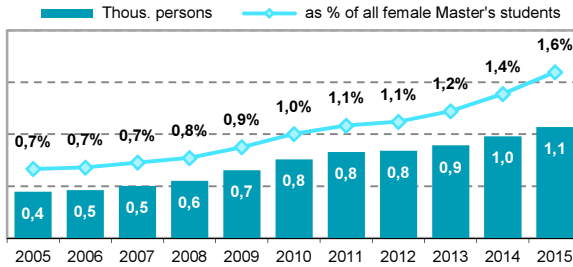



**Figure A28 Master's students of Computing - Women**




*Source: The Ministry of Education, Youth and Sports*

**Figure A29 Students of Computing at Master's or equivalent level of education*; 2014 (as a % of all Master's students)**

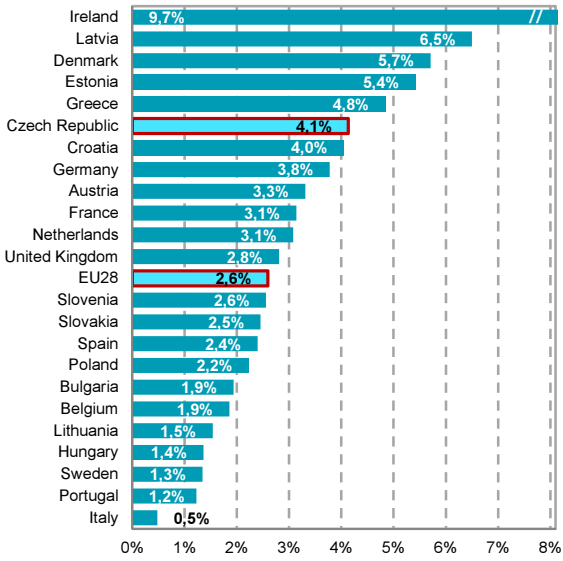
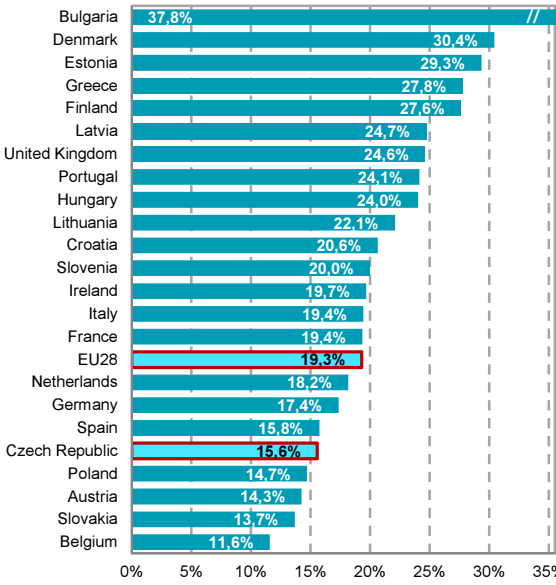



**Figure A30 The proportion of women among all students of Computing at Master's or equivalent level*; 2014 (%)**




** ISCED level 7*

*Source: Eurostat*

**Table A9 Graduates from tertiary education in ICT field of education (Computing) in the Czech Republic**

number

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **4 762** | **4 468** | **4 599** |
| Women | 691 | 727 | 810 |
| ***Field of education*** | | | |
| Computer science | 3 460 | 3 293 | 3 461 |
| Computers usage | 1 314 | 1 179 | 1 151 |
| ***Education level*** | | | |
| Higher professional | 258 | 214 | 249 |
| Bachelor programmes | 2 596 | 2 479 | 2 554 |
| Master programmes | 1 817 | 1 696 | 1 703 |
| Doctoral programmes | 92 | 79 | 93 |
| ***Nationality*** | | | |
| Czech Republic | 4 024 | 3 822 | 3 831 |
| Foreign | 738 | 646 | 768 |

**Figure A31 Graduates from tertiary education in Computing**

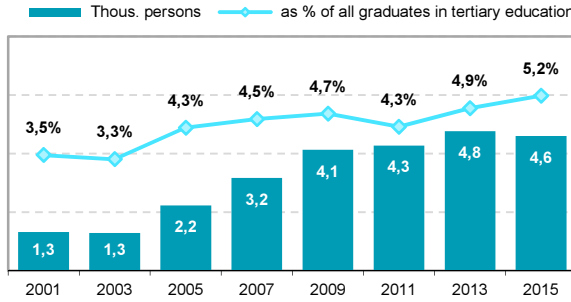



**Figure A32 Graduates in Computing by tertiary education level**

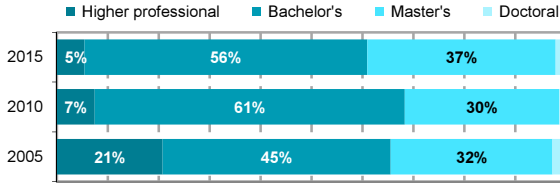
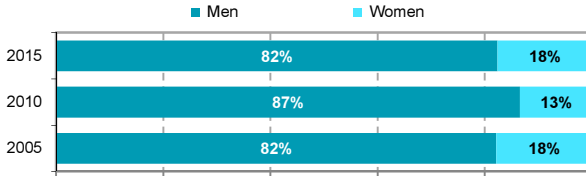



**Figure A33 Graduates from tertiary ed. in Computing by sex**




*Source: The Ministry of Education, Youth and Sports*

**Figure A34 Graduates from Bachelor's or equivalent level* of education in Computing; 2014 (thous.)**

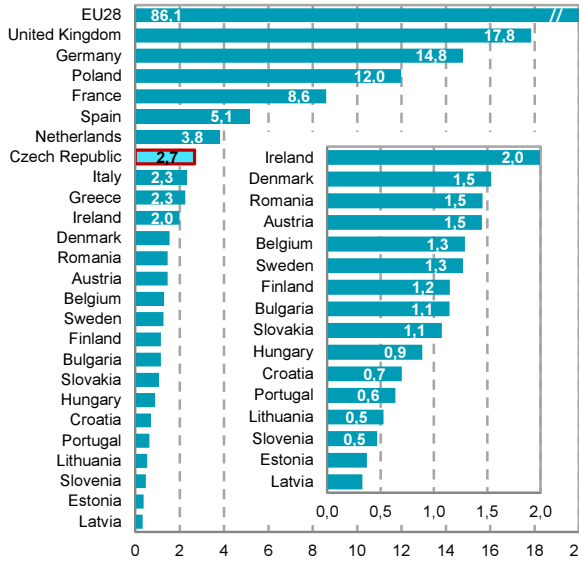
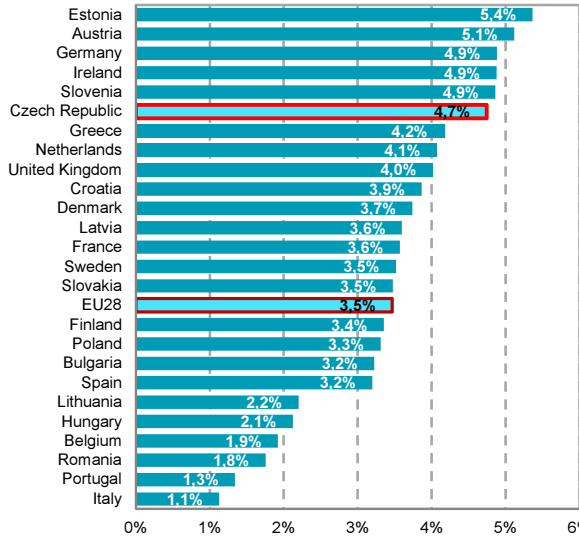



**Figure A35 Graduates from Bachelor's or equivalent level* in Computing; 2014 (as a % of all bachelor's graduates)**




* *ISCED 6*

*Source: Eurostat*

**Figure A36 Graduates from Master´s or equivalent level* of education in Computing ; 2014 (thous.)**

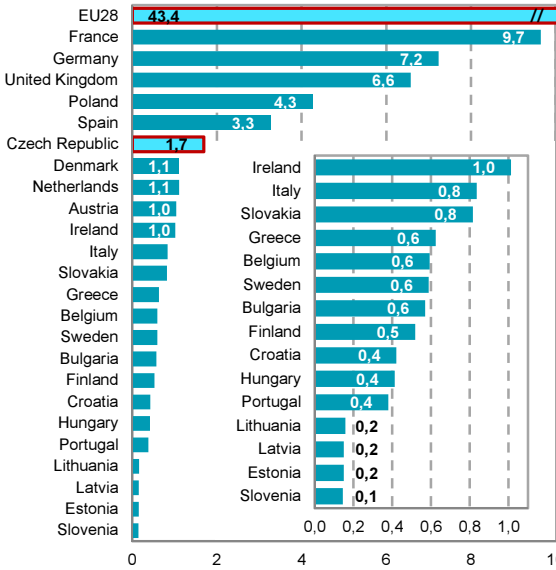
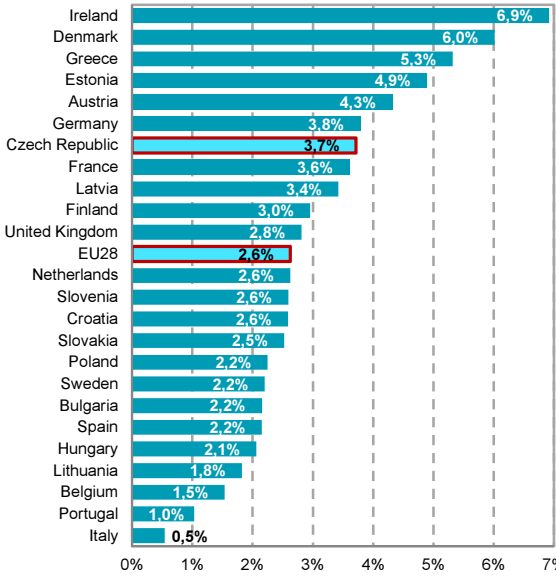



**Figure A37 Graduates from Master´s or equivalent level* in Computing; 2014 (as a % of all master's graduates)**




** ISCED 7*

*Source: Eurostat*

# B ICT expenditure and investment

### *B. 1 Investment in ICT equipment and software*

Investments into ICT equipment and software (hereafter **ICT investment**) in the tables shall mean the **gross fixed capital formation** (GFCF: P.51), which includes mainly acquisitions of fixed assets (P.511) used in the production processes repeatedly or continuously for more than one year. The definition of GFCF used here follows **The European System of Regional and National Accounts (ESA 2010)**.

ICT investment has **three components**: **information technology (IT) equipment** (computers and related hardware), **communications equipment** and computer software and databases (hereafter **software)**. Software includes acquisition of pre-packaged software, customized software and software developed in-house (own-account software).

ICT assets can be also classified to the groups of the **Classification of Products by Activity (CZ-CPA)** as follows:

- **ICT equipment:** Computers and peripheral equipment (26.2); Communication equipment (26.3) and Consumer electronics (26.4)
- **IT services (software):** Software publishing services (58.2); Computer programming, consultancy and related services (62.0) and Data processing, hosting and related services; web portals (63.1).

Investments **into computer** and **telecommunication equipment** became according to ESA 2010 a part of a newly created item of non-financial assets as **ICT equipment (AN.1132)**.

**Computer software and databases (AN.1173)** newly involve according to ESA 2010 two sub-items. **Computer software (AN.11731)** involves computer programs, program descriptions and supporting materials for both systems and application software. **Databases (AN.11732)** includes data files organized so as to enable cost-effective data access and use.

### *B. 2 Households expenditures on ICT equipment and ICT services*

Data on the total ICT investment in this chapter are supplemented with data on **Final ICT consumption expenditure of households** The final consumption expenditure of households is recorded in international classification COICOP. This is a classification where individual items of consumption are divided according to its purpose.

**ICT equipment and ICT services** according to this classification include the following items*:*

- **ICT equipment:** Telephone and telefax equipment (08.2); Audio-visual, photographic and information processing equipment (09.1)
- **Telecommunication (ICT) services:** Telephone and telefax services (08.3). This category contains primarily payments for calls via landline, mobile phone and payments for Internet connection.

The both data, the total ICT investment and final household consumption expenditure on ICT equipment and ICT services come from the **Annual National Accounts Statistics** of the Czech Statistical Office. **2015 data are preliminary.** For more information see:
http://apl.czso.cz/pll/rocenka/rocenka.indexnu?mylang=EN

For the **international comparison OECD and Eurostat** data sources were used.

**Further information on ICT investment can be found at** (only in Czech)**:**
**https://www.czso.cz/csu/czso/investice_v_ict**

## B ICT expenditure and investment

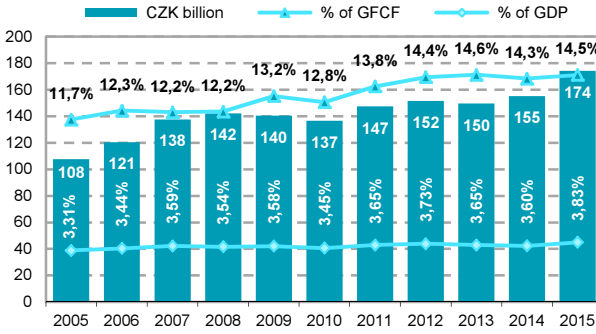
### Table B1 ICT investment in the Czech Republic

CZK million

| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **149 588** | **155 156** | **174 309** |
| ICT equipment | 73 986 | 77 338 | 84 325 |
| Computer software and databases | 75 602 | 77 818 | 89 984 |
| ***Industry (CZ-NACE Section)*** | | | |
| Agriculture, forestry and fishing | 616 | 951 | 2 210 |
| Mining and quarrying | 670 | 542 | 646 |
| Manufacturing | 37 009 | 44 469 | 53 651 |
| Electricity, gas and water supply | 4 925 | 4 524 | 6 232 |
| Construction | 1 842 | 2 986 | 3 289 |
| Wholesale and retail trade | 11 458 | 9 326 | 10 976 |
| Transportation and storage | 3 355 | 3 759 | 4 728 |
| Accommodation and food service activities | 999 | 1 535 | 1 752 |
| Information and communication | 38 739 | 41 599 | 34 615 |
| Financial and insurance activities | 14 121 | 13 569 | 17 236 |
| Real estate activities | 1 871 | 1 476 | 1 796 |
| Professional, scientific and technical activ. | 8 423 | 8 267 | 9 638 |
| Administrative and support service activ. | 2 229 | 1 482 | 1 673 |
| Public administration and defence | 10 907 | 9 902 | 11 787 |
| Education | 7 623 | 4 988 | 5 350 |
| Human health and social work activities | 2 480 | 3 768 | 6 054 |
| Arts, entertainment and recreation | 1 044 | 902 | 1 201 |
| Other services | 1 277 | 1 111 | 1 475 |

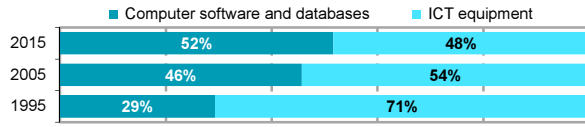
** Preliminary data*

### Figure B1 Total ICT investment



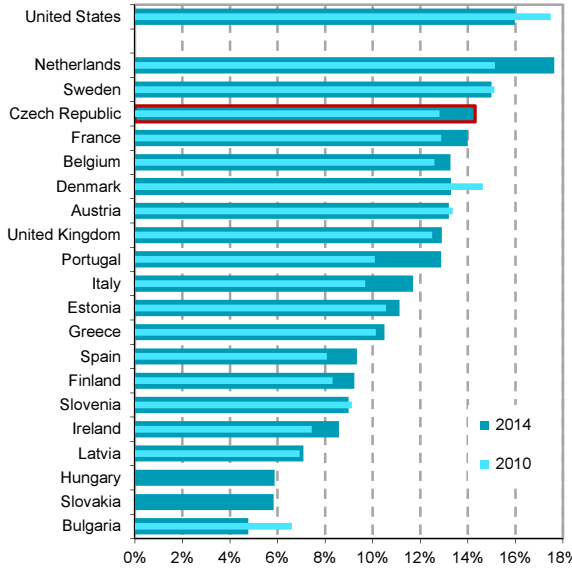

*GFCF - Gross Fixed Capital Formation (total investment)*

### Figure B2 ICT investment by asset (%)



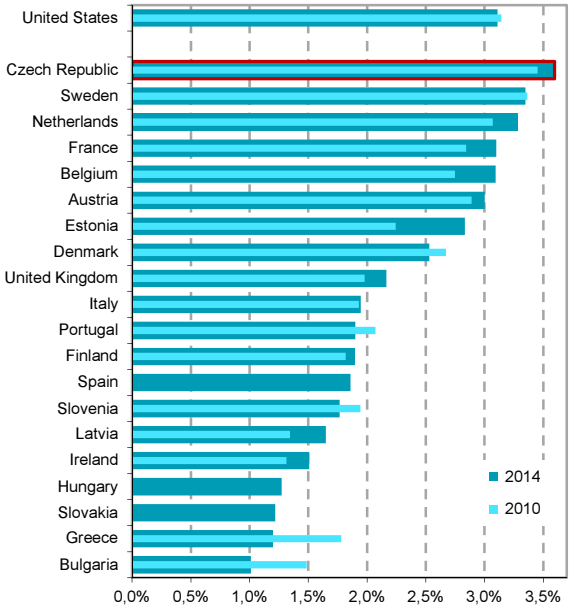

*Source: CZSO, Annual National Accounts Statistics*

**Figure B3 ICT investment (% of total GFCF)**




*GFCF - Gross Fixed Capital Formation (total investment)*

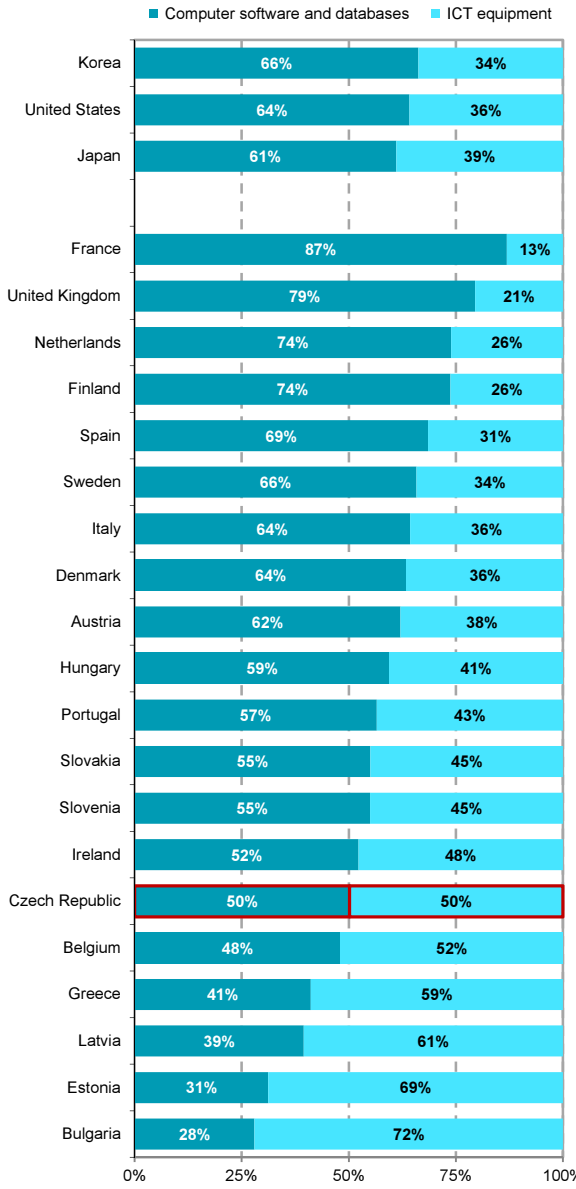
**Figure B4 ICT investment (% GDP)**




*Source: CZSO calculations based on Eurostat and OECD data, 2016*

## B ICT expenditure and investment

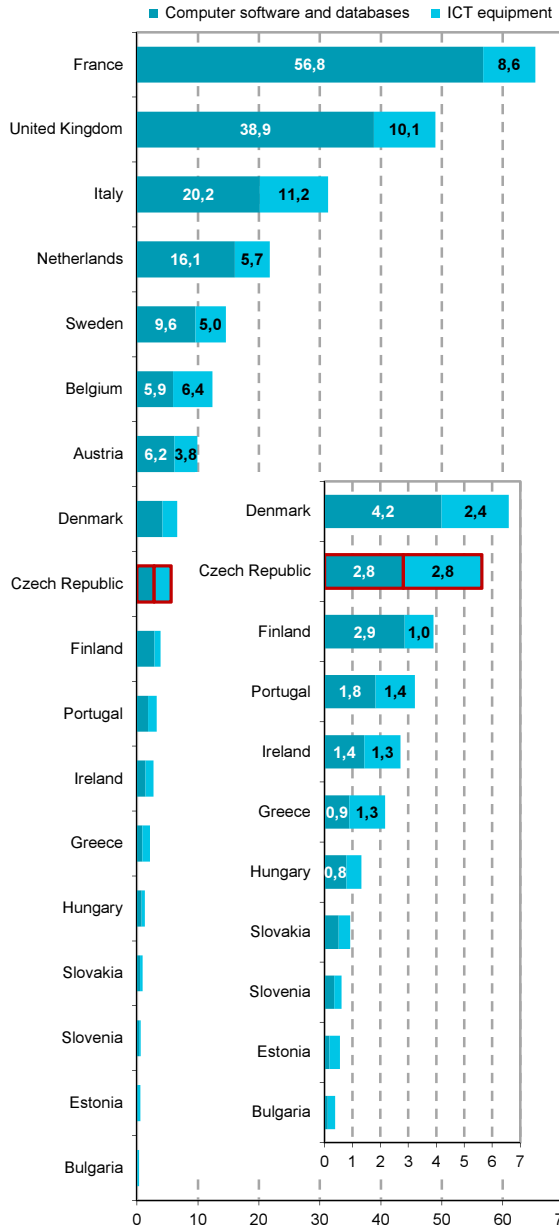
**Figure B5 ICT investment by asset; 2014* (%)**




** or the latest year available*

*Source: CZSO calculations based on Eurostat and OECD data, 2016*

**Figure B6 ICT investment by asset; 2014* (EUR billion)**




** or the latest year available*

*Source: CZSO calculations based on Eurostat and OECD data, 2016*

## B ICT expenditure and investment

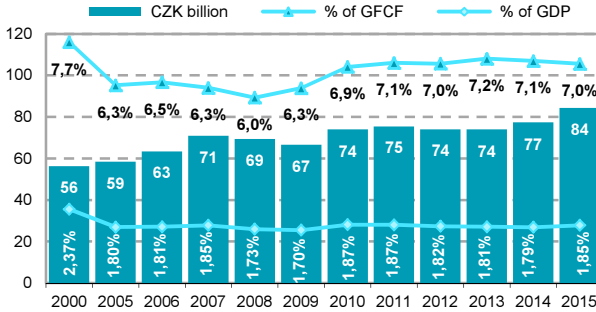
### Table B2 ICT equipment investment in the Czech Republic

CZK million

| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **73 986** | **77 338** | **84 325** |
| Computer (IT) equipment | 56 971 | 55 680 | 60 714 |
| Communication equipment | 17 015 | 21 658 | 23 611 |
| ***Industry (CZ-NACE Section)*** | | | |
| Agriculture, forestry and fishing | 392 | 683 | 1 912 |
| Mining and quarrying | 407 | 419 | 510 |
| Manufacturing | 28 842 | 34 135 | 41 484 |
| Electricity, gas and water supply | 3 304 | 2 836 | 4 331 |
| Construction | 1 055 | 2 142 | 2 315 |
| Wholesale and retail trade | 5 231 | 2 791 | 3 172 |
| Transportation and storage | 892 | 1 266 | 1 872 |
| Accommodation and food service activities | 847 | 1 310 | 1 496 |
| Information and communication | 11 648 | 14 245 | 4 215 |
| Financial and insurance activities | 1 098 | 933 | 1 224 |
| Real estate activities | 1 169 | 531 | 653 |
| Professional, scientific and technical activ. | 3 887 | 3 209 | 4 034 |
| Administrative and support service activ. | 518 | 381 | 442 |
| Public administration and defence | 5 609 | 4 837 | 6 304 |
| Education | 6 345 | 3 868 | 4 278 |
| Human health and social work activities | 1 807 | 2 986 | 5 034 |
| Arts, entertainment and recreation | 673 | 544 | 804 |
| Other services | 262 | 222 | 245 |

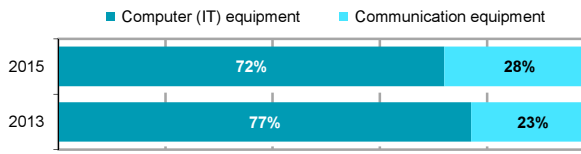
** Preliminary data*

### Figure B7 Total ICT equipment investment




*GFCF - Gross Fixed Capital Formation (total investment)*

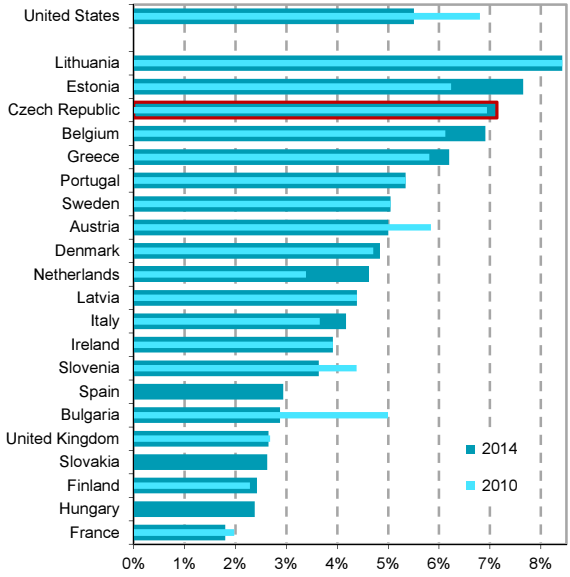
### Figure B8 ICT equipment investment by asset




*Source: CZSO, Annual National Accounts Statistics*

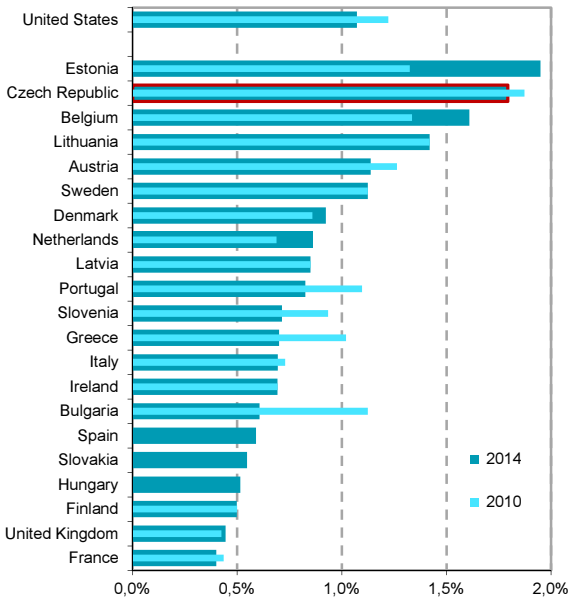
## B ICT expenditure and investment

**Figure B9 ICT equipment investment (% of total GFCF)**




*GFCF - Gross Fixed Capital Formation (total investment)*

**Figure B10 ICT equipment investment (% of GDP)**




*Source: CZSO calculations based on Eurostat and OECD data, 2016*

## B ICT expenditure and investment

**Table B3 Software investment in the Czech Republic**

CZK million

| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **75 602** | **77 818** | **89 984** |
| own-account software | 16 343 | 17 815 | 19 354 |
| ***Type*** | | | |
| Computer Software | 59 324 | 63 584 | 74 116 |
| Databases | 16 278 | 14 234 | 15 868 |
| ***Industry (CZ-NACE Section)*** | | | |
| Agriculture, forestry and fishing | 224 | 268 | 298 |
| Mining and quarrying | 263 | 123 | 136 |
| Manufacturing | 8 167 | 10 334 | 12 167 |
| Electricity, gas and water supply | 1 621 | 1 688 | 1 901 |
| Construction | 787 | 844 | 974 |
| Wholesale and retail trade | 6 227 | 6 535 | 7 804 |
| Transportation and storage | 2 463 | 2 493 | 2 856 |
| Accommodation and food service activities | 152 | 225 | 256 |
| Information and communication | 27 091 | 27 354 | 30 400 |
| Financial and insurance activities | 13 023 | 12 636 | 16 012 |
| Real estate activities | 702 | 945 | 1 143 |
| Professional, scientific and technical activ. | 4 536 | 5 058 | 5 604 |
| Administrative and support service activ. | 1 711 | 1 101 | 1 231 |
| Public administration and defence | 5 298 | 5 065 | 5 483 |
| Education | 1 278 | 1 120 | 1 072 |
| Human health and social work activities | 673 | 782 | 1 020 |
| Arts, entertainment and recreation | 371 | 358 | 397 |
| Other services | 1 015 | 889 | 1 230 |

** Preliminary data*

**Figure B11 Total software investment**

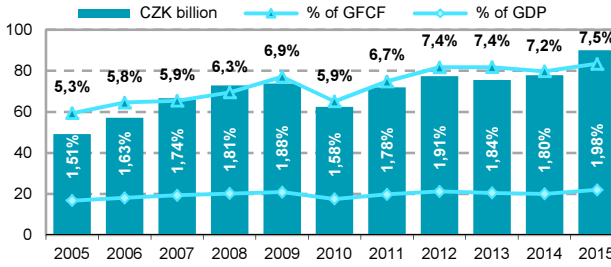
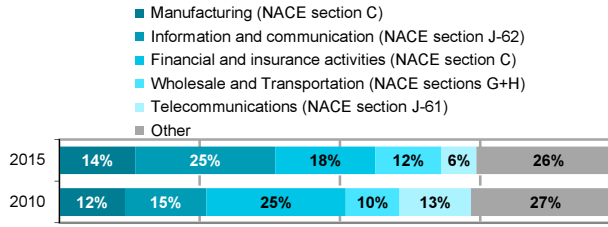
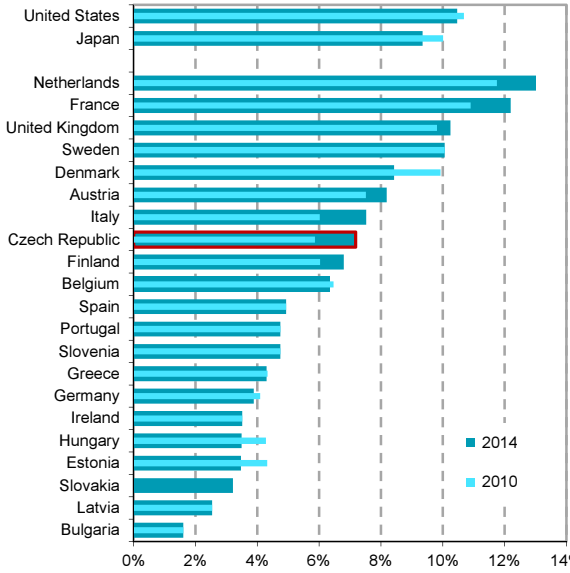



**Figure B12 Software investment by industry (NACE sections)**



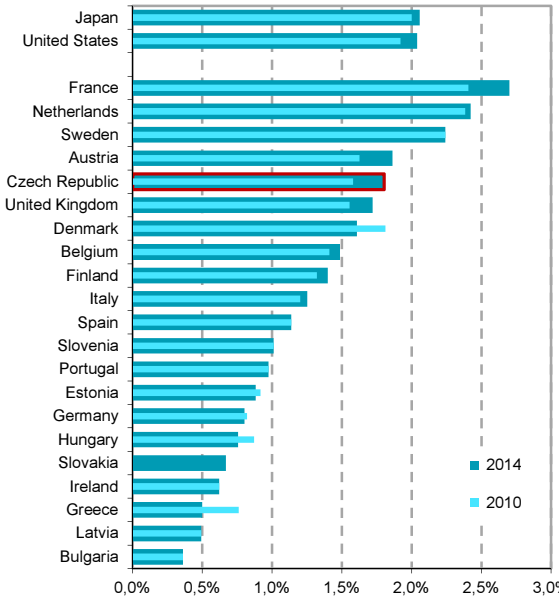

*Source: CZSO, Annual National Accounts Statistics*

**Figure B13 Software investment (% of total GFCF)**




*GFCF - Gross Fixed Capital Formation (total investment)*

**Figure B14 Software investment (% of GDP)**




*Source: CZSO calculations based on Eurostat and OECD data, 2016*

## B ICT expenditure and investment

**Table B4 Household consumption expenditures on ICT equipment and services in the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **87 070** | **86 984** | **88 354** |
| Total ICT equipment | 31 920 | 31 333 | 31 722 |
| Telephone equipment | 3 059 | 3 256 | 3 416 |
| Computers and consumer electronics | 28 861 | 28 077 | 28 306 |
| Telecommunication (ICT) services | 55 150 | 55 651 | 56 632 |

**Figure B15 Total household consumption expenditures on ICT**

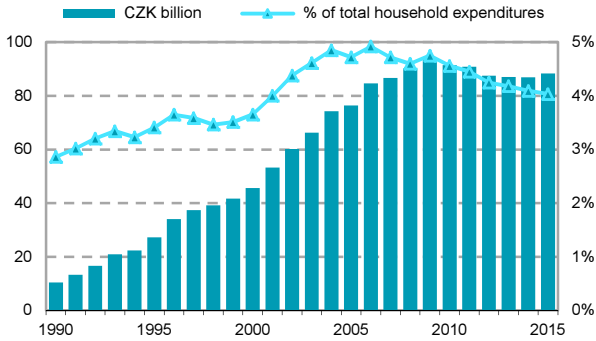



**Figure B16 Households ICT expenditures by commodities**

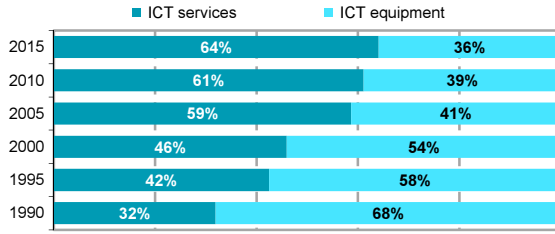
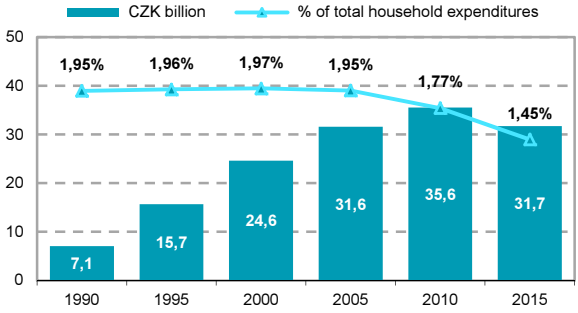



**Figure B17 Households ICT equipment expenditures**




*Source: CZSO, Annual National Accounts Statistics*

**Figure B18 Household consumption expenditures on ICT; 2014 (% of total households consumption expenditures)**

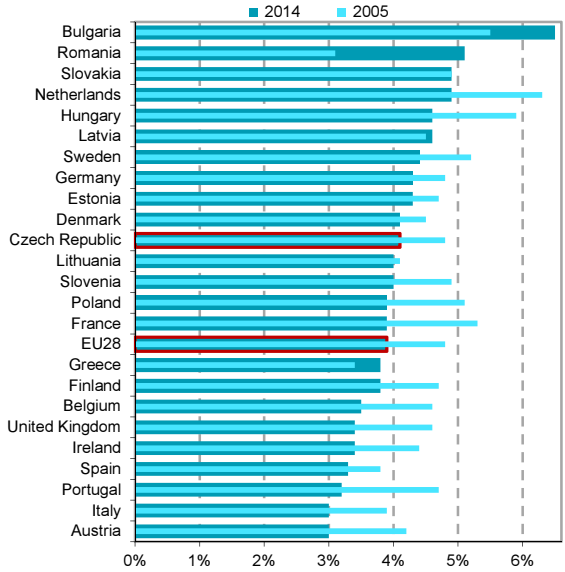
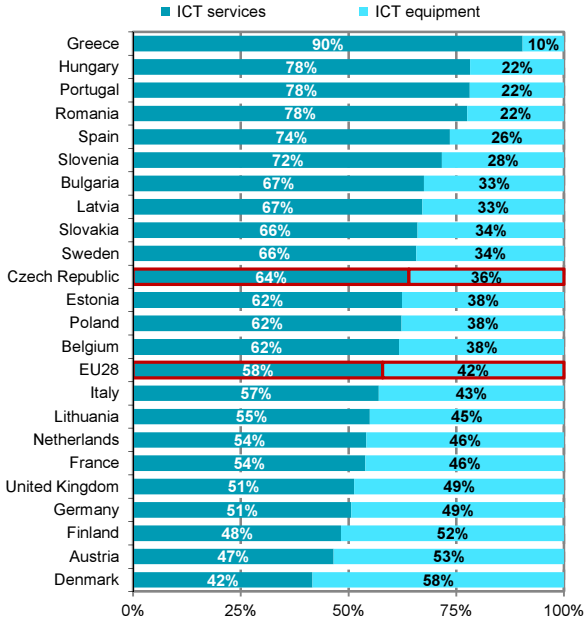



**Figure B19 Household ICT expenditures by commodities; 2014 (%)**




*Source: CZSO calculations based on Eurostat data, 2016*

**Table B5 Household consumption expenditures on telecommunication in the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **58 209** | **58 907** | **60 048** |
| Telephone equipment | 3 059 | 3 256 | 3 416 |
| Telecommunication services | 55 150 | 55 651 | 56 632 |

**Figure B20 Household expenditures on telecommunication**

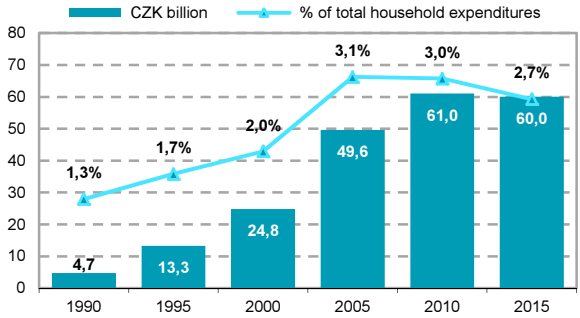



**Figure B21 Household expenditures on telecommunication by commodities**

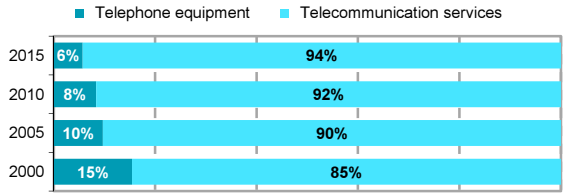
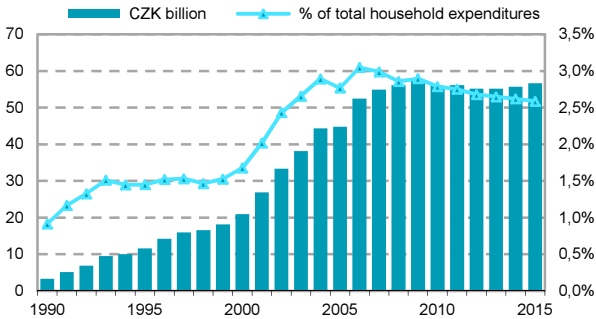



**Figure B22 Household expenditures on telecommunication services**




*Source: CZSO, Annual National Accounts Statistics*

**Figure B23 Household expenditures on telecommunication services; 2014 (% of total households expenditures)**

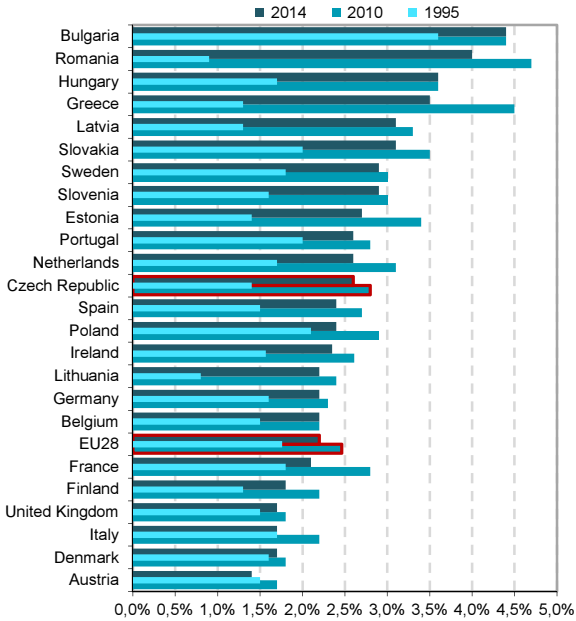
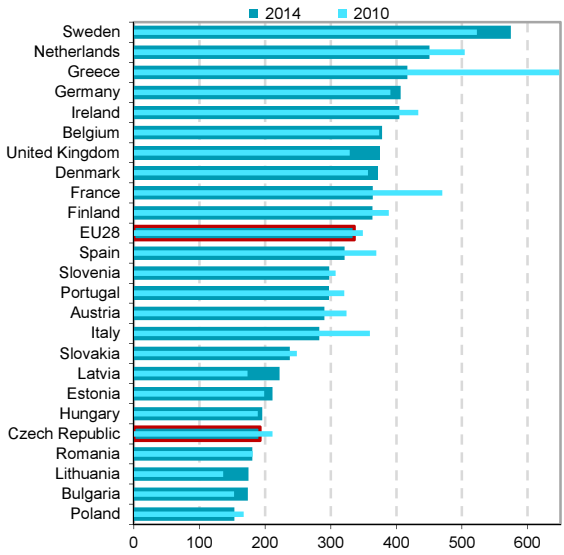



**Figure B24 Household expenditures on telecommunication services (per 1 inhabitant, in EUR)**




*Source: CZSO calculations based on Eurostat data, 2016*

# C ICT research and development

**Research and development (R&D)** is a systematic creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of human beings, culture and society.

Data for this chapter comes from the results of the **Czech annual questionnaire on research and developmen**t, which includes questions on human and financial resources determined for R&D activities realized on the territory of the Czech Republic. The statistical survey fully complies with methodological principles of the EU and the OECD mentioned in the Frascati Manual (OECD, Paris 2002) and Commission Implementing Regulation (EU) No 995/2012.

Further information on the **Czech R&D statistics** can be found at: https://www.czso.cz/csu/czso/vysledky_vyzkumu_a_vyvoje

### *C. 1 Expenditures on R&D of ICT products*

This sub-chapter presents data on the total **financial resources invested in research and development of ICT equipment and software (ICT products)** in the Czech Republic regardless of main economic activity and sector of R&D performers.

**ICT products** are classified into two main categories based on the following CPA divisions and groups:

- **ICT equipment** (CZ-CPA 261-4 a 268)
- **Software** (CZ-CPA 62)

*Software-related activities of a routine nature which do not involve scientific and/or technological advances or resolution of technological uncertainties are not to be included in R&D.*

Data on expenditures related to the research and development of ICT equipment and software **(ICT R&D expenditures)** are based on the results of the special module that is included in the **Czech annual questionnaire on research and development.**

**International comparison is not available for this data set.**

### *C. 2 R&D expenditures and personnel in the ICT sector industries*

This sub-chapter focuses on R&D expenditures and personnel performed by enterprises with the main economic activity that belongs to the **ICT sector industries.** In general, the term ICT sector includes both: **ICT manufacturing** and **ICT services industries** which are associated with the production and/or distribution of information and communication technologies (ICT) and a provision of related services.

ICT sector is divided into the **four main categories**: ICT manufacturing industries, ICT trade industries, Telecommunications and IT services. **For more information see Chapter E ICT sector.**

*Data on R&D expenditure and number of R&D personnel in ICT sector have less predictive value than the figures for the total ICT R&D expenditures included in first sub-chapter. Enterprises within the ICT sector can perform their R&D activities in areas other than ICT and vice versa enterprises outside the ICT sector can exercise their R&D activities in the ICT field.*

**Further information on ICT sector can be found at (only in Czech):**
https://www.czso.cz/csu/czso/annual-structural-business-statistics-methodology

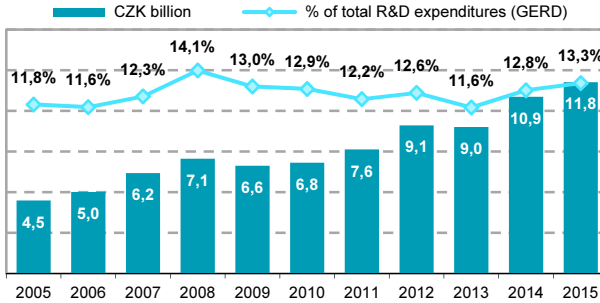
# C ICT research and development

## Table C1 Total ICT R&D expenditures in the Czech Republic

CZK million

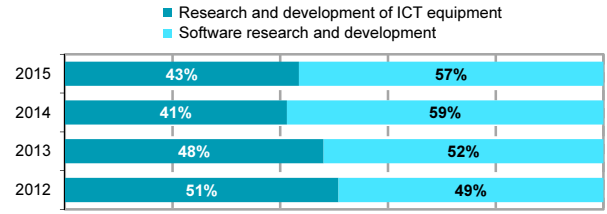
| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **9 008** | **10 868** | **11 763** |
| financed from government funds | 1 529 | 1 491 | 1 742 |
| ***ICT products for which R&D is carried out*** | | | |
| ICT equipment | 4 328 | 4 483 | 5 112 |
| Software | 4 680 | 6 385 | 6 651 |
| ***Type of R&D performers*** | | | |
| **Enterprises, total** | **7 953** | **10 066** | **10 000** |
| National enterprises | 3 894 | 4 330 | 3 600 |
| Foreign-controlled enterprises | 4 059 | 5 736 | 6 400 |
| **Public universities** | **921** | **759** | **1 704** |
| **Other R&D performers** | **133** | **42** | **59** |

## Figure C1 Total ICT R&D expenditures

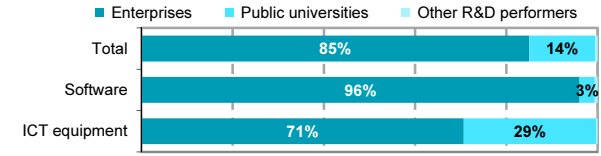



*GERD - Total Gross Domestic Expenditure on Research and Development*

## Figure C2 ICT R&D expenditures by products




## Figure C3 ICT R&D expenditures by type of R&D performers; 2015




*Source: CZSO, Annual R&D survey*

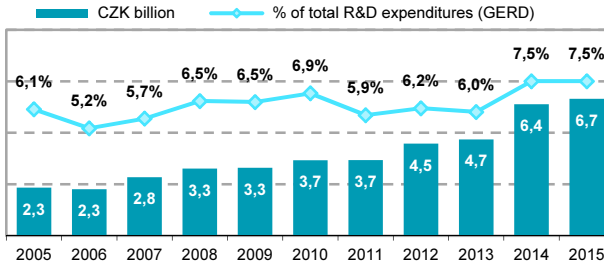
# C ICT research and development

## Table C2 Software R&D expenditures in the Czech Republic

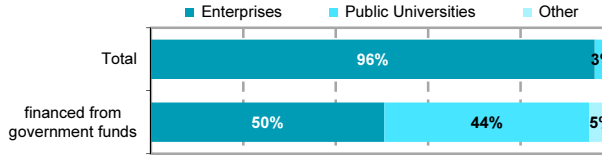
CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **4 680** | **6 385** | **6 651** |
| financed from government funds | 402 | 337 | 400 |
| ***Type of R&D performers*** | | | |
| **Enterprises, total** | **4 392** | **6 146** | **6 388** |
| National enterprises | 2 035 | 2 438 | 2 086 |
| Foreign-controlled enterprises | 2 356 | 3 708 | 4 302 |
| **Public universities** | **280** | **219** | **222** |
| **Other R&D performers** | **8** | **20** | **41** |

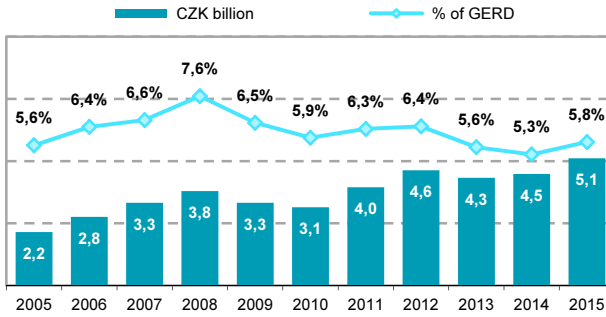
## Figure C4 Software R&D expenditures




## Figure C5 Software R&D expenditures by type of R&D performers; 2015




## Figure C6 ICT equipment R&D expenditures




*GERD - Total Gross Domestic Expenditure on Research and Development*

*Source: CZSO, Annual R&D survey*

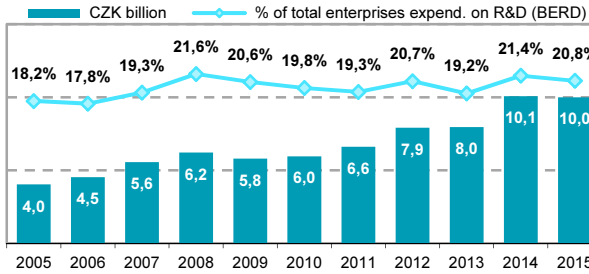
# C ICT research and development

**Table C3 Expenditures on R&D of ICT products performed by enterprises in the Czech Republic**

CZK million

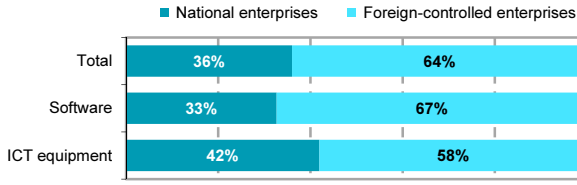
| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **7 953** | **10 066** | **10 000** |
| financed from government funds | 673 | 951 | 789 |
| ***ICT products for which R&D is carried out*** | | | |
| ICT equipment | 1 762 | 1 762 | 1 762 |
| Software | 4 392 | 6 146 | 6 388 |
| ***Enterprise size group*** | | | |
| Small (0-49 employees) | 1 296 | 1 445 | 1 169 |
| Medium (50-249 employees) | 3 835 | 3 923 | 3 416 |
| Large (250+ employees) | 2 822 | 4 698 | 5 415 |
| ***Ownership of enterprises*** | | | |
| National enterprises | 3 894 | 4 330 | 3 600 |
| Foreign-controlled enterprises | 4 059 | 5 736 | 6 400 |
| ***Main economic activity of enterprises (CZ-NACE)*** | | | |
| **ICT sector, total** | **5 660** | **7 585** | **7 302** |
| ICT manufacturing (261-264) | 281 | 271 | 167 |
| Telecommunications (61) | 591 | 603 | 622 |
| IT services (465+582+62+631+951) | 4 787 | 6 711 | 6 514 |
| Other manufacturing | 546 | 573 | 648 |
| Scientific research and development (72) | 570 | 700 | 660 |
| Other economic activities | 1 177 | 1 209 | 1 390 |

**Figure C7 Expenditures on R&D of ICT products performed by enterprises**




*BERD - Total intramural R&D expenditure in the business enterprise sector*

**Figure C8 Expenditures on R&D of ICT products by ownership of enterprises; 2015**



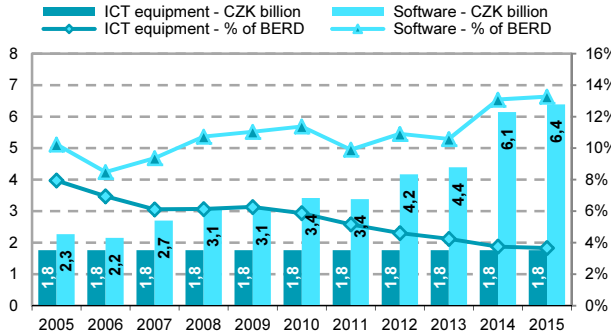

*Source: CZSO, Annual R&D survey*

**Table C4 Expenditures on R&D of ICT equipment and software performed by enterprises in the Czech Republic; 2015**

CZK million

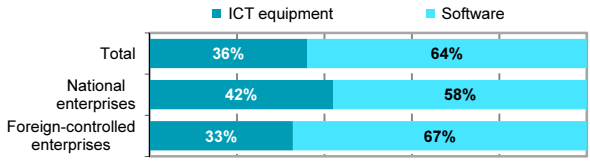
| | Total | ICT equipment | Software |
|---|---|---|---|
| **Total** | **10 000** | **3 612** | **6 388** |
| financed from government funds | 789 | 587 | 202 |
| ***Enterprise size group*** | | | |
| Small (0-49 employees) | 1 169 | 412 | 757 |
| Medium (50-249 employees) | 3 416 | 1 635 | 1 781 |
| Large (250+ employees) | 5 415 | 1 651 | 3 764 |
| ***Ownership of enterprises*** | | | |
| National enterprises | 3 600 | 1 904 | 1 696 |
| Foreign-controlled enterprises | 6 400 | 2 098 | 4 302 |
| ***Main economic activity of enterprises (CZ-NACE)*** | | | |
| **ICT sector, total** | **7 302** | **1 886** | **5 416** |
| ICT manufacturing (261-264) | 167 | 109 | 58 |
| Telecommunications (61) | 622 | 411 | 210 |
| IT services (465+582+62+631+951) | 6 514 | 1 366 | 5 148 |
| Other manufacturing | 652 | 386 | 266 |
| Scientific research and development (72) | 660 | 630 | 30 |
| Other economic activities | 1 386 | 709 | 677 |

**Figure C9 Expenditures on R&D of ICT equipment and software performed by enterprises**




*BERD - Total intramural R&D expenditure in the business enterprise sector*

**Figure C10 Expenditures on R&D of ICT equipment and software by ownership of enterprises; 2015**




*Source: CZSO, Annual R&D survey*

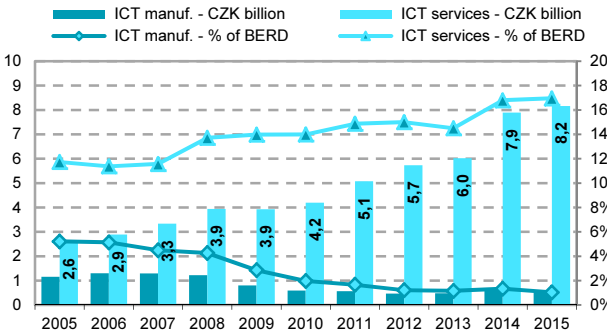
# C ICT research and development

**Table C5 R&D expenditures in the ICT sector in the Czech Rep.**

CZK million

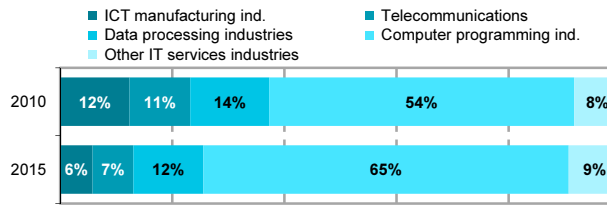
| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **6 499** | **8 515** | **8 659** |
| financed from government funds | 1 089 | 1 099 | 1 052 |
| ***Products for which R&D is carried out*** | | | |
| ICT equipment | 2 061 | 2 306 | 1 886 |
| Software | 3 599 | 5 279 | 5 416 |
| Other non ICT related products | 839 | 930 | 1 357 |
| ***Enterprise size group*** | | | |
| Small (0-49 employees) | 1 132 | 1 259 | 1 065 |
| Medium (50-249 employees) | 3 209 | 3 312 | 3 491 |
| Large (250+ employees) | 2 158 | 3 943 | 4 103 |
| ***Ownership of enterprises*** | | | |
| National enterprises | 3 236 | 3 706 | 3 095 |
| Foreign-controlled enterprises | 3 262 | 4 809 | 5 564 |
| ***Main economic activity of enterprises (CZ-NACE)*** | | | |
| ICT manufacturing industries (261-264) | 479 | 625 | 500 |
| ICT services industries, total | 6 019 | 7 889 | 8 159 |
| Telecommunications (61) | 592 | 603 | 630 |
| Computer programming (582+6201) | 3 314 | 4 879 | 5 643 |
| Data processing and hosting (631) | 1 355 | 1 580 | 1 080 |
| Other IT services (465+951+62 without 6201) | 758 | 827 | 806 |

**Figure C11 R&D expenditures in the ICT sector industries**




*BERD - Total intramural R&D expenditure in the business enterprise sector*

**Figure C12 R&D expenditures in the ICT sector by industry**




*Source: CZSO, Annual R&D survey*

**Figure C13 R&D expenditures in the ICT sector; 2014***
**(as a percentage of GDP)**

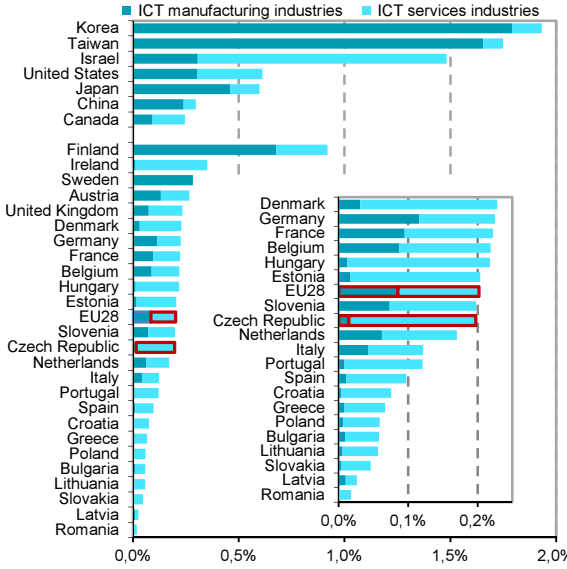
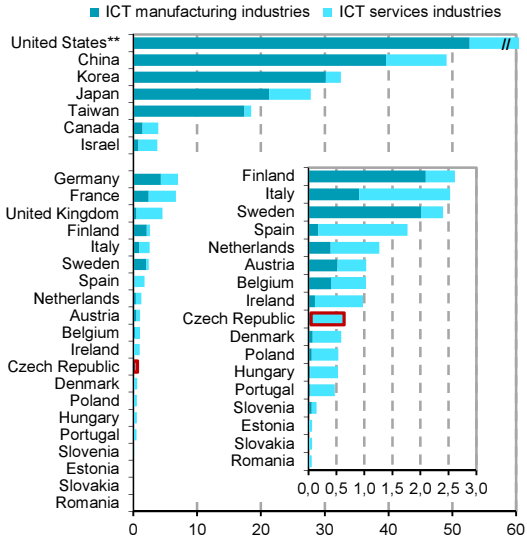



**Figure C14 R&D expenditures in the ICT sector; 2014***
**(USD billion PPP)**




** or the latest year available*

***USA: ICT manufacturing 52,7 billion, ICT Services 53,4 billion USD PPP*

*Source: CZSO calculations based on Eurostat and OECD data, 2016*

**Table C6 R&D personnel in the ICT sector in the Czech Rep.**

R&D personnel (Full Time Equivalent Numbers - FTE)

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **6 174** | **7 725** | **7 988** |
| ***By occupation*** | | | |
| Researchers | 3 281 | 4 480 | 4 829 |
| Technicians and equivalent staff | 2 428 | 2 648 | 2 637 |
| Other supporting and administrative staff | 465 | 597 | 522 |
| ***Enterprise size group*** | | | |
| Small (0-49 employees) | 1 426 | 1 468 | 1 356 |
| Medium (50-249 employees) | 2 930 | 2 869 | 3 062 |
| Large (250+ employees) | 1 817 | 3 388 | 3 570 |
| ***Ownership of enterprises*** | | | |
| National enterprises | 3 208 | 3 431 | 3 202 |
| Foreign-controlled enterprises | 2 966 | 4 294 | 4 786 |
| ***Main economic activity of enterprises (CZ-NACE)*** | | | |
| ICT manufacturing industries (261-264) | 676 | 656 | 523 |
| ICT services industries, total | **5 498** | **7 069** | **7 465** |
| Telecommunications (61) | 143 | 151 | 197 |
| Computer programming (582+6201) | 3 569 | 4 831 | 5 434 |
| Data processing and hosting (631) | 701 | 843 | 762 |
| Other IT services (465+951+62 without 6201) | 1 084 | 1 243 | 1 072 |

**Figure C15 R&D personnel in the ICT sector industries**

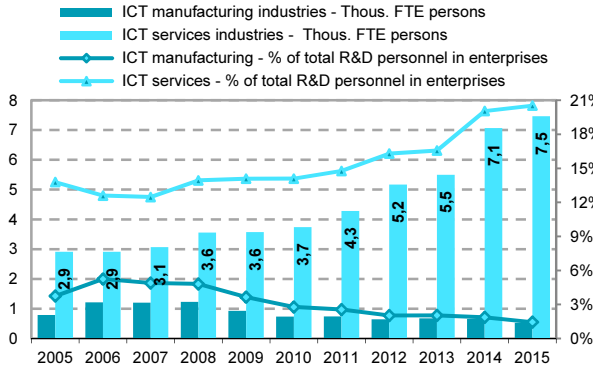
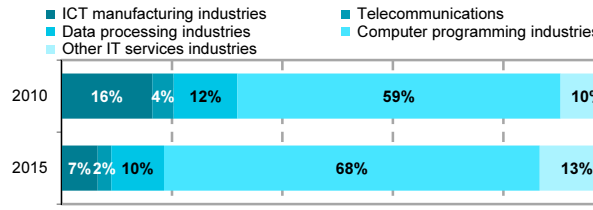



**Figure C16 R&D personnel in the ICT sector by industry**




*Source: CZSO, Annual R&D survey*

# D ICT external trade

ICT external trade **contains** trade in both ICT goods and ICT services. **ICT products** are defined as goods or services which must be primarily intended to fulfill or enable the function of information processing and communication **by electronic means**, including transmission and display (OECD 2008). Further information can be found at „**OECD Guide to Measuring the Information Society 2011**":

### *D. 1 External trade of ICT goods*

The **list of ICT goods** that is used for the external trade statistics is based on the Harmonised System Nomenclature (HS Nomenclature 2007), a classification of goods used for the international trade. List of ICT goods defined at 6-digit level of HS2007 was further grouped into the five main categories as follows:

- Computer equipment and peripherals;
- Communication equipment;
- Consumer electronics;
- Electronic components;
- Miscellaneous ICT parts and accessories n.e.s.

The **External Trade Statistics Database** of the Czech Statistical Office (CZSO) was used as a data source for national data. For more information see: http://apl.czso.cz/pll/stazo/STAZO.STAZO?jazyk=EN

The **UNCTAD database** and **The UN Comtrade database** was used as a data source for the international comparison:
http://unctad.org/en/Pages/Statistics.aspx; http://comtrade.un.org/db/

**Further information on ICT goods trade statistics can be found at:**
https://www.czso.cz/csu/czso/external_trade_in_ict_goods

### *D. 2 External trade of ICT services*

Data on exports and imports of the **ICT services** come from the CZSO direct survey at respondents on exports and imports of services.

Respective items of the ICT services are then defined according to the **Classification of Services** used by CZSO since 2011. This classification is based on the Classification of Products by Activity (CZ-CPA) and the international classification of Extended Balance of Payment Services (EBOPS 2010). ICT services, according to the EBOPS 2010, are divided into two main categories:

**Telecommunication services** include, first of all, transactions of Czech and foreign telecommunication operators for implemented international calls by means of fixed or mobile telephone networks. Other telecommunication services involve payments for the access to the Internet, cable television, and to other computer networks.

**Computer services and software** consist mainly of consultancy services in the fields of hardware and software of computers, including maintenance and repairs of both hardware and software and services related to data processing. **Computer software** involves purchase and sale of tailor-made software and applications (original computer software), including purchase and sale of ownership rights to such software or licence fees for the software use. Furthermore, it is also purchase and sale of standard software and applications **supplied over the Internet**, including purchase and sale of ownership rights to such software or licence fees for the software use.

Data for **international comparisons** come from **Eurostat** data sources.

Further information on **ICT services trade statistics** can be found at:
https://www.czso.cz/csu/czso/zahranicni_obchod_s_ict_sluzbami

# D ICT external trade

**Table D1 ICT goods exports from the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **414 405** | **487 462** | **522 936** |
| Computer equipment and peripherals | 198 836 | 232 424 | 247 779 |
| Communication equipment | 71 383 | 88 432 | 103 728 |
| Consumer electronics | 66 078 | 71 144 | 69 489 |
| Electronic components | 33 610 | 35 112 | 42 237 |
| Miscellaneous ICT parts and accessories | 44 498 | 60 349 | 59 703 |

**Figure D1 ICT goods exports**

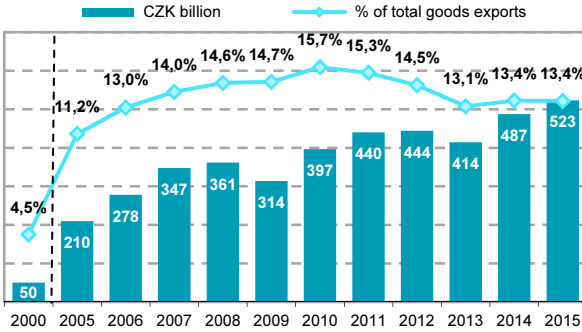



**Figure D2 ICT goods exports by commodities**

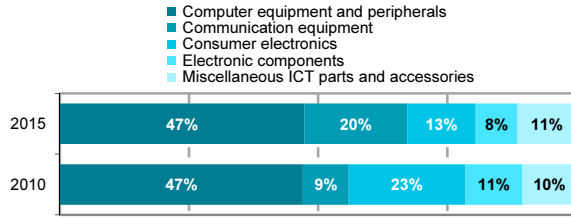
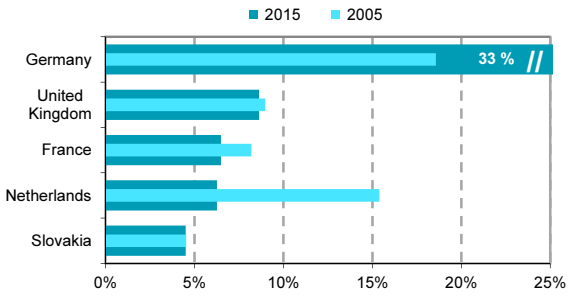



**Figure D3 ICT goods exports by countries**




*Source: CZSO, External Trade Statistics Database*

## D ICT external trade

**Figure D4 ICT goods exports (% of total goods exports)**

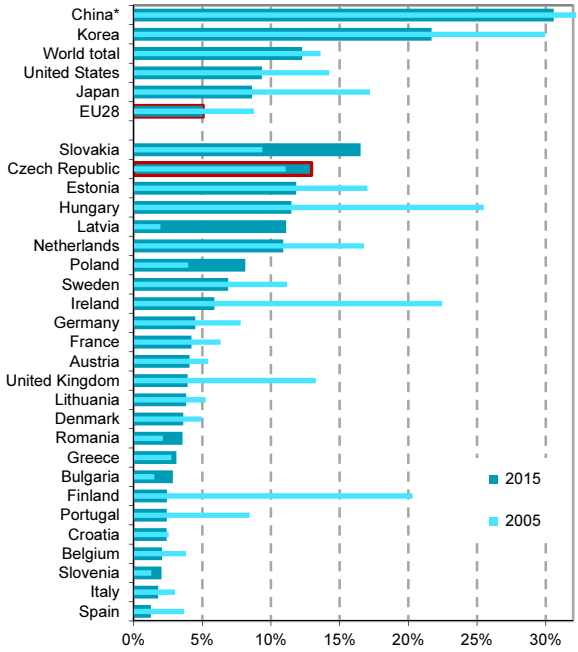
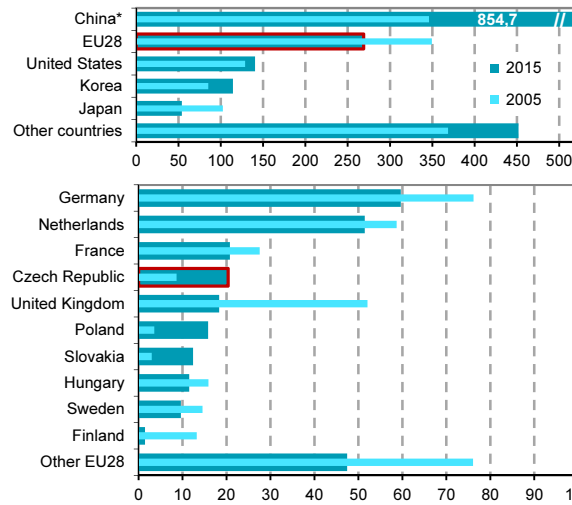



**Figure D5 ICT goods exports (US$ billion)**




*China* = (China; Hong Kong China; Macao China; China Taiwan)*

*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

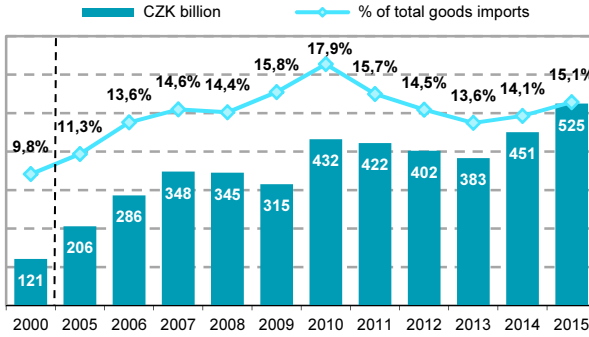
# D ICT external trade

## Table D2 ICT goods imports to the Czech Republic

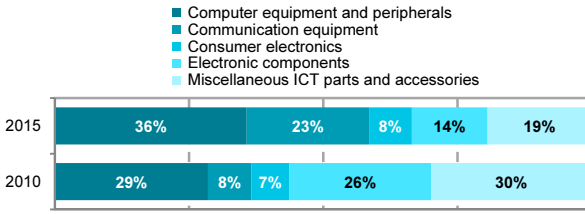
CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **383 010** | **450 580** | **524 914** |
| Computer equipment and peripherals | 129 839 | 145 750 | 187 555 |
| Communication equipment | 67 707 | 82 719 | 119 738 |
| Consumer electronics | 27 003 | 33 108 | 41 873 |
| Electronic components | 69 362 | 83 906 | 74 038 |
| Miscellaneous ICT parts and accessories | 89 099 | 105 096 | 101 711 |

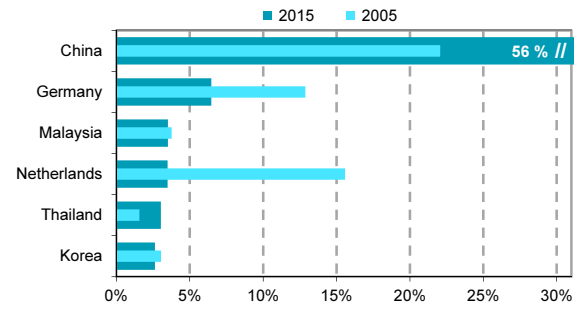
## Figure D6 ICT goods imports




## Figure D7 ICT goods imports by commodities




## Figure D8 ICT goods imports by countries




*Source: CZSO, External Trade Statistics Database*

**Figure D9 ICT goods imports (% of total goods imports)**

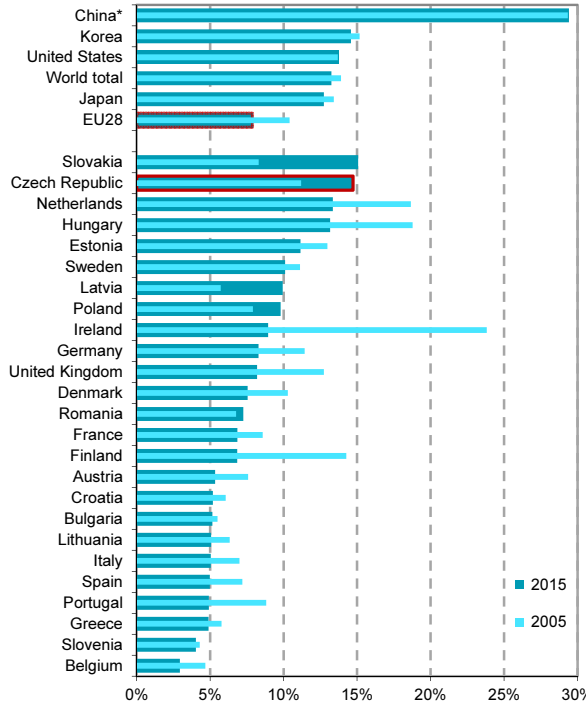
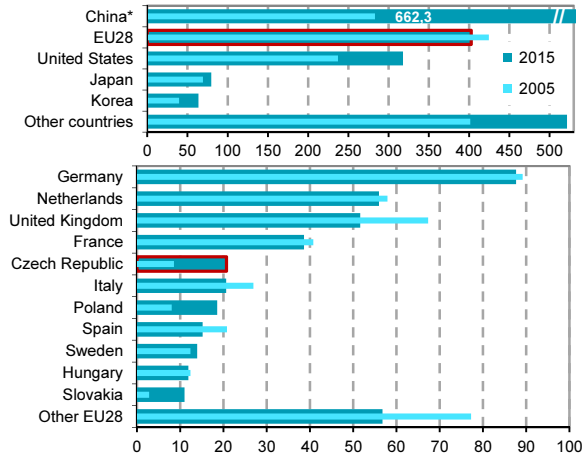


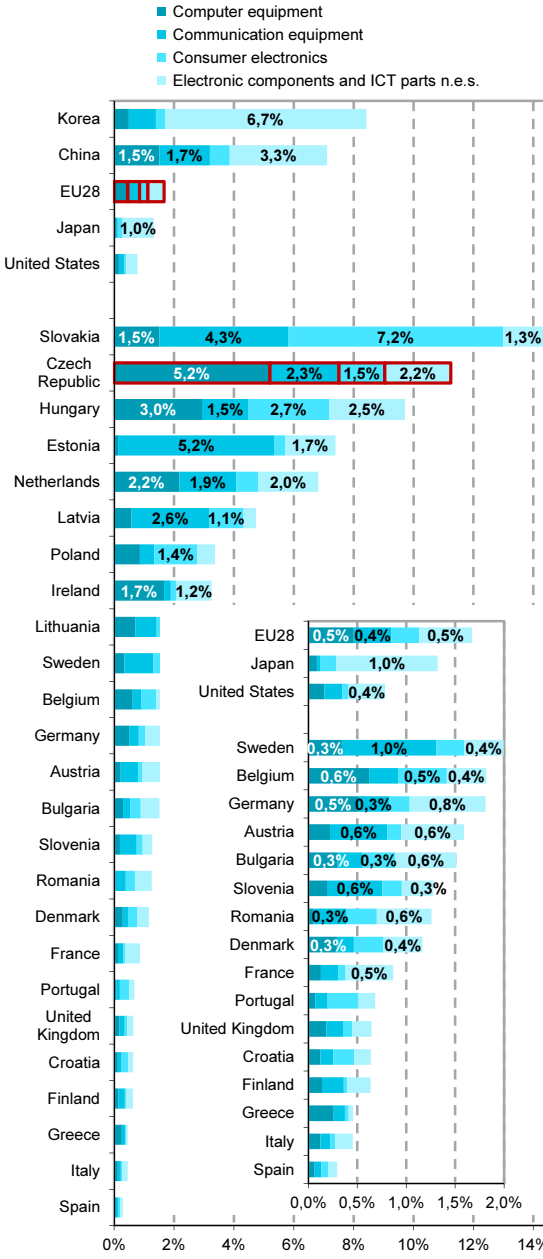

**Figure D10 ICT goods imports (US$ billion)**




*China* = (China; Hong Kong China; Macao China; China Taiwan)*

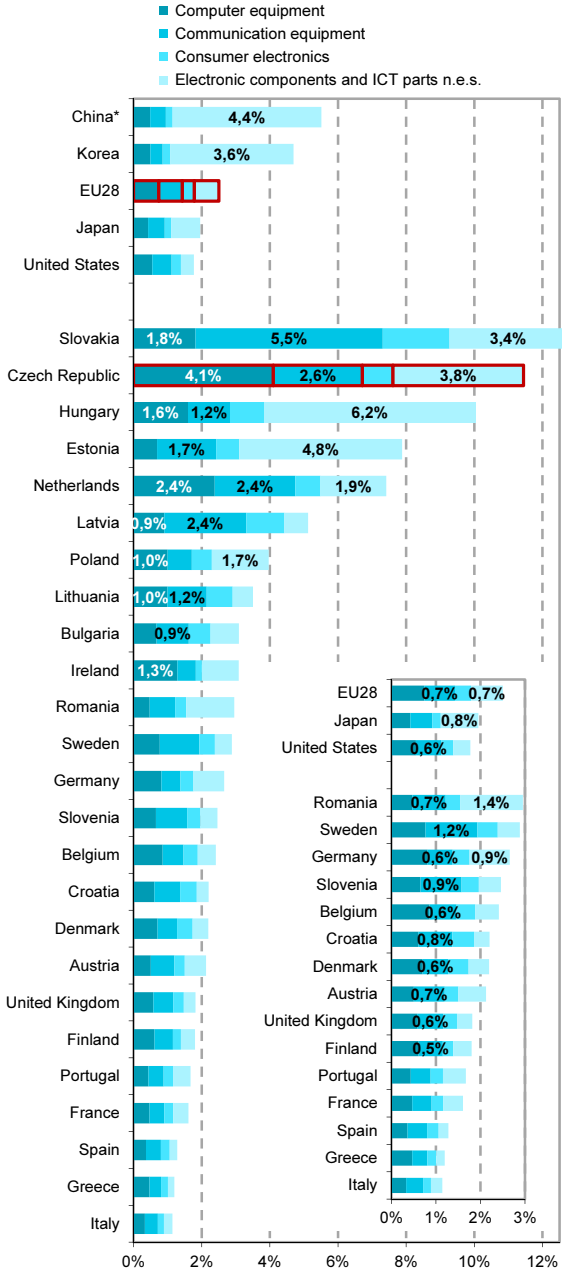
*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

**Figure D11 ICT goods exports; 2015 (as a % of GDP)**




*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

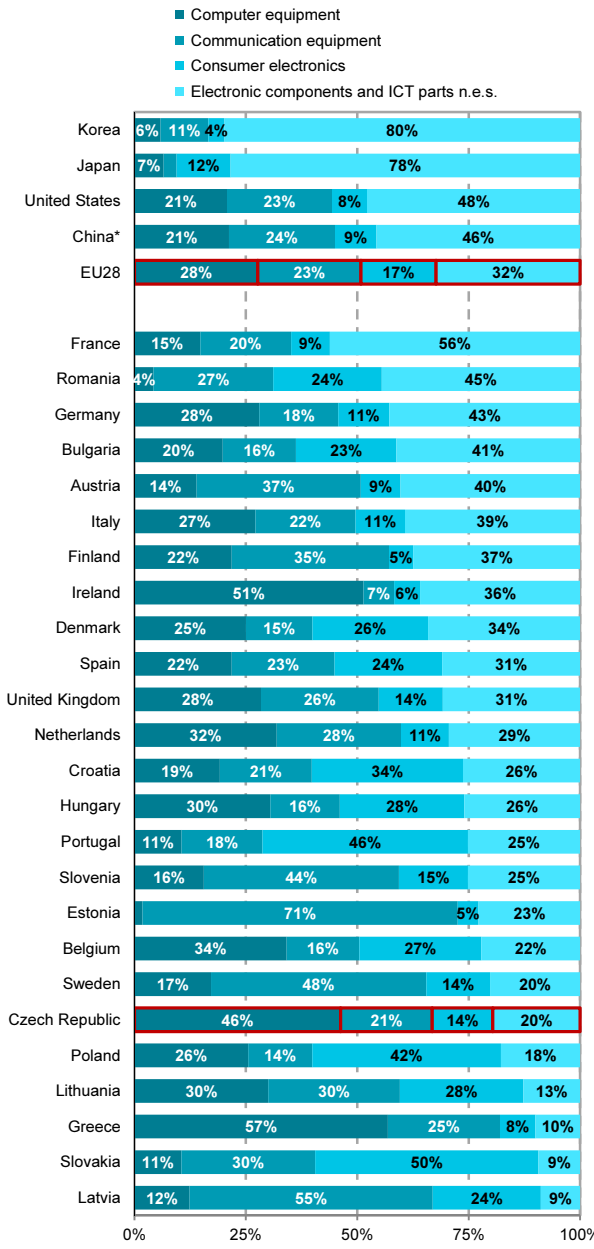
**Figure D12 ICT goods imports; 2015 (as a % of GDP)**




*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

# D ICT external trade

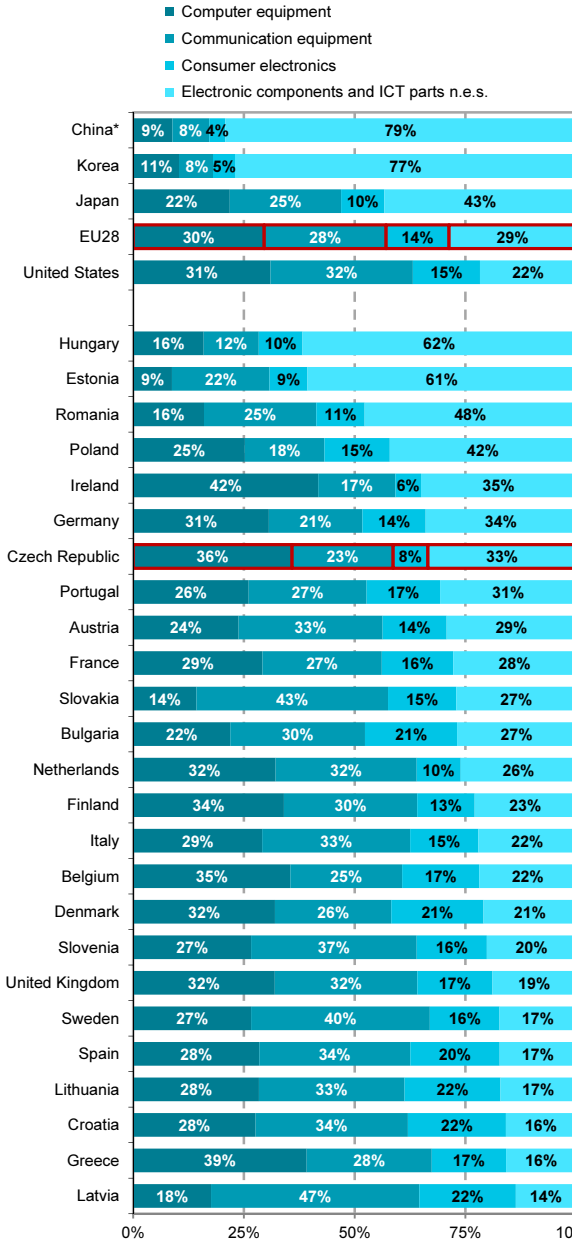
**Figure D13 ICT goods exports by commodities; 2015**




*China* = (China; Hong Kong China; Macao China; China Taiwan)*

*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

**Figure D14 ICT goods imports by commodities; 2015**




*China* = (China; Hong Kong China; Macao China; China Taiwan)*

*Source: CZSO calculations based on UNCTAD and UN Comtrade data, 2016*

# D ICT external trade

**Table D3 Computer equipment exports from the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **198 836** | **232 424** | **247 779** |
| Portable computers | 55 663 | 60 266 | 59 233 |
| Other computers | 78 730 | 93 090 | 88 059 |
| Computer peripherals, total | 64 443 | 79 068 | 100 486 |
| Storage units | 41 444 | 45 330 | 60 690 |
| Sound, video, network and similar cards | 7 135 | 8 119 | 8 874 |
| Monitors used with computers | 3 855 | 11 662 | 15 858 |
| Printers, copying or faxing machines | 5 776 | 6 565 | 7 037 |
| Other input or output peripherals* | 6 234 | 7 392 | 8 028 |

** Keyboards; joysticks, computer mice, scanners or optical readers*

**Figure D15 Computer equipment exports**

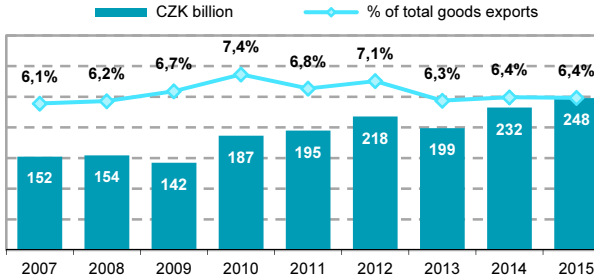



**Figure D16 Computer equipment exports by commodities**

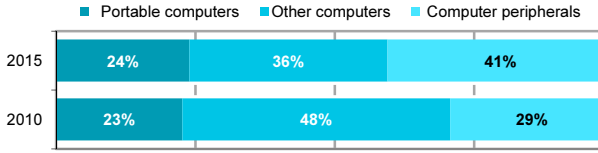
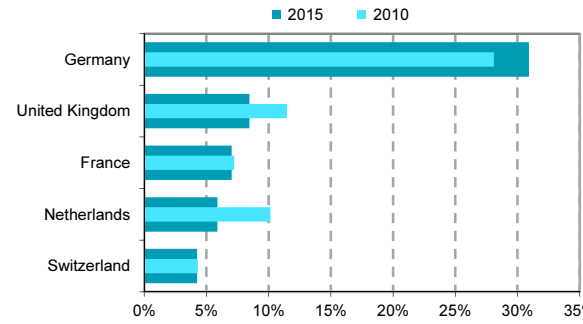



**Figure D17 Computer equipment exports by countries**




*Source: CZSO, External Trade Statistics Database*

# D ICT external trade

**Table D4 Computer equipment imports to the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **129 839** | **145 750** | **187 555** |
| Portable computers | 52 536 | 55 391 | 74 796 |
| Other computers | 13 515 | 20 520 | 23 130 |
| Computer peripherals total | 63 788 | 69 838 | 89 629 |
| Storage units | 35 616 | 37 875 | 50 105 |
| Sound, video, network and similar cards | 11 605 | 7 943 | 8 824 |
| Monitors used with computers | 4 876 | 10 746 | 15 141 |
| Printers, copying or faxing machines | 7 304 | 8 368 | 8 795 |
| Other input or output peripherals* | 4 388 | 4 906 | 6 764 |

** Keyboards; joysticks, computer mice, scanners or optical readers*

**Figure D18 Computer equipment imports**

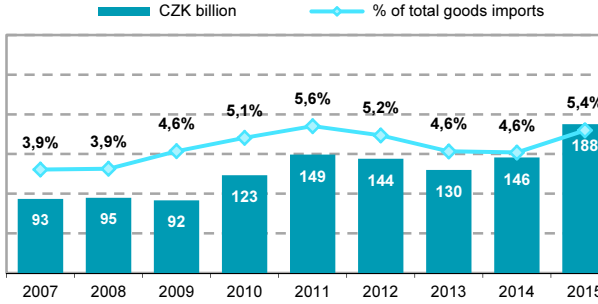



**Figure D19 Computer equipment imports by commodities**

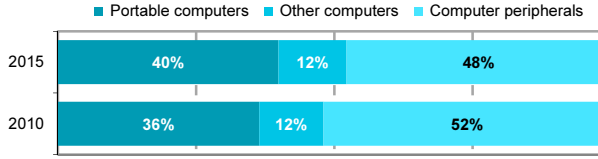
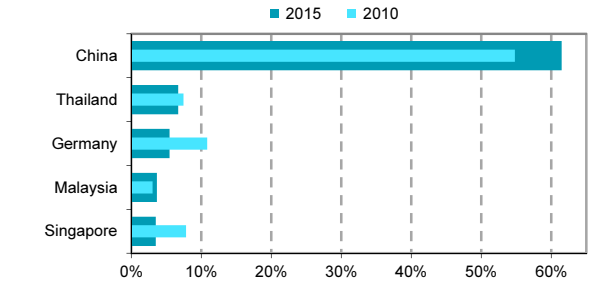



**Figure D20 Computer equipment imports by countries**




*Source: CZSO, External Trade Statistics Database*

# D ICT external trade

**Table D5 Communication equipment exports from the Czech Rep.**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **71 383** | **88 432** | **103 728** |
| Mobile phones | 47 473 | 59 345 | 67 721 |
| Other communication equipment* | 23 910 | 29 087 | 36 006 |

** Switching, routing and similiar apparatus suh as routers, bridges, hubs or modems; Base stations and other apparatus for transmission or reception of voice, images or other data; Radio or television transmission apparatus*

**Figure D21 Communication equipment exports**

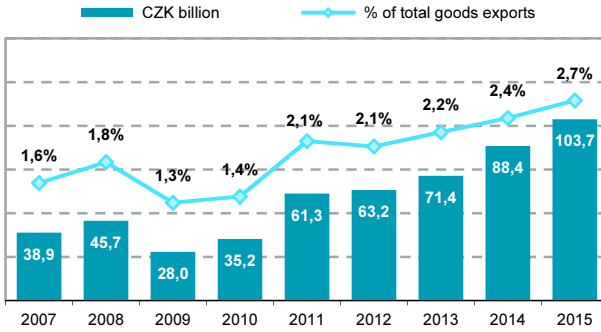



**Figure D22 Communication equipment exports by commodities**

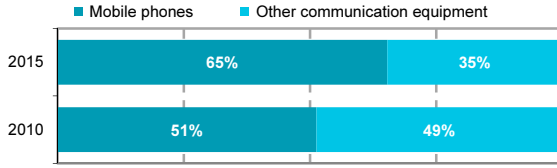
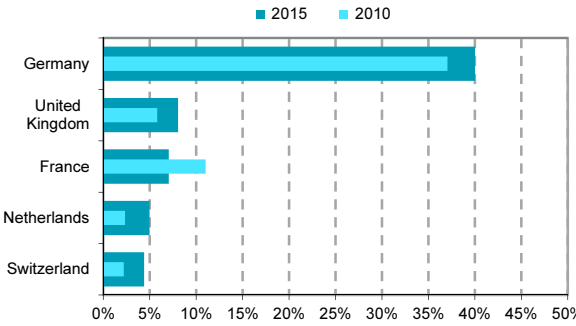



**Figure D23 Communication equipment exports by countries**




*Source: CZSO, External Trade Statistics Database*

# D ICT external trade

**Table D6 Communication equipment imports to the Czech Rep.**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **67 707** | **82 719** | **119 738** |
| Mobile phones | 46 854 | 56 211 | 85 524 |
| Other communication equipment* | 20 853 | 26 508 | 34 214 |

** Switching, routing and similiar apparatus suh as routers, bridges, hubs or modems; Base stations and other apparatus for transmission or reception of voice, images or other data; Radio or television transmission apparatus*

**Figure D24 Communication equipment imports**

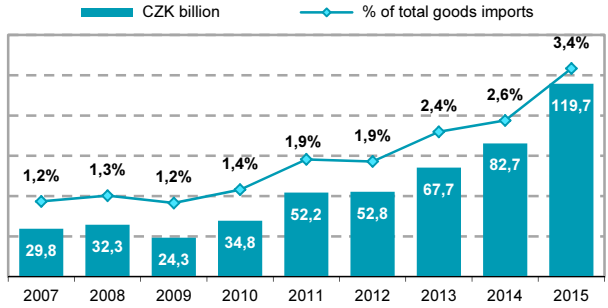



**Figure D25 Communication equipment imports by commodities**

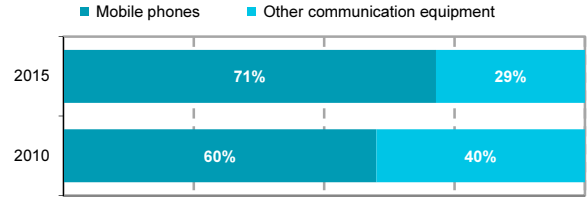
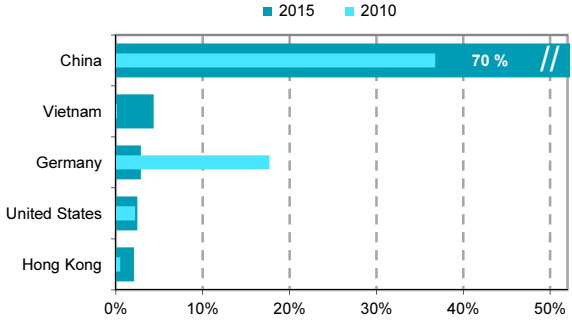



**Figure D26 Communication equipment imports by countries**




*Source: CZSO, External Trade Statistics Database*

# D ICT external trade

**Table D7 Consumer electronics exports from the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **66 078** | **71 144** | **69 489** |
| Radio and TV receivers | 46 819 | 50 320 | 42 129 |
| Sound and image recording and reproducing apparatuses | 8 856 | 8 149 | 13 362 |
| Consumer electronics accessories* | 10 403 | 12 675 | 13 998 |

** Monitors and projectors; Microphones and stands there for; Loudspeakers; Headphones, earphones and combined microphone/speaker sets; Audio-frequency electric amplifiers; Electric sound amplifier sets; Non-recorded media*

**Figure D27 Consumer electronics exports**

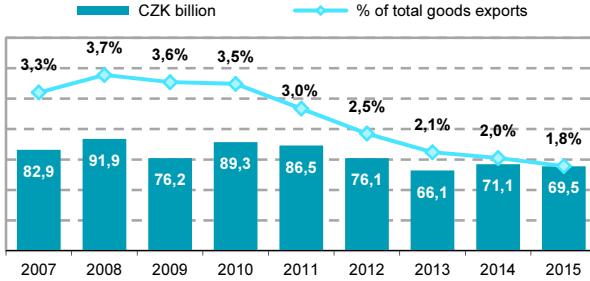



**Figure D28 Consumer electronics exports by commodities**

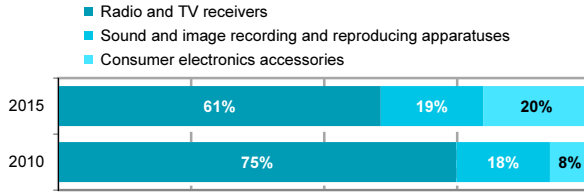
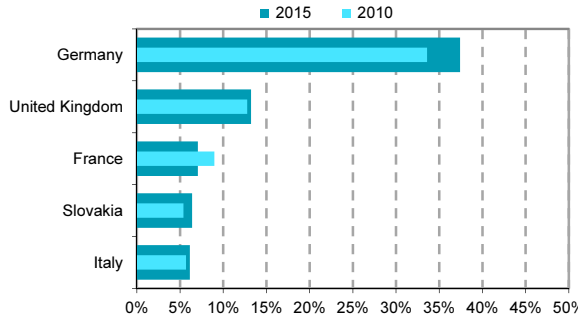



**Figure D29 Consumer electronics exports by countries**




*Source: CZSO, External Trade Statistics Database*

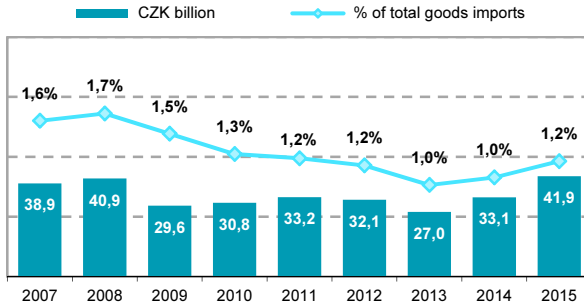
### Table D8 Consumer electronics imports to the Czech Republic

CZK million

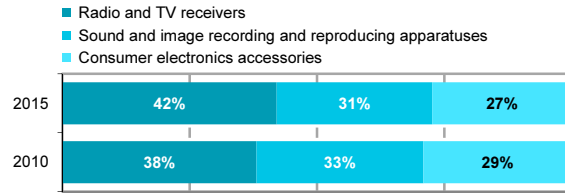
| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **27 003** | **33 108** | **41 873** |
| Radio and TV receivers | 12 498 | 14 707 | 17 619 |
| Sound and image recording and reproducing apparatuses | 8 487 | 9 296 | 12 785 |
| Consumer electronics accessories* | 6 018 | 9 105 | 11 469 |

** Monitors and projectors; Microphones and stands there for; Loudspeakers; Headphones, earphones and combined microphone/speaker sets; Audio-frequency electric amplifiers; Electric sound amplifier sets; Non-recorded media*

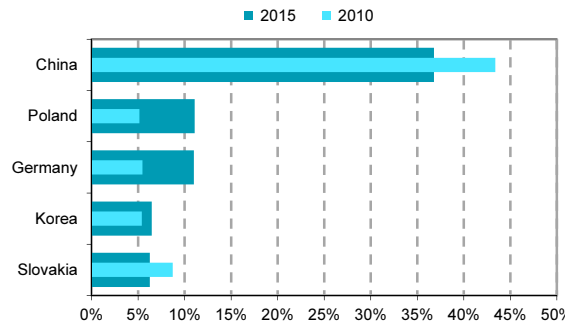
### Figure D30 Consumer electronics imports




### Figure D31 Consumer electronics imports by commodities




### Figure D32 Consumer electronics imports by countries




*Source: CZSO, External Trade Statistics Database*

**Table D9 Electronic components exports from the Czech Rep.**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **33 610** | **35 112** | **42 237** |
| Electronic integrated circuits | 23 641 | 22 938 | 30 420 |
| *of which Processors* | *19 483* | *18 185* | *25 078* |
| Printed circuits | 3 539 | 4 548 | 4 614 |
| Other electronic components | 6 429 | 7 626 | 7 203 |

**Figure D33 Electronic components exports**

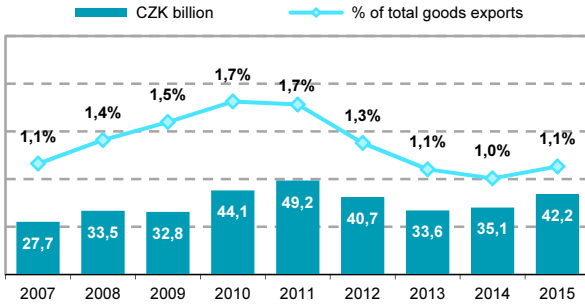



**Figure D34 Electronic components exports by commodities**

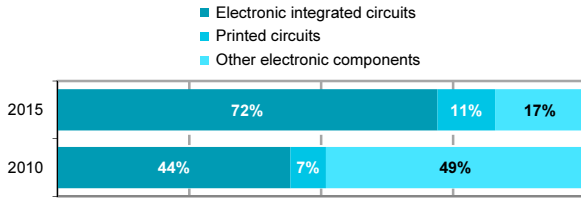
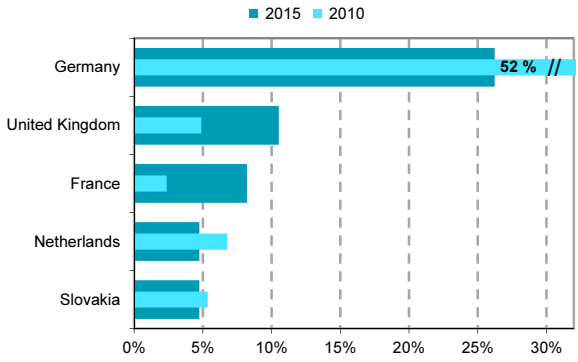



**Figure D35 Electronic components exports by countries**




*Source: CZSO, External Trade Statistics Database*

**Table D10 Electronic components imports to the Czech Rep.**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **69 362** | **83 906** | **74 038** |
| Electronic integrated circuits, total | 52 130 | 64 141 | 52 946 |
| *of which Processors* | *43 616* | *53 981* | *42 608* |
| Printed circuits | 7 563 | 8 746 | 9 966 |
| Other electronic components | 9 670 | 11 019 | 11 125 |

**Figure D36 Electronic components imports**

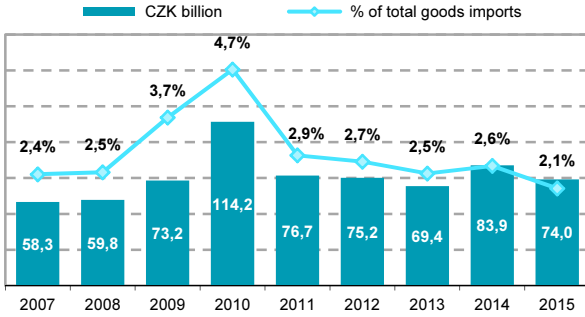



**Figure D37 Electronic components imports by commodities**

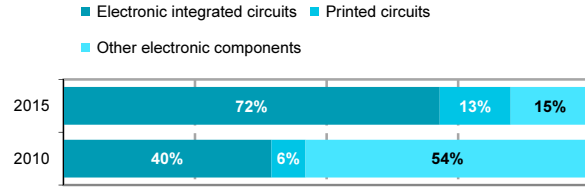
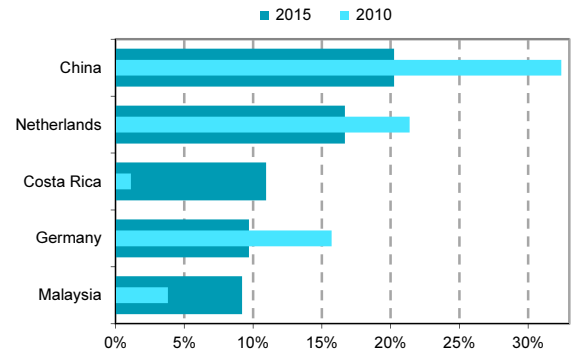



**Figure D38 Electronic components imports by countries**




*Source: CZSO, External Trade Statistics Database*

**Table D11 Export of ICT parts n.e.s. from the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **44 498** | **60 349** | **59 703** |
| Parts and accessories n.e.s. of | | | |
| - computers | 29 753 | 40 413 | 34 927 |
| - telecommunication equipment | 10 369 | 14 909 | 19 001 |
| - consumer electronics | 4 376 | 5 028 | 5 774 |

*n.e.s. - not else specified*

**Figure D39 Export of ICT parts and accessories n.e.s.**

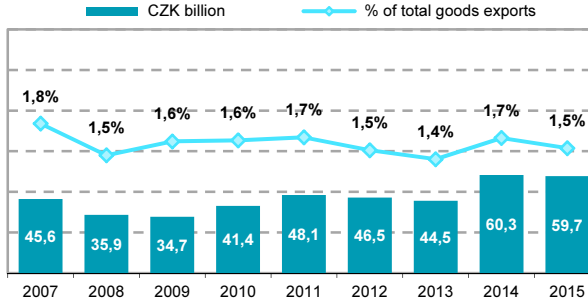



**Figure D40 Export of ICT parts n.e.s. by commodities**

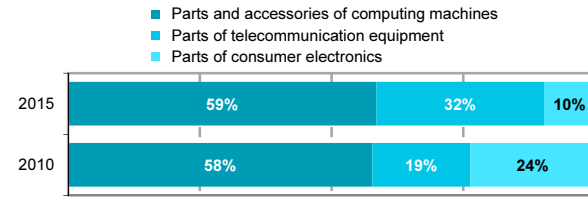
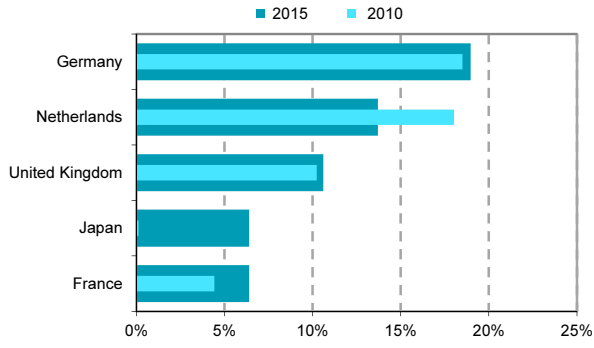



**Figure D41 Export of ICT parts n.e.s. by countries**




*Source: CZSO, External Trade Statistics Database*

# D ICT external trade

**Table D12 Imports of ICT parts n.e.s. to the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **89 099** | **105 096** | **101 711** |
| Parts and accessories n.e.s. of | | | |
| - computers | 50 290 | 63 719 | 57 982 |
| - telecommunication equipment | 12 018 | 15 412 | 19 714 |
| - consumer electronics | 26 792 | 25 966 | 24 016 |

*n.e.s. - not else specified*

**Figure D42 Imports of ICT parts and accessories n.e.s.**

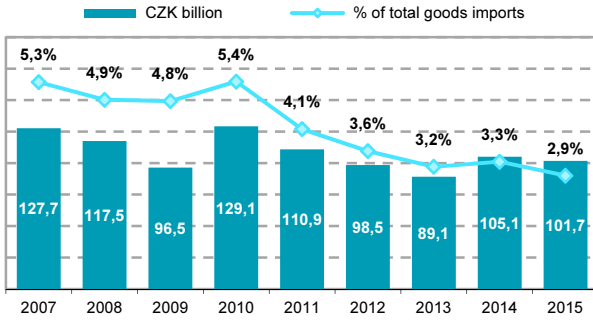



**Figure D43 Imports of ICT parts n.e.s. by commodities**

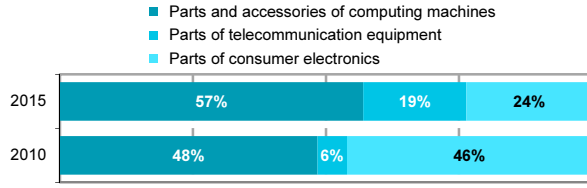
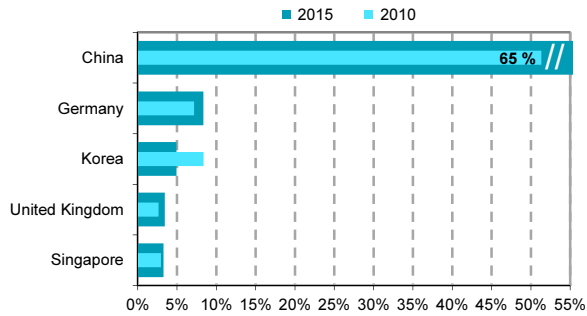



**Figure D44 Imports of ICT parts n.e.s. by countries**




*Source: CZSO, External Trade Statistics Database*

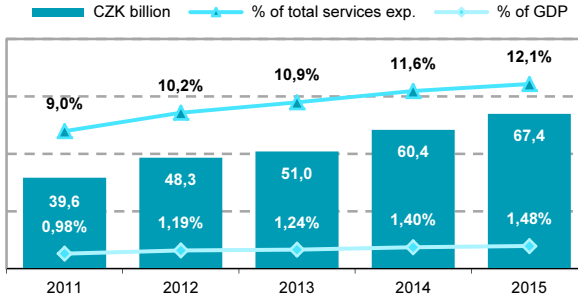
# D ICT external trade

## Table D13 ICT services exports from the Czech Republic

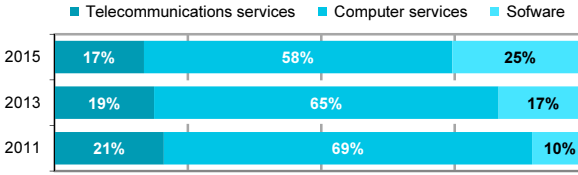
CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **51 021** | **60 444** | **67 390** |
| Telecommunication services | 9 531 | 11 554 | 11 299 |
| Computer services | 32 934 | 35 867 | 38 934 |
| Computer software | 8 556 | 13 023 | 17 157 |
| ***Ownership of exporting enterprises*** | | | |
| Private national enterprises | 10 900 | 15 322 | 19 742 |
| Foreign-controlled enterprises | 40 120 | 45 122 | 47 647 |
| ***Size of exporting enterprises*** | | | |
| Small (0-49 employees) | 5 199 | 9 185 | 8 042 |
| Medium (50-249 employees) | 8 841 | 11 824 | 11 876 |
| Large (250+ employees) | 36 980 | 39 435 | 47 472 |

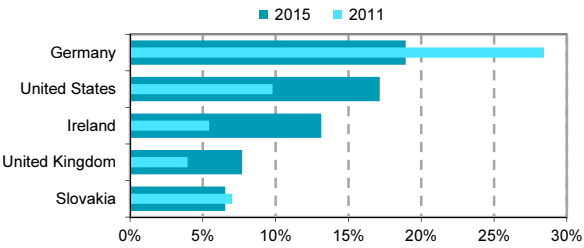
## Figure D45 ICT services exports




## Figure D46 ICT services exports by type of service




## Figure D47 ICT services exports by countries




*Source: CZSO, Survey on exports and imports of services*

**Figure D48 ICT services exports (as a percentage of total services exports)**

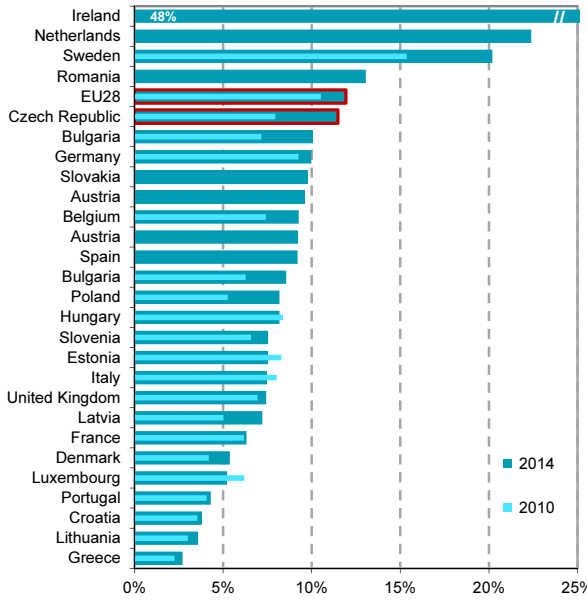
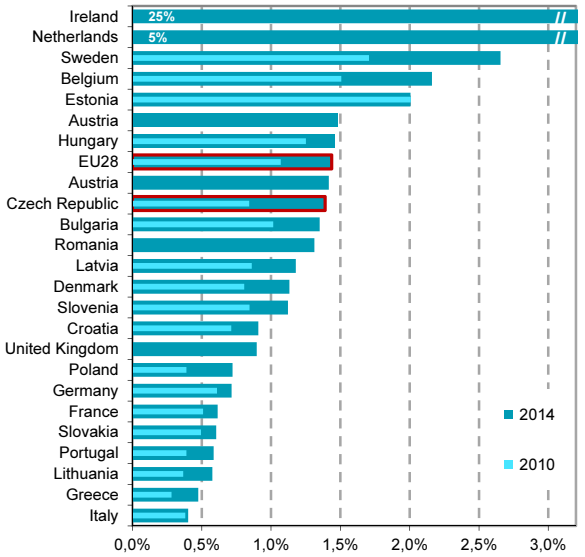



**Figure D49 ICT services exports (as a % of GDP)**




*Source: CZSO calculations based on EUROSTAT data, 2016*

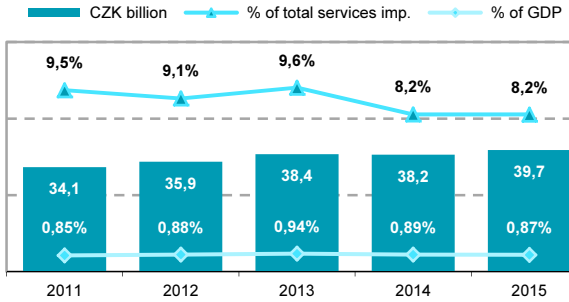
# D ICT external trade

## Table D14 Total ICT services imports to the Czech Republic

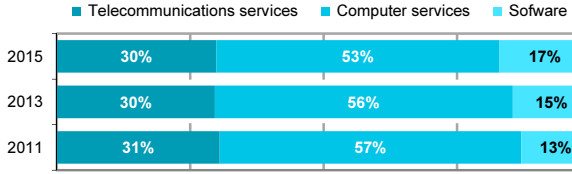
CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **38 381** | **38 232** | **39 732** |
| Telecommunication services | 11 371 | 11 227 | 11 881 |
| Computer services | 21 425 | 21 551 | 21 079 |
| Computer software | 5 586 | 5 454 | 6 772 |
| ***Ownership of importing enterprises*** | | | |
| Private national enterprises | 4 222 | 4 300 | 11 025 |
| Foreign-controlled enterprises | 34 160 | 33 932 | 28 707 |
| ***Size of importing enterprises*** | | | |
| Small (0-49 employees) | 3 235 | 2 993 | 5 029 |
| Medium-sized (50-249 employees) | 7 123 | 6 379 | 7 388 |
| Large (250+ employees) | 28 023 | 28 860 | 27 316 |

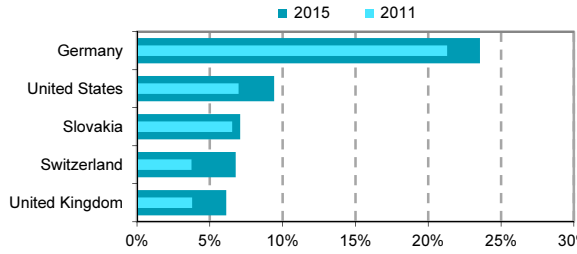
## Figure D50 Total ICT services imports




## Figure D51 ICT services imports by type of service




## Figure D52 ICT services imports by countries




*Source: CZSO, Survey on exports and imports of services*

**Figure D53 ICT services imports (as a percentage of total services imports)**

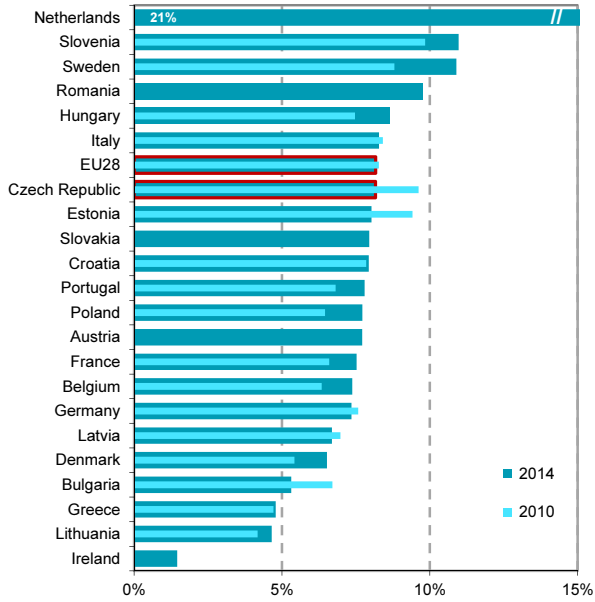
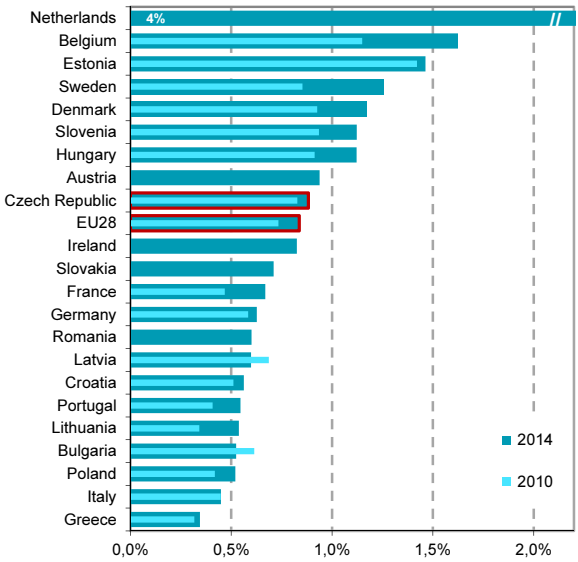



**Figure D54 ICT services imports (as a % of GDP)**




*Source: CZSO calculations based on EUROSTAT data, 2016*

**Table D15 Computer services and software exports from the Czech Republic**

CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **41 490** | **48 891** | **56 091** |
| Computer services, total | 32 934 | 35 867 | 38 934 |
| Computer HW&SW consulting and support | 19 466 | 19 538 | 20 439 |
| Data processing, hosting and related services | 9 366 | 10 009 | 11 037 |
| Maintenance and repair of computers | 4 102 | 6 320 | 7 457 |
| Computer software, total | 8 556 | 13 023 | 17 157 |
| Software originals: tailor-made sw&apps | 3 703 | 3 703 | 4 312 |
| Standard software supplied over the Internet | 4 371 | 7 888 | 11 158 |
| License to reproduce or distribute software | 481 | 1 433 | 1 688 |
| ***Ownership of exporting enterprises*** | | | |
| Private national enterprises | 10 283 | 14 184 | 12 964 |
| Foreign-controlled enterprises | 31 207 | 34 707 | 43 127 |
| ***Size of exporting enterprises*** | | | |
| Small (0-49 employees) | 4 098 | 7 636 | 5 890 |
| Medium-sized (50-249 employees) | 8 779 | 11 712 | 11 762 |
| Large (250+ employees) | 28 613 | 29 542 | 38 439 |

**Figure D55 Computer services and software exports**

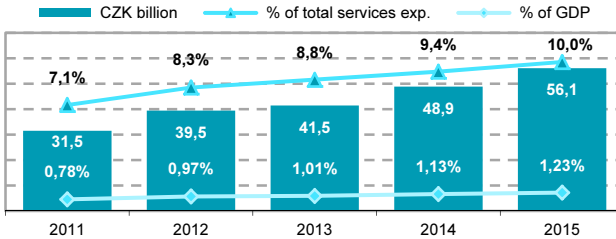
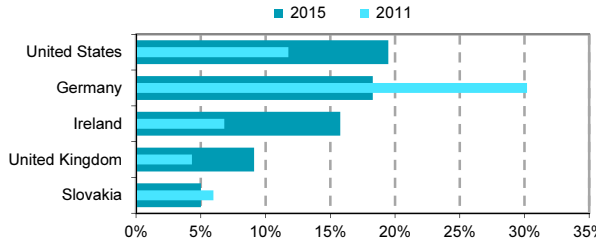



**Figure D56 Computer services and software exports by ownership of exporting enterprises**


**Figure D57 Computer services and sw exports by countries**




*Source: CZSO, Survey on exports and imports of services*

**Figure D58 Computer services and software exports (as percentage of total services exports)**

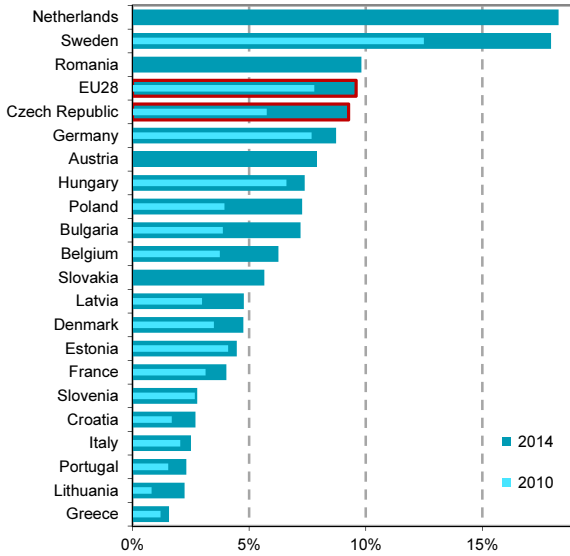
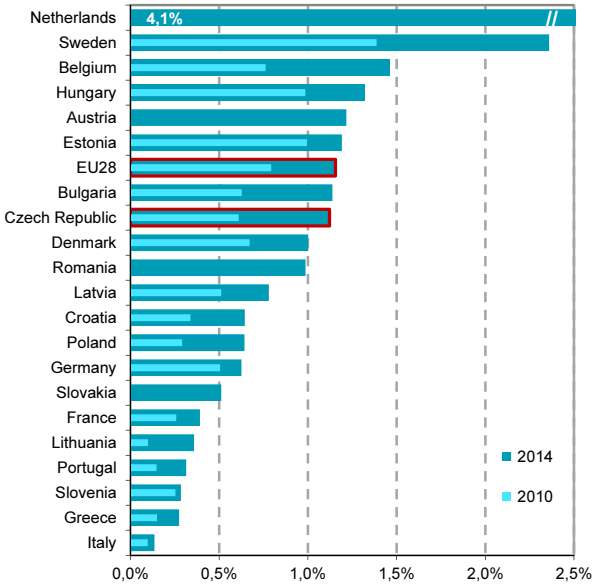



**Figure D59 Computer services and software exports (as a percentage of GDP)**



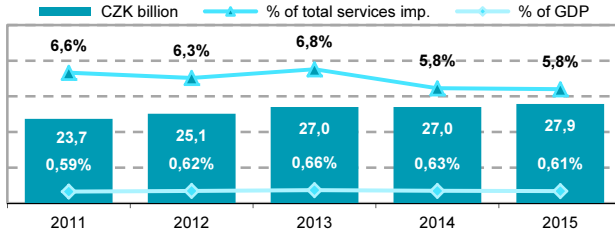

*Source: CZSO calculations based on EUROSTAT data, 2016*

### Table D16 Computer services and software imports to the Czech Republic

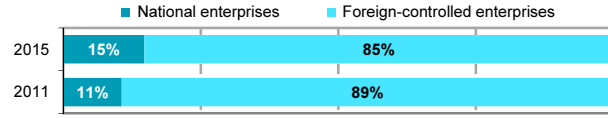
CZK million

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **27 010** | **27 005** | **27 851** |
| Computer services, total | 21 425 | 21 551 | 21 079 |
| Computer HW&SW consulting and support | 13 380 | 12 831 | 13 330 |
| Data processing, hosting and related services | 6 187 | 6 415 | 5 475 |
| Maintenance and repair of computers | 1 858 | 2 305 | 2 273 |
| Computer software, total | 5 586 | 5 454 | 6 772 |
| Software originals: tailor-made sw&apps | 1 821 | 2 182 | 2 295 |
| Standard software supplied over the Internet | 2 308 | 2 133 | 2 209 |
| License to reproduce or distribute software | 1 457 | 1 139 | 2 268 |
| ***Ownership of importing enterprises*** | | | |
| Private national enterprises | 3 574 | 3 278 | 4 108 |
| Foreign-controlled enterprises | 23 437 | 23 727 | 23 743 |
| ***Size of importing enterprises*** | | | |
| Small (0-49 employees) | 2 235 | 1 630 | 3 010 |
| Medium-sized (50-249 employees) | 6 247 | 5 740 | 6 669 |
| Large (250+ employees) | 18 528 | 19 636 | 18 172 |

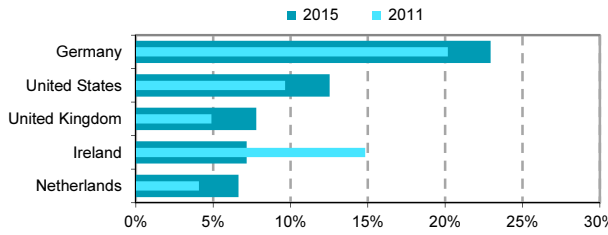
### Figure D60 Computer services and software imports




### Figure D61 Computer services and software imports by ownership of importing enterprises




### Figure D62 Computer services and sw imports by countries




*Source: CZSO, Survey on exports and imports of services*

**Figure D63 Computer services and software imports (as a percentage of total services imports)**

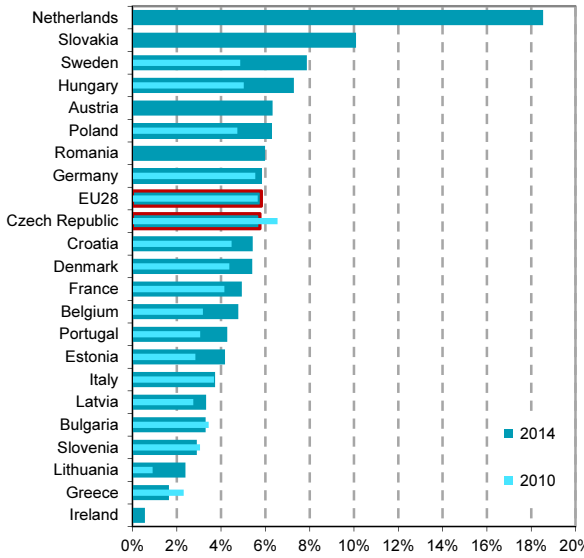
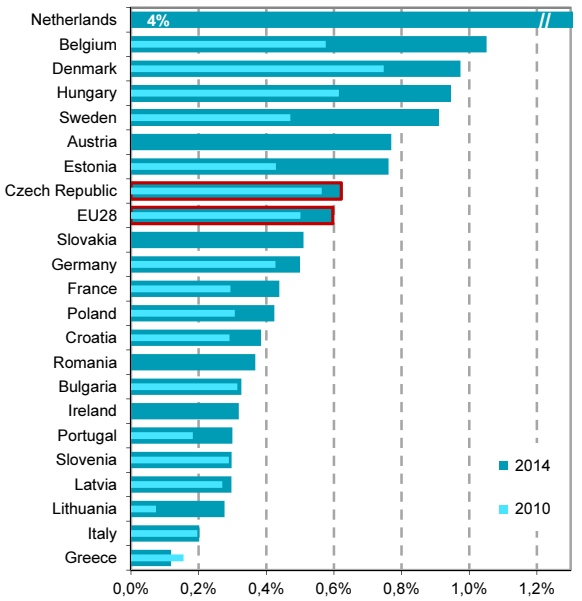



**Figure D64 Computer services and software imports (as a percentage of GDP)**




*Source: CZSO calculations based on EUROSTAT data, 2016*

# E ICT sector

In general, the term **ICT sector** includes a combination of ICT manufacturing and ICT services industries which are associated with the production and/or distribution of information and communication technologies (ICT) and a provision of related services. For more details see: „**OECD Guide to Measuring the Information Society 2011:** www.oecd.org/sti/measuring-infoeconomy/guide"

ICT sector together with Content and media sector was already in 2007 recognized by the **United Nation Statistics Division** as a new alternative grouping of economic activities called information economy. The **information economy** sector is defined within the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4. For more information see following web page: http://unstats.un.org/unsd/cr/registry/docs/i4_information_economy.pdf

ICT sector is divided into the **four main categories**: ICT manufacturing industries, ICT trade industries, Telecommunications and IT services. The ICT sector involves enterprises, which dominating activities belong to the **CZ-NACE groups and classes** as follows:

**ICT manufacturing industries:**

- Manufacture of electronic components and boards (26.1)
- Manufacture of computers and peripheral equipment (26.2)
- Manufacture of communication equipment (26.3)
- Manufacture of consumer electronics and media (26.4 and 26.8)

**ICT trade industries (ICT wholesale):**

- Wholesale of information and communication equipment (46.5)

**Telecommunications:**

- Wired telecommunications activities (61.1)
- Wireless telecommunications activities (61.2)
- Satellite and other telecommunications activities. (61.3 and 61.9)

**IT services industries:**

- Software publishing; Computer programming, consultancy and related activities (58.2 and 62.0)
- Data processing, hosting and related activities; web portals (63.1)
- Repair of computers and communication equipment (95.1)

Data for this chapter, except for R&D expenditures (source: **R&D annual survey – see chapter C**), were obtained from the annual structural survey of business entities from selected production industries (**SBS – Structural Business Statistics).** For more information about Czech SBS see: https://www.czso.cz/csu/czso/annual-structural-business-statistics-methodology

Data prior to the year 2005 are estimates based on the **Annual National Accounts Statistics**. More information about this data source is available at: http://apl.czso.cz/pll/rocenka/rocenka.indexnu_en

**All 2015 data are preliminary.**

The **Eurostat Structural Business Statistics Database** was used as a data source for the international comparison (except for R&D expenditure). More information about the data from the SBS, including definitions of individual indicators, is available at: http://ec.europa.eu/eurostat/web/structural-business-statistics/overview

**Further information on ICT sector can be found at (only in Czech):** https://www.czso.cz/csu/czso/odvetvi-informacni-ekonomiky

# E ICT sector

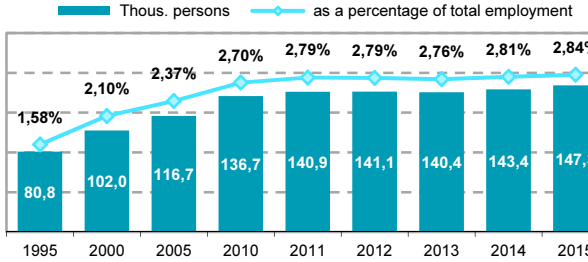
## Table E1 Employment in ICT sector in the Czech Republic

number of persons employed - headcount persons

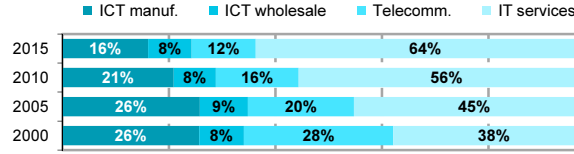
| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **140 418** | **143 425** | **147 333** |
| **ICT manufacturing, total** | **24 462** | **23 346** | **23 740** |
| Manuf. of computers & electron. component | 14 463 | 13 905 | 13 890 |
| Manufacturing of communication equipment and consumer electronics | 9 999 | 9 440 | 9 849 |
| **ICT services, total** | **115 957** | **120 080** | **123 593** |
| ICT wholesale | 11 821 | 12 356 | 12 055 |
| Telecommunications | 18 191 | 18 189 | 17 689 |
| IT services - Programm., consultancy & related IT activ. incl. data processing | 85 945 | 89 535 | 93 848 |

** Preliminary data*

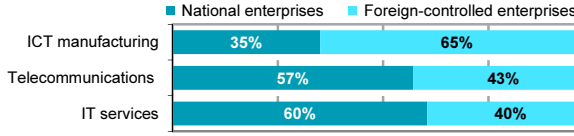
## Figure E1 Employment in ICT sector industries



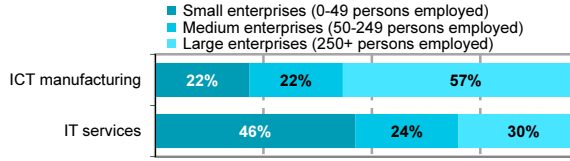

## Figure E2 Employment in ICT sector by industry




## Figure E3 Employment in ICT sector by ownerships; 2015

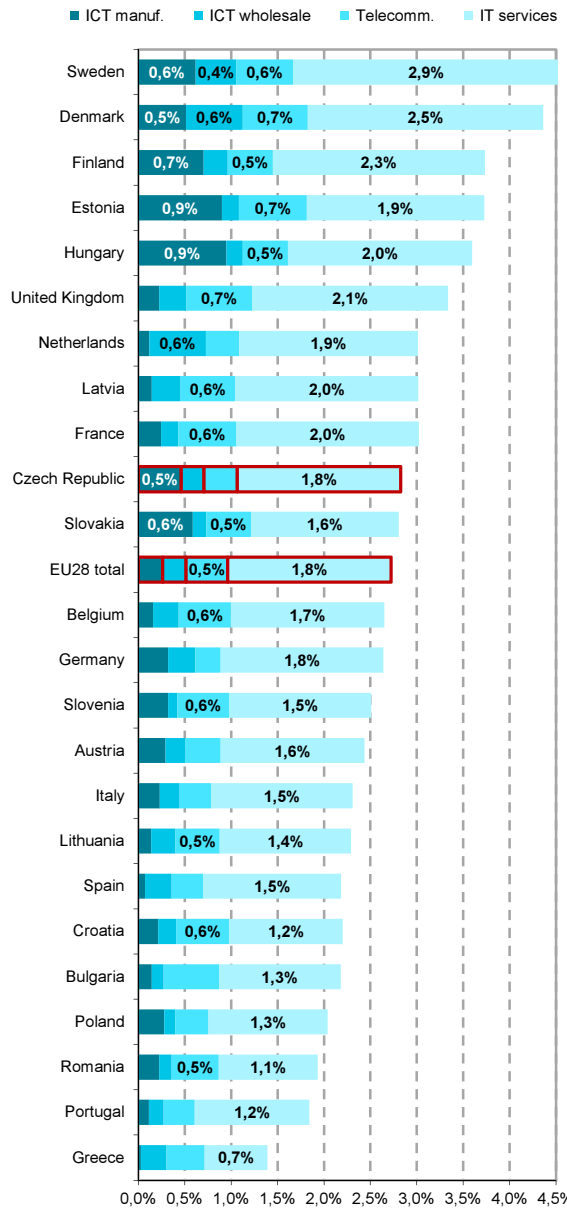



## Figure E4 Employment in ICT sector by size; 2015




*Source: CZSO, Structural Business Statistics*

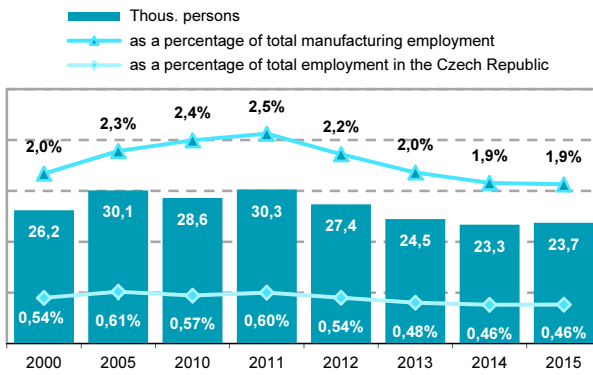
**Figure E5 Employment in ICT sector industries; 2014***
**(as a percentage of total employment)**



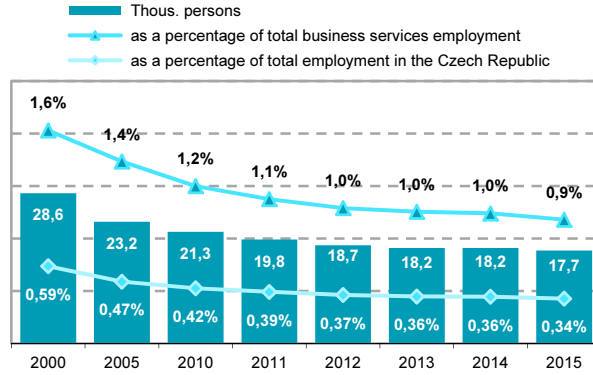

** or the latest year available*

*Source: Eurostat, Structural Business Statistics*

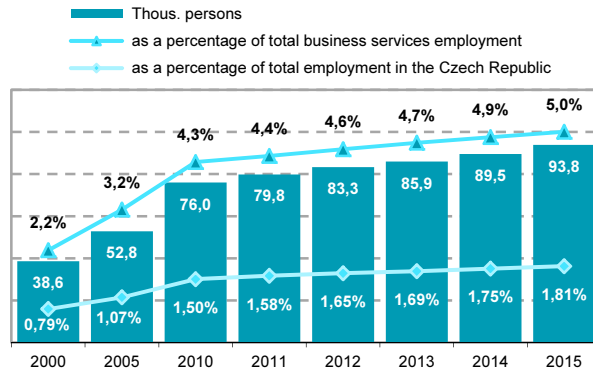
### Figure E6 Employment in ICT manufacturing




### Figure E7 Employment in Telecommunications




### Figure E8 Employment in IT services




*Source: CZSO, Structural Business Statistics*

**Figure E9 Employment in ICT manufacturing industries; 2014***
*(as a percentage of total manufacturing employment)*

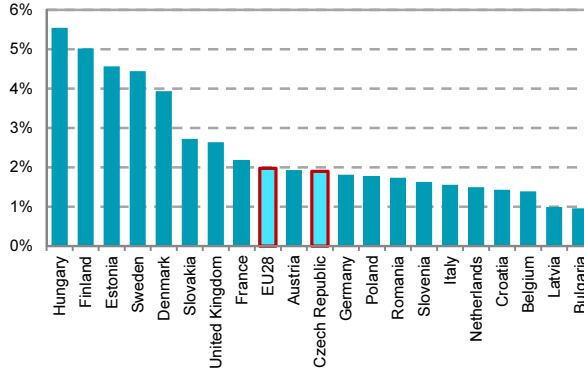



**Figure E10 Employment in Telecommunications; 2014***
*(as a percentage of total business enterprise sector employment)*

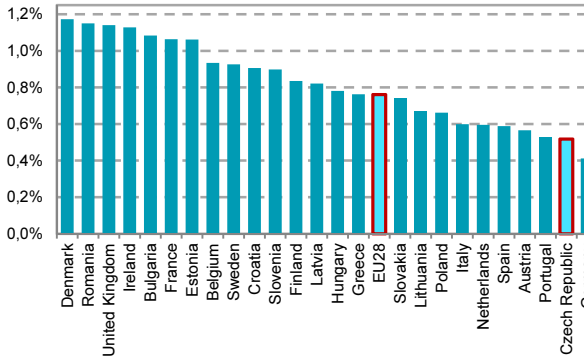
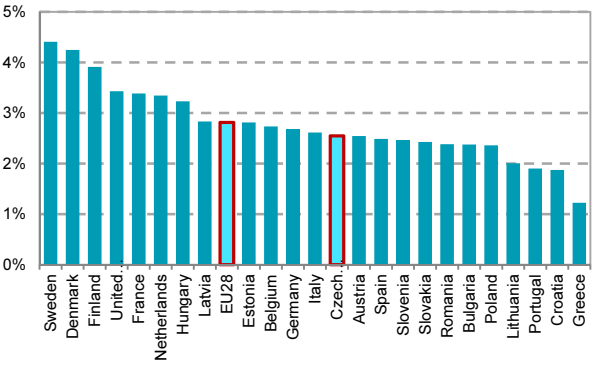



**Figure E11 Employment in IT services industries; 2014***
*(as a percentage of total business enterprise sector employment)*




* *or the latest year available*

*Source: Eurostat, Structural Business Statistics*

# E ICT sector

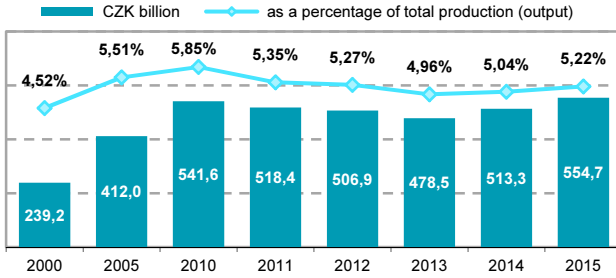
## Table E2 Production value in ICT sector in the Czech Republic

CZK million

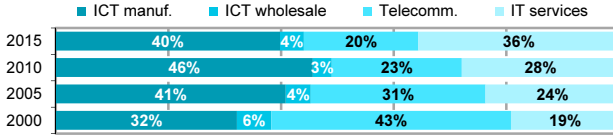
| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **478 507** | **513 330** | **554 650** |
| **ICT manufacturing, total** | **186 048** | **211 726** | **220 750** |
| Manuf. of computers & electron. components | 132 441 | 156 516 | 168 115 |
| Manufacturing of communication equipment and consumer electronics | 53 607 | 55 210 | 52 635 |
| **ICT services, total** | **292 459** | **301 603** | **333 900** |
| ICT wholesale | 22 728 | 22 547 | 23 557 |
| Telecommunications | 100 941 | 100 678 | 112 764 |
| IT services - Programm., consultancy & related IT activ. incl. data processing | 168 790 | 178 378 | 197 579 |

** Preliminary data*

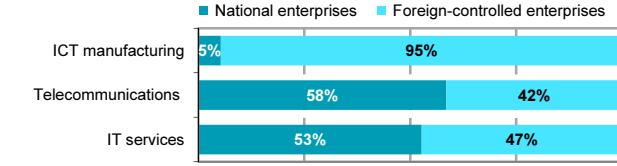
## Figure E12 Production value in ICT sector industries



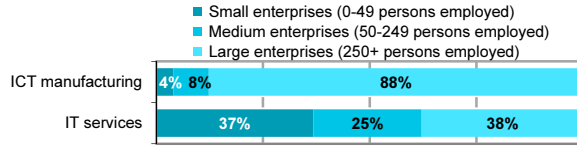

## Figure E13 Production value in ICT sector by industry




## Figure E14 Production value in ICT sector by ownerships; 2015

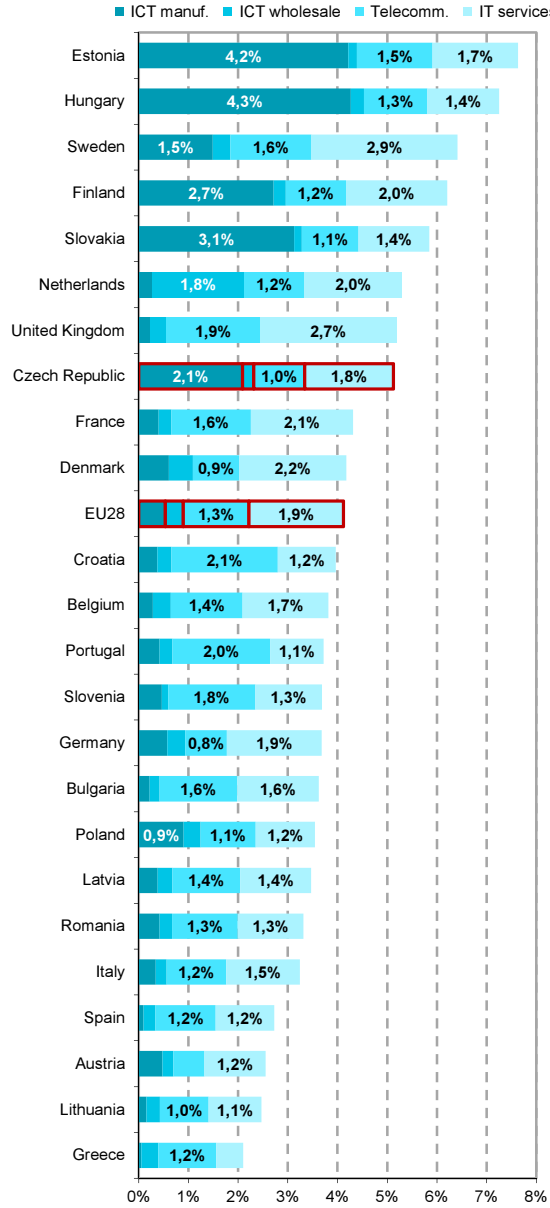



## Figure E15 Production value in ICT sector by size; 2015




*Source: CZSO, Structural Business Statistics*

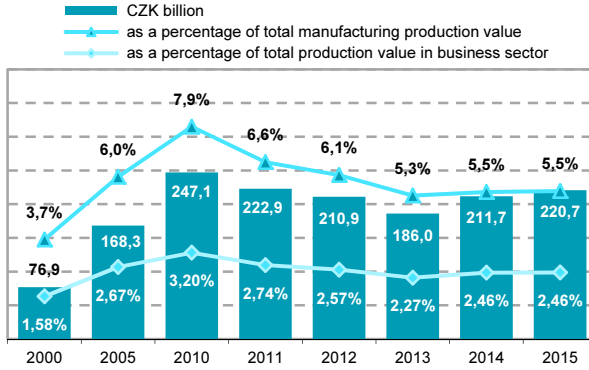
**Figure E16 Production value in ICT sector industries; 2014***
**(as a percentage of total production/output)**



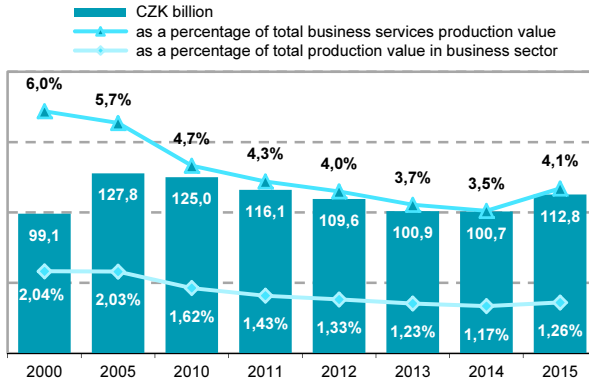

** or the latest year available*

*Source: Eurostat, Structural Business Statistics*

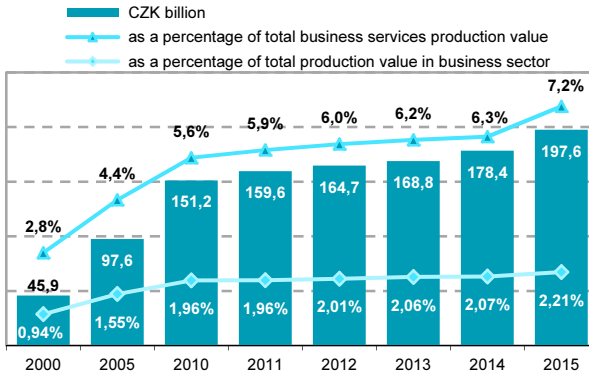
### Figure E17 Production value in ICT manufacturing industries




### Figure E18 Production value in Telecommunications




### Figure E19 Production value in IT services industries




*Source: CZSO, Structural Business Statistics*

**Figure E20 Production value in ICT manufacturing; 2014***
*(as a percentage of total manufacturing production value)*

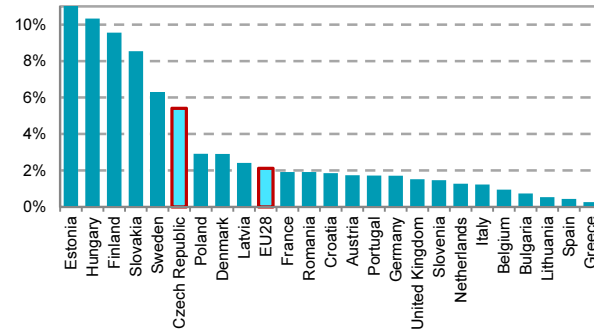



**Figure E21 Production value in Telecomm.; 2014***
*(as a percentage of total production value in business sector)*

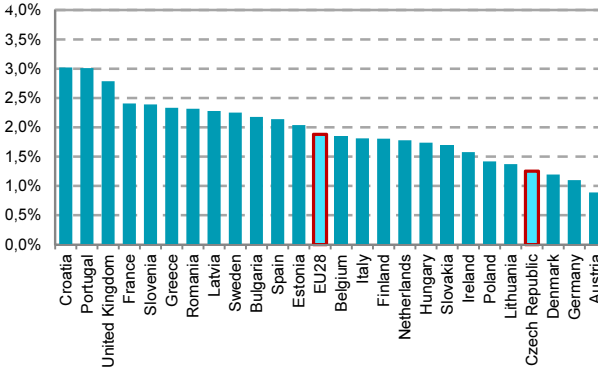
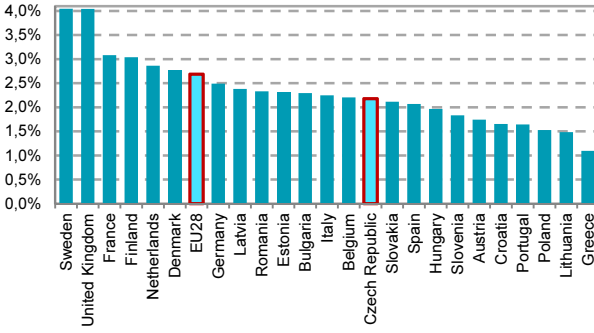



**Figure E22 Production value in IT services; 2014***
*(as a percentage of total production value in business sector)*




** or the latest year available*

*Source: Eurostat, Structural Business Statistics*

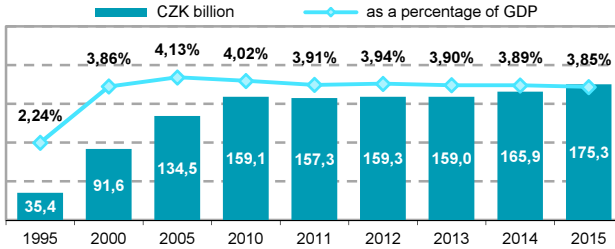
### Table E3 Value added of ICT sector in the Czech Republic

CZK million

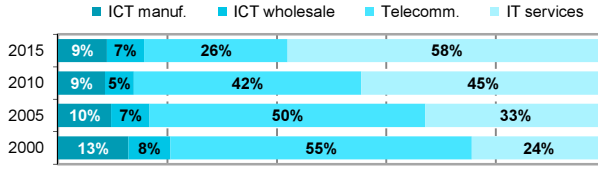
| | 2013 | 2014 | 2015* |
|---|---|---|---|
| **Total** | **159 007** | **165 899** | **175 310** |
| **ICT manufacturing, total** | **15 949** | **17 046** | **15 661** |
| Manuf. of computers & electron. components | 7 953 | 8 728 | 9 149 |
| Manufacturing of communication equipment and consumer electronics | 7 996 | 8 318 | 6 512 |
| **ICT services, total** | **143 058** | **148 854** | **159 649** |
| ICT wholesale | 10 381 | 11 105 | 11 946 |
| Telecommunications | 49 077 | 46 543 | 45 996 |
| IT services - Programm., consultancy & related IT activ. incl. data processing | 83 600 | 91 206 | 101 708 |

** Preliminary data*

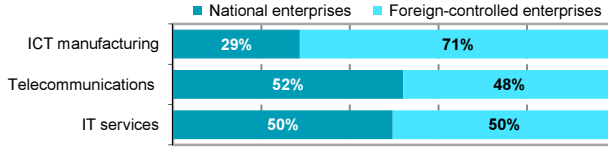
### Figure E23 Value added of ICT sector industries



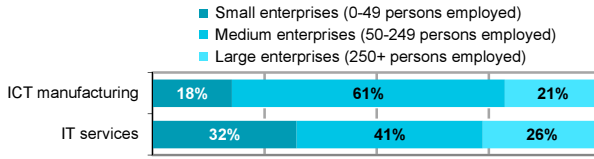

### Figure E24 Value added of ICT sector by industry




### Figure E25 Value added of ICT sector by ownerships; 2015

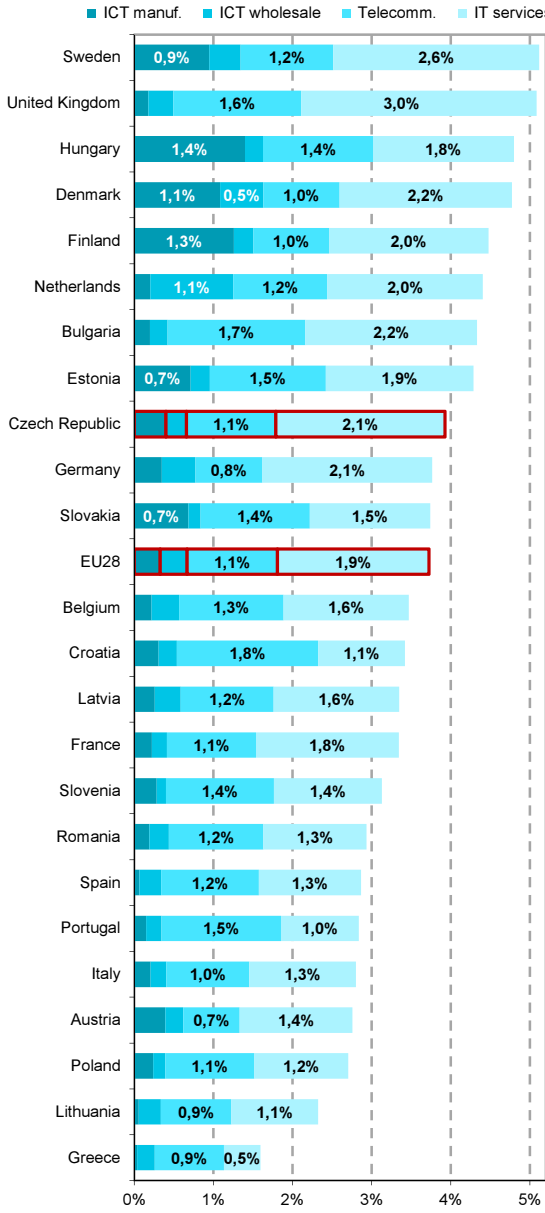



### Figure E26 Value added in ICT sector by size; 2015




*Source: CZSO, Structural Business Statistics*

**Figure E27 Value added of ICT sector industries; 2014***
**(as a percentage of GDP)**




** or the latest year available*

*Source: Eurostat, Structural Business Statistics*

**Figure E28 Value added of ICT manufacturing industries**

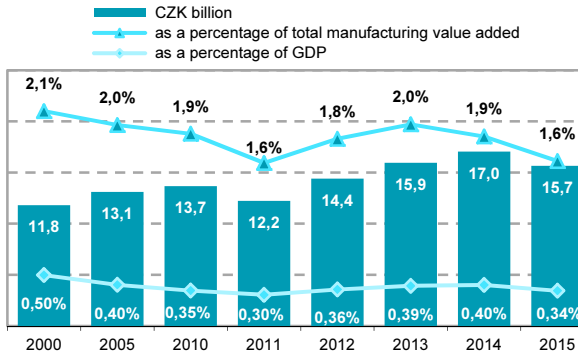



**Figure E29 Value added of Telecommunications**

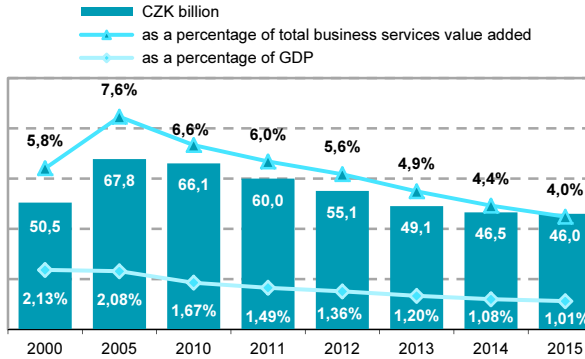
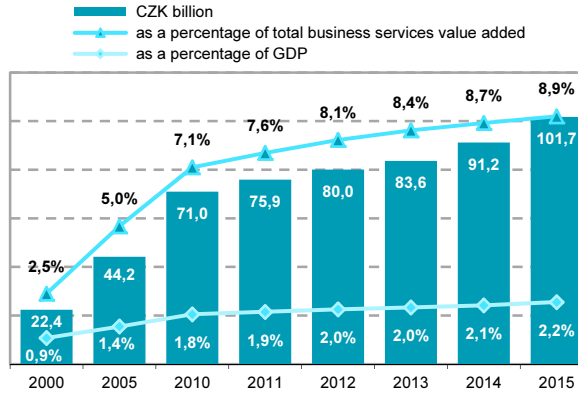



**Figure E30 Value added of IT services industries**




*Source: CZSO, Structural Business Statistics*

**Figure E31 Value added of ICT manuf. industries; 2014***
*(as a percentage of total manufacturing value added)*

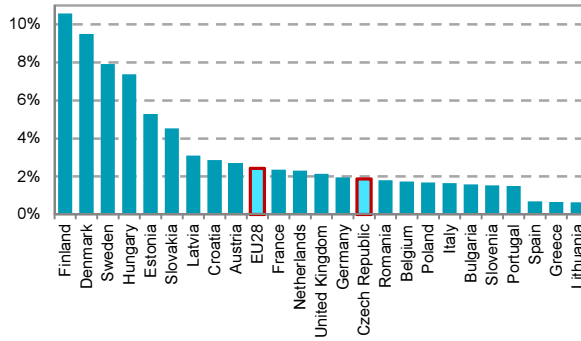



**Figure E32 Value added of Telecommunications; 2014***
*(as a percentage of total value added in business sector)*

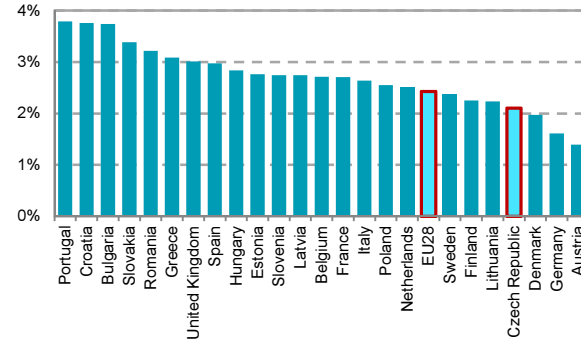
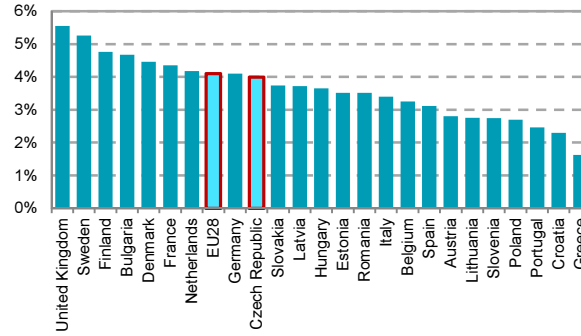



**Figure E33 Value added of IT services industries; 2014***
*(as a percentage of total value added in business sector)*




** or the latest year available*

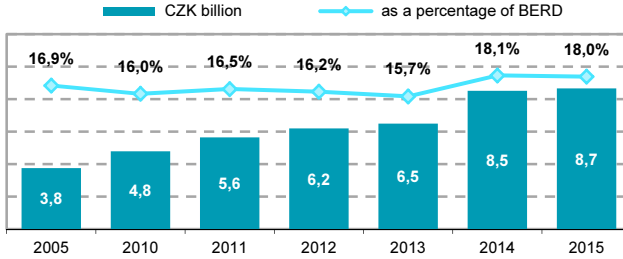
*Source: Eurostat, Structural Business Statistics*

### Table E4 R&D expenditure in ICT sector in the Czech Republic

CZK million

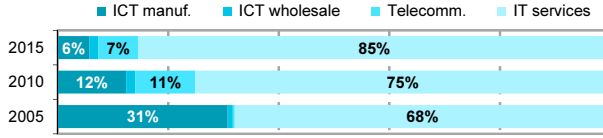
| | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Total** | **6 499** | **8 515** | **8 659** |
| **ICT manufacturing, total** | **479** | **625** | **500** |
| Manuf. of computers & electron. components | 116 | 208 | 161 |
| Manufacturing of communication equipment and consumer electronics | 363 | 417 | 338 |
| **ICT services, total** | **6 019** | **7 889** | **8 159** |
| ICT wholesale | 121 | 140 | 134 |
| Telecommunications | 592 | 603 | 630 |
| IT services - Programm., consultancy & related IT activ. incl. data processing | 5 306 | 7 147 | 7 395 |

### Figure E34 R&D expenditure in ICT sector industries

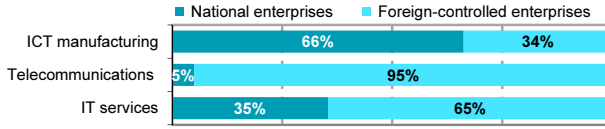



*BERD - Total intramural R&D expenditure in the business enterprise sector*

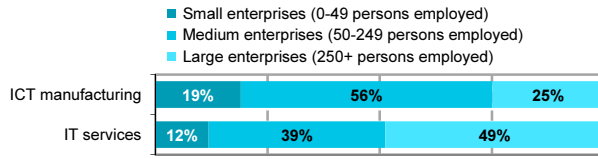
### Figure E35 R&D expenditure in ICT sector by industry




### Figure E36 R&D expenditure in ICT sector by ownerships; 2015

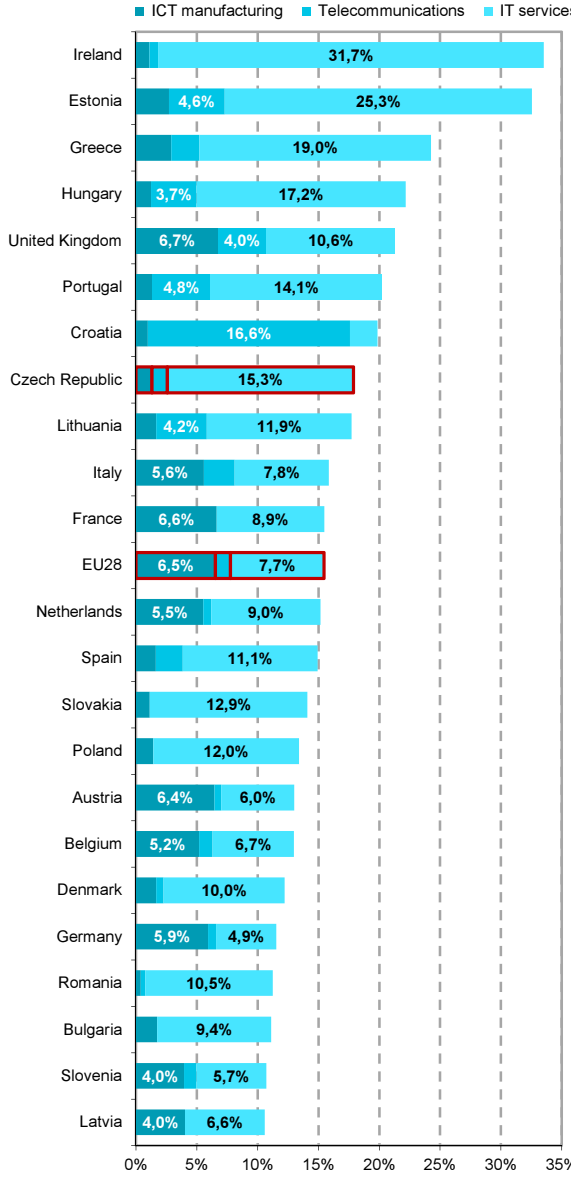



### Figure E37 R&D expenditure in ICT sector by size; 2015




*Source: CZSO, Annual R&D survey*

**Figure E38 R&D expenditure in ICT sector industries; 2014* (as a percentage of BERD)**




*BERD - Total intramural R&D expenditure in the business enterprise sector*

** or the latest year available*

*Source: Eurostat, Science, Technology and Innovation Database*

**Figure E39 R&D expenditure in ICT manufacturing**

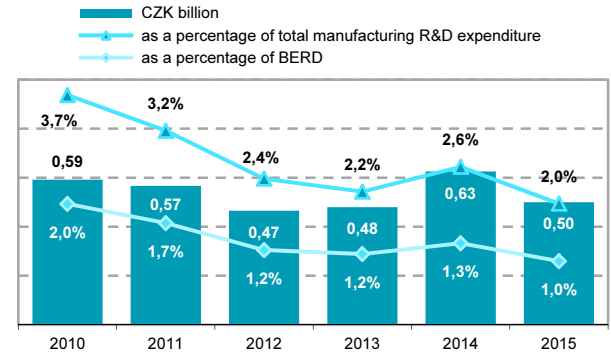



**Figure E40 R&D expenditure in Telecommunications**

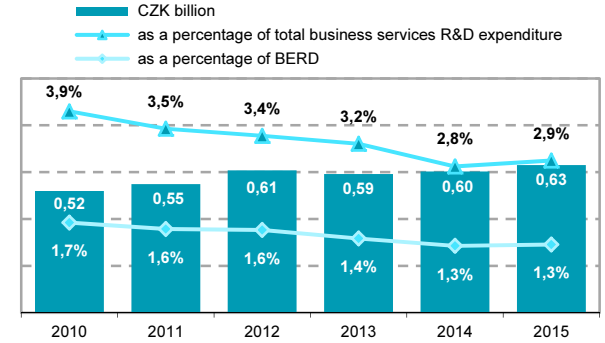
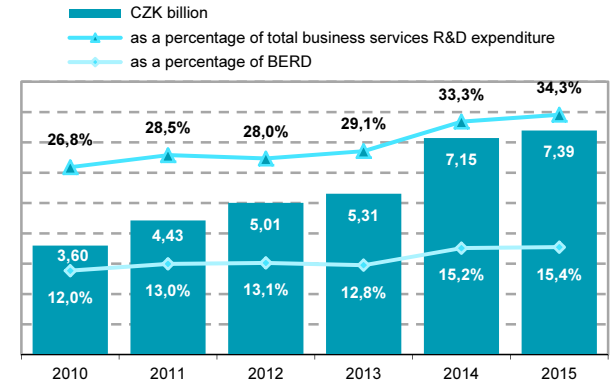



**Figure E41 R&D expenditure in IT services industries**




*BERD - Total intramural R&D expenditure in the business enterprise sector*

*Source: CZSO, Annual R&D survey*

**Figure E42 R&D expenditure in ICT manufacturing; 2014***
*(as a percentage of total manufacturing R&D expenditure)*

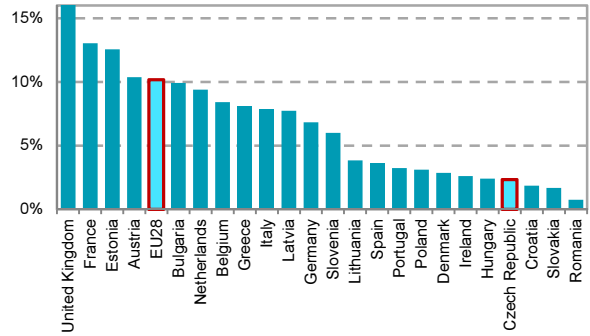



**Figure E43 R&D expenditure in Telecomm.; 2014***
*(as a percentage of BERD)*

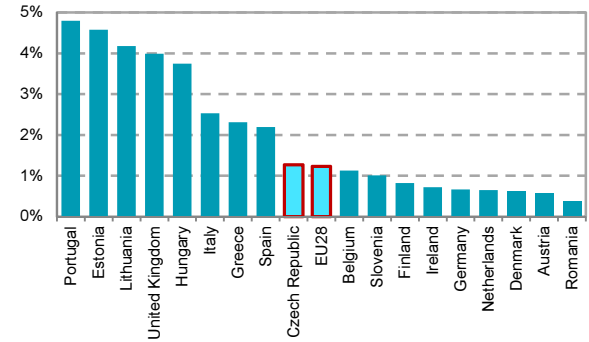
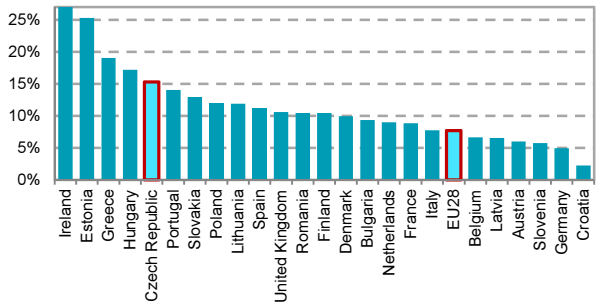



**Figure E44 R&D expenditure in IT Services; 2014***
*(as a percentage of BERD)*




*BERD - Total intramural R&D expenditure in the business enterprise sector*
** or the latest year available*

*Source: Eurostat, Science, Technology and Innovation Database*