MINISTRY OF
INDUSTRY AND TRADE
CZECH REPUBLIC

CONFEDERATION OF INDUSTRY
OF THE CZECH REPUBLIC

CZECH
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PANORAMA OF THE MANUFACTURING INDUSTRY OF THE CZECH REPUBLIC 2015

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MINISTER OF INDUSTRY AND TRADE

Dear readers,

you are holding in your hands the already 19th edition of the "Panorama of the manufacturing industry of the Czech Republic", which is being compiled by the Ministry of Industry and Trade (MIT) in close cooperation with the Czech Statistical Office (CSO). Additional information for their own segments was kindly provided by the Ministry of Agriculture, the Confederation of Industry of the Czech Republic and other selected sector associations and confederations.

Panorama represents a brief analysis of individual manufacturing industry segments as classified in the CZ-NACE economic activities' catalogue and in the CZ-CPA commodities' classification; the publication aims to offer to its readers an overall and up-to-date perspective of the entire manufacturing sector and its individual segments in the Czech Republic. The developments outlined herein cover the years 2008 to 2015.

The Czech economy has been in a great shape for the last two years with 2015 being exceptionally successful year for the national economy. Czech gross domestic product rose 4.5 % year-on-year, which is the best result for the last eight years. The industrial sector has been of traditionally fundamental importance to the national economy. This fact is reinforced once again by results achieved in 2015, when the industrial production in general rose by 4.6 % year-on-year, and by 6 % in the manufacturing sector alone. The excellent shape of the economy has been reflected in all key segments; from 24 segments within the manufacturing sector, 16 recorded increased production and jointly contributed almost 80 % of revenues in the sector. The dominant position has been once again achieved by the automobile industry, which experienced the most dynamic growth in 2015, rising by 11.5 %.

Manufacturing industry also plays a decisive role for the Czech economy in terms of being key to creating gross value added (GVA). In 2015, this sector's share on the GVA creation represented 27 % and with the overall growth reaching 3.9 %, the manufacturing sector's 8.0 % growth was more than double. Manufacturing industry remains an important employer. In 2015, employment in this sector grew, same as in the preceding year, by 2 % and its 27.3 % share in overall employment in the Czech Republic confirms this trend. These results manifest that industry is and will remain to be one of the most important segments of our economic prosperity.

Users' reactions to this publication over the years have confirmed that Panorama remains an important summary of the manufacturing industry's achievements in the Czech Republic. Panorama provides, to expert and lay public alike, in the Czech Republic and abroad, a great opportunity to learn about results achieved in individual segments within the manufacturing industry in the preceding period, as well as providing an opportunity to present successes achieved by the Czech firms on international stage.

I believe that 'Panorama of the manufacturing industry of the Czech Republic' will remain for you an important source of information and reference whether you are directly involved in the manufacturing industry or interested in the sector generally.

Ing. Jan Mládek, CSc.
Minister of Industry and Trade

MINISTRY OF
INDUSTRY AND TRADE
CZECH REPUBLIC

PRESIDENT OF THE CONFEDERATION OF INDUSTRY

Dear readers,

I am proud that the industrial sector once again confirmed its key role in shaping development of the Czech economy in 2015. Industry has decisively contributed to the economy's health, as well as facilitating lower unemployment rates and driving increases in wages. The industrial sector as a whole rose by 4.1 %, and its manufacturing segment by as much as 8.0 %, while the Czech economy enjoyed a healthy 4.5 % growth.

These results had been influenced to a degree by certain extraordinary factors, such as by faster absorption of the structural funds' investments, by lower oil prices and by continued favourable exchange rate of the Czech koruna, which greatly favours exporters. This however does not call into question the fact that these positive results were achieved primarily due to competitiveness of the Czech industry on a global scale. These results could have been even more impressive were it not for certain shortfalls in the energy and chemicals sectors. Nevertheless, the fast tempo of growth achieved in other sectors, most significantly in the automobile manufacturing segment, made sure that the industrial results remained at significantly high levels. I am convinced that industry will once again be the chief sector driving the entire national economy this year, even though all available prognoses advise that GDP growth may slower even if remaining solid.

Success always has its dark side. Success leads to underestimating the barriers, which have already proven themselves in terms of slowing down potential progress in the industrial sector. These are well-known and long term problems, which the Confederation has been constantly highlighting. Shortages in workforce forces firms to turn down business and this is alarming information. Changes in education sector are unimpressive and its general inertia is alerting. The government's policies attempting to open up the labour market to foreign workers such as those from Ukraine are lacklustre and produce little to nothing.

Regardless of the effort invested in improving legislation regulating investment there has been little progress. This is most strongly felt in the construction sector and has subsequent impact on the industrial sector. In the mid-term perspective, we are dissatisfied with the manner of resolving certain issues relating support to applied research, which is key for competitive performance of the Czech firms. Additional risks stem from the badly managed trends such as digitalization of the economy. The Confederation is also distressed by the trade unions' policies seeking never-ending increases in wages without linking such increases to improved labour productivity, not mentioning the ill-considered amendments to labour legislation. Regardless of these and other problems, especially in the EU, I remain an optimist.

2016 data will eventually show us how the firms coped with an environment offering less than ideal conditions. And for these reasons, the Confederation of Industry of the Czech Republic, which is today the strongest confederation of entrepreneurs and interest groups in the Czech Republic, strives to facilitate creation of even more business-friendly environment, so that we can say, in the next Panorama's edition that the industry's achieve

Ing. Jaroslav Hanák
President of the Confederation of Industry of the Czech Republic

CONFEDERATION OF INDUSTRY
OF THE CZECH REPUBLIC

PRESIDENT OF THE CZECH STATISTICAL OFFICE

Dear reader,

the latest edition of "Panorama of the manufacturing industry of the Czech Republic" which you are about to peruse is in a way quite exceptional. It covers a period which has been marked by extraordinary growth of the Czech economy and this growth has been driven in large part by manufacturing industry. From the a purely statistical perspective, we can definitely say that 2015 was not merely designated to be a 'year of industry,' but that it indeed achieved this designation hands down.

Statistical data offer several perspectives manifesting this fact. A complex approach, from the perspective of national income accounting, shows that gross domestic product rose in 2015 by 4.5 % year-on-year. Gross value added rose by 3.9 % and manufacturing industry contributed 2.1 percentage points. This demonstrates that about one half of the recorded economic growth can be attributed to the manufacturing industry's progress. The gross value added within this sector rose by 8.0 % year-on-year, which is again an excellent achievement.

Statistics also provide a more interesting and detailed, purely sector-based perspective. One of the chief indicators used in short-term statistics, i.e. industrial production index in manufacturing industry grew in real terms by 4.6 % in 2015. Manufacture of motor vehicles / automobiles, trailers and semi-trailers and rubber and plastics production, and production of metal constructions and manufacture of fabricated metal products were the most significant drivers of this development. These three segments represent two-thirds of the growth achieved by the manufacturing industry on the whole.

Here, we should perhaps mention that these numbers are derived from quick monthly data, which aim to provide information on the most current trends. The detailed conclusions are based on annual structural examinations and are available only with significant delay. "Panorama of manufacturing industry" attempts to bridge this gap in time. It combines the robust annual results derived from structural statistics with the most up-to-date data provided by short-term statistics. Its objective is to provide detailed yet more timely snapshot of the manufacturing industry.

Besides the raw data provided by the Czech Statistical Office, this publication also provides an analysis exceeding the dry interpretation of statistical data, including an outlook on the perspectives in individual segments. Interest generated by the general readership unequivocally shows that this is the right path to take. The far-ranging scope and the level of detail provided herein makes this publication a truly unique and interesting guide of the manufacturing industry in the Czech Republic. I am particularly pleased that the work of the Czech Statistical Office staff, who have been cooperating on preparation of the necessary data sets every year, is represented here in such a relevant and sound manner.

prof. Ing. Iva Ritschelová, CSc.
President of the Czech Statistical Office

CZECH STATISTICAL OFFICE

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FEDERATION OF THE FOOD AND DRINK INDUSTRIES OF THE CZECH REPUBLIC (FFDI)

Czech food industry historically belongs, in the Czech Republic and in the entire EU, among the most important industry sectors of the national economy and represents a relatively independent segment within the food chain. Its importance is obvious, it feeds the population by processing the majority of the local agricultural production and produces safe, high-quality, healthy, and accessible food. In order to be able to continue to serve this function it needs to remain competitive and to strengthen its competitive abilities for the future.

Czech food industry is beginning to be affected by a large number of external factors that arise, at least in part, from ever-growing globalization. Large numbers of retail chains in the Czech Republic put enormous pressure on the food industry in the Czech Republic, bringing in competition from foreign producers and the strong focus on reducing prices creates less than objective competitive environment which often affect quality of products. The extra dense retail network in the Czech Republic deforms natural competition and forces food and drink producers into a spiral of cost-cutting measures to the detriment of innovating their products. This situation is entirely contrary to the current life-style trends and to some degree prevents local firms from venturing abroad and properly participating in the European competition. This situation continued in 2015; sanctions against Russia added to this by reducing exports to that market and increasing pressure on the European countries to market their surplus goods to other markets, including the Czech market. All this lead to further disruptions of desired stability and reduced the dynamics of natural food industry development.

Share of farm products on the total Czech exports and imports represented 5.2 %, respectively 6.3 % in 2015, which is a slight year-to-year increase (especially in terms of exports).

Most exports from the Czech Republic in 2015 involved cigarettes, wheat, coffee, rapeseed oil, animal feed, baked products, chocolate, cocoa, non-evaporated milk and cream (especially raw milk), food preparations, beer, rape seed, lemonades, livestock, cheeses, sweets, sugar, malt, processed meats and conserved meats, barley, live poultry, sausages and salami, rapeseed oilcake, evaporated milk and cream.

Imported goods segment was dominated by pork, coffee, chocolate, cocoa preparations, baked products, cheeses, food preparations, animal feed, meat and poultry offal, cigarettes, rapeseed oil, wine, soya oilcake, lemonades, liquors, citruses, bananas, beef, coffee extracts and concentrates, tomatoes, flour products, semolina, starch, milk and canned fruit (incl. nuts).

In terms of commodities 2015 was favourable for improvement of the total Czech agricultural foreign trade balance, especially in the trade with cigarettes (by 2.2 billion CZK), barley (by 1.3 bn CZK), rapeseed seeds (1.1 bn CZK), rapeseed oil and livestock. All those commodities reached their maximum to date in 2015, and except for barley, reached year-on-year higher price. Active trading with food preparations turned the tide on the negative trade balance with that specific commodity.

On the other hand, negative trade balance deepened in cases of meat and poultry (and to a lesser degree in case of pork), liquor and the hitherto active trade balance for evaporated and non-evaporated milk and cream sharply dropped (which was caused by lower export prices for these export-intensive commodities). Imports of meat and poultry offal, which are predominantly import-intensive products, grew from both suppliers – Poland and Brazil.

Imports are to considerable degree driven by retail chains, especially when they are able to obtain products for less than from local producers. Imports also affect some of the commodities, which are then processed in the Czech Republic, for instance the so-called production quality pork, which is imported directly by local producers. Supervising authorities obviously continue to make sure that these imports, whether raw materials or final products, do not breach local health standards.

Assessment provided above makes it clear that the chief objective for the development of food industry in the Czech Republic remains significant growth in its efficiency and competitiveness on the European and global market. Its perspective lies in utilization of science and technology, development of product-related, technological and organizational innovations including acquisitions. It also requires full use of available support – both in terms of sales, utilizing modern forms of marketing – in the in terms of investment supported by EU funding and national sources. Any development in the sector needs to be in context with external, macro-economical and social conditions – i.e. economic growth, increases in real wages and other opportunities leading to increased demand for high-quality food. Internally, the sector itself, its segments and firms needs to strengthen their positions and competitive edge – by improving quality of their product for corresponding price, the sector needs to extend its own space for growth and economic efficiency.

We can expect that certain economic instability – an external factor on the whole – will continue, resulting in further losses of markets, as a product of political situation both in Europe and Asia, and that may significantly influence local market due to further surpluses in foreign products. European markets may be further negatively affected, primarily due to the unfavourable shifts in the trans-Atlantic trade links. We can therefore expect strong threats not only from the said external factors but also due to growth of and entry of new economies to relevant markets – China and India, i.e. countries enjoying unfairly low production costs.

If the Czech government fails to act and impose realistic and efficient measures leading to the proper orientation of the food and drink industries and improvement of its innovation capacity and creation of equal opportunities on the local and foreign markets, the situation in the sector will deteriorate further making it more difficult to conduct reasonable and profitable business in this sector. Considering the size and significance of this sector, such situation would have strong consequences for the entire Czech economy. Experience from the other EU Member States teaches us that significant support provided by the state in areas such as research and development and in nutritional policies that is correlated with support aimed at improving quality of life and focusing on products with higher added value may help avoid such a scenario.

Ing. Miroslav Toman, CSc.

President of the Federation of the Food and Drink Industries of the Czech Republic (FFDI)

TEXTILE – CLOTHING – LEATHER INDUSTRY ASSOCIATION

In recent years, the textile and clothing industry has undergone profound restructuring accompanied by a change in the dominant focus from classic textile to technical textile. The focus on production of technical textiles provides a fairly wide range of opportunities for application and development, be it textile for the automotive and aerospace industries, for healthcare, construction, agriculture and other fields of human activity. The success of sector restructuring is also proven by the fact that its revenues have growth consistently for seven consecutive years. In 2015, the revenues of companies with more than twenty employees reached CZK 52.37 bn. As for textile and clothing exports, these still comprise a fairly diverse mix of goods composed of both technically advanced products and products with lower value added. These goods are exported primarily to demanding European markets, among them mainly Germany, Italy, Poland. Slovakia, Austria, France, Netherlands and Great Britain.

Within the textile industry, the CLUTEX cluster of technical textiles and the Czech Technological Platform for Textiles were created based on the initiative of the Textile – Clothing – Leather Industry Association (ATOK) and textile companies. These two organisations are focussed on supporting technical development and innovations in the textile industry. For instance, the new Prowell material was invented with the organisational contribution of the cluster; it is unique due to its special construction using two different materials – cotton and polyester – which give the material new features, the primary benefits being excellent absorption, warmth, fast drying and low volume of the fabric. Another example is the brand new nano-fibre membrane called Nanomembrane. This membrane has unique features with which no other membranes in the world can complete. It is used for sports and outdoor purposes. Anti-decubitus pads (bed pads to prevent bedsores) and new types of surgical threads (visible via NMR imaging technology), suitable for permanent application as an in vivo medical resource, find application in healthcare. Also worth mentioning is the newly developed inspection system for assessing colour discrepancies in finished fabrics and devices used to measure the features of yarn rolls designated for dyeing in pressurised apparatuses.

Aside from the aforementioned organisations, we must also note the Textile Faculty of the Technical University in Liberec (FT TUL). In addition to lectures, this school engages in the research and development of new materials for wearing apparel and technical textiles, the development of composite structures with inorganic fibre content, nanoparticles and textiles uses, the construction and evaluation of intelligent textiles, modification and development of technologies for processing new materials, new energy sources and new transport media in the textile industry. This school's other areas of interest include the interdisciplinary uses of textiles, use of optical fibres and materials with shape memory for technical products, developments in the area of textile sensors and sensors suitable for use in textiles. A fairly well-known activity of the faculty is the research and development of using nanotechnologies in the textile industry.

There are of course companies in the Czech Republic that organise technical development on their own or in cooperation with foreign schools and research institutes.

Acquiring new employees with adequate education in textiles is presently one of the largest problems of the textiles and clothing industry, which is difficult and slow in solving. As for universities, the situation may be deemed relatively favourable thanks to the FT TUL, but the situation is considerable worse in secondary education. The said problem has two aspects: one is the lack of people interested in the textile and clothing industry and the other is an inadequately branched-out structure of secondary and apprenticeship schools in regions where textile and clothing companies operates, whereas with one exception, textile technology schools de facto do not exist at all. A certain solution and effort to find a remedy was initiated by the nationwide sector agreement, on which regional sector agreements are based, the substance of which is cooperation between regions, companies and schools in an effort to cover the educational demands of companies in the regions. At present, such agreements have been concluded in the Hradec Králové and Zlín regions, and negotiations on conclusion of a sector agreement are underway in the Olomouc region and prospectively in the South Moravian, Vysočina and South Bohemian regions.

Like in the rest of the manufacturing industry, extensive one-off contracts are not generally concluded in the textile and clothing industry. Instead, it is rather a matter of many smaller contracts.

The textile and clothing sector has been growing for the seventh consecutive year and, provided nothing unforeseen happens, it may be expected to continue growing in coming years, especially as the economy as a whole is reviving. One of the key factors that can have a negative impact on the sector's development is the international security situation, which is far from satisfactory at present. A certain model of negative impact is the situation in Africa, which first faced an Ebola virus epidemic, followed by security destabilisation due to the activities of radical Islamist groups. This destabilisation affected consumption in the region, which was reflected in the export of textile goods to the African continent. While textile goods worth CZK 2.27 bn were exported to Africa in 2014, in 2014 exports amounted to only CZK 1.65 bn, which is a slump of 28%. The fallout of the African market can be covered by increasing exports to European countries and the American continent. These two regions are crucial to the textile and clothing industry and will remain suck in the middle term.

Ing. Josef Novák

President of the Textile – Clothing – Leather Industry Association

ASSOCIATION OF FORESTRY AND WOOD PROCESSING ENTERPRISES

The technological standard of wood processing facilities differs considerably and is largely influenced by the age of the original investment and personality of the owner. At present, the decisive factors are speed and flexibility combined with the option of subsequent further steps in wood refining following the initial cutting based on the customer's requirements, which demands continuous modernisation of the used technologies.

The long-term major competition in the field and number of capacities for primary wood processing, completed around 2010 primarily in the area of Central Europe, puts immense pressure on the prices of final products and overall production efficiency. This consequently strongly limits the creation of resources for further investment into the expansion or renewal of existing technologies. In this regard, the position of facilities that are not backed by a strong foreign owner with sufficient funds for modernisation is very difficult, which largely explains the overall reduction in the number of units in recent years.

As for education and research, there are two forestry faculties attached to universities in the Czech Republic – one in Brno and the other in Prague. The completion of the new specialised forestry faculty pavilion within the Czech University of Life Sciences in Prague – Suchdol in spring 2016 is a very positive event.

In terms of the outlook for further development of the field, the activity of the UCEEB – University Centre for Energy Efficient Buildings of the Czech Technical University in Prague (ČVUT) which, as its name suggests, focussed on assessing the benefits of using wood as a building material.

Questions linger about the quality of the outputs of its research activities, the possibilities of their practical use and the equally important issue of close cooperation with other fields of science. At present, countries with an important share of wood-based industry place considerable emphasis on applying findings about the possibilities offered by wood matter in a whole range of other manufacturing sectors, which we can summarise under the general term of biotechnology. Scandinavian countries in particular are leaders in building new, progressive technological production centres for the innovative creation of other products based on waste e.g. from pulp production. IN the Czech Republic, one of the few similar examples is the complete change of manufacturing at Biocel Paskov from paper pulp to viscose pulp as a raw material for the production of textile fibres.

The wood processing industry has a stable position within the manufacturing industry (MI) and its products are highly sought for their quality and prices both domestically and within the EU and beyond. Its competitive advantage is the adequate supply of domestic primary wood – an ecologically renewable resource. One fact that cannot be considered entirely positive is that the Czech Republic is among Europe's largest exporters of raw wood and products with lower value added are predominant in our exports. At present, the area of our forests makes us one of the largest raw wood exporters in the world, which is due mainly to the consistent high demand in neighbouring countries – Austria and Germany.

After 2008, this division, like most other division in the MI, was impacted by a drawn-out crisis. Investment activity also weakened as a result of declining revenues, and the slump in the construction sector also had a negative impact. Only in the past two years have revenues approximated the level of 2008 again. There was also a substantial decline in the number of employees, dropping by 29% in the period from 2008 to 2015 to last year's headcount of 30,845 employees. The volume of investment declined steeply and started reviving only in 2015. Nevertheless, it is still considerably lower than the amount investment in 2008.

Another disadvantage is that compared to progressive EU countries (e.g. Germany, Austria, Scandinavia, etc.), we lag behind in using wood in building construction, even though the percentage share of wood building in the total number of completed residential buildings is consistently increasing slightly.

The growth of wood consumption in CZ as a renewable, environmentally friendly and universally usable raw material can be solved only if the behaviour of the population is influenced with the aim of increasing the use of wood-based products and especially by tuning the supportive measures with concepts in other economic sectors (environment, energy, industry, construction, etc.).

To increase competitiveness and further development of the division, it will be necessary to implement newer technologies and techniques, support research and development promote small and medium-sized entrepreneurship within the existing subsidy programs of the MIT and MoE, support new acquisitions and investments. Hence, the development of cooperation between the departments of industry and agriculture would be welcome, with the aim of proposing priority areas to support wood processing in the Czech Republic.

Ing. Petr Jelínek

Chairman of the Association of Forestry and Wood Processing Enterprises

CONFEDERATION OF THE CHEMICAL INDUSTRY OF THE CZECH REPUBLIC

The key facilities of commodity chemistry were modernised after 2000 and are now among the more advanced available facilities of medium capacity with predominant export orientation.

At present, the most important planned or finalised investments include the construction of membrane electrolysis by the SPOLCHEMIE (Spolek pro chemickou a hutní výrobu) and a new polyethylene unit at Unipetrol RPA.

Investments into sector evolution and innovation, including research and development, are essential to maintain the future competitiveness of the European chemical industry. The ratio of the volume of investments to revenues has been declining slighting in the EU since 2000, but in absolute numbers this fluctuation is minimal.

The costs for research and development in the European chemical industry in the period of 1992 to 2014 were around EUR 7.8 bn on average. The ratio of costs for R&D versus revenues in the chemical industry within EU-28, meaning R&D intensity, gradually worsened from 2.8% in 1991 to 1.7% in 2014. Spending on research and development in total in the chemical industry (including four aggregations, namely CZ-NACE 192 Petroleum refining, CZ-NACE 20 and 21 Chemical and pharmaceutical industry and CZ-NACE 22 Rubber and plastics industry) equals about CZK 3.5 bn per year, which is a 12% share in research and development within the manufacturing industry. The current system of assessing the quality and system of financing research in CZ often worked against efforts to improve the quality of research in many regards.

Within the framework of processing the Strategic research agenda of technological platforms supporting the chemical industry, the basic strategic areas were pinpointed for which sufficient scientific technical potential exists or is being created in the Czech Republic, ventures are being implemented and can significantly contribute to solving the needs of Czech companies:

- industrial biotechnology and use of renewable sources,
- material technology incl. nanotechnology,
- manufacture and processing of polymers and biopolymers,
- use of plastics after their lifetime,
- new types of reactions and processes.

New current topics are being added to these basic aims:

- circular economy,
- replacement of health and environmentally problematic substances,
- water management,
- materials for the energy industry,
- prevention of increased plastic waste in the sea,
- special polymers.

In the past two decades, the lack of qualified young workers on the labour market in the Czech Republic to replace the retiring generation has increased, not only to secure production in the chemical industry but even in the use of chemical substances and technologies in the energy, agricultural, healthcare, metallurgical, paper, glass, engineering and automotive industries, and in recent years also in the processing and recycling of waste. The resulting deficiencies in staffing the chemical sector are augmented by the fact that specialised apprenticeship education was practically liquidated in recent years. In order to mitigate this existing lack at least in part, a number of measures have been undertaken. In relation to the younger generation, we must mention the following:

- Sector agreement for chemistry “Youth for the Chemical Industry”, which was prepared as one of eight sector agreements with support from the European Social Fund and signed in June 2015. To date, it has been signed by 45 executive and 24 strategic partners. The sector agreement for chemistry is focussed on the following areas: support of specialised education in chemistry, promotion of chemistry at elementary schools, popularisation of chemistry by means of primary familiarisation in the preschool classes of kindergartens, and chemistry yesterday, today and tomorrow.
- “Search for the Best Young Chemist of the Czech Republic” contest, organised since 2012 by the Confederation of the Chemical Industry of the Czech Republic in cooperation with its member organisations and other partners. This contest exploits experience from cooperation between secondary specialised schools and chemical enterprises in the individual regions and is focussed on the pupils of elementary schools.
- Many companies in the chemical industry cooperate bilaterally with secondary specialised schools and universities, with student work internships at companies, thus ensuring their future employees.

Since 2015, revenues developed favourably in the pharmaceutical sectors, as well as the rubbers and plastics industry. In the latter division (CZ-NACE 22), this favourable development was due largely to the high demand in related sectors,

in particular the automotive industry. In 2015, tangible investments into the chemical industry reported a strong year-on-year growth of almost 19% to CZK 28.1 bn and this trend is continuing into 2016.

After the automotive industry, the chemical industry is the second most important manufacturing industry division in the Czech Republic in terms of revenues. In 2015, these reached CZK 561 bn, and the chemical sector employed about 120,000 people.

The chemical industry is strongly affected by cyclic development, whereas the conjectural phase occurred in the period of late 2014 – early 2016. In the next 3 years, the gradual reduction in the sector's profitability can be expected along with the finalisation of important investments.

Strengths and weaknesses of the Czech chemical industry, opportunities and threats:

Strengths:

- educated labour force (secondary specialised and university education),
- strategic position of the Czech Republic within Europe,
- unique network of product pipelines in the Czech Republic (oil, motor fuels, ethylene, ethylbenzene),
- long history and tradition of the chemical industry in the Czech Republic,
- continuation of new investments into the chemical industry,
- social partnerships, good cooperation between companies and unions.

Weaknesses:

- relatively high cost of energy compared to surrounding regions (natural gas, electricity, water),
- strong dependence on import of raw materials (mainly oil),
- relatively low waste recycling (plastics, etc.),
- low number of production units with competitive capacity.

Opportunities:

- strengthening the important position of the Czech Republic in the manufacture of rubber and plastic products (the Czech Republic is an important producer of tyres for industrial and agricultural use and plastics for the automotive industry),
- entry of foreign investments and provision of know-how to the chemical industry,
- possibility of more intensive use of newly created technological parks and excellence centres,
- drawing of subsidy titles to support research, development and investments.

Threats:

- complicated and cumbersome CZ and EU regulations,
- need to investment into technological equipment and further modernisation of the petrochemical and refinery industry,
- limited availability and rising prices of strategic raw materials (especially oil).

Ing. Petr Cingr

President of the Confederation of the Chemical Industry of the Czech Republic

ASSOCIATION OF THE GLASS AND CERAMIC INDUSTRY OF THE CZECH REPUBLIC

ASSOCIATION OF THE GLASS AND CERAMIC INDUSTRY OF THE CZECH REPUBLIC

The glass and ceramics industry is among the important sectors and is a competitive branch of the manufacturing industry in the Czech Republic. It has strong, healthy roots and tradition. The glass and ceramics industry reacts very sensitively to changes in economic, environmental and political development, not only because of its pro-export orientation but also because of its dependence on a whole range of related industrial sectors to which it supplies its products.

Statistics document stable and gradual growth. This fact is also reflected in the estimates of customers, service companies and suppliers of primary material for glass and ceramics production. Moderate growth is expected also by the manufactures of glass-making machines and equipment. Hence, the important factors for favourable progress of the sector will be future economic development particularly in Europe, which is the largest export territory for the Czech glass and ceramics industry.

Most companies have an optimistic outlook for the development of the glass and ceramics segment in 2016 as well. Revenues in the sector are increasing gradually and increasingly more people are working in it. At present, it comprises roughly 150 companies that employ more than 22,000 people.

The entire sector continues to perfect itself in accordance with sustainable development and its products contribute to environmental protection. The stable situation at companies allows owners to innovate, increase value added with new products, perfect technologies and acquire new markets.

Ing. Petr Mazzolini

President of the Association of the Glass and Ceramic Industry of the Czech Republic

ASSOCIATION OF CEMENT MANUFACTURERS OF THE CZECH REPUBLIC

The cement manufacturing industry in the Czech Republic is currently represented by combining a quality national raw material foundation with top cutting-edge global production technology of clinker and cement that can be imagined in this traditional sector in the 21st century.

Domestic production facilities are a part of European and global cement corporations, which guarantee a high social standard and environmentally friendly and quality production.

Like other parts of the national construction sector, the cement industry is also undergoing declines and increases in sales, moreover affected by the fact that cement as a commodity is not and never was an important subject of import or export. The manufacture and sale of cement after the building construction slump between 2009 and 2012 has seen only very moderate growth in the past 2 years. The cement industry is therefore all the more interested in the follow-up production of cement and development of the construction sector in the Czech Republic, will fully complying with local and European regulations and standards. Attention is devoted primarily to the main sales material of the cement industry, namely concrete. Cement specialists cooperate with the producers of concrete and other mixes of which cement is a part, in order to enable the current variability and future development of modern construction from the needs of small consumer through to the innovative requirements of architects and static technicians. The cement industry is massively expanding the product portfolio, permitted by European standards for large customers. Moreover, a number of products in the area of dry cement mixes is prepared to satisfy even small customers with its “user friendly” processing system.

In their everyday activity, cement plants cooperate both with the research base and universities. Moreover, they support a range of young talents through grants and competitions not only in the engineering field, but even among architects and concrete sculptors. This creates a direct link between industry, science and research and culture.

The cement industry, as an energy intensive industry reliant on a suitable raw material base, is aware of its importance of the national economy and the position in each region, and acts as a long-term investor, implementer and employer in its place of activity. Cement production facilities allow not only the careful exploitation of low-percentage limestone deposits, but also use a range of alternative primary materials and fuels. Moreover, cement plants introduce and apply the required best environmental practices, which transform cement plants into an environmentally friendly place with the possibility of using a range of wastes from the region to produce cement.

However, the support of construction through European project systems mainly involving financial support should be accompanied by long-term legislative stability. This was neglected in the past, and is difficult to correct in the present, particularly as concerns environmental permits for important line construction. Cement plants now produce cements with special features for the construction segment and are working on their further development.

Ing. Jaromír Chmela

Chairman of the Association of Cement Manufacturers of the Czech Republic

THE STEEL FEDERATION, INC.

Although the Czech steel industry was relatively successful in 2015 we were able to see trends in the continued efforts of steel companies to maintain competitiveness and defend their market position by rationalising costs and increasing production with high value added, which led to sustaining effective employment and increased earnings of steel industry workers. On the other hand, there are rising concerns as to whether the Czech steel industry will have equal conditions in terms of environmental regulations and business terms, including defence against "unfair" trading.

The prices of metallurgical products declined in the second half of 2015, due also to the surplus capacities of China, which are estimated at more than 400 million tonnes of steel (for illustration, demand in the EU reaches 160 million tonnes of steel per year). Job position in the Czech steel industry are threatened not only by the dumping of cheap steel and potential granting of market status to China, but also by reforms to the European Emissions Trading System proposed by the European Commission.

The situation in the EU requires EU authorities and member states to adopt specific measures to protect the position of industry in Europe, bring about economic growth and protect sustainable jobs.

Measures that will help energy intensive sectors such as the steel industry to maintain competitiveness are based on the use of the most advanced technologies, efficiency production and a highly qualified labour force. Essential, this concerns:

- restoration of equal conditions on the global market,
- modernisation of EU instruments to protect trade, prevent unfair business practices,
- use the results of research, development, investment into the most advanced technologies, radical solving of innovations, quality of the metallurgical production range,
- effective solving of the environmental agenda (both legislative aspects and environmental parameters) and energy factors (availability, acceptability of prices).

The specific areas for solving equal conditions for the steel industry are:

- protection against unfair business practices (anti-dumping measures and acceleration of their adoption), modernisation of instruments to sanction subvention measures, application of customs duty including elimination of the lower customs duty rule,
- realistic solving of the emissions trading agenda in order to help the steel industry proper (rules of support for projects in technology, research, innovation, including a revision of the emissions trading system, allocate allowances on the level necessary to maintain the viability of the steel industry),
- engagement in favour of investments into labour, because the competitiveness of the steel industry requires qualified, duly trained employees.

It is evident from the finds of 2015 and in the outlook until 2020 that the Czech steel industry can maintain its competitiveness only through:

- a collective, strong procedure against "unfair trade",
- an investment strategy that will bring products with high quality and finalisation into the product portfolio (based on customer requirements) through the implementation of research, development and innovation project.

A specific aspect of the Czech metallurgical industry is its concentration into a single region – Moravia-Silesia. The environmental limits in this region are among the strictest in the European Union, and because Czech steel companies take them seriously, they have invested over CZK 40 bn into environmental projects. In addition to this, modernisation investments also have a positive impact on the environment, their main objective being to improve the competitiveness of Czech steel products. Since 1993, these measures have reduced dust emissions by 92%, SO2 by 68.7% and NOx by 64%. Emissions will be reduced further by the launch of other projects, in which CZK 10 bn were spent in 2014 and 2015 alone.

Ing. Jan Czudek

President of the Steel Federation

ASSOCIATION OF ENGINEERING TECHNOLOGY

The Association of Engineering Technology represents the interests of 48 leading engineering companies, mainly manufacturers of machining and shaping machines, tools and components. This groups accounts for about 75% of the sector. Our results are a good indicator of the situation in the entire engineering industry, respectively the manufacturing industry.

In 2015, our sector reported the best results in its entire history. After overcoming the most recent crisis, in which production slumped by about 40% and consumption by more than 60%, the pre-crisis results of 2008 were already being achieved in 2013 and 2014. The year 2015 brought the highest values and interest growth compared to 2014: in production (+11.7%), exports (+6.05%), imports (+15.7%) and consumption (+23.6%). The main sector purchasing engineering technologies was the automotive industry, respectively its subcontractors, manufacturers of tools and forms, the defence, aerospace and energy industries.

Last year's consumption figures in particular testify to the high dynamic growth of the domestic manufacturing industry and investments into technological equipment. Import dynamics also indicate the rising foreign competition and declining market share of our manufacturers on the domestic market. For a number of years, the Czech Republic has held 15th place in the global ranks of machining and shaping tool manufacturers, and is in 8th place in terms of per capita production and consumption. In terms of volume, the world's largest producer is China, while Switzerland can boast the highest per capita production. Germany maintains its position as the number 1 importer (35.7%), followed by Italy (9.7%), Taiwan (7.5%), Japan, Switzerland and South Korea on the imaginary chart.

The main export territories for the machining and shaping tools segment are still Germany (26.3%), Russia (12.6%) and China (11.1%), followed by Slovakia, Poland and Italy. Exports to Germany have a slightly declining tendency. Exports to Russia saw a major slump, due primarily to sanction and the drop in oil prices. On the other hand, exports to China are increasing steeply. The share of our machines on the Chinese market is still relatively low, but despite the decline in consumption in China, there is still considerable export potential here.

In 2016, we expect a certain economic slowdown, which means that maintaining the absolute values of 2015 would be considered a very good result.

Ing. Oldřich Paclík, CSc.

Director of the Association of Engineering Technology

AUTOMOTIVE INDUSTRY ASSOCIATION

The automotive industry remains the most important sector of the Czech economy and like the domestic economy, and it saw extraordinary growth in 2015. In 2015, companies in the automotive industry produced the most personal vehicles in history. More than 1,298,000 passenger cars left Czech plants last year. In addition to the production of passenger vehicles, 850 freight vehicles, 4,517 buses and 1,727 motorcycles were manufactured. Production data confirmed the fact that the Czech Republic is a global superpower in the manufacture of passenger cars and buses. We are second in automobile production per capita, with only Slovakia coming ahead of the Czech Republic. As for bus manufacturing, we are actually the global leader in per capita terms.

The comparison of the automotive industry in a global context is equally favourable, growing faster in the Czech Republic than abroad, despite the fact that the European automobile market has already recovered from the crisis. While global motor vehicle production increased by only 1.1% (to 90.8 mn automobiles), domestic vehicle production increased by 4.2%.

The highest vehicle production in history was reflected in the financial results of domestic vehicle manufacturers and suppliers. The revenues of companies within the Automotive Industry Association from industrial activity exceeded CZK 912 bn. Exports reached CZK 780 bn. Total sales of companies in the sector (in addition to the manufacture of actual cars, this also includes parts suppliers) exceeded one billion korunas for the first time. This means the sector contributes to one fourth of all industrial production in the Czech Republic. The automotive industry accounts for the same share of Czech exports. The share in creating gross domestic products is estimated at 7-8 %. These data underline the key role played by the automotive industry in the domestic economy.

The contribution of the automotive industry to the foreign trade balance of the Czech Republic was traditionally high. Exports were dominated by European markets, with more than 84% of automotive industry exports headed to EU and EFTA countries.

In 2015, companies within the Automotive Industry Association employed 115,000 people and the total employee headcount increased by 4.2% year-on-year. Overall, companies manufacturing cards or car parts currently employ about 160,000 people, with tens of thousands more employed in related sectors.

Data about employee headcount and realised revenues testify to the high productivity and efficiency of the Czech automotive industry. The automotive industry often reports higher labour productivity than other sectors and employee receive higher salaries. The average wage of employees in the automotive sector exceeds CZK 33,000 and is about 26% above the average wage across manufacturing sectors in the Czech Republic.

Investors who entered 10 to 15 years ago are now exploiting the fact that they have new plants equipped with modern technologies and quality employees. However, the lack of qualified labour is also the greatest impediment to further development at present.

For this reason, the education of employees and efforts to development the education system in the Czech Republic are long-term priorities for a vast majority of companies in the sector. This is why in 2015, the Automotive Industry Association became involved in activities related to the Year of Technical Education. Companies' activities in recent year are focussed primarily on secondary education, but university education is of equal interest. Companies are also striving to evolve activities on lower levels of the education system, with a number of them focussing even on elementary schools and kindergartens. In simplified words, it may be said that companies' activities in the field of education are aimed at two priorities. The first is cooperation between companies and schools with the aim of increasing the share of practical education of students at companies. The second is to increase the motivation of pupils to study technical fields and work in industry once they have graduated. On a sector level, the automotive industry is working to promote legislative changes that will improve the quality of schools and teachers and the quality of curriculum content.

The figures concerning investment into research and development are also interesting. The number of employees and companies in the automotive industry engaged in research and development is rising, and this is a key factor for the future. In 2015, the companies within the Automotive Industry Association employed almost 7,000 people in research and development which is 6% of the total employee headcount. 65% of companies have their own research and development centres. The demand for new developers and technicians increases every year and currently surpasses the offer on the labour market. Most companies are also planning new investments into research and development and technology, especially with the onset of the Industry 4.0 phenomenon.

As for the outlook for this year, it may be assumed that the automotive industry will continue to grow. All three personal car manufacturers operating in the Czech Republic are doing very well on European markets. Based on data from 1H2016, the Czech Republic and European Union as a whole can look forward to a favourable year. In the first six months of this year, new car sales in CZ increased by 175 to the highest value in history, almost 133,000 automobiles. Equally good results were reported by the European Automobile Manufacturers' Association (ACEA), and new car sales in the Czech Republic in 2016 can be expected to increase to 260,000 – 270,000 newly registered cars. Based on data about first registrations in the first half, it is apparent that the production growth trend will continue and that last year's production of personal vehicles in the Czech Republic, which amounted to 1,298,000 automobiles, should be exceeded by three to four percent. We should therefore be on a level of 1,350,000 manufactured cars.

In conclusion, it must be emphasised that the Czech automotive industry includes not just manufacturers. The supplier sector is just as important and its results are also excellent. There are six suppliers among the ten largest exporters, who are members of the Automotive Industry Association. The share of suppliers in total sales of companies within the Automotive Industry Association was almost 43% and supplier companies employ 65% of the people working in the sector.

Ing. Martin Jahn, MBA

President of the Automotive Industry Association

ASSOCIATION OF AEROSPACE MANUFACTURERS OF THE CZECH REPUBLIC

The Czech aerospace industry is based on the close cooperation of all economic and non-economic entities, whose focus spans the entire lifecycle of the basic aviation product, meaning the aircraft. These include universities, research organisations, development and design studios, aircraft and parts manufacturers, maintenance and repair providers and air traffic control. The Czech Republic is one of the few countries in the world that has maintained the ability to develop and manufacture an entire portfolio of basic aviation products – aircraft, engines and propellers – and the related accessories. Our primary domain is sports aircraft, small passenger aircraft for up to 19 passengers, military training jets, small unmanned aircraft and participation in the supply chains of major global players such as Airbus.

Our industry has the required technological background for all of these activities, which is comparable to other advanced aerospace countries. This technological background is continuously modernised and expanded to new technological domains, which are the output of ongoing research and development.

In addition to its own corporate development centres, the Czech aerospace industry also exploits its close cooperation with national research centres (e.g. the Aerospace Research and Test Establishment in Prague) or specialised university worksites at the Czech Technical University (ČVUT) or Brno University of Technology (VUT).

The aerospace development cycle can hardly be compared with any other industrial sector. An aircraft is usually development for 7 to 10 years and then flies for 20 to 30 years. During this period of time, there is very little opportunity to incorporate the truly revolutionary outputs of research and development. It is more of a continuous innovation process, within which the current results of research and development are applied to a greater or lesser degree. The results of Czech aerospace research and development are implemented not only in current Czech programs (e.g. L410NG or EV-55), but also on the aircraft of global players (e.g. Airbus, Boeing, Bombardier).

The Czech aerospace industry is involved in the largest European aviation project CLEAN SKY 2, working alongside strong European players such as Airbus, Dassault, Allenia Aeronautica, Rolls Royce, Agusta Westland, Safran Group, Thales, etc. CLEAN SKY 2 is the largest aviation program in Europe and our companies and research centres are respected members of this European team.

A lasting problem is the critical lack of employees qualified in aerospace professions, be it with specialised, secondary or university education. A crucial topic in recent times has been the requalification and employment of people from abroad. A number of major aerospace corporations operate their own apprenticeship centres or secondary schools, and their students are directly involved in corporate practice during the course of studies. University students are assigned topics for their diploma or dissertation theses, whereas the project leaders are very often people directly from the aerospace industry. Nowadays, it is a matter of course to employ university students in their final years of study or those working on their PhD on a part time basis at the companies. The best experts in industry, specialists in the individual domains, are often a part of the education process as teachers at secondary schools and universities. We see the intertwining of our production enterprises and the education sector as a positive thing. We would welcome a reasonable increase in the number of students in technical fields.

All contracts are important, either in terms of volume or focus, because they continuously maintain and develop the ability of our aerospace industry. An industry that uses demanding, cutting-edge technologies.

At present, the important, market oriented activities worth mentioning mainly include projects worked on by our largest companies:

- Aircraft Industries – manufactures and markets the traditional Czech 12-seater aircraft L410. It is also finalising the considerably modernised version of this aircraft - L410NG – which should be certified in 2017;
- Aero Vodochody Aerostructures – involved primarily in cooperation as a Tier 1 supplier for aerospace projects e.g. of the Canadian Bombardier company or Brazilian Embraer. It provides “after market service” for its L39 or L159 trainers. It is also developing a new modern version of the L39NG training jet;
- GE Aviation Czech – manufactures GE H80 turboprop engines, which replaced the original Walter M601 engines;
- Evektor – is finishing the new nine- to fourteen-seat EV-55 turboprop aircraft, which is now in the final phases of development testing;
- První brněnská strojírna Velká Bíteš – develops, manufactures and markets small modern jet, turboprop and turboshaft aircraft engines.

The Czech aerospace industry is currently heavily impacted by the substantial loss of trade in Russia, which is why our primary activities are geared towards seeking new markets for our products. We cooperate with the Czech Government in creating an effective system of state support for the aviation and space industry. Most of our companies are participating in finalising the L410NG and EV-55 projects and launching their serial production. We are intensively seeking to become involved in European supply chains.

We have plenty to offer.

Ing. Josef Kašpar

President of the Association of Aerospace Manufacturers of the Czech Republic

ASSOCIATION OF THE CZECH RAILWAY INDUSTRY

Railway industry is one of the stable pillars of the Czech economy. Results achieved by the Czech railway industry in 2015 confirmed trend started in preceding years. We have seen growth in exports and the total revenue of firms involved in this sector reached 91 billion CZK. Export brought 55 % of that revenue and grew by 6 billion CZK in comparison with 2014. The sector's stability manifested itself also in terms of employment and despite increased labour productivity, the number of employees in the sector grew to 21 000. The planned revenue of firms associated in ACRI for 2016 is anticipated to reach 87 billion CZK (contracted sales).

Exports are primarily destined for EU Member States, but we have been successful in concluding contracts in Turkey, Belorussia and in some of the Asian countries. We are primarily producing command and signalling systems, locomotives and tramways and in all these segments we are ranked amount the European top manufacturers. Stable results are achieved also thanks to draw downs of funding from the OP T1 and follow on programmes from in the current programming period. Effective set up of OP T2 subsidy programmes will be also key for the successful future performance of the railway industry firms beyond this year.

The current programming period guarantees up to 3.5 billion EUR for railway development – infrastructure projects – and newly also up to 20 billion CZK for restoration of railway vehicles which represents, for firms associated in ACRI, potential to implement projects and contract new sales until the end of the programming period, i.e. until 2020.

Czech railway industry products can be seen on Czech tracks and increasingly also on foreign markets. With regard to the Czech railways they are practically the sole stable partner to the national carriers ČESKÉ DRÁHY and ČD CARGO. Specific projects in recent past include new electric train unit 'InterPanter' and 'RegioPanter' produced by ŠKODA TRANSPORTATION; upgraded carriages renovated in Pars nova Šumperk; new and significantly upgraded motor locomotives produced by CZ LOKO; modern signalling equipment supplied by AŽD Prague and a number of other projects. ŠKODA TRANSPORTATION, CZ LOKO, AŽD Praha, BONATRANS, BORCAD, ZKL and others have been very successful in acquiring contracts abroad. ŠKODA TRANSPORTATION has a large contract to supply locomotives and train unit to Bavaria and CZ LOKO has contracted customers in the former USSR; in addition to that Třinecké železárny [Třinec Steelworks] supplies their rail and rail-related products to many European countries, BONATRANS begun producing wheelsets in India, other Czech products can be found in the Malaysian metro, Czech trams have been purchased by Turkish carriers, and Czech firms are installing command and signalling equipment in Iran.

Negative factors affecting Czech railway industry include the fact that the Czech economy is one of the most open in Europe. This has its advantages but also certain negative impacts. Negatives lie in the fact that the Czech market is open to foreign suppliers in the degree that is not usual even for the neighbouring countries. Each country aims to support, within legal limits, its domestic producers, especially where the projects are financed from public sources. This kind of investment funded directly or indirectly from public money contributes, of they are implemented by forms producing their products in the Czech Republic, to the local economy by generating jobs, taxable income, increased purchase power etc. In practical terms, the invested money come back on many levels, in the form of the investment itself, i.e. upgraded railways, engines and carriages, and in the form of steady financial stream back to the state budget. Even in the very liberal EU environment it is usual, that these projects are usually awarded to successful local firms, which is the result of politically responsible support of domestic industry.

The key factors for the future competitiveness of the railway industry will be our own technically advanced products and services based on the state of the art technologies and solutions and for this reason, the railway industry needs to be heavily supported, on the national and European level, in the research and development sectors. This represents the value added, which is the very key for the European railway industry's survival in competition with the rapacious, mostly Asian, competitors. The research and development segment in the railway industry needs to be supported both from the European and also national sources.

Considering the fact that the Czech Republic has bigger ambitions that to the assembly shop for the entire Europe, it will be important to focus on expanding research, development, innovations and advanced technologies. Without these activities the railway industry will struggle in the future. Czech government adopted this year the National Policy for Research, Development and Innovations 2016–2020 (NP RD&I), which determined what are the key sectors and research themes to be targeted by applied research. The National Policy also proposes changes to the management and financing of science in order to arrive at more top-of-the-class scientific achievements and to involve firms, in all sectors, more in research and development. The government aims to support applied research especially in highly perspective sectors, which drive the Czech economy and which include the railway industry. The government and its partners are now preparing to implement a detailed plan for bringing the NP RD&I into action: a new bill on supporting science, research and innovations is being currently drafted; Ministry for Science and Research is planned to be established to promote, coordinate and regulate this sector. These steps should facilitate a better position from coordinating science-related policies, including financing of research organizations and newly established research and development centres.

The future of scientific research and the future of the railway industry is in the hand of young, educated professional and that requires cooperation between individual firms and universities. Firms planning large investment into research, development and innovations need technically educated professionals on all levels. A number of firms already started

looking for new talent at schools, from vocational schools to universities. Lack of technically educated professionals is a key problem and it is being pointed out not only by these firms but today by nearly everyone. Children and their parents have perceived for some time the traditional industrial sectors as old-fashioned, outmoded, backward and the required technical education as unattractive. We are now talking about major systemic change but that is a long term process, and the firms need their technically competent professionals now. They have therefore already started looking for ways to cooperate with schools at levels.

ACRI is one of the players, which strives to educate children and their schools in this direction, and we have been organizing presentations of the railway industry at universities and other education institutions for some time to this end. We are trying to present the railway industry as a forward-looking, advanced sector enjoying stable growth and results, a sector whose products are competitive on a global scale. In addition, it is a sector offering a growing number of job opportunities. Firms are struggling with lack of graduates in technical professions, and one of the possibly ways of attracting people and convincing them that they will have good prospective future is to encouraging interest in these sectors already at schools and in individual students.

Marie Vopálenská

Director General of the Association of the Czech Railway Industry

ASSOCIATION OF CZECH FURNITURE MANUFACTURERS

The Czech furniture industry has reported excellent results; domestic consumption has seen a revival and Czech furniture is being successfully exported.

Furniture production in the Czech Republic increased from just under CZK 40 bn in 2014 to more than CZK 43.5 bn last year. This is an increase of more than CZK 3.5 bn, similar to the increase seen between 2013 and 2014, which amounted to almost CZK 3.5 bn. This year, we expect the growth trend to continue. This is suggested by lasting factors from previous years, such as investments into the furniture industry and weak the Czech koruna (CZK), which favours exports. In 2015, exports increased from CZK 24.63 bn compared to CZK 21.44 bn in 2014. The growth of furniture imports has also grown consistently, rising to CZK 15.75 bn in 2015 compared to CZK 13.6 bn in 2014.

The results of the Czech furniture industry compared to previous years are accompanied by the revival of domestic furniture consumption. The rise in furniture consumption in 2012 to 2014 was very moderate, but this trend is starting to change now. The growth factor for the volume of imported furniture from abroad has remained more or less the same. At the same time, the share of imports in domestic consumption is increasing. Hence, the export ability of Czech furniture manufacturers still stands behind the considerable success of domestic producers. The results in 2015 indicate that exports strengthened once again. The present export performance of the Czech furniture industry exceeds 20%.

Ing. Martin Čudka

President of the Association of Czech Furniture

METHODOLOGY

The Panorama of the Manufacturing Industry for 2015 is published as a collective document of the Ministry of Industry and Trade (MIT), Czech Statistical Office (CSO) and the Confederation of Industry of the Czech Republic (SP).

In terms of content, the first part of the publication contains essays that present the views of certain sector associations on the current development in selected sectors and their future prospects. The data presented in this part is based also on the internal sources of the individual sector associations, and with respect to the fact that the structure of dividing individual industrial sectors may differ from the official classification of economic activities according to CZ-NACE used by the MIT and CSO, this data may not always be entirely comparable to the data presented in the second part of the publication.

The second part of the publication was compiled by the MIT and examines the basic production and financial characteristics, price development and foreign trade.

SOURCE OF DATA FOR THE INDUSTRY PANORAMA

Enterprises within the Panorama of the Manufacturing Industry are sorted according to their primary economic activity based on the CZ-NACE classification of economic activities. CZ-NACE coding is based on the standard European Union NACE classification of economic activities:

- the first level, sections, is identified by an alphabetical code,
- the second level, divisions, is identified by a two-digit numerical code,
- the third level, groups, is identified by a three-digit numerical code,
- the fourth level, classes, is identified by a four-digit numerical code.

The alphabetical section code is not a part of the activity code that identifies the other classification levels, e.g. the activity “glue production” is classified under code 20.52, where 20 is the division code, 20.5 is the group code and 20.52 is the class code. Section C, to which this activity belongs, is not shown in the code.

Within the Panorama of the Manufacturing Industry, the sectors are analysed on the group level. The period reviewed in the analysis is from 2008 to 2015.

The source of data for characterising the manufacturing industry, its divisions and groups according to CZ-NACE is the annual statistical report of the CSO P5-01 (period of 2008 through 2014). Data in the P5-01 report is for all enterprises sizes, i.e. also entrepreneurs. The period of 2015 is calculated using the 2015/2014 indexes, sourced from the quarterly statistical reports P3-04, P6-04, Práce 2-04 and data from the Financial Analysis of the Business Sphere for 2015. The data was used to compile concise financial reports according to Czech accounting standards valid until 31 December 2015 and additional supplementary data. The definitions of the indicators are provided in tables 1 through 3.

Table 1

Balance sheet (valid until 31 Dec. 2015)		Source of data or calculation
Total assets		CSO Report P5-01
B.	Fixed assets	CSO Report P5-01
B.I.	Fixed intangible assets	CSO Report P5-01
B.II.	Fixed tangible assets	CSO Report P5-01
B.III.	Long-term financial assets	Fixed assets - fixed intangible assets - fixed tangible assets
C.	Current assets	CSO Report P5-01
C.I.	Supplies in stock	CSO Report P5-01
C.II.	Long-term receivables	CSO Report P5-01
C.III.	Short-term receivables	CSO Report P5-01
C.IV.	Short-term financial assets	Current assets - supplies in stock - long-term receivables - short-term receivables
A.+D.I.	Accruals + receivables Equity	Total assets - fixed assets - current assets
Total liabilities		Total assets
A.	Equity	CSO Report P5-01
B.	Foreign resources	CSO Report P5-01
B.I.	Reserves	CSO Report P5-01
B.II.	Long-term liabilities	CSO Report P5-01
B.II.6+B.II.7.	Long-term bonds and bills	CSO Report P5-01
B.II.- (B.II.6.+B.II.7.)	Other long-term liabilities	Long-term liabilities - (long-term bonds and bills)
B.III.	Short-term liabilities	CSO Report P5-01
B.III.8+B.III.9.	Short-term bonds and bills	CSO Report P5-01
B.III.- (B.III.8.+B.III.9.)	Other short-term liabilities	Short-term liabilities - (short-term bonds and bills)
B.IV.	Bank loans and assistance	CSO Report P5-01
B.IV.1.	Long-term bank loans	Bank loans and assistance - (short-term bank loans and assistance)
B.IV.2.+BIV.3.	Short-term bank loans and assistance	CSO Report P5-01
C.I.	Accruals	MIT calculation

Source: MIT

Table 2

Profit and loss statement (valid until 31 Dec. 2015)		Source or calculation
I.	Revenues from goods sold	CSO Report P5-01
A.	Costs of goods sold	revenues from sale of goods - sale margin
+	Sale margin	CSO Report P5-01
II.	Production	CSO Report P5-01
II. part 1	Revenues from finished products	CSO Report P5-01
II. part 1	Revenues from services sold	CSO Report P5-01
II.2. + II.3.	Change in balance of supplies + capitalisation	Production - revenues from goods sold - revenues from services sold
B.	Consumption from production	Sale margin + production - value added
+	Value added	CSO Report P5-01
C.	Personnel costs	CSO Report P5-01
C.1.	Wages	CSO Report P5-01
C.3. + C.2.	Social security and health insurance costs Social security + bonuses to company body members	Personnel costs - wages - Other personnel costs
C.4.	Other personnel costs	CSO Report P5-01
	Gross operating surplus	Value added - personnel costs
E.	Write-offs	CSO Report P5-01
	Other revenues	Total revenues - revenues from goods sold - production
	Other costs	Total revenues - costs of goods sold - cost of production - personnel costs - write-offs - EBIT
	EBIT	Earnings before tax + interest paid
N.	Interest paid	CSO Report P5-01
****	Earnings before tax	Earnings in accounting period + tax
Q. + S.	Tax	CSO Report P5-01
***	Earnings in accounting period	CSO Report P5-01

Source: MIT

Table 3

Additional and recalculated data	Source or calculation
Total revenues	CSO Report P5-01
Sales	Revenues from goods sold - Revenues from services sold
Average full-time equivalent	CSO Report P5-01
Working owners	CSO Report P5-01
Number of units	CSO Report P5-01
Investments	CSO Report P5-01
Total costs	Total revenues - earnings before tax
Turnover (Revenues for goods + Production)	Revenues from goods sold + Production
Interest-bearing resources	Equity + bank loans + long-term bonds and bills + short-term bonds and bills

Source: MIT

Price development data is sourced from the monthly CSO report Ceny Prům 1-12. The year 2005 is considered the reference base, i.e. 2005 = 100%. Industrial manufacturer prices are listed in CZ-CPA classification.

Data for cross-border foreign trade is obtained from the CSO, whose source is customs statistics. The CZ-CPA production classification was chosen, and corresponds to the classification of activities according to CZ-NACE.

The Input - Output tables compiled by the CSO were used to calculate inputs into the divisions, sorted into domestic and foreign (import). Outputs from the division were sorted into exports, creation of gross fixed capital, final consumption by the government + other consumption, final household consumption and supplies for interim consumption. Furthermore, the import intensity of exports was calculated using the Input-Output tables.

Individual data for innovations and costs for R&D were linked with individual production and financial data. The linked data were used to process the section on innovations and costs for R&D in Chapter 1.

CHAPTER STRUCTURE

The Panorama contains chapters for the entire CZ-NACE C Manufacturing Industry section and for the individual divisions of the manufacturing industry, whereas for reasons of protection of individual data, the divisions CZ- NACE 12 Manufacture of tobacco products, CZ-NACE 19 Manufacture of coke and refined petroleum products and CZ-NACE 33 Repair and installation of machinery and equipment were omitted. The sum of data for the entire section includes these omitted divisions.

Chapter 1 Manufacturing Industry contains sub-chapter 1.1 Production characteristics, which first evaluates the development of indicators values in 2008 to 2015 and then the arranged shares in the given indicator for individual divisions based on size. If it is a relative indicator, its values are sorted for the individual divisions also by size.

Sub-chapter 1.2 Investments, expenditure on research and development (R&D) and innovations examines investments into tangible and intangible assets, R&D spending and innovations.

Sub-chapter 1.3 Price development discusses the development of prices, where 2005 is considered 100%.

Sub-chapter 1.4 examines foreign trade in CZ-CPA classification.

The chapters for the individual divisions are divided into the subchapter Division characteristics, which specifies the shares of the groups in selected absolute indicators. Data in the interactive viewer on the MIT website can be used to calculate the shares of groups in all of the absolute indicators. This is followed by a descriptive sub-chapter, Division development, which is followed by the sub-chapter Main economic indicators. This chapter contains a selection of economic indicators for the division and the price development of division commodities. Financial performance is presented by indicator Spread. Again, all the indicators for the division and group can be obtained in the interactive viewer on the MIT website. The next sub-chapter Foreign trade (FT) contains the development of exports, imports and the FT balance in terms of commodities broken down according to CZ-CPA. The chapter is concluded with the sub-chapter Division summary and prospects.

INFA METHODOLOGY

The INFA[1] methodology was used to evaluate the performance of the section, divisions and groups; it is used by the MIT CZ in the Financial Analysis and was also used in the previous Panorama. The INFA methodology is a financial analysis instrument that allows the comprehensive evaluation of the management of group enterprises, which causally links indicators of financial controlling and risk controlling. The INFA methodology was not applied in the Panorama in its full scope.

INFA is based on the concept that when assessing enterprise performance, it is necessary to link (while retaining the option of separate viewing) financial controlling and risk controlling indicators. The indicator that represents the most aggregated embodiment of this linking is economic profit. The enterprise and division, group or entire manufacturing industry perform sufficiently well if it achieves a positive economic profit.

INFA works with the managerial form of economic value added (EVA), which is based on calculating the Spread. Spread compares the profitability of equity (ROE) achieved by the enterprise with the rate of cost of equity, respectively the profitability of equity with regard to the accepted risk (r_e). Economic profit is the product of Spread and the value of equity (E). It applies that: EVA = Spread * E.

In analysing the creation of economic profit, INFA separates the creation of enterprise output (represented by the EBIT value), its division and relations between the time structure of assets and liability (see Fig. 1).

In the diagram in Fig. 1, the first group (I.) contains factors that affect the size of output generated by the enterprise (EBIT). EBIT is the most appropriate output characteristic, because this value is not affected by the size of the corporate output designated for creditors (interests) and the state (taxes). The value of EBIT must be assessed in relation to the volume of assets, which are tied up in the company (assets) and through which the EBIT was created. The EBIT/asset indicator shows the enterprise's total profitability and is called the enterprise's earning power. The first group of indicators includes earning power and indicators that explain and approximate its creation. A high and stable earning power has a positive impact on both ROE and r_e.

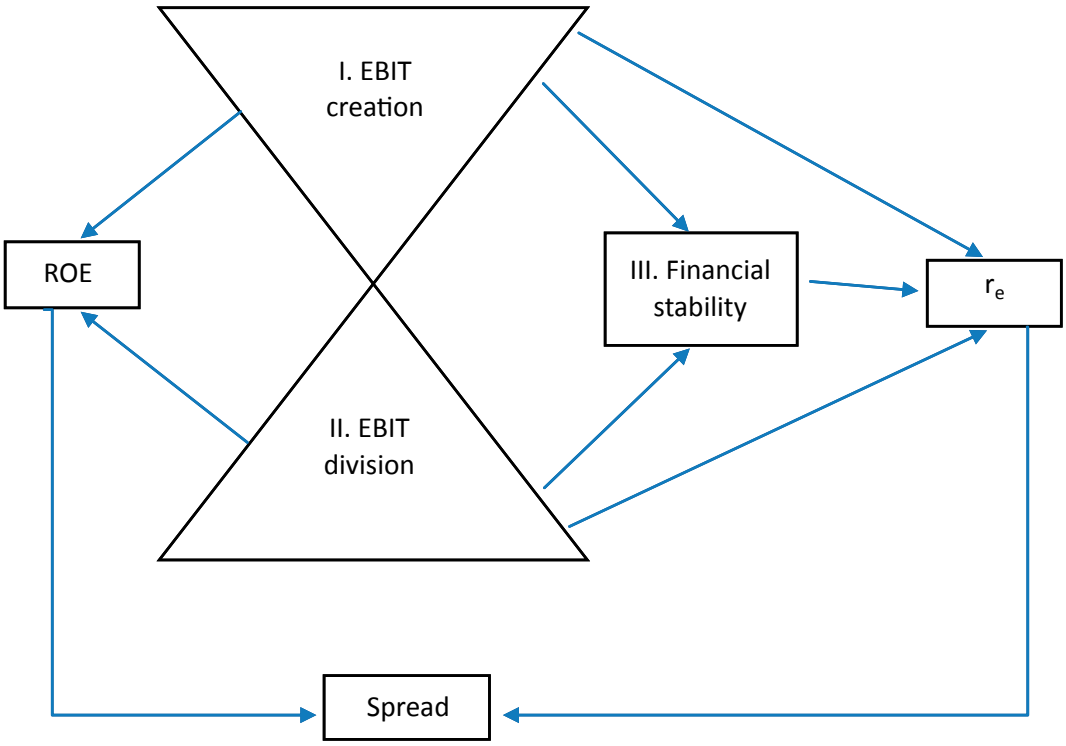
The second group (II.) contains factors that decide on how the EBIT generated by the enterprise is divided among owners and creditors (i.e. capital providers) and the state.

The earning power ratio is also affected by the value of the company's debt (financial leverage). If the enterprise's earning power is insufficient, the ROE worsens due to higher debt. The effect of financial leverage on the degree of risk (r_e) is obvious: it always applies that higher debt generates higher risk. The rise in indebtedness changes the division of EBIT to the disfavour of owners, because the part of the EBIT taken by creditors in the form of interest increases.

The third group (III.) includes indicators that rate financial stability, under which the enterprise output is created and divided. It compares assets and sources of their financing in terms of their lifetime.

1 The authors of the INFA methodology are Inka and Ivan Neumaier.

Fig. 1 INFA diagram



Source: INFA Performance Indicator Diagnostic System, Neumaier I., Neumaierová, I. Central European Business Review (2014)

Indicators representing the balance of the system (ability to punctually meet liabilities to all stakeholders) are an essential condition for the functioning of the enterprise, and greatly influence corporate risk. They particularly include standard liquidity (L3).

The decisive factor is how all the groups described above together affect the return on equity (ROE) and degree of risk (r_e), i.e. whether the Spread (ROE – r_e) rises or falls. INFA allows the selection of basic indicators to assess the enterprise's performance (Fig. 2). The EBIT creation indicators are light-blue, EBIT division indicators blue and financial stability indicators red.

The estimate of the cost of equity value r_e according to the INFA methodology, in the form used at the MIT, is based on several simplified conditions:

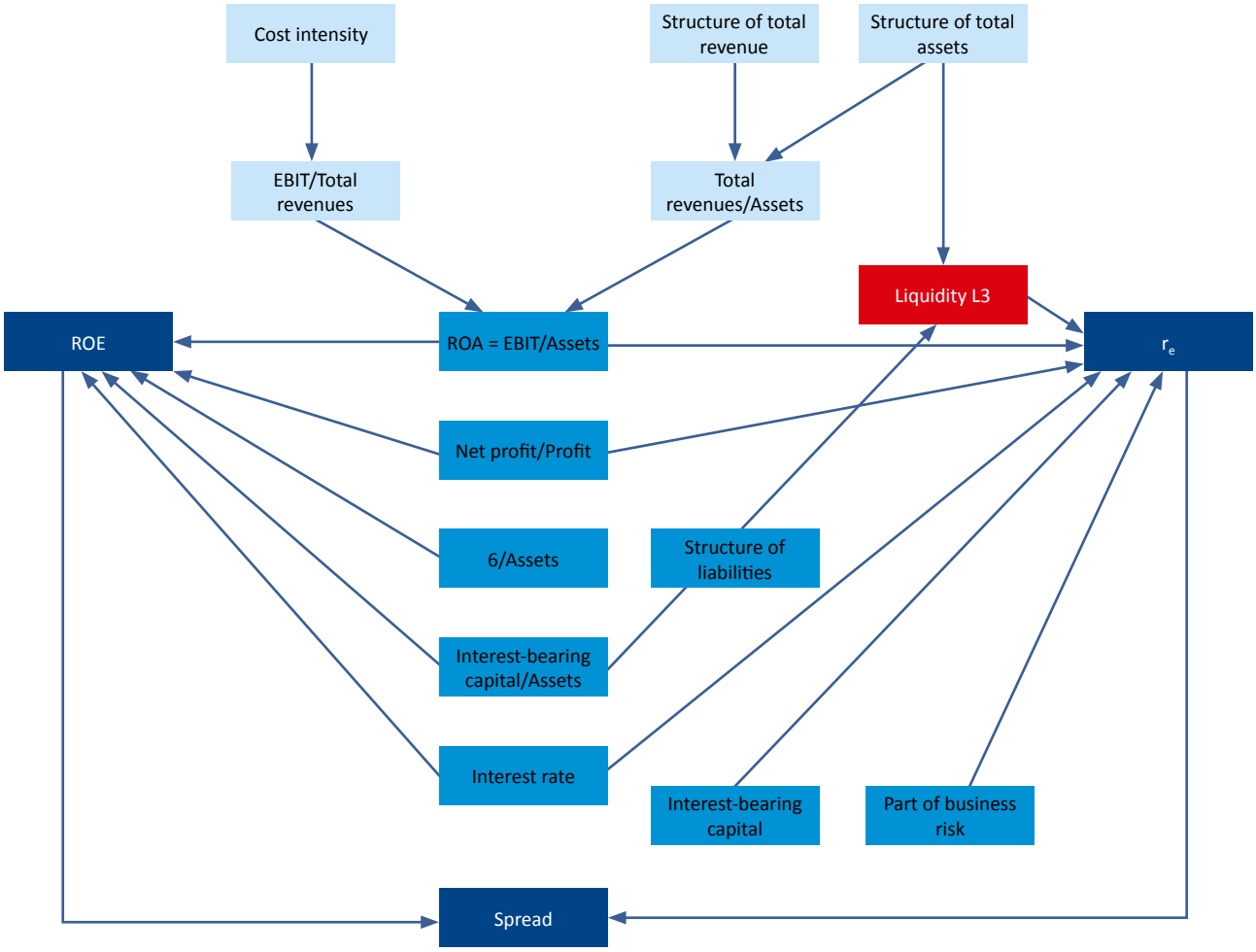
- The price for external capital uses the real interest rate.
- The market value of external capital is identified with the book value of interest-bearing external capital.
- It is assumed that the value of the Weighted Average Capital Cost (WACC) is independent of the capital structure. A change in capital structure merely redistributes the total capital cost between the owners and creditors.
- In the WACC equation, the figure (1 – income tax rate), which characterises taxation, is replaced with the share of net profit in total profit, i.e. the real impact of taxation is taken into account.

The alternative cost of capital r_e must be calculated separately for the individual enterprises. The r_e calculation is performed automatically for most companies, whereas individual particularities are taken into account for the most important enterprises. This concerns about 500 companies.

The values of r_e for individual groups, divisions and sections are calculated as the weighted mathematical average:
*Group r_e = ∑(enterprise r_e * enterprise equity)/ ∑enterprise equity.*

According to the Financial Analysis of the Business Sphere, the risk-free rate r_f refers to the yield from 10-year government bonds (table 4).

Fig. 2 INFA diagram (including basic indicators)



Source: modified according to INFA Performance Indicator Diagnostic System, Neumaier I., Neumaierová, I. Central European Business Review (2014)

Table 4

Year	2008	2009	2010	2011	2012	2013	2014	2015
Risk-free rate r_f	4.55%	4.67%	3.71%	3.79%	2.31%	2.26%	1.58%	0.58%

Source: CNB data, MIT calculations

Use of the INFA methodology determined the selection of calculated indicators, which is supplemented by labour productivity (value added per employee), average wage and capital intensity (table 5).

Table 5

Indicators	Source or calculation
EVA	Spread * Equity
Spread	ROE - r_e
ROE	Earnings in accounting period / Equity
Rate of alternative cost of equity (r_e)	Calculation according to INFA methodology
EBIT/Assets	EBIT/Assets
Revenues/Assets	Total revenues/Assets
EBIT/Revenues	EBIT/Total revenues
Equity/Assets	Equity/Assets
Interest-bearing capital/Assets	Interest-bearing capital/Assets
L3	Current assets/(short-term liabilities + short-term bank loans and assistance)
L2	(Long-term receivables + short-term receivables + short-term financial assets)/(short-term liabilities + short-term bank loans and assistance)
L1	Short-term financial assets/(short-term liabilities + short-term bank loans and assistance)
GOS/Total revenues	Gross operating surplus/Total revenues
VA/Total revenues	Value added/Total revenues
PC/Total revenues	Personnel costs/Total revenues
Value added per employee	Value added/Average FTE*1000
Average wage	Wages/Average FTE/12*1000
Capital intensity	(Fixed intangible assets + fixed tangible assets per employee)/Average FTE*1000

Source: MIT calculations

Data from tables 1 through 5, for each group, division and the manufacturing industry in total, are available in the interactive table on the MIT website http://www.mpo.cz/en/panorama-interactive-table.html

1.

MANUFACTURING INDUSTRY

The manufacturing industry (MI) is an important segment of the economy, which is an significant carrier for the development of technologies, expertise and job opportunities. It has a long tradition in the Czech Republic and its development has demonstrated the ability to maintain its position in the competitive environment, especially due to the entry of foreign capital and involvement in regional and global value chains. A high degree of integration and connection to foreign trade, however, also makes the MI sensitive to changes in external conditions. In the course of the global recession, this was reflected in a significant slump in production and efficiency for companies under foreign control, while companies under domestic ownership passed through the period of crisis with minimal fluctuations.

The dynamic development of MI in CZ is confirmed by the growth of its market share in the creation of GVA, which achieved 27.0% in 2015, at a year-on-year increase of 0.3 p.p. While overall GVA grew by 3.9%, the growth of MI was more than double (8.0%), and of the individual segments of the national economy its contribution to the year-on-year change was the highest (2.1 p.p.). CZ is among the countries with the highest share of MI in GVA, ranking just after Ireland among the EU 28 countries. The MI accounts for 27.3% of employment in CZ in 2015, which was 0.58 p.p. higher year-on-year.

With the development of technology and the aims of economic policy, there are increasingly more activities in the MI that have the character of services (research and development, education, servicing and complementary activities), which merge with the services segment but cannot be statistically separated. Hence, the MI is losing the character of assembly lines.

The development of basic production characteristics indicates that following the recession slump, the MI started exceeding 2008 levels starting from 2011. Since 2012, the MI as a whole moved from negative economic value added and Spread figures to positive ones, which improved substantially in 2014 and 2015 and thus improved competitiveness.

The absolutely dominant segment of the MI is the automotive industry, which also acts as a multiplication factor for the development of other related sectors. An important part of the automotive industry is the manufacture of auto parts and accessories, which are an important export article and which, once installed in foreign, mainly luxury cars, head to the global market in third countries.

1.1 PRODUCTION CHARACTERISTICS

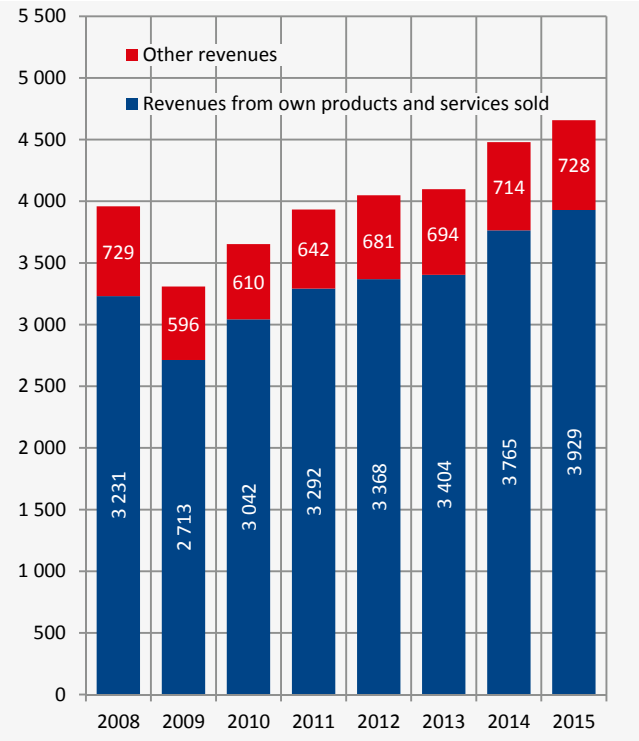
1.1.1 TOTAL REVENUES AND REVENUES FROM SALE OF OWN PRODUCTS AND SERVICES

Revenues in the manufacturing industry primarily consist of revenues from own products and services sold, i.e. revenues from the core activities of enterprises in the manufacturing industry (graph 1.1). Following the crisis decline in 2009, revenues from own products and services sold (hereinafter revenues) have taken on a growth trend, exceeding the 2008 level in 2011. Other revenues (revenues from goods sold, supplies sold, financial revenues, etc.) also returned to growth after 2009, but only approximated the 2008 level in 2015.

The most important division in terms of revenues is undeniably the manufacture of motor vehicles (CZ-NACE 29), whose share exceeded one quarter of the MI. Following with a substantial gap are other important

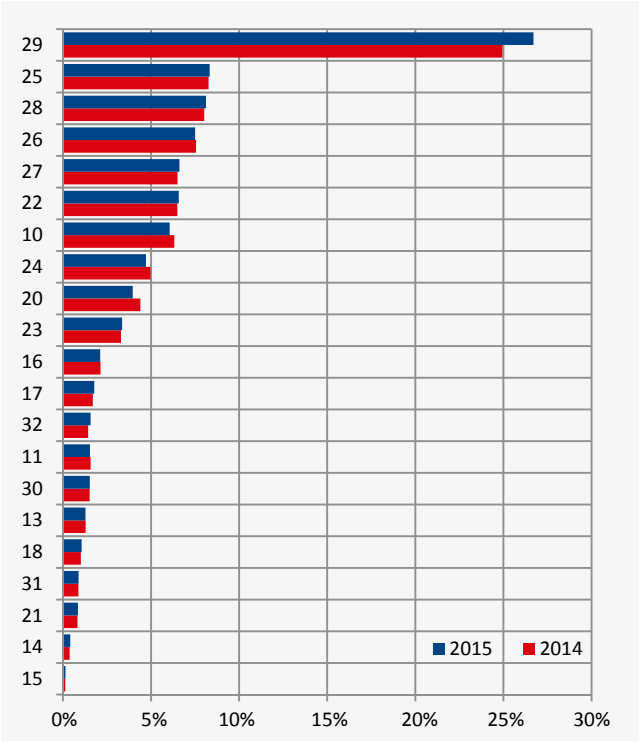
divisions, whose share in the MI ranges between 8.3 to 6.1%: Manufacture of fabricated metal products (CZ- NACE 25), Manufacture of machinery and equipment (CZ-NACE 28), Manufacture of computers (CZ-NACE 26), Manufacture of electrical equipment (CZ-NACE 27), Manufacture of rubbers and plastic products (CZ-NACE 22) and Manufacture of food products (CZ-NACE 10) – see graph 1.2.

Graph 1.1 – Revenues (CZK bn)



Source: CSO data, MIT calculations for 2015

Graph 1.2 – Share of sales from own products and services according to CZ-NACE (MI = 100%)



Source: CSO data, MIT calculations for 2015

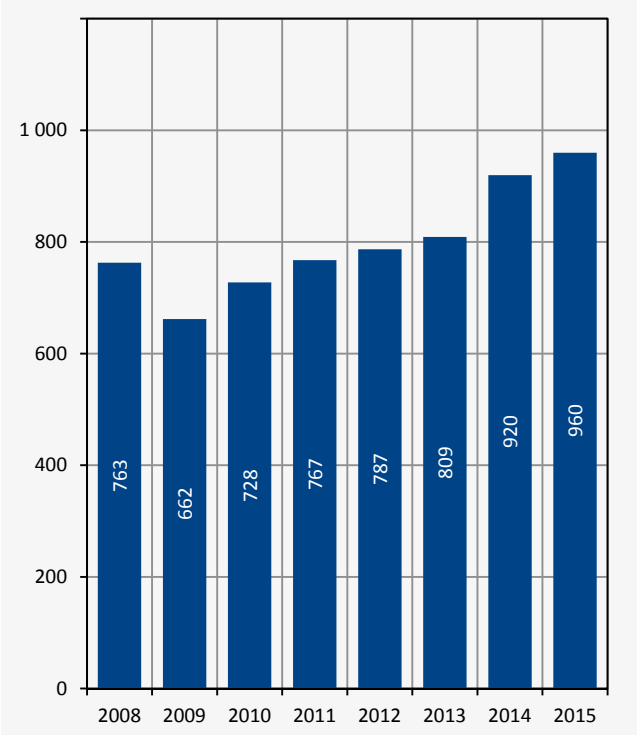
1.1.2 VALUE ADDED, PERSONNEL COSTS AND GROSS OPERATING SURPLUS

The development of value added in the manufacturing industry in the period of 2008 to 2015 was similar to the development of revenues (graph 1.3). Its generating partly relies on other parts of revenues, such as revenues from sale of goods, changes in inventory of own production and capitalisation. The greatest share is again provided by the manufacture of motor vehicles, which accounts for about one fifth of the MI. The distance of other CZ-NACE divisions has reduced slightly (graph 1.4).

An interesting fact is the share of value added in revenues (value added margin). Among manufacturing enterprises, it is one of the basic profitability indicators and shows how well the enterprise is able to cover costs for material, energy and purchased goods and services. The highest share of value added in revenues in terms of absolute volume of revenues is reported by less important divisions, i.e. the manufacture of leather and related products (CZ-NACE 15), manufacture of other transport equipment (CZ-NACE 30) and manufacture of wearing apparel (CZ-NACE 14). This indicator is affected by the character of production in the given division and also by the degree of involvement in multinational chains and their impact on redistribution of financial resources within the chain. This is evidence e.g. by the fact that in terms of volume, the largest division CZ-NACE 29 has a share of value added in revenues below the MI average (graph 1.5).

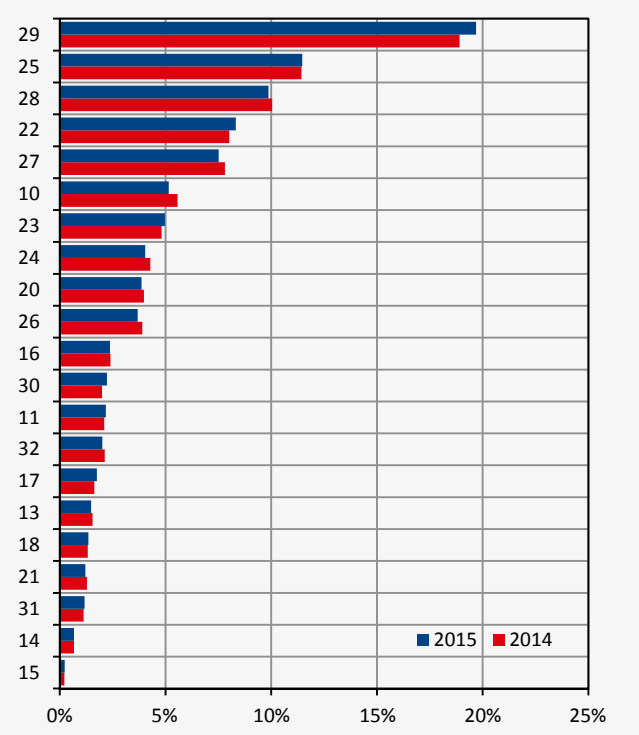
The development of personnel costs in the period of 2008 to 2015 corresponds to the development of revenues, whereas the year-on-year relative changes are generally lower (graph 1.6). The share of individual divisions in personnel costs corresponds approximately to their share in revenues (graph 1.7).

Graph 1.3 – Value added (CZK bn)



Source: CSO data, MIT calculations for 2015

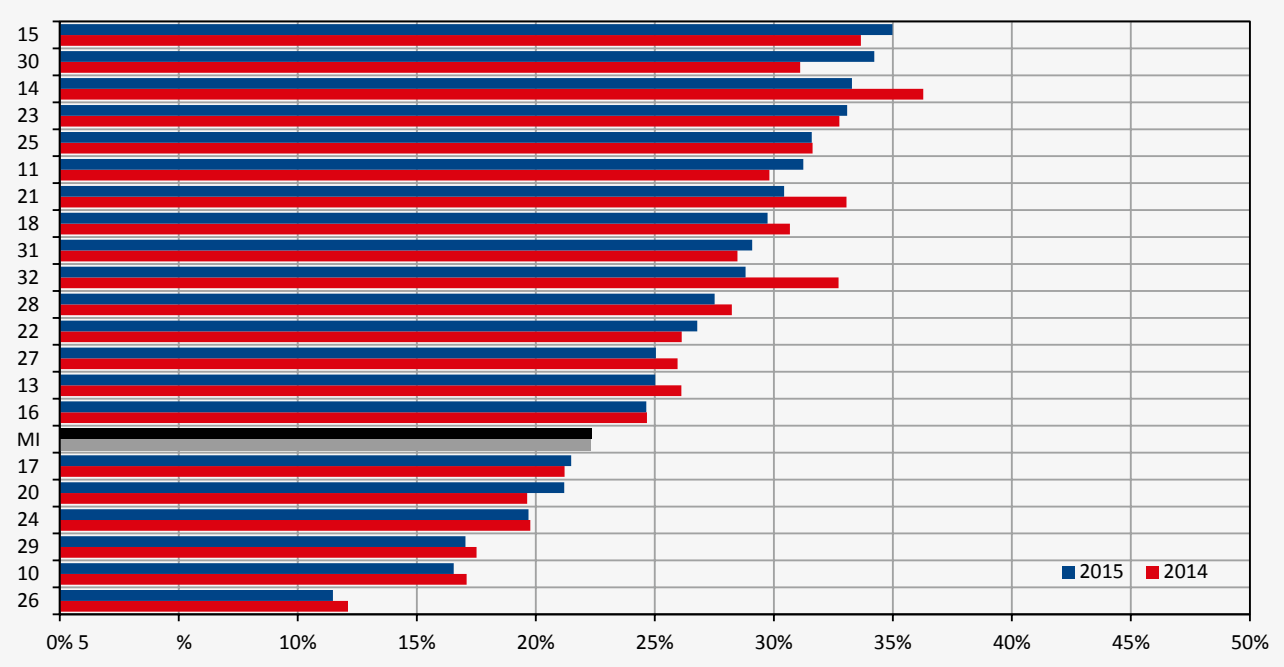
Graph 1.4 – Share in value added according to CZ-NACE (MI = 100%)



Source: CSO data, MIT calculations for 2015

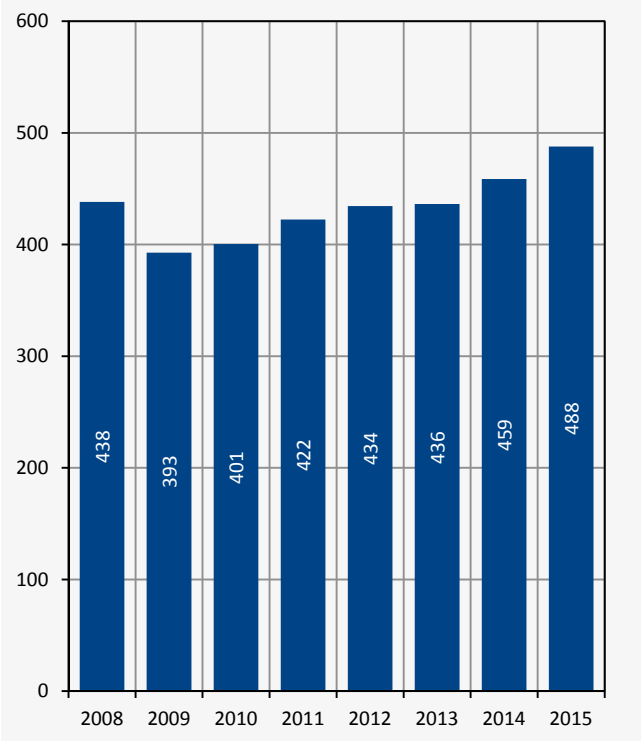
The gross operating surplus is the difference between value added and personnel costs (graph 1.8). It tells us what the company retains after paying personnel costs. The development is similar to the development of value added. The substantial jump in 2014 was not accompanied by a similar increase in personnel costs, which had a positive effect on the efficiency and competitiveness of enterprises. The share of gross operating surplus in revenues is shown in graph 1.9. The specific features of the divisions are apparent in this indicator, namely the share of value added in revenues and the need for labour force to generate revenues. From this perspective, the best divisions are the manufacture of beverages (CZ-NACE 11) and pharmaceuticals (CZ-NACE 21).

Graph 1.5 – Share of value added in revenues (value added margin) according to CZ-NACE (in %)



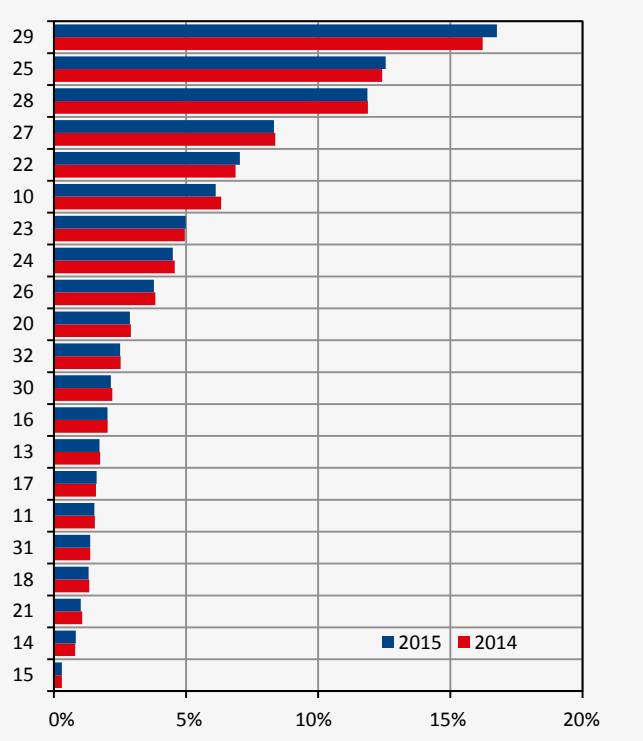
Source: CSO data, MIT calculations for 2015

Graph 1.6 – Personnel costs (CZK bn)



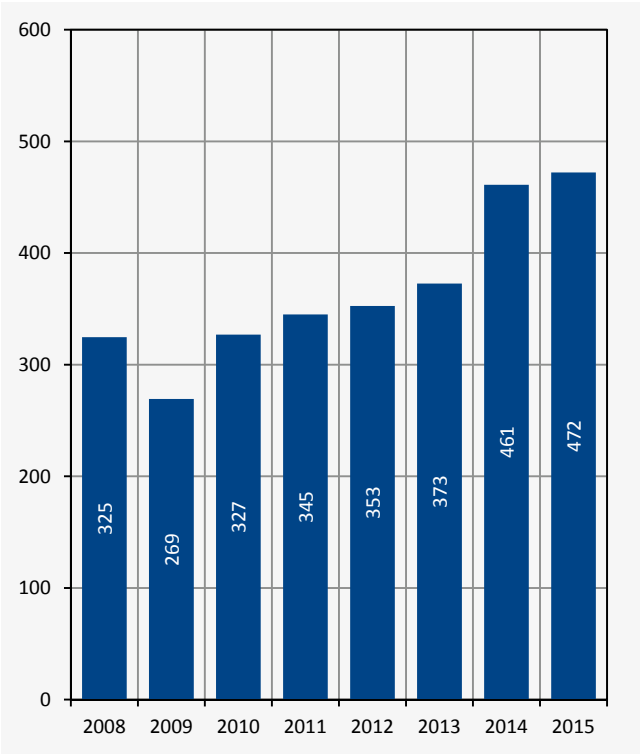
Source: CSO data, MIT calculations for 2015

Graph 1.7 – Share of personnel costs according to CZ-NACE (MI = 100%)



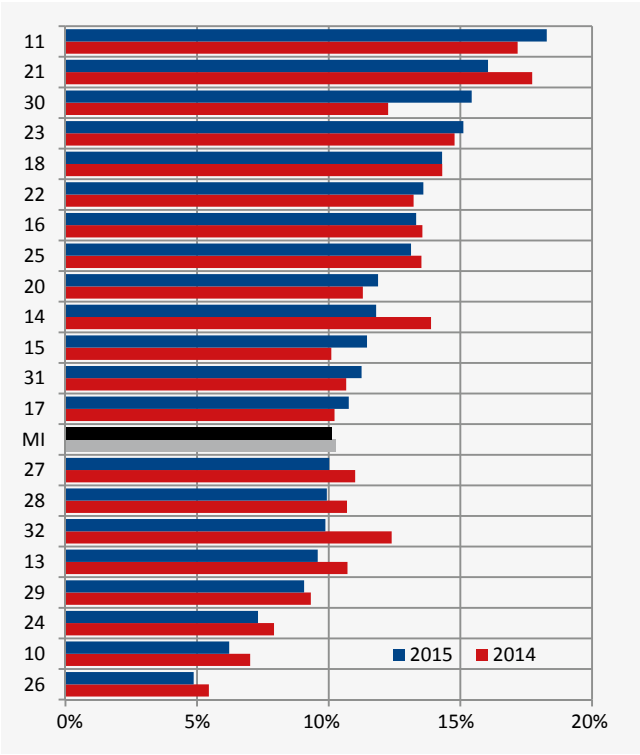
Source: CSO data, MIT calculations for 2015

Graph 1.8 – Gross operating surplus (CZK bn)



Source: CSO data, MIT calculations for 2015

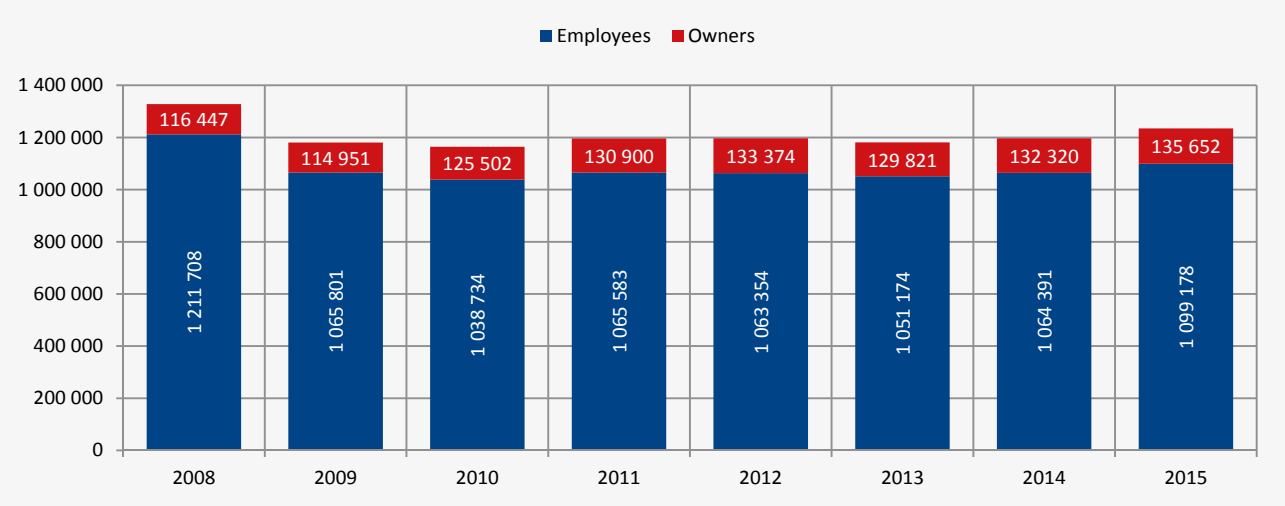
Graph 1.9 – Share of gross operating surplus in revenues from sale of own products and services according to CZ-NACE



Source: CSO data, MIT calculations for 2015

1.1.3 NUMBER OF EMPLOYEES AND EMPLOYED PERSONS

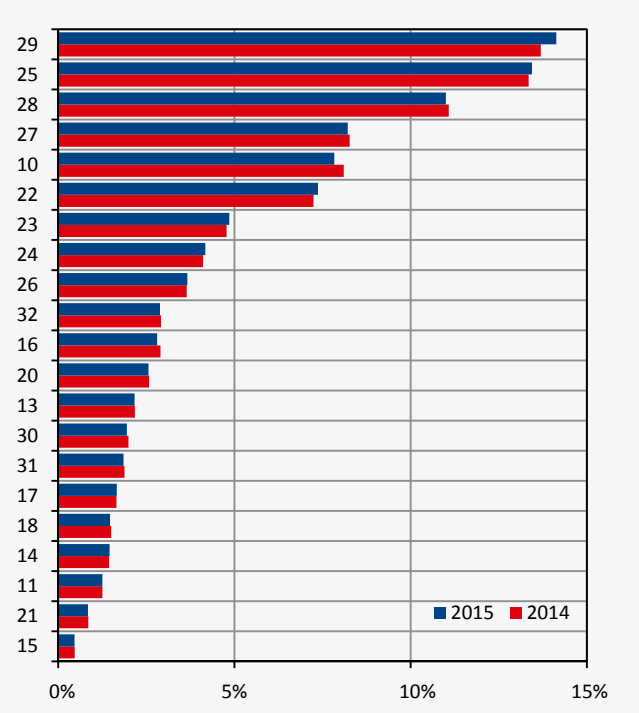
Graph 1.10 – Employed persons



Source: CSO data, MIT calculations for 2015

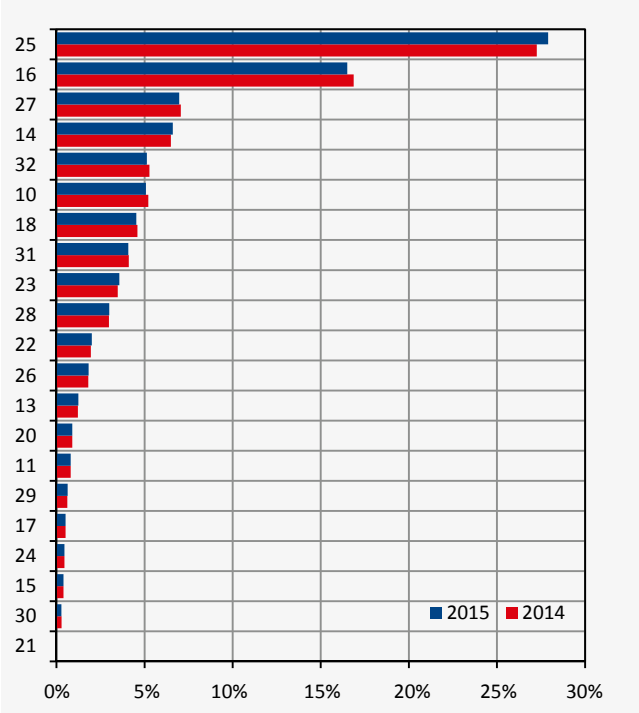
Alongside actual employees, owners (usually entrepreneurs) also work in the manufacturing industry, usually in micro-enterprises (entrepreneurs). Share of working owners in the number of working persnos increased from 9.6% in 2008 to 12.3% in 2015. The development of employment in the manufacturing industry took the shape of a W, with the lowest employee headcount reported in 2010 and the second lowest in 2013. The growth in the number of employed persons is positive in 2013 through 2015 in both groups (graph 1.10).

Graph 1.11 – Share of employment according to CZ-NACE (MI = 100%)



Source: CSO data, MIT calculations for 2015

Graph 1.12 – Number of working owners according to CZ-NACE (MI = 100%)



Source: CSO data, MIT calculations for 2015

Of the MI divisions, the largest employers are CZ-NACE 29 Manufacture of transport equipment and CZ-NACE 26 Manufacture of fabricated metal products. Slightly smaller employers are CZ-NACE 28 Manufacture of machinery, CZ-NACE 27 Manufacture of electrical equipment and CZ-NACE Manufacture of food products (graph 1.11). The number of working owners (graph 1.12) is highest in the divisions of manufacture of fabricated metal products (CZ-NACE 25) and wood processing (CZ-NACE 16).

1.1.4 LABOUR PRODUCTIVITY AND AVERAGE WAGE

The relation of labour productivity from value added to the average wage in MI was negative only in the crisis year 2009 and again in 2015, but there was stable wage growth combined with a strong year-on-year increase in labour productivity in 2014 and a reduction of its growth in 2015 (graph 1.13).

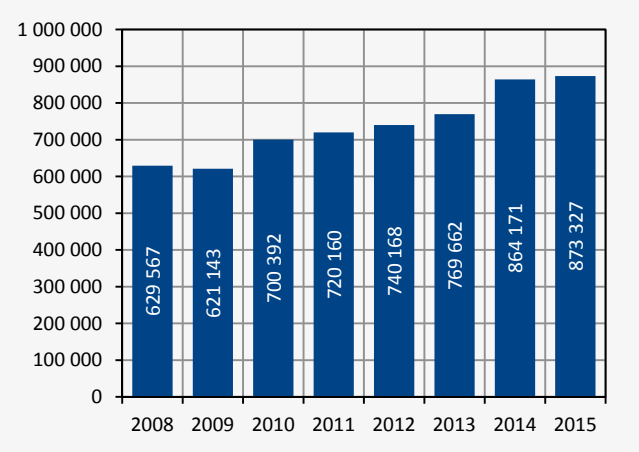
This development was due to the development of labour productivity (graph 1.14) and average wage (graph 1.15) in the manufacturing industry.

The highest labour productivity values in 2015 were reported by the divisions manufacturing beverages, chemicals, pharmaceuticals, and automotive industry, which also reach the highest level of monthly average wage (manufacture of beverages CZK 32,026, pharmaceuticals CZK 31,733, automotive industry CZK 31,555, chemical industry CZK 29,282). On the contrary, the lowest labour productivity values and monthly wage are reported by the wearing apparel and leather industries (wearing apparel industry CZK 15,129, leather industry CZK 17,217), see graph 1.16 and graph 1.17.

Graph 1.13 – Comparison of labour productivity and average wage development (2008 = 100%)

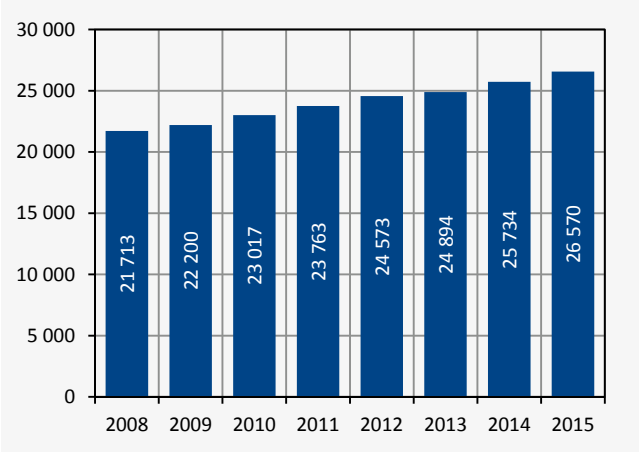
Source: CSO data, MIT calculations for 2015

Graph 1.14 – Labour productivity (CZK/person/month)



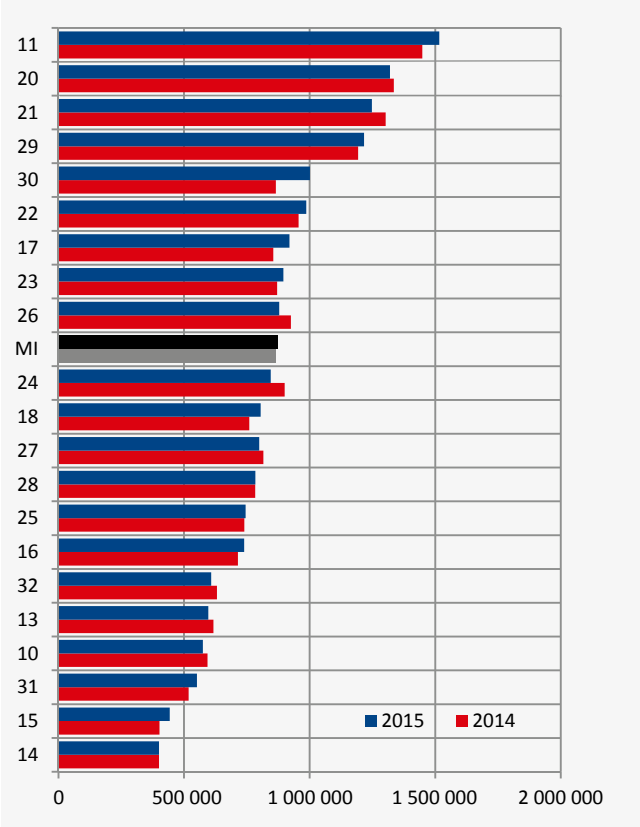
Source: CSO data, MIT calculations for 2015

Graph 1.15 – Average wage (CZK/person)



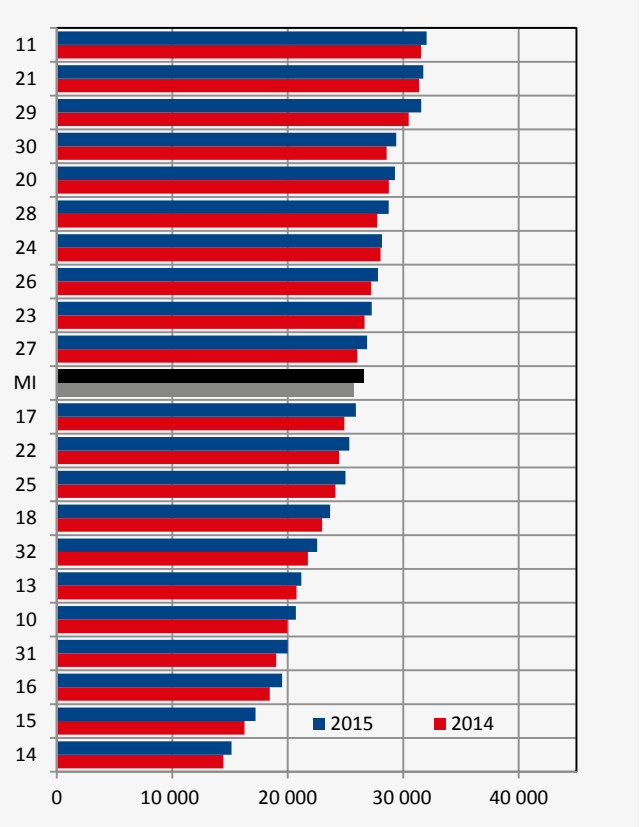
Source: CSO data, MIT calculations for 2015

Graph 1.16 – Labour productivity according to CZ-NACE (CZK/person)



Source: CSO data, MIT calculations for 2015

Graph 1.17 – Average wage according to CZ-NACE (CZK/person)



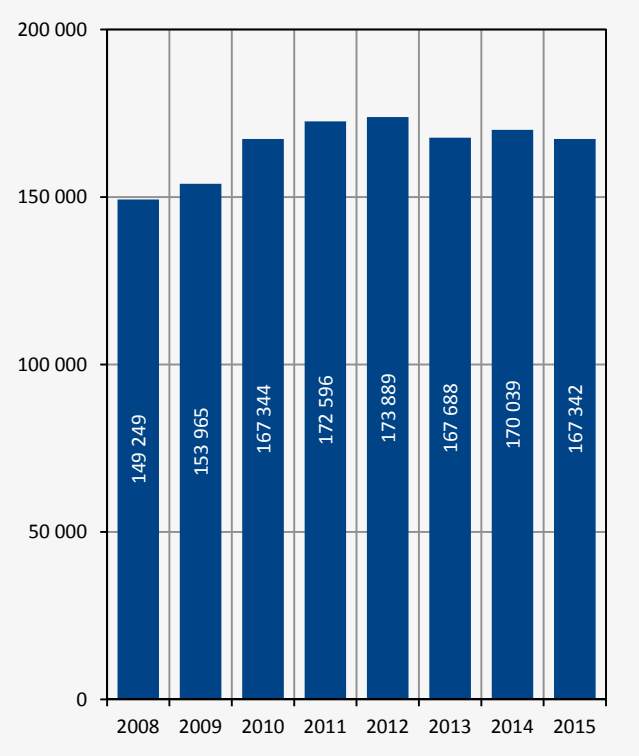
Source: CSO data, MIT calculations for 2015

1.1.5 NUMBER OF ENTERPRISES

Despite the economic recession, the number of entities in the manufacturing industry increased, except in 2013. This was affected to a dramatic reduction of employment, where a part of the employees who lost their jobs started their own business. In 2014, there were 20,790 more enterprises compared to 2008, which is an increase of 13.9% (graph 1.18). This growth is mainly due to the boom in micro-enterprises and the more accurate statistical estimate of the number of enterprises using administrative data sources. In 2015, the number of enterprises declined slightly.

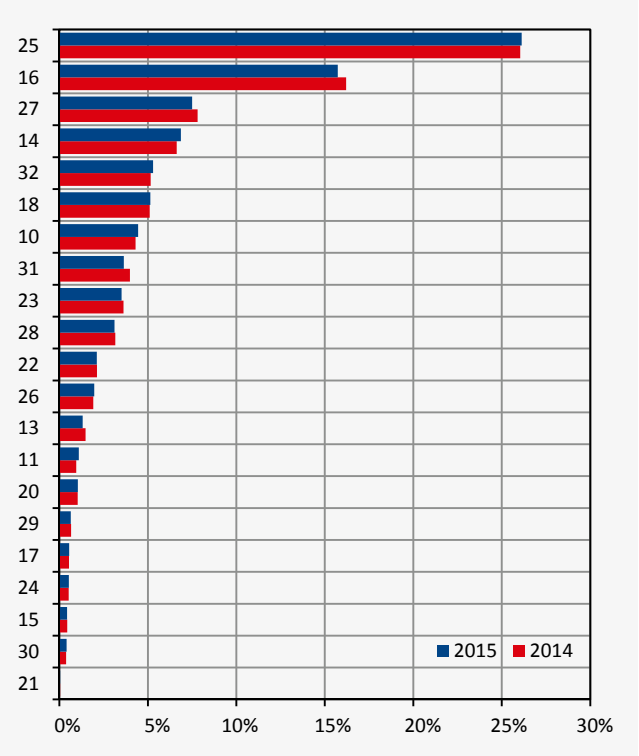
In the MI structure according to number of enterprises (graph 1.19), divisions with a high share of micro-enterprises include entrepreneurs are dominant (CZ-NACE 26 Manufacture of fabricated metal products and CZ-NACE 16 Wood processing). At the other end are divisions that consist mainly of large enterprises.

Graph 1.18 – Number of enterprises



Source: CSO data, MIT calculations for 2015

Graph 1.19 – Number of enterprises according to CZ-NACE (MI = 100 %)



Source: CSO data, MIT calculations for 2015

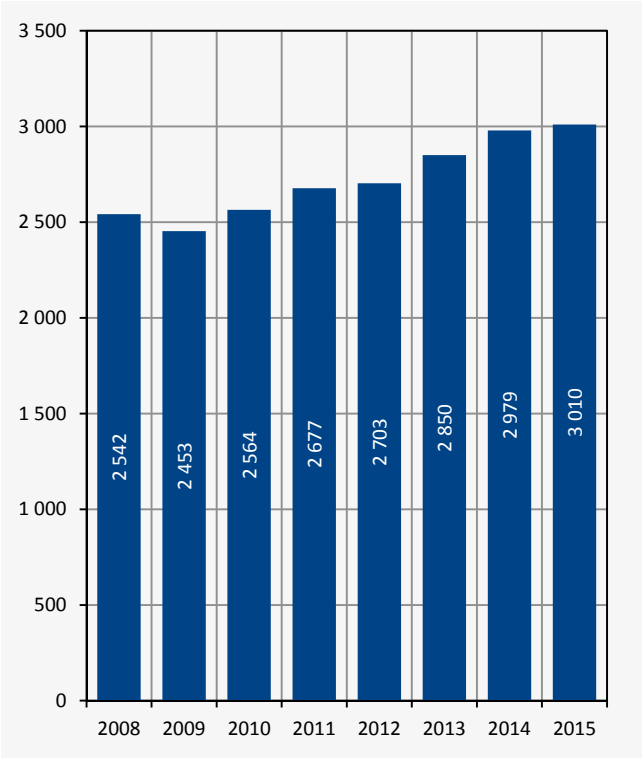
1.1.6 ASSETS AND EQUITY

The volume of assets in the manufacturing industry grew from 2009 to 2015, following a decline compared to 2008 (graph 1.20). Divided by division (graph 1.21), the most assets were held by the manufacture of motor vehicles (CZ-NACE 29). Second was the manufacture of machinery (CZ-NACE 28) followed by the manufacture of fabricated metal products (CZ-NACE 25).

The equipping of employees with fixed tangible and intangible assets (graph 1.22) reflects the capital intensity of production. Its sharp year-on-year increase by 13.3% in the crisis year of 2009 was caused by the steep decline in employment. In the entire reference period of 2008 to 2015, capital intensity increased by almost one quarter. Divided by division, equipping with fixed tangible and intangible assets (graph 1.23) is highest in the manufacture of beverages (CZ-NACE 11) and in the chemical industry (CZ-NACE 20). The lowest capital intensity is required in the division Manufacture of wearing apparel (CZ-NACE 14) and manufacture of leather (CZ-NACE 15). The diverse character of production in individual divisions is evident in the equipping of employees with assets.

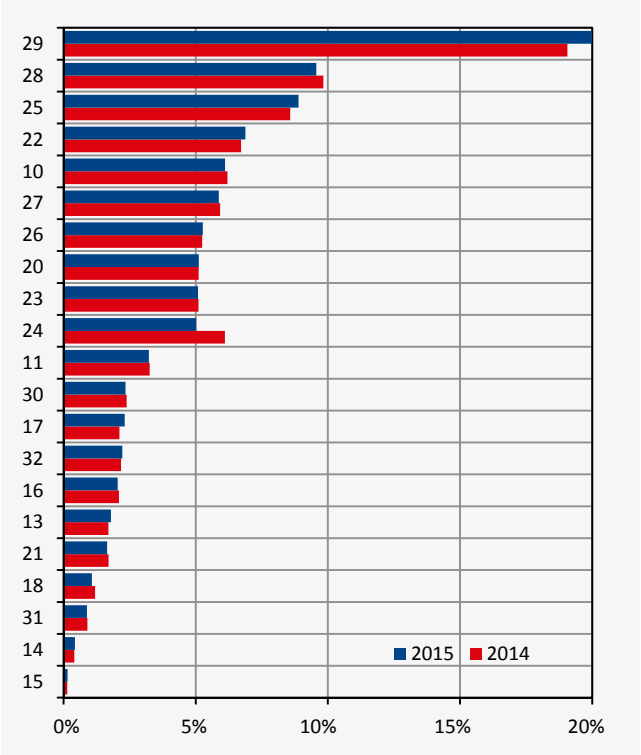
The book value of equity in the manufacturing industry has been growing from 2009 to 2015, following a decline in 2008 (graph 1.24). The share in equity of the manufacturing industry in the individual CZ-NACE divisions is shown in graph 1.25. The shares correspond approximately to shares in assets.

Graph 1.20 – Assets (CZK bn)



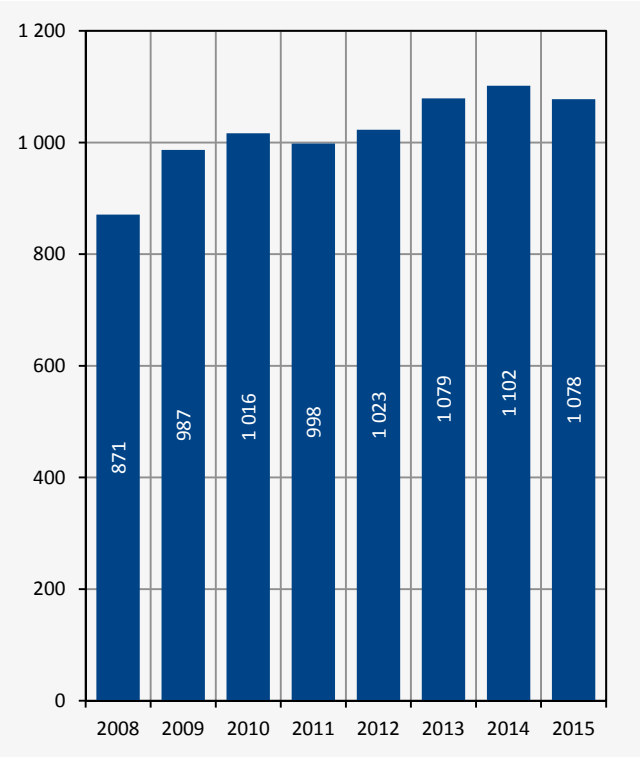
Source: CSO data, MIT calculations for 2015

Graph 1.21 – Assets according to CZ-NACE (MI = 100%)



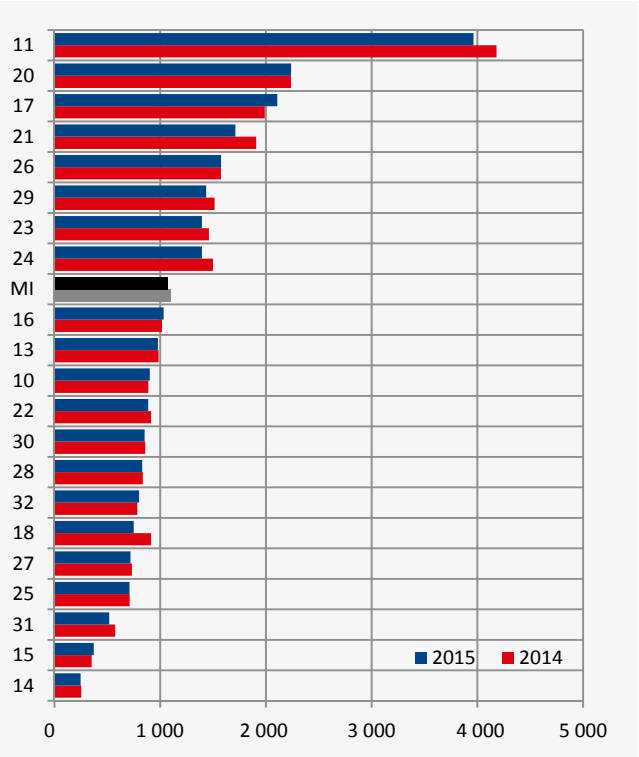
Source: CSO data, MIT calculations for 2015

Graph 1.22 – Equipping of employees with fixed tangible and intangible assets (CZK thousands/person)



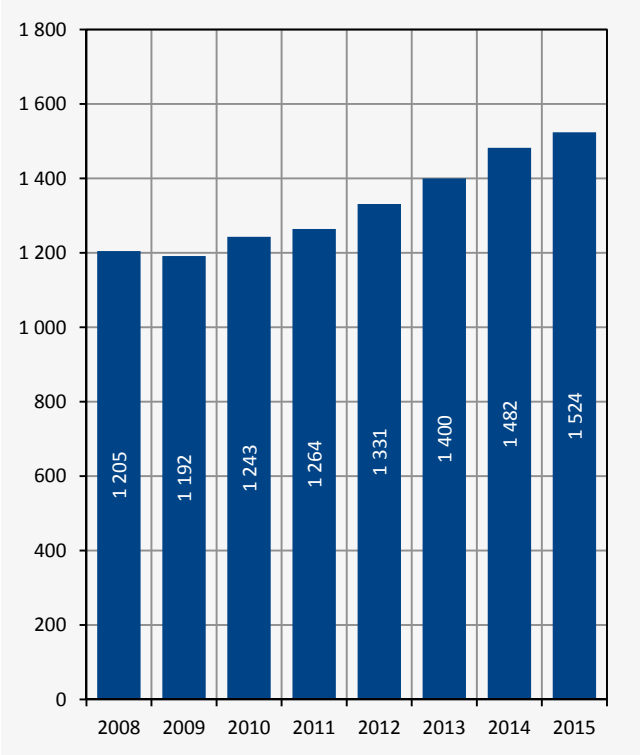
Source: CSO data, MIT calculations for 2015

Graph 1.23 – Equipping of employees with fixed tangible and intangible assets according to CZ-NACE (CZK thousands/person)



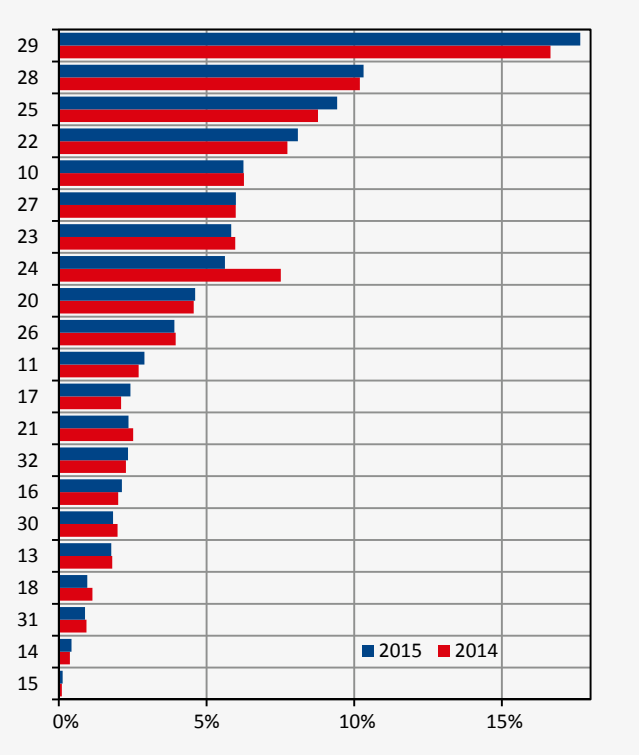
Source: CSO data, MIT calculations for 2015

Graph 1.24 – Equity (CZK bn)



Source: CSO data, MIT calculations for 2015

Graph 1.25 – Equity according to CZ-NACE (MI = 100%)



Source: CSO data, MIT calculations for 2015

1.2 INVESTMENTS, EXPENDITURE ON RESEARCH AND DEVELOPMENT AND INNOVATION

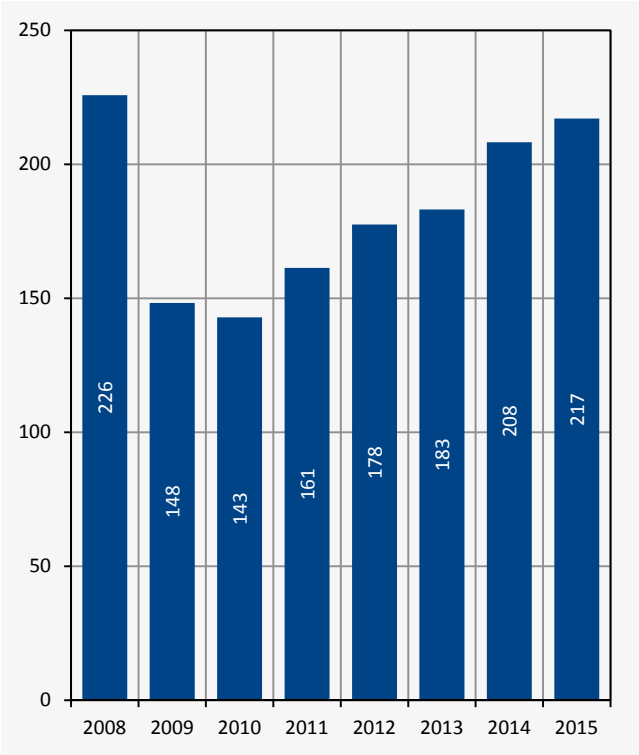
1.2.1 INVESTMENTS

Investments, i.e. the purchase of fixed tangible and intangible assets, dropped by one third in the MI in 2009 to CZK 148 bn, and the decline continued slightly in 2010. In later years, they grew year-on-year, but in 2015 they remained 4% below the 2008 level (graph 1.26).

In the MI structure (graph 1.27) the highest investment were in the manufacturing of motor vehicles (CZ- NACE 29), followed by the manufacture of fabricated metal products (CZ-NACE 25) and manufacture of machinery (CZ-NACE 28).

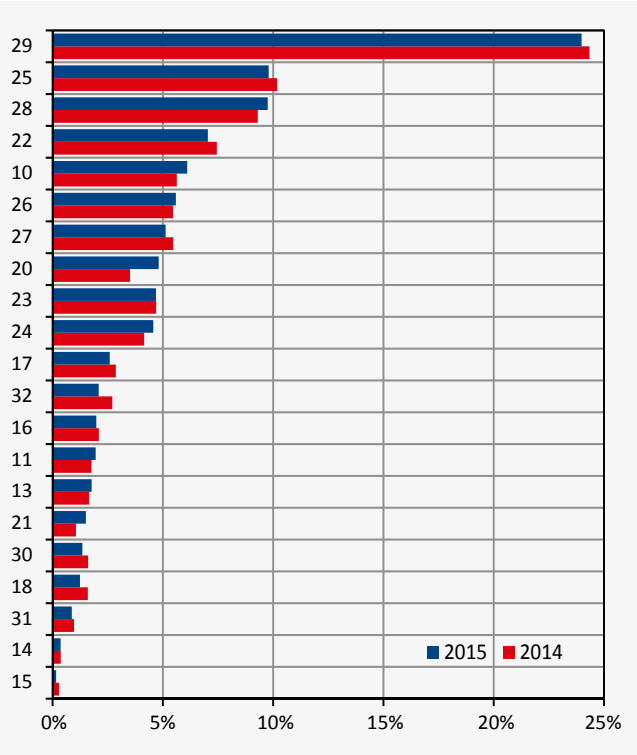
The share of investments in revenues indicates the intensity of revenues for investments. The level of this indicator is affected by the technological character of production and investment period, meaning also structural changes in the MI. In 2009, investments declined substantially and continued this decline in 2010. Its value then increased until 2015, but the value of 2008 was not achieved (graph 1.28). The values of the individual MI divisions in 2014 and 2015 are shown in graph 1.29. An interesting fact is the year-on-year change of this indicator for the manufacture of leather (CZ-NACE 15). Values far above average are achieved by the divisions manufacture of pharmaceutical products (CZ-NACE 21), manufacture of paper products (CZ- NACE 17) and manufacture of other non-metallic mineral products (CZ-NACE 23). On the contrary, the drivers of the manufacturing industry, manufacture of motor vehicles and manufacture of computers, report below-average values.

Graph 1.26 – Investments (CZK bn)



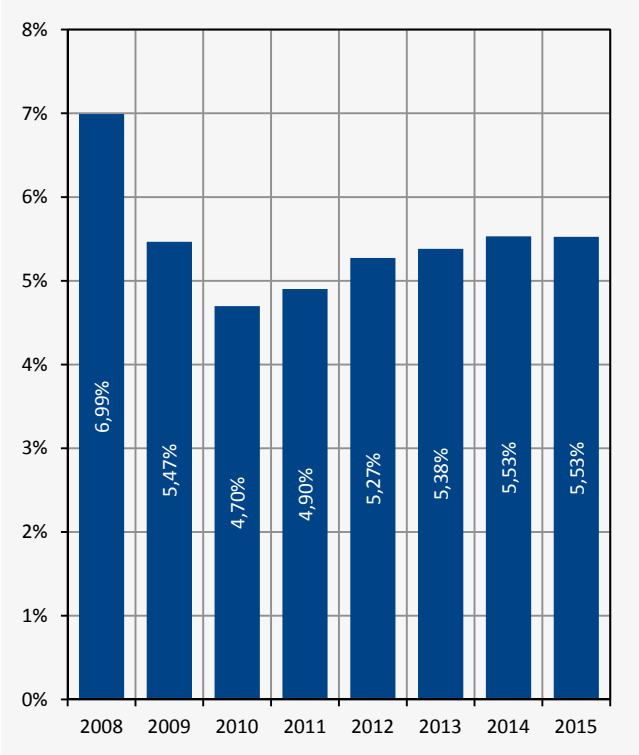
Source: CSO data, MIT calculations for 2015

Graph 1.27 – Investments according to CZ-NACE (MI = 100%)



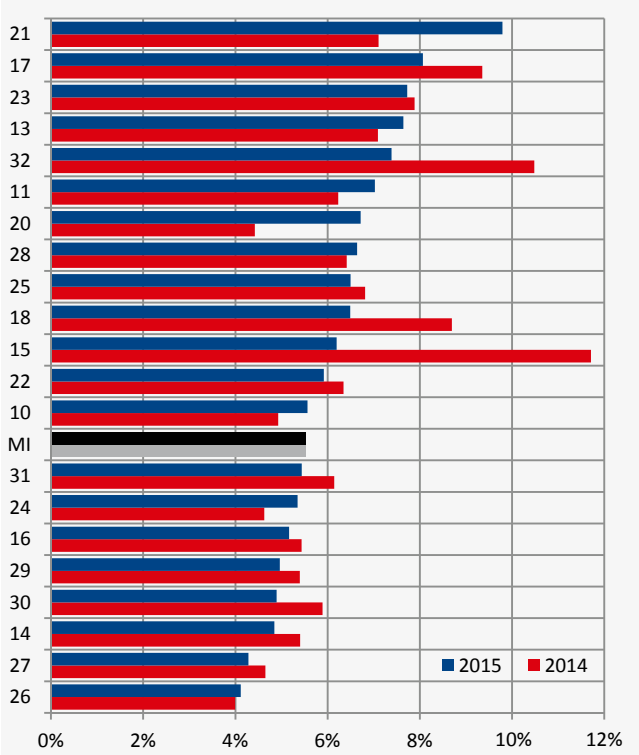
Source: CSO data, MIT calculations for 2015

Graph 1.28 – Share of investments in revenues from sale of own products and services



Source: CSO data, MIT calculations for 2015

Graph 1.29 – Share of investments in revenues from sale of own products and services in CZ-NACE (in %)



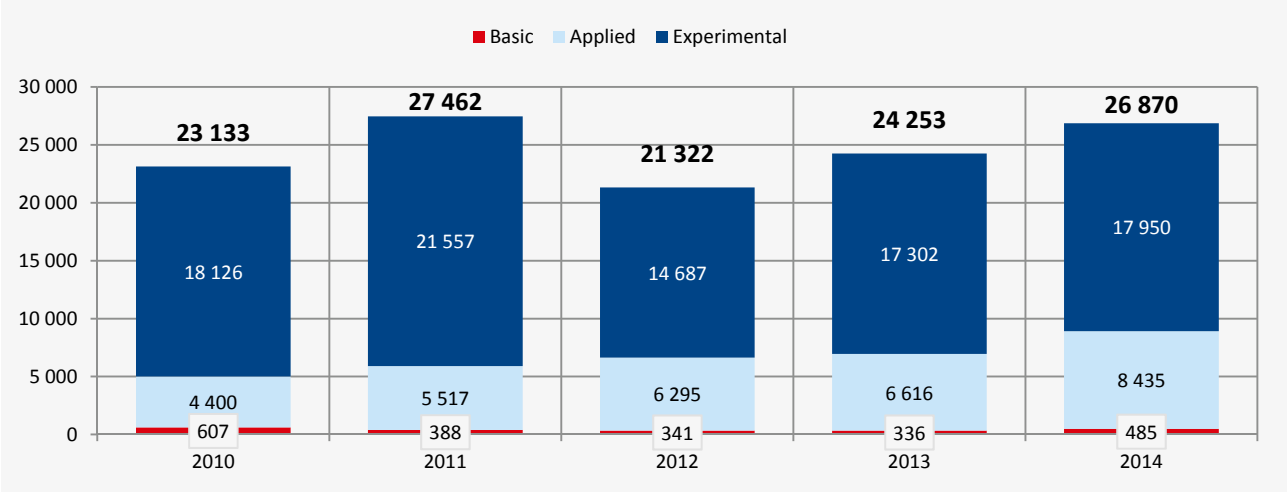
Source: CSO data, MIT calculations for 2015

1.2.2 EXPENDITURE ON RESEARCH AND DEVELOPMENT IN THE MANUFACTURING INDUSTRY

Expenditure on research and development (R&D) include all overhead and investment costs spent in the Czech Republic in the given year. Reporting units are all entities that have an R&D workplace. The linked data for R&D is available for the period of 2010 to 2014.

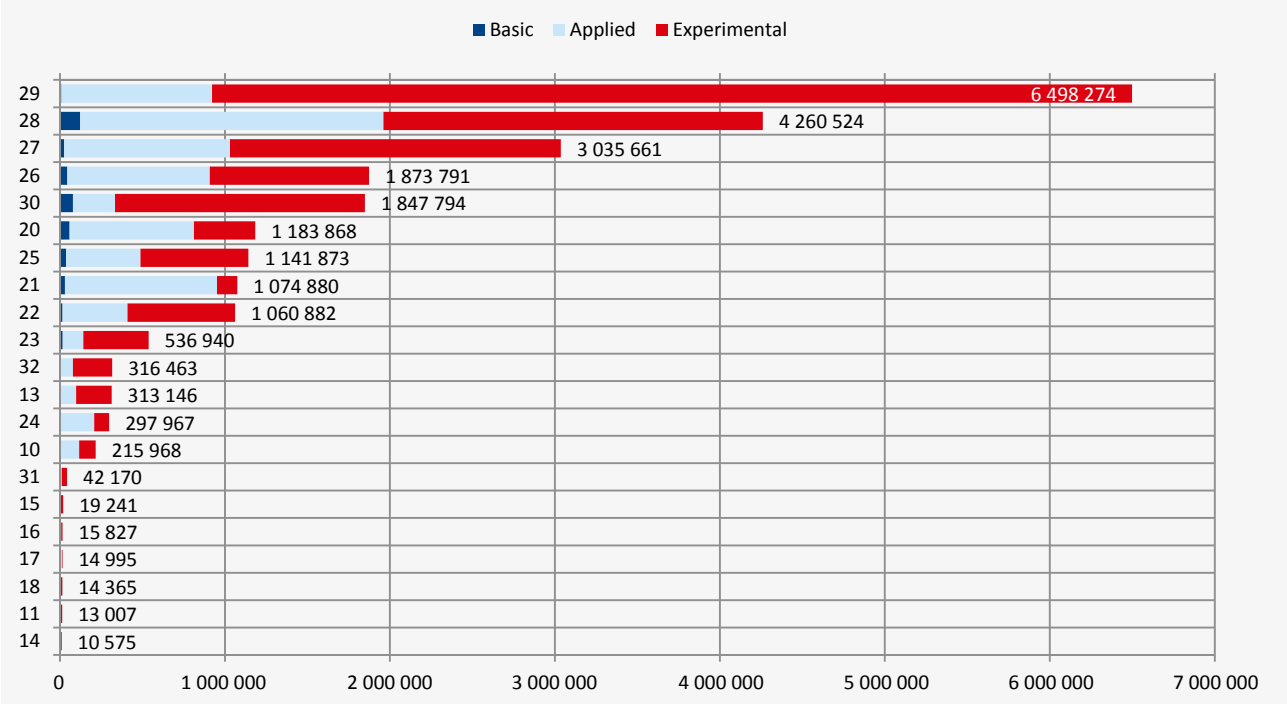
Over the 2010–2014 period the total value of expenditure on R&D was the highest in 2011 (graph 1.30). Depending on the type of cost, most R&D spending is generated from experimental research, followed by applied research, which alone shows a consistently rising trend. Costs for basic research are negligible in the MI business sphere. When interpreting this data it must be taken into account that the boundary between individual types of R&D is not always clear. In 2014, the greatest share in expenditure on R&D (graph 1.31) according to CZ-NACE was held by the manufacture of motor vehicle (CZ-NACE 29), manufacture of machinery (CZ-NACE 28) and manufacture of electrical equipment (CZ-NACE 27). A pleasing fact is that the expenditure on basic research are the highest for the manufacture of machinery and manufacture of other transport equipment, i.e. sectors where the largest share of companies are under domestic control.

Graph 1.30 – Expenditure on R&D in the manufacturing industry (CZK m)



Source: CSO data, MIT calculations

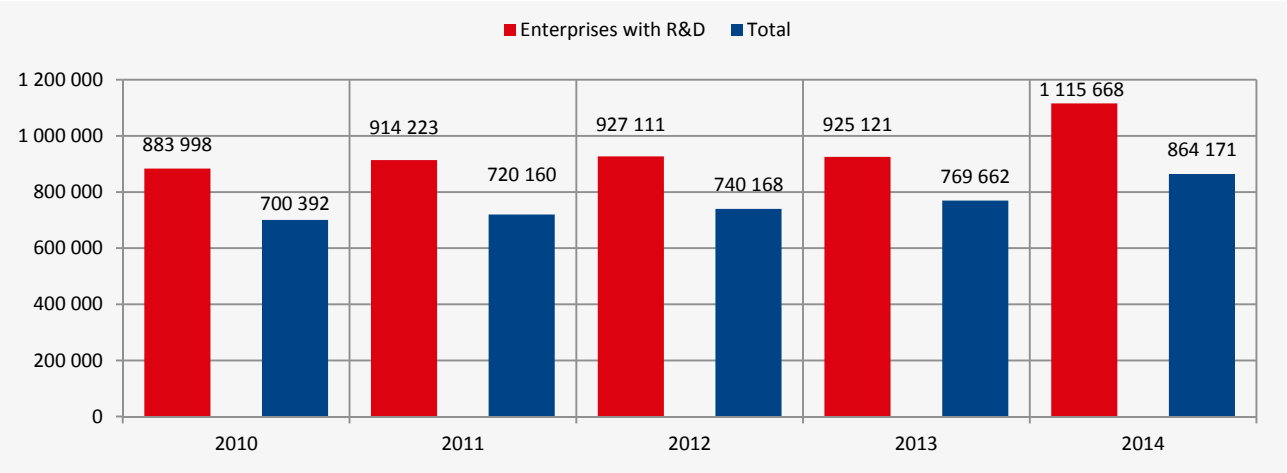
Graph 1.31 – Expenditure on R&D according to CZ-NACE in 2014 (CZK thousands)



Source: CSO data, MIT calculations

An overview of differences in the labour productivity of MI companies in total compared to companies with R&D is shown in graph 1.32. According to expectations, companies with R&D have a higher level of labour productivity, which increased substantially in 2014. The greatest difference is reported by the manufacture of beverages (CZ-NACE 11), manufacture of motor vehicles (CZ-NACE 29) and manufacture of computers (CZ-NACE 26).

Graph 1.32 – Comparison of labour productivity in MI (CZK/person)



Source: CSO data, MIT calculations

1.2.3 INNOVATIONS

For the purpose of analytic assessment of the development and role of innovation in MI, attention was focused on activities that are decisive for industry, i.e. enterprises with technical innovations, namely innovations of products and services which are new to the market. This is only a part of the innovation activities, methodically summarily classified in the "Oslo Manual"[1], which further classified innovations, apart from products, into process, continuous or suspended technical innovations, marketing and organisational innovations.

From the last available data for 2010, 2012 and 2014 about innovations were combined with production and financial data for enterprises across the entire MI. This created a group of innovative enterprises, whose results were compared with MI enterprises overall.

The share of innovative enterprises constitutes over one fifth of enterprises of the entire manufacturing industry, but their shares in the production characteristics are dominant and have a rising trend. Their share in MI revenues increased from 60% in 2010 to 68% in 2014, their share in value added from 57% to 72% and their share in employment from 52% to 66% (graph 1.33). Their lower share in employment than value added indicates their higher level of labour productivity.

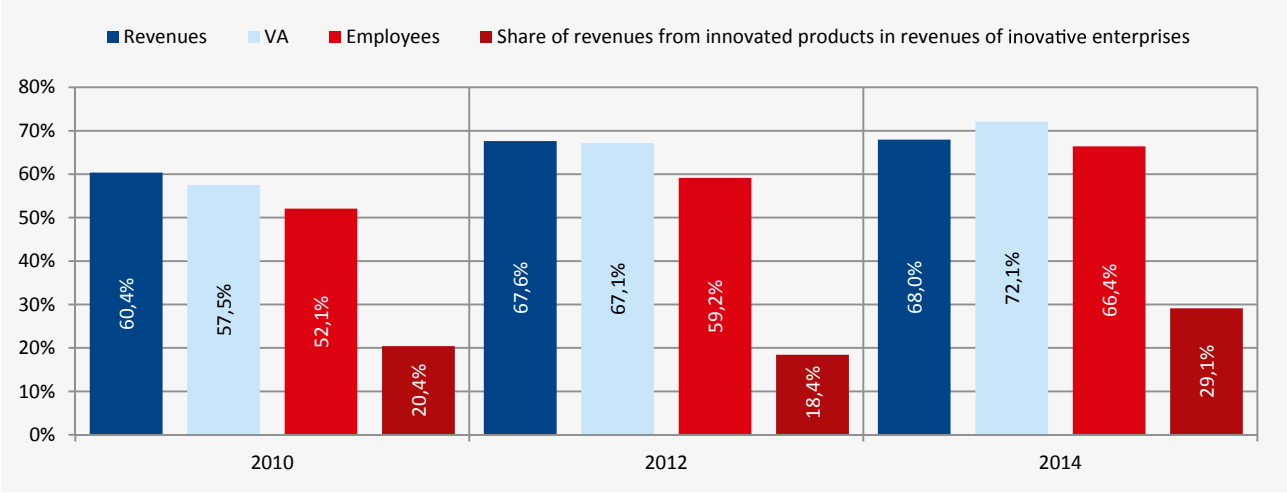
The share of revenues from innovated products rose from 20% in 2010 to 29% of total revenues of innovated products. The greatest share of innovated products (graph 1.34) is in the division manufacture of computers (CZ-NACE 26) and manufacture of motor vehicles (CZ-NACE 29). These two divisions are also the only ones above the manufacturing industry average.

The share in revenues from innovations in total revenues was calculated for innovative companies (graph 1.34). The greatest share is held by the division manufacture of computers, followed by the manufacture of motor vehicles and manufacture of wearing apparel. Two important phenomena are evident. Most innovations in the manufacture of computers did not occur in CZ, because production is mainly carried out at companies that are a part of global value chains (GVC). Revenues from innovations in the manufacture of wearing apparel (CZ-NACE 14) are generally innovations of the lowest level. The "Oslo Manual" does not distinguish the innovation level. If the innovation level were to be distinguished, the share of innovations in the manufacture of wearing apparel would most likely be much lower.

For completeness, graph 1.35 contains the revenues from innovated products in 2014. The highest revenues by far are generated by the division manufacture of motor vehicles.

1 The OECD document "The Measurement of Scientific and Technological Activities, Proposed Guidelines for Collecting and Interpreting Technological Innovation Data" contains methodical instructions for collecting and using data about industrial innovations.

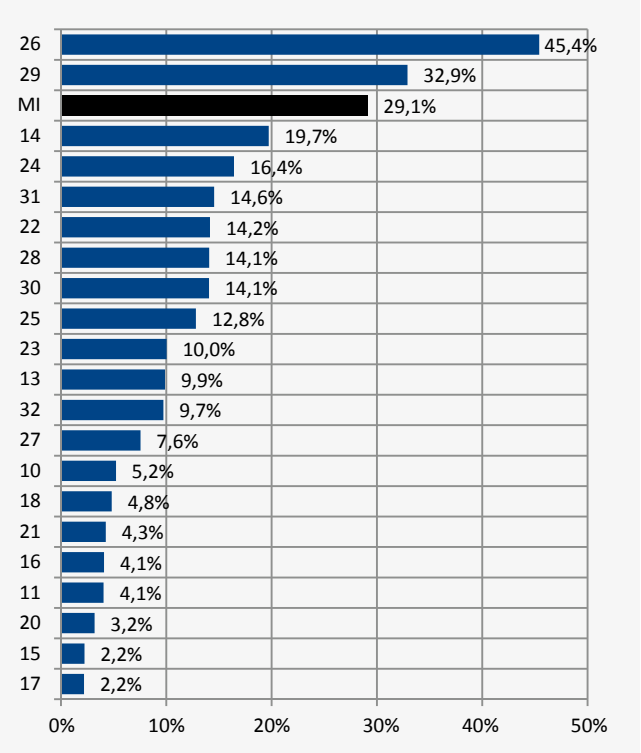
Graph 1.33 – Share of basic data of innovative companies in MI



Source: CSO data, MIT calculations

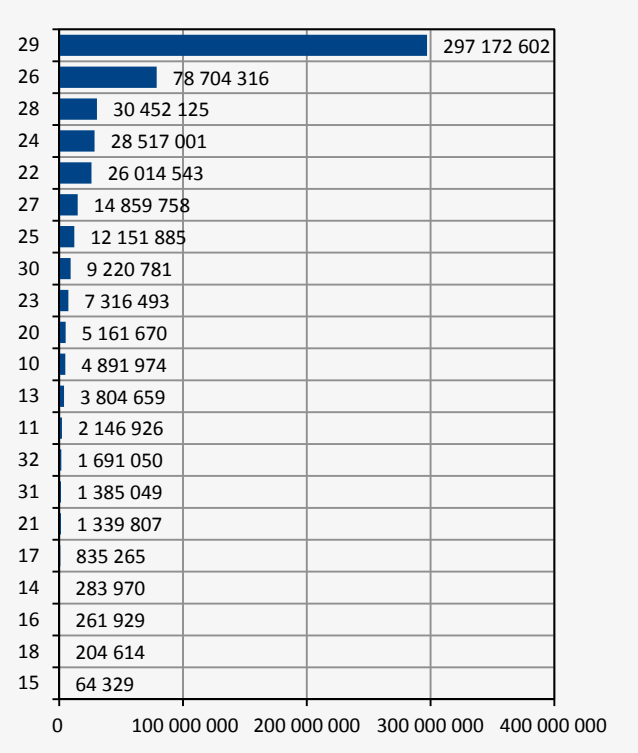
Companies implementing product innovations have an overall higher labour productivity than the average for the entire manufacturing industry. The manufacture of beverages (CZ-NACE 11), manufacture of chemical substances (CZ-NACE 20), manufacture of motor vehicles (CZ-NACE 29), pharmaceuticals (CZ- NACE 21) and manufacture of rubber and plastic products (CZ-NACE 22) are above the manufacturing industry average.

Graph 1.34 – Share of revenues from innovations in total revenues according to CZ-NACE in 2014



Source: CSO data, MIT calculations

Graph 1.35 – Revenues from innovated products according to CZ-NACE in 2014 (CZK thousands)



Source: CSO data, MIT calculations

1.2.4 INNOVATIONS AND RESEARCH AND DEVELOPMENT (R&D)

The combined view of innovative companies and companies that spend on R&D is very interesting (Table 1.1). Companies that have product innovations and R&D constitute only 13.4% of revenues of the manufacturing industry. This group of companies is the main driver of innovations and R&D in the manufacturing industry and thereby competitiveness. Two other groups of enterprises, meaning innovative companies without R&D, generate 54.6% of revenues, and non-innovative companies that have R&D, which generate 10.7% of revenues are the drivers of innovation or R&D. The worst group in the manufacturing industry consists of companies without innovation or R&D, which constitute 21.3% of revenues in the manufacturing industry.

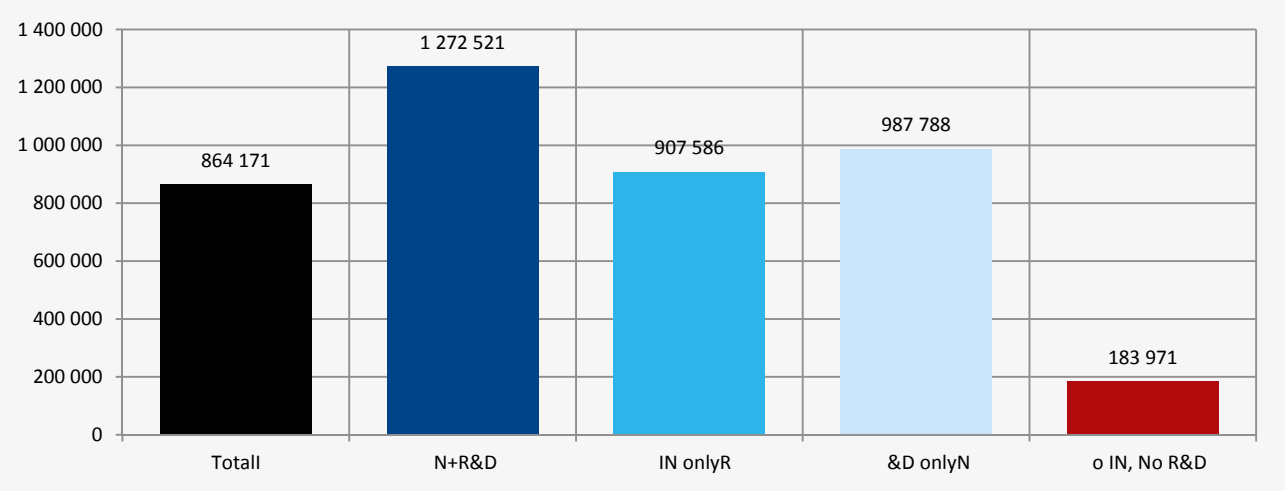
The differences in the aforementioned groups of companies can be demonstrated on the level of labour productivity (graph 1.36). Companies with product innovations and R&D spending generally have far better labour productivity values. On the contrary, enterprises without innovations and R&D lag behind in labour productivity.

Table 1.1 – Share in revenues of the manufacturing industry in 2014

			R&D	
			Yes	No
			24.1%	75.9%
Innovations	Yes	68.0%	13.4%	54.6%
	No	32.0%	10.7%	21.3%

Source: CSO data, MIT calculations

Graph 1.36 – Comparison of labour productivity in MI in 2014 (CZK/person)

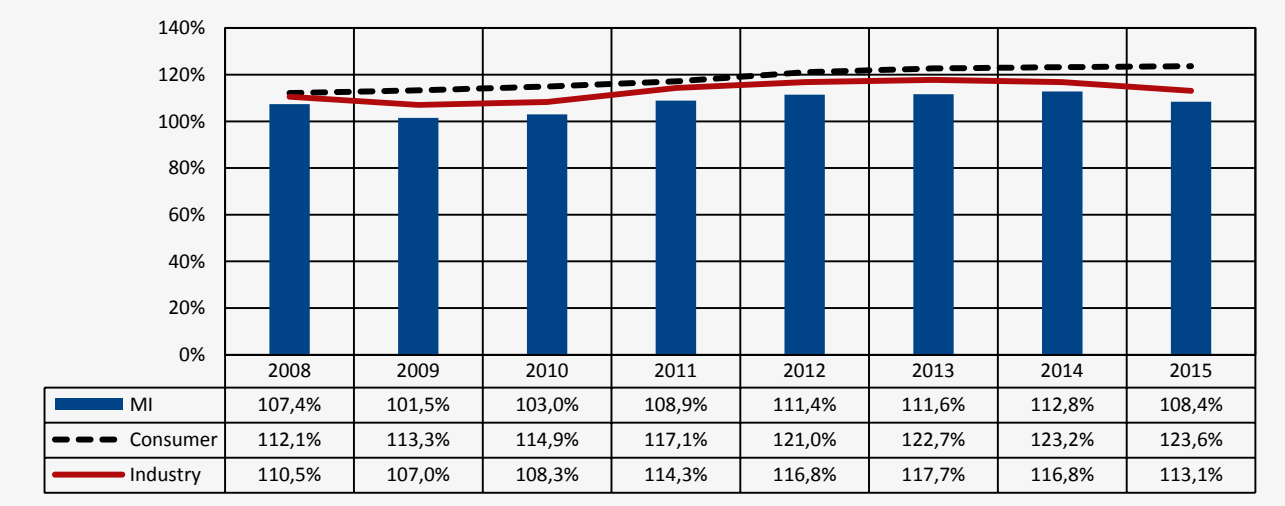


Source: CSO data, MIT calculations

1.3 PRICE DEVELOPMENT

The prices of manufacturers in the manufacturing industry followed a general production performance, with a certain delay. Their long-term development shows a lower dynamic compared to overall industrial prices, with the key factor of their faster growth being of energy prices and especially compared to consumer prices (graph 1.37). The crisis slump of 2009 was evident in the development of manufacturers' prices in the manufacturing industry, with a substantial year-on-year decline and subsequently slowed growth until 2014. Their decline in 2015 was affected by lower prices for energy inputs and competitive pressure on the global market.

Graph 1.37 – Industrial manufacturers price index in 2008 through 2015 according to CZ-CPA (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
MI	107,4%	101,5%	103,0%	108,9%	111,4%	111,6%	112,8%	108,4%
Consumer	112,1%	113,3%	114,9%	117,1%	121,0%	122,7%	123,2%	123,6%
Industry	110,5%	107,0%	108,3%	114,3%	116,8%	117,7%	116,8%	113,1%

Source: CSO data, MIT calculations

1.4 FOREIGN TRADE

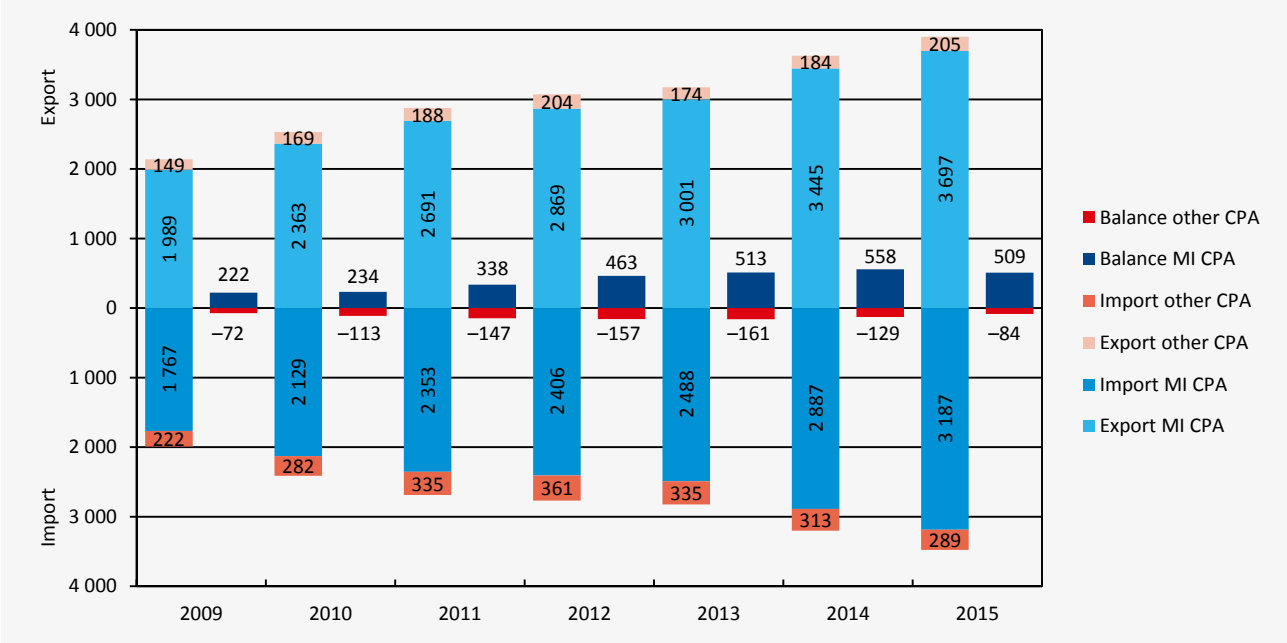
Foreign trade is reported in the concept of cross-border statistics according to commodity, i.e. in CZ-CPA classification, unlike the economic activities listed according to CZ-NACE classification. The importance of MI in the national economy is confirmed also by data about foreign trade. MI products account for almost 95% of the Czech Republic's total exports (graph 1.38). The value of MI commodity exports in the reviewed period of 2008 to 2015 continues to grow, while the value of other commodities, such are agricultural and raw material products, oscillates, primarily because of their sensitivity to price development. Given a detailed view of MI exports, there is an evident dominance of exports of motor vehicles, computers, machinery and electrical equipment (graph 1.39).

About 90% of the total value of imports consist of manufacturing industry products and these are also reporting a growth trend. The most important imported commodities are computers, motor vehicles, chemical substances and metals (graph 1.39). The value of imports of other items, as in the case of exports, oscillates mainly for price rather than volume reasons.

The positive foreign trade balance consists of manufacturing industry commodities with a rising tendency (except for 2015), where the negative balance of other commodities is due mainly to the import of energy resources (graph 1.38). The greatest positive balance in the groups of manufacturing industry products is reported for motor vehicles, followed by machinery, electrical equipment and metal products. A negative balance is reported mainly by metals, chemical substances and pharmaceutical products (graph 1.39).

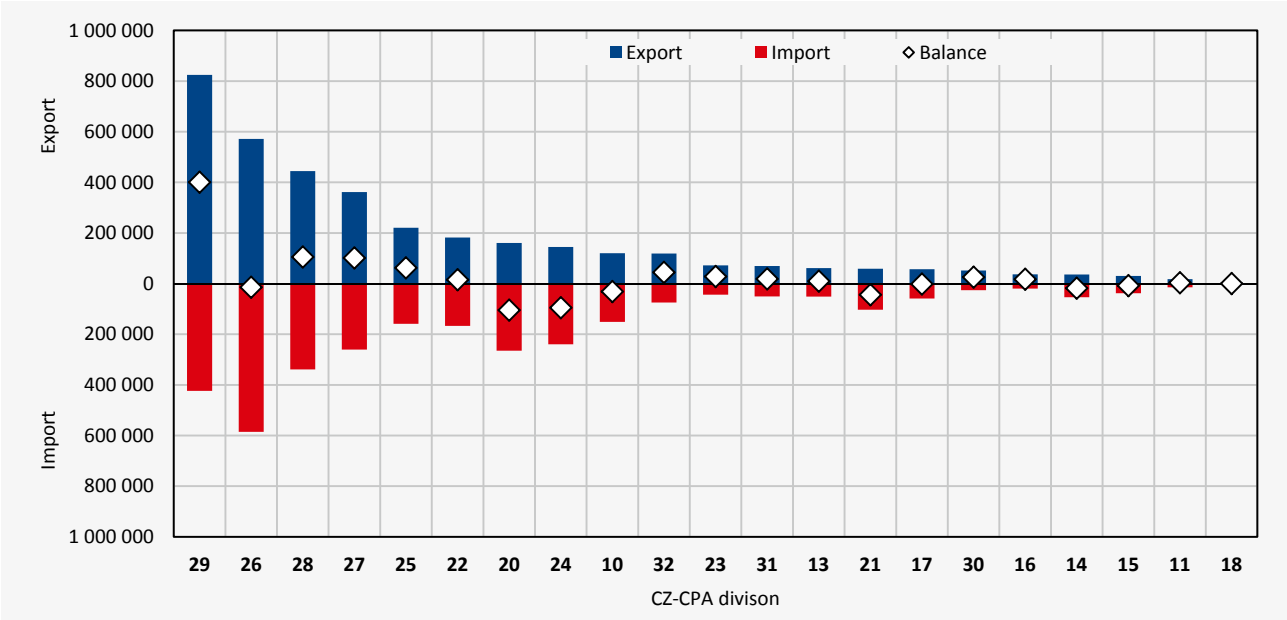
The involvement of MI enterprises in global value chains can be documented on the import intensity of exports. While in 1990 CZK 1 of exports contained 28.60 hellers of imports, in 2010 it was 52.39 hellers (graph 1.40). In 2010, the share of companies under foreign control generated about 80% of revenues in the manufacturing industry, while in 1990 it was practically zero. In the period of 1990 to 2010, the export of manufacturing industry products increased tenfold, which would not have been possible without involvement in the international division of labour. In 2010, the most import intensive was the production of refinery products (CPA 19), followed by the manufacture of computers (CPA 26), manufacture of chemical substances (CPA 24) and manufacture of motor vehicles (CPA 29), see graph 1.41.

Graph 1.38 – Product export, import and trade balance of MI 2008 - 2015 (CZK bn)



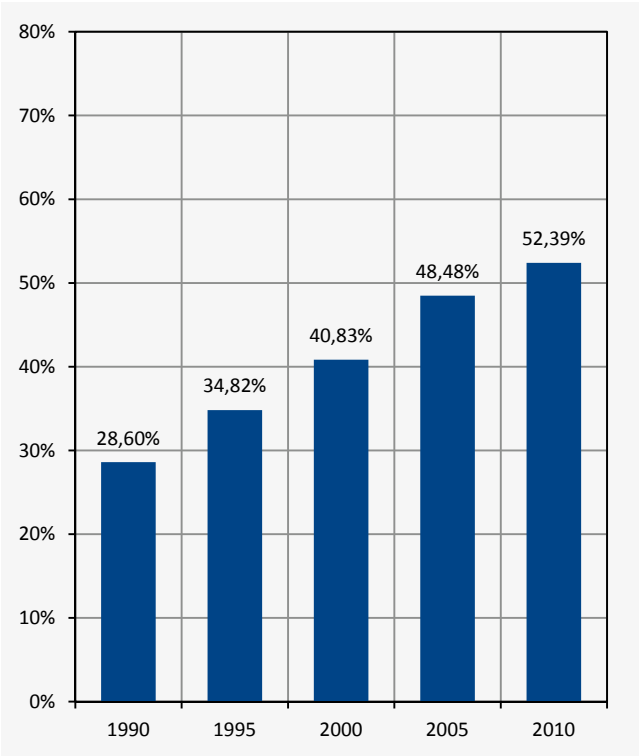
Source: CSO data, MIT calculations

Graph 1.39 – Product export, import, and trade balance in 2015 according to CZ-CPA (CZK m)



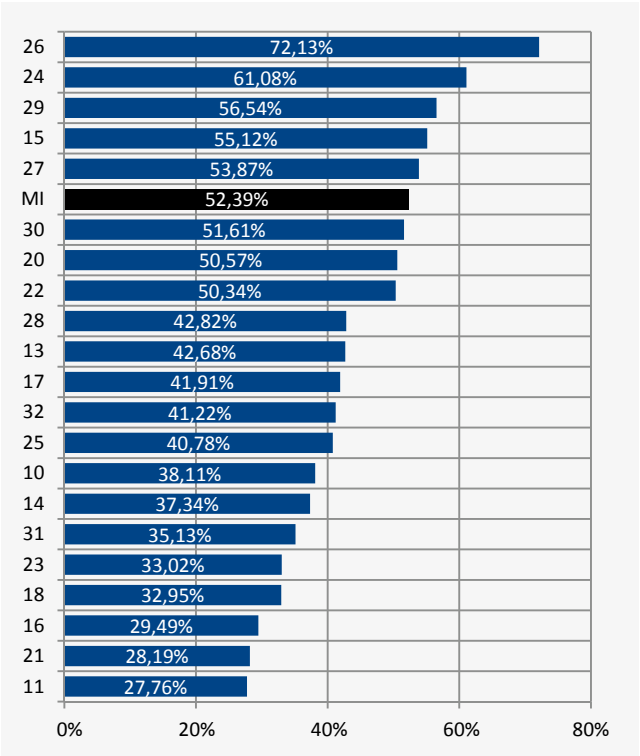
Source: CSO, data as at 28 February 2016

Graph 1.40 – Import intensity of export of the manufacturing industry



Source: CSO data, MIT calculations

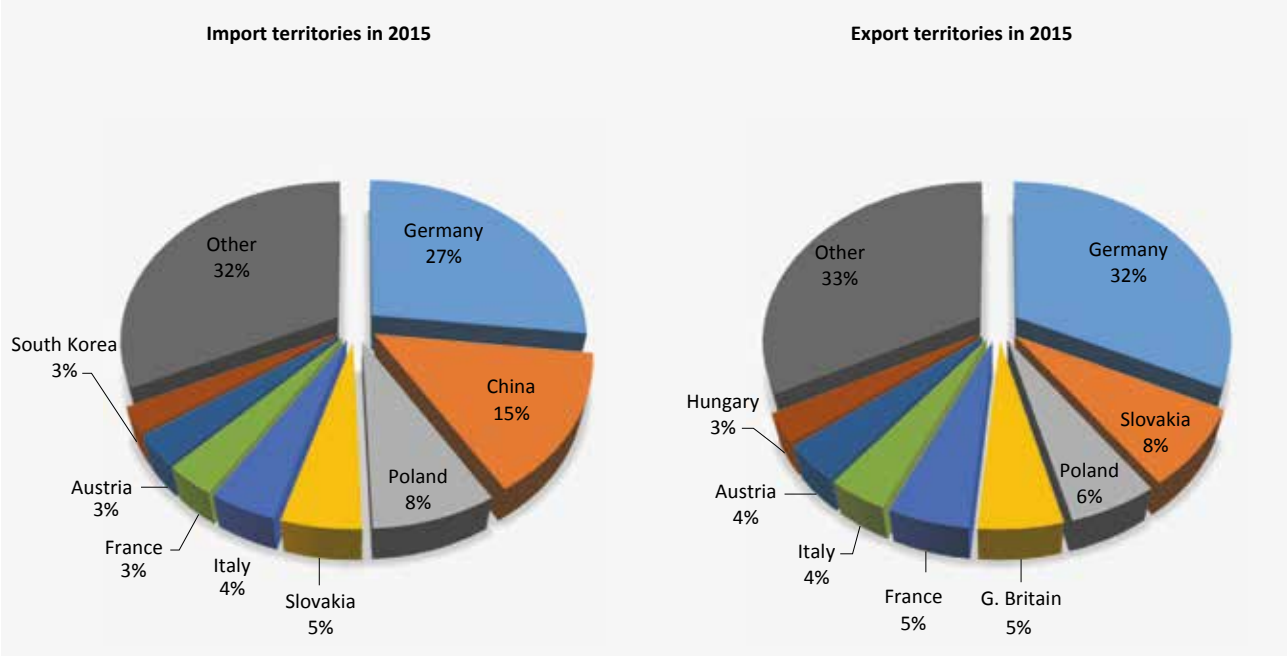
Graph 1.41 – Import intensity of export according to CZ-CPA in 2010



Source: CSO data, MIT calculations

From a territorial perspective, exports of MI commodities are largely directed to Germany (32%), through which a part of the commodities from CZ becomes a part of German exports to third countries. At a considerable distance behind are other countries, primarily the neighbouring Slovakia (8%), Poland (6%), Great Britain (5%), France (5%), Italy 4(%) and neighbouring Austria (4%). Imports are again dominated by Germany (27%), but second place with a smaller gap goes to China (15) followed by Poland (8%), Slovakia (5%), Italy (4%) and France, Austria and South Korea (3% each), see graph 1.42.

Graph 1.42 – Foreign trade in CZ-CPA



Source: CSO, data as at 28 February 2016

1.5 ECONOMIC PROFIT

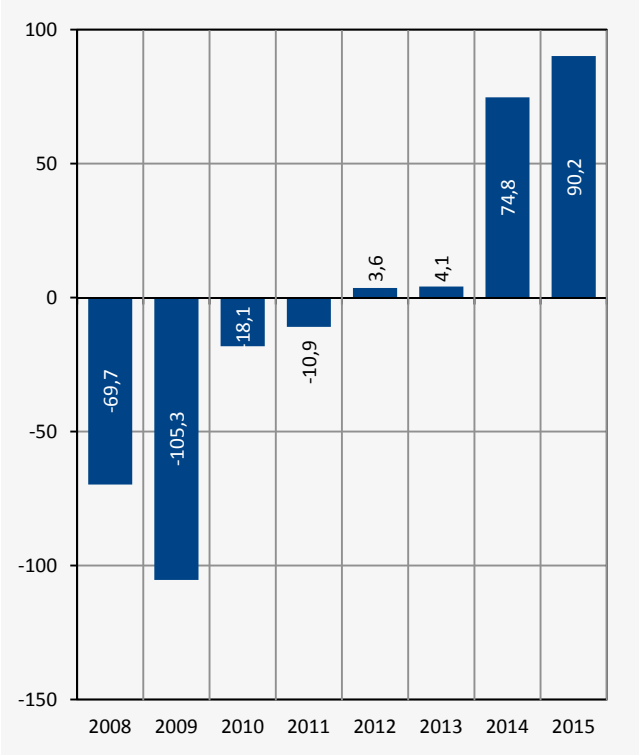
The most aggregated indicator expressing efficiency is economic profit (EVA). The economic profit of the manufacturing industry in the period of 2008 to 2009 was highly unsatisfactory, and reached almost zero in 2010 and 2011. The turning point occurred in 2012, when the economic profit swung back over zero, i.e. companies in the manufacturing industry started generating value for their owners. In 2013 it still remained very close to zero. In 2014 it saw radical growth, which continued into 2015 (graph 1.43).

The main drivers of the excellent economic profit result in 2015 were the manufacture of motor vehicles (CZ-NACE 29), followed by the manufacture of rubber and plastic products (CZ-NACE 22) and manufacture of fabricated metal products (CZ-NACE 25). At the other end of the chart of divisions based on creation of economic profit is the manufacture of basic metals (CZ-NACE 24), manufacture of food products (CZ-NACE 10) and manufacture of other transport equipment (CZ-NACE 30).

The value of economic profit is affected by the size of the division. Relative economic profit, i.e. Spread (difference between return on equity and alternative cost of equity) indicates the efficiency of generating economic profit. Spread, which can also be expressed as the share of economic profit and equity, i.e. the creation of economic profit from one CZK of equity. The development of Spread values corresponds to the development of economic profit (graph 1.45). The development of Spread values was determined by the development of return on equity (ROE) and development of alternative cost of equity (re), the value of which is affected primarily by the decline in the risk-free rate (rf).

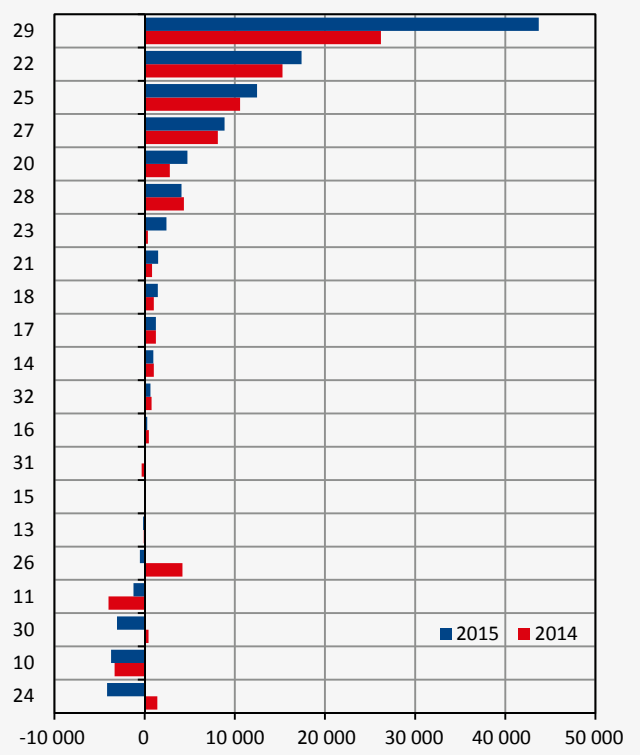
The chart of divisions according to spread value is more interesting (graph 1.46). In first place, as with the chart of economic profit, is the manufacture of motor vehicles (CZ-NACE 29). However, in second place is the manufacture of wearing apparel (CZ-NACE 14). In the chart of economic profit, this division was in 11th place. Most other divisions also report a different order between economic profit and spread.

Graph 1.43 – Economic profit (CZK bn)



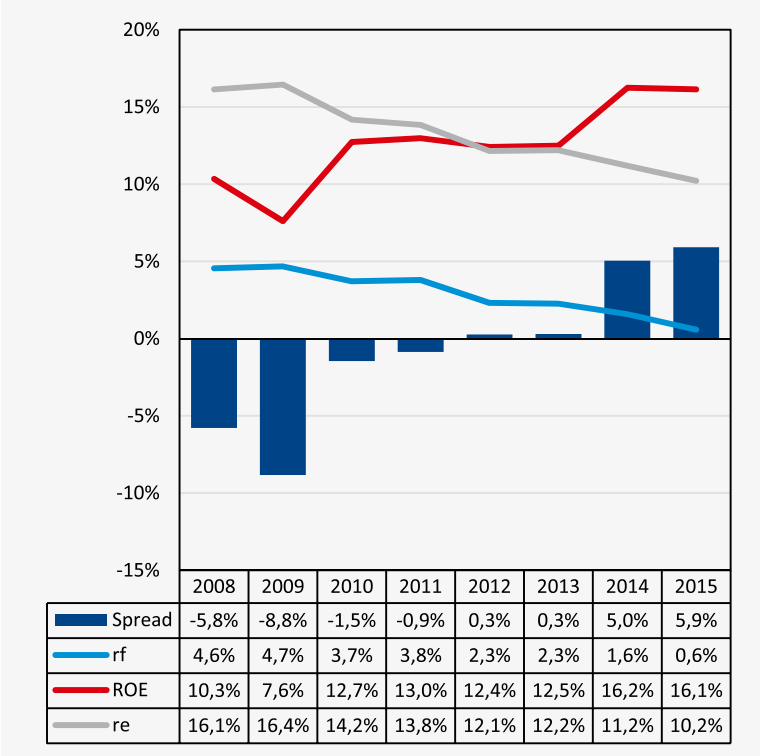
Source: CSO data, MIT calculations

Graph 1.44 – Economic profit according to CZ-NACE (CZK m)



Source: CSO data, MIT calculations

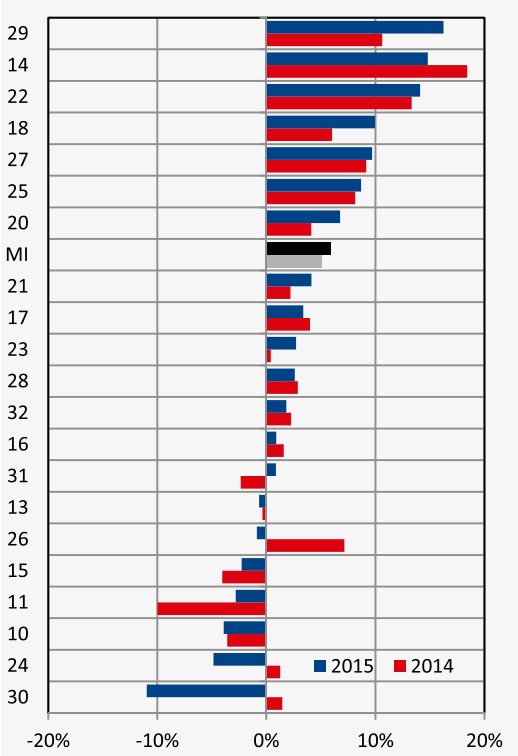
Graph 1.45 – Spread, ROE, r_e and r_f (%)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-5,8%	-8,8%	-1,5%	-0,9%	0,3%	0,3%	5,0%	5,9%
rf	4,6%	4,7%	3,7%	3,8%	2,3%	2,3%	1,6%	0,6%
ROE	10,3%	7,6%	12,7%	13,0%	12,4%	12,5%	16,2%	16,1%
re	16,1%	16,4%	14,2%	13,8%	12,1%	12,2%	11,2%	10,2%

Source: CSO data, MIT calculations

Graph 1.46 – Spread according to CZ-NACE



Source: CSO data, MIT calculations

1.6 SUMMARY AND PROSPECTS OF THE MANUFACTURING INDUSTRY

Results achieved by the manufacturing industry (MI) sector between 2008 and 2015 have been very good. Ongoing growth in labour productivity (with the exception of the crisis peak in 2009) represents one of the significant factors facilitating these results; this growth has been accompanied by increases of average wages, while the ratio between these wage increases and labour production remained favourable. Productivity is closely linked to innovations and expenditure dedicated to R&D, driving one another: growth in productivity facilitates innovations and vice versa. Enterprises implementing innovative solutions and enjoying fruits of their own R&D capacity traditionally have the highest labour force productivity (47 % higher than the average enterprise in the MI sector) while enterprises eschewing innovative solutions and investing in R&D, have achieved a mere 21 % of the average MI labour productivity over the same period.

Good results in the manufacturing industry obviously have favourable impact on how is the current situation viewed by all key stakeholders, i.e. owners, employees, business partners, investors, by the state etc. Owners enjoy healthy profits while employees are able to appreciate good, stable and growing wages as well as new jobs. From the perspective of the state administration this translates into positive trends in terms of higher tax returns and especially in the manufacturing industry's significant contribution to better external economic position of the Czech Republic, which again translates itself into positive foreign trade balance regardless of the fact that other sectors have in aggregate negative effect thereon.

Czech Republic is and will continue to be a small, open economy with a strong pro-export industrial focus. Industry generates about a third of the Czech GDP and that is in practical terms the highest value from all 28 EU Member States. Currently, we also hold the second place among European countries in having the lowest unemployment rate. If we wish to maintain this strong economic position in the long term, we need to be prepared to timely react to development trends in technology and in the social sphere, and to the growing digitalization in all sectors, and to reconcile these developments with everyday practice. Future will be primarily influenced by acceleration of technological innovation. In the nearest future, this will primarily concern the so-called 'Industry 4.0' concept. Ideas relating to this phenomena first emerged around the year 2000 and assuming all the new technology and digital platforms successfully proliferate, we may expect that by 2020 the fundamental technological changes will fully affect the manufacturing industry as well as all other sectors in the Czech Republic and abroad. Industry 4.0 will make itself felt on many levels, whether in expanded use of information technology, cyber-physical systems and artificial intelligence in production and services in all economic sectors, or in greater involvement of internet of things in production technologies, new business models incl. repairs and maintenance of product and the degree in which stakeholders in MI will be able to participate in innovations within this 4th industrial revolution.

In order to successfully navigate this great change it is first and foremost that entrepreneurs are able to actively adapt to these objective developments, that they can quickly act on impulses which are changing our industry through this new philosophy of systemic use, integration and inter-linking all kinds of technologies under constant and swift development, and that they are able to prepare to embrace the new conditions brought by this fourth industrial revolution in the Czech Republic; it is our foremost objective in the long term to maintain and strengthen competitiveness of the Czech Republic.

Fundamental innovations often take place outside of the Czech Republic, but given the existing close links of the Czech MI sector to the global value chain (which generates about 70 % of MI revenue), we may anticipate that these will proliferate into most of the production activities in the Czech Republic very quickly. For enterprises in other sectors, this represents a great opportunity to engage in related lower degree innovations. For these enterprises, which are not fully integrated in the global value chains, the critical issue will be the availability of financial resources to implement necessary investment into new technologies. Success of these efforts will to a large degree depend not only on the Czech Republic alone, but will be affected by the actual progress of our chief partners, and that is primarily by Germany.

Digitalization of the economy has been taking place in a broad swathes of sectors. Not only in the sectors that are traditionally predisposed such as electronics, engineering, construction and production of machinery and equipment, tool engineering, automobile industry, energy sector, chemical and pharmaceutical sectors, metallurgy and steel making, software development, information technologies and telecommunications, industrial automation, radio-communications but also in maintenance, banking sector, financial and marketing services, commerce, consulting, advertising, agriculture, environment, healthcare, food processing to name but a few.

Government cannot stand aside all this. The industry and the entire economy have been undergoing a fundamental change, which will have effect on the entire society and for those reasons, the government formulated the "Initiative for Industry 4.0 In the Czech Republic'.

The objective of this Initiative is to expose the potential directions that future development may take and to outline measures supporting the economy and the industrial base in the Czech Republic and to assist the Czech society in absorbing the upcoming technological changes. The Initiative focuses on promoting the fundamental information on the necessity and urgency of changes brought about by the 4th industrial revolution and maps measures supporting investment, applied research and standardization as well as addresses issues relating to cyber-security, logistics or legislation. And what is most important, that interests trade unions and employers alike – it anticipates impulses affecting labour market, education and development of human resources.

The labour market is going to change to meet new demand. New job position and professions will quickly emerge, while some of the less qualified position will equally quickly die out. We are aware of this course of events and for those reasons we strive to create conditions ensuring that these quick changes will not be destructible for the society, but that they offer opportunities for growth in qualification and development of human resources. Increased demand for technically qualified and educated workforce should translate into corresponding and natural growth in salaries of these new professionals, as foreseen and called for by their representatives.

Timely adaptation to new realities brought about by Industry 4.0 will increase the Czech Republic's attractiveness for new investors, foreign or domestic, and stimulate expansion in investment by foreign corporations which have already established themselves here. Introduction of new technologies will facilitate significant increases in efficient use of resources. Reductions of energy and raw material intensity in production, increases in productivity in production, optimisation of logistical routes, technological solutions for de-centralized production systems and energy distribution or smart infrastructure in cities – these are the chief contributions of Industry 4.0 for a more efficient use of resources.

Implementation of Industry 4.0 concepts in, for example, automobile industry, food processing or in engineering, will facilitate complex optimisations of entire vertical production processes. Fully automated production lines will allow manufacture of smaller volumes of products that will flexibly react to actual customer demand. At the same time, these concepts will help shortening the time necessary for reconfiguration of production and reduce related costs. Digitalization will offer more opportunities for tele-working (remote working). New "smart factories" will emerge, producing "smart products." Corporate systems will be able to flexibly react, in real time, to immediate changes in demand for products. Smart factories will open the road for new and creative ways of creating value.

2.

CZ-NACE 10 MAFUFACTURE OF FOOD PRODUCTS

2.1 DIVISION CHARACTERISTIC

CZ-NACE 10 division sorted by groups

- 10.1 Processing and preserving of meat and production of meat products;
- 10.2 Processing and preserving of fish, crustaceans and molluscs;
- 10.3 Processing and preserving of fruit and vegetables;
- 10.4 Manufacture of vegetable and animal oils and fats;
- 10.5 Manufacture of dairy products;
- 10.6 Manufacture of grain mill products and starch products;
- 10.7 Manufacture of bakery products and confectionery;
- 10.8 Manufacture of other food products;
- 10.9 Manufacture of prepared feeds for animals.

The manufacture of food products in the Czech Republic as well as the entire European Union belongs to supporting sectors of the manufacturing industry. The importance of the manufacture of food is above all because of the necessity to secure nutrition of population by manufacture and sale of healthy, safe and quality food.

Although the manufacture of food does not increase its share in the manufacturing industry, it still remains a major employer in many regions and is the fifth largest employer of the entire manufacturing industry. Some other sectors of the manufacturing industry are suppliers of industrial inputs to the production of foods, those are manufacturing engineering, non-ferrous metallurgy, chemical industry, pulp and paper industry and energy industry, so the development of the food industry strengthens the performance of these sectors as well. In comparison with other divisions of the manufacturing industry the manufacture of food is rather characterized by lower margins of value added and lower labour productivity.

Table 2.1.1 Shares of groups in CZ-NACE 10 division in 2015 (%, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
10.1	21.6	19.0	21.2	21.6	13.4	15.7	23.7	24.6
10.2	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.3
10.3	3.0	2.9	2.3	2.3	3.4	2.6	3.1	1.9
10.4	1.7	2.5	6.2	5.9	3.2	4.5	1.1	0.2
10.5	10.5	11.1	14.2	14.6	9.2	9.9	9.4	2.2
10.6	3.3	3.1	4.1	4.0	3.3	3.7	2.8	2.8
10.7	28.7	23.5	12.1	12.2	16.7	17.6	35.7	42.5
10.8	21.7	23.4	19.3	19.0	25.7	24.5	18.0	20.5
10.9	8.5	13.7	19.9	19.7	24.3	20.6	5.4	5.0

Source: CSO, 2015, MIT calculations

In terms of classification of economic activities of the group, some food production sectors have a direct link to agricultural production while others focus on higher finalization of food.

In manufacture of food products, the highest share in sales and revenue is achieved by the production group that is processing and preserving meat and meat products and furthermore by the animal feed production group and another food product group that is very complex and mostly processes products with plant origin.

Table 2.1.1 shows shares of manufacturing groups in selected characteristics of the division. The number of units is clearly dominated by the group of manufacture of bakery products and confectionery and other flour products. It includes various size manufacturers in urban and rural areas. This production group is the largest employer of the division. It has also reached the highest share in the value added indicator under the manufacture of food products, closely followed by the group of manufacture of other food products which, at the same time, has the highest share in the total asset indicator.

2.2 DIVISION DEVELOPMENT

After securing the priority requirement of being harmless to health, the development of manufacture of food aims to improve the quality of domestic production. The entire EU puts emphasis on quality of food as well. In the Czech Republic quality systems are used for this requirement. A major position among them is taken by the national label KLASA. This label represents a marketing support to awarded manufacturers and products. The objective is to build the confidence of customers and consumers. In 2015, marketing in this area was focused on ensuring exhibitions, fairs and activities for direct presentation of manufacturers and food.

Other award for manufacturers is the Regional food label. This contributed to the presentation of small and medium enterprises supplying primarily local markets with food mostly typical for the given region. In 2015 it were 107 products. Organic foods have also proved successful on the market. As of 31/12/2015, 541 such manufacturers were registered.

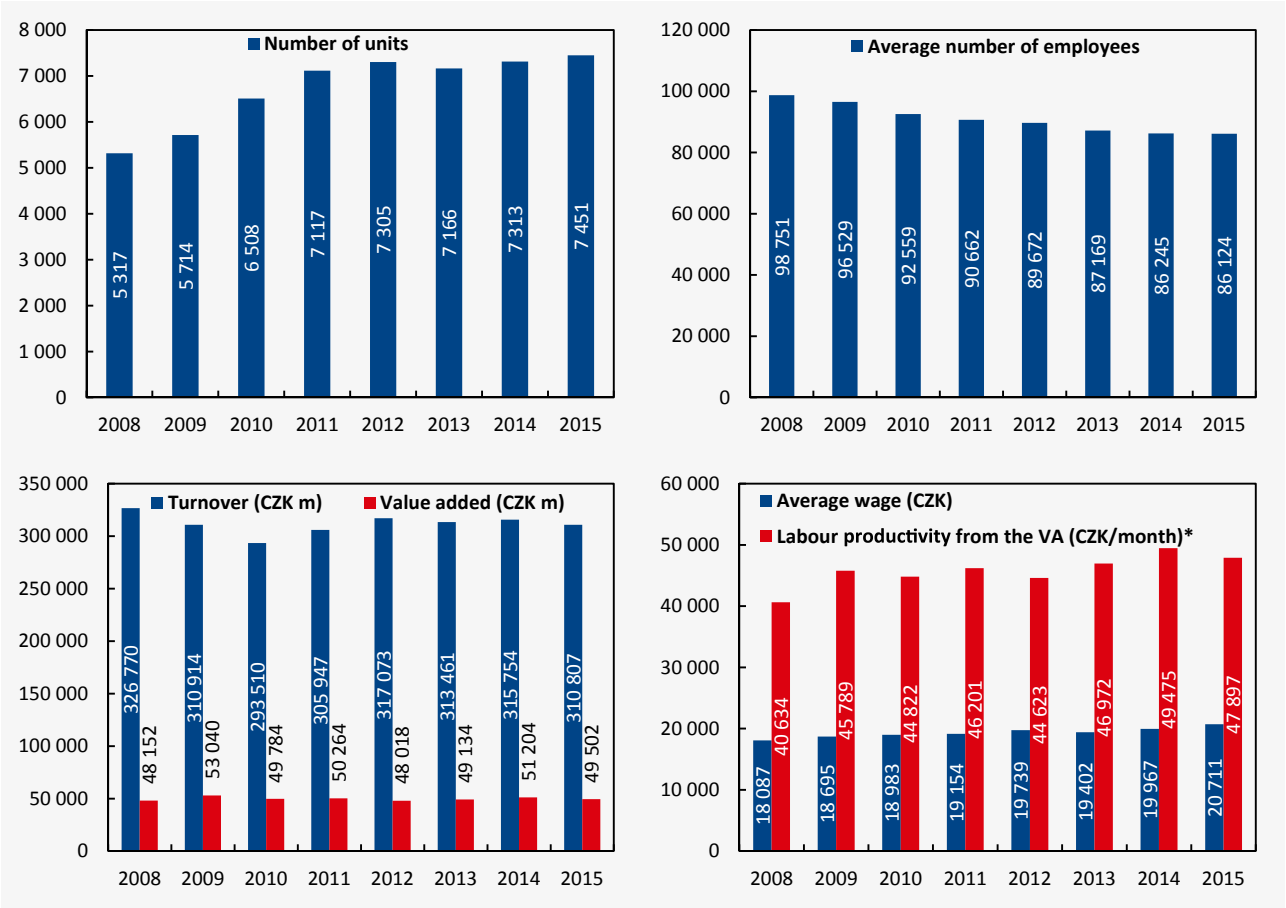
2.3 MAIN ECONOMIC INDICATORS

The biggest economic fall of the rated production was recorded in 2010 in the context of the economic crisis. After that there was some recovery, however with fluctuations in monitored indicators. Upon a steady decline of staff headcount and average wage growth the value added per employee achieved the peak in 2014 (Graph 2.3.1).

The division currently employs 86,000 persons, which is 7.8% of the entire manufacturing industry. The average wage is lower in comparison with the entire manufacturing industry, and in 2015 it made almost CZK 21,000 per month. The dynamics of growth is relatively weak compared with the growth of labour productivity. The average wage growth rate has achieved more than 1.1% since 2008, while the productivity has grown by 1.2%.

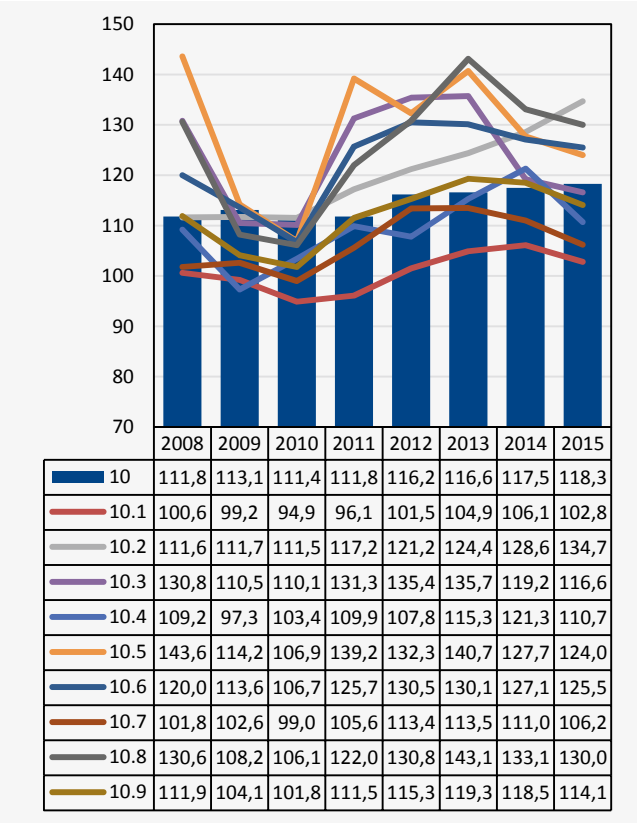
In 2008 to 2015 prices of CZ-CPA 10 industrial producers had an upward trend, though it was differentiated both in terms of years and in terms of manufacturers. Only in exceptional cases a decline in prices had been recorded for some producers in several earlier years (e.g. by CZ-CPA 10.3 and CZ-NACE 10.5). On the contrary, in 2015 the biggest price growth was shown by the product group CZ-CPA 10.2 Processing and preserving of fish, crustaceans and molluscs and the CZ-CPA 10.6 Manufacture of grain mill products and starch products (Graph 2.3.2).

Graph 2.3.1 – Major economic indicators of CZ-NACE 10 division (2008 = 100%)



Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

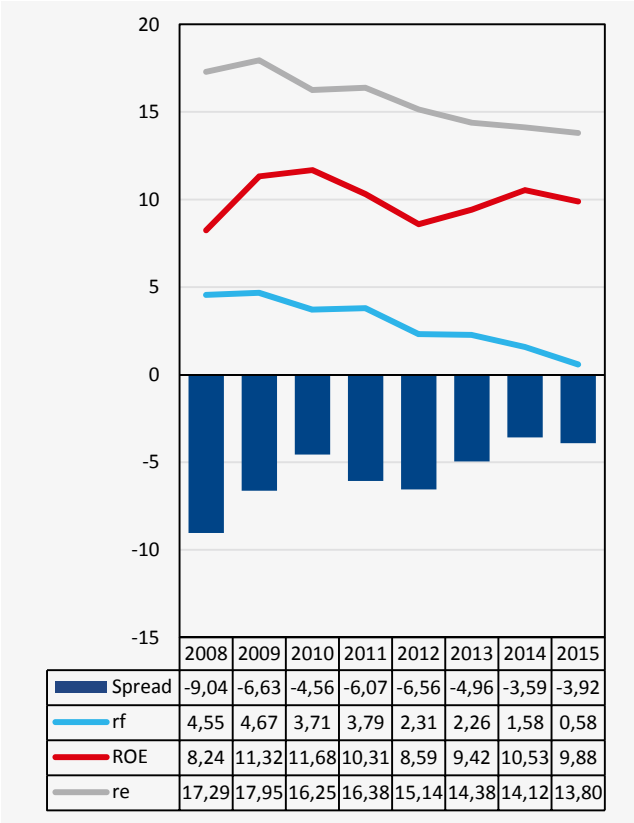
Graph 2.3.2 – Price development of CZ-CPA 10 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
10	111,8	113,1	111,4	111,8	116,2	116,6	117,5	118,3
10.1	100,6	99,2	94,9	96,1	101,5	104,9	106,1	102,8
10.2	111,6	111,7	111,5	117,2	121,2	124,4	128,6	134,7
10.3	130,8	110,5	110,1	131,3	135,4	135,7	119,2	116,6
10.4	109,2	97,3	103,4	109,9	107,8	115,3	121,3	110,7
10.5	143,6	114,2	106,9	139,2	132,3	140,7	127,7	124,0
10.6	120,0	113,6	106,7	125,7	130,5	130,1	127,1	125,5
10.7	101,8	102,6	99,0	105,6	113,4	113,5	111,0	106,2
10.8	130,6	108,2	106,1	122,0	130,8	143,1	133,1	130,0
10.9	111,9	104,1	101,8	111,5	115,3	119,3	118,5	114,1

Source: CSO, MIT calculations

Graph 2.3.3 – Spread (ROE – re) CZ-NACE 10 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-9,04	-6,63	-4,56	-6,07	-6,56	-4,96	-3,59	-3,92
rf	4,55	4,67	3,71	3,79	2,31	2,26	1,58	0,58
ROE	8,24	11,32	11,68	10,31	8,59	9,42	10,53	9,88
re	17,29	17,95	16,25	16,38	15,14	14,38	14,12	13,80

Source: CSO, MIT calculations

The outcome of the financial analysis is to compare the Spread (difference ROE – re), return on equity ROE, cost of equity re and risk-free rate rf.

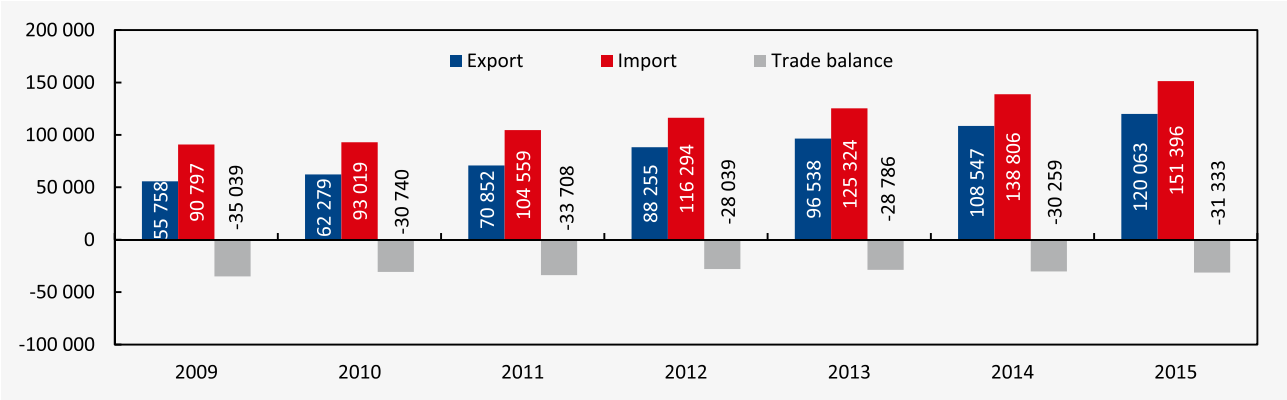
The CZ-NACE 10 division shows a negative Spread, which means that it did not create any value for its owners even in one year of the reviewed years (Graph 2.3.3). The development shows an improvement in Spread's negative values, mainly due to a gradual reduction in the risk-free rate, which was on the other hand hindered by the deterioration of the return on equity (ROE) in 2011, 2012 and 2015.

2.4 FOREIGN TRADE

2.4.1 DEVELOPMENT OF FOREIGN TRADE

The export development of CZ-CPA 10 products continued its growth in 2009 to 2015, and in 2015 reached a total value of CZK 120.1bn. Similarly, the food product import grew and in 2015 reached CZK 151.4bn. Export growth is higher than that of import, but the overall foreign trade balance of monitored products is still negative and has reached CZK -31bn (Graph 2.4.1). The positive trade balance has been shown only by dairy products (CZ-CPA 10.5) and since 2013 by animal feeds (CZ-CPA 10.9).

Graph 2.4.1 – Product export, import and balance of foreign trade in CZ-CPA 10 (CZK m)

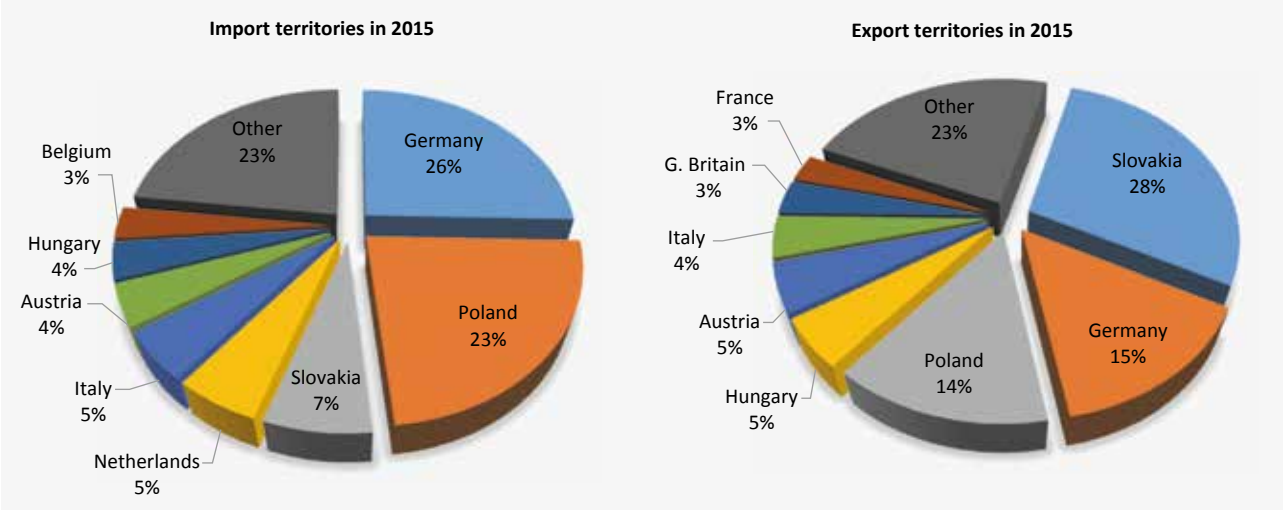


Source: CSO, data as at 28 February 2016

2.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The territorial structure of foreign trade with CZ-CPA 10 products for 2015 shows that the largest import territory was Germany with a share of 26% and Poland with 23% of the total volume. In that year at exports a major position has been taken by Slovakia with 28% followed by Germany with 15% and Poland with 14% of the total volume (Graph 2.4.2). In recent years in import territories the position of Germany has weakened slightly, while Poland's position strengthened. For export destinations the Poland's share has decreased.

Graph 2.4.2 – Foreign trade with CZ-CPA 10 products



Source: CSO, data as at 28 February 2016

2.5 DIVISION SUMMARY AND PROSPECTS

The manufacture of food products traditionally represents both a significant industrial and market segments. For some foods it means a daily supply of market, which is a challenging way of distribution. Customers require both fresh foods and products with a long life, and the ongoing innovation processes in almost all productions are still expanding the normal range of foods and their degree of processing.

Marketing is to be streamlined and the consumer confidence in the food produced in the Czech Republic is to be strengthened. It concerns the domestic market, but also the foreign one, where new territories are to be sought to eliminate for example the effect of Russian ban on food imports. However, main trading partners

are still the neighbouring countries. The increase of spending on science and research could yield positive results that would transform into innovations and productions required by market.

The aforementioned trends and regulations create conditions for a prospect of the division. In the next period it will seek to improve performance and efficiency of the relatively complex and economically differentiated private sphere of food producers. The potential for growth will more open while strengthening the competitiveness of food production and the entire food chain. This can also be helped by aid financed from EU funds and national subsidies.

Food law is mostly created by EU regulations and directives. The regulations are directly applicable, however the directives cannot be directly applicable and must be reflected into national legislation. The Ministry of Agriculture has prepared an amendment to Act no. 110/1997 Coll., On Foodstuffs and Tobacco Products no. 139/2014 Coll., effective from 1/1/2015 with the objective of harmonization and adaptation of the Act to the European regulation. Requirements arising directly from this European regulation were removed from the national legislation and requirements allowed by this regulation to be adopted by the EU Member States by their choice are the subject matter of the aforesaid amendment. Particularly it is information about non-prepacked foods. Furthermore it involves adjustments of competencies of supervisory authorities in catering services. The legislative process will continue. For example, it concerns clarification of the voluntary labelling "Czech Food" and "Made in the Czech Republic" and other designations. For more details see: *http://eagri.cz/public/web/mze/potraviny/znacky-kvality-potravin/ceska-potravina*. It also establishes a special regime for the possibility of donating food through charity and humanitarian organizations. The amendment of the aforesaid Act is directly linked to a preparation of completely new implementing regulations for different types of foods inclusive of tobacco products.

Another important legal standard that applies to foods is the Act no. 50/2016 Coll., which is amending the Act no. 395/2009 Coll., On Significant Market Power in the Sale of Agricultural and Food Products and Its Misuse. This standard had been prepared in the past period by the Office for Protection of Competition and entered into force in 2016 (specifically on the thirtieth day after its announcement, which is associated with the date of 6/3/2016). The purpose of this legal standard is to prevent the abuse of market forces in supplier-customer relationships and prevent the use of prohibited practices for the aforementioned products.

3.

CZ-NACE 11 MANUFACTURE OF BEVERAGES

3.1 DIVISION CHARACTERISTIC

Sorting of CZ-NACE 11 division (the sorting is by classes, this division is not sorted by groups)

- 11.01 Distilling, rectifying and blending of spirits;
- 11.02 Production of wine from grapes;
- 11.03 Production of apple wine and other fruit wines;
- 11.04 Production of other non-distilled fermented beverages;
- 11.05 Production of beer;
- 11.06 Production of malt;
- 11.07 Production of non-alcoholic beverages, bottling of mineral and other water.

The CZ-NACE 11 division Manufacture of Beverages includes an ever wider range of products. This production is dominated by the traditional beer production, which includes the production of malt as well. In the Czech Republic beer is considered to be a national drink and Czech beer bears a protected geographical indication (PGI). Viticulture and winemaking have gone through a phase of renaissance in the Czech Republic. Some recovery is also seen for some spirits. This is also true for non-alcoholic beverages and mineral water, which are demanded by a significant part of consumers. The renaissance of winemaking is of a long-term character and is associated mainly with the Czech Republic's accession to the EU and the associated legislation that pays more attention to the classification of wines. Recently, consumers with regard to their lifestyle incline more to wine, even the male part of the population does so. Certain groups of consumers also prefer non-alcoholic beverages and mineral water, which is also related to the development of motoring.

The manufacture of beverages has a long tradition. This manufacture involves the production of non-alcoholic beverages, production of alcoholic beverages made primarily through a fermentation, and the production of spirits. In terms of spirits, this mainly involves the production of distilled alcoholic beverages, mixed drinks and the production of pure alcohol. In terms of beverages produced through fermentation, this involves the production of wine, inclusive of a sparkling wine and concentrated grape must, mixing, purification of wine and bottling of wine, production of apple wine and other fruit wines, and production of other non-distilled fermented beverages – production of vermouth, etc. This division also includes the aforementioned production of non-alcoholic beverages and the bottling of mineral and other water. The basic indicators, but also the further economic indicators specified in this division are thus generated from all the mentioned productions.

This division does not include the manufacture of products from coffee and tea. The production of beverages is affected by seasonality, which is in context with the development of weather.

3.2 DIVISION DEVELOPMENT

In the Czech Republic the manufacture of beverages with its scope does not belong among the key sectors of the manufacturing industry, however, its level of turnover and value added overtake e.g. Sweden.

The supply sectors involve agriculture – malting barley, grapes etc., but important are also some sectors of the manufacturing industry - machinery, packaging, for example the new shapes of packaging and also the

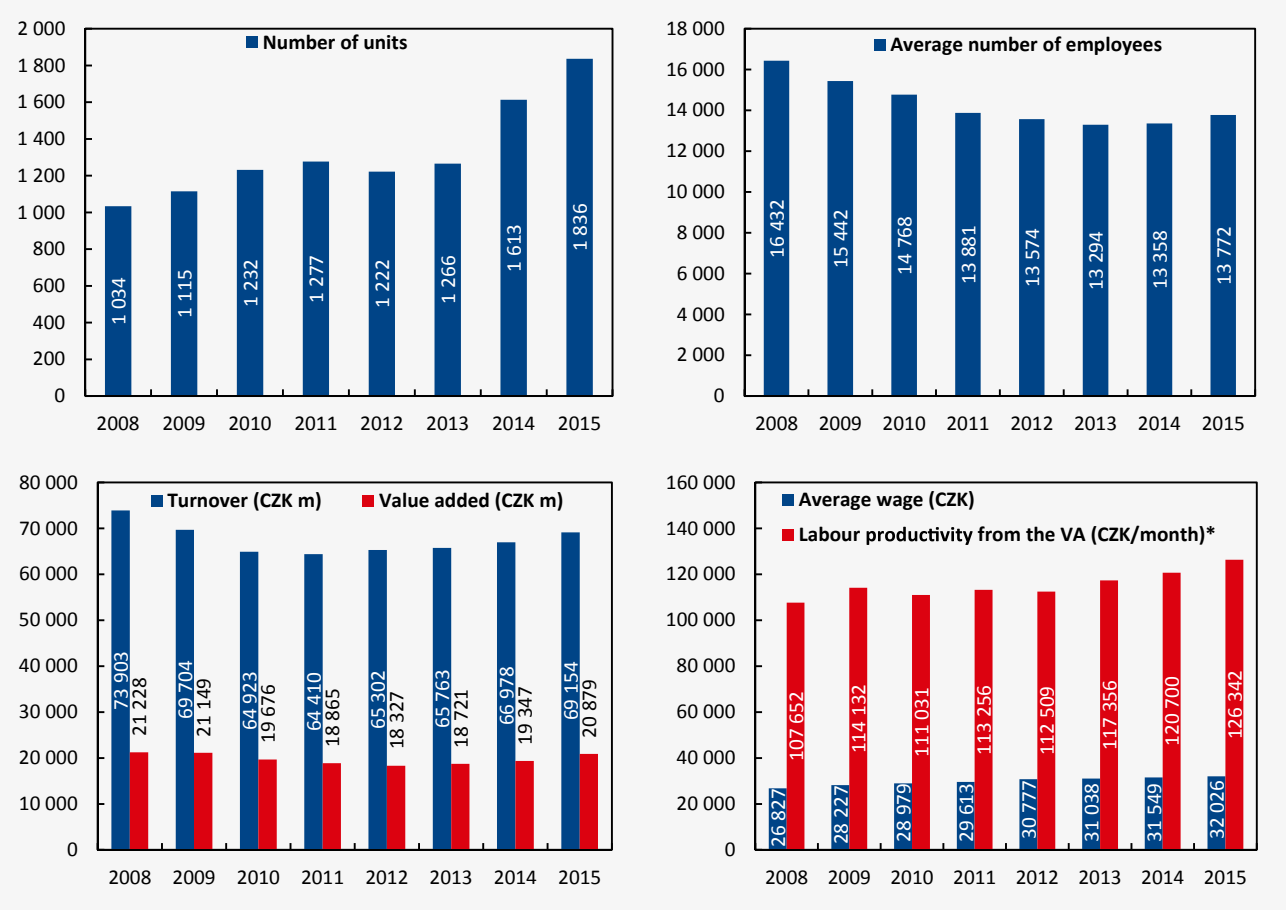
manufacture of food products - canning factories and others. On the utilization side the final consumption by households prevails, furthermore it is the intermediate consumption, catering, restaurants, the manufacture of beverages alone and the manufacture of food products. An important direction in the utilization is also the export.

The manufacturers of beverages and especially major companies owned by foreign capital are strengthening their competitiveness through high quality and marketing inclusive of participation in fairs and exhibitions in order to maintain or win further territories. Smaller companies are expanding the range of beverages on local markets and thus contributing to high domestic consumption per capita, particularly in beer.

3.3 MAIN ECONOMIC INDICATORS

In the reviewed years the main economic indicators saw fluctuations, particularly in sales and value added. Their least favourable development was in 2010 and 2012 as shown in Graph 3.3.1. While the average wage growth was relatively stable, since 2013 a major increase in labour productivity has occurred. In 2013 the decline in employment rate stopped and turned into a modest growth. The increase in the number of enterprises mainly concerns small companies such as small breweries that are located in all regions, and the rise in their numbers is likely to continue.

Graph 3.3.1 – Major economic indicators of CZ-NACE 11 division (2008 = 100%)



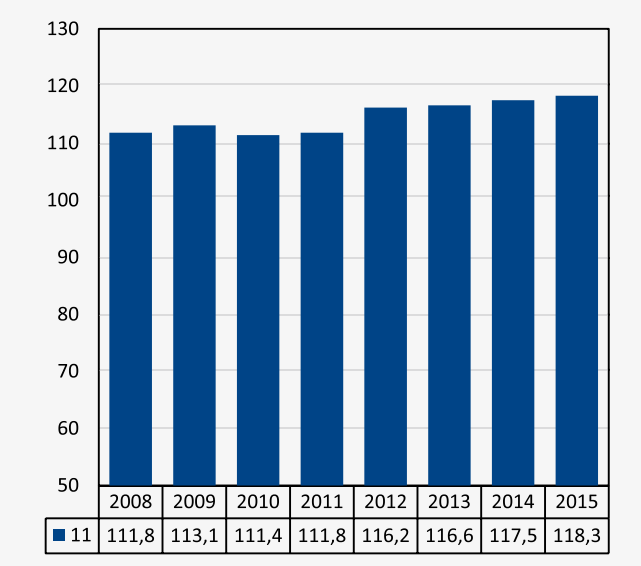
Source: CSO, MIT calculations

** This is a monthly aliquot share calculated from annual data.*

Since 2012, the prices of industrial producers CZ-CPA 11 have recorded a jump in growth that continued in following years at a slower pace (Graph 3.3.2). In 2012, there was basically a full recovery in demand for spirits and even for the more expensive ones which are some guarantee that they have not been tampered with, and other beverage companies have joined this trend in price formation that depends on the market situation.

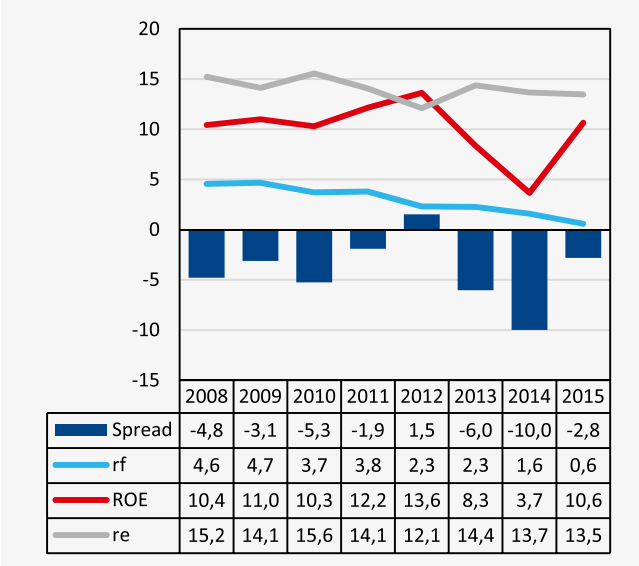
Comparisons of Spread (difference ROE – re), return on equity ROE, the cost of equity re and risk-free rate rf under the financial analysis indicate that the CZ-NACE 11 division shows a negative Spread, which means that the sector did not create values for its owners in the reviewed years with the exception of 2012 (Graph 3.3.3). The positive value in the aforementioned year was affected with an increase in return on equity with the significant drop in assets that increased disproportionately in the following year, which may be associated with acquisition activities in the brewing industry.

Graph 3.3.2 – Price development of CZ-CPA 11 (2005 = 100%)



Source: CSO, MIT calculations

Graph 3.3.3 – Spread (ROE – re) CZ-NACE 11 (in %)

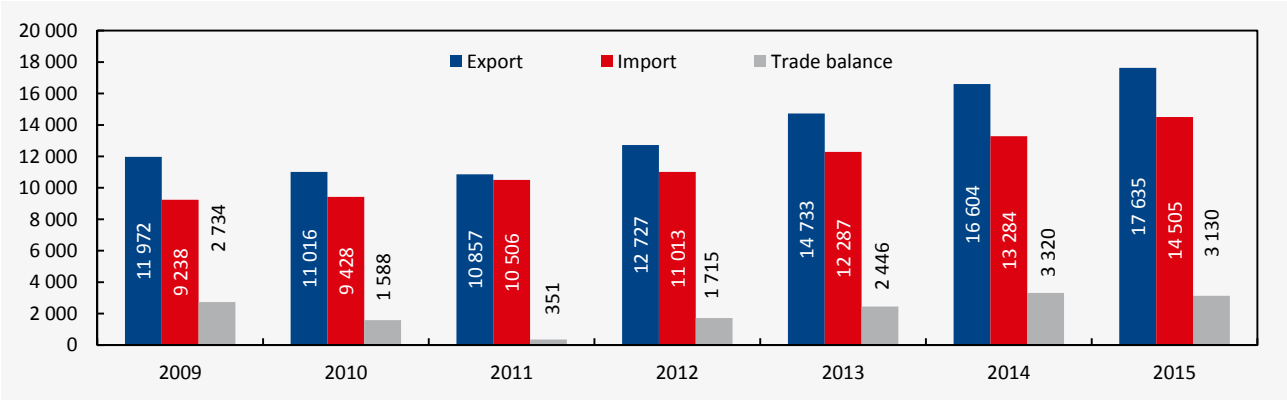


Source: CSO, MIT calculations

3.4 FOREIGN TRADE

3.4.1 DEVELOPMENT OF FOREIGN TRADE

Graph 3.4.1 – Product export, import and balance of foreign trade in CZ-CPA 11 (CZK m)



Source: CSO, data as at 28 February 2016

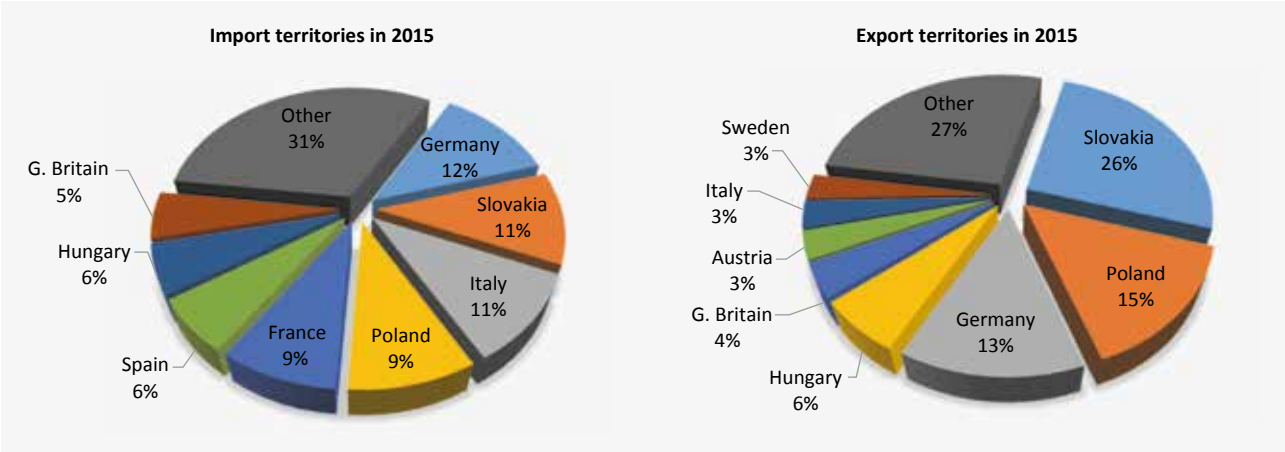
The balance of foreign trade with beverages is consistently positive, although its value has fluctuated in different years (Graph 3.4.1). The positive balance of foreign trade has resulted from the growing volume of export and the pace of its growth since 2012. The major export product is beer. On the contrary, there is no wine self-sufficiency in the Czech Republic and the lack of domestic production of wine is annually resolved with relatively high imports. In calendar year 2015, the Czech Republic imported 1,627,000 hl of wine worth CZK 4.8bn, i.e. almost the same amount as the previous year. Import of white wine amounted to 971,000 hl worth CZK 2.1bn, i.e. 60% of the total import, of which the share of barrelled white wine was 69%. Red wine was imported in the amount of 545,000 hl worth CZK 1.9m, i.e. 34% of the total import realized. For red wine, as in the previous year, the import of bottled wine (54%) moderately prevailed. Also in 2015, as well as in 2014, the largest supplier of wine to the Czech Republic was Spain with a delivery volume of 529,000 hl (33% of the total import), which rose by 8% year on year, worth CZK 769.6m (+7%). Year on year Italy delivered to the CR less wine (340,000 hl), its financial value, however, was higher (CZK 1,126.6m). Other major imports of wine were made from Hungary (227,000 hl) and Slovakia (107,000 hl).

3.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The territorial structure of foreign trade with CZ-CPA 11 products for the year 2015 shows that most of them were imported from Germany (a 12% share), followed by Slovakia and Italy (both 11%), Poland and France (both 9%). For exports in 2015, the main territory was Slovakia with a share of 26%, Poland with 15% and Germany with 13%. These and further data are shown in Graph 3.4.2.

The structure of import territories in recent years has not changed so much. The same applies to export territories as well.

Graph 3.4.2 – Foreign trade with CZ-CPA 11 products



Source: CSO, data as at 28 February 2016

3.5 DIVISION SUMMARY AND PROSPECTS

The manufacture of beverages has a long tradition in the Czech Republic. It represents a significant production and market segment with an overlap on foreign territories. The production of beer is dominant. According to the Czech Beer and Malt Association, in 2016 the production amounted to a total of 20.1m hl of beer, i.e. a year-on-year increase by 2.2%. Exports to foreign countries reached even 4.1m hl, which is a year-on-year increase by more than 13.3%. The average beer consumption per capita/year in the last six years was fluctuating between 143 to 146 litres.

The opposite situation is in wine. According to the CSO, in the winegrower's year 2015/16 (the year is from 1/8 to 31/7) the domestic production reached 800,000 hl at a year-on-year index of 209.4. Imports of raw materials for wine amounted to 16,000 hl (a year-on-year index of 96.9). Wine consumption in the reference year amounted to 1,985,000 hl and exports of 200,000 hl. The self-sufficiency is reported as 40.3%.

For distillates and spirits, the situation has stabilized in volume upon assortment changes. Certain changes occur in direction towards higher consumption of more expensive spirits and upon expansion of assortment of spirits traditionally produced in certain regions which is also related to a sufficiency of raw materials for its manufacturing, particularly the suitable fruit or herbs. Non-alcoholic beverages and mineral water are used especially in the summer season and throughout the year by consumers who prefer this type of beverage for various reasons.

In the reviewed years, the main economic indicators saw fluctuations, particularly in sales and value added. The years 2010 to 2012 proved critical in terms of performance and the market. The indicator of value added per employee, however, has shown a recovery since 2013 and development of the average wage indicator shows it is growing. The prospect of this sector is connected on one side to the customer market, but also to the supplier market, particularly suppliers of agricultural raw materials.

4.

CZ-NACE 13 MANUFACTURE OF TEXTILES

4.1 DIVISION CHARACTERISTIC

CZ-NACE 13 division sorted by groups

- 13.1 Preparation and spinning of textile fibres and yarn;
- 13.2 Weaving of textiles;
- 13.3 Finishing of textiles;
- 13.9 Manufacture of other textiles.

Depending on the type of processed raw materials the manufacture of textiles is divided into the cotton, silk, linen and wool manufactures. The production of most textile companies has more technology stages. It involves production fields like spinning, weaving, finishing and manufacturing of other textiles. The textile industry belongs to sensitive sectors that are facing stiff competition on the global market, especially from third countries, but nevertheless the CR textile industry is export-oriented.

From the perspective of the individual selected economic indicators and the number of existing production units, the group 13.9 clearly dominates and involves the manufacture of nonwoven, technical and industrial textiles. Its position is dominant in all monitored indicators, mainly in the number of production units (Table 4.1.1).

From an overall perspective, one can say that the economic results are significantly affected by competitive effects of imports from abroad and, at the same time, the sector is also subject to fashion trends. This is evidenced by the fact that the year-on-year decline in the total number of production units was 12.4% in 2015. On the contrary, during the reviewed period 2008 to 2015 there was an increase in the number of production units by 7.0%. However, this development is significantly distorted by the increase in the number of production units in the group NACE 13.9 Manufacture of other textiles, where the number of production units increased up to 2,976 in years 2008 to 2012, which was the increase of their number by about 58.6%. On the contrary, in 2013 to 2015 there was a decrease in the number of units by 19.5%. In 2015, a total of 2,208 production units were involved in the manufacture of textiles, among which prevail strongly micro-businesses, small manufacturing companies, small entrepreneurs and self-employed persons. Their economic success and failure then result in fluctuations in the number of production units in the reviewed period.

Table 4.1.1 Shares of groups in CZ-NACE 13 division in 2015 (%, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
13.1	9.1	8.5	7.7	7.7	11.2	8.7	8.8	2.0
13.2	24.3	23.2	22.0	22.5	30.1	26.7	23.1	2.5
13.3	3.5	1.7	2.4	2.3	0.2	1.8	4.0	2.1
13.9	63.1	66.6	68.0	67.5	58.5	62.8	64.1	93.3

Source: CSO, 2015, MIT calculations

4.2 DIVISION DEVELOPMENT

After the 2008-2009 period of crisis that essentially affected the entire manufacturing industry we can say about the monitored time series that it was a period of textile production booming because the sector proved high resilience and flexibility. It was internally restructured and the major manufacturers stabilized and thus also the prestige of the sector of manufacture of textiles gradually grew. In a number of regions the major companies belong to large employers and are also an example of the entrepreneurial skills and social approaches to their employees. Turnovers of leading companies are growing by 10.0% per annum and it is not unusual that these companies are investing sums of about CZK 100m per year in the production. Those are companies like VEBA Broumov, JUTA Dvůr Králové n. Labem, Nová Mosilana Brno, PEGAS Znojmo, LANEX Bolatice, Kordárna Velká n. Veličkou and many others.

A prerequisite for this positive development is the effective utilization of research, development and innovation potential. The evidence of such utilization is the development of technical textile, which in recent years has grown the most and fastest, and we can say that it has changed the overall character of this division. Today the technical textile represents a significant majority of manufacturing and sales of textile production (70.0%) and with the way as new markets are getting open to new applications of the technical textile its share in the future will continue to grow.

One of the ways how to increase the number of innovations or initiate the creation of new companies in the industry or attract investment into the sector is certainly a cluster. For the textile industry in the Czech Republic undoubtedly the CLUTEX cluster is relatively of great importance – it is a technical textile cluster that had been established in 2006 and in the same year was awarded the "Cluster of the Year" and was also announced as a successful project of the programme "Clusters of the Operational Programme Entrepreneurship". The CLUTEX cluster is a member of an international project TEXTILE 2020 whose mission is to create a European cluster focused on advanced textile materials. The cluster's activities are focused primarily on projects in areas of research, development and innovation, human resource development and promotion.

4.3 MAIN ECONOMIC INDICATORS

Main economic indicators of the division are significantly affected by the group CZ-NACE 13.9 Manufacture of other textiles involving the production of nonwovens and technical textiles that accounts for two thirds of value added and sales in the division.

From 2013 the number of units inside the division began to reduce, in 2015 there was the biggest year-on-year decrease by 13.0% in the group CZ-NACE 13.3 Finishing of textiles and furthermore by 12.7% in the group CZ-NACE 13.9 Manufacture of other textiles. The remaining groups saw a decrease of the number of units by about 5%. In terms of staff headcount, however, in 2015 most of the division groups saw a year-on-year growth. The biggest increase was in the group CZ-NACE 13.1 (by 10.5%), only in the group CZ-NACE 13.2 there was a decrease in their number (by 4.7%). The division as a whole then saw an increase of the staff headcount by 2.9%.

In 2015, turnover of the entire division increased by 3.5%, the biggest increase by 29.7% was in the group CZ-NACE 13.1, while in the group CZ-NACE 13.2 it decreased by 10.0%. The division's value added is slightly down 0.5% year on year, mainly thanks to the group CZ-NACE 13.2 (down 13.4%), while other groups grew around 4%.

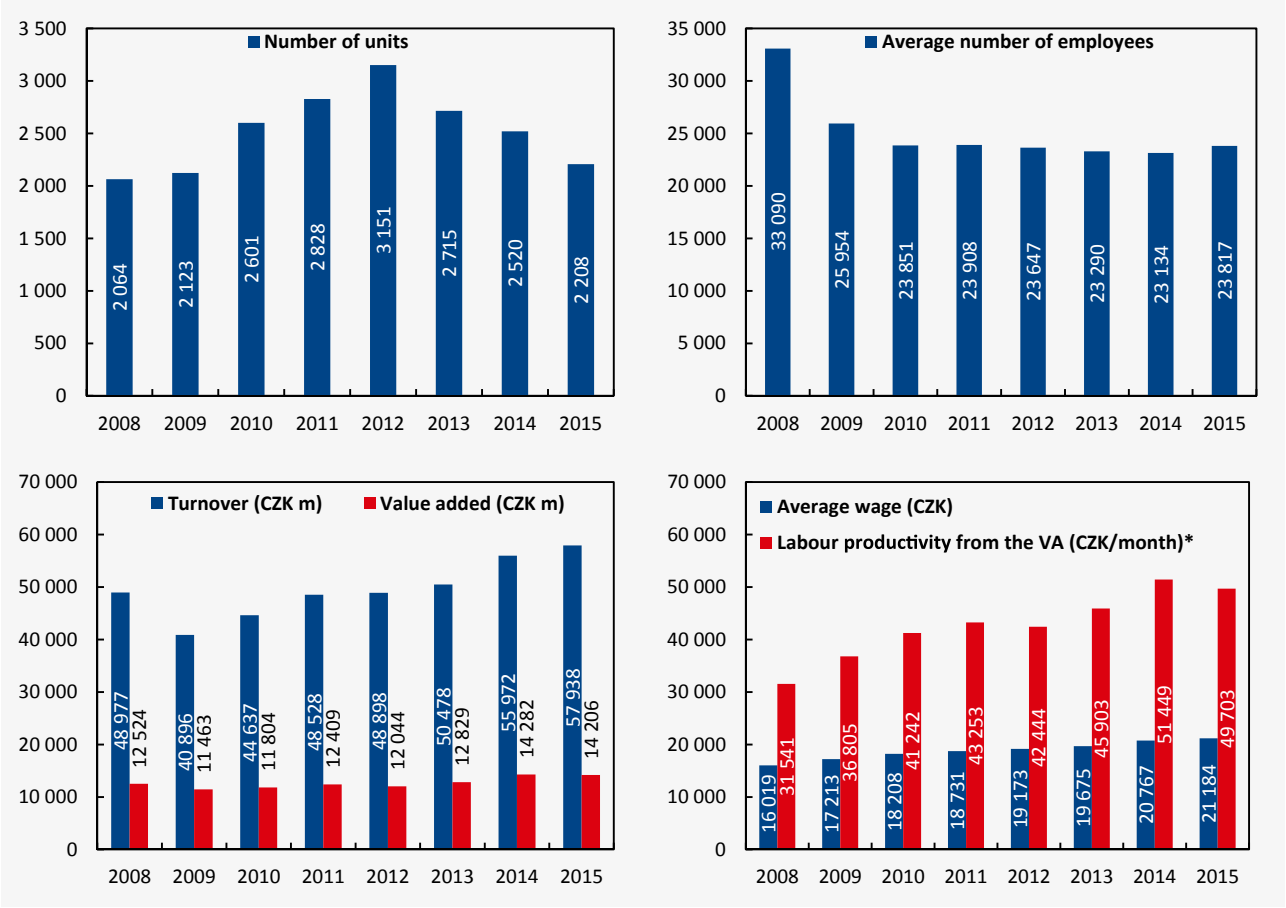
A year-on-year growth of employment rate with a decrease in value added in 2015 was negatively reflected in the labour productivity which was down 3.4% for the division. Only in the group of CZ-NACE 13.3 it was up 0.9%.

The average wage in the division grew by 2.0% year over year and amounted to CZK 21,184, while only the group CZ-NACE 13.2 saw its decrease by 4.4%.

When considering the development in the CZ-NACE 13 division during the reviewed period 2008 to 2015 we can say the development was relatively positive as the staff headcount dropped by 28%, however sales rose by 16.0%, value added by 13.4%, labour productivity by 58.0% and the average wage by 32.2% (Graph 4.3.1).

At the same time, it should be also noted that manufacturing units with 20 and more employees, there were 184 in 2015 that means by 2.2% more than in 2014, were crucial for the production of financial results of the entire division, and of them then the manufacturing units with 50 or more employees, there were 102 in 2015. In terms of individual indicators, the manufacturing units with 20 or more employees account for 91.6% of R&D sales, 90.5% of value added and 89.4% of staff headcount.

Graph 4.3.1 – Major economic indicators of CZ-NACE 13 division (2008 = 100%)

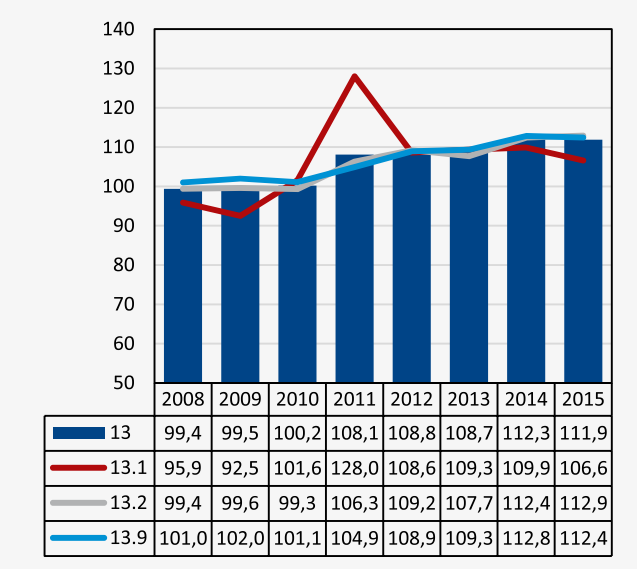


Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

Over the reviewed period the level of producer prices for CZ-CPA 13 commodities continuously increased in all production groups of CZ-CPA 13 and copied the production output with minor fluctuations. This development also reflected to some extent the increase in input prices and energy prices. For a long time the CZ-CPA 13.9 goods, which also include products from non-woven textiles and technical textiles, have seen a price growth. The most problematic is then the price development of products of CZ-CPA 13.2 Woven fabric that is most affected by imports of cheap materials (Graph 4.3.2).

In the development of the return on equity (ROE) there has been a significant improvement of its level since 2010, and it maintains practically a constant value despite a slight fluctuation. A noticeable decrease of risk since 2014 has contributed to the fact that negative values of Spread indicator in 2014 and 2015 edged to the threshold of positive values (Graph 4.3.3).

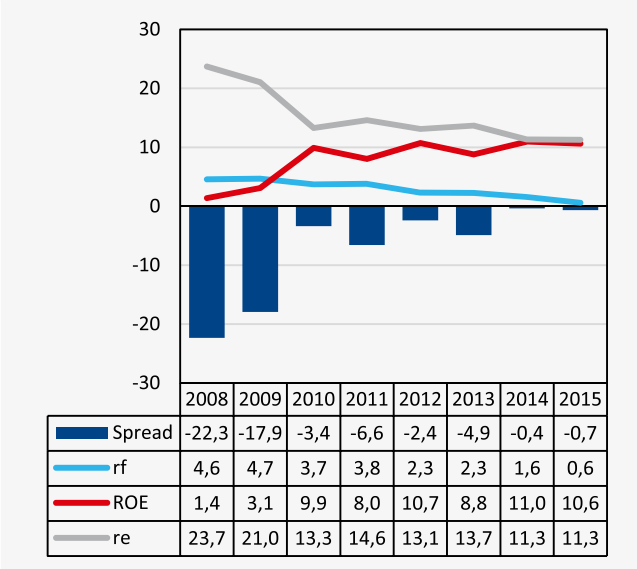
Graph 4.3.2 – Price development of CZ-CPA 13 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
13	99,4	99,5	100,2	108,1	108,8	108,7	112,3	111,9
13.1	95,9	92,5	101,6	128,0	108,6	109,3	109,9	106,6
13.2	99,4	99,6	99,3	106,3	109,2	107,7	112,4	112,9
13.9	101,0	102,0	101,1	104,9	108,9	109,3	112,8	112,4

Source: CSO, MIT calculations
Note: Group 13.3 is not monitored

Graph 4.3.3 – Spread (ROE – re) CZ-NACE 13 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-22,3	-17,9	-3,4	-6,6	-2,4	-4,9	-0,4	-0,7
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	1,4	3,1	9,9	8,0	10,7	8,8	11,0	10,6
re	23,7	21,0	13,3	14,6	13,1	13,7	11,3	11,3

Source: CSO, MIT calculations

4.4 FOREIGN TRADE

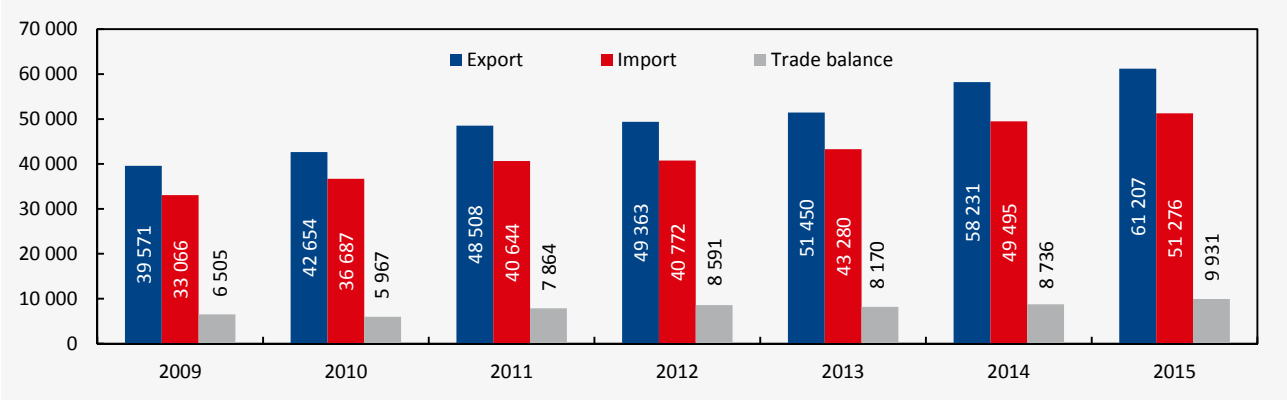
4.4.1 DEVELOPMENT OF FOREIGN TRADE

For domestic producers, the Czech Republic is a relatively small market for the sale of textile and semi-finished products. If producers want to reach their full capacity and to compete with other European producers, they have to try to break through abroad. We can say that they are quite successful, not only by virtue of the development of new and high-quality textile products, but also thanks to the production cooperation with Western partners. It is also significantly supported by the entry of foreign capital. Exports and imports for the period 2009 to 2015 show an increasing trend, when the prevailing export creates a positive trade balance of CZ-CPA 13 commodities (Graph 4.4.1).

In 2015 exports rose by 5.1% year over year, imports by 3.6% and the positive trade balance by 13.7%.

From the perspective of foreign trade by individual groups in 2015, the group CZ-CPA 13.9 had the largest share of 56.9% in the total exports and even of 71.0% in imports, so in this group imports prevailed over exports with a negative trade balance of CZK -1.6bn.

Graph 4.4.1 – Product export, import and balance of foreign trade in CZ-CPA 13 (CZK m)

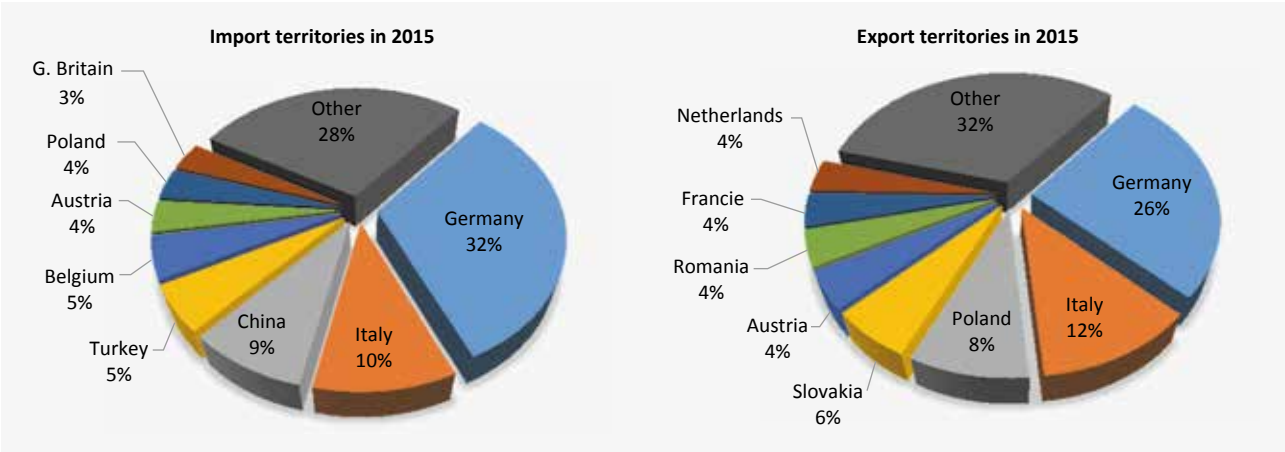


Source: CSO, data as at 28 February 2016

4.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Among the biggest foreign purchasers are Germany, to which goods worth CZK 15.8bn were exported in 2015 (up 6.0% year on year), Italy CZK 7.1bn (the same level as in 2014), Poland CZK 5.3bn (up 3.1%), Slovakia CZK 3.6bn (up 5.9%) and Austria CZK 2.7bn (up 15.7%).

Graph 4.4.2 – Foreign trade with CZ-CPA 13 products



Source: CSO, data as at 28 February 2016

In 2015, the most textile goods were imported from Germany for a total of CZK 16.5bn (by 6.5% more than in 2014 and at the same time the import volume exceeded the export volume by 4.0%), from Italy for CZK 5,3bn (down 4.5%), from China for CZK 4.4bn (down 4.3%), from Turkey for CZK 2.8bn (up 8.5%) and from Belgium for CZK 2.6bn (by 15.5% more than in 2014).

In 2015, total turnover with Russia despite the announced EU embargo was CZK 1.04bn, i.e. by 6.4% higher than in 2014. The export volume in 2015 was by 7.3% higher than in 2014. The import volume was by 26.1% higher, even though it was only at the level of about CZK 55.4m.

In 2015, total turnover with Ukraine was at the level of about CZK 297.9m, i.e. by about 16.5% lower than in 2014. Exported textile goods were worth about CZK 283.7m, i.e. by about 19 3% less than in 2014, and imported textile goods were worth about CZK 14.2m, i.e. by about 269.4% more than in 2014.

4.5 DIVISION SUMMARY AND PROSPECTS

The economic results indicate that the textile industry has boomed in recent years. Sales and value added in 2013 exceeded their pre-crisis level of 2008.

The textile industry in the EU as well as in the Czech Republic is one of the traditional manufacturing industries. It is also a sensitive sector that on the global market is facing strong competition from third countries, especially Asian countries, as well as the unfavourable economic situation because textile and clothing companies are among the entities that tend to be most vulnerable to the recession. The textile and clothing products are present in all areas of life.

A long-term vision until 2020 – a transformation of the current European textile and clothing industry in a stable and competitive player is contained in the EU paper "European Technology Platform for the Future of Textiles and Clothing (Textile ETP)". It identifies three major development trends of this manufacture in Europe:

- The transition from commodities to the manufacture of specialised products with help of high-tech processes, utilization of new fibres and textiles with high functionality adapted to the purpose of use, utilization of highly flexible technology. It focuses on the development of smart textiles with the use of electronic components, while maintaining easy maintenance by washing and ironing.
- The utilization and extension of textiles as new (construction) materials in different industrial sectors and user areas.
- The end of the era of mass production of textile products and move to industrial production focused on customers, their needs, a flexible response to the demand with the use of smart logistics, distribution and service.

The Programme of Czech Technology Platform for Textiles (CTPT), founded in 2008, is based on the European Technology Platform. It focuses on two supporting innovative objectives:

- Objective 1 – Innovation on the input side to the textile and clothing industry: innovation in the area of textile materials (fibres, yarns, textile structures, etc.), innovation in the area of textile technology, processes, multidisciplinary approach to research and development of textile materials.
- Objective 2 – Innovation on the product output side: on the basis of outputs from Objective 1 and the collaboration with other fields – the development of new textile products; development of applications of the products in medicine, transportation, and other non-traditional areas and looking for new areas for textile applications.

For faster innovation and improvement of the economic efficiency of research and development in the textile and clothing industry, it is necessary to focus on cooperation with subsequent user fields such as construction, military equipment, protective equipment (both personal and professional), health care, sports and outdoor equipment. In all the aforesaid areas there are requirements to ensure new functional features of textiles or combinations thereof.

5.

CZ-NACE 14 MANUFACTURE OF WEARING APPAREL

5.1 DIVISION CHARACTERISTIC

CZ-NACE 14 division sorted by groups

- 14.1 Manufacture of wearing apparel, except fur apparel;
- 14.2 Manufacture of articles of fur;
- 14.3 Manufacture of knitted and crocheted apparel.

Clothing manufacture is labour-intensive with a high share of manual labour on the product. For the manufacture of clothing, the creation of fashion collections depending on season and customer's requirements is typical. Manufacturing in small series prevails and made-to-order apparel increasingly finds its use inclusive of related services such as fashion consulting or clothing adjustments. Czech clothing industry as well as the textile industry is export-oriented, for example companies with 50 and more employees accounted for direct export revenues by nearly 72.0% of the total revenues.

In terms of selected economic indicators and the number of existing units, the dominant group is clearly the group 14.1 Manufacture of wearing apparel, except fur apparel (Table 5.5.1). Its position is decisive in all monitored indicators.

Overall, we can say that in the division there is a significant trend of increasing number of small production units and micro-companies. In 2015, a total of 11,494 companies were involved in the manufacture of clothing, i.e. by 1.9% more than in 2014 and by 39.2% more than in 2008. Employment rate in the reviewed period significantly decreased and as late as 2015 there was a year-on-year growth for the first time and it made 4.3%. The total staff headcount of 16,032 was down 35% against 2008.

Table 5.1.1 Shares of groups in CZ-NACE 14 division in 2015 (%, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
14.1	90.4	90.7	91.9	91.7	87.8	86.6	91.6	92.1
14.2	0.4	0.7	0.5	0.5	1.6	3.0	0.5	1.4
14.3	9.1	8.6	7.7	7.9	10.6	10.3	7.9	6.5

Source: CSO, 2015, MIT calculations

5.2 DIVISION DEVELOPMENT

Like the entire manufacturing industry also the garment industry was affected by the crisis in 2008 and 2009. Following a strong fall in sales of own products and services in 2009, their volume stagnated until 2013, when they revived, and in 2015 they got above the level of 2008. In terms of the number of production units the development had an opposite trend in the clothing industry than in the textile industry, where the number of entities dropped, while it grew in the clothing industry.

In the clothing industry sector, in addition to small production units, particularly such companies succeeded that started to apply the so-called North-European business model. This consists in the fact that companies retain control of important processes (such as design, trade, finance, marketing, quality, etc.) and the manufacture is moved to more cost-effective regions. However, practically none of the former important clothing companies of the socialist era had transferred to that model and therefore ceased to exist. On the other hand, new companies were established that have taken this model and are successful. Those companies are Blažek, Pietro Filipi, Hannah, Alpine Pro, Sportisimo, Husky and others.

One major problem is the deterioration of the age structure of employees and the negative trend in education, especially in the field of technical education. Loss of available workers is already now felt by many companies in the clothing manufacturing sector and this fact is becoming more urgent with the continuing economic growth.

5.3 MAIN ECONOMIC INDICATORS

The main economic indicators of division CZ-NACE 14 Manufacture of wearing apparel are affected by economic performance of the group NACE 14.1 Manufacture of wearing apparel, except fur apparel because it accounts in average for 90.0% of the reported values.

Like in the textile industry also in the industry of manufacture of wearing apparel the development of economic results is significantly affected by manufacturing companies with 20 and more employees. Although they amount to only 1.5% of the total number, they account for 40.1% in total sales, 54.7% in value added and 63.7% in staff headcount.

If we look at the development in various groups in terms of the number of production units, we can say that their number is growing only in the group CZ-NACE 14.1, however, in other groups it has rather a fluctuating trend. In the group CZ-NACE 14.2 during the reviewed period 2008 to 2015, there was the largest number of production units in 2013, then the number strongly dropped, but in 2015 the number of companies again grew by 2.6% year over year. In the group CZ-NACE 14.3 the number of production units was growing until 2012, in the following years, however, was dropping. In 2015 there was a year-on-year decrease by 16.1% compared to 2014.

The total staff headcount in the group CZ-NACE 14 in 2015 was lower by 35.1% than in 2008. In terms of staff headcount, in 2015 the group CZ-NACE 14.1 succeeded to stop the decrease and to grow 5.3% year over year. The remaining two groups show a steady decline in staff headcount, i.e. CZ-NACE 14.2 (down 8.3%) and CZ-NACE 14.3 (down 5.0%) against 2014.

When evaluating the CZ-NACE division according to main indicators monitored, we can say that they copy the development of the indicator of the number of production units. Total turnover of CZ-NACE 14 division in 2015 was up 1.8% against 2008, with a year-on-year growth of 14%. Turnover of the group CZ-NACE 14.1 during the reviewed period 2008 to 2015 saw a decline in the first two years, but since 2010 has continuously increased, and in 2015 there is a year-on-year increase of its value by 15.4%. Turnover of the group CZ-NACE 14.2 had a fluctuating trend and in 2015 showed a decrease by 8.2% and its value was far below the level shown in 2008. Turnover of the group CZ-NACE 14.3 during the reporting period had also a fluctuating trend, but in 2015 it saw a year-on-year increase by 1.7%.

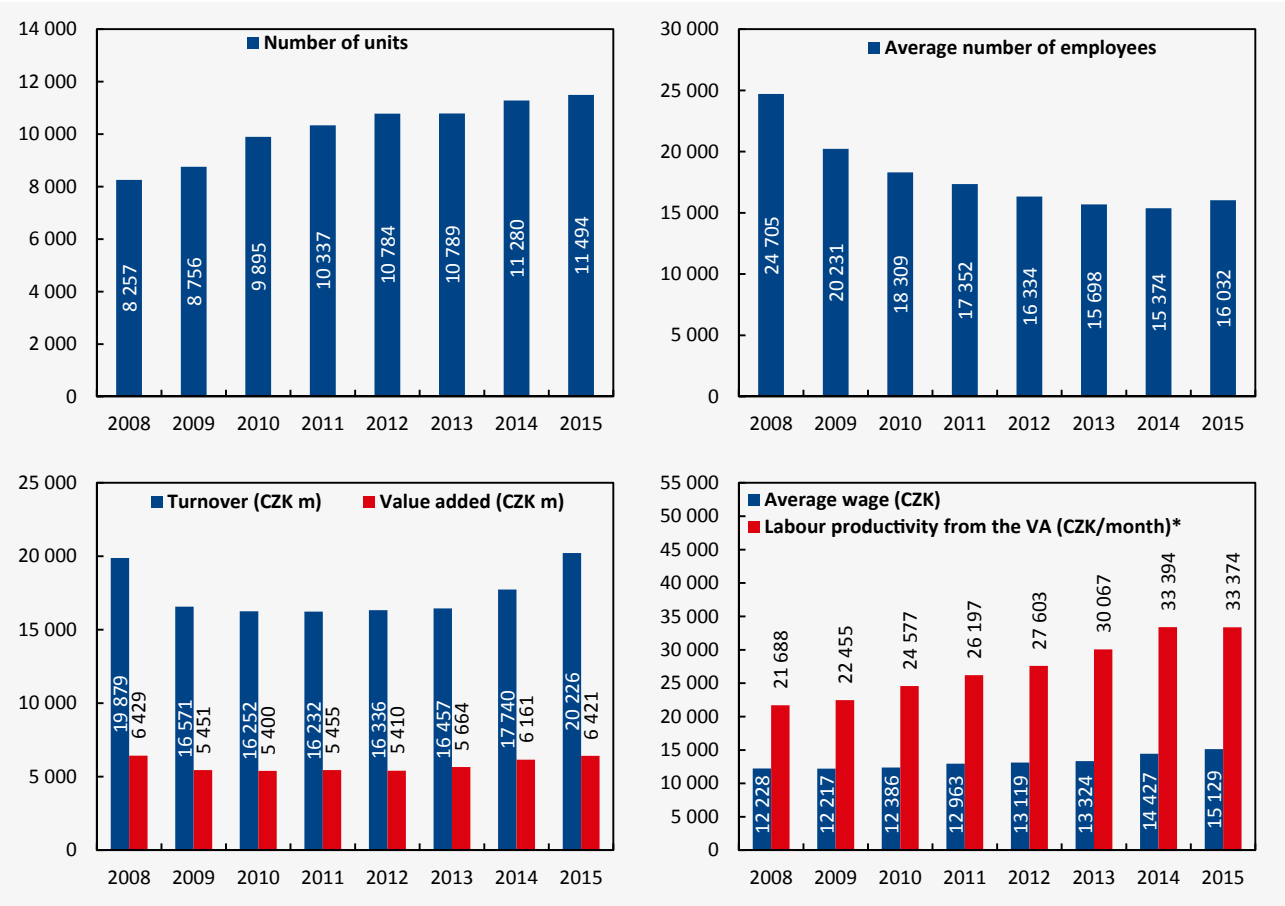
Value added in 2015 edged its level of 2008. During the reviewed period it fluctuated in all three groups of the division. In the group CZ-NACE 14.1 in 2015 it grew by 5.4% year over year, on the contrary in the group CZ-NACE 14.2 there was a year-on-year decline of 4.6% as well as in the group CZ-NACE 14.3 (down 6.3%).

Thanks to falling employment rate the labour productivity had an upward trend in the reviewed period 2008 to 2015, however slightly dropped in 2015 while restoring the growth of employment rate. In the group

CZ- NACE 14.1 in 2015 it grew 0.2% year on year, in the group CZ-NACE 14.2 4.3% and in the group CZ-NACE 14.3 there was a year-on-year drop of 1.3%. However, in 2015 its total value was up 53.9% against 2008.

In 2015 the average wage in CZ-NACE 14 saw a value of CZK 15,129, i.e. up 23.7% against 2008. The group CZ-NACE 14.1 saw its year-on-year increase of 5.0% in 2015, on the other hand the group CZ-NACE 14.2 saw its decline by 1.6% and the group CZ-NACE 14.3 saw its increase by 5.4%.

Graph 5.3.1 – Major economic indicators of CZ-NACE 14 division (2008 = 100%)

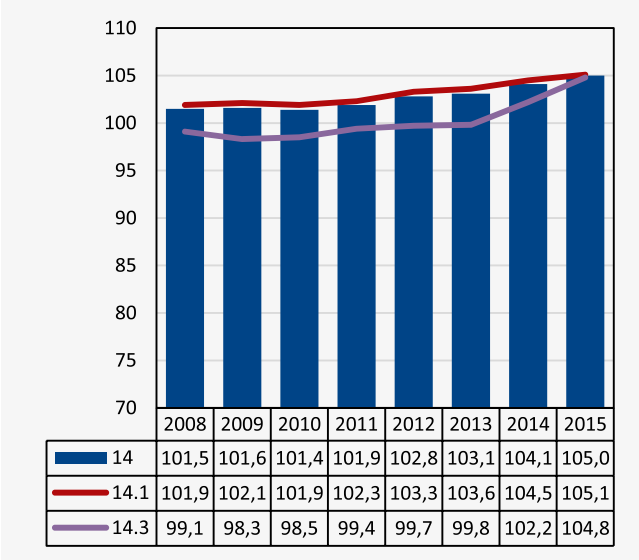


Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

Producer prices of CZ-CPA 14 commodities during the reviewed period had a growth trend. Better results in the price development over the whole reviewed period were seen by the product group CZ-CPA 14.1 Manufacture of wearing apparel, except fur apparel. In the last two years there was a faster growth of prices in the group 14.3 (Graph 5.3.2). This development also reflects to some extent the increase in input prices.

In the development of financial results in CZ-NACE 14 division a paradoxical development occurred when the return on equity began grow dramatically upon entering a period of crisis, which together with the decrease in risk has led to relatively high positive values of Spread since 2010. The return on equity and Spread reached the highest level in 2012, in the following years a slight increase in risk was reflected in the reduction of these high positive values (Graph 5.3.3).

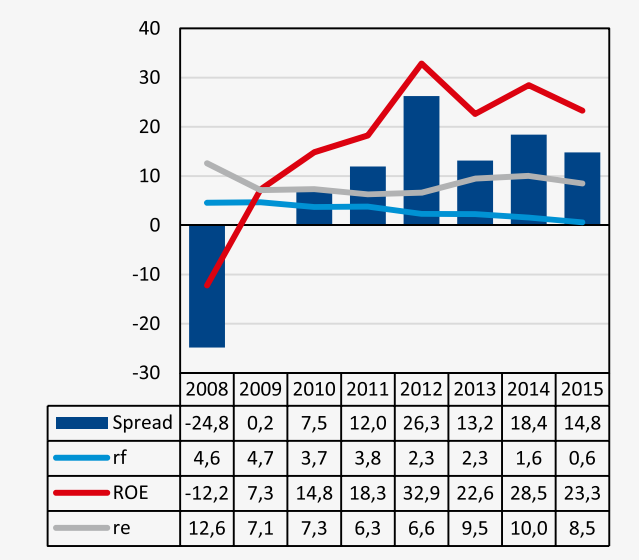
Graph 5.3.2 – Price development of CZ-CPA 14 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
14	101,5	101,6	101,4	101,9	102,8	103,1	104,1	105,0
14.1	101,9	102,1	101,9	102,3	103,3	103,6	104,5	105,1
14.3	99,1	98,3	98,5	99,4	99,7	99,8	102,2	104,8

Source: CSO, MIT calculations

Graph 5.3.3 – Spread (ROE – re) CZ-NACE 14 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-24,8	0,2	7,5	12,0	26,3	13,2	18,4	14,8
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	-12,2	7,3	14,8	18,3	32,9	22,6	28,5	23,3
re	12,6	7,1	7,3	6,3	6,6	9,5	10,0	8,5

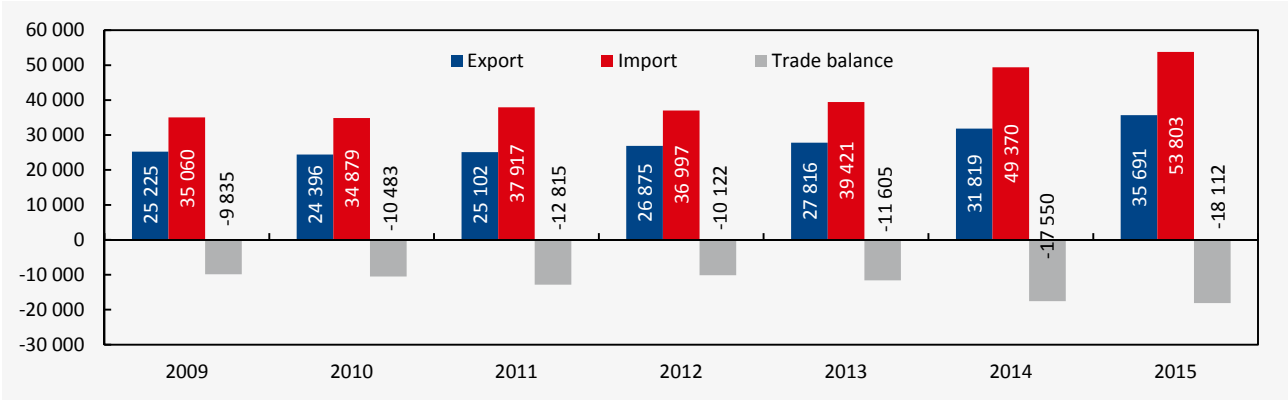
Source: CSO, MIT calculations

5.4 FOREIGN TRADE

5.4.1 DEVELOPMENT OF FOREIGN TRADE

In the years 2009 to 2011 the value of exports of CZ-CPA 14 goods stagnated and in the following years began to increase its pace. However, the value of imports was higher and particularly in 2014 and 2015 grew faster than the value of exports, which deepened the negative trade balance (Graph 5.4.1). The predominance of imports over exports of the CZ-CPA 14 division commodities is associated with the growing purchasing power of the population. Negative impact on the overall trade balance has been consistently posed by China (CZK -14.8bn, i.e. up 11.3% against 2014), Bangladesh (CZK -7.2bn, i.e. up 33.3%), Turkey (CZK -4.0bn, i.e. up 8.9%) and India (CZK -1.7bn).

Graph 5.4.1 – Product export, import and balance of foreign trade in CZ-CPA 14 (CZK m)



Source: CSO, data as at 28 February 2016

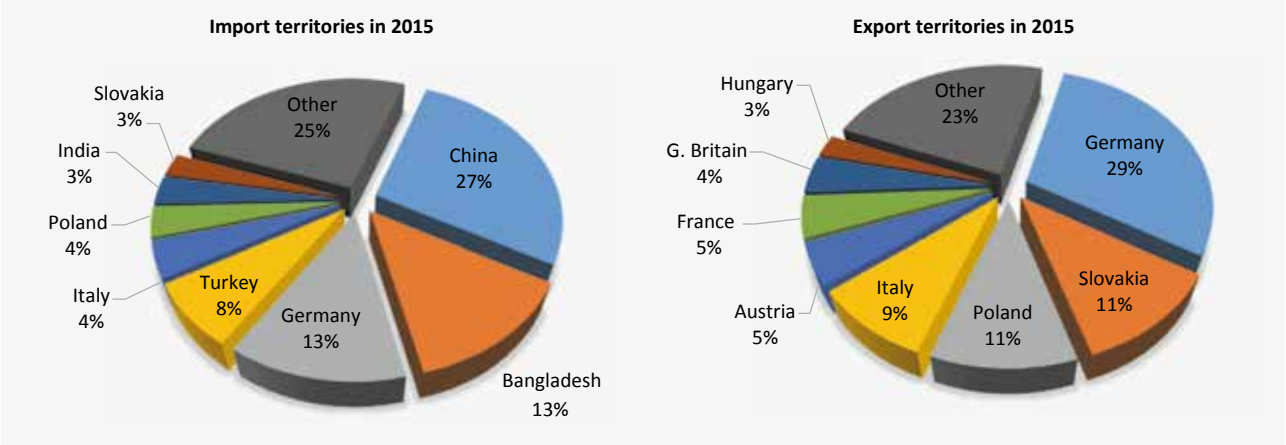
5.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Among the biggest foreign purchasers are Germany, to which goods worth CZK 10.5bn were exported in 2015 (i.e. up 18.0% against 2014), Slovakia CZK 4.1bn (up 2.5%), Poland CZK 3.8bn (down 13.6%) and Italy CZK 3.2bn (up 18.5%).

In 2015, the most CZ-CPA 14 goods were imported from China, for a total of CZK 14.8bn (i.e. up 11.3% against 2014), from Germany for CZK 6.9bn (i.e. up 16.9%), from Bangladesh for CZK 7.2bn (i.e. up 33.3%), from Turkey for CZK 4.0bn (i.e. up 5.3%) and from Italy for CZK 2.3bn (i.e. up 4.5% against 2014).

In trade with Russia the announced embargo starts to be reflected. Turnover of CZ-CPA 14 commodities with Russia was at the level of CZK 377.6m in 2015, i.e. down 26.4% against 2014. At the same time the value of exports in 2015 was down 29.2% against 2014, on the other hand the value of imports was only at the level of CZK 17.3m, but this was more than a fourfold increase against 2014.

Graph 5.4.2 – Foreign trade with CZ-CPA 14 products



Source: CSO, data as at 28 February 2016

5.5 DIVISION SUMMARY AND PROSPECTS

The clothing and textile industries of the EU and also the Czech Republic are an important part of the European manufacturing industry and affect the economic and social situation in many EU-28 regions. Numerous EU studies prove that the European clothing industry is a sector with the highest degree of creativity and will continue to affect the EU lifestyle in the future as well. Clothing and fashion are among the largest categories of consumer goods, i.e. also one of the reasons why almost all EU member states inclusive of the Czech Republic maintain their clothing and textile manufacture. Clothing has also its strategic importance and significant funds have been invested into its development particularly on the market of work and army apparel. Nevertheless investments into the Czech manufacture have a long-term declining trend. In 2014, investments into the manufacture of clothing reached only 37.3% of the value of investments in 2008.

According to Euratex data *(the European Apparel and Textile Organization, which creates a favourable environment for the manufacture of textile and clothing products within the European Union)* more than 120,000 companies existed in the EU clothing industry in 2015, up 0.6% against 2014, which employed over one million people and achieved total sales of more than EUR 78.7bn. Compared to 2014, employment rate in clothing manufacture in the EU remained at the same level and turnover increased by more than 3.1%. Total exports of clothing products by the EU-28 in 2015 amounted to EUR 22.7bn and in comparison with the previous year increased by 4.1%. Imports of clothing by the EU-28 grew by 10.1% to EUR 80.8bn. The trade balance of the EU-28 with clothing products is highly negative, in 2015 the foreign trade balance amounted to EUR -58.1bn which represents a year-on-year increase by 12.6%. In terms of the EU-28 foreign trade territorial structure in 2015, similarly to 2013, the five main purchasers included Switzerland, Russia, USA, Hong Kong and Japan. Most of the EU-28 garment industry purchasers saw a growth in turnover, with the exception of Russia, where it was down 29.0%. Imports from China into the EU-28 were up 5.6% in 2015, imports from Bangladesh into the EU-28 were up 23.6%.

The main partner in foreign trade with CZ-CPA 14 products still remains Germany with a 39.0% share of the total turnover of clothing products, therefore the further development of the CR clothing industry will depend largely on developments in the German clothing business, but also in other EU countries, whose economies are also currently accelerating. Important is also whether our clothing companies will succeed to export products to markets outside Europe.

The future of Czech clothing industry will much depend on further development of its competitiveness. It is still true that to achieve the increase it is necessary to focus mainly on:

- The production of products with higher value added via introduction of results of research, development and technology and non-technology innovations into production in small series, with modifications according to the wishes and requirements of customers.
- The special clothing for demanding professions and extreme conditions (uniforms, protective clothing in a variety of demanding operations, as well as outdoor apparel for sports and leisure, given the increasing number of people who actively spend their leisure time).
- The improvement of marketing activities and other activities in direct contact with the market (business activities). The quick response is important as it decides on value-added margin. From a marketing perspective, on the demand side, it is necessary to be able to assess the feasibility of market requirements and on the supply side to be able to work with information on product value added in the form of new functional materials and new applications.
- One of the most interesting trends is particularly the smart clothing that is in addition to protection from the cold and inclement weather able to serve many further functions. It can be equipped with electronic sensors and components and used for example for monitoring of vital functions in medical fields or when using the integrated solar cells it can provide thermal comfort for the wearer or communicate with mobile technology. All this while maintaining easy maintenance by washing and ironing.
- The education and training of workers in the clothing and textile production. Although the staff headcount in the manufacture of clothing is dropping, the demand for skilled and flexible workforce is growing.

6.

CZ-NACE 15 MANUFACTURE OF LEATHER AND RELATED PRODUCTS

6.1 DIVISION CHARACTERISTICS

The CZ-NACE 15 Division is broken down into the following groups

- 15.1 Tanning and dressing of leather, dressing and dyeing of fur, manufacture of luggage and similar products;
- 15.2 Manufacture of footwear.

The manufacture of leather and related products division is characterised by the high share of manual work, where there are a large number of small enterprises, including sole traders, whose number accounts for more than 94.6% of the whole division. Approximately three quarters of production is accounted for by group 15.1 Tanning and dressing leather (tanned leathers), dressing and dyeing fur, manufacture of luggage, handbags, saddlery and similar products, the remaining quarter by group 15.2 Manufacture of footwear (Table 6.1.1). Larger companies have higher output, where the number of companies with 50 or more employees comprises just under 3.0% of the total number of entities. They account for 67.6% of the number of employees and 68.3% of sales of own products and services.

Table 6.1.1 - Shares of CZ-NACE 15 Division Groups in 2015 (as a %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
15.1	66.7	74.3	73.3	73.1	77.5	77.6	61.8	73.9
15.2	33.3	25.7	26.7	26.9	22.5	22.4	38.2	26.1

Source: CSO, 2015 calculations MIT

6.2 DEVELOPMENTS IN DIVISION

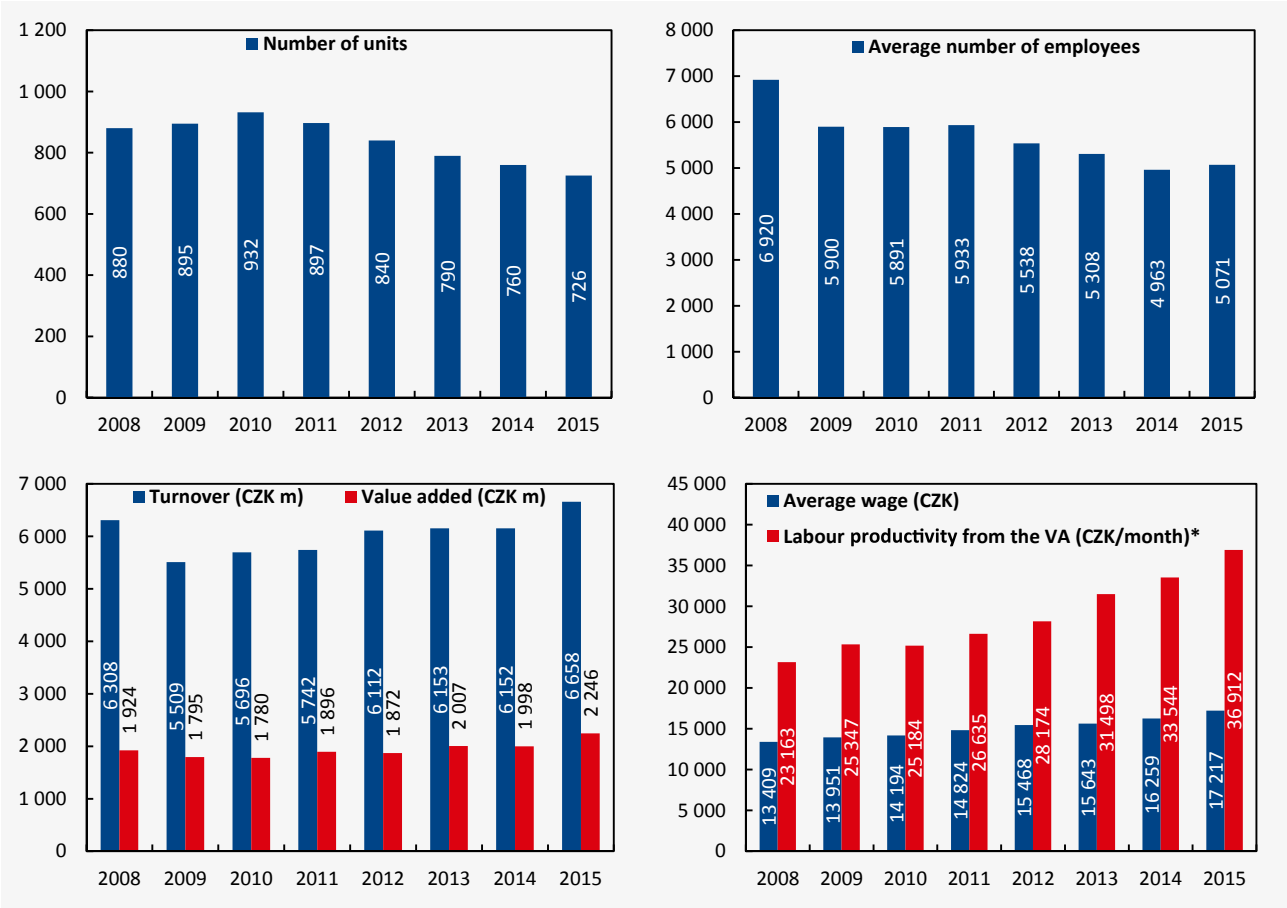
A total of 726 entities worked in the manufacture of leather and related products in 2015 with an average registered number of 5,071 employees. From the viewpoint of the size of manufacturing companies only 26 companies have more than 50 employees and, for example, the footwear industry has only 35 companies with 20 or more employees.

From 2010 the division stabilised and developed relatively favourably, after previous collapses in production after 1997, when the majority of the large footwear companies and companies producing leather fancy goods went through a period of bankruptcies and winding up. In this period, approx. 25,000 employees of large footwear companies from across the Czech Republic lost their jobs. The fall in footwear manufacture caused a downturn in production in leather tanning plants and other supplier sectors. The result is that today all materials and semi-finished products for footwear manufacture have to be imported into the Czech Republic. Production has gradually become a matter for smaller, often family firms that are clearly SMEs. By 2015 the division had experienced a reduction in the number of production units by 17% and a fall in the average registered number of employees by more than one quarter. On the other hand, added value exceeded the 2008 level in 2013 and turnover did so in 2015.

Despite these complicated conditions, a number of smaller companies and family businesses focusing on specialised products are still in operation. It is pleasing that in recent years Czech manufacturers have done well, in particular in the segment of high-quality children's certified footwear, because demand for it on the Czech market has been growing.

6.3 MAIN ECONOMIC INDICATORS

Graph 6.3.1 – Main Economic Indicators of CZ-NACE 15 Division (year 2008 = 100 %)



Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

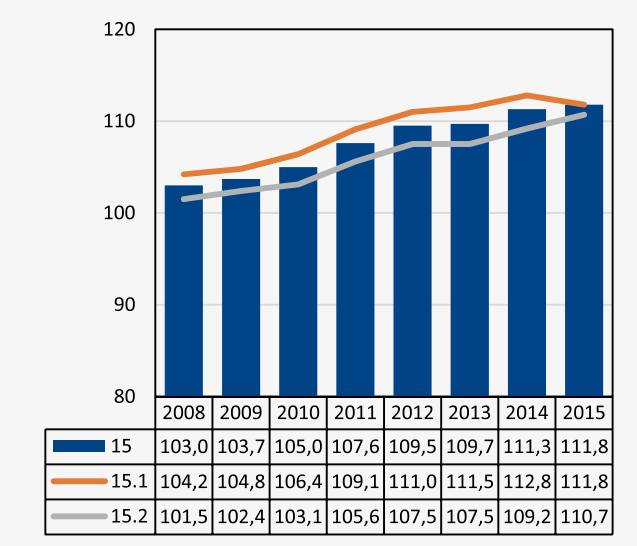
Most CZ-NACE 15 indicators are rising, which indicates the division is stabilising. Foreign-owned production entities with 20 or more employees make a significant contribution. The share of such entities represents a mere 1.5% of the total number of production units, but their share in total sales is 28.6% and in employees it is 37.4%.

The high number of small entities in the division is documented by the fact that of the total number of 726 production units in 2015 (year-on-year -4.5%), only 52 of them had more than 20 employees.

In this aggregation of companies with more than 20 employees group CZ-NACE 15.12 Manufacture of luggage, handbags, saddlery and similar products, whose sales increased year-on-year by 13.9%, value added by 20.4% and employee numbers by 9.2%, had a decisive influence on year-on-year growth. On the other hand, for the group CZ-NACE 15.11 Tanning and dressing of leather, sales fell by 2.0% and employee numbers by 10.6%, and for group CZ-NACE 15.2 Manufacture of footwear, sales fell year-on-year by 4.0%, value added by 12.0% and employee numbers by 2.4%. Overall, manufacture of footwear is experiencing a long-term downturn, where

in the period in question from 2008 to 2015 there was a fall in employee numbers by 42.4%, a fall in turnover by 20.8% and a fall in value added by 29.2%. In the same period productivity rose by 22.9% and average wage by 18.8%.

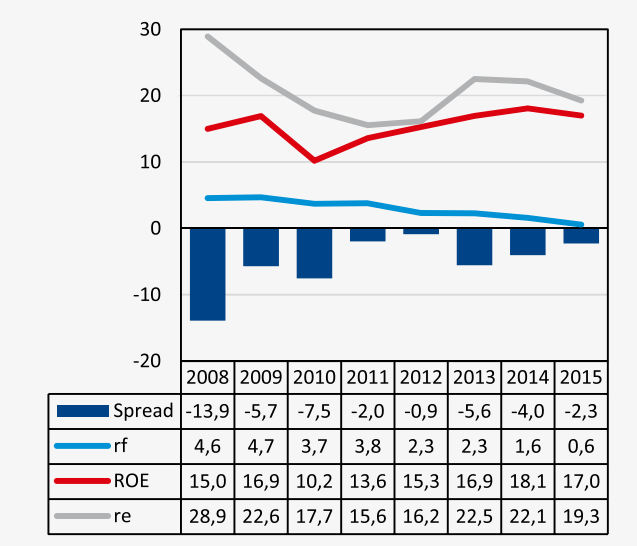
Graph 6.3.2 – CZ-CPA 15 Price Developments (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
15	103,0	103,7	105,0	107,6	109,5	109,7	111,3	111,8
15.1	104,2	104,8	106,4	109,1	111,0	111,5	112,8	111,8
15.2	101,5	102,4	103,1	105,6	107,5	107,5	109,2	110,7

Source: CSO, MIT calculations

Graph 6.3.3 – CZ-NACE 15 Spread (ROE – re) (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-13,9	-5,7	-7,5	-2,0	-0,9	-5,6	-4,0	-2,3
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	15,0	16,9	10,2	13,6	15,3	16,9	18,1	17,0
re	28,9	22,6	17,7	15,6	16,2	22,5	22,1	19,3

Source: CSO, MIT calculations

The level of manufacturers' prices in division CZ-CPA 15 rose in the period in question (Graph 6.3.2). This fact was primarily a result of increases in input prices. The continuing focus on high-quality products with a higher value added also had an influence on increases in manufacturers' prices. It should, however, be stated that prices on the market are markedly distorted by the falling volume, as well as high imports from China at dumping prices. There is a gradual increase in the average price of footwear, although it is at the level of CZK 80.00/pair. The input materials for footwear manufacture cannot even be purchased for such a price in the Czech Republic. According to long-term statistics, consumption of footwear in the Czech Republic is approx. 3.5 to 4 pairs of shoes per capita per year. This means that imports of footwear from China alone are double this statistic for household consumption.

In the division's financial results there has been a favourable increase in the return on equity and productivity since 2011. The negative Spread values came closest to a positive value in 2012, but in subsequent years in the division there was an increase in the degree of risk as a consequence of a decline in larger entities in favour of small ones and the related worsening of liquidity, which led to a worsening of the Spread values (Graph 6.3.3).

6.4 FOREIGN TRADE

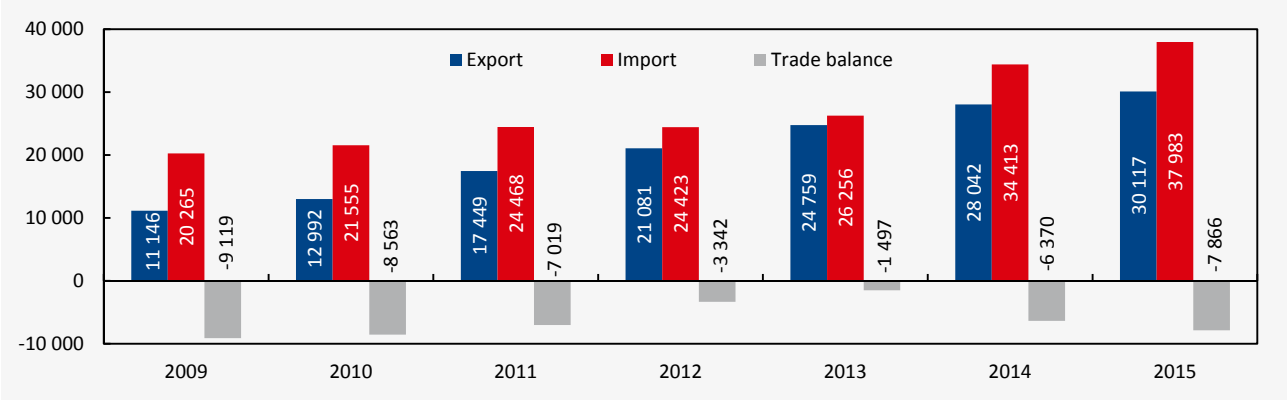
6.4.1 TRENDS IN FOREIGN TRADE

Compared to the whole of Europe, the Czech Republic is a relatively small market for footwear sales. If manufacturers want to make full use of their capacities and do not have a chance to compete domestically with very cheap Asian competition, they have to export. There are a number of co-operative manufacturing projects with western partners. In addition, however, companies are going over to products that are more complicated in design terms and have a higher utility value and modern design. That is why Czech footwear manufacturers are managing to export 70-80% of their products.

Despite all the problems securing production and the constantly rising prices of input materials and semi-finished products, it should be stated that the export value of CZ-CPA 15 products is constantly increasing and in 2015 rose by 7.4% year on year. Both product groups have contributed to this, the export value of luggage and handbag products in CZ-CPA 15.1 rose in 2015 by 3.4% and the value of footwear exports in CZ-CPA 15.2 rose by 9.9%. The value of exports in 2015 was almost three times the value of exports in 2009.

On the other hand, there was also an increase in the value of imports, which rose by 10.4% year on year. The foreign trade balance for products in division CZ-CPA 15 is constantly negative, something which has deepened in the last two years of the period in question 2009-2015. In 2015 the negative balance rose year on year by 23.5% and in comparison with 2013, when it was the lowest in the period in question, it has increased by 425.5%.

Graph 6.4.1 – Product export, import and balance of foreign trade in CZ-CPA 15 (CZK m)



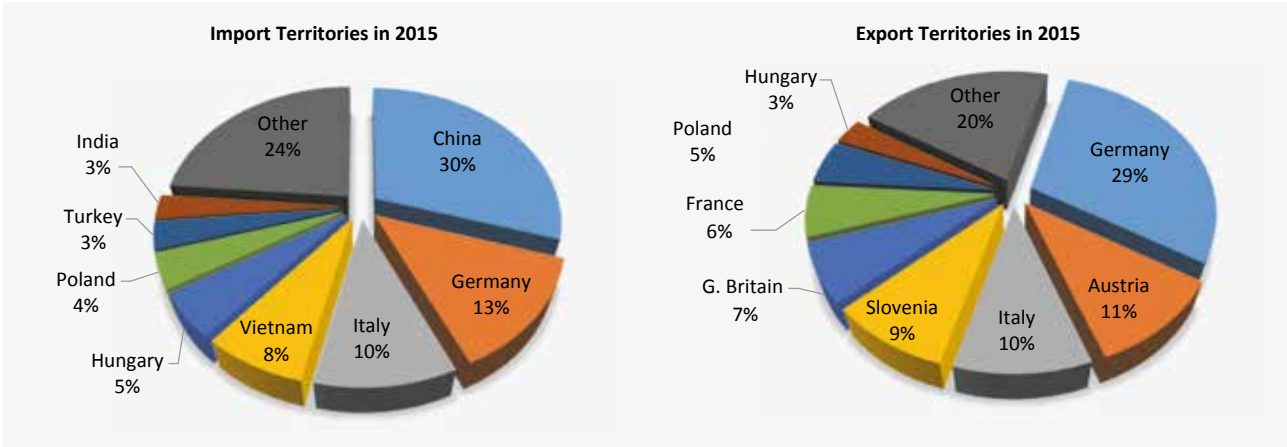
Source: CSO, data as of 28 February 2016

6.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

CZ-CPA 15 exports mostly go to EU countries, in the last few years the target countries have been, in particular, Germany, Austria, Italy, Slovenia, Great Britain, France, Poland and Hungary (Graph 6.4.2). In comparison with 2013, for example, in 2015 there was an increase in exports to Germany by 4.0%, Austria by 1.0% and Poland by 1.0%.

The largest volume of imports was from China, and even though it was 3.0% lower than in comparison with 2013 in 2015 it comprised 30.0% of total imports of leather products. It should be stated that re-exports to EU countries account for a significant proportion of this volume.

Graph 6.4.2 – Foreign Trade in Products in CZ-CPA 15



Source: CSO, data as of 28 February 2016

6.5 DIVISION SUMMARY AND PROSPECTS

According to a World Trade Organisation (WTO) study, production costs in Asian countries are increasing. The large quantity of investors that were attracted to China, for example, by the use of cheap labour caused a strengthening of the middle class there, and they are demanding salary increases, which is increasing manufacturing costs. Together with increased costs of transport and travel expenses and the limited options for production of small series, this is leading to a movement away from China for some investors, who keep looking for new territories where production is cheaper, or who return to their home countries.

Increased costs of production of footwear together with rising pressure on the price of leather as a raw material are increasing prices of leather footwear. This fact led to a marked reduction in the share of leather footwear in the total value of exports. In 2003 exports of leather footwear accounted for approx. 60% of global exports, but over the next ten years this share fell below 50%.

The rising price of leather footwear is also having a marked influence on consumers' attempts to care for purchased footwear, so that it retains its useful properties for longer, which as a consequence is leading to the development of new business opportunities for footwear repair points and production companies involved in products and services that extend footwear's service life.

As a consequence of lasting high imports of cheap footwear and other leather products from Asian countries, at the current time the main problem in the Czech Republic is the relatively low interest in Czech products, or rather getting them into retail networks. Despite these complicated conditions, a number of smaller companies and family businesses focusing on specialised products and on perfect customer service are still in operation. The above summaries, however, show that the Czech footwear industry can today be regarded as a good and efficient exporter, in particular when making use of suitable foreign co-operation.

A number of manufacturers' are trying to build their own retail networks, or rather trying to obtain contracted retail outlets. Internet sales in their own e-shops are a new option for manufacturers. Footwear manufacturers have significantly restructured their activities and are manufacturing clothing accessories and footwear with higher value added, in particular in the segments work footwear, protective and safety footwear, as well as orthopaedic, medical, prophylactic and high-quality children's footwear. At the current time they are also producing high-quality leather ladies' and men's walking shoes. It is pleasing that many customers are returning to high-quality Czech footwear and asking for it from retailers. These trends are the most visible in the segments children's and medical footwear.

A lasting problem in the leather industry is the lack of young skilled workers and the resulting rising average age of employees.

Important factors to keep manufacturing of leather and similar products competitive, as in previous years, are:

- The creation of favourable conditions for the entry of foreign capital;
- The submission of high-quality business plans to obtain monies from EU funds and co-financing options;
- Improvements in education and co-operation with the Ministry of Education, which will lead to an increased interest in studying in leather industry fields;
- The expansion of co-operation with the domestic and foreign science and technology base (research institutes, universities); the introduction of new knowledge into practice and its use in product innovation;
- The development of marketing services.

7.

CZ-NACE 16 – MANUFACTURE OF WOOD, PRODUCTS OF WOOD AND CORK, ARTICLES OF STRAW AND WICKER MATERIALS, EXCEPT FURNITURE

7.1 DIVISION CHARACTERISTICS

The CZ-NACE 16 Division is broken down into the following groups

- The CZ-NACE 16 Division is broken down into the following groups
- 16.1 Sawmilling and impregnation of wood;
- 16.2 Manufacture of wood, cork, wicker and straw products, except furniture.

The manufacture of products in division CZ-NACE 16 has a long tradition in the Czech Republic. Wood and wood products are used practically in all areas of life, in the majority of manufacturing industry sectors, in construction and in households. Timber, as a raw material, is for the wood manufacturing industry, whereas fibre is used for the manufacture of cellulose, which serves for the manufacture of medical products and papers, primarily for the printing industry and packaging. Poorer-quality wood also serves as an environmentally-friendly fuel. Given the progressive application of technology that is more and more sophisticated, wood is a material with a new future.

14 m to 18 m m^3 of wood is obtained from Czech forests every year, of which over 85% is coniferous. The same as in 2014, wood production rose slightly in 2015. 16.2 m m^3 of wood was cut in 2015. There was, however, an increase in the volume of random production, by one third to 4.5 m m^3. The information is based on reports related to an area of approx. 65% of forests in the Czech Republic. The calculation for the total area of forests, which characterises the general situation, despite its limitations, represents a volume of almost 7 m m^3, which means that roughly half of total production was in the random production category.

The volume of recorded spruce bark timber rose by half in 2015 in comparison with 2014—to approximately 1.5 m m^3, and represents more than 2 m m^3 on the territory of the Czech Republic. A significant quantity of the timber remains unprocessed in forests.

In the wood manufacturing industry from the viewpoint of selected economic indicators and the number of units the dominant group is CZ-NACE 16.2 Manufacture of wood, cork, wicker and straw products, except furniture (Table 7.1.1). It has a clear lead in all the indicators monitored.

Table 7.1.1 – Shares of CZ-NACE 16 Division Groups in 2015 (as a %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
16.1	21.1	18.3	28.3	28.8	21.0	23.9	20.5	6.2
16.2	78.9	81.7	71.7	71.2	79.0	76.1	79.5	93.8

Source: CSO, 2015 calculations MIT

7.2 DEVELOPMENTS IN DIVISION

From the viewpoint of sales by the Czech manufacturing industry, CZ-NACE 16 is not an important sector and its share of total sales in manufacturing was 2.2% in 2015, the same as in 2014. Almost three quarters of sales (71.7%) are accounted for by group 16.2. The number of units in the division was 26,326 in the last year, which is 4.5% less than in 2014.

The division produces highly-competitive products in both CZ-NACE 16 groups. The quality and prices of domestic manufacturers make them sought-after suppliers not only in the Czech Republic, but also in markets in EU countries and outside the EU.

A clear competitive advantage the division has are sufficient domestic resources of a renewable raw material, which are a condition for further development and increases in the volume and quality of production, in the sophisticated products category. The division has a growing share of wood products with a quality designation, and certification of the consumption chain of wood products in accordance with the PEFC system is continuing (*the PEFC forest certification system is one of the forestry processes leading to sustainable management of forests in the Czech Republic and also attempts to improve all functions of forests in favour of man's environment*).

On the contrary, a disadvantage of the division is the lack of processing capacities, both from the viewpoint of structure (imbalance in favour of several large foreign investors) and the viewpoint of further processing. The Czech Republic is one of the largest European and, probably, global exporters of raw wood.

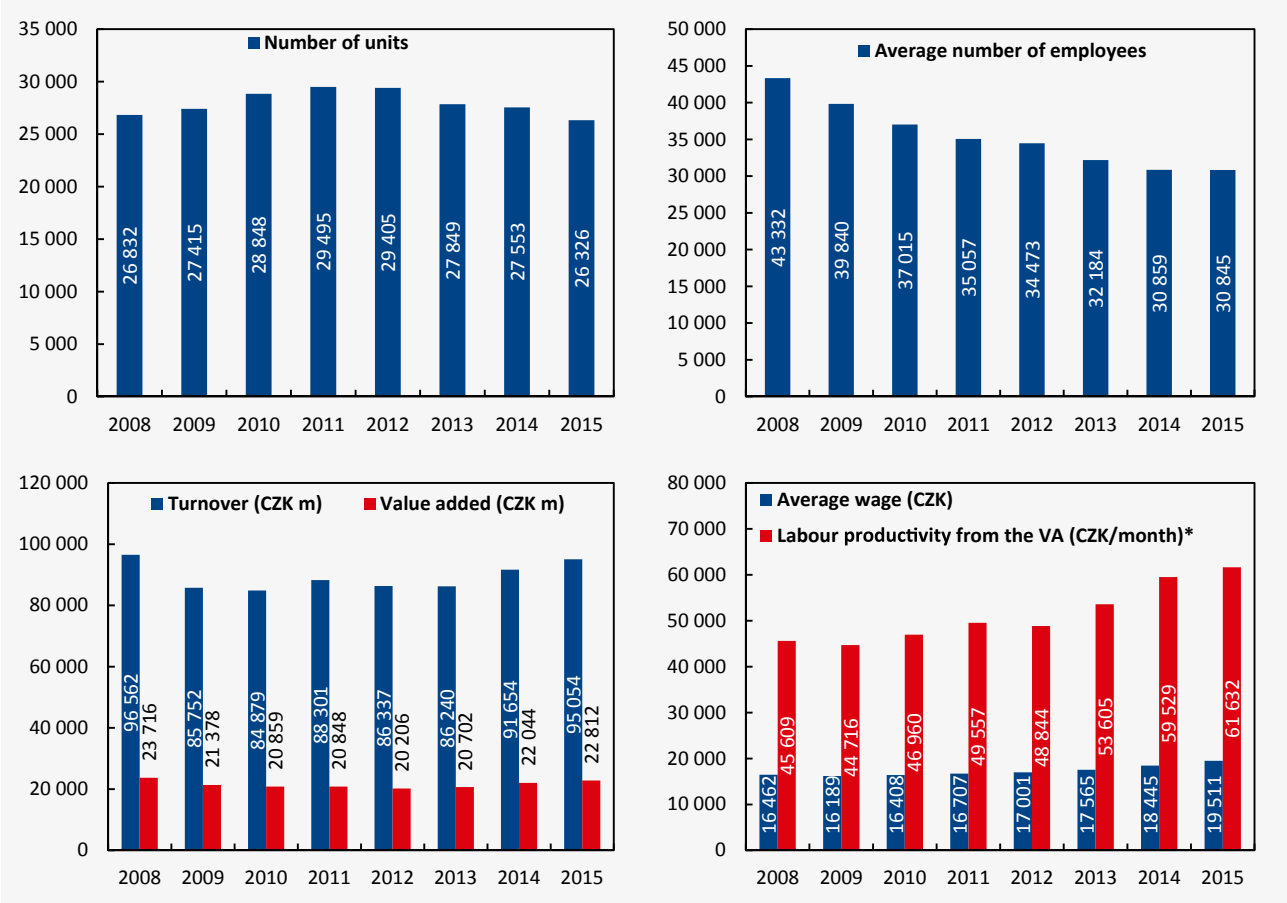
7.3 MAIN ECONOMIC INDICATORS

The main economic indicators in CZ-NACE 16 are influenced by the economic performance of group 16.2 Manufacture of wood, cork, wicker and straw products, except furniture.

The number of employees in the division in the period in question kept falling, with the fall ending in 2015. There were 28.8% fewer employees against 2008. Assets also had a falling tendency, and were reduced by 8% in the period in question, 2008-2015.

The reduction in turnover during the recession lasted from 2009 to 2013, its growth in 2014 and 2015, however, was not enough to reach the 2008 volume (-1.5% in 2015). Value added had similar trends and in 2015 the gap to the 2008 level was 3.8%. As the number of employees fell, productivity (with small fluctuations) rose (Graph 7.3.1). Between 2008 and 2014 there was an increase of 35.1%, in 2015 the year-on-year rise was 3.5%. The average salary in the division had risen by 20.5% in 2015 compared to 2009, and in 2015 it was CZK 19,511, with a year-on-year increase of 5.8%. The relationship between productivity and average salary was unfavourable only in 2012 and 2015.

Graph 7.3.1 – Main Economic Indicators of CZ-NACE 16 Division (year 2008 = 100 %)

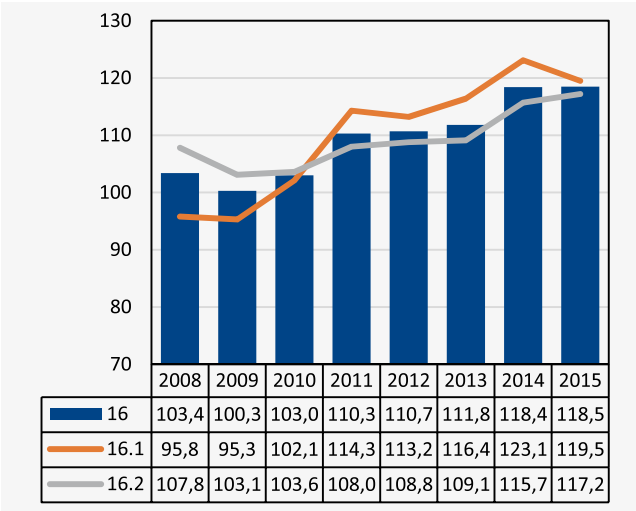


Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

The level of manufacturer CZ-CPA 16 commodities prices, after the crisis collapse in 2009, increased in leaps in the next years (2011, 2014), in particular due to trends in prices of the input raw material—wood, both in the Czech Republic and abroad (Graph 7.3.2). Only prices of group 16.1 products fell under the 2005 level in 2008 and 2009, but from 2011 their dynamism exceeded the prices of group 16.2 products.

In the division's financial results there has been a favourable increase in the return on equity and productivity since 2013. The Spread values therefore went positive after 2014 (Graph 7.3.3).

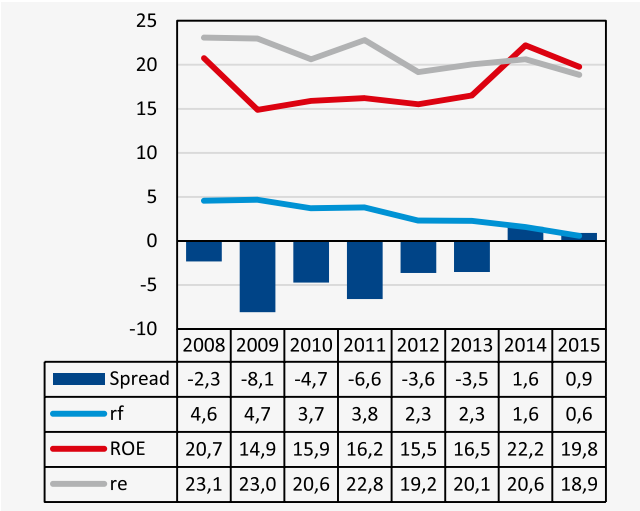
Graph 7.3.2 – CZ-CPA 16 Price Developments (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
16	103,4	100,3	103,0	110,3	110,7	111,8	118,4	118,5
16.1	95,8	95,3	102,1	114,3	113,2	116,4	123,1	119,5
16.2	107,8	103,1	103,6	108,0	108,8	109,1	115,7	117,2

Source: CSO, MIT calculations

Graph 7.3.3 – CZ-NACE 16 Spread (ROE – re) (in %)



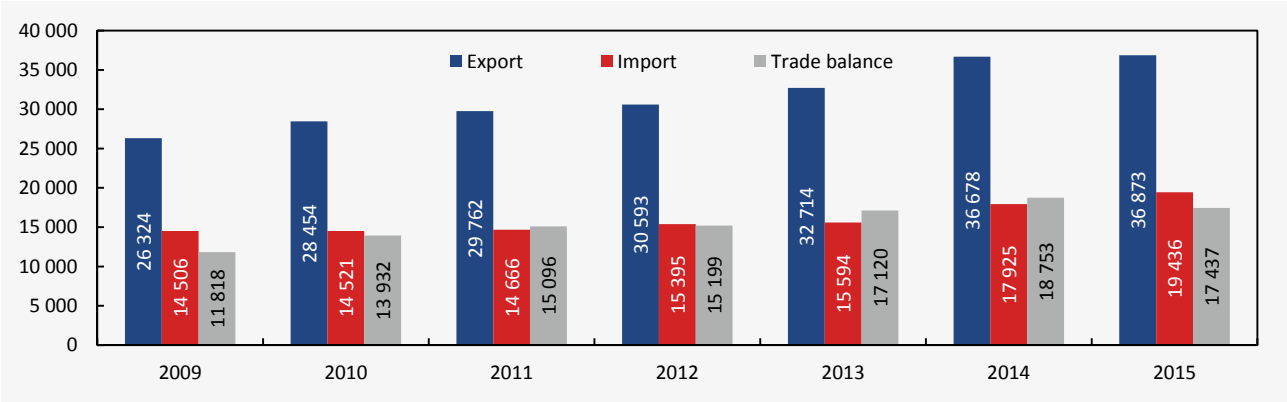
	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-2,3	-8,1	-4,7	-6,6	-3,6	-3,5	1,6	0,9
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	20,7	14,9	15,9	16,2	15,5	16,5	22,2	19,8
re	23,1	23,0	20,6	22,8	19,2	20,1	20,6	18,9

Source: CSO, MIT calculations

7.4 FOREIGN TRADE

7.4.1 TRENDS IN FOREIGN TRADE

Graph 7.4.1 – Product export, import and balance of foreign trade in CZ-CPA 16 (CZK m)

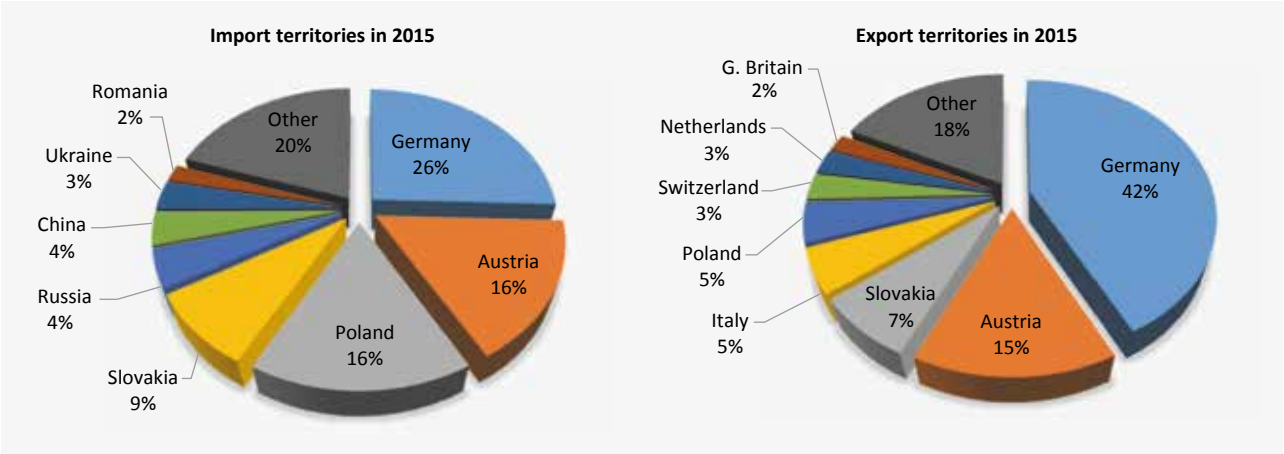


Source: CSO, data as of 28 February 2016

Trends in foreign trade in CZ-CPA 16 commodities show that in the period in question the value of exports rose faster (40.1%) than the value of imports (34%), so the positive balance grew progressively (except 2015, where the dynamism of imports exceeded that of exports). The positive balance of foreign trade reported in the period in question grew by more than 47% (Graph 7.4.1). The dynamism of exports was greater than the dynamism of imports in the period in question.

7.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Graph 7.4.2 – Foreign trade in products in CZ-CPA 16



Source: CSO, data as of 28 February 2016

The territorial distribution of foreign trade has not changed much in the long-term. The largest foreign customers for CZ-CPA 16 products include EU member states such as Germany, where 42% of exports went in 2015, Austria with 15%, Slovakia with 7%, Italy with 5% and Poland with 5%. The main exports to Germany are timber, construction products and pallets, in Austria there is interest in roundwood, timber, veneers, agglomerated products and plyboard. Exports of CZ-CPA 16 products to EU countries account for approx. 83% of total production.

In 2015 the largest numbers of goods in CZ-CPA 16 were imported from Germany (26%), Austria (16%), Poland (16%) and Slovakia (9%).

7.5 DIVISION SUMMARY AND PROSPECTS

The wood manufacturing industry has a stable position in manufacturing. Domestic producers in the wood manufacturing industry are, given the quality of their products and their prices, sought-after suppliers not only on the domestic market, but also on markets in other countries in the EU and elsewhere in the world. A key question for the further development of the wood manufacturing industry is an increase in the competitiveness of Czech products, through the introduction of the latest techniques and technology, as well as the application of modern management methods. Favourable conditions exist here in the strengthening of co-operation in science and research with foreign partner organisations. The modernisation of production should, in connection with the direct activities of the business sector, be helped by new pro-growth measures to support SMEs and also support within Operational Programmes financed with the participation of monies from the EU's structural funds.

The Czech Republic continues to be behind developed EU countries in the use of wood in the construction industry. Primarily there should be an increase in the consumption of wood and products made from it in the relevant industrial groups, a strengthening of low-energy wooden houses and an expansion of the application of wooden elements, such as complicated roof structures, atypical window frames, floors and panels for outer walls, with the aim of achieving higher competitiveness compared to buildings made from classic construction materials.

It will also be necessary to increase the share of waste recovery from production in the form of pellets, for example. This aim should be boosted by the expansion of activities in wood-working clusters, which were established with the promise of participation by foreign entities. Sufficient use is currently being made of the wood manufacturing industry's potential in biomass, in particular for energy purposes. This is because wood is one of the cheapest fuels and is also a domestic, renewable resource.

In connection with expected wide-ranging production, the Czech Republic is at risk of an extraordinary crisis on the market in timber, where, since the second half of 2015 there has been rising pressure on spruce ranges, in particular concerning lower quality roundwood and fibre. A very similar situation is expected in neighbouring countries.

Supply will be in excess of demand on the wood market in 2016. The expected massive production will lead to a volume of spruce timber that endangers the ability to sell it all. A fall in gross profit can be expected in 2016, in particular due to a fall in the price of wood. It can be estimated that lower wood prices this year will lead to a year-on-year reduction in profits. At the same time, there was an increase in production of less-valuable wood from random production of wood damaged by bark beetle. Intentional production will be limited with regard to the amount of random production, so that supply and demand come into balance and the price of wood can start to rise.

8.

CZ-NACE 17 MANUFACTURE OF PAPER AND PAPER PRODUCTS

8.1 DIVISION CHARACTERISTICS

The CZ-NACE 17 Division is broken down into the following groups

- 17.1 Manufacture of pulp, paper and paperboard;
- 17.2 Manufacture of articles of paper and paperboard.

The manufacture of paper and paper products is a relatively important division in Czech manufacturing industry with good environmental performance, as the manufacture of paper uses renewable resources (recycling of old paper, cellulose fibre that can be recycled multiple times, etc.). For example, fibrous wood, as the basic raw material for the paper industry, is appreciated at least six times.

Paper industry products can be used in all other divisions of manufacturing industry, primarily in printing and in the production of packaging, including recyclable packaging. Manufacture in this division is based on renewable raw materials (wood mass) and secondary raw materials (recycled paper), primarily of domestic origin. The manufacture of fibre and paper takes place in a closed cycle with great emphasis on a reduction in all types of emissions, it is highly demanding in investment terms and makes use of investment incentives. High energy consumption is, for the large part, covered by renewable resources and waste heat from own production.

The number of units in the division has not changed year on year and in 2015 it was again 928, of which 72.4% were in group 17.2 and 27.6% were in group 17.1 (Table 8.1.1). The number of employees in the division increased year on year by 4.0%, where group 17.2 accounted for a total of 18,288 employees, 83.2% of persons. Group 17.2 contributed 64.4% of sales and a similar amount of revenues (63.9%).

Table 8.1.1 – Shares of CZ-NACE 17 Division Groups in 2015 (as a %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
17.1	20.8	35.9	35.6	36.1	36.5	43.8	16.8	27.6
17.2	79.2	64.1	64.4	63.9	63.5	56.2	83.2	72.4

Source: CSO, 2015 calculations MIT

8.2 DEVELOPMENTS IN DIVISION

In recent years the division as a whole has been doing relatively well, which is shown by the majority of main economic and financial indicators. In 2015 sales of products manufactured in house and services, turnover, number of employees, value added and added value per employee, as well as average salary, rose. The only fall was in investment.

The production of paper and paper products is based on the processing of renewable raw materials mostly of domestic origin (wood) and on recyclable secondary raw materials (recycled paper). For a number of years the field has been actively realising a strategy for sustainable development, and fibre and paper are produced in a practically closed cycle. The processing of recycled paper, however, is not of the required standard in the Czech Republic and the majority of collected paper for paper recycling is exported (exports were 803,000 tons of a collected quantity of 950,000 tons, i.e. 84.5%). The production of fibre is demanding in terms of the quantity of water and energy (electricity, heat), which are, however, to a significant extent, covered by own resources based on recovery of waste from the production of pulp, mechanical pulp or paper. In recent years there has been a serious problem with sharp weather fluctuations, which made the smooth cutting of wood impossible.

For the Czech paper industry, which is currently an integral part of the European paper industry (a member of CEPI), what is important today is the fact that in the past it was designed as a Czechoslovak industry. Today this has a significant impact on production options and, primarily, the coverage of consumption from domestic resources. The Czech paper industry stands out through its specialisation in production of wrapping and packaging types of paper, which are then exported in bulk in some ranges. The majority of paper and paperboard consumption in the Czech Republic has to be covered from imports (in 2015 it was 1.444 m tons), which is almost double domestic production (740,000 tons). Graphic and hygiene paper is mostly what is imported, as are some materials for the manufacture of corrugated fibreboard.

In 2015, the division CZ-NACE 17 accounted for 1.8% of sales of own products and services from Czech manufacturing industry (in 2014 it was 1.6%), making it one of the less important manufacturing divisions. It is, however, a traditional and important sector that is a competitive and promising part of the Czech manufacturing industry. Its products are essential in all other fields in manufacturing, in particular in the manufacture of packaging of all kinds and types, where consumption keeps on rising, as well as in printing. The advantage is that it primarily processes domestic recyclable raw materials.

Given the close links to the European market, 80% of paper production (primarily packaging) is exported. At the same time, however, an even greater volume of consumption (primarily printing and graphics papers) have to be covered by imports, which are actually higher than the total paper production in the Czech Republic.

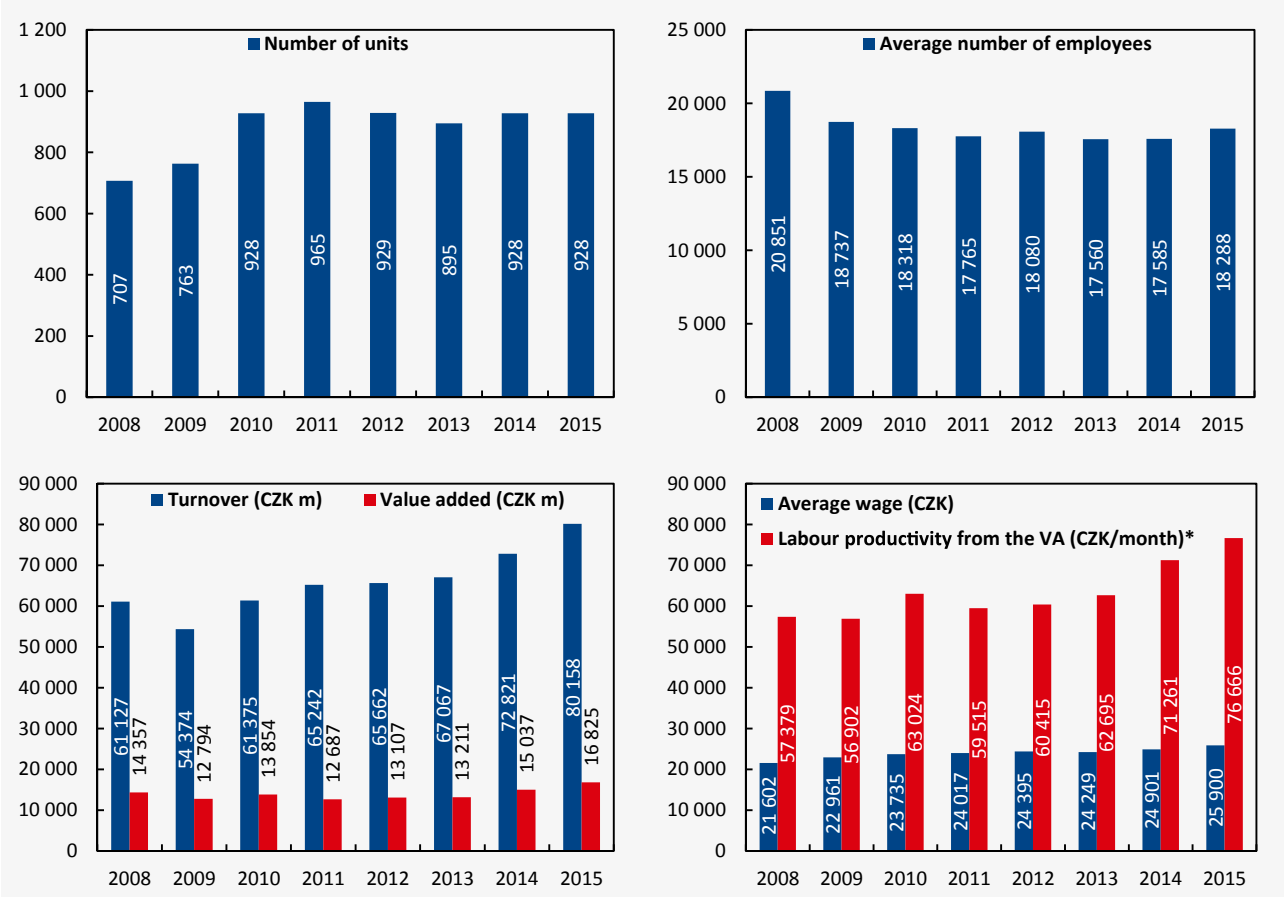
8.3 MAIN ECONOMIC INDICATORS

The number of employees in the period 2008-2015 fell by approx. 2,500 people, i.e. by more than 12%, although the year-on-year increase in 2015 was 4.0% (Graph 8.3.1). Corporate assets kept on increasing and in the period in question from 2008 to 2015 rose by 35%. The division's total turnover rose in 2015, as it did in 2014—this time by 10.4% year on year. With the exception of the crisis year of 2009, turnover rose progressively until 2015; there was faster dynamism with regard to the higher demand in the cellulose and paper industry in 2013-2015. Turnover rose by 31% between 2008 and 2015.

Value added fell relatively markedly after 2008, then fluctuated in subsequent years, before rising by 14% in 2014 year on year and by 12% in 2015. Productivity had a positive jump in 2010; after it fell in 2011 it started to grow with significant year-on-year rises in 2014 (by 14%) and 2015 (over 7%). The relationship between the dynamism of productivity and the average salary was favourable in 2010 and then between 2013 and 2015.

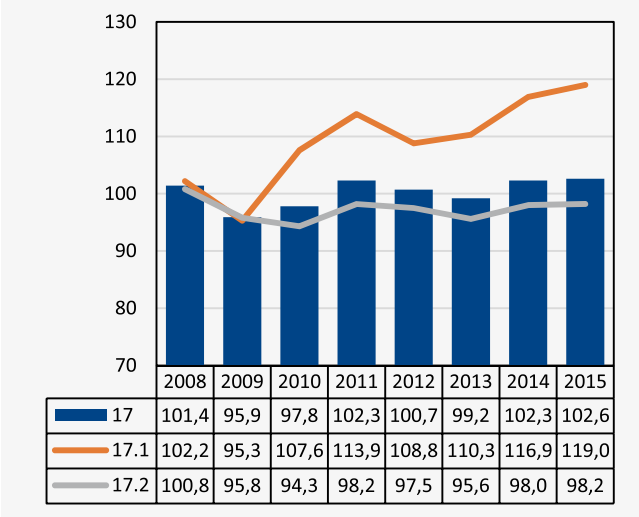
The average salary in the sector (with the exception of a slight fall in 2013) kept on rising; in 2014 it rose by 2.7% and in 2015 by 4% to CZK 25,900. It was 2.5% below the average salary in manufacturing.

Graph 8.3.1 – Main economic indicators of CZ-NACE 17 division (year 2008 = 100 %)



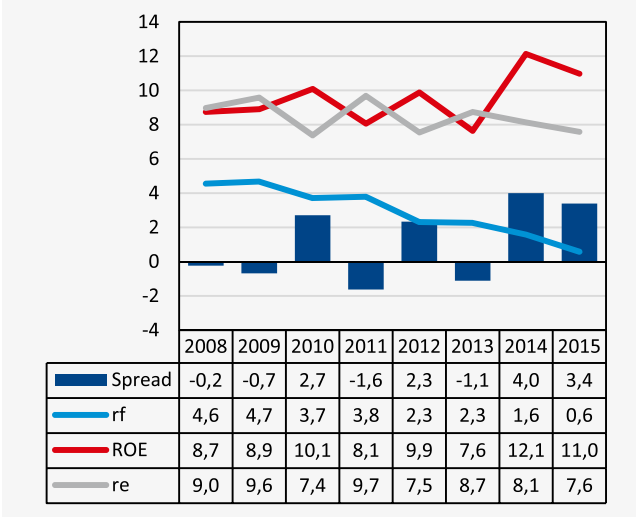
Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

Graph 8.3.2 – CZ-CPA 17 Price developments (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
17	101,4	95,9	97,8	102,3	100,7	99,2	102,3	102,6
17.1	102,2	95,3	107,6	113,9	108,8	110,3	116,9	119,0
17.2	100,8	95,8	94,3	98,2	97,5	95,6	98,0	98,2

Graph 8.3.3 – CZ-NACE 17 Spread (ROE – re) (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-0,2	-0,7	2,7	-1,6	2,3	-1,1	4,0	3,4
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	8,7	8,9	10,1	8,1	9,9	7,6	12,1	11,0
re	9,0	9,6	7,4	9,7	7,5	8,7	8,1	7,6

Source: CSO, MIT calculations

Trends in the Spread indicator in 2009–2013 showed regular fluctuations between positive and negative values (Graph 8.8.3). In 2014 it reached the highest positive values, which fell slightly in 2015.

Trends in the industrial manufacturers' price index varied in the period in question. Whereas in group 17.1 in connection with high prices of basic raw materials, in particular pulp, it was over the 2005 level throughout the period in question (excluding 2009), in group 17.2 it did not exceed 100% in the period in question (Graph

8.3.2). This makes it clear that manufacturers in group 17.2 did not manage to increase the prices of their products even despite the higher prices of inputs.

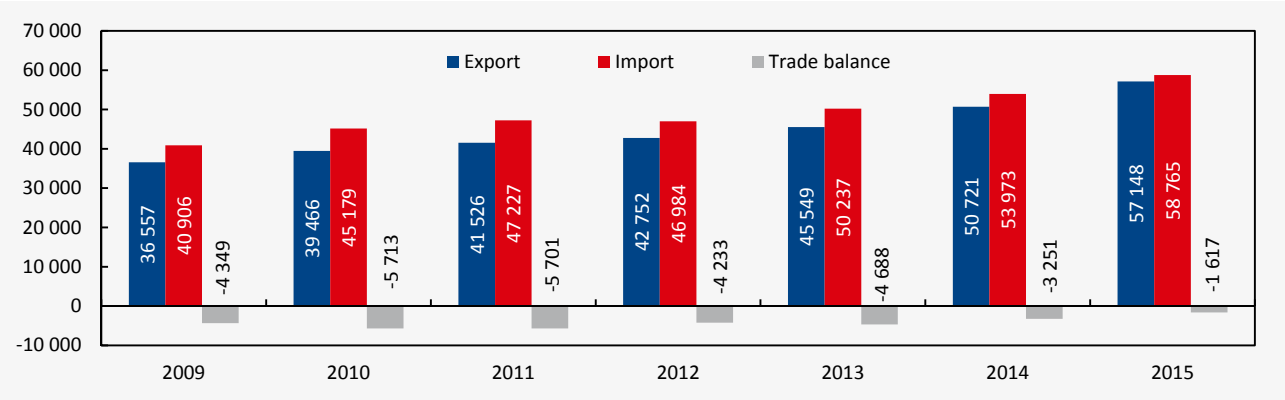
8.4 FOREIGN TRADE

8.4.1 TRENDS IN FOREIGN TRADE

The value of imports in CZ-CPA 17 has, for a long time, exceeded the value of exports, but with regard to the increased growth of exports since 2010 there has been a decline in the negative foreign trade balance (Graph 8.4.1).

The negative balance in 2015 was CZK 1.6bn. Exports rose year on year by 12.7% to CZK 57.1bn. Imports reached CZK 58.8bn.

Graph 8.4.1 – Exports, Imports and Balance of Foreign Trade in CZ-CPA 17 Products (CZK mn)

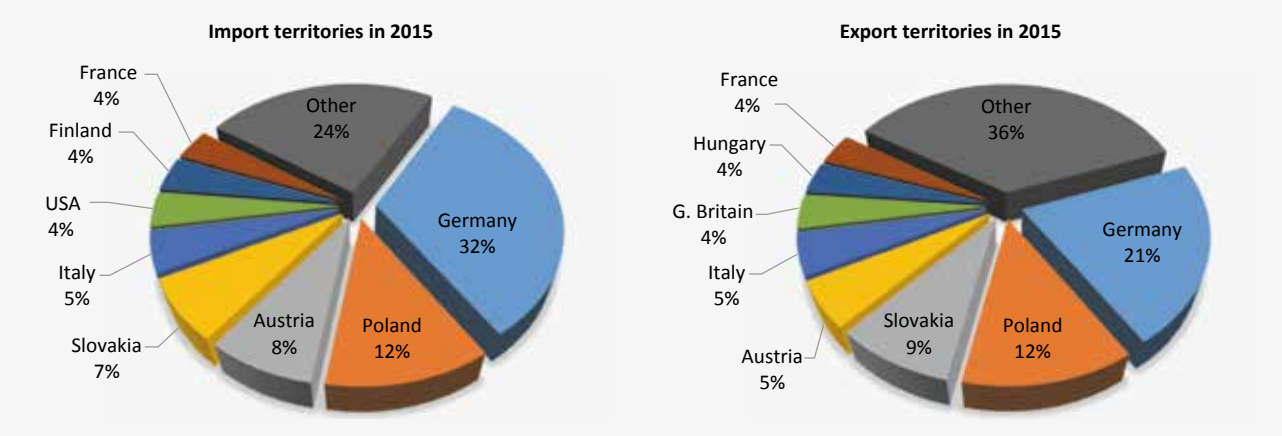


Source: CSO, data as of 28 February 2016

8.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The largest customer for CZ-NACE 17 is traditionally Germany (21%), followed by Poland (12%) and Slovakia (9%). From the viewpoint of imports, which rose year on year in 2015 by 8.9% to CZK 58.8bn, our largest supplier is Germany (32%), followed by Poland (12%) and Austria (8%). The territorial structure of foreign trade in paper products has been relatively stable from the long-term viewpoint, the decisive business partners are not changing (Graph 8.4.2).

Graph 8.4.2 – Foreign trade in products in CZ-CPA 17



Source: CSO, data as of 28 February 2016

8.5 DIVISION SUMMARY AND PROSPECTS

The economic trends and outlook for CZ-NACE 17 are shown fairly precisely by various types of statistics, but primarily those showing paper consumption per capita per year. According to UNESCO, consumption of communication (print and graphics) papers relatively precisely shows the literacy and social and cultural development of a society, the consumption of hygiene paper shows the medical and social level and the consumption of packaging and wrapping papers shows the development of the whole of manufacturing industry and the food sector, as all their goods are packaged. Statistics on the production of paper and paper products show the field's development (total production and consumption in 2015 rose year on year by 7%), which is indicated by data about domestic paper consumption per capita, which rose from 130 kg in 2014 to approx. 136 kg in 2015 (in 1993, when the Czech Republic came into being, it was only 60 kg per capita), and it has further growth potential.

In future years it seems necessary to ensure thorough non-discrimination against all energy sources and a balanced proposal of systemic changes, so that there is no inefficient increase in the costs of business or deterring of foreign investors from business activities in this field in the Czech Republic. This primarily concerns a threat to the availability of the basic raw material (wood) for the paper industry, caused by a possible outflow to the production of energy from renewable sources. In addition, it is necessary to prevent reductions in the competitiveness of Czech companies on the European market due to the creation of unequal conditions. The environmental aims in the paper industry should be assessed with regard to their economic and social impacts. In addition, it is necessary to find the optimum measures in both economics and employment, as well as the environment. This approach takes into account the principle of sustainable development based on a dynamic balance between the three pillars—economic, social and environmental. The aforementioned approach is defended by the Czech paper industry together with the other member countries of the Confederation of European Paper Industries (CEPI).

Despite the dynamic growth in paper and paperboard consumption, the Czech Republic has still not reached the level of advanced EU countries, and it can be assumed in subsequent years that this indicator will rise, up to a consumption of 180 kg per capita. This would correspond to the total domestic consumption of paper and paperboard in a volume of approximately 2 m tons a year. Reaching this limit only through a further absolute increase in imports is not an economically-effective solution and it is necessary to consider investments of a larger extent (also in connection with the large surplus of recycled paper on the market in the Czech Republic that is exported). Optimistic views of the sector should underline the fact that it is a sector based on sustainable resources making use of easy recycling of its products and is generally perceived as environmentally-friendly.

9.

CZ-NACE 18 PRINTING AND REPRODUCTION OF RECORDED MEDIA

9.1 DIVISION CHARACTERISTICS

The CZ-NACE 18 Division is broken down into the following groups

- 18.1 Printing and service activities related to printing;
- 18.2 Reproduction of recorded media.

Division CZ-NACE 18 Printing and reproduction of recorded media processes information in the form of a tangible product, such as newspapers, magazines, corporate printed matter and recoded audio and visual media. Its products are used in all other divisions of manufacturing industry, as well as in culture and education.

This division is one of the smaller ones in terms of the volume of sales, as its share in the total sales of manufacturing industry in 2015 was only one per cent (1.02%). Group 18.1 contributed 80% to the division's total sales in 2015, whereas group 18.2 only contributed 20%. The shares in other production characteristics are even higher in group 18.1 (Table 9.1.1). The division is dominated by micro companies and small enterprises, where only one tenth of a per cent of businesses were large companies with more than 250 employees. The well-known large companies include GZ Digital Media, a.s., Státní tiskárna cenin, státní podnik, and Svoboda Press s.r.o.

Table 9.1.1 – Shares of CZ-NACE 18 Division Groups in 2015 (as a %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
18.1	88.0	84.4	79.7	79.8	81.7	82.3	88.6	85.4
18.2	12.0	15.6	20.3	20.2	18.3	17.7	11.4	14.6

Source: CSO, 2015 calculations MIT

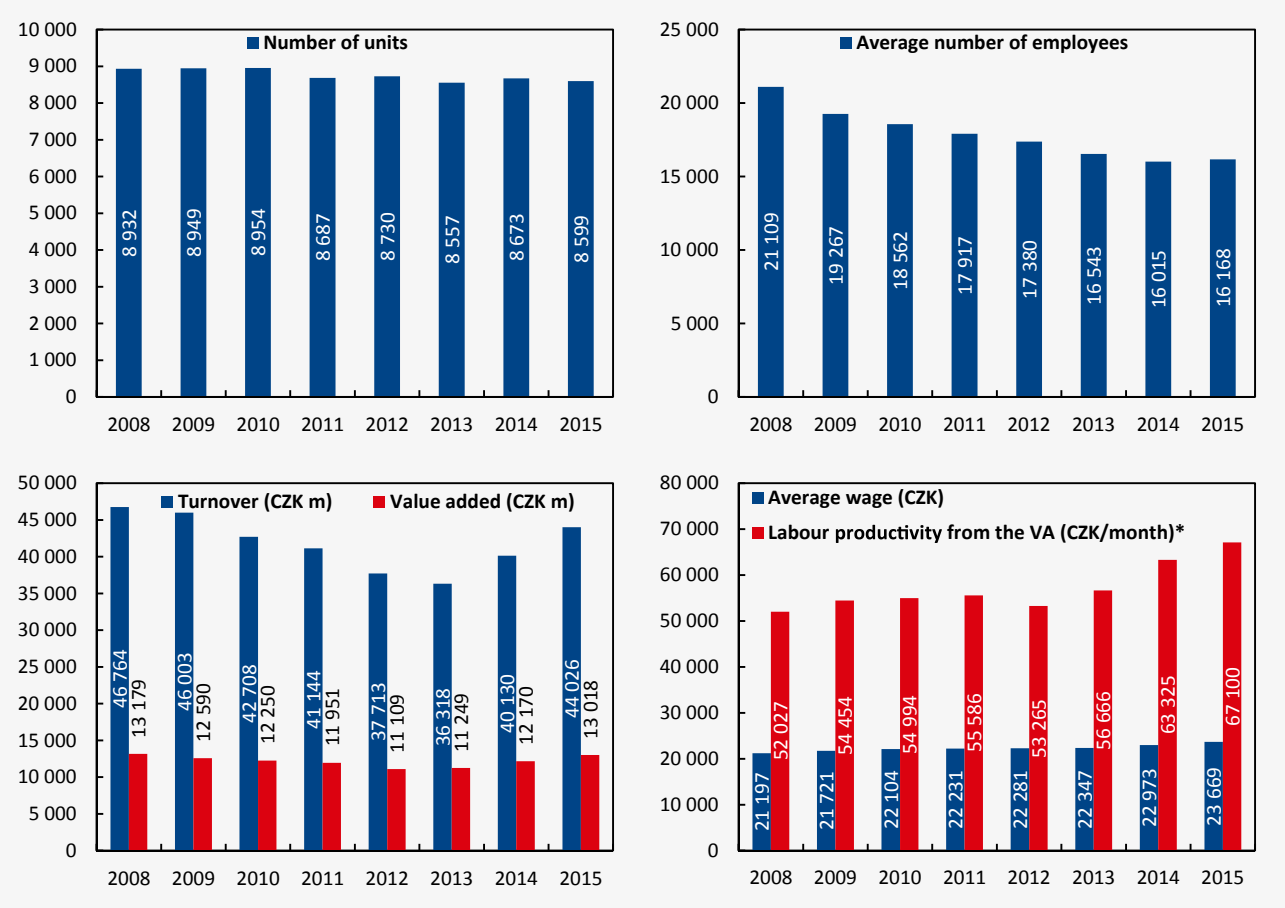
9.2 DEVELOPMENTS IN DIVISION

Trends in production characteristics show structural changes both inside the division and throughout the economy. Printing activities are declining in the division, and their sales in 2015 were 15% lower than in 2008, whereas for reproduction of recorded media they rose by 64%. In connection with progressive technical changes, where traditional media are progressively being replaced using the latest technology, the partial downturn in manufacturing is compensated for by the development of information and communication activities in services.

9.3 MAIN ECONOMIC INDICATORS

In the period in question the number of entities in the division fell slightly and in 2015 it was 3.7% lower compared to 2008. The reduction in employment was more dramatic, in the period in question the fall was by 23.4%, but in 2015 there was an increase, by 1% year on year. The share of working owners in printing accounted for 38% of the employee headcount in 2015. The division's turnover peaked in 2008. After this, as a consequence of problems in the printing industry (restructuring, lack of orders, development of the internet, lower income from advertising, etc.) it fell progressively and only in 2014 did it show year-on-year growth of 10.5%, with an additional 9.7% in 2015. Trends in value added in the period in question basically copied trends in sales. Productivity rose, thanks to the fall in employment, with the exception of 2012, but then the increase strengthened markedly. It rose by 30% in the period in question (Graph 9.3.1). The level of productivity is markedly higher in group 18.2 (CZK 815.6 th) than in group 18.1 (CZK 554.3 th).

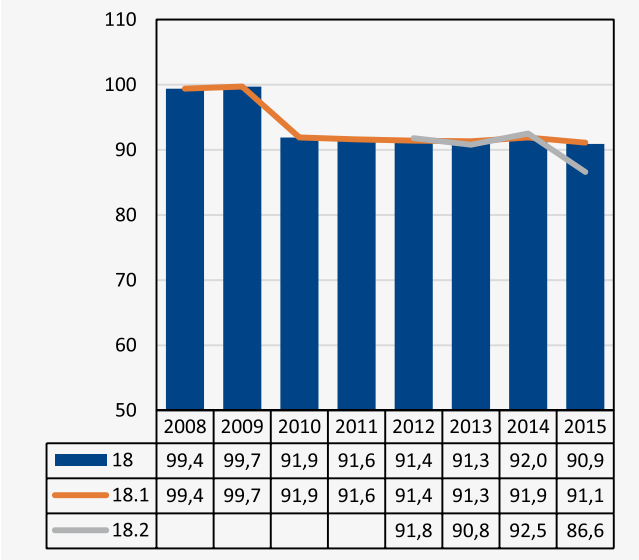
Graph 9.3.1 – Main economic indicators of CZ-NACE 18 division (year 2008 = 100 %)



Source: CSO, MIT calculations

** This is a monthly aliquot share calculated from annual data*

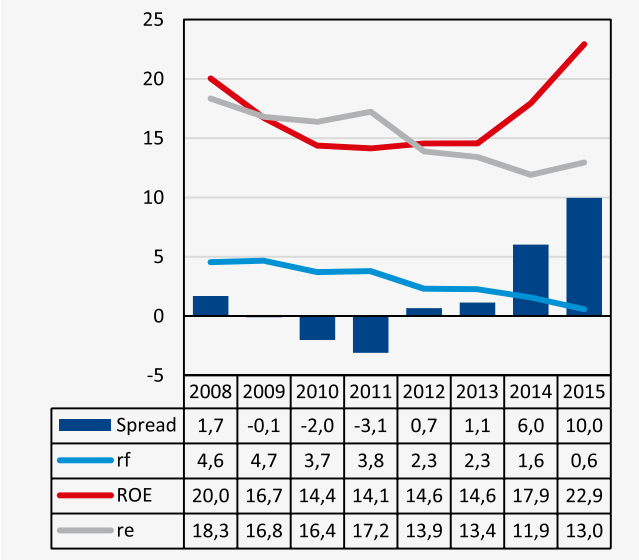
Graph 9.3.2 – CZ-CPA 18 Price developments (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
18	99,4	99,7	91,9	91,6	91,4	91,3	92,0	90,9
18.1	99,4	99,7	91,9	91,6	91,4	91,3	91,9	91,1
18.2					91,8	90,8	92,5	86,6

Source: CSO, MIT calculations
Note: The data was not gathered for group 18.2 in 2008 to 2011

Graph 9.3.3 – CZ-NACE 18 Spread (ROE – re) (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	1,7	-0,1	-2,0	-3,1	0,7	1,1	6,0	10,0
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	20,0	16,7	14,4	14,1	14,6	14,6	17,9	22,9
re	18,3	16,8	16,4	17,2	13,9	13,4	11,9	13,0

Source: CSO, MIT calculations

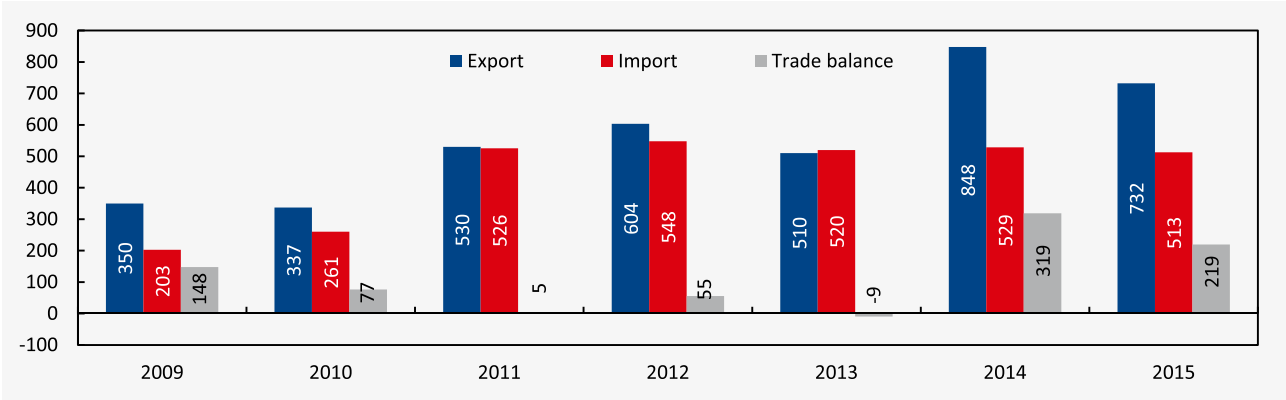
The prices of industrial producers did not reach the level of 2008 and 2009 (Graph 9.3.2) in any of the years in question and were permanently below the rate of inflation in both groups. The prices of CZ-CPA products were influenced by a number of factors, such as the excess of demand over supply, tough competition between printers, the development of the internet, the high number of titles with smaller and smaller print runs.

Trends in CZ-NACE 18 were influenced not only by the economic recession, but also the sector's structural problems. After 2008 the Spread had negative values, from 2012 there was a turnaround, when the Spread became positive. In 2014 the indicator reached a value of 6.03% and in 2015 it was even 9.97 %, with a marked increase in return on equity and a reduction in the sector's degree of risk. This makes it clear that the performance of CZ-NACE 18 in the last three years has started to progressively improve, and this trend improved further in 2015 (Graph 9.3.3).

9.4 FOREIGN TRADE

9.4.1 TRENDS IN FOREIGN TRADE

Graph 9.4.1 – Product export, import and balance of foreign trade in CZ-CPA 18 s (CZK m)



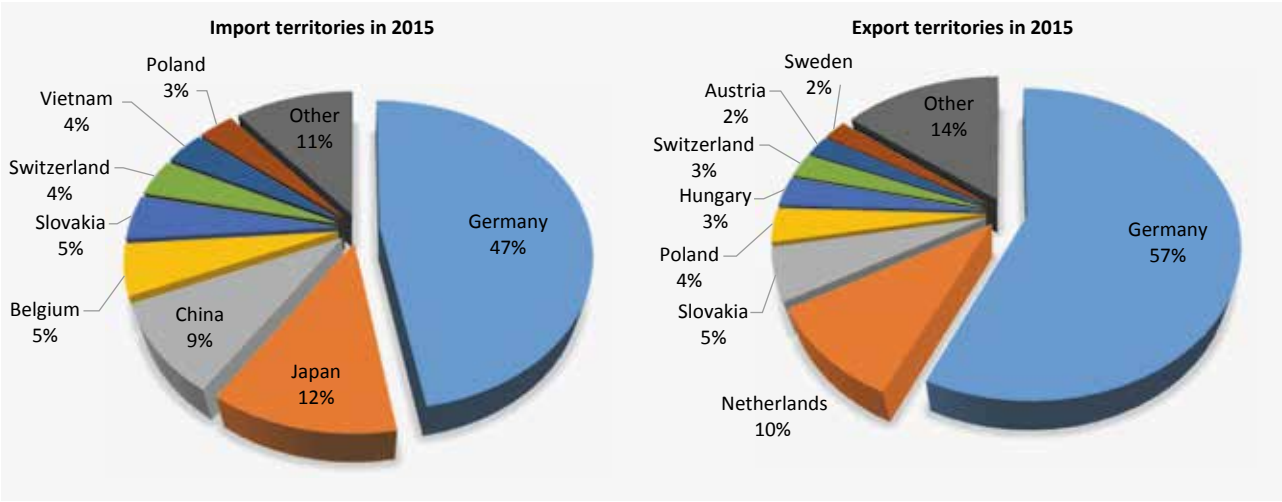
Source: CSO, data as of 28 February 2016

Foreign trade in CZ-CPA 18 products is negligible, as the vast majority of products end up in the Czech Republic. Exports fell by 13.6% in 2015 compared to 2014 and in the whole period in question they fluctuated. Imports fell year on year by 3% and the positive foreign trade balance fell by 31% (Graph 9.4.1).

9.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The only significant business partner is still Germany, to which almost 57% of our exports went last year; it also accounted for 47% of imports.

Graph 9.4.2 – Foreign trade in products in CZ-CPA 18



Source: CSO, data as of 28 February 2016

9.5 DIVISION SUMMARY AND PROSPECTS

CZ-NACE 18 remains an important sector contributing to communication activities that serve a wide group of customers. It is an area with a lot of competition between the various types of products and its character is changing due to the arrival of modern technology, higher use of the internet and the development of social networking. A number of originally printed products have been replaced by electronic media. e-books, online newspapers, magazines and brochures also have electronic variants, which is leading to a fall in the costs of advertising, which is moving to new areas, including online. With regard to this, volumes of a number of printed products are falling, whereas demand for packaging and labels is rising. It is worth mentioning the trend towards progressive increases in sales of vinyl albums, which has been visible for several years. Listening to music on vinyl albums has started to compete with the internet and mobile applications for listening to music and has caused a fall in CD production. The largest manufacturer of vinyl albums in the world is the Czech company GZ Media from Loděnice u Berouna.

In the Czech Republic, as is shown by the above data, the printing and reproduction of recorded media sector went through a complicated period from 2008 to 2015 and it is one of the few manufacturing divisions where the indicators fell relatively markedly in the period in question. The reason was not only a fall in demand for printed products and recorded media in the Czech Republic, but also unfavourable trends in the global printing industry, primarily in developed countries. It was 2014 that brought a certain revival to the Czech Republic, when revenues started to grow. Revenues rose by more than 10% in 2015 compared to 2014 and value added also rose. In the near future the Czech printing industry should basically copy global sector trends and its future objectives should be handled using efficient investments in production facilities in the main areas of the printing industry, i.e. in one-time jobs, promotional, packaging and publication printing.

10.

CZ-NACE 20 MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS

10.1 DIVISION CHARACTERISTIC

CZ-NACE 20 division sorted by groups

- 20.1 Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms;
- 20.2 Manufacture of pesticides and other agrochemical products;
- 20.3 Manufacture of paints, varnishes and similar coatings, printing ink and mastics;
- 20.4 Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations;
- 20.5 Manufacture of other chemical products;
- 20.6 Manufacture of man-made fibres.

The CZ-NACE 20 manufacture of chemicals and chemical products holds an important position in the economy of the Czech Republic. The chemical sector is strongly tied to other divisions of the manufacturing industry, such as the manufacture of plastics and rubber, textile industry, electrical engineering industry, automotive industry and others, acting as their important subcontractor sector.

The number of units is clearly dominated by the group 20.1, which includes also the largest and most important chemical companies in the Czech Republic. Second in the ranking is the group 20.5 representing the manufacture of explosives, detonators, glues, fragrance oils, chemically modified oils and fats, fatty acid methyl esters for engines, powders and pastes used in soldering or welding, auxiliary products for coating metals, auxiliary products to cement, activated carbon, lubricating oil additives, rubber accelerators, catalysts, antiknock agents, antifreeze and defroster agents, transmission fluids and many other chemical products. Third in the ranking is the group 20.4, which includes manufacturers of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations. In 2015 the largest share in the CZ-NACE 20 division sales had the product group NACE 20.1, which accounted for more than 3/4 of all division sales. The group CZ-NACE 20.1, which includes the manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber, clearly dominates also in all other economic indicators (Table 10.1.2).

Table 10.1.2 – Shares of groups in CZ-NACE 20 division in 2015 (%, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
20.1	56.0	70.1	77.6	78.5	71.8	75.8	53.1	64.2
20.2	2.3	1.3	1.0	1.0	0.6	1.2	2.6	2.8
20.3	7.2	5.5	4.7	4.6	5.0	4.3	7.6	4.8
20.4	14.2	9.9	6.3	6.0	11.2	7.5	15.6	10.8
20.5	16.6	10.9	8.4	8.1	10.2	10.0	17.1	16.6
20.6	3.7	2.4	2.0	1.9	1.1	1.2	3.9	0.8

Source: CSO, 2015, MIT calculations

10.2 DIVISION DEVELOPMENT

In 2015 the development of chemical industry in the Czech Republic was influenced by both external and internal factors. In terms of the external factors we can mention a rather favourable economic situation in the EU-28 induced by the improvement in economic growth in some EU countries and increased demand for chemicals and also by lower refining margins year over year. From the internal factors it was particularly the accident at ethylene unit of the Unipetrol company in August 2015, which was negatively reflected in the chemical industry sales and exports.

The financial results of the Unipetrol Group were affected by limited production capacity of Litvinov refinery, and in particular by the significant decline in petrochemical production and sales volumes of petrochemical products due to the aforementioned accident at the ethylene unit. Sales volumes of petrochemical products dropped to 193,000 tonnes (-57%). The year-on-year higher refining and petrochemical margins, higher sales of refined products or internal projects in the area of operational excellence were positive reflected in Unipetrol's results.

The accident at ethylene unit in Litvinov also affected the overall management of Spolana company. As a result of this accident the supply of ethylene was interrupted, which is the main raw material for the production of PVC, and Spolana had to shut down not only the production of PVC, but also the production of sodium hydroxide.

Last year, good results were seen by another company in Ústecký Region – Spolchemie that is the largest exporter of the Ústecký Region. The positive results were affected by a restructuring plan, reduced operating costs and strong demand by European customers.

Also Synthesia of Pardubice recorded a growth in revenues in 2015, particularly due to the growth in production and sales of organic pigments and dyes.

Also another chemical company Explosia improved its management year on year. Last year, for example, Explosia sold more industrial explosives and exported about 60 percent of its production. The growth in production of smokeless powders was supported by a new production line worth tens of millions of CZK. Last year the company also supplied its customers with larger quantities of large calibre ammunition.

The share of CZ-NACE 20 division in sales of the Czech manufacturing industry is around 5%. Chemicals are used in all areas of the economy and the chemical sector is an important supplier of raw materials for many other fields of the manufacturing industry. Major purchasers of chemicals are mainly rubber and plastics industries, construction, pulp and paper and automotive industries.

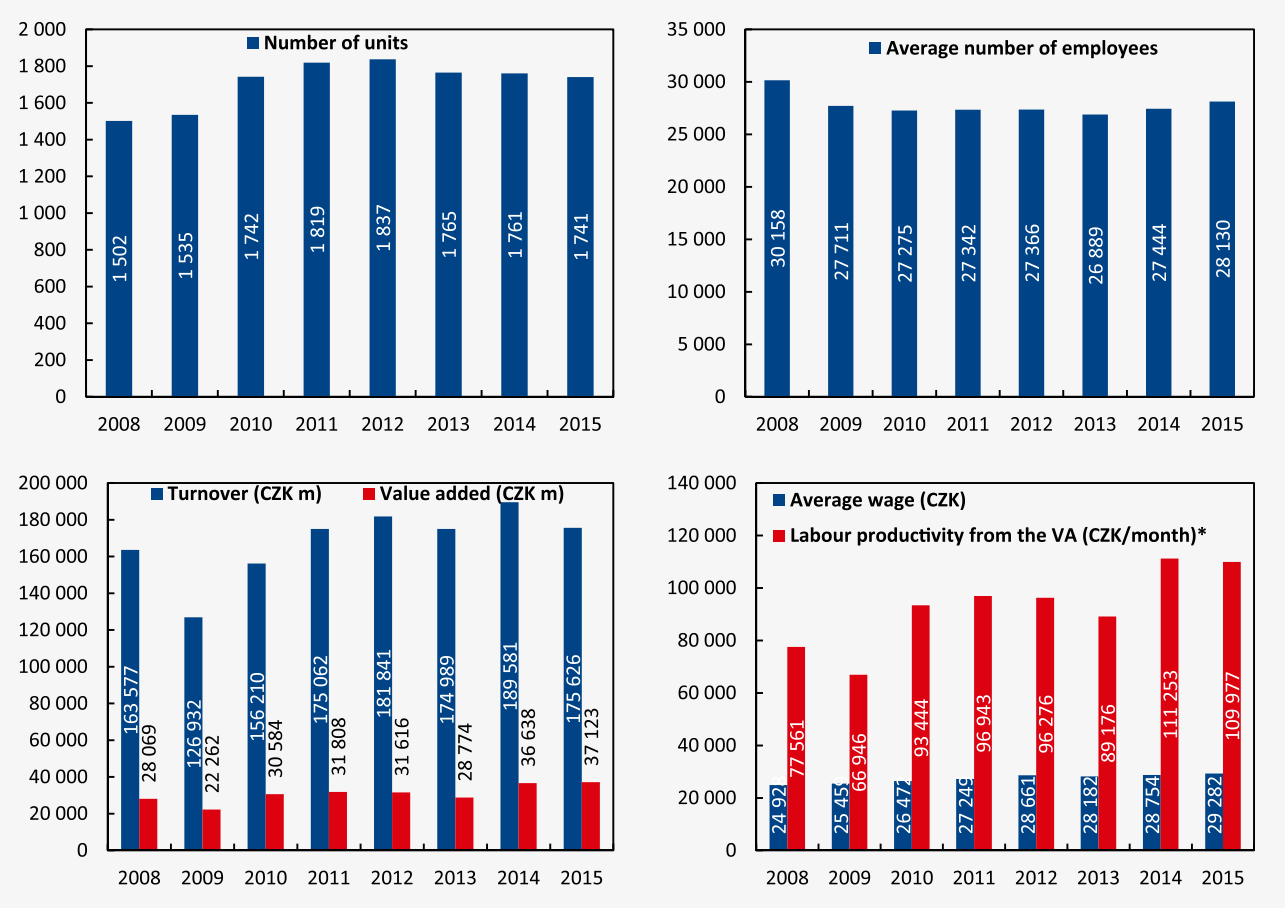
In the Czech Republic the chemical industry is concentrated primarily in three regions – Ústecký Region, Moravian-Silesian Region and Central Bohemia Region. The ten largest chemical companies in the Czech Republic belong to the product group CZ-NACE 20.1 (Unipetrol RPA s.r.o., Synthos Kralupy a.s., Deza a.s., BorsodChem MCHZ s.r.o., Spolana a.s., Lovochemie a.s., Spolchemie – Spolek pro chemickou a hutní výrobu a.s., Synthesia a.s., Silon s.r.o. and Linde Gas a.s.). The other product groups include for example Indet Safety a.s., Austin Detonator s.r.o. (CZ-NACE 20.5), Schwan Cosmetics CR s.r.o., Procter & Gamble (CZ-NACE 20.4), Glanzstoff Bohemia s.r.o. (CZ-NACE 20.6), EFTEC Czech Republic a.s. (CZ-NACE 20.3).

According to Eurostat and Cefic (European Chemical Industry Council) in 2014 the EU chemical industry accounted for 1.1% of the EU gross domestic product. This relatively low share is affected by the declining share of the industry in GDP in developed countries and, on the contrary, by a growth of the share of the service sector. The EU is utilizing about two-thirds of chemicals in the industrial sector, inclusive of construction, while more than a third goes to other areas of the economy such as agriculture, services, etc.

10.3 MAIN ECONOMIC INDICATORS

After the crisis-caused fall of all indicators of CZ-NACE 20 division in 2009, the indicators started to grow except of the employment rate that rather stagnated and started to grow as late as in 2014 and 2015 but has not reached the level of 2008. Indicators of turnover and value added have a growth trend, however in recent years have shown a fluctuating course, and in 2015 there was a noticeable year-on-year decline in turnover while value added was growing (Graph 10.3.1).

Graph 10.3.1 – Major economic indicators of CZ-NACE 20 division (2008 = 100%)



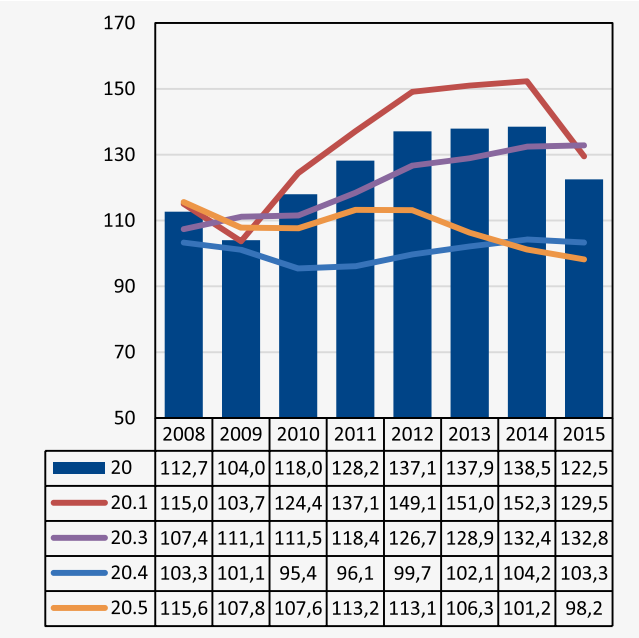
Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

The state of labour productivity growth being ahead of the average wage growth was achieved only in 2010, 2011 and then in 2014, when the productivity increased sharply at a gradual increase in wages that continued also in 2015, but the productivity decreased due to the high basis of the previous year.

In the financial development of CZ-NACE 20 division, a trend of gradual improvement is seen when the return on equity is gradually increasing (with fluctuations in some years) while risk is reducing and thus Spread indicator has arrived from negative to positive values since 2014. In 2015, this value increased further (Graph 10.3.3).

Price development of the CZ-CPA 20 division was significantly affected by the group CZ-CPA 20.1, whose prices grew dramatically after 2009, but from 2013 their growth slowed and, on the contrary, fell dramatically in 2015 (Graph 10.3.2). A lower and relatively stable price growth was seen for the group CZ-CPA 20.3, while the group 20.4 prices were rather oscillating and the group 20.5 prices have started to decline steadily since 2012.

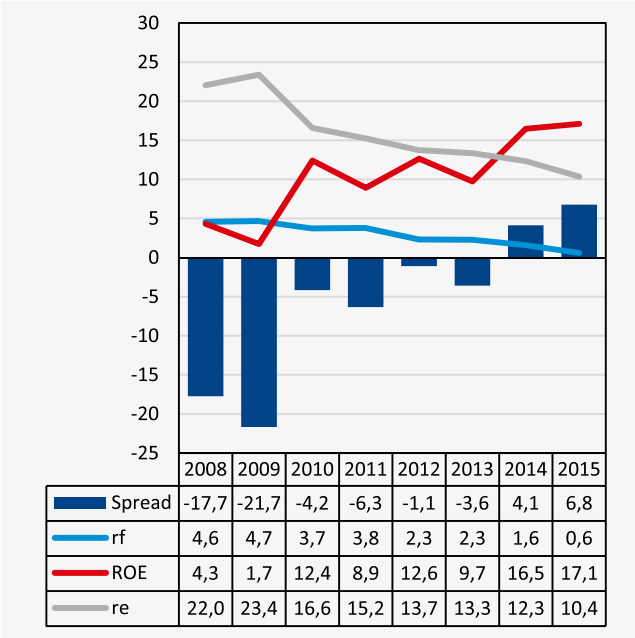
Graph 10.3.2 – Price development of CZ-CPA 20 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
20	112,7	104,0	118,0	128,2	137,1	137,9	138,5	122,5
20.1	115,0	103,7	124,4	137,1	149,1	151,0	152,3	129,5
20.3	107,4	111,1	111,5	118,4	126,7	128,9	132,4	132,8
20.4	103,3	101,1	95,4	96,1	99,7	102,1	104,2	103,3
20.5	115,6	107,8	107,6	113,2	113,1	106,3	101,2	98,2

Source: CSO, MIT calculations
Note: Groups 20.2 and 20.6 are not monitored

Graph 10.3.3 – Spread (ROE – re) CZ-NACE 20 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-17,7	-21,7	-4,2	-6,3	-1,1	-3,6	4,1	6,8
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	4,3	1,7	12,4	8,9	12,6	9,7	16,5	17,1
re	22,0	23,4	16,6	15,2	13,7	13,3	12,3	10,4

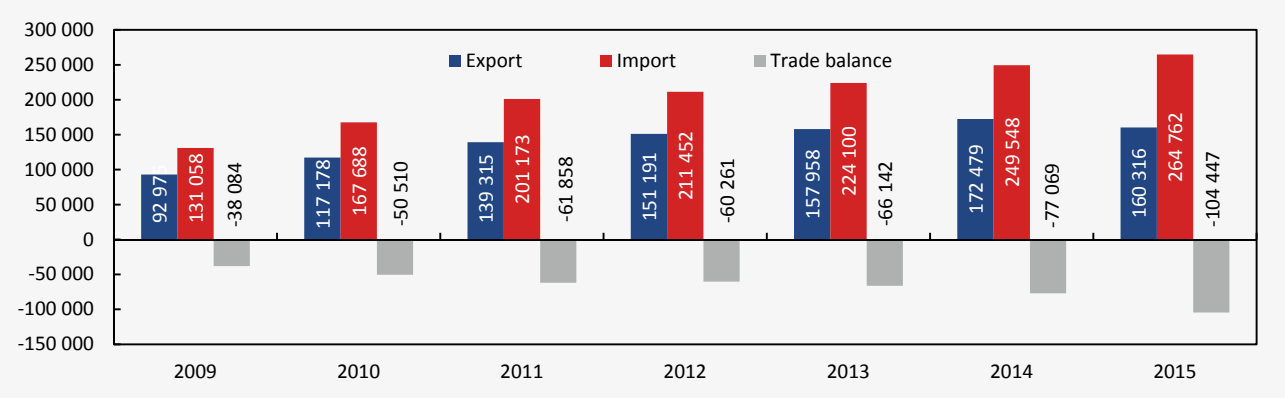
Source: CSO, MIT calculations

10.4 FOREIGN TRADE

10.4.1 DEVELOPMENT OF FOREIGN TRADE

The product group CZ-CPA 20 shows exports being ahead of imports for a long-term period and its negative trade balance over the past five years has grown rapidly and doubled. In 2015 the balance grew by 36% to CZK -104.4bn year on year (Graph 10.4.2).

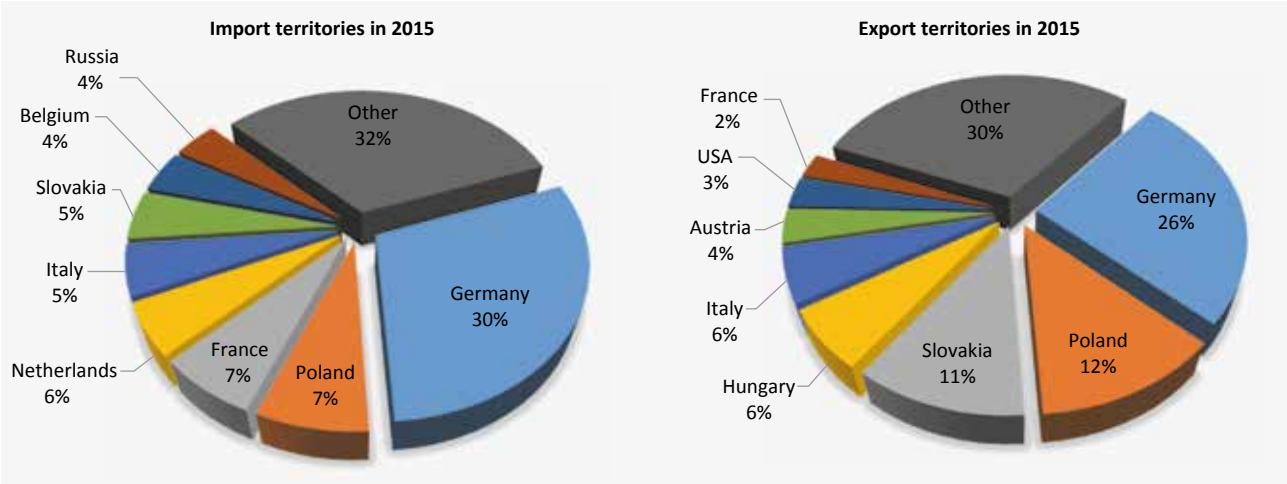
Graph 10.4.2 – Product export, import and balance of foreign trade in CZ-CPA 20 (CZK m)



Source: CSO, data as at 28 February 2016

40.4.3 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Graph 10.4.3 – Foreign trade with CZ-CPA 20 products



Source: CSO, data as at 28 February 2016

The value of exports of the product group CZ-CPA 20, after a series of year-on-year growths, decreased by 7.1% to CZK 160.3bn in 2015. Most chemical substances and chemical preparations were traditionally exported to Germany (a 26% share, for example noble gases, inorganic acids, oxides, ammonia, hydroxides, inorganic salts, organic hydrocarbons, organic acids and other organic compounds). Then it were Poland with a 12% share (for example noble gases, inorganic acids, inorganic acid salts, organic hydrocarbons, organic acids and other organic substances) and Slovakia with 11% (especially inorganic acid salts, organic substances, noble gases, inorganic acids). In last year other important export markets were Hungary (mainly amino compounds) and Italy, both with a 6% share, Austria with a 4% share, USA with 3% and France with 2% (Graph 10.4.3). The product group CZ-CPA 20.1 has the largest share in exports.

The value of imports grew continuously, in 2015 increased by 6.1% to CZK 264.8bn. Similar to exports, the largest share in imports was taken by Germany (for example inorganic acid salts, hydroxides, oxides, inorganic acids, ammonia) and made 30%. Then it were Poland (for example hydrocarbons, alcohols, noble gases, inorganic and organic acids, ammonia, inorganic hydroxides, salts, hydroxides) and France (for example inorganic acids, oxides, hydrocarbons, alcohols and other organic compounds), both countries with a 7% share, furthermore the Netherlands with 6%, Italy with a 5% share, as well as Slovakia and Belgium and Russia with 4%. The product group CZ-CPA 20.1 accounted for more than 50% of exports.

10.5 DIVISION SUMMARY AND PROSPECTS

The chemical industry is an important part of the manufacturing industry in the EU and worldwide. It supports the improvement of living standards and employment rates and the economy. It represents around 7% of the EU industrial production and provides directly about 1.15m of high-skill jobs. Indirectly it provides three times more jobs in other industries. It has the second largest share of value added per employee (after the pharmaceutical industry). Two-thirds of its production are being supplied to other sectors of the manufacturing industry. There is another important link to sectors of agriculture and services.

The EU chemical industry is energy intensive and under strong competitive pressure. It struggles with challenges such as increased international competition, increasing of prices of energy and input materials, pressures on resource efficiency, new regulations, laws and the need for innovation. As an energy-intensive industry, the chemical industry depends on economic policy in the area of climate change and energy. In addition, the chemical sector is highly regulated in order to protect the health of their employees, consumers' health and environment protection.

In 2014, world sales of the chemical industry grew by 2.6% to EUR 3,232bn (the Cefic 2016 Facts and Figures). However, their growth was significantly lower in comparison with the trend of the last ten years, when in the period 2003-2013 the world sales grew by an annual average of 9.0%. Similar to recent years, the worldwide leader was again China, whose sales in 2014 rose to EUR 1,111bn. In 2014, the EU had a 17% share in global revenues in the field of chemistry, which represents a value of EUR 551bn. However, the development over the past 20 years shows that the EU position is weakening. The reason is a growing demand for chemical products in China, India and other developing countries and, on the contrary, the falling demands in the EU and North America, where Europe sells most of its chemical products.

From a global and European point of view, the Czech chemical industry belongs to those less important. The Czech Republic accounts for about 0.2% of global sales. The European long-term leader has been Germany, in 2014 it accounted for 26.7% of global sales. In 2014, thirty of the world's largest chemical companies reached a total combined turnover of EUR 2,815bn. Twelve of these thirty companies were based in Asia and had a 51.9% share in global sales. Twelve companies were based in Europe and their sales accounted for 17% of global turnover.

Regarding foreign trade, in 2014 the EU achieved a positive trade balance totalling EUR 43.5bn, which is a decrease compared to 2013. Sales from total exports to countries outside the EU reached EUR 137.7bn. Sales of imports from countries outside the EU then made EUR 94.2bn.

Investments in development play a key role in the future development of the chemical industry. Nevertheless larger upgrades of facilities or expansions of production necessitate long-term planning. Such investments are related not only to the increase of production or the introduction of new productions, but must also comply with the relevant regulations and rules and lead to a reduction in operating costs. However, investments into the EU chemical sector are in a long-term decline or stagnation. In 2014, a total amount of investments in the EU chemical industry reached EUR 18.6bn, which is only a slight increase against the previous year.

In connection with aforesaid, new forms of industrial cooperation between the chemical and other industries are being established which helps keep jobs in the European production. An example might be the cooperation between agricultural sector and chemical industry in the production of bioplastics.

In the Czech Republic the investment activity in the chemical sector is still continuing. Unipetrol and Italian-based company Technip signed an agreement on construction of a new polyethylene unit in Chempark Záluží. It will be the largest investment in the history of the Czech petrochemical industry. The unit will also be among the most modern production facilities of its kind in Europe. The value of the contract is CZK 5.76bn. Total investment costs related to the project implementation will amount to CZK 8.5bn. Putting into operation of the new polyethylene unit is planned for mid 2018.

The Lovochemie plant of Lovosice plans to increase the nitric acid production in the KD6 production facility to 1,100 tonnes per day. The capacity increase will be achieved by modification and installation of some new machinery. The product is a 60% nitric acid – a basic semi-finished product to produce artificial fertilizers and Lovochemie is the largest domestic manufacturer thereof. Implementation of the project is scheduled for 2017. In connection with the increase in production, the consumption of ammonia is to be increased by 16,000 tonnes per year to a total of 106,000 tonnes.

Spolchemie of Ústí is completing its biggest investment in company's modern history, the membrane electrolysis will be completed in summer. The chemical plant commenced the construction by virtue of the European legislation that prohibits the use of poisonous mercury in production. The electrolysis construction costs amounted to CZK 1.5bn. The chemical plant is also using electrolysis outcomes for its own production of epoxy resins. The new electrolysis production will consume 60,000 tonnes of salt a year.

Chinese company Wanhua Industrial Group and BorsodChem MCHZ company of Ostrava signed a memorandum of understanding on investment added into the project of aniline technology improvement and the project of new special amine. EUR 90m (CZK 2.4bn) is to be invested into the production expansion in Ostrava plant.

In April this year a new line for production of spherical powders was put into operation by Explosia public limited company of Pardubice. Explosia a.s. is involved in production and sale of explosives and services associated with the application of energetic materials for civilian and military utilization.

This June the Unipetrol RPA s.r.o. company entered into a purchase agreement with ANWIL S.A. company, based on which it will acquire a 100% equity stake in SPOLANA a.s. company. The transaction supports the overall reorganization of activities of the Unipetrol Group, which relates to the acquisition of full control over refining activities in the Czech Republic. The acquisition of Spolana will allow the Unipetrol Group to better plan and optimize production capacities, prepare for the planned launch of the new polyethylene unit and improve society's resilience to the effects of the external environment. Both companies can take advantage of the piping between Litvinov and Neratovice to supply products. Spolana company is a major purchaser of ethylene, it also buys ammonia and sulphur from Unipetrol RPA.

11.

CZ-NACE 21 MANUFACTURE OF BASIC PHARMACEUTICAL PRODUCTS AND PHARMACEUTICAL PREPARATIONS

11.1 DIVISION CHARACTERISTICS

The CZ-NACE 21 Division is broken down into the following groups:

- 21.1 Manufacture of basic pharmaceutical products;
- 21.2 Manufacture of pharmaceutical preparations.

The pharmaceutical industry significantly contributes to the development of the global economy. It is a strong sector that is one of the pillars of industrially developed economies and is regarded more and more as an important sector also in developing countries. It contributes to employment, trade, spending on research and development and the building of technological capacities.

The pharmaceutical industry is a hi-tech manufacturing division, the most demanding in terms of science and research, as large financial amounts (mostly 15 to 20% of annual revenues) are spent on the development of new medicines every year. Its production portfolio is very wide and includes original drugs that are patent-protected and generic drugs for which patent protection has ended. Here the decisive manufacturers concentrate, in particular due to high costs, mostly on generics, where the Czech Republic is an industry leader.

The decisive weight in the division is possessed by the CZ-NACE 21.2 group, whose share of total revenues in the division was 91.5% in 2015. Product group 21.2 clearly dominates in the other economic indicators, such as number of employees, total assets, equity, revenues, added value and personnel costs, where the share is always over 87% (Table 11.1.1).

Table 11.1.1 – Shares of CZ-NACE 21 Division Groups in 2015 (as a %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
21.1	12.2	9.5	8.5	9.2	12.4	12.0	11.7	20.2
21.2	87.8	90.5	91.5	90.8	87.6	88.0	88.3	79.8

Source: CSO, calculations MIT for 2015

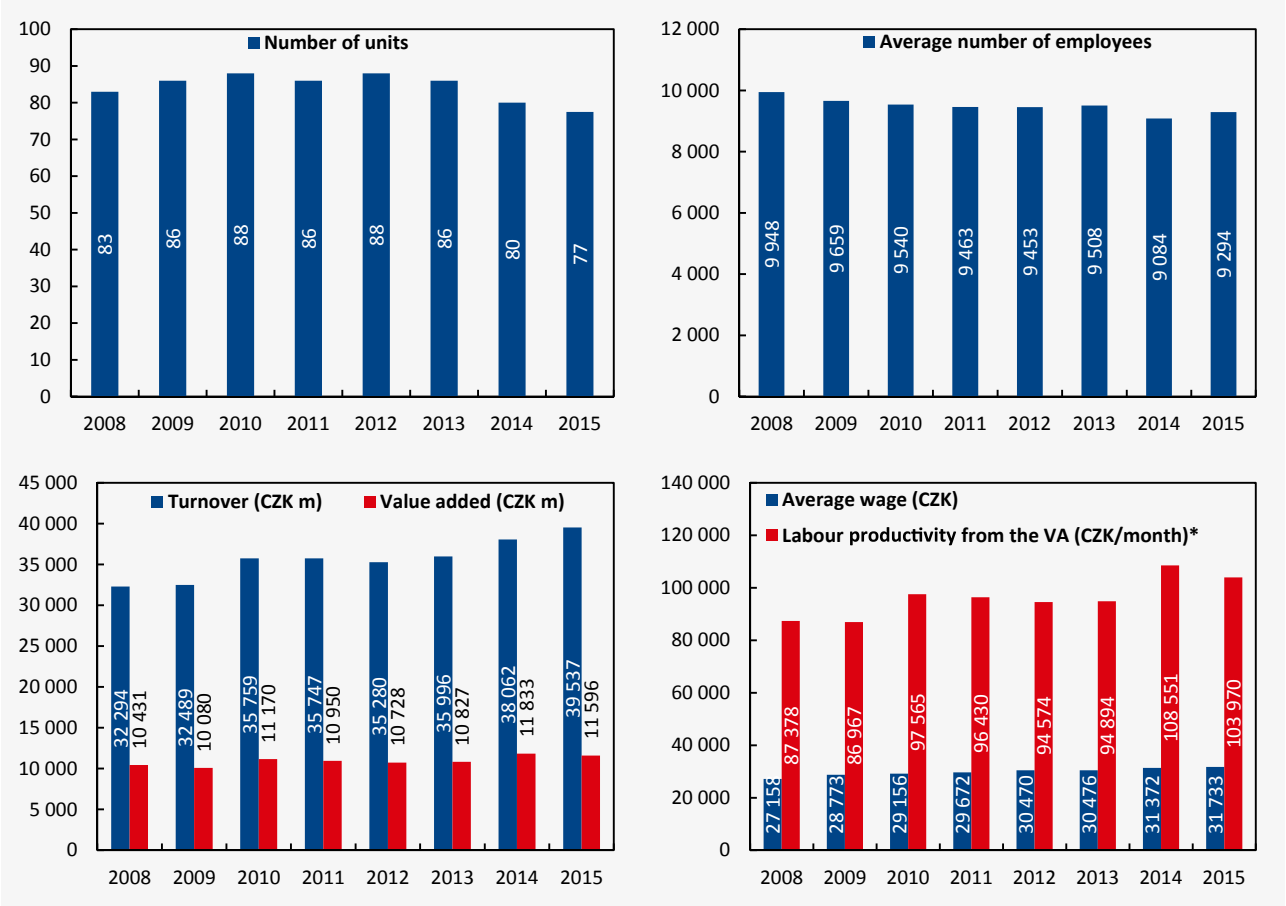
11.2 DIVISION DEVELOPMENT

In the Czech Republic drugs worth CZK 60bn are consumed annually, the number of packages sold is around 250m units. The leader on the domestic pharmaceutical market is Zentiva, which sold a total of 41.5 million drug packages in 2015, increasing its sales by 3.8% year on year. This year the company plans to increase the number of medicines manufactured in its production unit for the manufacture of hormonal medicaments, sterile ointments and eye drops. In 2016 and 2017 the company will launch 11 new generic drugs for cardiovascular and respiratory illnesses. The company also started the development of new generic drugs for treating cancer. Investments in them were worth more than half a billion Czech koruna. Since they were brought into operation, Zentiva has increased the manufacture of such drugs by tens of percent and today produces approximately 14m doses annually.

Teva Pharmaceutical Industries Ltd. has an annual turnover of over CZK 2bn. It has a product portfolio of more than 220 medicines. It delivers more than 19 million packages of medicines annually to the Czech healthcare system. Its corporate affiliate is the Teva Czech Industries s.r.o. production plant in Opava, which has an annual turnover of over CZK 8bn, manufactures around 8 billion pills, 50 million gelatine capsules and 210 million cytostatic tablets annually, and is one of the largest manufacturers in Central Europe, as well as being a leading exporter, primarily to the US market.

11.3 MAIN ECONOMIC INDICATORS

Graph 11.3.1 – Main Economic Indicators of CZ-NACE 21 Division (year 2008 = 100 %)

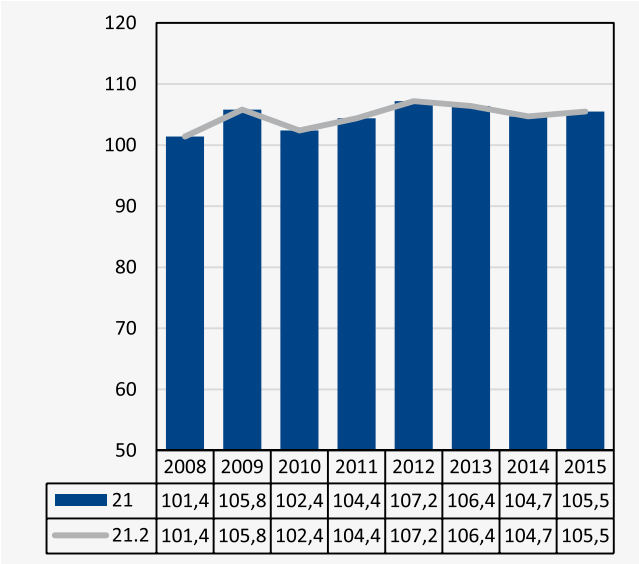


Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

Whereas the crisis year 2009, in the majority of industries, led to a marked collapse in indicators, in Division 21 there was only a slight fall in added value, productivity and employment, and turnover even rose slightly. In 2010 there was a jump in all the indicators, except employment, in the next there years there was more or less stagnation, but in 2014 turnover, value added and productivity rose significantly. Turnover continued its year-on-year growth in 2015, but value added and productivity fell, and there was a slight increase in the number of employees (graph 11.3.1).

Productivity grew faster than average salaries, something favourable for competitiveness, only in 2010 and 2014. In other years average salary rose faster.

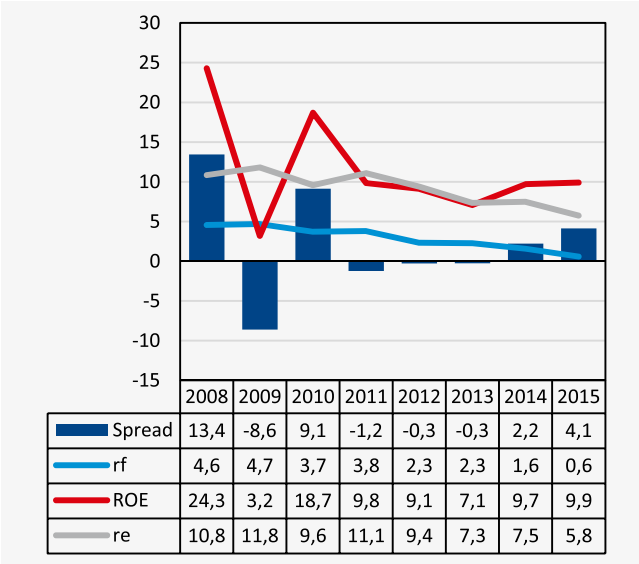
Graph 11.3.2 – CZ-CPA 21 Price Developments (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
21	101,4	105,8	102,4	104,4	107,2	106,4	104,7	105,5
21.2	101,4	105,8	102,4	104,4	107,2	106,4	104,7	105,5

Source: CSO, MIT calculations
Note: Group 21.1 is not monitored

Graph 11.3.3 – Spread (ROE – re) CZ-NACE 21 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	13,4	-8,6	9,1	-1,2	-0,3	-0,3	2,2	4,1
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	24,3	3,2	18,7	9,8	9,1	7,1	9,7	9,9
re	10,8	11,8	9,6	11,1	9,4	7,3	7,5	5,8

Source: CSO, MIT calculations

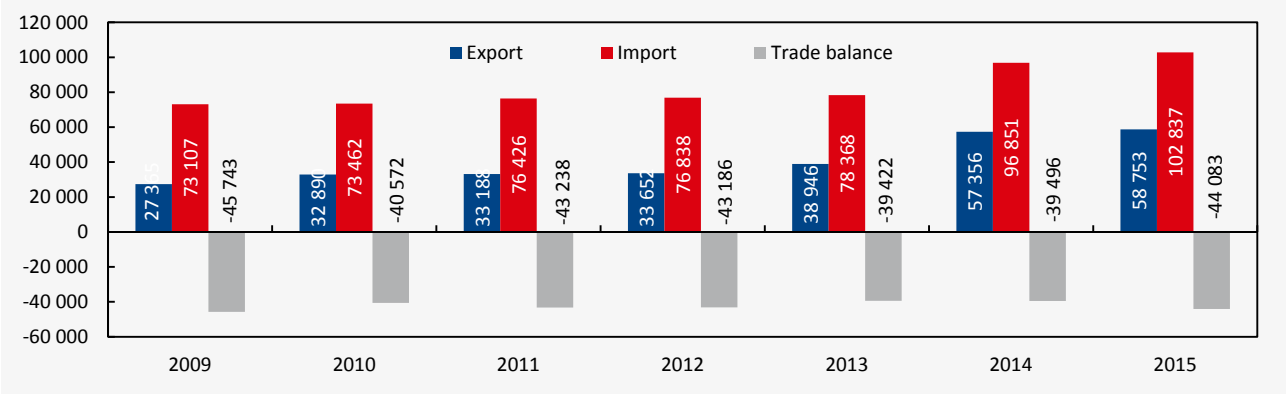
Whereas the crisis year of 2009 only had a slight effect on production indicators, in the division's financial position characterised by the Spread indicator there was a deep collapse into negative values, which was equalised in 2010 by the high positive value, influenced by fluctuations in the return on equity (graph 11.3.3). In the next three years the Spread oscillated around zero and it only improved in 2014 and again in 2015.

Trends in manufacturers' prices are statistically monitored only for the CZ-CPA 21.2 group. Trends in prices were generally moderate, after the fluctuation in 2009 prices alternately rose and fell for two-year periods. They reached their maximum level in 2012. They rose slightly in 2015. The fall in prices in the last few years was influenced by the situation on the drug market. It has stagnated, or even fallen slightly, in recent years. This state is caused by permanent pressure on prices and payments for drugs and the limited entry of new medicaments onto the market.

11.4 FOREIGN TRADE

11.4.1 TRENDS IN FOREIGN TRADE

Graph 11.4.1 – Product export import and balance of foreign trade in CZ-CPA 21 (CZK m)



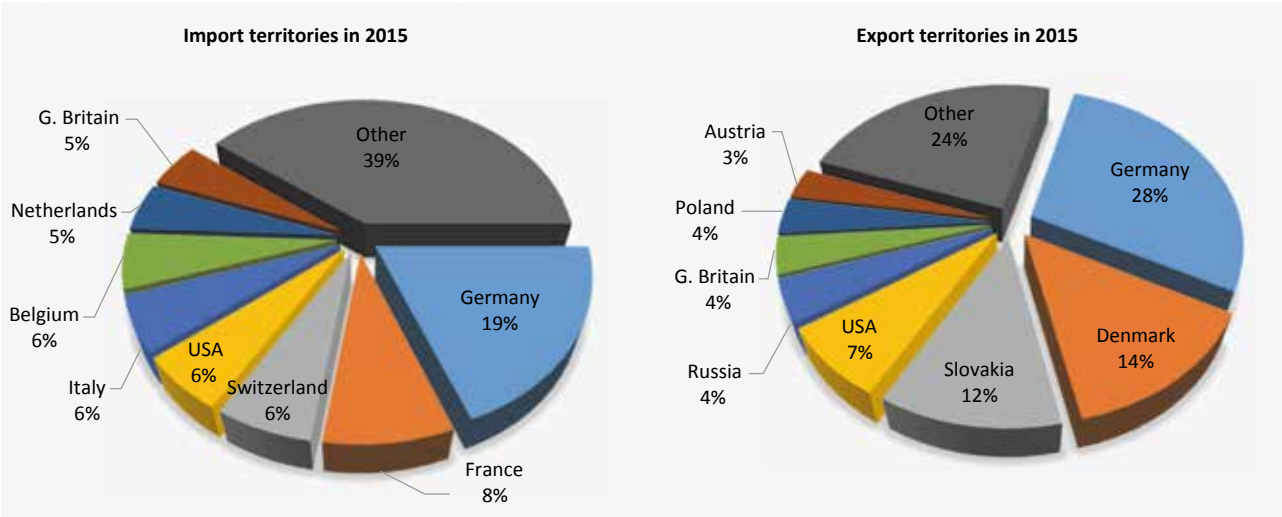
Source: CSO, data as of 28 February 2016

In a similar manner to chemical substances and chemical preparations, for pharmaceutical commodities the value of imports exceeds the value of exports. Their growth trends are relatively well-balanced, so the negative balance does not have large fluctuations, in 2015 it reached CZK 44.1bn. In 2014 there was an evident significant increase in the value of imports and exports (graph 11.4.3).

The large increase in the Czech Republic's foreign trade in 2014 in CZ-CPA 21 commodities was caused by an increase in the Danish company Orifarm Supply, s.r.o., which opened a plant in the Czech Republic to re-package original medicaments, which it then exported from the Czech Republic, mostly to Denmark and Germany. This is confirmed by the fact that in 2014 the biggest exports of CZ-CPA 21 commodities were to these two countries, and exports of CZ-CPA 21.2 to Denmark rose more than three times. This state continued into 2015, which is confirmed by revenues for CZ-CPA 21.2 exports, which exceeded CZK 50bn last year.

11.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Graph 11.4.2 – Foreign trade in CZ-CPA 21 products



Source: CSO, data as of 28 February 2016

In 2015 exports of CZ-CPA 21 products totalled CZK 58.8bn. The traditionally largest market for pharmaceutical products and preparations was Germany (in particular drugs and pharmaceutical products such as cotton wool, gauze, bandages) with a share of 28%, followed by Denmark (drugs, antisera) with 14% and Slovakia (drugs, pharmaceutical products) with 12%. Another significant market is the USA (pharmaceutical products such as cotton wool, gauze, bandages, etc.) with a share of 7% and Russia (drugs), Great Britain and Poland, all with 4%.

Imports rose in 2015 to CZK 102.8bn. The largest share (19%) in imports is possessed, the same as for exports, by Germany (primarily drugs, vitamins), followed by France (drugs) with an 8% share. After them are Switzerland, the USA, Italy and Belgium (6%) and the Netherlands and Great Britain (5%).

11.5 DIVISION SUMMARY AND PROSPECTS

The European pharmaceutical industry is the fifth largest division in EU manufacturing industry. The pharmaceutical industry is a hi-tech division with the highest added value per employee, significantly higher than other hi-tech manufacturing industry divisions. The pharmaceutical industry is the sector with the highest share of investment in research and development from net earnings. According to European Commission statistics, five of the ten leading companies in research and development were pharmaceutical companies.

In 2013 patented drugs represented one third of the global pharmaceutical market. Nevertheless, it is expected that after patents expire in developing countries this share will fall. On the contrary, the market in generics will rise, as sales of generic drugs on developing markets increase.

In addition, for many companies focused on research there is an expectation in the near future of a marked fall in income, when their patents expire. Therefore, these companies will, in the future, have to focus more on other methods of innovation—open co-operation and new business models, such as mergers between pharmaceutical companies or the involvement of academia, the public or the private sector. This co-operation includes sharing specialist knowledge, know-how and technology, such as substance databases.

The fragmentation of the pharmaceutical market in the EU, in addition, has led to lucrative re-exports of medicines by drug resellers. This practice is also known as the parallel trade in drugs. It concerns the export of drugs from the domestic market to other countries. It is a legal activity in the spirit of the principle of free movement of goods around the EU. According to the Statement Institute for Drug Control, the volume of re-exports in 2014 from the Czech Republic was 6.3m packages of medicines worth CZK 3.5 at manufacturer's prices. Preparations for special treatment (oncology, central nervous system, biological treatment) lead. The typical destination countries are Germany, Great Britain, Sweden, the Netherlands and Denmark. Despite all the efforts of manufacturers the consequence is often a lack of some drugs for patients in countries with low prices (e.g. Greece, Slovakia, Hungary and the Czech Republic).

The pharmaceutical industry is one of the sectors with the most intensive research and development. At the current time there is a sharp increase in research and development in the developing economies of countries such as Brazil, China and India, which is causing a shift in research activities to these rapidly developing markets. In 2014 Europe accounted for 25.3% of global revenues, whereas the USA accounted for 44.5%. According to IMS Health data, revenues on the sale of new drugs issued in 2010 to 2014 in the USA accounted for 57% of drugs sold on the US market, whereas on the European market sales of such drugs only accounted for 25%.

According to the EFPIA (European Federation of Pharmaceutical Industries and Associations, the document The Pharmaceutical Industry in Figures – Edition 2015) in 2014 the European pharmaceutical industry employed over 700,000 people, and mostly they are highly-skilled jobs. It therefore indirectly created three to four times more jobs. €30.5bn was invested in research and developed in Europe in the same year. In 2014 European pharmaceutical production was more than €220m, exports were €316.5m and imports were €238.5m.

The increase in sales continued in the Czech Republic in 2015 (by 5.8%), the same trend as in 2014. This year's preliminary results show that this trend could continue, even though after a good start to the year there was a fall.

Investment activity in this division is continuing. At Zentiva in 2015 the volume of investments in research and development was CZK 670m. Since 2009, when Sanofi purchased Zentiva, the total has been CZK 4.8bn. The manufacture of vaccines at a plant in Jevany, Central Bohemia, will re-start after a year and a half. Baxter, which closed the plant last year, sold the business to the US biotechnology company Nanotherapeutics. It employs over 250 people at the plant. The European Commission has permitted the acquisition by Teva Pharmaceutical Industries of Allergan, which specialises in the manufacture of generic drugs. The corporate merger will have a direct influence on the Czech pharmaceutical market. Teva will become the fourth largest drug manufacturer. The acquisition could cause a fall in the prices of some medicaments.


GUMOTEX

12.

CZ-NACE 22 MANUFACTURE OF RUBBER AND PLASTIC PRODUCTS

12.1 DIVISION CHARACTERISTICS

The CZ-NACE 22 Division is broken down into the following groups:

- 22.1 Manufacture of rubber products;
- 22.2 Manufacture of plastic products.

The manufacture of rubber and plastic products CZ-NACE 22 is one of the most important divisions of the Czech Republic's economy. Plastic and rubber have a wide range of users—for packaging materials, in construction, in the automobile industry and the electrical engineering industry.

Plastics have a lot of uses even after recycling. Recycled plastic products include, for example, parts for automobiles, design furniture and household accessories, textiles, shoes and bags, packaging materials and a number of other products.

Rubber is a material that is unique and irreplaceable. Rubber products are a necessary component for the manufacture of products in other sectors. Rubber is a material that is flexible, long-lasting and safe at low temperatures. Thanks to its properties—it can withstand very low and very high temperatures—it is used, for example, in the space and aviation industries. Around 60% of rubber products are used for components in means of transport.

The production of plastic products is predominant in division CZ-NACE 22. There is a clear predominance, in particular, in the number of units and number of employees, for the other characteristics the predominance over the manufacture of rubber products is less (Table 12.1.1).

Table 12.1.1 – Shares of groups in CZ-NACE 22 division in 2015 (%, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
22.1	27.2	43.6	42.5	45.4	41.2	37.0	24.9	19.1
22.2	72.8	56.4	57.5	54.6	58.8	63.0	75.1	80.9

Source: CSO, 2015 calculations MIT

12.2 DIVISION DEVELOPMENT

A total of 322m tons of primary plastics was produced in the world in 2015. The leader was China with a share of 28%; the USA was in second place, just ahead of Europe. A large part of produced plastics are used in packaging. Globally this concerns 80m tons with an outlook for 318m tons in 2050.

Sales by the Otrokovice-based tyre manufacturer Continental Barum rose last year by CZK 57.7bn. It is more than 3.5% more than in the previous year, and a record for the company. Exports contributed CZK 38bn to sales. The company manufactured 21.1m car and light utility tyres last year; the production was approximately the same as in past years. The company is able to produce more than 1,800 different types of product. The

company produces a more demanding range and in small series. About a third of car tyres manufactured are now accounted for by high-speed tyres for sports and luxury automobiles. Last year Continental Barum manufactured 919,000 lorry tyres and 119,000 industrial ones.

Semperflex Optimit, the largest manufacturer of hydraulic hoses in Europe, opened a new production hall in 2015 in Odry, Nový Jičín District. Thanks to an investment of more than CZK 400m, the company will increase its production capacity by a third.

The Břeclav-based Gumotex started up a coating line last year. The company estimates its annual benefit at CZK 20m. The business invested CZK 140m in the technology and expects that it will help it against Asian competitors.

Last year the Swedish Trelleborg group signed a contract to purchase the Czech rubber holding company ČGS Holding, which includes, in particular, the tyre manufacturer Mitas, as well as the Rubena and Savatech brands. The transaction's value is CZK 31.4bn. Trelleborg is active in more than 40 countries around the world and by taking the holding company over it will become a global leader in the manufacture of agricultural tyres.

Sales and profit were also increased by two Czech manufacturers of food casings—Viscofran and Devro. Viscofran from České Budějovice saw its sales grow by five per cent to CZK 6.3bn, the Jilemnice-based Devro saw its sales rise at a similar tempo, to CZK 3.5bn. At Viscofan the main influence was the long-term stable situation in sales and the fact that the company's distribution network reaches 130 countries around the world. Viscofran is part of the Spanish Viscofran Group, the largest global manufacturer of artificial casings for, in particular, the meat industry. Devro, part of the multinational group of the same name with operations in Scotland, Australia and the USA, did better in both US continents and in Asia, where it introduced new products. The results were positively boosted by the weakening of the CZK exchange rate against the dollar and an increase in the value of sales in CZK equivalent. The global fall in energy prices also had a positive effect. A reduction in the costs per unit of production and a reduction in inventories also had favourable effects.

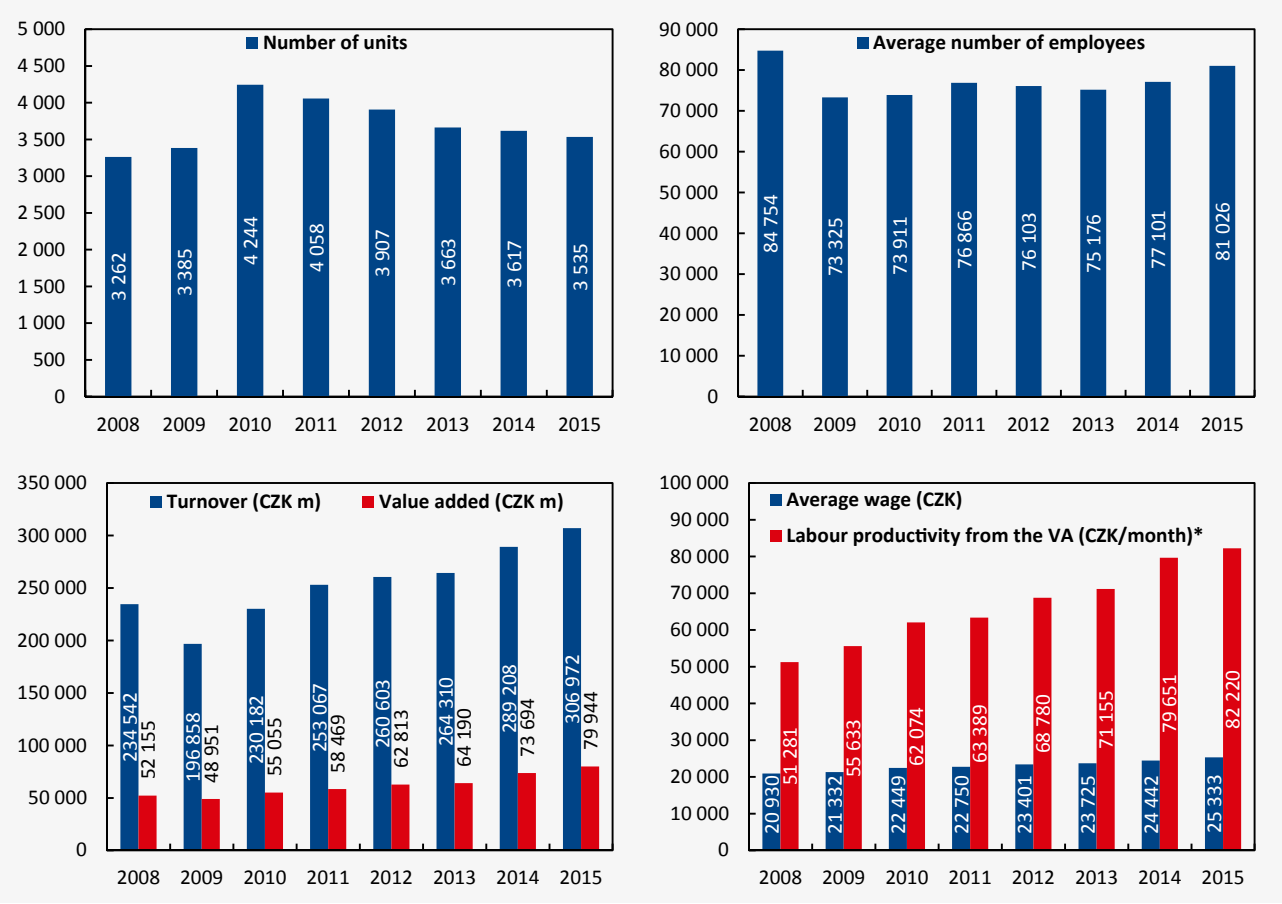
The Napajedla-based company Fatra, which is one of the largest plastics manufacturers in the country, slightly increased its sales to CZK 3.6bn last year. Its record sales, which were CZK 3.55bn in 2014, rose by around one per cent. The year-on-year increase in profit occurred thanks to better market conditions, where the company achieved higher revenues in the decisive segments. The insulation foils and flooring segment made a significant contribution to sales. The company also produces PVC granulate, plastic profiles, packaging foil, steam-permeable foil, welded products, injected and shaped products. Fatra has been exporting to other countries for a long time; exports contributed 66% to sales last year, the same as in 2014.

According to the EPS Association (an association grouping manufacturers of expandable polystyrene) last year expandable polystyrene enjoyed its highest-ever consumption—62,000 tons of EPS was consumed, i.e. 2.1% more than in comparison with the previous year. The economic revival of industry, including construction, is the cause of the Europe-wide high sales of EPS, and the Czech Republic is one of the countries in the region where the popularity of polystyrene is traditionally high. The historically highest nationwide consumption is significantly boosted by economic factors, such as growth in investment in construction and higher support from government subsidy programmes. Construction accounted for 85% of the total consumption of EPS.

12.3 MAIN ECONOMIC INDICATORS

The production characteristics indicate that it is one of the most stably-developing industries. The decline during the 2009 recession was not dramatic and in 2010 value added exceeded the 2008 level, turnover exceeded it a year later. In the next years these indicators continued to grow stably. Employment did not manage to reach the 2008 level, but with the exceptions of 2012 and 2013 there were year-on-year increases, in particular in 2015. Productivity showed stable growth, and thanks to a reduction in employment did not fall even in the recession-hit year of 2009. Given the moderate trends in average wage, productivity rose faster than wages throughout the period in question (Graph 12.3.1).

Graph 12.3.1 – Main Economic Indicators of CZ-NACE Division 22 (year 2008 = 100 %)

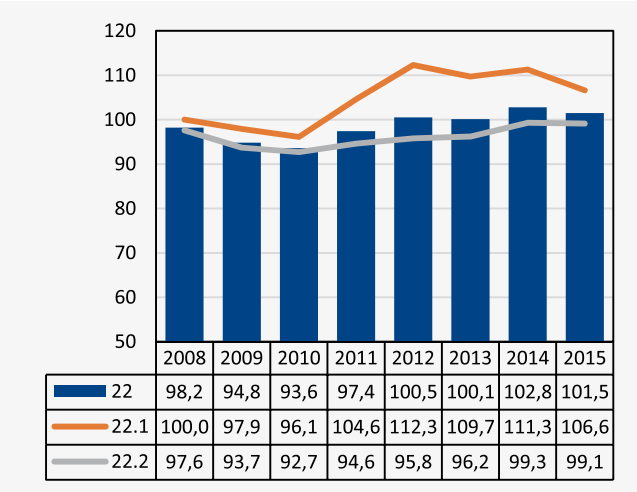


Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

The financial situation of the CZ-NACE 22 division had stably-improving trends where, in 2009, there was a reduction in the negative values of the Spread and from 2010 its values improved year-on-year. This was due to an equal reduction in risk and an increase in the return on equity (Graph 12.3.3).

Between 2008 and 2010 industrial manufacturers' prices for CZ-CPA 22 commodities were under the 2005 level and fell year on year, reaching the minimum in 2010. Growth started in 2011, where in group 22.1 the growth was progressive for two years, but had a falling tendency in the next years, although prices remained above the 2005 level. The prices of this product group are influenced primarily by rubber prices on international markets and are much higher than for the CZ-CPA 22.2 product group. For group 22.2 the year-on-year growth was slower, but their level remained under the 2005 value (Graph 12.4.3).

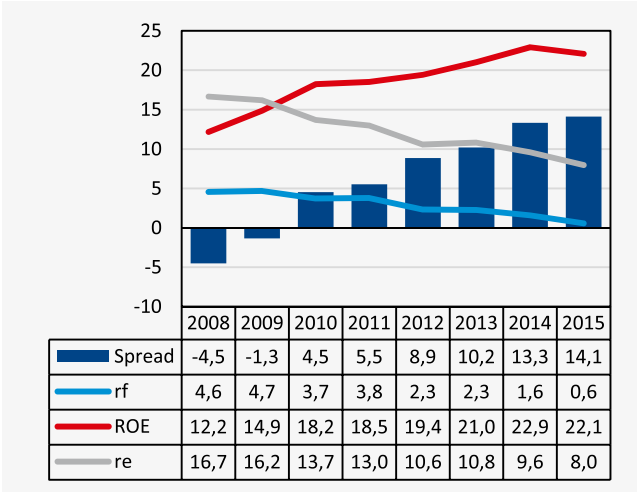
Graph 12.3.2 – CZ-CPA 22 Price development (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
22	98,2	94,8	93,6	97,4	100,5	100,1	102,8	101,5
22.1	100,0	97,9	96,1	104,6	112,3	109,7	111,3	106,6
22.2	97,6	93,7	92,7	94,6	95,8	96,2	99,3	99,1

Source: CSO, MIT calculations

Graph 12.3.3 – Spread (ROE – re) CZ-NACE 22 (in %)



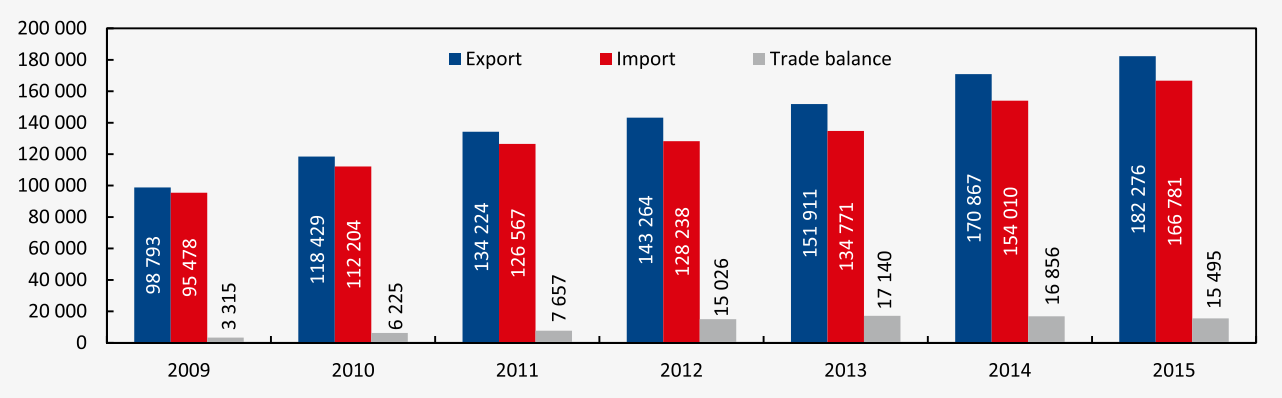
	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-4,5	-1,3	4,5	5,5	8,9	10,2	13,3	14,1
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	12,2	14,9	18,2	18,5	19,4	21,0	22,9	22,1
re	16,7	16,2	13,7	13,0	10,6	10,8	9,6	8,0

Source: CSO, MIT calculations

12.4 FOREIGN TRADE

12.4.1 TRENDS IN FOREIGN TRADE

Graph 12.4.1 – Product export, import and balance of foreign trade in CZ-CPA 22 (CZK m)



Source: CSO, data as of 28 February 2016

In 2015 exports of CZ-CPA 22 products totalled CZK 182bn and there was a year-on-year increase of 6.7%. The CZ-CPA 22.2 commodity plastic products has a slightly larger share (54%) of exports. CZ-CPA 22 exports have been growing for a long time for both plastic and rubber products.

Imports rose in 2015 by 8.3% to CZK 167bn, in particular thanks to imports of plastic products. They contributed more than two thirds to CZ-CPA 22 exports and their sales from imports accounted for CZK 116bn in 2015.

The positive trade balance fell in 2015, the same as the year before. This is thanks to CZ-CPA 22.2, where the balance is negative and where imports of plastic products are markedly increasing. On the contrary, the balance of CZ-CPA 22.1 is positive and growing over the long-term, and it is responsible for the total positive balance of foreign trade in CZ-CPA 22 commodities.

CZ-CPA 22 is one of the few branches within the broader approach of chemicals industry in the Czech Republic (chemical products and preparations, pharmaceutical products and preparations and rubber and plastic products together) that has a positive foreign trade balance.

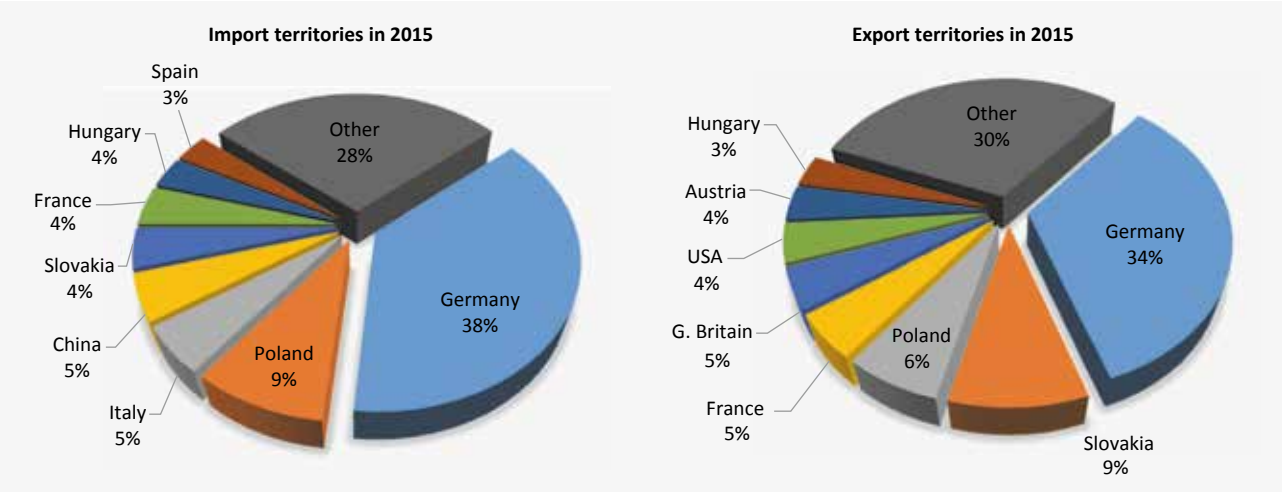
12.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The biggest market for rubber and plastic products was traditionally, with a 34% share, Germany (primarily waste, fragments, cuttings from plastics, pipes, hoses, panels, sheets, foil bags, bags, bottles, products for transporting and packaging goods, construction products and other plastic products, panels, sheets, rubber strips, tyres for cars, buses, lorries and farm vehicles, and other rubber products), followed by Slovakia with 9% (e.g. panels, bottles, flacons, demijohns, packaging and other products from plastics, car tyres) and Poland with a 6% share (e.g. pipes, hoses from plastic, rubber, car tyres). Other export destinations for CZ-CPA 22 commodities are France (mostly car tyres), Great Britain (car tyres), USA (car tyres, rubber), Austria (bottles, flacons, plastic products for construction, tyres) and Hungary (bottles, flacons, boxes, plastic crates, tyres).

Imports, the same as exports, are mostly from Germany, with a 38% share (e.g. waste, fragments, cuttings from plastics, monofilaments, poles, panels, sheets, foils, boxes, bags, tops, lids, closures, etc. from plastics, rubber, car tyres and other rubber products), followed by Poland, with a 9% share (panels, boxes, crates, tops, lids and other plastic products, car tyres) and Italy (waste, fragments, cuttings, panels, sheets, foils, films, bottles, flacons and other plastic products) and China (plastic hygiene and toiletry products), both countries with a 5% share.

The export of car tyres from the Czech Republic last year was worth more than CZK 4.6bn, which is 175% more than ten years ago.

Graph 12.4.2 – Foreign trade in CZ-CPA 22 products



Source: CSO, data as of 28 February 2016

12.5 DIVISION SUMMARY AND PROSPECTS

The manufacture of rubber and plastic products in the Czech Republic has progressively assumed the position of an important player. For several years it has had higher sales than the related chemical industry division. In addition, the division's share of total sales by the manufacturing industry in the Czech Republic is higher than in the European Union.

In the last 150 years the plastics industry has been of key importance for innovation and has contributed to the development of society. There are around 60,000 companies in the European plastics sector, most of them are SMEs.

Growth in the plastics sector has a multiplier effect on a whole number of other sectors in the European economy. The manufacture of plastics is key for innovation in a whole number of products and technologies

in sectors of the economy such as healthcare, power, the cosmetics industry, the automotive industry, the sea sector, construction, electronics, packaging and the textile industry.

Production of plastics in the world and the EU has been rising in the long term. Global production rose from 299m tons in 2013 to 311m tons in 2014, which is year-on-year growth of 3.9% (for comparison in 1950 1.5m tons of plastics was produced in the year). In the EU the growth is not that significant, in the last five years production of plastics in the EU rose only slightly and in 2014 it was 59m tons. Production of plastics in the EU has still not reached the pre-crisis level. China remained the global leader with a 26% share in plastics production, followed by Europe, which was second in 2014 with a 20% share in global plastics production. They were followed by the NAFTA countries with a 19% share and the rest of Asia with a 16% share. For example, the plastics processing sector is growing fast in India (currently more than 22,000 companies with 4m employees), primarily due to the growing population and growing manufacturing industry, in particular the automotive industry.

Consumption of plastics in 2014 reached 47.8m tons and rose by 3.2% compared to 2013. Two thirds of this consumption in Europe were accounted for by five countries. Germany had the largest share (24.9%), followed by Italy, France, Great Britain and Spain. The largest share of plastics consumption was accounted for by packaging materials (39.5%), followed by construction (20.1%), the automotive industry (8.6%), electronic products (5.7%), agriculture (3.4%) and others. Almost 8m tons of plastics were deposited at dumps in Europe in 2014 (Data PlasticsEurope – Plastics – The Facts 2015).

Solid plastic packaging should continue to accumulate in future years. It is replacing glass bottles, drinks cartons and tin cans. A dominant role is played by PET (polyethylene terephthalate), followed by polyethylene and polypropylene. On the contrary, the amount of PVC (polyvinyl chloride) and polystyrene packaging is falling. 170bn plastic bottles, mostly from PET, are consumed in Europe annually. Global PET consumption for the manufacture of bottles totalled 16.7m tons last year and should continue to grow. In parallel with this there should be growth in the production of plastic closures and polyolefins. 230bn units of them are consumed annually.

According to European Bioplastics, in the next few years the positive trend in the bioplastics industry should continue. According to the association, capacities for the production of bioplastics will rise until 2018 from the current 1.6m tons to 6.7m tons. Growth should be supported by an EU directive that limits the production of plastic bags and supports the regional manufacture of compostable plastics. By 2018 75% of all bioplastics should be manufactured in Asia. Europe will play a key role in research and development of bioplastics. One third of all bioplastics are manufactured in South America. Good access to the raw materials necessary for manufacture provides opportunities for, for example, Brazilian bioplastics producers.

As already stated, the production of rubber and plastic products is an important division in manufacturing industry in the Czech Republic. The division's sales have been increasing over the long term, the sector stably employs between 70,000 and 80,000 people and the number of companies is around 3,500. There are a lot of foreign-owned companies. Increases in sales and the reported investments indicate that in the near future this industry could continue to develop. However, it depends on how other related sectors develop, primarily the automobile industry.

Continental Barum is investing in a new hall for the manufacture of truck tyres. It is the largest investment project by the Continental group at the Otrokovice plant; the total amount of the investment is around CZK 4.4bn. The hall will open on 11 October this year; its construction was completed last year, it has been progressively fitted out and trial operation has commenced. Also thanks to it last year the company increased the production of truck and industrial tyres; last year was the first time in the company's existence that more than a million units were produced. The aim is to produce 1.7m units.

Viscofan is getting ready to invest CZK 130m, in particular in new technologies for the manufacture of plastic food packaging. In connection with this aim, the investment plan was strengthened, and the group will invest in the construction of a new production plant in Mexico and the development of production capacities in

Budějovice. It is in Budějovice that a new extrusion line was installed and further investments in an increase in capacities and in research and development are planned. Overall, more than CZK 5m is to be invested in the České Budějovice plant in the next few months.

The Spanish manufacturer of plastic components for the automobile industry Pino Componentes is moving from Liberec to the industrial CTPark in Mladá Boleslav. It intends to markedly expand its production in the Czech Republic and double its operating area to approximately 5,500m2.

Devro plans to expand the production of edible collagen hotdog casings at its plant in Semily. This should create 120 new employment opportunities. The amount of the incentive could be as much as CZK 360m.

This year Donghee Czech intends to almost double the production of automobile parts in Český Těšín. This concerns the construction of a new hall in which plastic fuel tanks should be produced. Instead of the current 300,000 sets of automobile parts, this year the company wants to produce 550,000 sets. The company, which sends the components from Český Těšín to the nearby Hyundai plant, intends to hire 170 people as a part of the expansion.

There will be dozens of employment opportunities more in Nový Bydžov near Hradec Králové. The originally Swiss company Datwyler Sealing Technologies CZ plans to build two new halls there. The plant manufactures rubber products for the automotive and electronics industries. The input raw materials are rubber mixtures supplied from other countries in the form of belts, plates and granules.

Erce CZ intends to employ ninety people in its new operation in Hranice, Přerov District. There the company wants to produce approximately 540 tons of plastic products for the automobile industry every year.

Witte Automotive intends to open a new plant in Ostrov in 2016 to manufacture external painted handles.

13.

CZ-NACE 23 MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS

13.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 23 into individual groups

- 23.1 Manufacture of glass and glass products;
- 23.2 Manufacture of refractory products;
- 23.3 Manufacture of clay building materials;
- 23.4 Manufacture of other porcelain and ceramic products;
- 23.5 Manufacture of cement, lime and plaster;
- 23.6 Manufacture of articles of concrete, cement and plaster;
- 23.7 Cutting, shaping and finishing of stone;
- 23.9 Manufacture of abrasive products and non-metallic mineral products n.e.c.

The division CZ-NACE 23 includes the glass, ceramics, porcelain and building materials industries. The division thus includes a fairly wide range of manufacturing industry production for the domestic and foreign markets. The main export article remains glass, ceramic and porcelain goods and a selected range of concrete prefabricated products. The groups in the division encompassing the production of building materials are dependent on the output end primarily on the development of the construction sector, which has a fundamental impact on their production characteristics.

The listed sectors have a good raw material base and modern production units in the Czech Republic. Most building materials (cement, lime, plaster, ceramic roof tiles, natural stone and concrete products) are designated primarily for the domestic market, despite an increase in the share in total exports.

Table 13.1.1 – Shares of groups in division CZ-NACE 23 in 2015 (in %, division = 100%)

Group CZ-NACE	Personnel costs	Value added	Sales	Total revenues	Equity	Assets total	Number of employees	Number of units
23.1	38.6	36.6	33.0	33.4	34.9	34.7	42.2	34.8
23.2	6.3	5.2	4.6	4.6	4.4	4.0	6.1	0.8
23.3	5.8	6.0	6.5	6.2	5.5	6.3	5.9	3.6
23.4	6.8	4.6	4.4	4.3	3.3	3.5	8.9	20.7
23.5	5.6	9.0	6.8	7.8	11.0	11.5	3.2	0.1
23.6	28.7	28.5	32.4	31.9	29.2	30.1	25.4	14.7
23.7	1.6	1.9	1.5	1.4	1.1	1.3	2.4	23.0
23.9	6.7	8.1	10.8	10.3	10.7	8.7	5.8	2.4

Source: CSO, MIT calculations for 2015

The greatest share in employment and other production characteristics is achieved by group 23.1 Manufacture of glass and glass products, followed by group 23.6 Manufacture of articles of concrete, cement and plaster. Lower shares are achieved by group 23.4 Manufacture of other porcelain and ceramic products, 23.2 Manufacture of refractory products, 23.3 Manufacture of clay building materials and 23.5 Manufacture of

concrete, cement and plaster. The lowest share is reported for group 23.7 Cutting, shaping and finishing of stone (table 13.1.1).

In terms of the number of units, it may be stated that the division consists largely of small units, where of the total of 5,886 units there are only 301 units that have more than 20 employees, based on CSO statistical data. Of this number, 199 units are under foreign control.

13.2 DIVISION DEVELOPMENT

The building materials manufacturing industry is the material basis for the construction sector, which in the long term combined with the related investment construction contributes to the balanced development of the territory, including environmental impacts and the creation of conditions for business in other economic sectors and branches. For example, the construction of transport infrastructure and buildings generates the growth of revenues and job opportunities both during their construction and particularly afterwards through use and maintenance of the structure throughout its lifetime.

The development of the building sector is also crucial to maintaining and increasing production of glass panes, given the increased use of glass in construction. Efforts to reduce emissions also place considerable pressure on the development of new types of glass which reduce the energy consumption of buildings. Developments in the area of glass panes lead from raw glass to glass with high value added. An example of the trends in antibacterial glass, which has major potential especially in terms of rising costs for protection against bacterial and operational economic savings. AGC Flat Glass Czech regularly installs such glass at hospitals, and has installed it e.g. at the hospital in Prostějov, Czech Republic.

13.3 MAIN ECONOMIC INDICATORS

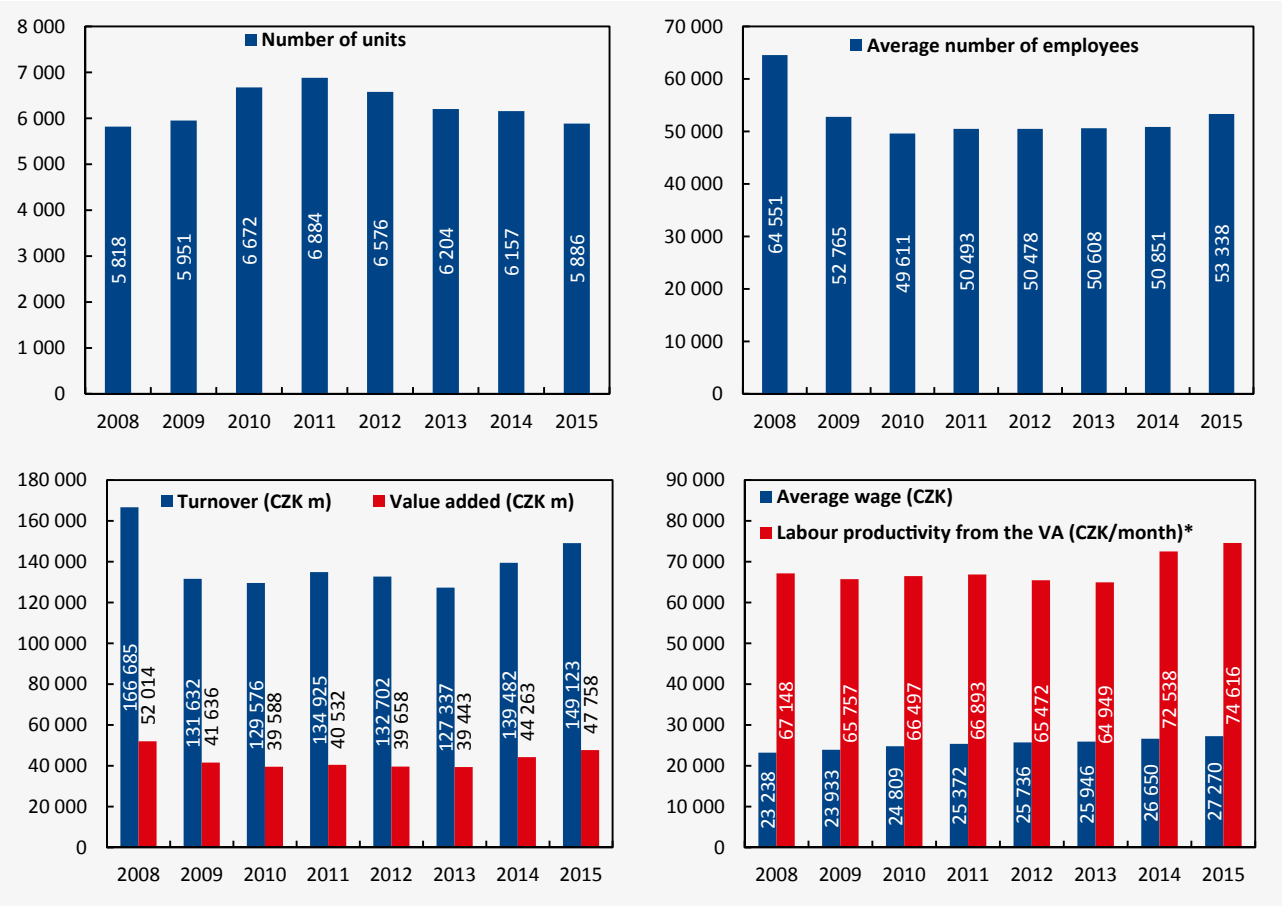
This sector was one of those most impacted by the financial and economic crisis that began in 2008.

Most of the evaluated indicators the course of the reviewed period (2008 to 2015) registered a noticeable slump in 2009, with subsequent hesitant development until 2014, when most indicators returned to growth. This trend continued into 2015. The production and material supplying particularly of the civil engineering construction sector, which increased by 17% year-on-year in 2015, had a major share in this growth. The increase of public contracts, especially for transport infrastructure (high, road and railway construction) also contributed substantially.

In terms of the individual indicators, the development in the number of production units in the division was contradictory, as their number increased until 2011 and then declined, remaining slightly above the 2008 level in 2015. The year-on-year decline in 2015 4.4%. An increase was seen only in group 23.2 by 8.9%. In other groups, the decline in the number of units ranged from 0.7% for group 23.1 to 12.5% for group 23.3.

The employee headcount in the division in 2015 increased year-on-year by 4.9%. The only group to see a decline was group 23.5 by 8.2%. In other groups, the increase in the employee headcount ranged from 1.2% to 8.7%. The situation was similar for the turnover indicator, which increased by 6.9% year-on-year in 2015 in the division, but still remained 10.5% lower compared to 2008. A decline in 2015 was reported only by group 23.5 by 2.6%, in other groups there was an increase in turnover ranging from 0.8% to 13.6% compared to 2014.

Graph 13.3.1 – Main economic indicators of division CZ-NACE 23 (2008 = 100%)



Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

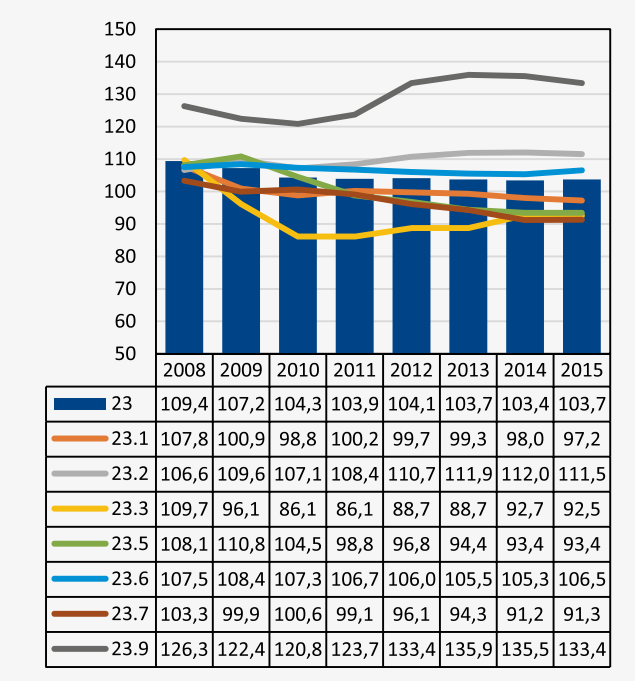
Labour productivity in the division in 2015 increased by 2.9% year-on-year and was 11.1% higher compared to 2008. In the building production groups, its growth ranged between 0.8% and 9.8%, with the highest level reported by group 23.5. There was a decline in the groups of glass and ceramics manufacturing, ranging from 0.2% to 3.3%.

In 2015, the average wage in the division was CZK 27,270, with a year-on-year increase of 2.3%; compared to 2008 it was 17.4% more. Division CZ-NACE 23 reports a wide range of average wages, from CZK 18,023 for group 23.7 Cutting, shaping and finishing of stone to CZK 46,395 for group 23.5 Manufacture of cement, lime and plaster.

The rise in building production in 2014 and particularly 2015 also had a positive impact on the financial results achieved in the sector, both in terms of building material production and glass production. The return on equity in 2014 and 2015 increased substantially and the Spread value swung from negative to positive value, meaning that the division as a whole started generating a positive economic profit (graph 13.4.2).

In 2015, CZ-CPA 23 products registered fairly fluctuating price development in the individual commodity groups. While prices for CZ-SPA 23 production grew overall by 3.7%, in product group 23.2 prices grew by 11.5%, in product group 23.6 the growth was 6.5% and in product group 23.9 there was an increase of 33.4%. On the other hand, in product group 23.1 there was a year-on-year decline by 2.8%, in product group by 7.5%, in product group 23.5 by 6.6% and in product group 23.7 by 8.7% (graph 13.3.2).

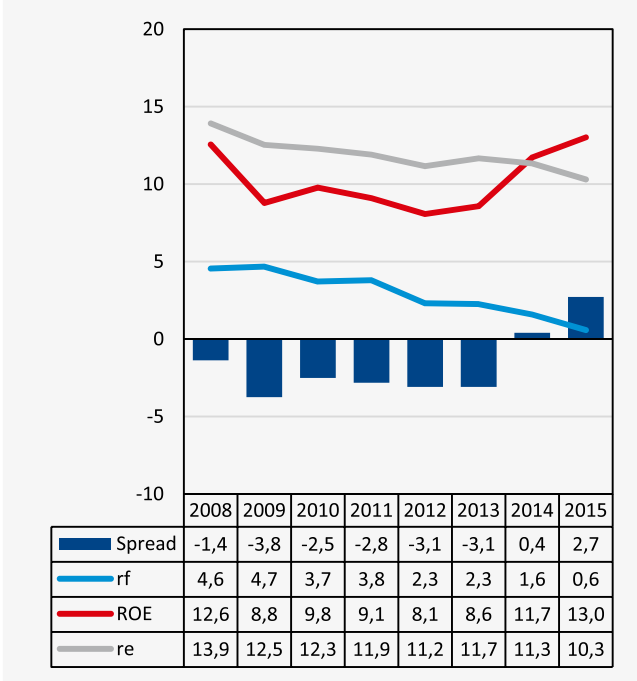
Graph 13.3.2 – Price development CZ-CPA 23 (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
23	109,4	107,2	104,3	103,9	104,1	103,7	103,4	103,7
23.1	107,8	100,9	98,8	100,2	99,7	99,3	98,0	97,2
23.2	106,6	109,6	107,1	108,4	110,7	111,9	112,0	111,5
23.3	109,7	96,1	86,1	86,1	88,7	88,7	92,7	92,5
23.5	108,1	110,8	104,5	98,8	96,8	94,4	93,4	93,4
23.6	107,5	108,4	107,3	106,7	106,0	105,5	105,3	106,5
23.7	103,3	99,9	100,6	99,1	96,1	94,3	91,2	91,3
23.9	126,3	122,4	120,8	123,7	133,4	135,9	135,5	133,4

Source: CSO, MIT calculations

Graph 13.3.3 – Spread (ROE – re) CZ-NACE 23 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-1,4	-3,8	-2,5	-2,8	-3,1	-3,1	0,4	2,7
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	12,6	8,8	9,8	9,1	8,1	8,6	11,7	13,0
re	13,9	12,5	12,3	11,9	11,2	11,7	11,3	10,3

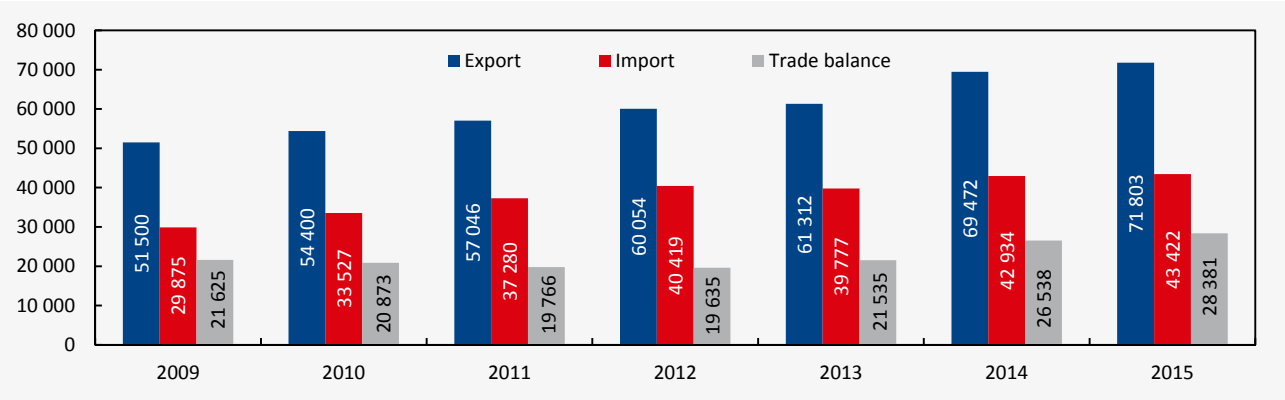
Source: CSO, MIT calculations

13.4 FOREIGN TRADE

13.4.1 DEVELOPMENT OF FOREIGN TRADE

Foreign trade of CZ-CPA 23 production consistently maintains a positive trade balance, meaning that exports exceed imports and most commodity groups are pro-export oriented. In 2015, there was an overall Graph 13.3.3 - Spread (ROE – re) CZ-NACE 23 (in %) increase in exports by 3.4%, while in the reviewed period of 2009 to 2015 this increase was 39.4%. For imports, there was a year-on-year increase of 1.1%, while imports increased by 45.3% in the reviewed period of 2009 to 2015. The positive foreign trade balance in 2015 increased year-on-year by 6.9%, and was 31.2% higher for the reviewed period of 2009 to 2015. Exports of CZ-CPA products in 2015 reached almost CZK 72 bn.

Graph 13.4.1 – Product export, import and foreign trade balance in CZ-CPA 23 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

In terms of product structure, specifically glass, ceramic and sanitary products, it must be noted that the rising trend of exports is being maintained, largely lowing increased production and new investments by a number of important glass producers and manufacturers of ceramic products and building materials. For instance, group CZ-CPA 23.1 Glass and glass products contributed 54.5% to the total volume of exports in 2015.

Imports increased in 2015 to CZK 43.5 bn, primarily owing to the import of glass products from group 23.1 worth CZK 17.5 bn.

13.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

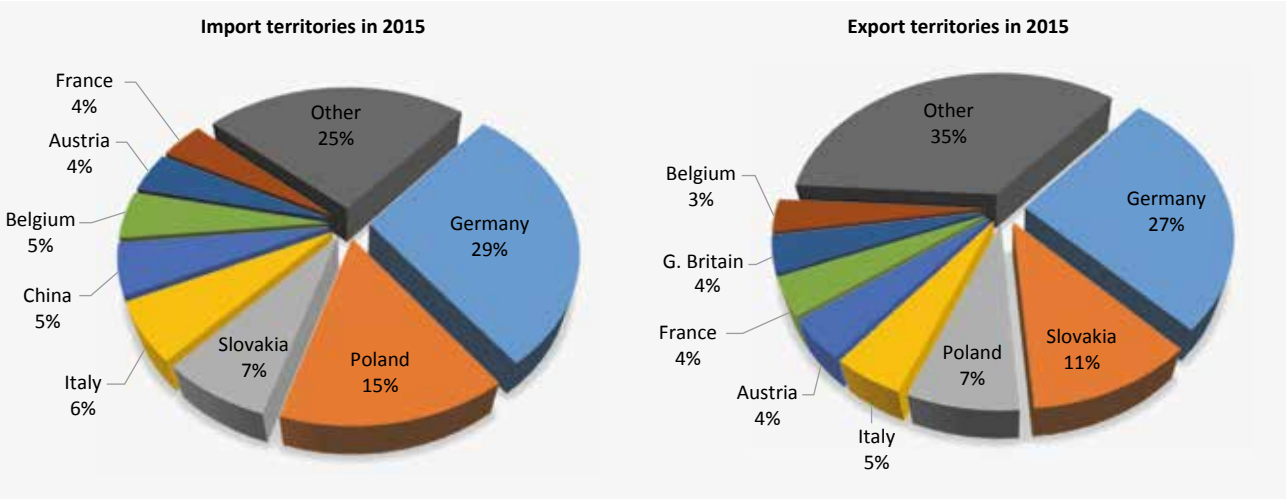
Traditionally, the largest market for glass and building products was Germany with a share of 27%, followed by Slovakia with 11% and Poland with 7%. Other markets among EU countries include Italy with a share of 5% and Austria with a 4% share. The best-selling building materials on these markets are cement, ceramic universal tiles (floor and wall tiles), brick ceramic products, concrete prefabricates and concrete products, dry plaster mixes and materials for thermal insulation systems.

The restored production stability has also led to an increasing number of contracts particularly in neighbouring countries (Germany), but at the same time the strong competition of goods from China is partly starting to show. On the other hand, in terms of the product structure of glass manufacturing, the impact of the war in certain countries of the Middle East, as well as the sanctions against Russia declared by the EU, is starting to have a negative impact.

As with exports, the greatest share of imports (29%) came from Germany (particularly building chemical products, glue, grout), followed by Poland with a share of 15% (cements, concrete products, bonding agents and blocks).

Slovakia contributed 7%, Italy 6% and China 5% to product imports. These were mainly special bonding agents, mortars and cements, building chemical products (self-levelling floor compound, poured flooring) as well as ceramic tiles.

Graph 13.4.2 – Foreign trade in CZ-CPA 23 products



Source: Source: CSO, data as at 28 February 2016

13.5 DIVISION SUMMARY AND PROSPECTS

In the first quarter of 2016, the construction sector did not do very well and saw an 8.8% slump. The slump affected both building construction and civil engineering. Problems were caused by the failure to draw on European funds for transport infrastructure construction, due mainly to the requirements for a new EIA evaluation for certain crucial transport constructions, as well as a lack of substantial revival of "PPP projects" on the part of private investments for building construction.

Nevertheless, the position of the Czech glass and ceramics industry and building material production industry can be assessed as a stable and prospective sector in terms of competitiveness, with a good outlook for further sustenance and improvement of its reference position in the European competitive environment. The successful development of activities at home and abroad, however, requires the consistent growth of the technical standard and utility features of products, and the high efficiency of the entire manufacturing-sales process.

Pro-export orientation and dependence on a range of related industrial sectors, to which it supplies its products, makes the glass and ceramics industry very vulnerable. These sectors, as well as the construction sector, will rely heavily on the development of domestic demand and the future economic developments primarily in Europe, which is the traditional export territory. Exporters will also have to cope with the loss of markets in areas affected by war conflicts. An unchanging factor is the increasing competition from third-world countries, in particular from the Far East.

Innovative strategies for glass products and building materials must therefore follow up closely on the innovations in building construction and industry across the EU. In a globalised world, development is a crucial means of maintaining and improving the competitiveness of glass products and building materials in the Czech Republic, and consequently of our entire construction sector. For this reason, most manufacturers are heavily specialised and focus on products with high value added, which they managed to export successfully abroad.

In conclusion, it may be stated that glass and building materials play an important role in sustainable development owing to their features and durability, which determines building energy consumption throughout their lifetime. Research into the use of materials and there combinations can therefore lead to substantial improvements in the environment and quality of life. Therefore, the trends must also include the development of new, quality materials with functional and aesthetic value.

The important factors for maintaining competitiveness in the sector also include:

- Creating positive conditions for the entry of foreign capital;
- Submitting quality business ventures to obtains resources from EU funds and the possibility of their co-financing;
- Improving education and cooperation with the Ministry of Education, which will lead to increased interest in studying technical and technological sciences in the building material manufacturing industry, building construction and glass industry;
- Developing cooperation with the domestic and foreign scientific-technical base (research institutes, universities);
- Introducing new findings into practice and their use during product innovation;
- Development of marketing services.

Therefore, to improve competitiveness manufacturing companies must find ways to focus on production with high value added, orient themselves on quality products, seek ways to strengthen innovation in production and improve management and sales strategies.

14.

CZ-NACE 24 MANUFACTURE OF BASIC METALS, METALLURGY; CASTING OF METALS

14.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 24 into individual groups

- 24 Manufacture of basic metals;
- 24.1 Manufacture of basic iron and steel and of ferro-alloys;
- 24.2 Manufacture of tubes, pipes, hollow profiles and related fittings, of steel;
- 24.3 Manufacture of other products of first processing of steel;
- 24.4 Manufacture of basic precious and other non-ferrous metals;
- 24.5 Casting of metals.

Metallurgical production is a highly material and energy intensive division. In the Czech Republic, it is concentrated practically into one region (almost 98% of iron and steel production comes from the Moravia-Silesia region). Czech metal processing, like European, is undergoing structural development, which began with the outbreak of the global crisis. Since 2013, however, there has been a turn towards growth and although steel production is unlikely to return to pre-crisis levels, production and consumption are growing and should continue to do so.

One third of deliveries from the metallurgical industry consist of exports, while two thirds are directed to interim consumption, with the main customers being within the CZ-NACE 24 division itself, followed by mechanical engineering in CZ-NACE 28 and fabricated metal products in CZ-NACE 25.

The main suppliers to the group include ore extraction, fabricated metal production, secondary raw materials and coal mining.

Companies in groups CZ-NACE 24.1, 24.2 and 24.3 are focussed primarily on basic metallurgical production and account for 60% of revenues and half of the employee headcount in the division. Production in CZ is consistently concentrated into two dominant companies - ArcelorMittal Ostrava, a.s. and Třinecké železárny, a.s. They are jointed in part by VÍTKOVICE STEEL, a.s., which has recently been facing a number of problems related to ownership changes.

In the segment of non-ferrous metallurgical production (CZ-NACE 24.4), the core program is the manufacture of semi-finished and finished products of copper, aluminium, zinc, nickel, precious metals and alloys thereof. Most metallurgical products are semi-finished and finished products designated for production use. Final products include mainly Al foil, polished and profiled Al sheets, Cu sheets, welding tips, soldering irons, lead and zinc rods and pipes, etc. The manufacture and first processing of non-ferrous metals is more diversified in terms of technological and product parameters. Some 90% of the production program in CZ is provided by ten metallurgical companies.

The casting of metals (CZ-NACE 24.5) includes the manufacturing of casts from grey cast iron (LLG), steel cast iron, nodular iron (LKG), tempered alloys and alloys of non-ferrous metals. One a small part of their products has a final character. Production is material and energy intensive. It is diversified among a large number of entities. In terms of employment, however, it is an important group because its share exceeds 30% while generating 14% of revenues.

Table 14.1.1 – Shares of groups in division CZ-NACE 24 in 2015 (in %, division = 100%)

Group CZ-NACE	Personnel costs	Value added	Sales	Total revenues	Equity	Assets total	Number of employees	Number of units
24.1	43.9	42.4	49.5	52.6	53.7	52.7	40.4	7.0
24.2	11.2	17.6	11.3	10.6	16.3	13.9	10.3	4.0
24.3	10.4	9.1	11.2	9.9	6.5	7.7	10.5	3.7
24.4	8.0	10.3	14.1	13.9	9.6	11.0	7.4	12.5
24.5	26.5	20.7	13.9	13.0	13.9	14.7	31.4	72.9

Source: CSO, MIT calculations for 2015

14.2 DIVISION DEVELOPMENT

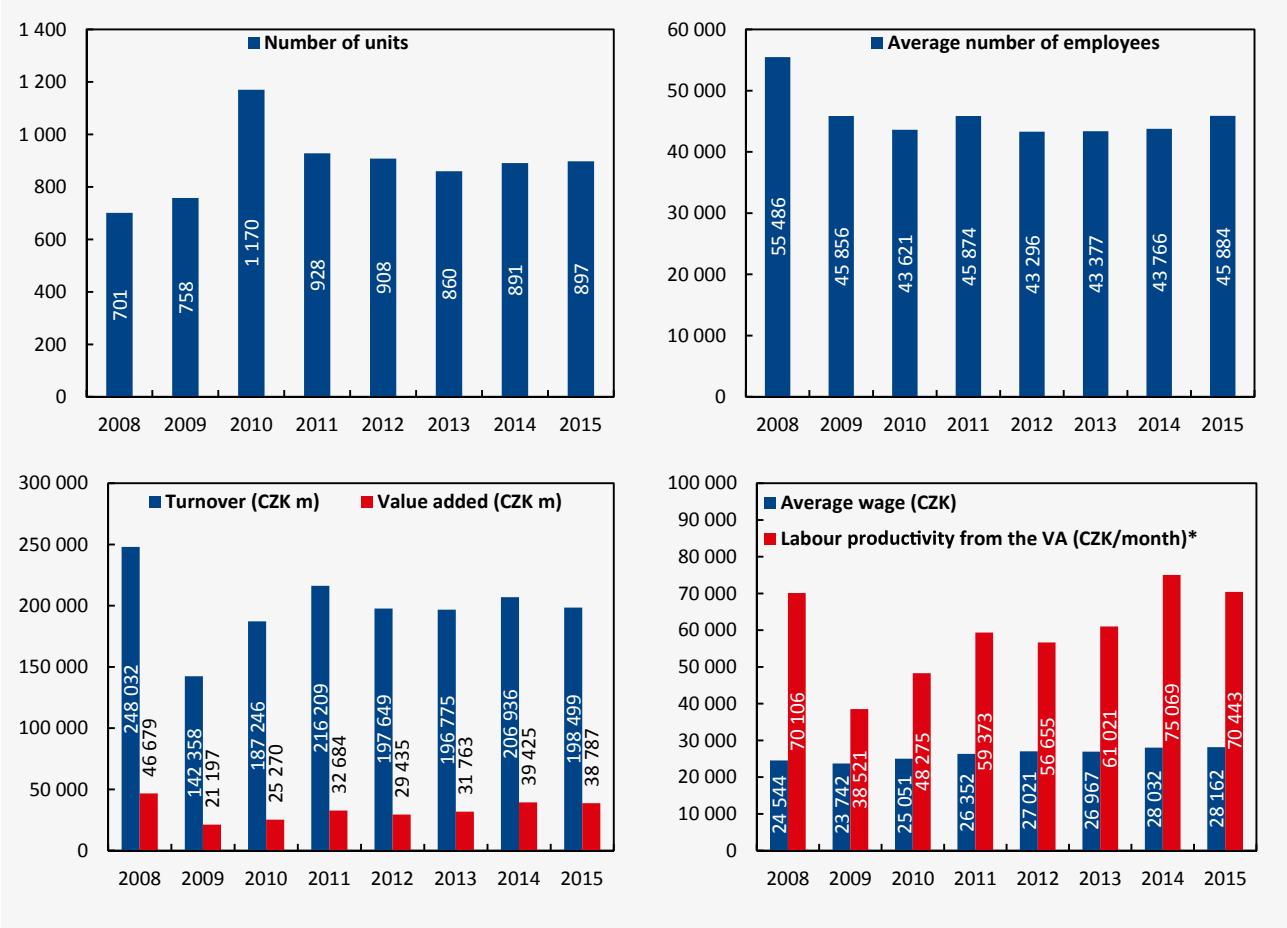
The global recession was evident in the metallurgical division with the greatest slump in value added and revenues in 2009.

The reduction of employment and assets was more gradual. The promising revival in 2010 (apart from employment) culminated in 2011 for all indicators, but did not reach 2008 levels. The second wave of recession in 2012 was more moderate and continued into 2013 in terms of revenues, while value added returned to year-on-year growth, with stagnating employment. In 2014, all the indicators reported growth, which was substantial in the case of value added. In 2015, the dynamics of the metal manufacturing division (CZ-NACE 24) were not as positive, with production declining by 1% year-on-year. The positive relation between labour productivity and average wage in 2008 was not achieved throughout the reviewed period, coming closest in 2014. Given stable year-on-year growth of average wage, there was a faster rise in labour productivity in 2011 and 2014, which declined in the following years to make the relation between these indicators unfavourable in 2012 and 2015.

14.3 MAIN ECONOMIC INDICATORS

In a year-on-year comparison, most of the decisive indicators for the steel industry (CZ-NACE 24.1 through 24.3) in 2015 are less favourable than in the previous year. The decline in revenues at regular prices, however, essentially corresponds to the decline in prices. The lower decline in value added also indicates the continuing restructuring in favour of products with higher value added. A negative moment was registered in the second half of 2015, where there was a substantial decline in the number of contracts. However, optimism for coming years continues to be based on the growth in primary consumption sectors of the steel industry, which apart from the division itself include mechanical engineering and the production of steel constructions. While in 2014 the volume of contracted orders in the sector increased year-on-year by 5%, in 2015 contracts in the sector dropped by 6.6% year-on-year, with a declining trend reported primarily in the second half.

Graph 14.3.1 – Main economic indicators of division CZ-NACE 24 (2008 = 100%)



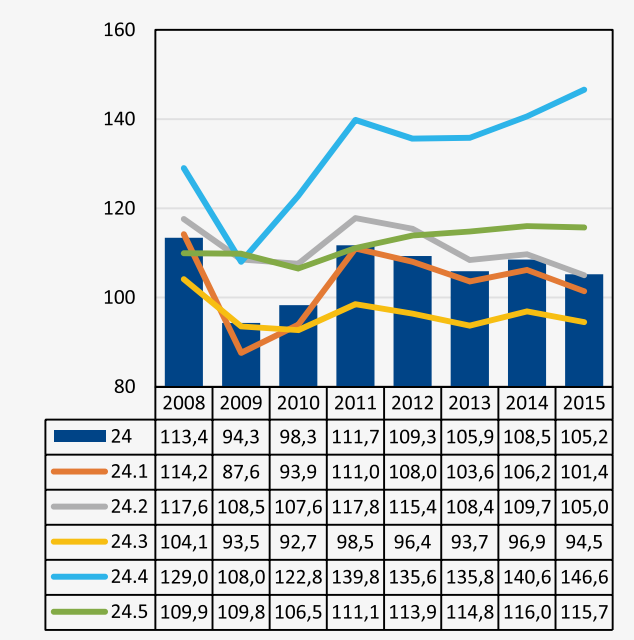
Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

Despite the decline in the second half of 2015, the continued growth of the primarily sectors of the manufacturing industry, which are important to steel manufacturers, contributes to the positive outlook. At the same time, competition on the market is increasing and there are cases of deliveries for dumping prices in imports. The results of the steel industry will also be affected by certain EU legislative measures, particularly environmental laws and regulations, the allowance trading system, definition of energy mixes, etc. The expected future growth of oil, energy and raw materials prices will also play a role.

As for the development of prices for products in group CZ-CPA 24, the weight of steel manufacturers (CZ-CPA 24.1 to 24.3) became apparent; following the recession slump in 2009, prices grew year-on-year for two years, peaking in 2011 and subsequently declining, with the exception of 2014. Yet the development of pipe prices (24.2) was above the level of other steel products. Following the slump in 2009, the prices of non-ferrous metals increased substantially towards the first peak in 2011, and continued to grow towards another peak in 2015, with the exception of 2012. The development of prices for casting production (24.5) was most balanced, with a gradual growth tendency.

The financial position of the division was affected by return on equity, whose development took the shape of a W curve (graph 14.3.3), with the value dipping into the red in 2009 and 2012. The Spread indicator reached its two lowest values in these years. It was slightly positive only in 2013 due to the increased profitability. Of the individual groups, CZ-NACE 24.2 Manufacture of alloy and steel pipes and tubes fared best, with positive figures since 2013. On the contrary, group CZ-NACE 24.3 Manufacture of other products of first processing of iron and steel remained in the red throughout the entire period.

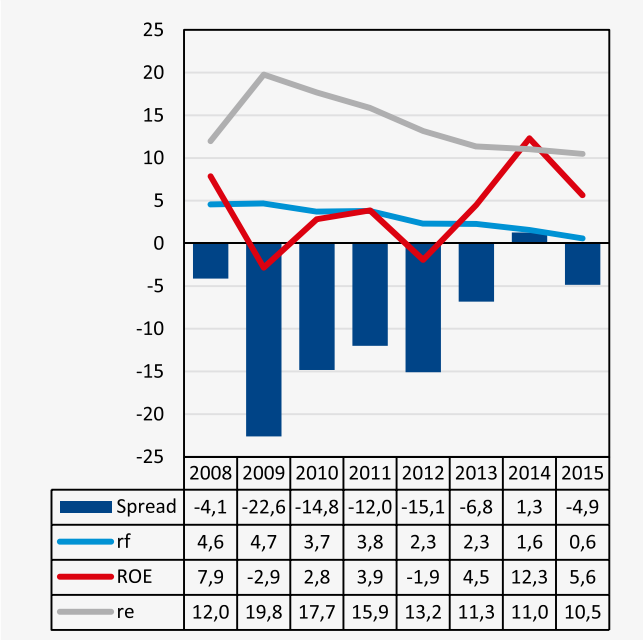
Graph 14.3.2 – Price development CZ-CPA 24 (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
24	113,4	94,3	98,3	111,7	109,3	105,9	108,5	105,2
24.1	114,2	87,6	93,9	111,0	108,0	103,6	106,2	101,4
24.2	117,6	108,5	107,6	117,8	115,4	108,4	109,7	105,0
24.3	104,1	93,5	92,7	98,5	96,4	93,7	96,9	94,5
24.4	129,0	108,0	122,8	139,8	135,6	135,8	140,6	146,6
24.5	109,9	109,8	106,5	111,1	113,9	114,8	116,0	115,7

Source: CSO, MIT calculations

Graph 14.3.3 – Spread (ROE – re) CZ-NACE 24 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-4,1	-22,6	-14,8	-12,0	-15,1	-6,8	1,3	-4,9
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	7,9	-2,9	2,8	3,9	-1,9	4,5	12,3	5,6
re	12,0	19,8	17,7	15,9	13,2	11,3	11,0	10,5

Source: CSO, MIT calculations

14.4 FOREIGN TRADE

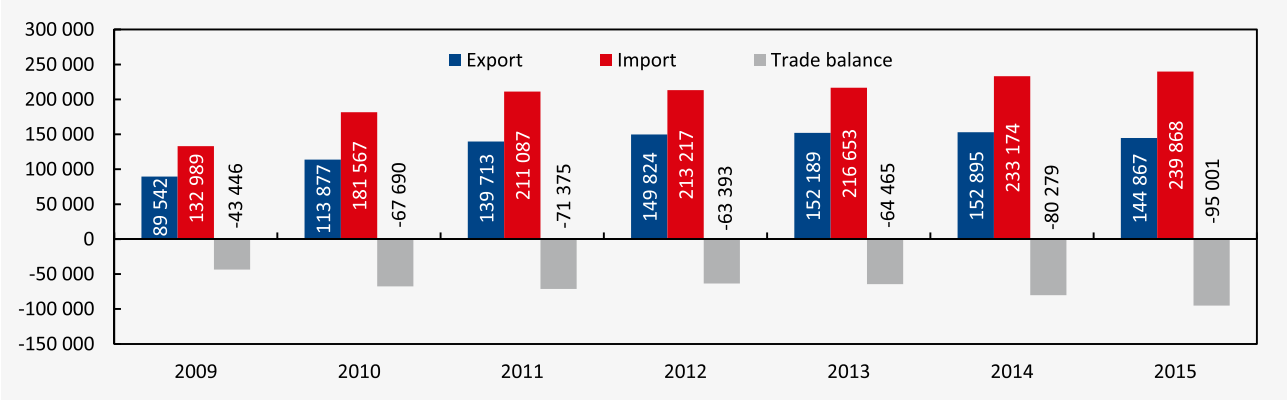
14.4.1 DEVELOPMENT OF FOREIGN TRADE

Following the 2009 crisis year slump in exports, which consist mainly of semi-finished products, hot rolled flat products, long rolled products and steel pipes, exports began to increase year-on-year from 2010 through to 2014. In 2015, exports decreased year-on-year by 5.3%, and consisted primarily of the export of steel pipes (both seamless and welded) and semi-finished products, whereas the exports of long rolled products (rolled wire, profile steel) and hot rolled flat products (thick sheets) was higher year-on-year.

The value of imports of CZ-CPA 24 products grew consistently from 2010, mainly due to the increased import of flat products and steel pipes. In 2015, imports increased year-on-year by 2.9%. The most significant contribution was made by the import of semi-finished products mainly for Vítkovice Steel (due to the suspension of steel production), followed by long rolled products (concrete steel, rolled wire, railway tracks, profile steel), cold rolled flat products (cold rolled thin sheets and belts), steel pipes (mainly welded) and pulled steel rods. On the other hand, imports of hot rolled flat products (wide and narrow belts) and pulled wire declined.

The lasting surplus of imports over exports led to a negative foreign trade balance in the group, which increased considerably in 2014 and 2015. The range of imports and exports also affected the increased negative balance. The negative balance for cold rolled flat products and semi-finished products had a negative effect, as did the reduced positive foreign trade balance of long rolled products and steel pipes.

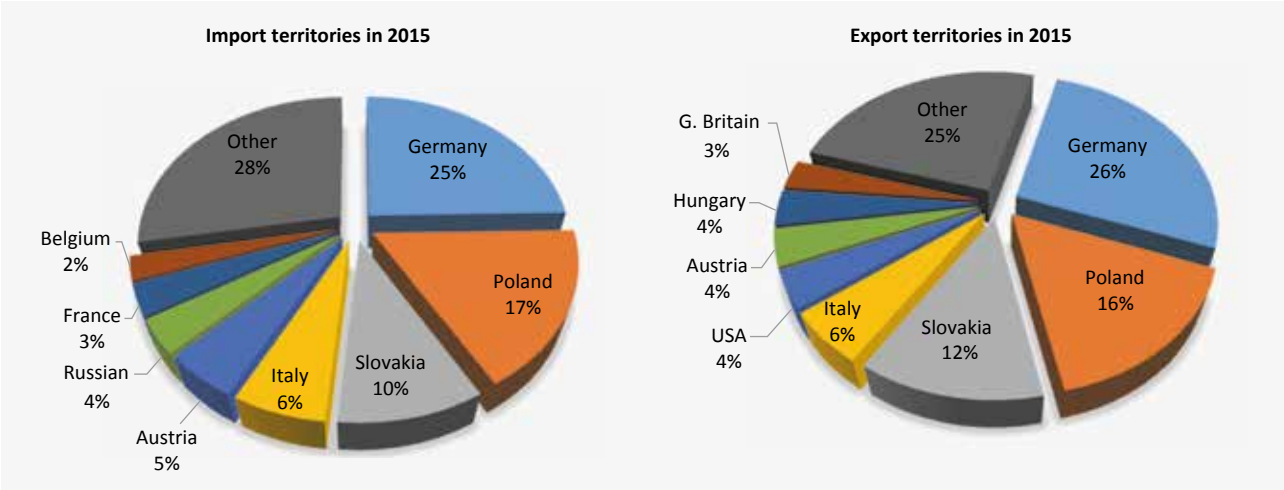
Graph 14.4.1 – Product export, import and balance of foreign trade in CZ-CPA 24 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

14.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Graph 14.4.2 – Foreign trade in CZ-CPA 24 products



Source: Source: CSO, data as at 28 February 2016

The most CZ-CPA 24 products for 2015 were shipped to Germany with 26%, followed by Poland (16%), Slovakia (12%), Italy (6%) and the USA, Austria and Hungary (4% each).

In 2015, imports of CZ-CPA 24 products amounted to CZK 239.9 bn, with the greatest share in the division came from Germany (25%), followed by Poland (17%), Slovakia (6%) and other countries, which have a share of less than 5% in foreign trade. A substantial year-on-year growth was reported in the volume of imports from Russia (mainly semi-finished products). Imports from China to the domestic market in 2015 accounted for less than 1% of the total volume of imports. Imports from China threaten the domestic market indirectly, because imports to other EU countries, especially coastal countries, are rising sharply, thus limiting the opportunities for supply from CZ to EU countries. Furthermore, imports from China are constricting our exports to countries outside the EU, particularly in the Near and Middle East.

14.5 DIVISION SUMMARY AND PROSPECTS

In evaluating the prospects of the Czech steel industry, it must be noted that it is a sector with immense energy demand, existentially bound to solving ecological burdens and environmental impacts. It is also a crucial sector in terms of employment, further augmented by the regional aspect.

The ways to achieve and sustain a competitive edge for the steel industry in the Czech Republic are:

- research, development and innovation;
- optimisation of the capacity portfolio (in terms of market, contracts and concentration of production on the most progressive technologies);
- vertical integration (raw materials, energy) currently has higher priority than horizontal cooperation and capital connection.

Further successful development of the steel industry also requires particular attention to the issue of ecology. In some aspects, the existence of steel manufacturing in the Czech Republic could be at stake. For equal conditions, it is essential:

- to implement and observe fair conditions for the areas of environment and energy;
- in this respect, to promote solutions that will not harm and threaten the existence of industrial enterprises;
- not to permit the adoption of laws that do not penalise all sources of pollution (air, waste, water) and discriminate against the industrial sector.

The greatest threats for the steel sector are:

- direct granting of the status of “market economy” to China;
- reduced investments into the energy sector;
- continued decline in prices for steel materials arising from the surplus of supply over demand and declining oil prices (lower investments into production and transmission capacities).

15.

CZ-NACE 25 MANUFACTURE OF FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT

15.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 25 into individual groups

- 25.1 Manufacture of structural metal products;
- 25.2 Manufacture of radiators and boilers for central heating, metal reservoirs and containers;
- 25.3 Manufacture of steam generators, except central heating hot water boilers;
- 25.4 Manufacture of weapons and ammunition;
- 25.5 Forging, pressing, stamping and roll-forming of metal; powder metallurgy;
- 25.6 Treatment and coating of metals; machining;
- 25.7 Manufacture of cutlery, tools and general hardware;
- 25.9 Manufacture of other fabricated metal products.

Division CZ-NACE 25 includes the production of “clean” metal products which usually have a static function, as well as the manufacture of weapons and ammunition.

The range of products and equipment included in this division is vast – from pins to nuclear reactors. Despite the diversity of products in division CZ-NACE 25, a unifying character for all product groups in the division is the fact that the original input materials are traditional metal semi-finished products manufactured by division CZ-NACE 24 Manufacture of basic metals, metallurgy; casting of metals. A detailed analysis of the production of individual manufacturing enterprises included in fabricating metal products shows that many companies strive to increase the value added of their products by also engaging in the subsequent assembly of their fabricated metal products into machinery equipment; these companies thus acquire a much greater character of engineering production.

The prestigious CZECH TOP 100 chart (based on revenues) for 2014 ranked companies from this division, namely MORAVIA STEEL a.s. (repeatedly) in 9th place - it forms a group with TŘINECKÉ ŽELEZÁRNY, a.s., which has held 15th place for two consecutive years (it should be added that the economic activities of the said companies belong to two divisions: CZ-NACE 24 Manufacture of basic metals, metallurgy; casting of metals, which is predominant, and CZ-NACE 25 Manufacture of fabricated steel products, except machinery and equipment).

The greatest differences can be registered in the number of units, where group 25.7 dominates and includes companies whose production portfolio includes a wide range of metal products. The total number of units in this group (including the smallest) exceeds 50,000. The lowest number of units (just under 100 units) is reported in group 25.4, which includes both major weaponry enterprises and a number of companies consisting of a single individual - gunsmith. In other parameters, as in previous years, we can see four very balance groups, namely 25.1, 25.6, 25.7 and 25.9.

Table 15.1.1 – Shares of groups in division CZ-NACE 25 in 2015 (in %, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of employees	Number of units
25.1	19.7	15.7	19.1	19.0	15.8	18.4	19.4	6.3
25.2	6.7	5.7	6.4	6.6	7.1	7.3	6.1	1.1
25.3	1.9	1.3	1.5	1.4	1.5	2.5	1.4	0.3
25.4	2.9	3.4	2.5	2.9	2.5	3.1	2.7	0.2
25.5	5.8	6.3	6.3	6.5	6.9	6.3	5.3	5.1
25.6	23.9	24.8	2.7	2.7	25.4	23.2	25.6	27.4
25.7	19.2	22.2	19.9	19.4	18.0	17.8	19.8	55.7
25.9	19.9	20.6	21.6	21.6	22.8	21.5	19.7	4.0

Source: CSO, MIT calculations for 2015

15.2 DIVISION DEVELOPMENT

The manufacture of fabricated metal products has a lasting important position within the entire manufacturing industry. Particularly for the mechanical engineering and automotive industries, this division is one of the most important suppliers of components for completing final products and equipment. After 2009, which was a critical year for many divisions in the manufacturing industry (MI), this division has seen positive development. In 2015, division CZ-NACE 25 takes fifth place with a 6.1% share in revenues from products and services sold within the MI (companies with 50 or more employees). In the average employee headcount of the MI, CZ-NACE 25 generates a share of 10.9%, which is the 3rd largest share in the MI employee headcount.

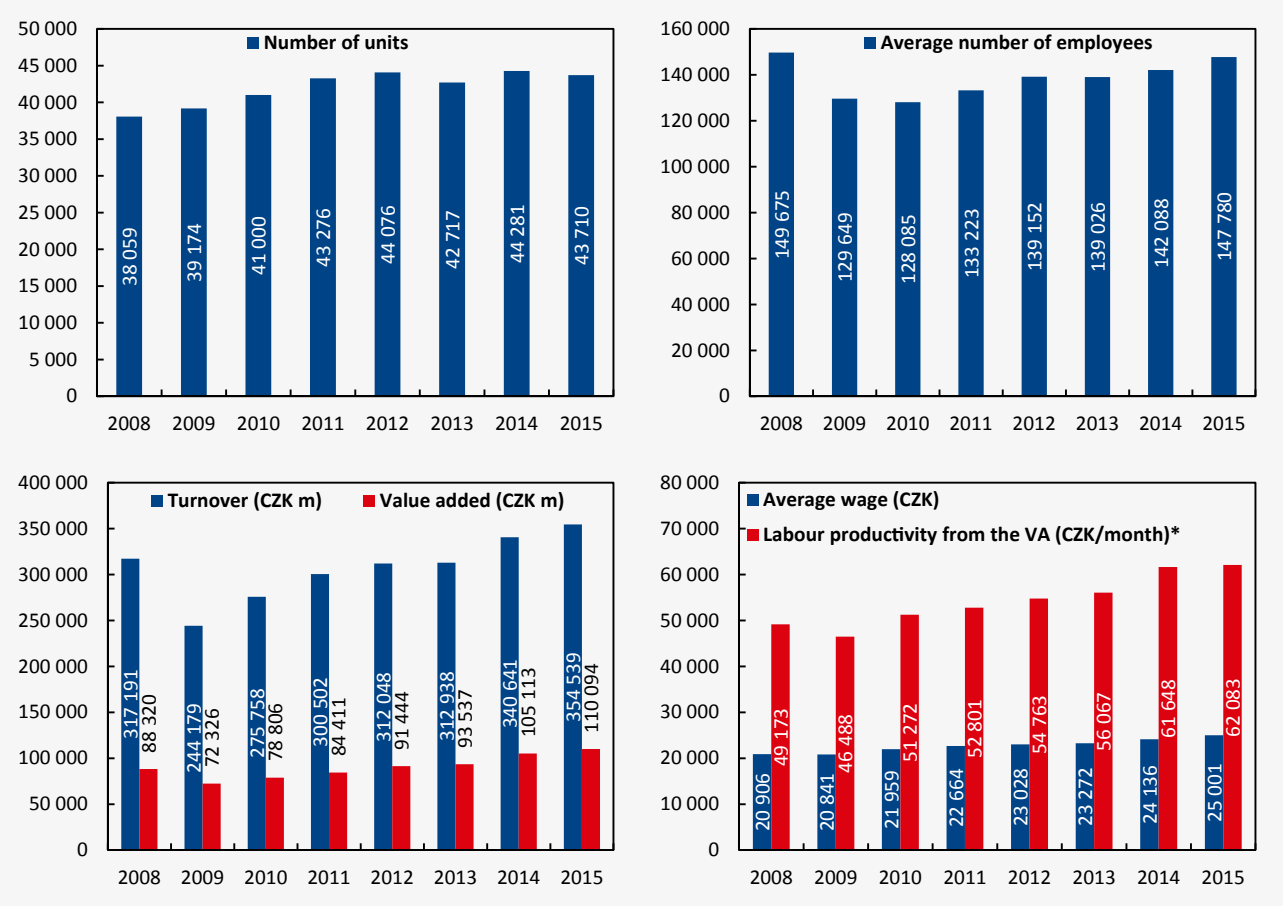
15.3 MAIN ECONOMIC INDICATORS

The development of economic indicators depicts their crisis decline in 2009. The gradual growth of all the monitored indicators until 2012 through 2015, when they gradually reach 2008 values, is due to the character of production, which is largely supplied to investments which were subdued by the recession and are gradually reviving with a slight delay.

The development of the individual product groups in the past three years saw little fluctuation. A long-term declining tendency is reported by the manufacture of metal reservoirs, where price development reflects the impact of the global economic recession that is apparent with a delay particularly for manufacturing, whose products are supplied to investment projects (metal structural parts, other fabricated metal products and metal reservoirs, tanks and similar vessels). The year 2011 meant renewed revival for CZ-CPA 25 products, only to see another slight decline in 2012. The CZ-CPA 25 commodity price index in the table clearly projects the impact of prices for input materials, where for groups CZ-CPA 25.1, 25.2 (with relatively high masses of processed material, manly steel) show instability compared to groups with a higher share of various technologies (CZ-CPA 25.5, 25.7). In 2013, pricing was affected by a substantial change in the exchange rate of the Czech koruna to the Euro. Since 2014, prices have been stabilised or declined slightly.

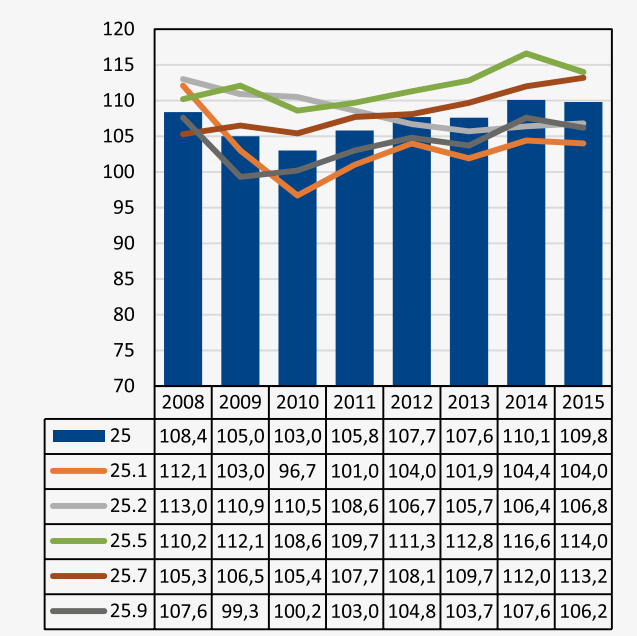
The development of the relative economic profit indicator (Spread) testifies to the very progressive improvement of the group's economic position, as it gradually moves from profoundly negative values in 2009 to positive values in 2012, which continued to improve in later years, particularly in 2014. Combined with reduced risk, this was mainly aided by increased return on equity.

Graph 15.3.1 – Main economic indicators of division CZ-NACE 25 (2008 = 100%)



Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

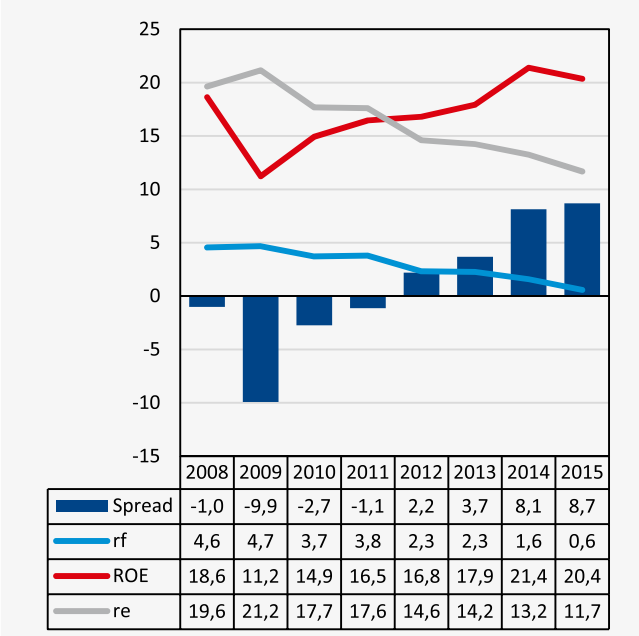
Graph 15.3.2 – Price development CZ-CPA 25 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
25	108,4	105,0	103,0	105,8	107,7	107,6	110,1	109,8
25.1	112,1	103,0	96,7	101,0	104,0	101,9	104,4	104,0
25.2	113,0	110,9	110,5	108,6	106,7	105,7	106,4	106,8
25.5	110,2	112,1	108,6	109,7	111,3	112,8	116,6	114,0
25.7	105,3	106,5	105,4	107,7	108,1	109,7	112,0	113,2
25.9	107,6	99,3	100,2	103,0	104,8	103,7	107,6	106,2

Source: CSO, MIT calculations
Note: Groups 25.3, 25.4 and 25.6 are not monitored

Graph 15.3.3 – Spread (ROE – re) CZ-NACE 25 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-1,0	-9,9	-2,7	-1,1	2,2	3,7	8,1	8,7
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	18,6	11,2	14,9	16,5	16,8	17,9	21,4	20,4
re	19,6	21,2	17,7	17,6	14,6	14,2	13,2	11,7

Source: CSO, MIT calculations

15.4 FOREIGN TRADE

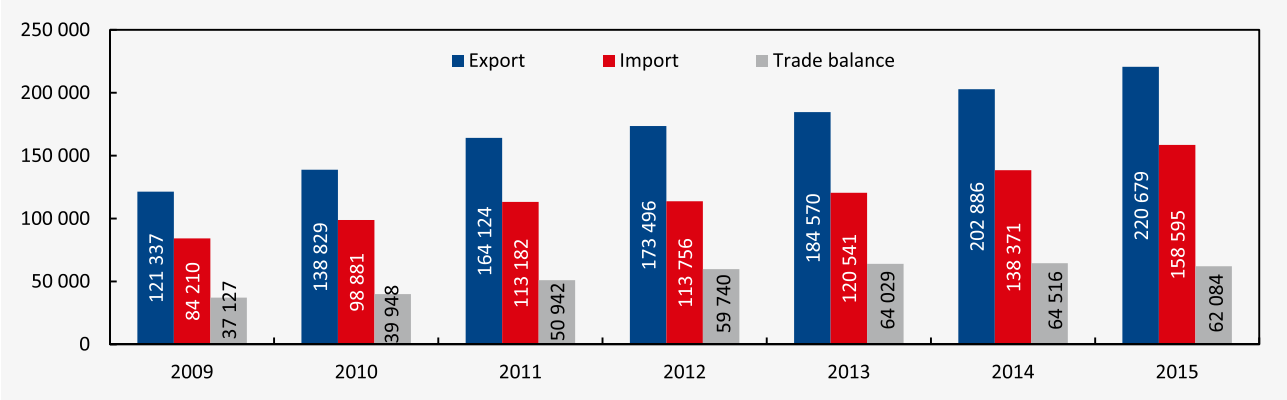
15.4.1 DEVELOPMENT OF FOREIGN TRADE

Until the onset of the global economic recession, the rising performance and competitiveness of individual products groups in CZ-CPA 25 manufacturing was apparent. This relies on adequate contract performance and until 2008 companies producing CZ-CPA 24 products (compared to 2000, imports until 2008 increased by 75.7% while exports increased by 75.4% with a positive trade balance in individual years) gradually managed to acquire contracts for construction or modernisation (e.g. thermal power plants) both at home and abroad, thus profiting from favourable references.

Following a dramatic decline in imports of CZ-CPA 25 products to the Czech Republic in 2009 compared to 2008, year-on-year growth was restored in the following years, although its dynamic was reduced.

Similarly as the import of CZ-CPA 25 production, product exports also increased year-on-year in the period of 2009 to 2010 by more than 14%, and in 2011 by a full 18%. In 2011, the previously signalised phase-out of German nuclear energy was accelerated. Paradoxically, Czech companies expect increased opportunities to supply products from CZ-CPA 25 manufacturing to Russia and other post-Soviet countries. A number of other contracts for investment units are still being implemented by Czech suppliers, e.g. in 2009-2012 ŠKODA PRAHA a.s. is performing contracts for the Bohunice V2 nuclear power plant (project, installation and delivery of turbo generators to increase the performance and lifetime of the operated blocks) in the Slovak Republic, projects and deliveries of technological equipment, including installation and start-up of two 750 MB gas power plants in Egypt (New Talkha and El Kureimat II), etc. The foreign trade balance in all years of 2009-2015 was positive, exceeding CZK 64 bn in 2014 and declining slightly by about CZK 2.5 bn in 2015.

Graph 15.4.1 – Product export, import and foreign trade balance in CZ-CPA 25 (in CZK m)

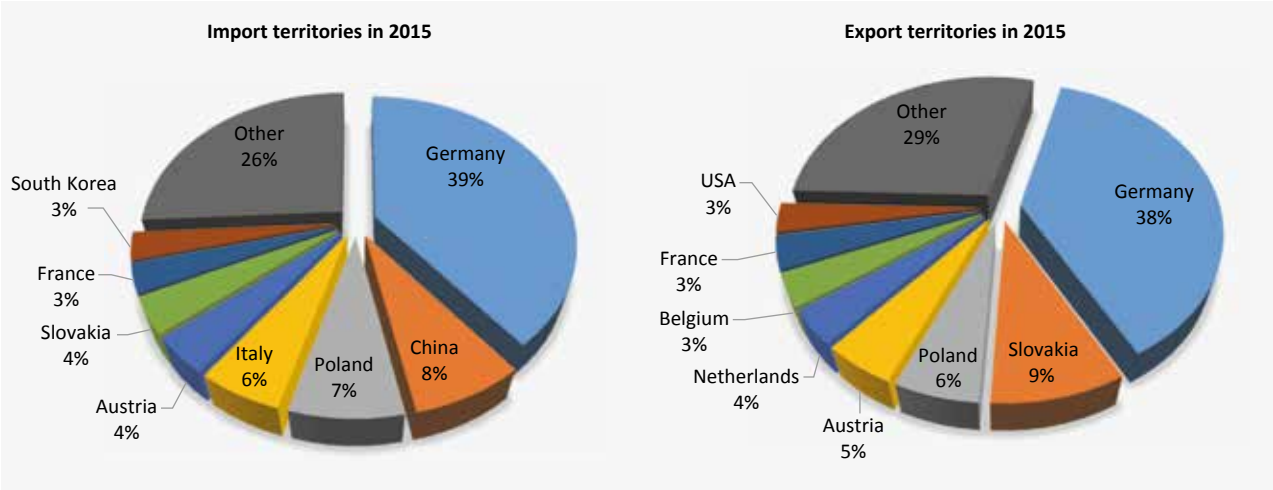


Source: Source: CSO, data as at 28 February 2016

15.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The Czech Republic's largest partner in both exports and imports of products is traditionally is closest neighbour – Germany. The shares in total imports and exports with this partner have not changed substantially over the years and are consistently around 40%. The shares in exports and imports of all other countries do not even reach double-digits.

Graph 15.4.2 – Foreign trade in CZ-CPA 25 products



Source: Source: CSO, data as at 28 February 2016

15.5 DIVISION SUMMARY AND PROSPECTS

Fabrication of steel products has a lengthy tradition in the Czech Republic, as does mechanical engineering production. The need to use metals to manufacture components for assembling and manufacturing final products is rising.

This is due to the utility features of metals. With the development of mechanical engineering and support primarily from the automotive industry in the Czech Republic, there is an increasing demand for metal components in these divisions, joining materials and tools and instruments that are increasingly complex in technological and materials terms. Another major customer for metal product manufacturing is the construction industry. Metal structures and prefabricates are becoming increasingly more popular in building construction and are an integral part of practically every investment project delivery.

Division CZ-NACE 25 is not among the major environmental polluters (even though this division includes the treatment and coating of metals, which employs environmentally harmful chemicals).The companies have implemented proper waste management and processing in compliance with the valid legislation.

With the rising standard of living, diversity of supply and quality of finished products in the Czech Republic, sales of metal manufacturing to regular consumers have also increased. In the global competitive environment, there has been renewed success in recent years in winning contracts of both larger and smaller scopes and within investment projects. Many companies have managed to hold on to their markets and continue to expand.

For these reasons, the manufacture of fabricated metal products in the Czech Republic has a very promising outlook for further development in the demanding competitive environment.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16.

CZ-NACE 26 MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS

16.1 DIVISION CHARACTERISTICS

The CZ-NACE 26 Division is broken down into the following groups

- 26.1 Manufacture of electronic components and boards;
- 26.2 Manufacture of computers and peripheral equipment;
- 26.3 Manufacture of communication equipment;
- 26.4 Manufacture of consumer electronics;
- 26.5 Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks;
- 26.6 Manufacture of irradiation, electromedical and electrotherapeutic equipment;
- 26.7 Manufacture of optical instruments and photographic equipment;
- 26.8 Manufacture of magnetic and optical media.

For a long time the CZ-NACE 26 Division has been one of the most important parts of manufacturing industry. It is an important supplier for other industrial sectors, in particular the automotive industry and mechanical engineering. Production is included in the hi-tech and medium-tech categories. The sector includes both operations that require a lot of labour and highly-productive automated units.

The division includes the manufacture of consumer electronics, measuring, testing, navigational and control equipment, irradiation, electromedical and electrotherapeutic equipment, optical instruments and manufacture of magnetic and optical media.

Table 16.1.1 – Shares of groups in CZ-NACE 26 division in 2015 (in %, division = 100 %)

CZ-NACE group	Personnel costs	Value added	Sales	Revenues	Equity	Total assets	Number of employees	Number of units
26.1	17.4	16.4	5.5	5.1	10.2	8.0	19.2	25.9
26.2	12.0	13.5	52.0	47.9	19.9	22.5	14.1	9.0
26.3	13.6	12.9	5.0	4.8	11.3	7.4	12.3	24.5
26.4	7.8	4.7	11.7	10.9	13.4	11.5	8.0	8.7
26.5	42.8	47.8	24.6	30.1	40.0	47.4	38.4	22.1
26.6	1.1	0.9	0.3	0.3	0.7	0.5	1.1	1.9
26.7	5.2	3.7	0.8	0.8	4.3	2.3	6.7	3.6
26.8	0.1	0.2	0.1	0.1	0.2	0.3	0.2	4.2

Source: CSO, calculations MIT for 2015

In the structure of the CZ-NACE 26 division from the viewpoint of sales and revenues group 26.2 Manufacture of computers and peripheral equipment is dominant, but accounts for relatively little of the other indicators (according to the number of units it is fourth, i.e. the companies are mostly large ones). From the viewpoint of personnel costs, added value, assets, equity and number of employees the greatest share is held by group 26.5 Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks, which is, according to the number of units, in third place. The largest number of units is accounted for by

group 26.1 Manufacture of electronic components and boards, followed by group 26.3 Manufacture of communication equipment.

16.2 DEVELOPMENTS IN DIVISION

In 2015 a total of 3,300 enterprises were active in division CZ-NACE 26, their turnover was more than CZK 312bn, they employed 40,295 people and accounting value added totalling CZK 35.4bn was created.

As far as concerns sales (not production) of some segments in the division, according to a report by IDC (IDC is one of the leading global analytical and advisory companies that performs market research and analysis and forecasts developments and trends in information and communication technology) the PC market in Central and Eastern Europe experienced the worst year in history. The market collapsed for the third year in a row, this time by more than a quarter in comparison with 2014. The regional results are worsened by the situation in Eastern Europe, whereas Central European markets have a stabilising influence. In 2015 13.7m computers were sold in the region, which is 26.2% less than in 2014. IDC states that last year was extraordinarily difficult for manufacturers, where one of the main factors was the saturation of distribution channels with cheap devices using the Windows with Bing operating system from 2014. Manufacturers therefore had trouble getting a higher number of new devices into distribution.

According to a GfK analysis (GfK is a company that provides important information about the market and consumers that enables clients to take better decisions) over 3.4m mobile telephones were sold in the Czech Republic in 2015, and three quarters of them were smartphones.

The market value of consumer electronics was increased by 2.9% in the year-on-year comparison. The average price of products is increasing across all categories, in particular because of the consumer preference for more expensive products. This overall trend was, according to GfK, fundamentally influenced by trends in the television category, which is key. Consumers may have bought less televisions than in 2014, but on average they paid more for their televisions due to rising demand for larger screens. The weight of advanced parameters such as Smart TV, Ultra HD and curved screen also rose.

The most important manufacturers in the CZ-NACE 26 division include in 26.1. ON Semiconductor Czech Republic, s.r.o., in 26.2 Foxconn CZ s.r.o. and Inventec (Czech) s.r.o., in 26.3 ADC Czech Republic, s.r.o., and CommScope Czech Republic s.r.o., in 26.4 Panasonic AVC Networks Czech, s. r. o., in 26.5 Continental Automotive Czech Republic s.r.o., Fei Czech, s.r.o and TESCAN Brno, s.r.o., in 26.6 UJP Praha and in 26.7 Meopta-optika s.r.o.

In the main “TOP 100 Czech Companies” rankings for 2014 from the sales viewpoint FOXCONN CZ s.r.o. (CZ-NACE 26.2 group) occupied sixth place in sales with an approximate value of CZK 119bn. The company also came second in the rankings of Largest Exporters from the Czech Republic. It exports 100% of products manufactured in the Czech Republic. In the main “TOP 100 Czech Companies” Rankings Panasonic AVC Networks Czech, s.r.o. occupied 26th place.

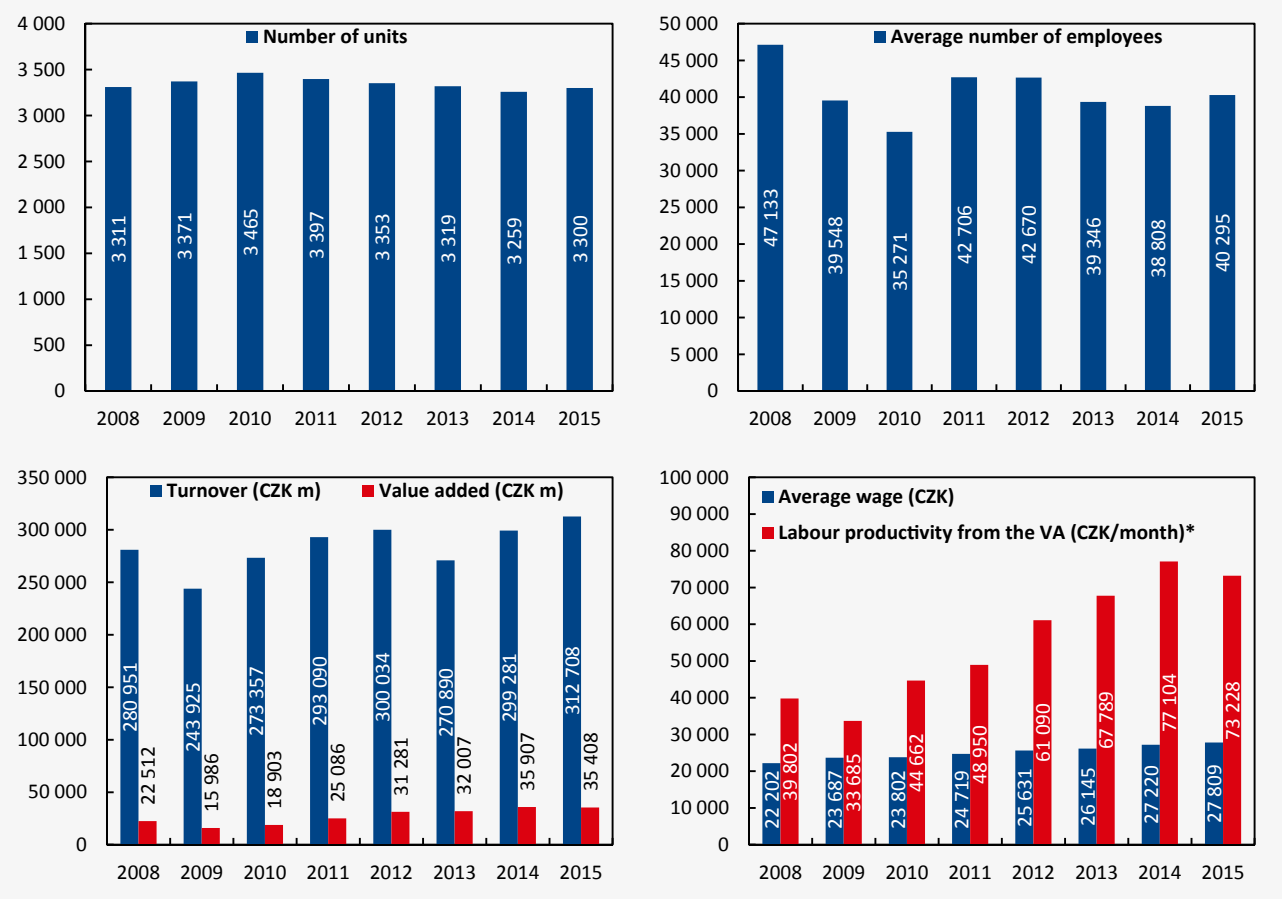
16.3 MAIN ECONOMIC INDICATORS

Companies under foreign control contribute almost 92 per cent to sales (of which large companies contribute the most), although they account for only 2.62% of units (of which medium-sized enterprises contribute the most), giving them 71% of value added and 65% of the number of employees. The lower share in employment compared to other indicators shows a higher level of productivity for companies under foreign control (at a level of 112%) in comparison with domestic companies, despite the fact that value added is reallocated abroad in various amounts within multinational corporations. Large companies account for the greatest share of this.

Asset and value added indicators showed, after the falls in 2009 and 2010 caused by the global recession, a rising trend, whereas for turnover the improvement was slower. Employment did not exceed the 2008 level (Graph 16.3.1). Productivity was a significant way ahead of average salary.

In 2015 there was a slowdown in turnover from 10.5% in 2014 to 4.5%, a fall in value added by 1.4% (in 2014 there was an increase of 12.2%) and an increase in the number of employees by 3.8%, which led to a reduction in productivity by 5%.

Graph 16.3.1 – Main Economic Indicators of CZ-NACE 26 Division (year 2008 = 100 %)

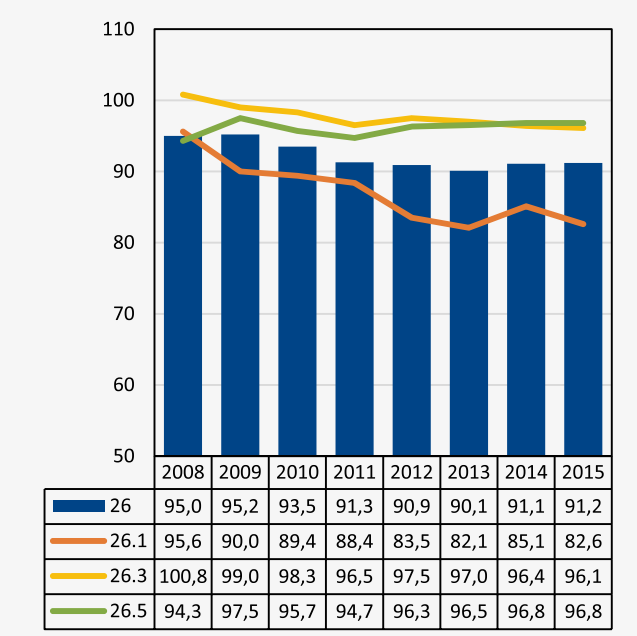


Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

Manufacturers' prices in the CZ-NACE 26 are falling, which in this sector is due to an increase in useful value at the same time as a reduction in prices as a consequence of increases in the scale of production. Thanks to significant influence of multinational chains in this section, the transfer pricing policy between parents and subsidiaries has a large effect here. The whole sector, however, did not reach the pricing level of 2005. During the recession in 2009 prices even rose slightly year on year (Graph. 16.4.2). This was thanks to their increase in the group Manufacture of irradiation, electromedical and electrotherapeutic equipment (26.6), where the prices oscillated in subsequent years. There was a similar situation in prices for Manufacture of communication equipment (26.3), which exceeded the 2005 level in 2008. There was a trend toward a more marked reduction in prices (except 2014) in Manufacture of electronic components and boards (26.1). The prices of other fields in the sector are not monitored statistically.

Efficiency, measured using the Spread indicator, shows an improving trend that is powered by improving returns on equity, which became positive in 2012; in 2014 the Spread became positive. However, a fall in profitability in 2015 pushed the Spread into slightly negative values (Graph 16.3.3). The overall result is negatively influenced by the groups 26.8 Manufacture of magnetic and optical media and 26.4 Manufacture of consumer electronics, which had negative Spread values for the entire period in question.

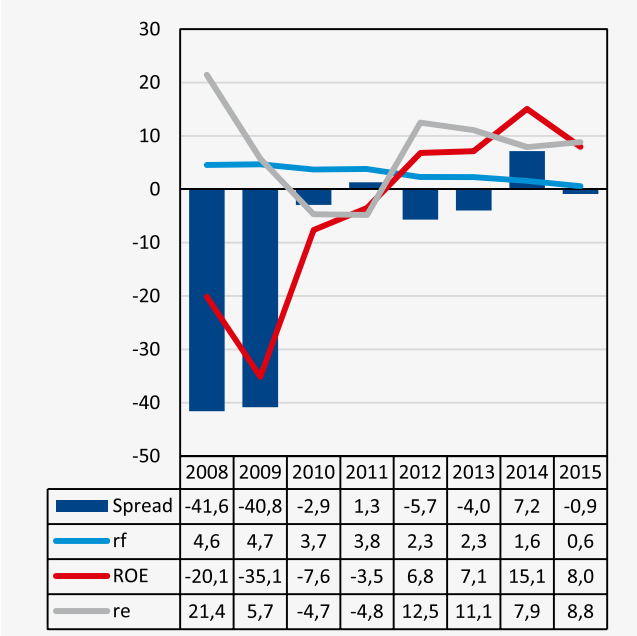
Graph 16.3.2 – CZ-CPA 26 Price development (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
26	95,0	95,2	93,5	91,3	90,9	90,1	91,1	91,2
26.1	95,6	90,0	89,4	88,4	83,5	82,1	85,1	82,6
26.3	100,8	99,0	98,3	96,5	97,5	97,0	96,4	96,1
26.5	94,3	97,5	95,7	94,7	96,3	96,5	96,8	96,8

Source: CSO, MIT calculations
Note: Groups 26.2, 26.4, 26.6, 26.7 and 26.8 are not monitored

Graph 16.3.3 – Spread (ROE – re) CZ-NACE 26 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-41,6	-40,8	-2,9	1,3	-5,7	-4,0	7,2	-0,9
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	-20,1	-35,1	-7,6	-3,5	6,8	7,1	15,1	8,0
re	21,4	5,7	-4,7	-4,8	12,5	11,1	7,9	8,8

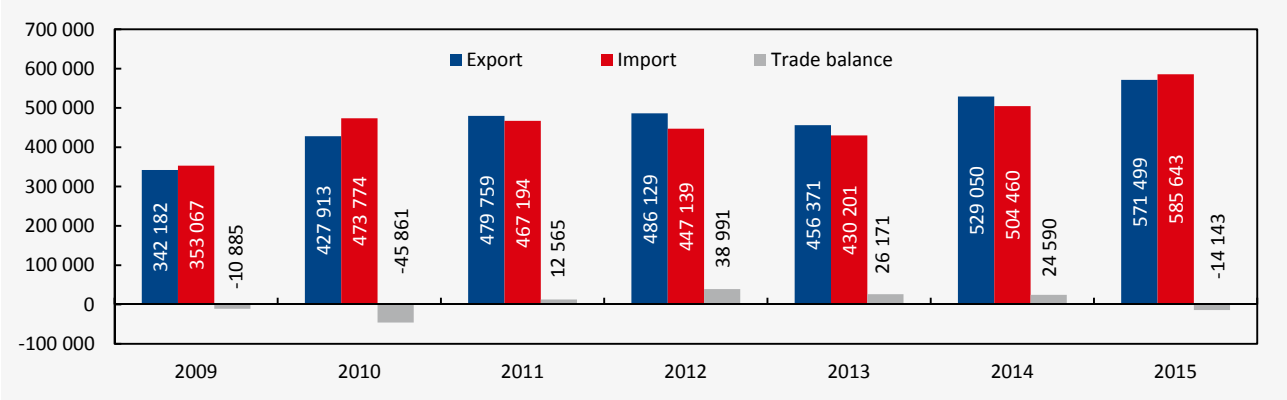
Source: CSO, MIT calculations

16.4 FOREIGN TRADE

16.4.1 TRENDS IN FOREIGN TRADE

In 2015 exports of CZ-CPA 26 products totalled CZK 571.5bn, i.e. 8% more than in the previous year. The commodity structure of exports is dominated by the dynamically-developing product group 26.2 Computers and peripheral equipment with 49%, followed by group 26.3 Communication equipment with a share of 22%. The situation for imports is similar, where group 26.2 products account for more than 41% and group 26.3 products have a share of almost 28%. Total imports rose to CZK 585.6bn, i.e. a 16% increase in comparison with 2014.

Graph 16.4.1 – Product export, import and balance of foreign trade in CZ-CPA 26 (CZK m)



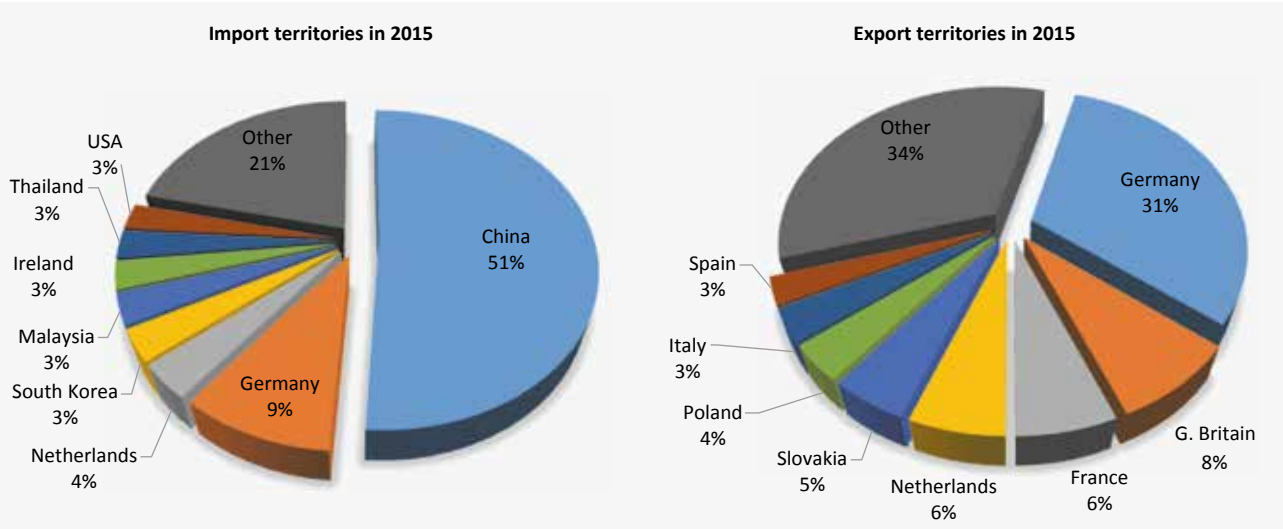
Source: CSO, data as of 28 February 2016

There was a positive trade balance in this commodity group only in 2011 to 2014 and it was strongly influenced by the transfer pricing policies of multinational companies. Only products in group 26.2 Computers and peripheral equipment and group 26.4 Consumer electronics have a long-term negative trade balance.

16.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

In Europe the trade balance in 2015 is a positive CZK 312bn (exports CZK 462bn and imports CZK 149bn). The balance with Asia is, however, more markedly negative CZK 373bn (exports of a mere CZK 19.6bn, imports of CZK 393bn). A dominant position in exports is still held by Germany (CZK 179bn), which is caused primarily by ownership relations of companies under foreign control, followed by Great Britain (CZK 47bn), France (CZK 36bn), the Netherlands (CZK 34bn) and Slovakia (CZK 27bn). The largest import territories are China (CZK 299bn), followed by Germany (CZK 55bn), the Netherlands (CZK 21bn) and South Korea (CZK 19bn).

Graph 16.4.2 – Foreign trade in CZ-CPA 26 products



Source: CSO, data as of 28 February 2016

16.5 DIVISION SUMMARY AND PROSPECTS

The CZ-NACE 26 division is influenced primarily by companies under foreign control. The benefits of these companies are not only in productivity, the tempo of growth in revenues and employment, but also in the fact that they mostly produce in the Czech Republic on top-quality facilities, as they invest in research, development and innovation. This industry is moving more and more to the Czech Republic. Links to foreign companies have a favourable impact also in the form of guaranteed sales of goods; on the other hand they are a danger, either through the outflow of investments or in the form of a fall in demand in Europe, on whose markets most of the exports are concentrated. The sector is and will be very dependent on the quality of technical education.

For this reason in the future it is necessary to support education in technical fields, as well as to effectively support research projects and invest in science and innovation. In the same way, it is necessary to continue to stimulate the inflow of direct investment, because the trend is also technology transfer as a part of the subsidiaries. It is pleasing that in 2014 the spending on research and development in division CZ-NACE 26 was 23% higher than the previous year and that it has a rising tendency; broken down by source of financing it was business spending 87.8%, public Czech 9.9% and public foreign 2.3%. A total of 3.9% of funds was spent on research and development for this division.

Further developments in the industry, which, however, greatly depend on trends in the economy of the whole European Union, are forecast as follows by analysts: Two thirds of companies from the list of the largest global companies will integrate digital transformation into their corporate strategy by the end of 2017. In addition to the marked expansion of digital transformation, IDC also foresees mass use of “third platform” technology (cloud, big data, mobility and social media). We are now at a stage of innovation. IDC regards other innovation accelerators as robotisation, recognition systems that learn from big data, natural interfaces, 3D printing and transition to secure solutions optimised for third platform technology. All this is represented by products with higher value added.

17.

CZ-NACE 27 MANUFACTURE OF ELECTRICAL EQUIPMENT

17.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 27 into individual groups

- 27.1 Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus;
- 27.2 Manufacture of batteries and accumulators;
- 27.3 Manufacture of optical and electrical cables, electric conductors and electrical wiring equipment;
- 27.4 Manufacture of electric lighting equipment;
- 27.5 Manufacture of domestic appliances;
- 27.9 Manufacture of other electrical equipment.

The manufacture of electrical equipment is historically an important division within the manufacturing industry. Products have an assembling character and are designated mainly for further use in industry, in the production and distribution of electricity, in transport and connections, and in the consumer segment.

The share of CZ-NACE 27 in the revenues of the entire manufacturing industry in 2015 was the same as in the previous year, i.e. 6.7%, which means 5th place in the chart of shares of individual divisions. The level of labour productivity in this division was slightly below the manufacturing industry average and it contributed about 8.2% to the employee headcount.

In 2015, there were 12,548 companies operating within division CZ-NACE 27, and their total turnover exceeded CZK 294 bn, employing 90,285 people and generating financial value added worth CZK 72 bn. Division CZ-NACE 27 is one of the largest employers within the manufacturing industry.

Among the major enterprises are: group 27.1 - Siemens, s.r.o., ABB s.r.o., ŠKODA ELECTRIC a.s., group 27.2 - Johnson Controls Autobaterie spol. s r.o., group 27.3 - nkt cables s.r.o., MD Elektronik s.r.o., group 27.4 - Automotive Lighting s.r.o., HELLA AUTOTECHNIK NOVA, s.r.o., group 27.5 - Miele technika s.r.o., Mora Moravia, s.r.o., group 27.9 - AVX Czech Republic, s.r.o.

Table 17.1.1 – Shares of groups in division CZ-NACE 27 in 2015 (in %, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of employees	Number of units
27.1	51.2	48.2	46.2	46.1	43.4	47.2	48.2	71.0
27.2	1.8	2.8	4.0	3.8	6.4	4.8	1.3	0.3
27.3	14.2	12.7	15.3	14.6	10.7	11.8	16.1	2.4
27.4	15.9	20.6	19.8	21.4	17.6	16.2	14.4	2.2
27.5	5.4	5.2	5.5	5.2	6.7	6.0	6.2	4.8
27.9	11.4	10.5	9.3	8.9	15.2	14.0	13.7	19.3

Source: CSO, MIT calculations for 2015

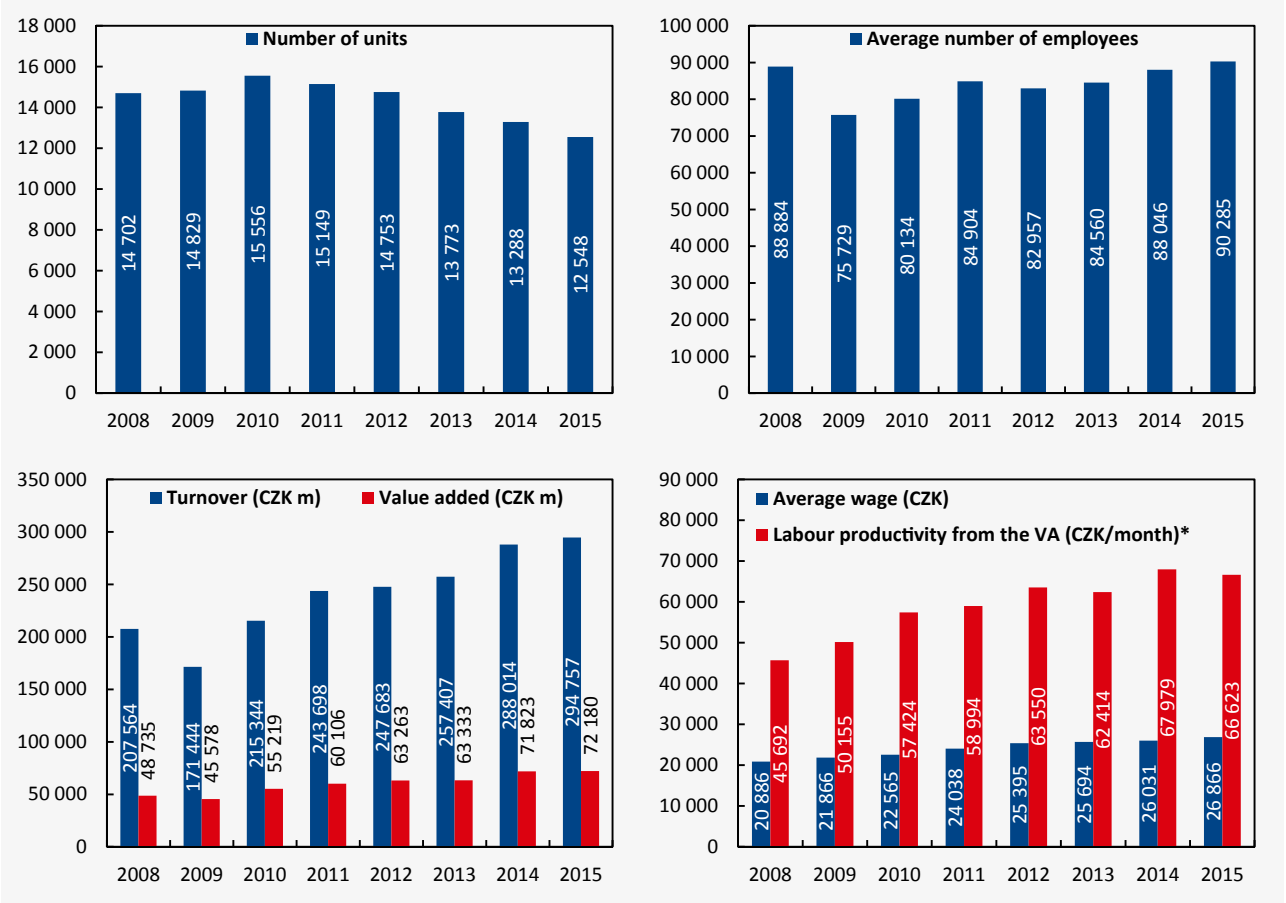
17.2 DIVISION DEVELOPMENT

Overall, division CZ-NACE 27 did well in all regards in 2015. Given that increasingly more companies are striving to ensure delivery of the correct product in the correct quantity to the right place in the expected quality while spending optimal costs, the future development of the electrical engineering sector is promising.

In this sector, the dominant group is CZ-NACE 27.1. This is also obvious from the ranking of companies in the "Czech Best 100" companies of 2014 chart, which presents the financial results of the participating companies to the public. Among the best-ranking companies was Siemens s.r.o. from group 27.1, which jumped from 22nd to 18th position. Another important player in this group, ABB s.r.o., finished in 47th place. The top one hundred also included Automotive Lightning s.r.o. in 46th place, and Varroc Lighting Systems s.r.o. in 65th place.

17.3 MAIN ECONOMIC INDICATORS

Graph 17.3.1 – Main economic indicators of division CZ-NACE 27 (2008 = 100%)

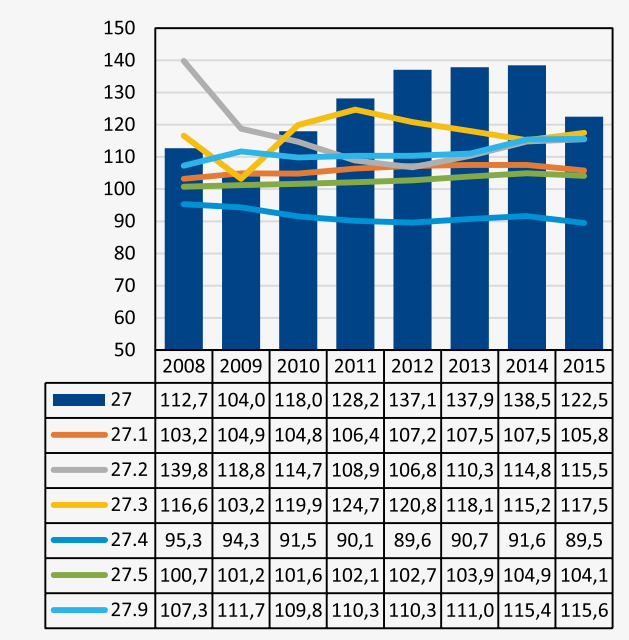


Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

In this division, foreign owners, despite holding on 1.28% of units (of which mostly medium-sized enterprises) account for 75% of revenues (of which almost 65% is generated by large enterprises), more than 68% of value added and 66% of employment. This also results in a higher level of labour productivity at companies under foreign control compared to domestic companies, even though the value added is partly moved abroad within multinational corporations.

The growth of labour productivity was excellent, showing stronger growth in the reviewed period than average wage, yet because of the fluctuating dynamic of value added and employment development, in some years (2011, 2012 and 2015) the average wage increased faster year-on-year than labour productivity. In 2015, turnover slowed down year-on-year from 11.9% in 2014 to 2.3% with a moderate increase in value added by 0.5% (in 2014 the growth was 13.4%) and concurrent slight increase in employment by 2.5%, which was reflected in a decline in labour productivity by 2.5%.

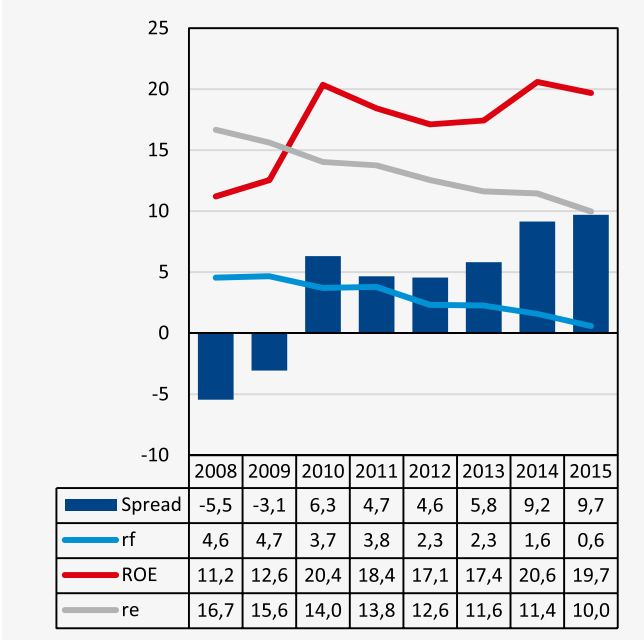
Graph 17.3.2 – Price development CZ-CPA 27 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
27	112,7	104,0	118,0	128,2	137,1	137,9	138,5	122,5
27.1	103,2	104,9	104,8	106,4	107,2	107,5	107,5	105,8
27.2	139,8	118,8	114,7	108,9	106,8	110,3	114,8	115,5
27.3	116,6	103,2	119,9	124,7	120,8	118,1	115,2	117,5
27.4	95,3	94,3	91,5	90,1	89,6	90,7	91,6	89,5
27.5	100,7	101,2	101,6	102,1	102,7	103,9	104,9	104,1
27.9	107,3	111,7	109,8	110,3	110,3	111,0	115,4	115,6

Source: CSO, MIT calculations

Graph 17.3.3 – Spread (ROE – re) CZ-NACE 27 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-5,5	-3,1	6,3	4,7	4,6	5,8	9,2	9,7
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	11,2	12,6	20,4	18,4	17,1	17,4	20,6	19,7
re	16,7	15,6	14,0	13,8	12,6	11,6	11,4	10,0

Source: CSO, MIT calculations

The overall result is slightly negatively affected only by group 27.3 Manufacture of optical and electrical cables, electric conductors and electrical wiring equipment. On the other hand, the effect of group 27.4 Manufacture of electric lighting equipment is very positive.

In the overview of industrial manufacturer price indexes for 2008-2015, the highest growth of prices in 2011 is apparent in group 27.3 Manufacture of optical and electrical cables, electric conductors and electrical wiring equipment, when they reached their maximum and then declined year-on-year until 2014 (graph 17.3.2). Other groups report rather fluctuating price development, but without major deviations. Modern technologies allow the reduction of production costs, thus also reducing the sale price. Another factor is the increasing sophistication of products with additional functions and companies' effort to produce efficient appliances. Prices are also pushed down by strong competition in this sector. For instance, in group 27.4 Manufacture of electric lighting equipment, the strong competition on the market (especially imports from China) has become fully apparent in recent years, leading manufacturers to implement more frequent innovations and reduce the prices of older products.

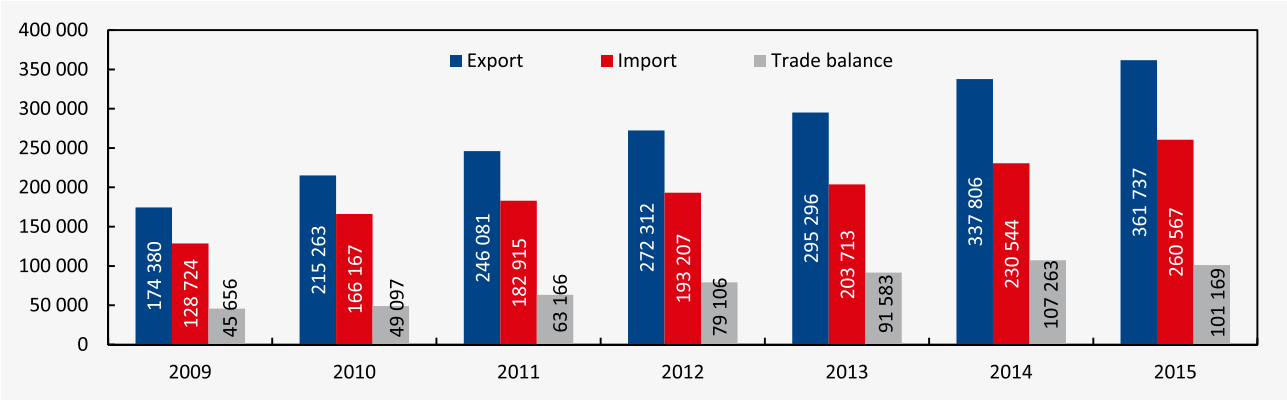
The Spread indicator has been positive since 2010, which indicates the very high efficiency of the sector. This was aided by the return on equity (ROE), which is consistently positive, and the risk rate of division CZ-NACE 27, measured by the alternative cost of capital (re), which continues to decline (graph 17.3.3).

17.4 FOREIGN TRADE

17.4.1 DEVELOPMENT OF FOREIGN TRADE

The commodity structure of exports for division 27 is dominated by product group 27.1 Electric motors, generators, etc. with its 35%, followed by product group 27.3 Electrical cables and electrical wiring equipment with a share of 25%. The case is the same for imports, where product group 27.1 accounts for almost 40$ and product group 27.3 for 24%. For commodities in group 27.5 Domestic appliances, there has been a positive foreign trade balance since 2012 despite the fact that many products from this group are imported from Asia and are not manufactured in Europe.

Graph 17.4.1 – Product export, import and foreign trade balance in CZ-CPA 27 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

Total imports in 2015 in group CZ-CPA 27 amounted to CZK 260.6 bn, of which about CZK 168.7 bn from the EU and about CZK 61.7 bn from Asia. In percent, the EU share in imports is about 65% and declining (in 2014 it was 70%).

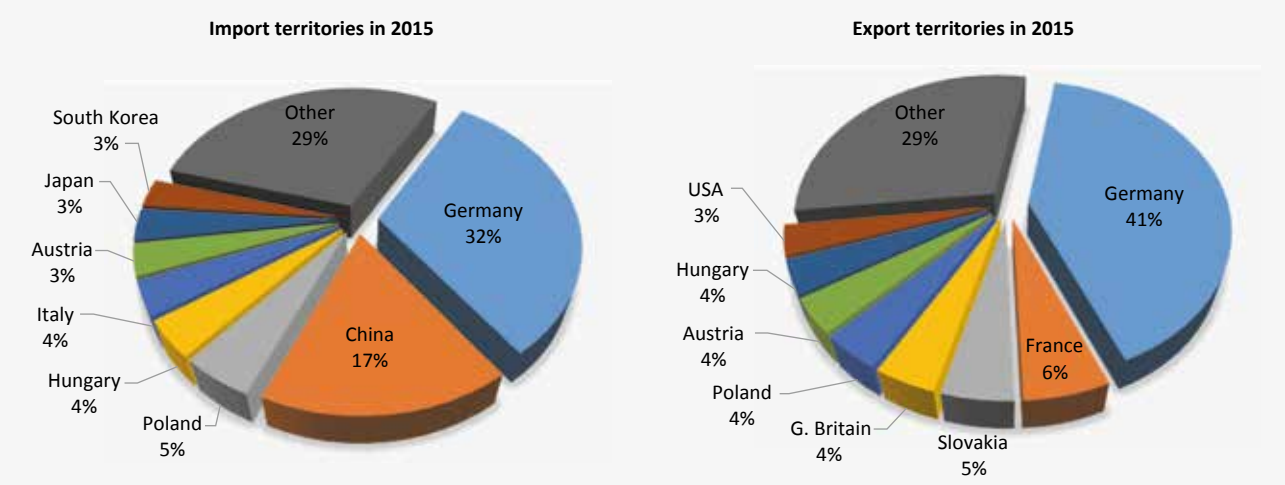
Total CZ-CPA 27 exports in 2015 amount to CZK 361.7 bn, of which the majority went to EU countries (almost 83%). Hence, it is evident that our economy is highly dependent on the economic cycle of the European Union. The positive foreign trade balance in the reviewed period increased gradually, but declined year-on-year in 2015. The foreign trade balance with Asia is strongly negative for all CZ-NACE 27 groups.

17.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Germany still has a dominant position in exports, due mainly to the ownership relations of companies under foreign control.

Germany is also the largest import territory, followed by China, Poland, Hungary, Italy and Austria. In 2015, turnover with Germany reached almost CZK 230 bn, and the positive trade balance with this country is CZK 65.4 bn (imports 82.3 bn and exports 147.7 bn). Apart from Germany, the Czech Republic also had a foreign trade surplus on large markets with France, Slovakia, Great Britain and Russia. On the contrary, we import more than we export mainly from China with a turnover of CZK 51 bn (of which imports CZK 43.4 bn, exports CZK 7.5 bn and a negative balance of CZK 36 bn). The negative trade balance with China increased in 2015 (graph 17.4.4).

Graph 17.4.2 – Foreign trade in CZ-CPA 27 products



Source: Source: CSO, data as at 28 February 2016

17.5 DIVISION SUMMARY AND PROSPECTS

CZ-NACE 27 Manufacture of electrical equipment has a very strong position in the Czech economy, especially in the area of deliveries for the energy sector. The domestic market is fully comparable to foreign markets, where strong competition forces manufacturers to keep innovating products, look for production savings and new trends in the field. The trend of switching to newer sophisticated products is also supported by the building of new or expansion of existing development capacities. The assembling character of production of the electrical engineering industry creates conditions for competitiveness in other divisions of the manufacturing industry and energy sector. It is important for its share in the import of materials, components and parts for production and assembly, its wide range of technological processes, important share of multinational capital in new investments and use of progressive technologies. It also exploits the logistics networks of multinational corporations and requires highly qualified workers in research, development and production. For instance, according to statistics of spending on research and development in 2014, about 6.4% of investments went into division CZ-NACE 27, of which over 95% from business resources, 3.6% from Czech public resources and roughly 1.1% from foreign public resources. The positive fact is that spending increased by more than 60%.

A decisive factor for further development and expansion of this sector is an abundance of qualified technical workers. The Ministry of Industry and Trade is striving to solve the lack thereof, which is apparent in certain areas of the Czech Republic. 2015 was the Year of Industry and Technological Education, which managed to incite interest in studying at secondary engineering schools.

A major competitive advantage for the Czech Republic is its strategic location in Central Europe and the resulting easy access to the European Union market, well developed transport and telecommunications infrastructure, an evolved technological base, major potential for research and development projects and investments support through a transparent system of investment incentives. The technological potential of the Czech Republic in this sector is very strong and guarantees competitiveness on foreign markets.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18.

CZ-NACE 28 MANUFACTURE OF MACHINERY AND EQUIPMENT N.E.C.

18.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 28 into individual groups

- 28.1 Manufacture of general-purpose machinery;
- 28.2 Manufacture of other general-purpose machinery;
- 28.3 Manufacture of agricultural and forestry machinery;
- 28.4 Manufacture of metal forming machinery and machine tools;
- 28.9 Manufacture of other special-purpose machinery

An important division of the Czech manufacturing industry is the manufacture of machinery and equipment CZ-NACE 28. This division includes a very wide range of equipment, which mechanically or thermally affects materials or performs production processes on materials (i.e. manipulation, spraying, weighing or packaging), including the manufacture of the mechanical components that produce and use power. This also includes specially manufactured parts for this machinery and equipment. This division further includes fixed, movable or manually controlled equipment regardless of whether it is designated for industry, trades, construction, agriculture or household use. The division also includes the manufacture of special equipment for passengers or cargo transport.

In 2015, this division accounted for almost 8% of revenues for own products and services in the manufacturing industry (MI), thus taking an imaginary third place within the manufacturing (after division CZ- NACE 29 Manufacture of motor vehicles and division CZ-NACE 26 Manufacture of computer, electronic and optical products).

Table 18.1.1 – Shares of groups in division CZ-NACE 28 in 2015 (in %, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of employees	Number of units
28.1	25,4	26,7	25,9	26,7	31,0	30,6	25,0	10,6
28.2	35,0	35,4	37,5	36,6	34,5	33,6	34,7	61,2
28.3	5,8	5,9	6,0	6,5	5,4	6,1	6,2	5,5
28.4	10,1	9,5	8,6	8,8	9,7	9,8	9,7	4,9
28.9	23,7	22,5	21,9	21,5	19,4	19,9	24,3	17,7

Source: CSO, MIT calculations for 2015

18.2 DIVISION DEVELOPMENT

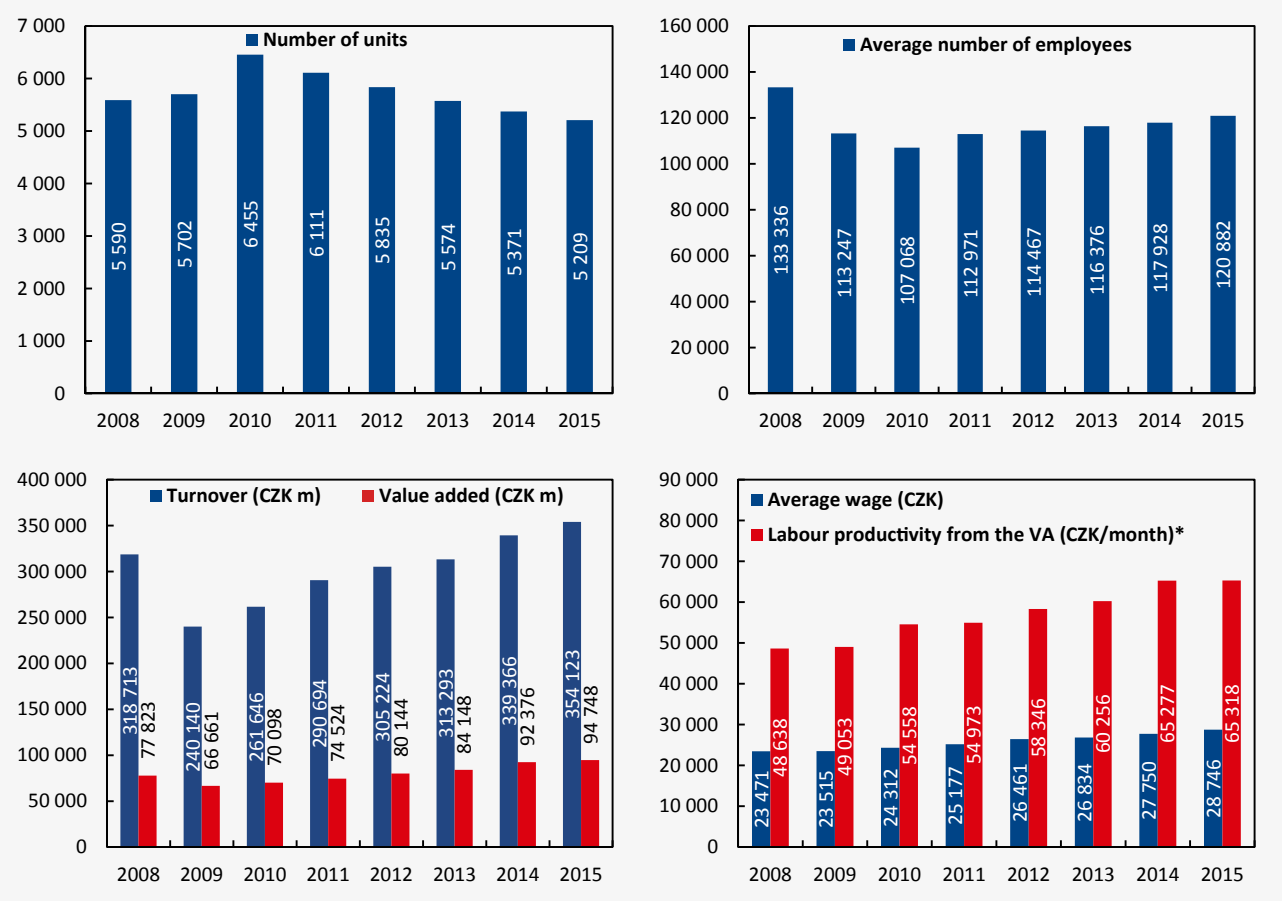
The division's production includes a wide range of equipment that is indispensable for any investment into production technology. The development, production and sale of this equipment is an indicator of the condition and further development of the Czech economy. It ranges from the manufacture of turbines, transport and air conditioning equipment, agricultural, food processing, textile, paper and construction machines through to metal machining and shaping machines. Given its inputs, the division CZ-NACE 28 is closely linked to the metallurgical and metal production industry. In terms of use, more than half the division's production

is exported, one quarter is used in domestic investments in practically all branches of the economy, and within the remaining intermediate consumption, the largest volume accounts for mutual supplies within the sector itself, followed by cooperation with the most closely linked sectors, namely the automotive and metal production industries.

18.3 MAIN ECONOMIC INDICATORS

The economic recession of 2009 was apparent in division CZ-NACE 28 in two phases (unlike most of the other divisions, which saw growth from 2010 following a slump in 2009), with employment declining in both 2009 and 2010, but turnover and value added returning towards stable growth from 2010 (graph 18.3.1). Employment started to grow in 2011 and continued to grow in further years; however, it did not reach the pre-crisis level of 2008. Its faster growth is prevented by the relatively high demands on requalification of the labour force. With a fairly even growth of the average wage, labour productivity increased in two larger year-on-year jumps in 2010 and 2014. This led to the slower growth of productivity compared to wages in 2011 and 2015.

Graph 18.3.1 – Main economic indicators of division CZ-NACE 28 (2008 = 100%)

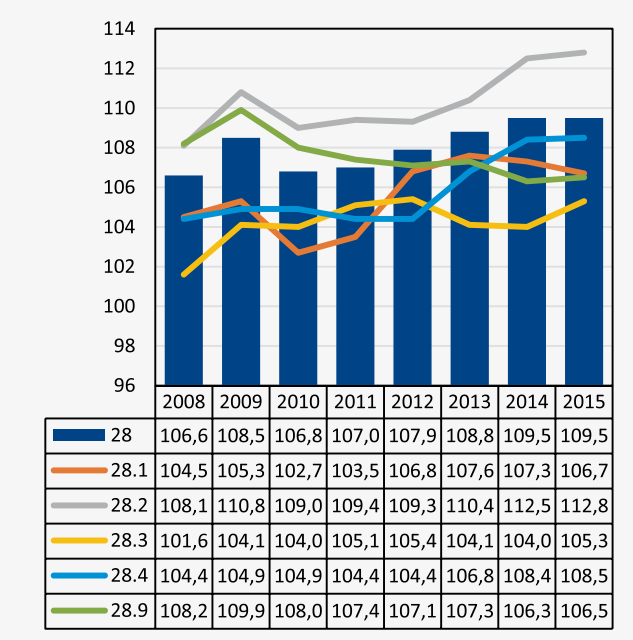


Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data.*

Manufacturers' prices oscillated with a slight growth tendency, where the highest indexes were achieved by group CZ-CPA 28.2, the lowest indexes by group 28.1, and a rather rising trend by group CZ-CPA 28.9 (graph 18.3.2).

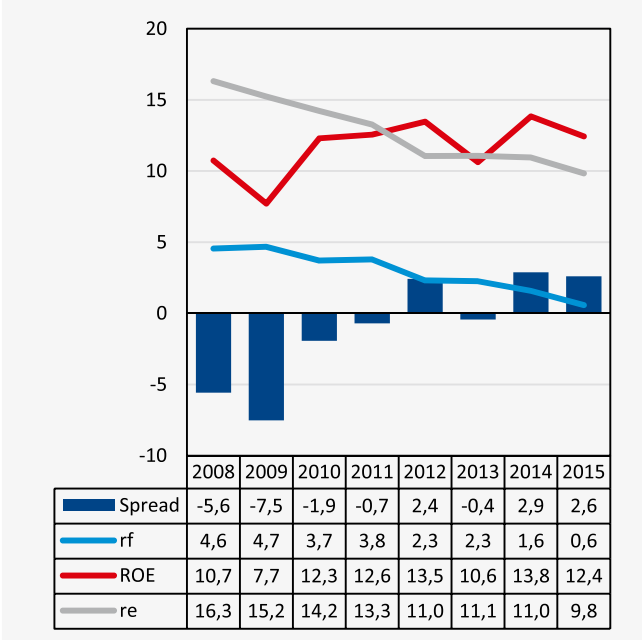
Financial position expressed by the Spread indicator had an improving tendency, where division 28 first reduced its negative values in 2010 and 2011, and moved into positive values in 2012. In 2013, it "jumped back" to negative values slightly due to the slump in return on equity (graph 18.3.3). The year-on-year decline in returns in 2015 resulted in a reduction of the positive Spread value. Of the individual groups, CZ-NACE 28.2 fared best, keeping the Spread values positive throughout the reviewed period. Major fluctuations between negative (in 2009) and positive (2012) values were reported by group CZ-NACE 28.3. In 2015, only group 28.4 finished in the red.

Graph 18.3.2 – Price development CZ-CPA 28 (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
28	106,6	108,5	106,8	107,0	107,9	108,8	109,5	109,5
28.1	104,5	105,3	102,7	103,5	106,8	107,6	107,3	106,7
28.2	108,1	110,8	109,0	109,4	109,3	110,4	112,5	112,8
28.3	101,6	104,1	104,0	105,1	105,4	104,1	104,0	105,3
28.4	104,4	104,9	104,9	104,4	104,4	106,8	108,4	108,5
28.9	108,2	109,9	108,0	107,4	107,1	107,3	106,3	106,5

Graph 18.3.3 – Spread (ROE – re) CZ-NACE 28 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-5,6	-7,5	-1,9	-0,7	2,4	-0,4	2,9	2,6
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	10,7	7,7	12,3	12,6	13,5	10,6	13,8	12,4
re	16,3	15,2	14,2	13,3	11,0	11,1	11,0	9,8

Source: CSO, MIT calculations

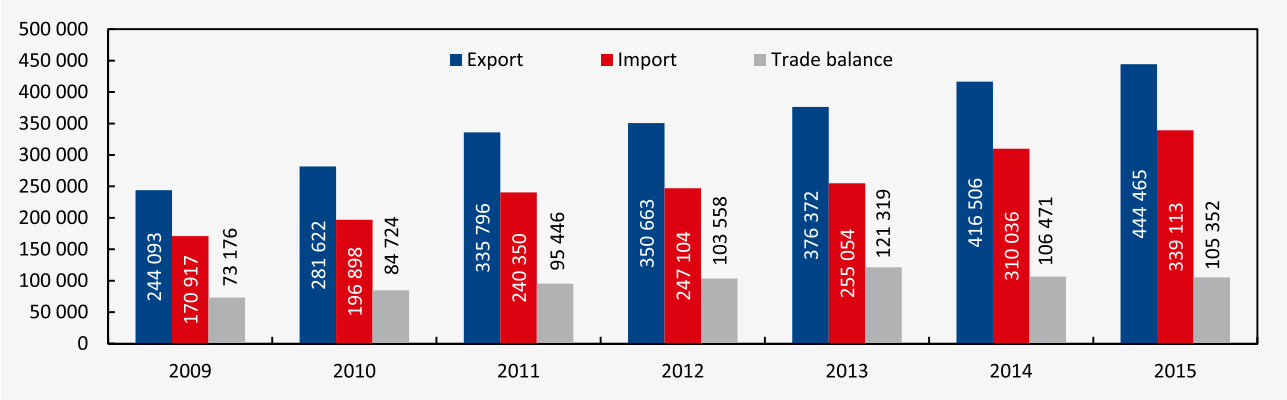
18.4 FOREIGN TRADE

18.4.1 DEVELOPMENT OF FOREIGN TRADE

The positive balance and gradually increasing volume of exports of CZ-CPA 28 products testifies to the improving quality, technical standard and competitiveness of products. The positive development of export performance continued, condition by investment into research and development, improving employee qualifications and adapting enterprising to the increasingly competitive environment.

The commodity structure of exports and imports is significantly and consistently dominated by products of CZ-CPA 28.1 and 28.2.

Graph 18.4.1 – Export, import and foreign trade balance for products according to CZ-CPA 28 (in CZK m)



Source: CSO, data as at 28 February 2016

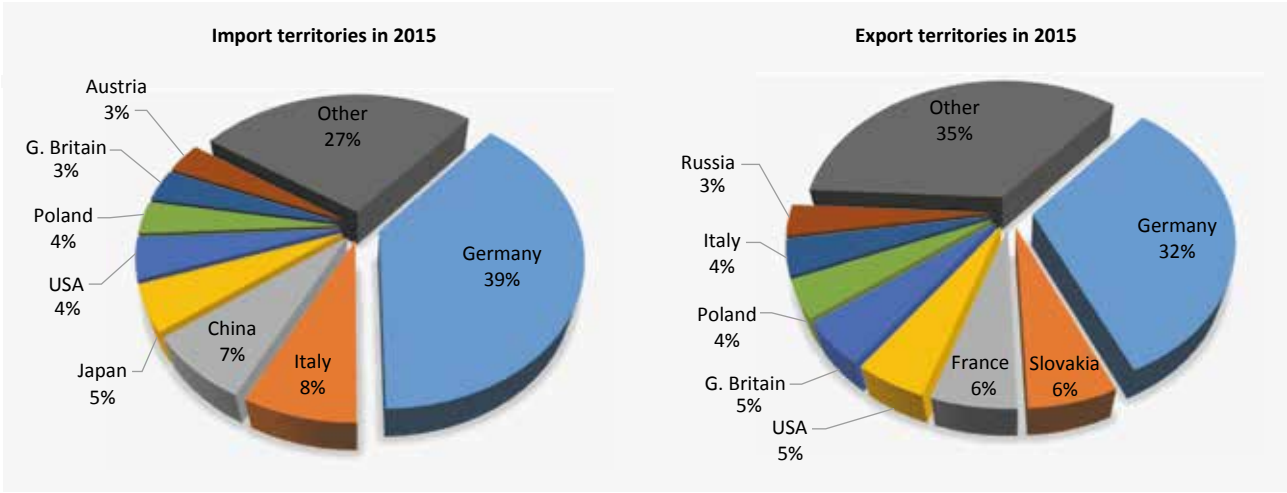
18.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

The territory to which the largest volume of machinery and equipment is exported is traditionally Germany. In 2015 – as in 2014 – exports to this neighbour accounted for more than 32% of the total export volume. The situation is similar for imports, with imports from Germany dominating as per tradition. In 2014, the share of imports from Germany exceeded 40%, while in 2015 they accounted for 39% of total imports.

The shares for other territories have not seen any major changes compared to the established distribution of recent years, with 6% of exports headed to France. Other traditional countries are Slovakia, Poland, Great Britain, Italy and the Russian Federation, the destination of 3% to 5% of total exports. About 35% of exports go to other territories. The territories for import have not changed significantly in recent years either. Czech manufacturers are interested in exporting to East Asia and there are ongoing negotiations on exports to countries in South America.

In November 2015, three meetings of the Mixed Workgroup for Heavy Engineering were held within the "India Engineering Sourcing Show" (IESS) in Mumbai. The main point on the agenda was to sign a protocol on cooperation in the area of heavy engineering, which also defines as a key project of interest the modernisation of the Indian state engineering enterprise HEC in Ranchi.

Graph 18.4.2 – Foreign trade in CZ-CPA 28 products



Source: CSO, data as at 28 February 2016

18.5 DIVISION SUMMARY AND PROSPECTS

One of the important parts of general Czech engineering is energy engineering, which is currently experiencing strong development thanks to the rising global demand for energy. Energy machinery includes the manufacture and delivery of equipment for many segments across general engineering, starting from the manufacture of turbines, to armatures, compressors and pumps, through to lifting and handling equipment.

Recently, the Czech energy engineering industry, as a decisive agent in the recovery and renewal of the Czech energy industry, is coming to the forefront once again, while retaining its traditional customers in Russia, the post-soviet republics, China, India, Pakistan, Egypt, Turkey, Vietnam, Cuba and other countries.

The involvement of Czech energy equipment manufacturers into contracting consortia is often aided by their membership in multinational conglomerates, whose ties and influence open doors to foreign contracts. At the same time, a number of 100% Czech companies are successful exporters of energy equipment, specifically because of their extensive tradition and wealth of references.

The tradition and the current standard in the manufacture of machine tools, which forms an integral part of this division, justifies expectations of further successful development for this group.

Within the 2015 International Engineering Trade Fair in Brno, the minister of industry and trade announced an initiative titled Industry 4.0. It involves the preparation of a vision for digital economy heading towards a cybernetic revolution, which will bring about a transformation in the thinking of people, involved organisations and management of industrial production, which will consequently have a positive impact on society as a whole. The aim is to involve Czech companies effectively into supplier-customer chains, and in cooperation with the research sector to prepare solutions which will improve their position in these chains with a view of activities with higher value added.

19.

CZ-NACE 29 MANUFACTURE OF MOTOR VEHICLES (EXCEPT MOTORCYCLES), TRAILERS AND SEMI-TRAILERS

19.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 29 into individual groups

- 29.1 Manufacture of motor vehicles and engines;
- 29.2 Manufacture of bodies for motor vehicles; manufacture of trailers and semi-trailers;
- 29.3 Manufacture of parts and accessories for motor vehicles and their engines.

The automobile industry is a major contributor to the overall economic results of the Czech Republic. In recent years, its share in the manufacturing industry is increasing further, as are its revenues, number of employees and exports.

Depending on the character of the production program, this division includes: personal, light utility and freight vehicles, buses and trolleybuses, snowmobiles, golf carts, amphibious vehicles, fire trucks, trailers and semi-trailers, and the manufacture of their parts.

For more than ten years, the manufacture of parts and accessories for motor vehicles has a greater share on revenues and employment in the automotive industry than the manufacture of motor vehicles, but in terms of exports the manufacture of motor vehicles consistently has a greater share. The importance of group 29.2 is marginal, and although its revenues continue to grow, it still hasn't reached the pre-crisis level of 2008.

The automotive industry is a customer of products and services from other divisions of the manufacturing industry, e.g. electrical engineering, metallurgy, chemical, plastics, glass, textile and general engineering. A vehicle is composed of up to 12,000 parts (Škoda will be purchasing 5,500 parts from 530 suppliers for the new Kodiaq).

In 2015, domestic suppliers manufactured, both for Czech car manufacturers and above all for export, e.g. 21.1 million pneumatic tyres for personal and light utility vehicles, 919,000 pneumatic tyres for cargo vehicles and 119,000 industrial tyres for other motor vehicles, 31 million vehicle windows, ca. 18 million car lights, over 2 million power steering units, more than 14 million springs for personal vehicles, 3 million air conditioning units, as well as millions of condensers, vaporisers, coolers or heating units, over 20 million filters and millions of other components.

In 2015, there were almost 7.2 million vehicles in operation in the Czech Republic.

In addition to new vehicles, about 660,000 used personal automobiles were sold in CZ, the average price of which was ca. CZK 196,000, which represents ca. CZK 130 bn. Leasing companies generate a considerable turnover for their revenues in relation to vehicles sales. More than 80% of the CZK 51.4 bn spent on leasing was used to purchase vehicles (personal, light utility and cargo, including buses and trolleybuses). For business loans, it was more than 72% of the CZK 50.1 bn volume. For instance, vehicles worth almost CZK 12 bn were purchased through ŠKOFIN. In terms of advertising expenses, 10 of the largest advertisers paid more than CZK

2.7 bn on advertising (the most was paid by Hyundai with CZK 584 m, Škoda with CZK 348 m and Volkswagen with CZK 340 m). In Slovakia, car manufacturers invested EUR 86.6 m into advertising.

Logistics are important for all manufacturers, especially in sectors with just-in-time production. ČD Cargo, a.s. annually transports more than 1 m vehicles thanks to domestic and Slovak car manufacturers. At large companies, up to 15,000 trucks with finished products arrive and depart every year. Around 300,000 drivers in the Czech Republic have a professional license, and regularly take to the steering wheel of a cargo truck or bus. Road transport accounts for 78% of the total carriage of goods in the country (trucks paid about CZK 9.7 bn in toll in the Czech Republic in 2015, +11.67% year-on-year). In coming years, we expect the further growth of road cargo transport. As for passenger transport, individual and bus transport accounts for more than 50%.

Once its lifetime is over, a vehicle becomes "waste", which is a source of materials for reuse (iron, plastics, metal, glass, coloured metals, precious elements and more). In the Czech Republic more than 130,000 motor vehicles past their lifetime are ecologically scrapped every year. In 2015, 669,154 vehicles were deleted from the Central Vehicles Register – only 111,222 units were handed over for liquidation and another 557,932 were deleted administratively after 1 July 2015 (the reason being Act No. 293/2013 Coll. (Art. II(4b)), which changed the rules for "partial transfers"). About 44,000 tonnes of eliminated tyres were processed (58.9% were used for energy). Car batteries are an important commodity as well (Kovohutě Příbram recycled over 100 tonnes of lead batteries). Given the onset of electromobility, we expect a greater share of lithium batteries for recycling in the coming years (after 2020) (e.g. the battery for the BMW i3 weighs about 230 kg, in an electrical bus, including tempering equipment it weighs up to 2.5 tonnes).

Table 19.1.1 – Shares of groups in division CZ-NACE 29 in 2015 (in %, division = 100%)

CZ-NACE group	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of Employees	Number of units
29.1	30,7	47,2	46,2	45,6	54,6	47,3	22,5	9,3
29.2	1,7	1,0	0,8	0,8	0,9	1,0	2,1	17,2
29.3	67,7	51,7	53,0	53,6	44,5	51,8	75,5	73,5

Source: CSO, MIT calculations for 2015

Economic results in time series are sometimes impacted by statistical factors. Businesses are included in the individual divisions and groups based on their primary activity, whereas their other activities may belong to other divisions or group. In the case of changes in the production structure, when a different activity becomes primary, the business is reassigned to the relevant division (group). This leads to a change in the dynamic or volume of the indicator for organisational reasons, not economic reasons. The production of auto parts is thus on the boundary between the metal-working, mechanical engineering, electrical engineering and rubber and plastics industries.

In terms of the number of units and employees, and the resulting wage expenses, group 29.3 Manufacture of parts and accessories for motor vehicles and their engines clearly dominates, as it includes representatives of leading global car part manufacturers. In terms of sales, added value, total revenues and assets, it has a share of slightly more than half. Almost one quarter of employees are involved in the final manufacture of motor vehicles (here Škoda has more than a 2/3 share in employment). As for total revenues, the first three ranks were taken by Škoda, TPCA and HMMC.

The smallest group is 29.2 with the manufacture of trailers and semi-trailers, from superstructures for trucks or terrain vehicles through to trailer carts for personal vehicles. In most indicators, this group reaches a maximum 2% share.

19.2 DIVISION DEVELOPMENT

The automotive industry has a very wealth history. Worth mentioning: 200 years since the premiere of the first steam-powered automobile in our territory by Josef Božek, 150 years since the birth of Václav Laurin, one of the founders of the Laurin & Klement brand, 120 years since the foundation of the company "První východočeská výroba kočárů Josefa Sodomky" (First East Bohemian Carriage Manufacturing Company Josef Sodomka, later Karosa, now IVECO), 115 years since the foundation and 110 years since the launch of production of personal vehicles at Laurin & Klement (now Škoda Auto, a.s.) and the first international auto salon on Czech territory, 95 years of activity of Bosch on our territory, 90 years since the launch of regular operation of buses in Prague, 85 years since the launch of regular operation of buses in Brno and Ostrava, 80 years since the manufacture of the first trolleybus in our territory, registration of the Tatra trademark, foundation of BRITA (later Pal, now Brisk a.s.) and manufacture of the Škoda 935 with a streamlined auto body, 70 years since the foundation of the national enterprise PAL and termination of production of AERO personal automobiles, 25 years since the foundation of Brano Group, a.s., MAHLE Behr Mnichovo Hradiště, s.r.o., Kögel, s.r.o, 20 years since the launch of bus production at SOR Libchavy, s.r.o., foundation of e.g. Johnson Controls Automobilové součástky, k. s., Tyco Electronics Czech s.r.o., GRAMMER CZ, s.r.o., 15 years since the foundation of Magna Exteriors (Bohemia) s.r.o., Nemak Czech Republic, s.r.o., MAHLE Behr Mnichovo Hradiště s.r.o., 10 years since the launch of production at Toyota Peugeot Citroën Automobile Czech, s.r.o. (TPCA), foundation of SUNGWOO HITECH s.r.o.

We have also noted sales or production milestones. For the first time in history, Škoda Auto a.s. (Škoda) managed to sell one hundred thousand cars in a single month (March 2015). Škoda manufactured its 17 millionth car, TPCA its 2.5 millionth and Hyundai Motor Manufacturing Czech s.r.o. (HMMC) its 1.5 millionth care, Škoda produced its 7 millionth manual gearbox and Škoda Electric, a.s. its 14 thousandth trolleybus since launching production.

The automotive industry is consistently among the most important in the Czech Republic. It accounts for 28.7% of revenues from sale of own products within the manufacturing industry. In terms of exports, it contributes a share of about one third (the Škoda car manufacturer is the largest exporter in the country) and in terms of employment it accounts for 14%. Investments in the automotive industry account for almost one fifth of all investments in the manufacturing industry. This sector also ranks in top position in investment incentive statistics.

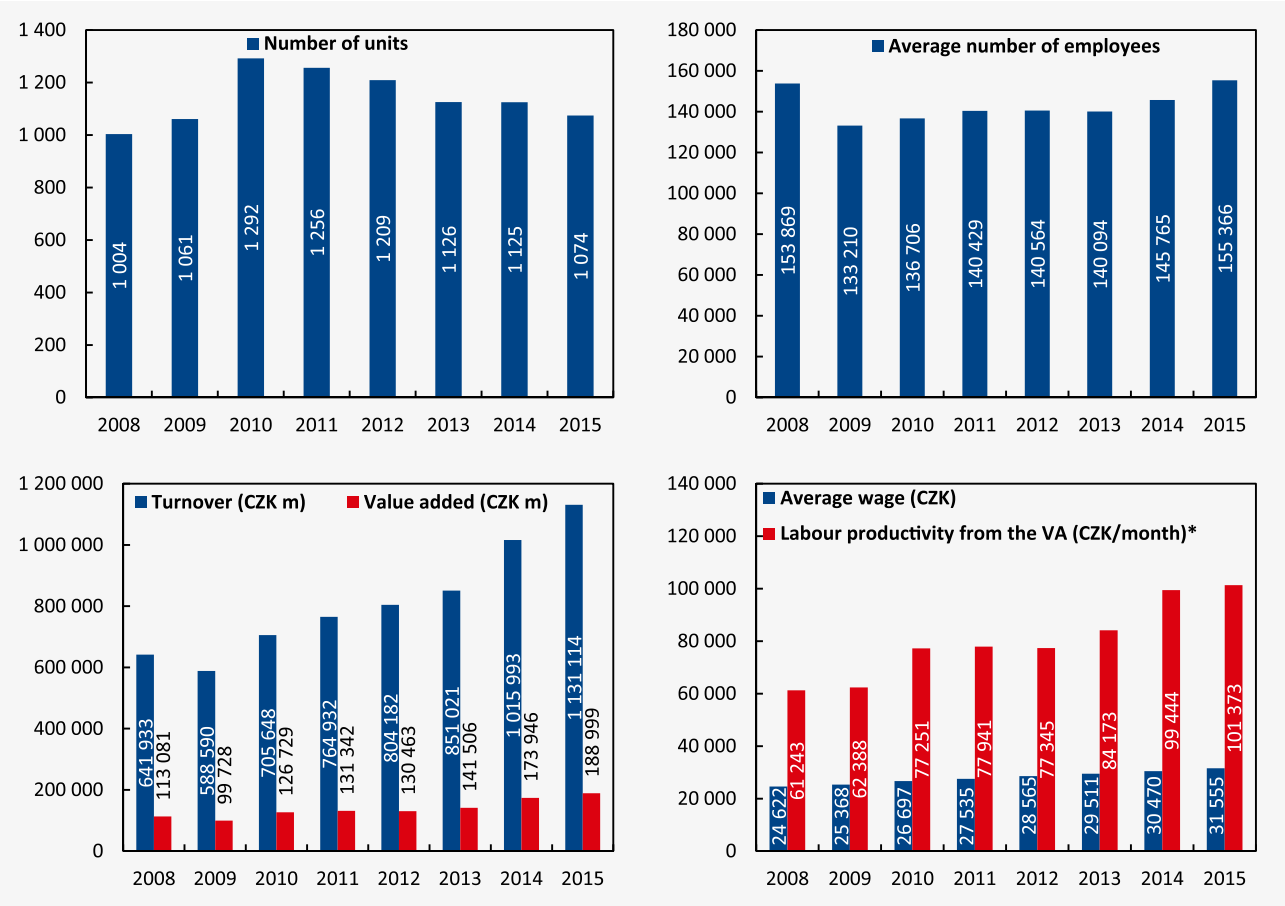
For comparison: in Slovakia the automobile industry directly employs 80,000 people, accounts for 43% of industrial production and 35% of exports of the manufacturing industry.

Companies in the automotive sector and related suppliers regular rank in the CZECH TOP 100, but not all companies participate in this poll. In first place in 2015 was Škoda Auto, a.s., with BOSCH DIESEL, s.r.o. in 21st place, Iveco Czech Republic, a.s. in 32nd place, Automotive Lighting s.r.o. in 34th place, AGC Flat Glass Czech a.s. in 38th place, TRW Automotive Czech s.r.o. in 48th place, Witte Nejdek, spol. s r.o. in 55th place, MITAS a.s. in 57th place, MANN + HUMMEL (CZ) s.r.o. in 78th place, TRCZ s.r.o. in 83rd place and SOR Libchavy spol. s r. o. in 84th place.

The automotive industry is also among the most important sectors in Central European countries. As an example, we can list the following plants: in Poland, FCA Poland (556,000 personal automobiles, formerly Fiat Auto Poland S.A), VW Poland (in 2015 it manufactured 171,000 light utility vehicles); in Hungary, AUDI Hungaria Motor (the largest engine plant in the EU, in 2015 it manufactured more than 2 million engines in one year for the first time); in Slovakia, Volkswagen Slovakia (in 2015 it manufactured 397 458 personal automobiles, 262,400 gearboxes and 36.4 million components), KIA Slovakia (in 2015 it manufactured 338,000 personal automobiles and 582,000 engines); and in Romania, Automobile Dacia (in 2015 it manufactured ca. 551,000 vehicles, 514,000 gearboxes and 436,000 engines).

19.3 MAIN ECONOMIC INDICATORS

Graph 19.3.1 – Main economic indicators of division CZ-NACE 29 (2008 = 100%)



Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

Following the recession in 2009, most indicators have returned to growth, whereas turnover and added value exceeded the pre-crisis level of 2008 as early as in 2010. This is due to the growth of production not only domestically, but especially in Germany and other neighbouring countries. Also, the demand for new vehicles in the EU grew for more than 30 consecutive months.

Labour productivity increased substantially in two year-on-year jumps in 2010 and 2014, while average wage growth was even. This led to the unfavourable surpassing of productivity by wage growth in the years 2011 and 2013. The growth of employment since 2010 was interrupted in 2013, but then accelerated, exceeding the employee level of 2008 in 2015. The lack of employees is forcing companies to increase wages in order to reduce employee fluctuation and attract new staff. According to the Automotive Industry Association, the average wage of employees in its membership base (including companies not only in CZ-NACE 29) exceeded CZK 33,000 (year-on-year increase of 3.6%). In the past decade, the wage in this sector has increased dramatically from CZK 22,591 (2006) to CZK 33,274 (2015), i.e. by a full 47%. Wages in the automotive sector are about one fourth higher than the CZ average.

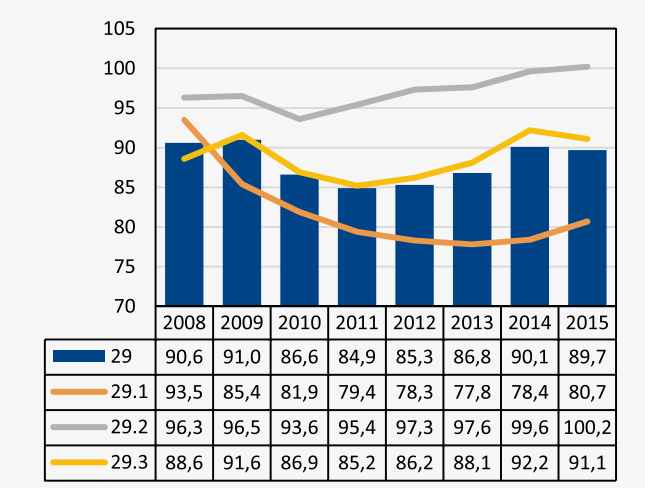
In Slovakia, for instance, the average wage in this sector in the middle of 2015 was EUR 1,040 (increasing by EUR 167 in the past five years, i.e. +19.1%). The highest wages are in the Bratislava region and lowest in the Košice region, with a difference of more than 30%. The average wages with car manufacturers were: Volkswagen Slovakia – EUR 1,750, KIA – EUR 1,215, PSA Peugeot Citroën – EUR 1,100 (the average does not include managers' salaries). Jaguar Land Rover reported that it will be offering an average wage of EUR 1,225 (which should reach EUR 1,300 by the end of 2019).

According to the Centre for Automotive Research, the average hourly wage expenses in the USA at the following car manufacturers were equal to: Mercedes-Benz USD 65, General Motors USD 58, Ford USD 57, Honda USD 49, FCA USE 48, Nissan USD 42, Hyundai USD 41, BMW USD 39 and Volkswagen USD 38 (wage expenses are the sum of the hourly wage, health insurance and bonuses). The average wage in the automotive industry in Germany exceeded EUR 4,000.

According to the Czech Statistical Office, new automobile prices increased by 2.4% year-on-year in 2015. The prices of used cars increased by 2.2% year-on-year. In 2015, it was possible to purchase only ten models for less than CZK 200,000 (in 2014 it was 20 models). The cheapest was the Dacia Sandero for CZK 169,900, which can thus be bought for 6 average salaries (in 2010 the cheapest car could be bought for 6.67 average salaries). Car prices increased every year, also because of the continuously greater equipping of vehicles with various security elements and other electronic systems that assist the driver in traffic. In 2015, dealers also raised prices in relation to the increased demand for new cars. For semi-trailer and trailer manufacturers, the rise in prices is due to the production of more sophisticated products. The prices of auto parts for CZ NACE 29.3 had a declining tendency in 2009 to 2013, due to long-term contracts that requires the reduction of supplier prices.

In EU-28, the average price of a new car in 2014 increased by EUR 874 year-on-year to EUR 26,435. In Norway, the average price of a new car surpassed EUR 43,000 (owing to the 18.7% share of electromobiles and hybrids in total sales). For instance in the USA, the average automobile price increased year-on-year by USD 802 to USD 33,188. Even in Russia, which has seen a major decline in sales, the AvtoVAZ car manufacturer raised prices by 9% (the cheapest model cost RUB 300,000 (USD 4,595), due to the rising prices of imported car parts following the devaluation of the rouble.

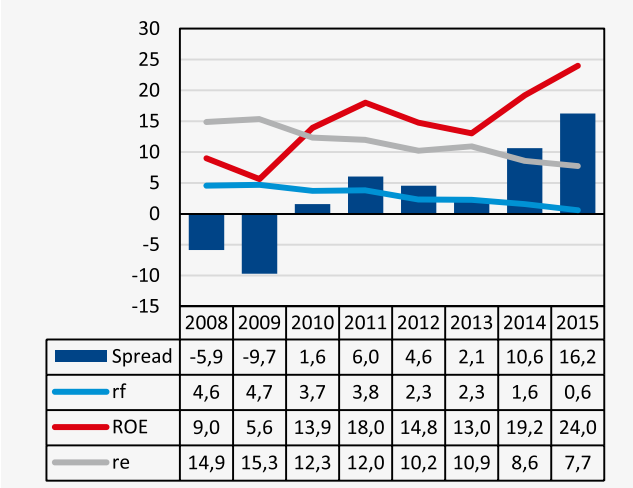
Graph 19.3.2 – Price development CZ-CPA 29 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
29	90,6	91,0	86,6	84,9	85,3	86,8	90,1	89,7
29.1	93,5	85,4	81,9	79,4	78,3	77,8	78,4	80,7
29.2	96,3	96,5	93,6	95,4	97,3	97,6	99,6	100,2
29.3	88,6	91,6	86,9	85,2	86,2	88,1	92,2	91,1

Source: CSO, MIT calculations

Graph 19.3.3 – Spread (ROE – re) CZ-NACE 29 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-5,9	-9,7	1,6	6,0	4,6	2,1	10,6	16,2
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	9,0	5,6	13,9	18,0	14,8	13,0	19,2	24,0
re	14,9	15,3	12,3	12,0	10,2	10,9	8,6	7,7

SOURCE: CSO, MIT CALCULATIONS

Unlike the number of companies, the number of employees continues to grow. Apart from the manufacturers of superstructures, the other sub-divisions have reached pre-crisis employment. In particular the manufacturers of personal automobiles and buses have increased production and hired new employees in recent years. The situation was quite the opposite among freight vehicle manufacturers. Tatra (now TATRA TRUCKS, a.s.) changed owners, has increased production and is hiring new workers. Among superstructure manufacturers, we see a slight decline in employment, unlike revenues which have increased steadily over the past six years. Car manufacturers in the European Union are definitely among the largest employers in industry. For instance, in CZ the Škoda car manufacturer employs over 25,000 people, while VW Bratislava in Slovakia employs over 10,000 people, AUDI HUNGARIA MOTOR Kft in Hungary over 11,000 people and Dacia in Romania over 14,000 people.

Parts manufacturers, following a decline in employee headcount in 2008-2009, continue to hire new employees and have the opportunity to create new job positions.

Financial position, measured by the Spread indicator, developed favourably, finding itself in the black since 2010. Following a sharp increase in 2011, the positive Spread values decreased in the next two years, but again saw considerable year-on-year growth in 2014 and 2015 (graph 19.3.3). This development was in close correlation to the return on equity. Group 29.1 did best, with a positive Spread value in all years except in 2009. In the other two groups, the Spread reached positive values only in 2014 and 2015, whereas the year-on-year increase for group 29.3 in 2015 was enormous.

19.4 FOREIGN TRADE

The automobile industry is consistently among the largest exports and contributes substantially to the positive foreign trade balance of the Czech Republic. Domestic car manufacturers have dealers on about 100 foreign markets and the Czech Republic strives to support the increase of exports to existing and new countries. We may state that in recent years, about 1 million vehicles are exported and approximately 250,000 vehicles are imported (including used vehicles). Due to the proximity of Germany, as Europe's largest manufacturer of motor vehicles, the export of automobile parts is also increasing. In addition to Germany, the Czech Republic supplies automobile parts to practically all the European countries that manufacture vehicles.

The automotive industry was the most important exporter for several countries around the globe in 2015. In some countries, automobile exports accounted for the largest share in total exports: e.g. in Slovakia 27.4% (USD 20.6 bn), Mexico 23.7% (USD 90.4 bn), Czech Republic 19.9% (USD 31.4 bn), Germany 18.7% (USD 249 bn), Spain 17.9% (USD 50.8 bn), Slovenia 13.8% (USD 3.7 bn). It was the second largest exporter e.g. in Romania 14.5% (USD 8.8 bn), Italy 8.3% (USD 38 bn), South Korea 13.1% (USD 69.1 bn), Canada 14.7% (USD 60 bn). As for Canada, we could state that it is the leading exporter, if we didn't take account of the export of petroleum and petroleum products. It was the third largest exporter e.g. in Great Britain 11.0% (USD 50.7 bn), Sweden 11.1% (USD 15.4 bn), France 8.7% (USD 44.1 bn), Poland 10.8% (USD 21.3 bn) and India 5.3% (USD 14.1 bn). In China, as the world's largest exporter of vehicles, it ranked 8th with a share of 2.7% (USD 62.7 bn).

19.4.1 DEVELOPMENT OF FOREIGN TRADE

The highest growth of exports was reported by product group CZ-CPA 29.1, as more than 90% of motor vehicle production is exported. This is due mainly to the increased demand for higher class automobiles, such as the Škoda Superb and Octavia and Hyundai iX 35. More than 90% of the production of personal automobiles was exported. Superstructure manufacturers reached the levels of 2009 in 2015. Domestic automobile companies have dealers on practically every continent (Škoda cars are sold in more than 100 countries, cars produced by the HMMC plant are exported to 58 countries). For bus manufacturers, the European market is dominant, but there are also contracts in other, primarily Asian countries. For cargo vehicles, the main markets are Europe and Asia. The exports of companies associated within AutoSAP were again dominated by European countries, whereas the share of these markets in exports increased further from 83% to 84.3%. The European market of personal automobiles grew for 28 consecutive months from September 2013. Given the decline in the exchange rate of the koruna to the €, we noticed a substantial increase in exports of used cars up to three years of age, especially to Germany. The Russian market, which was the destination for a considerable volume of vehicles and components, again reported a year-on-year decline in the number of registrations of new personal and light utility vehicles, to 1.6 m personal vehicles (-35.7%, respectively minus 890,000 vehicles). Due to this slump, it is not among the largest export countries in the graph. The Ukrainian market also saw a major decline in new vehicle sales, although it is among the smaller export territories.

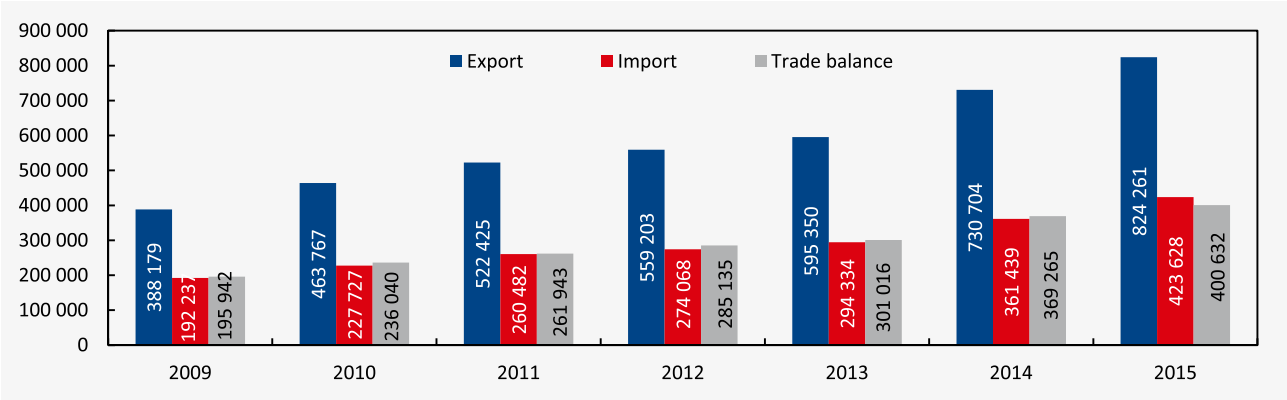
For auto parts, the growth of exports is due mainly to the increase of production by almost 230,000 vehicles in Germany, Poland and Slovakia. Great Britain also reported a year-on-year growth in motor vehicle product

by about 90,000 units. Czech companies also supply automobile manufacturers across the English Channel.

As for motor vehicle imports, both those of new and used vehicles are rising (in 2015 it was about 330,000 units including more than 30,000 Škoda cars). Imports for both groups have more than doubled in the past six years.

The foreign trade balance exceeded the boundary of CZK 400 bn for the first time (for comparison, this was the total automotive industry export volume in 2009). Motor vehicle manufacturers accounted for about two thirds of this.

Graph 19.4.1 – Product export, import and balance of foreign trade in CZ-CPA 29 (CZK m)



Source: CSO, data as at 28 February 2016

Foreign trade agreements:

- FTA EU with South Korea
  This agreement came into validity on 1 July 2011. Since then, the sales of European automobile manufacturers in this country have been growing. In 2015, 243,900 vehicles were imported into South Korea (year-on-year +24.2%). German automobile manufacturers account for 68.5% of imported vehicles. In 2015, Korean automobile manufacturers sold 831,145 personal automobiles in the EU (year-on-year +77,236 units). Production at HMMC and KIA Slovakia reached 682,200 vehicles (KIA Slovakia covers 56% of all Kia sales in Europe). In 2015, EU exports to South Korea within the automotive industry exceeded EUR 8.2 bn (an increase of EUR 4.7 bn since 2012). Imports to South Korea from the EU reached EUR 7.0 bn (an increase of EUR 1.1 bn since 2012).

- Transatlantic Trade and Investment Partnership (TTIP) EU and USA
  Negotiations on the agreement were launched in 2013. European manufacturers export about 900,000 cars per year to the USA (the most important export market not only in terms of volume, but also in terms of the value of sold cars). The volume of imports from the EUR has been stagnating at 200,000 units since 2009. In 2015, no automobiles were exported directly from CZ to the USA. However, there are a number of companies on the domestic market that are involved in trade with the USA through the manufacture of auto parts. The main obstacles to increasing mutual trade are the differing requirements for vehicles in terms of safety and emissions. Expert negotiations are underway in this area.

- FTA with Japan
  The mandate for negotiations was approved in November 2012, and discussions began in March 2013. In 2015, negotiations were conducted on an expert level for the technical harmonisation and mutual recognition of standards. 755,000 vehicles are imported from Japan to the EU, and 155,000 from the EU to Japan. The proposed free trade agreement is aimed at removing the customs duty, which is 10% for personal automobiles and 22% for cargo vehicles, applied to vehicles manufactured in Japan and imported to the EU. In return, Japan is expected to eliminate the non-tariff surcharges that prevent European automobile manufacturers from entering the Japanese market. Studies indicate the substantial growth of imports to the EU and declining employment in the European automotive industry after adoption of the FTA.

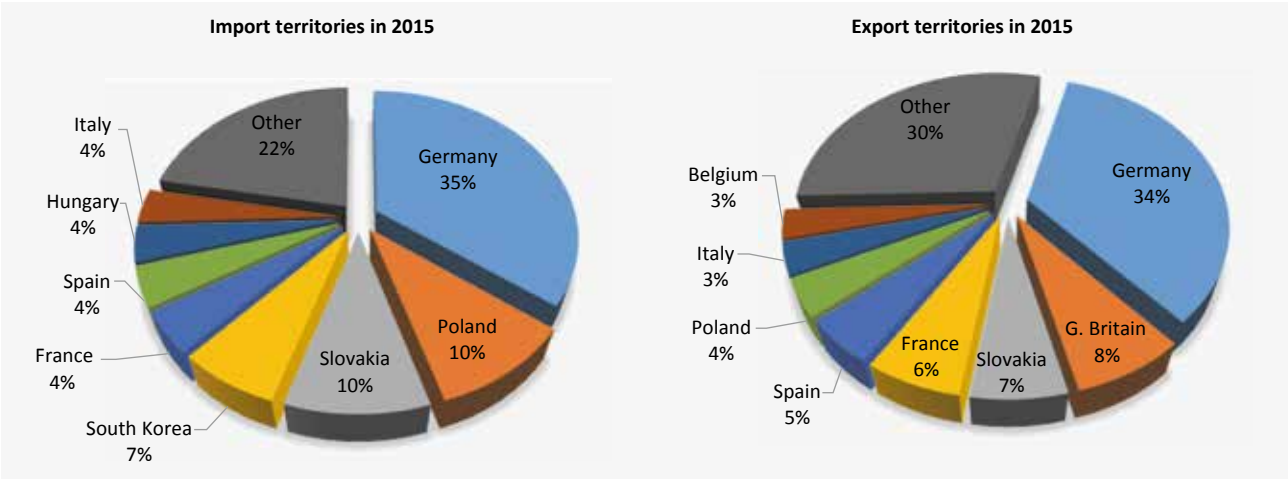
- FTA EU and Vietnam
  On 2 December 2015, the Vietnamese minister of industry and trade Vu Huy Hoang and EU trade commission Cecilia Malmström signed a document in Brussels on official termination of discussions on the EU – Vietnam Free Trade Agreement (EVFTA). It is expected to increase mutual trade between the EU and Vietnam, not only in the automotive industry.

- FTA EU and India
  Negotiations began in 2007 and the European Parliament expressed its concerns over the lengthiness of the process. According to the Society of Indian Automobile Manufacturers (SIAM), the FTA will be considerably more beneficial for the EU automotive industry. At present, there is an import duty of about 10% on Indian cars imported to the EU, while for imports to India it is between 60% and 100% for finished vehicles. In 2013-14 the EU exported automobiles and parts worth USD 1.6 bn to India (of which automobiles accounted for USD 170 m). India exported vehicles worth USD 1.2 bn to the EU. The ACEA (European Automobile Manufacturers Association) supports the FTA, under the condition of balance and reciprocity, complete elimination of customs duty for motor vehicles and their parts. It also demands a promise that no new non-tariff obstacles will be adopted in the future.

19.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Germany is dominant both in terms of exports and imports. Škoda cars are among the most popular imported vehicles in Germany, and in 2015 Škoda ranked 7th among the best-selling brands with 170,000 vehicles sold (in 2010 it was 8th place with 132,000 vehicles). The Škoda Octavia moved up to 6th place on the German market among the best-selling models of personal automobiles, and the Škoda Fabia to 14th place. The most popular model manufactured by the South Korean car producer is Germany was the Hyundai i30. Germany is the second largest customer for IVECO.

Graph 19.4.2 – Foreign trade of CZ-CPA 29 products



Source: CSO, data as at 28 February 2016

For TPCA, the largest market is Great Britain to which 27.3% of manufactured vehicles were sent (59,892 units) and for Škoda it is the third largest market in the EU (75,000 vehicles).

Škoda is the best-selling brand in Slovakia with a share of 21.6% in total registrations of new personal automobiles. IVECO held a share of almost half in new bus sales in this region (253 vehicles), while HMMC supplies gearboxes to KIA Slovakia.

The largest market for IVECO buses is France, the destination of almost half of its production. It is also the second largest market for TPCA (37,000 vehicles).

Russia has disappeared from among the largest export territories due to the major slump in new vehicle sales.

In terms of imports, the share of Germany continues to grow, having already exceeded a third of total imports (largest share in imports of new and used vehicles and components). For Poland, the import of auto parts (e.g. engines for TPCA, auto body parts, steering wheels) for domestic car manufacturers is predominant. Additionally, we also import e.g. buses Solaris is the third largest bus seller in our country) and auto bodies for trolleybuses (Škoda Electric uses Solaris bodies into which it mounts electrical parts) from Poland. From Slovakia we import e.g. the Škoda Citigo (which has a share of almost 50% on the domestic "mini category" market) and engines for HMMC. Personal automobiles and components for HMMC are imported from South Korea, while mainly personal automobiles are imported from France and Spain (SEAT is the 10th best-selling car in the country). Engines for Škoda, for instance, come to us from Hungary. As for Italy, the most important import articles are personal and light utility vehicles.

19.5 DIVISION SUMMARY AND PROSPECTS

In 2015, 1.3 million motor vehicles were manufactured in CZ (in the past five years, motor vehicle production has increased by more than 100,000 units). The greatest year-on-year growth in production in 2015 was reported by TPCA, by almost 35,000 personal automobiles, followed by HMMC by ca. 15,000 units. The shares of the individual car manufacturers in the production of personal and light utility vehicles were: Škoda (56.77%), HMMC (26.36%) and TPCA (16.87%). There is only one remaining brand of freight vehicle manufacturers, that being TATRA. It again managed to increase production despite a decline in transport, which was replaced with a strength growth in domestic demand. In 2015, bus manufacturers reported the highest production ever (4,517 units). In terms of production distribution, 80% of buses bear the IVECO symbol on the front mask. The plant in Vysoké Mýto is the largest production plant of the Iveco Bus division. The second largest manufacturer SOR Libchavy increased its share to almost 14 %. In addition to buses, 280 trolleybuses were also manufactured. Since 2015, utility vehicles of its own production are also offered by ZEBRA Group. In addition to motor vehicles, we must also mention the manufacture of semi-trailers and trailers. More than 840 trailers and 940 semi-trailers for freight vehicles were produced by PANAV, a.s. and SCHWARZMÜLLER s.r.o. Additionally, AGADOS, spol. s r.o. sold more than 21,500 trailers for personal and light utility vehicles. Auto part manufacturers increased their revenues and employee headcounts. There practically isn't a vehicle in Europe that doesn't have components from Czech suppliers, if we omit small manufacturers of sports and luxury cars.

Investments in the Czech automotive industry

In 2015, 106 projects received an investment incentive, of which 25 were in the automotive industry. In terms of total investments, these amounted to CZK 12 bn of CZK 45 bn in total (26%), with plans to create more than 3,000 new jobs. The largest projects include the expansion of bearing production by INA Lanškroun, s.r.o. (bearings for the automotive industry), RONAL (aluminium wheels), AISIN EUROPE MANUFACTURING CZECH, s.r.o. (brake parts). A modern new vehicle diagnostics workplace was ceremoniously presented at the TATRA TRUCKS, a.s. compound. It is the first brand new operation facility at the company since its takeover by new owners within the framework of the performed restructuring. The European Commission approved the Czech Republic's investment incentive for Nexen and Mobis, as a major investment project with state support.

For comparison: The Slovak Agency for Investment and Trade Development (SARIO) concluded 23 investment incentives for 2015, the implementation of which could create up to 7,400 new jobs, whereas investments are planned worth EUR 1.74 bn. The automotive industry had the greatest share of investments owing to the promise to the fourth automobile plant in our neighbour's country (Jaguar Land Rover expects to create 2,800 new jobs and invest ca. EUR 1.4 bn) and the construction of a new plant for Brose worth EUR 50 m with the hiring of 600 new employees. Within the framework of expanding the auto body plant at VW Bratislava, it has started manufacturing car bodies for the Bentley SUV, which are then exported to Britain. Volkswagen has started building a welding plant in Bratislava worth EUR 1.5 bn and a new assembly hall worth more than EUR 300 m. Kia has announced an investment worth EUR 150 m.

Forecast for the Czech automotive industry

Given the continued growth of sales particularly in the EU, in 2016 we expect the increased production of motor vehicles in the country and higher revenues, employment and exports in the automotive industry, as confirmed by statistics for the first five months of 2015. Further investments have been confirmed, not only into expanding production, but also into the construction of brand new production capacities. Major investments have also been announced for the area of research and development. For instance, Valeo is building a new R&D centre worth CZK 600 m to test automobile safety and assistance systems. The problem for most automobile industry companies not the lack of qualified personnel, which prevent the further expansion of production. It is proving difficult to find a sufficient number of technically-focused secondary school and university students to replace departing employees and increase the employee headcount at many companies.

Environment

In 2015, the average emissions of new personal automobiles registered in the EU decreased year-on-year by 3% to 119.6 g CO_2/km. Since 2010, when levels started being monitored, they declined by more than 20 g CO_2/km. The emission target of 130 g CO_2/km for 2015 was fulfilled two years earlier. By 2021, car manufacturers will have to reduce the average emissions in the EU for their vehicle fleets to 95 g CO_2/km.

Due to the low price of petrol in the USA (the lowest in the past five years), there has been no reduction in the average consumption of new vehicles, which has remained at 25.3 miles/gallon (mpg), i.e. 217 g CO_2/km. In 2020, average consumption should reach 42 mpg and in 2025 even 54.5 mpg.

Sales of alternative-powered vehicles have increased, especially because of tax benefits. In 2015, 146,161 electromobiles including hybrids were sold in the EU (+108.8%, +76,165 units year-on-year). Worldwide electromobile sales: e.g. Tesla sold over 50,000 cars, Renault-Nissan 85,000, Toyota 1.2 m hybrids.

In VW group vehicles in the USA, software was discovered that manipulates the results of NOx emission measuring, leading to the "Dieselgate" affair. During the subsequent inspection of other vehicles from various car manufacturers it was discovered that the reported consumption (emissions) of other models do not correspond to the vehicles' consumption in real operation. In this connection, e.g. the American Automobile Association (AAA), International Automobile Federation (FIA), and Transport & Environment (T&E) tested several models of automobiles and identified cases where real consumption was up to 20% higher. Some countries have filed lawsuits against the car manufacturers for this reason.

This is also the reason why the European Commission has proposed a new system of testing automobile emissions in real operation (RDE), which was approved by the European Parliament. In the period from September 2017 to January 2020, it will be possible to exceed the 80 mg NOx/km limit in real operation within the framework of RDE measuring by 100%, after January 2020 by 50%. Some countries have announced a target of selling only emission-free vehicles in their territory after 2025 or 2030.

Forecast for the global automotive industry

For 2016, growing sales of new vehicles are predicted for most markets, in particular the EU, USA and China. Countries substantially support the purchase of low-emission vehicles and are building the necessary infrastructure, although the original objectives stipulated several years ago are not being met, especially as

concerns the share of electromobiles. The European Commission is preparing the Final GEAR 2030 Report with recommendations for the further aims of the European automotive industry (following up on the prior initiative CARS 21 – Competitive Automobile Regulation System for the 21st Century and the CARS 20 Action Plan focussed on increasing the competitiveness and sustainability of the European automotive industry until the year 2020). Member states are to send the European Commission their National Plans to support alternative-powered vehicles (electricity, hydrogen, CNG and LNG) in connection to the approved guideline on the implementation of infrastructure for alternative fuels. VW was severely impacted by fines in the USA (the questions of their final value remains open), and has seen a decline in sales as well. The "Dieselgate" affair has had practically no effect on its sales on other markets. European manufacturers must cope with the approaching year 2020 and the emission target of 95 g CO_2/km for their vehicle fleets. The European Commission is expected to launch discussions on the emission limits for 2025 in the EU. In connection to the strategy of reducing CO_2 emissions for cargo vehicles, the EC will submit its draft Directive stipulating the maximum value for this vehicle category. Car manufacturers and technological companies will continue testing autonomous vehicles. On the international field, the creation of legislation for electromobility and autonomous vehicles will continue, as required by car manufacturers and technological companies. The greatest volume of investment into research and development will go towards this particular area. Negotiations will continue on the adoption of a FTA between the EU and Japan, EU and USA, and USA and Japan.

20.

CZ-NACE 30 MANUFACTURE OF OTHER TRANSPORT EQUIPMENT

20.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 30 into individual groups

- 30.1 Building of ships and boats;
- 30.2 Manufacture of railway locomotives and rolling stock;
- 30.3 Manufacture of air and spacecraft, engines and related machinery;
- 30.4 Manufacture of military fighting vehicles (data not published);
- 30.9 Manufacture of transport equipment not elsewhere classified.

This division includes the manufacture of other transport equipment, e.g. the manufacture of boats and ship building, manufacture of railway cars and locomotives, aircraft and spaceships and manufacture of their parts, bicycles and motorcycles. The composition of the production range places it among the largely pro-export oriented divisions. Its production accounts for 38% of exports, while deliveries for domestic investment account for 33% and interim consumption uses 22%. Of this, the largest customers include companies within division CZ-NACE 30 itself, as well as manufacturing of machinery CZ-ACE 28 and repair and installation CZ- NACE 33.

As for largest ships, this mostly involves their repair or manufacture of the rough construction, while the complete ship is then finished abroad. Rolling stock manufacturers find customers mainly among Central European railway companies, which they supply with new locomotives or wagons, or perform complete rolling stock overhauls for them. Aviation industry companies include major suppliers of aircraft parts for foreign manufacturers, but also very successful manufacturers of ultralights, who manage to acquire new contracts abroad. In other transport equipment, there is the dominant production of bicycles, of which some 300,000 to 350,000 are manufactured in the Czech Republic every year, with about 2,000 motorcycles and quads manufactured yearly.

Table 20.1.1 – Shares of groups in division CZ-NACE 30 in 2015 (in %, division = 100%)

Group CZ-NACE	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of employees	Number of units
30.1	0.5	0.5	1.2	1.2	0.5	0.7	1.1	21.6
30.2	48.7	54.5	56.7	55.7	61.1	61.9	47.4	6.7
30.3	41.7	36.5	30.7	32.8	30.7	31.1	38.9	9.0
30.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.9	9.0	8.6	11.4	10.3	7.8	6.3	12.6	62.7

Source: CSO, MIT calculations for 2015

Important enterprises in division group CZ-NACE 30.1 are Barkmet, a.s. (building of ships of various types, cargo ships, container ships, tugboats, ferries and pontoons), NOVA České Loděnice, a.s. (construction of chemical and gas tankers, container ships and repairs of ships 90 to 110 m in length and 600 – 900 t in weight) and MARINE, s.r.o. (offer riveted aluminium boats not only of its own production - various types of aluminium boats, universal, fishing, tourist, models for firefighters and police forces).

Group CZ-NACE 30.2 is represented e.g. by Škoda Transportation, a.s., CZ LOKO, a.s., Škoda vagonka, a.s., Bombardier Transportation Czech Republic, a.s., LEGIOS, a.s., Pars Nova, a.s. (railway car manufacturers), Bonatrans Group, a.s., ČKD Kutná Hora, a.s. and IFE-CR, a.s. (railway car parts manufacturers).

The largest companies in group CZ-NACE 30.3 are Honeywell Aerospace Olomouc, s.r.o., Aero Vodochody Aerospace, a.s., LATECOERE Czech Republic, s.r.o., Zodiac Galleys Europe, s.r.o., První brněnská strojírna Velká Bíteš, a. s., Aircraft Industries, a.s. and GE Aviation Czech, s.r.o., which manufacture complete aircraft or aircraft parts. Companies supplying components for the space industry are small in terms of employee headcount, but represent the Czech Republic in a significant way with their deliveries to multinational corporations engaged in building e.g. satellites and space rockets. These include CSRC, spol. s r.o., BBT-MATERIALS PROCESSING, s.r.o., BD SENSORS, s.r.o. Frentech Aerospace, s.r.o.

Within group CZ-NACE 30.9 we must mention the companies Bohemia Bike and BPS Bicycle Industrial, s.r.o., 4EVER, s.r.o. (manufacture of bicycles), Shimano Czech Republic s.r.o. (manufacture of bicycles and bicycles parts). WANZL spol. s r.o. (manufacture of transport containers, carts and palette extensions), OM PROTIVÍN, a.s. (manufacture and sale of cogged wheels primarily for the motorcycle industry) and JAWA MOTO spol. s r.o. (manufacture of road and offroad motorcycles).

The most important division group in the long term is the manufacture of locomotives and rolling stock, which accounts for 57% of revenues, 54.5% of value added and almost 50% of employment. The second largest division group is the manufacture of aircraft and aircraft engines, spacecraft and related equipment, whose share in revenues is 30.7% and almost 40% of employment. The division groups building of ships and boats and manufacture of transport equipment not elsewhere classified have a minority share in all the monitored indicators (table 20.1.1).

Although employment within the division has increased slightly in recent years and has currently exceeded 21,000 employees, and the total revenues have reached CZK 64 bn, the share of these sectors in the revenues of the manufacturing industry is consistently between 1.5% and 2.0%. The same applies to employment (graph 20.3.1).

The sectors are increasingly dependent on electronic equipment, which constitutes the largest part of supplies to the division, mainly from imports. The products of several domestic manufacturers of electrical equipment for the aviation, aerospace industry and security equipment for rolling stock and related infrastructure are also used. The second largest input group consists of rubber and plastics industry products, with a slight prevalence of imports over domestic suppliers. The third largest group consists of inputs from the own segment of manufacturers of other transport equipment, with primarily domestic suppliers, which is due to the wide range of companies manufacturing components mainly for rolling stock and aircraft.

20.2 DIVISION DEVELOPMENT

This sector has an extensive tradition in the country. In 2015, we were able to celebrate e.g.: 200 years since the foundation of the Josef Jan Zvěřina machine works (now DAKO CZ a.s.), 170 years since the arrival of the first train in Prague, 130 years of railway connection between Brno and Tišnov, 115 years since the foundation of the “Staudinger Waggonfabrik A.G.” joint-stock company (now Škoda Vagonka, a.s.), 95 years since the launch of production of steam locomotives in Pilsen and the flight of the first aircraft manufactured by AVAI (all-wood Avia BH), 90 years since the foundation of ROSTEX and Miktrotechny Praha a.s., 65 years since the foundation of Výzkumný a zkušební ústav ČSD (research and testing institute) (now Výzkumný ústav železniční a.s.) and foundation of PBS Velká Bíteš (now První brněnská strojírna Velká Bíteš, a. s.), 55 years since the test drives of the T3 tram prototype and its launch of operation in Prague (over 13,000 units built), 50 years since the foundation of the Železniční dvojkolí (railway wheel set plant) within Železárny a drátovny Bohumín BONATRANS and launch of production of the single-engine bottom wing Z-37 Čmelák aircraft, 40 years since

the launch of production of 810 series motor carriages, 25 years since the foundation of INEKON, 20 years since the foundation of Českomoravská komerční společnost, a.s.

In 2015, we registered the following important events within the sector:

- První brněnská strojírna won 1st place in the Innovations category of the Czech Republic Business Project of the Year contest for the innovation production of the TP100 turboprop aircraft engine;
- BPS Bicycle Industrial, s.r.o manufactured its millionth bicycle since launching production;
- The first battery-powered Czech train entered trial operation in Pilsen;
- Škoda Transportation bought a majority share in the Finnish railway and urban rail car manufacturer TransTech (the company has an annual turnover of more than CZK 2.5 bn and about 500 employees);
- New modes of transport were presented - the new 100% low-rise five-cell tram, developed and manufactured in part by the Pilsen-based company Škoda Electric, premiered at the major Asian UrTran transport trade fair. This is a modern vehicle that could in the future serve the tram line network in China's capital city, Beijing, and is able to move even without trolley lines in places;
- The InterPanter electric train from Škoda Vagonka was ceremoniously christened on the trial circuit in Velim;
- The new turboprop L 410 NG aircraft was presented by Aircraft Industries;
- Aero Vodochody successfully flew in the new version of the L-39NG military aircraft.

This sector as a whole has been growing in recent years, owing primarily to the aviation industry, within which new contracts have been acquired mainly from abroad, e.g. delivery of aircraft door parts, interior pats for the manufacturers of large aircraft (Airbus, Boeing), delivery of engines for small and medium-sized aircraft and other components for final aircraft manufacturers.

The railway industry is also very successful, particularly in Central Europe, but it is gradually penetrating other markets around the world as well.

The production of division CZ-NACE 30.9 is dominated by the manufacture of bicycles, which account for about two thirds of the entire division group's production. The manufacture of bicycles is increasing steadily, as are sales of special custom bikes and electric bikes.

Unfortunately, the building of ships has not attained pre-crisis revenues. The production capacities of domestic companies are not fully exploited. One of the causes is the poor navigability of the Elbe.

In division CZ-NACE 30, only one company received an investment incentive in 2015 - FAIVELEY TRANSPORT LEKOV a.s. for a project worth CZK 250 m. Within the framework of overall investments in the manufacturing industry, this sector is among the least important. The Škoda Transportation, a.s. engineering group issued bonds worth CZK 2.31 bn with a five-year maturity period. It will invest the acquired resources into research and development

Building of ships and boats - the turnover of companies building ships increased in the past two years, but it is still CZK 0.5 bn lower than in the crisis year of 2008. It is difficult to acquire large contracts like in the past. In 2015, the complete modernisation of the chemical tanker TMS Christoph with dimensions of 86 x 9 m was carried out at the Chvaletice Shipyard (complete replacement of the central tank section). It was the premiere for a tanker this size on the central Elbe. Only freight ships of smaller dimensions and coal barges were to be seen here in the past.

Manufacturers of rolling stock also raw renewed growth only in recent years. This is due to contracts for Czech Railways (e.g. in 2015 they invested CZK 6.5 bn into the purchase of new, renovation and restoration of existing railway cars for, which is CZK 0.6 bn more year-on-year), but also to deliveries for German and French railways. There was also a delivery of trams to Slovakia (Bratislava) and Turkey (72 trams worth more than CZK 3.4 bn).

Manufacturers of aircraft and aircraft engines, spacecraft and related machinery do consistently well. Domestic manufacturers are obtaining more orders not only from European companies. The export embargo

to Russia has had a major impact on Aircraft Industries, which found itself insolvent in 2016 due to a decline in its aircraft sales. However, insolvency was averted in the course of the year. Aircrafts from Kunovice became much more expensive due to a slump in the value of the rouble to the dollar. The drop in sales for the Kunovice company was immense - to one tenth in two years.

20.3 MAIN ECONOMIC INDICATORS

The crisis period was not as dramatically apparent in division CZ-NACE 30 as it was in other divisions. In 2009, the turnover practically stagnated year-on-year (-0.9%) and value added increased by almost 7%. The brunt was borne mainly by employment, which declined by almost 10% year-on-year and by another 10% in 2010. All this was positively reflected in the jump in labour productivity in 2009, but also in a substantial growth of average wage. Since 2010, turnover increased (with a pause in 2013) with subsequent high growth in 2014 and 2015. Value added also saw considerable year-on-year jumps in 2014 and 2015, following prior fluctuating growth. The driver for the growth of value added was the aviation industry. This indicates that we manufacture sophisticated products with increasingly higher value added. The greatest slump in value added was reported by ship builders. This fact is due to the transition towards repair services rather than the building of classic ships. Employment reported year-on-year growth since 2011. The growth in the total number of division employees is due mainly to the aviation industry, which consistently hires workers (in the reviewed period it was more than 2,200 people, which is an increase of more than one third). The railway industry also increased the number of employees by more than 300, and the manufacturers of other transport equipment practically doubled their number of employees. Unfortunately, one of the greatest limitations for further development, particularly of the Czech aviation and railway industries, which are experiences a major boom in recent years, it the lack of qualified experts on all levels.

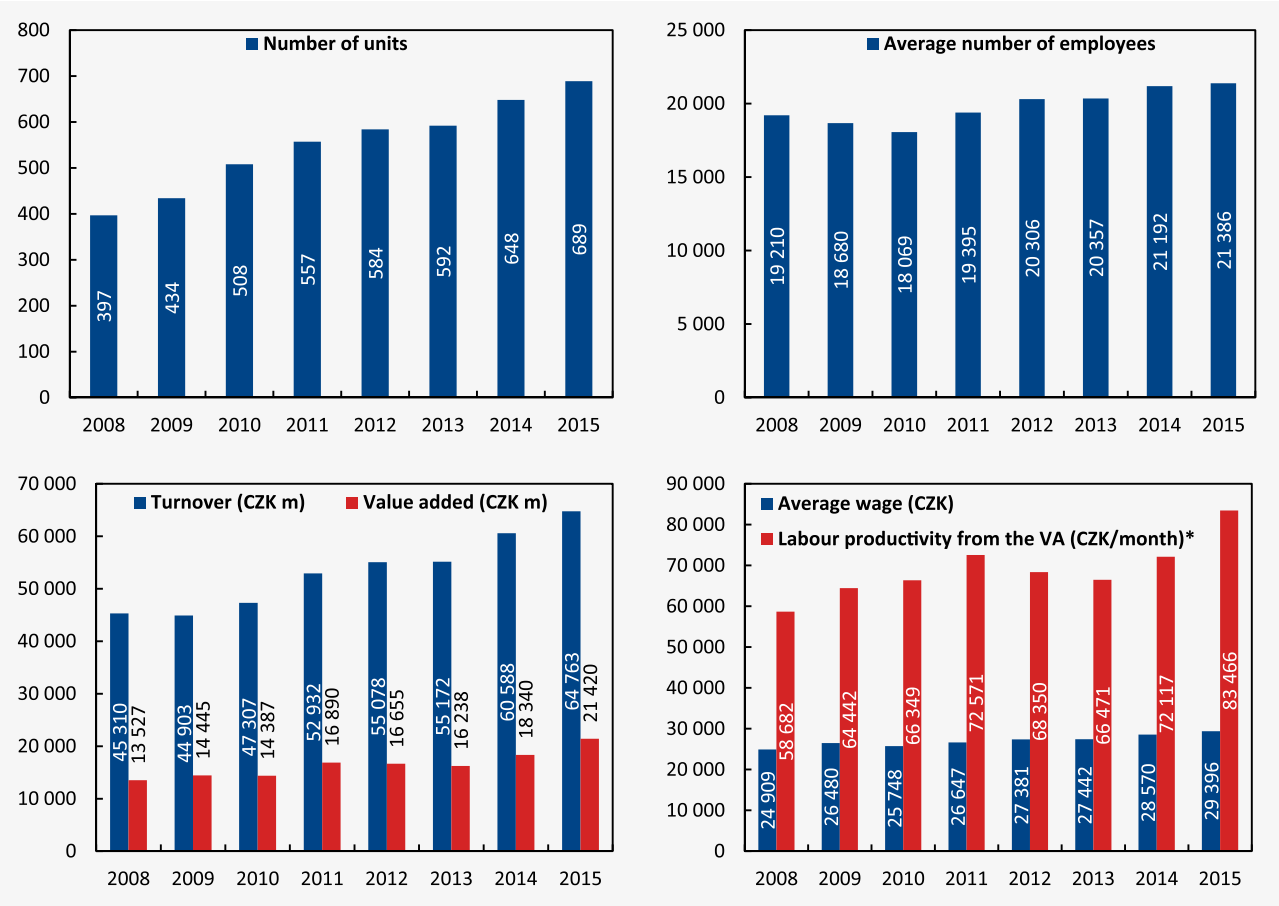
The lead of labour productivity growth ahead of wage growth was positive, except in 2012 and 2013 due to the fluctuating development of value added caused by the slump among rolling stock manufacturers. Average wage in the division increased from 2011 and exceeded the average wage in the manufacturing industry. Within CZ-NACE 30, however, there are substantially differences among the individual groups. While wage increased in three groups, it declined among ship manufacturers. Average wage in the railway and aviation industry is double that of the ship building industry. In 2015, the values of all production indicators were above the 2008 levels.

Turnover in the reviewed period almost doubled, which was due mainly to increased production in the aviation and railway industries, while the building of ships and ship components saw a decline.

As for the number of units, the highest growth in the reviewed period was reported by the manufacturers of ships, aircraft and transport equipment not elsewhere classified. For the first of these, this is due to expansion of the production range among companies that were not previously engaged in manufacturing ship components. Among aircraft manufacturers, the need to cooperate with other domestic companies in increasing due to the rising number of contracts. As for manufacturers of transport equipment not elsewhere classified, it is mainly the expanding number of companies engaged in the manufacture of complete bicycles or their components.

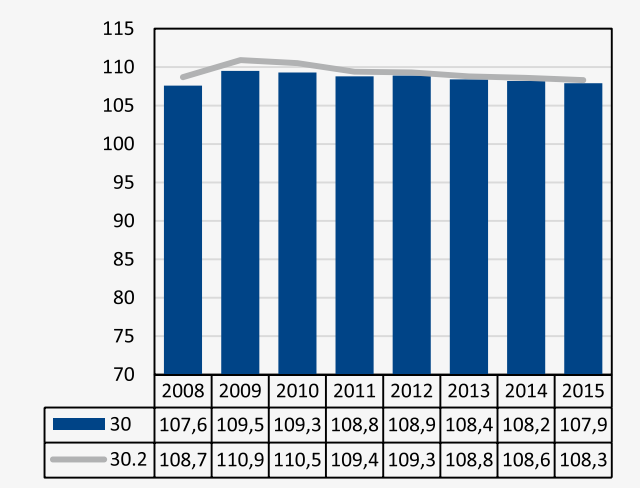
Graph 20.3.2 indicates the development of industrial manufacturer prices for product groups CZ-CPA 30, which as a whole practically copies the development of prices for rolling stock manufacturers, meaning the most important commodity within CZ-CPA 30. End prices increased in relation to input price increases.

Graph 20.3.1 – Main economic indicators of division CZ-NACE 30 (2008 = 100%)



Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data*

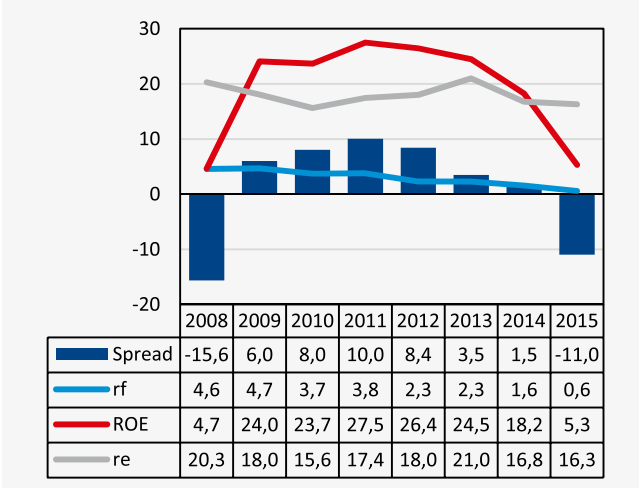
Graph 20.3.2 – Price development CZ-CPA 30 (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
30	107,6	109,5	109,3	108,8	108,9	108,4	108,2	107,9
30.2	108,7	110,9	110,5	109,4	109,3	108,8	108,6	108,3

Source: CSO, MIT calculations
Note: Groups 30.1, 30.3, 30.4 and 30.9 are not monitored

Graph 20.3.3 – Spread (ROE – re) CZ-NACE 30 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-15,6	6,0	8,0	10,0	8,4	3,5	1,5	-11,0
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	4,7	24,0	23,7	27,5	26,4	24,5	18,2	5,3
re	20,3	18,0	15,6	17,4	18,0	21,0	16,8	16,3

Source: CSO, MIT calculations

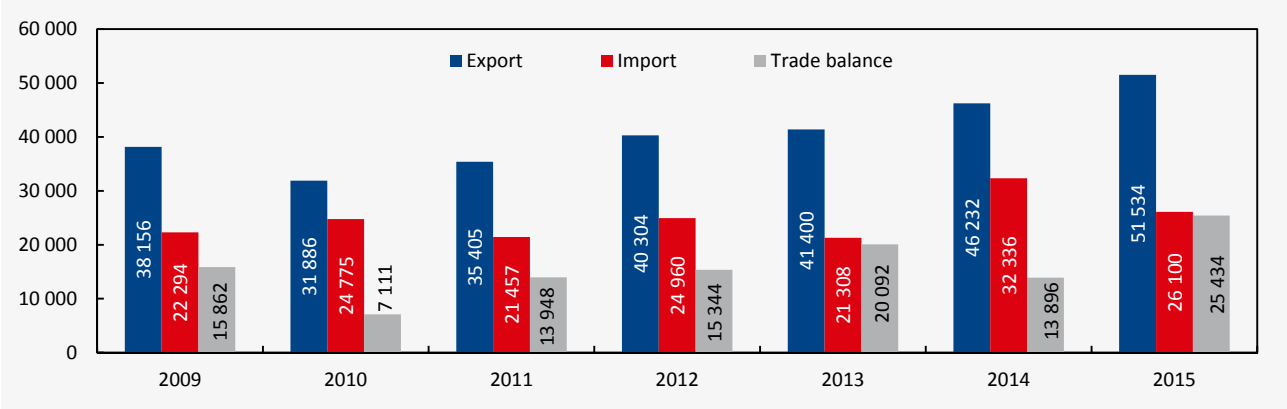
Development of the financial position of the CZ-NACE division, characterised by the Spread indicator, indicates that this indicator had a very negative value in the pre-crisis period in 2008. However, with the onset of the crisis in 2009 it moved into positive values, which culminated in 2011. In later years, the Spread reduced and reached a profound negative value in 2015. The development of this indicator, particularly in 2015, did not correspond to the development of production characteristics, in particular value added and labour productivity. This means that the negative values were achieved by financial transactions outside of production activity, especially as concerns the manufacture of rolling stock.

20.4 FOREIGN TRADE

20.4.1 DEVELOPMENT OF FOREIGN TRADE

The export of CZ-CPA 30 products in 2015 reached the highest values in the past 5 years, specifically CZK 51,534 mn. Almost half of this is generated by the railway industry (which saw the greatest increase of CZK 6.2 bn in 2008 to 2015). A third of exports consist of aviation industry components, which grew again following a major slump in 2010 to 2011. Transport equipment not elsewhere classified accounts for about 15% of exports. Exports by ship manufacturers reduced by about one third in the reviewed period. Exports of military fighting vehicle manufacturers in 2015 reported a substantial growth thanks to the delivery of 280 BVP-1 vehicles for the Iraqi army.

Graph 20.4.1 – Product export, import and balance of foreign trade in CZ-CPA 30 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

Imports of other transport equipment in 2015 declined by CZK 6.2 m year-on-year. This was due to the international slump in the sale of rolling stock ad aircraft imports by more than one third. The greatest share in imports is consistently generated by aviation industry commodities. In 2015, the imaginary second place went to commodities of transport equipment not elsewhere classified, the import of which has increased steady in recent years. This is due to the need to import components primarily to manufacture bicycles and electric bikes (of which some 30,000 units were sold - that being + 15% year-on-year).

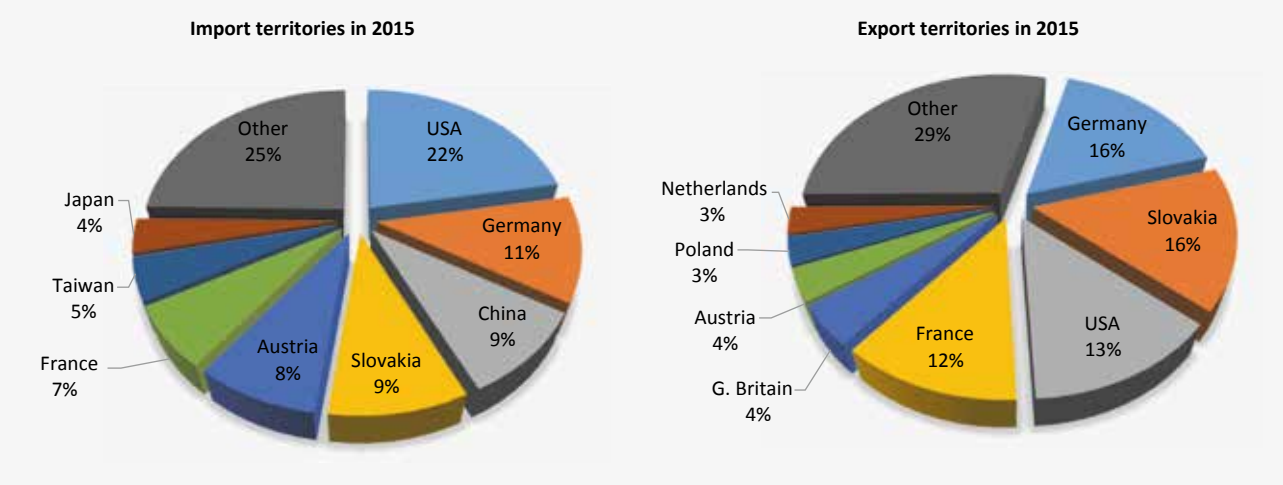
The positive trade balance for CZ-CPA 30 commodities in 2015 increased by about CZK 11.5 bn and reported a historical record by exceeding CZK 25 bn. A substantial growth of the positive balance (by almost CZK 5 bn year-on-year) was reported for aviation industry commodities and engines, spacecraft and related equipment, as well as in the railway industry (by almost CZK 6.5 bn). On the contrary, a consistently negative balance is shown by transport equipment not elsewhere classified. This is due to the import of components for the manufacture of bicycles that are then sold on the domestic market, which absorbs over 300,000 bicycles per year (graph 20.4.1).

20.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

In terms of territorial structure, the USA has the largest share of imports due to the import of aircraft and helicopters and their parts. This is related mainly to the manufacture of Sikorski helicopters at Aero, partly through cooperation within Honeywell. Germany mainly imports rolling stock and parts, motorcycles and bicycles. China primarily imports bicycles and motorcycles, mopeds and components for their production. France has a similar share of aviation industry commodity imports as the USA. From Slovakia, we import mainly rolling stock, which is modernised by Slovak companies for Czech railways or for RegioJet. Imports from Austria also consist mainly of rolling stock (Czech Railways bought used wagons which will be modernised and deployed on domestic or interstate connections).

The largest export market was Germany, mainly due to the export of rolling stock and parts thereof. In addition to these products, kitchen sets for final assembly in Airbus aircraft in Hamburg are exported to Germany. For Slovakia, the railway industry is likewise dominant, mainly due to the delivery of 45 ForCity Plus trams to Bratislava and 671 electric trains for the Slovak railway carrier Železničná spoločnosť Slovensko (ZSSK). As for the USA, the dominant export is aircraft and aircraft parts with the aforementioned Sikorski helicopters and deliveries for Boeing. The main export commodity to France is aircraft parts, primarily for Airbus aircraft. Great Britain is an important market for aircraft parts but also for yachts. Exports to China are also increasing (electrical drive components for seventeen metro trains, cooperation in tram manufacturing), although this country is not among the largest export territories yet.

Graph 20.4.2 – Foreign trade in CZ-CPA 30 products



Source: Source: CSO, data as at 28 February 2016

20.5 DIVISION SUMMARY AND PROSPECTS

The economic production results of division CZ-NACE 30 achieved in 2015 are a good basis for further development.

Group CZ-NACE 30.1 Building of ships and boats is dependent on foreign contracts. In recent years, domestic carriers are reducing the number of vessels or renovating old ones, rather than buying new ones. The low use of naval transport on the Elbe-Moldau watercourse is due mainly to unreliability (high dependence on the overall hydrological and water management balance in the rivers). This problem should be solved by the construction of navigation berms on the Elbe. It is necessary to find a functional compromise between the conditions of the technical solution and interests of environmental and landscape protection.

Water transport is still waiting for a key investment into the navigability of the Elbe. In the period between 2007 and 2013, the Czech Republic was granted over four billion korunas from the European Union to solve

the problematic areas on the Elbe near Děčín. Because a permit could not be procured from the Ministry of Environment, a number of projects were implemented that had nothing to do with naval transport. The planned navigation berm near Děčín, which should help ensure the year-round navigability of the Elbe in the Czech Republic, can get a building permit at earliest in 2019. The outdated ship fleet worsens the competitiveness of cargo naval transport and limits the benefits of water transport for the environment while being relatively energy intensive. Within the OPD (Operational Programme Transport), about EUR 170 m was reserved to develop naval transport in the period of 2014 to 2020. Part of this may be used by carriers to modernise ships, part will go towards infrastructure.

In group CZ-NACE 30.2 Manufacture of railway locomotives and rolling stock, we expect revenues, export and employment to grow. Škoda Transportation has founded a new subsidiary, Škoda Transportation USA, LLC, in the United States of America. Important contracts have been announced from Czech Railway and from foreign railway carriers, as well as tram supplies. We can mention e.g.

- 39 one-floor electric "RegioPanter" units for Germany;
- 13 INTERPANTER trans for inter-regional and long-distance transport;
- modernisation of Bdpee231 series cars;
- modernisation of 71 passenger cars of three types (Ampz, Bmz and WRmz) and modernisation of 22 former ÖBB cars;
- repair of drive chassis for 575 electrical units;
- 20 trams for Riga.

In group CZ-NACE 30.3 Manufacture of air and spacecraft, engines and related machinery, we expect to see further growth of revenues and employment within new contracts, such as:

- agreement between the American helicopter manufacturer Bell Helicopters and the domestic company LOM Praha on future cooperation in providing maintenance for military helicopters manufactured by Bell;
- manufacture of the new L-39NG aircraft, which in addition to AERO Vodochody AEROSPACE will involve 40 other Czech companies;
- contract for delivery of three sets of parts for Airbus A400m and A350 aircraft;
- 20 L 410 aircraft for China.

Also in group CZ-NACE 30.9 Manufacture of transport equipment not elsewhere classified, we expect revenues to grow in relation to the rising interest in cycling and the consequent increased sales of bicycles. Also motorcycle manufacturers, who are managing to increase production because of rising interest in this mode of transport due to increasingly denser traffic in cities, are announcing the production of new models.

21.

CZ-NACE 31 MANUFACTURE OF FURNITURE

21.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 31 into individual groups (this division does not have groups).

The basic raw materials for the furniture industry are agglomerated boards, plywood and veneer from processed (treated) wood, generally a renewable resource supplied by the wood processing industry. A characteristic feature of division CZ-NACE 31 is high material intensity (about 80% of the total product costs). The use of new modern technologies, including nanotechnology, allows the observance of EU legislation and guarantees that the products do not contain hazardous substances or pollutants that could harm users or the environment (e.g. formaldehyde). The division is among those less important within the manufacturing industry, and its share in total MI revenues in 2015 was about 1%.

21.2 DIVISION DEVELOPMENT

In 2015, furniture production in CZ increased year-on-year by more than CZK 2 bn to almost CZK 40 bn. This is a similar growth to that between 2013 and 2014, when there was an increase of about CZK 2 bn. Manufacturing was revived substantially mainly because of rising exports, which grew to CZK 69.3 bn in 2015 compared to CZK 64.9 bn in 2014. However, the import of furniture is also growing consistently, reaching CZK 50.5 bn in 2015 compared to CZK 40.4 bn in 2014.

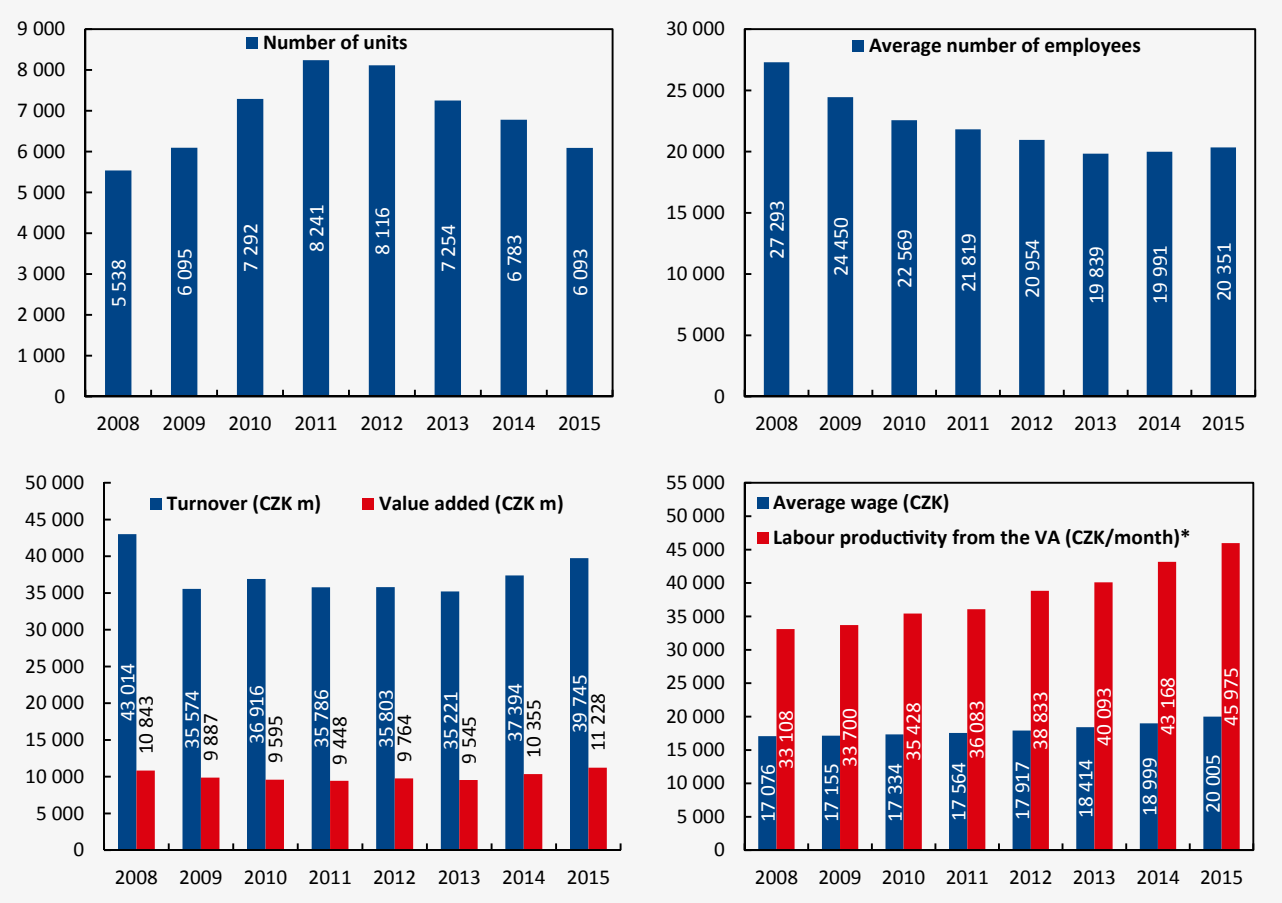
Based on current economic results and investments into the furniture industry, we expect the growth trend in this division to continue into 2016.

Furniture manufacturing in CZ has an extensive tradition, with its core and largest producers situated mainly in Moravia. Bentwood furniture in particular reaches a superior European and global standard. Kitchen production has also attained an excellent level among the other range of furniture. More recently, our smaller manufacturers have present a series of interesting furniture solitaires (individual and accessories), which is a range that was formerly our major weakness.

The greatest problem in the sector at present is the lack of qualified labourers.

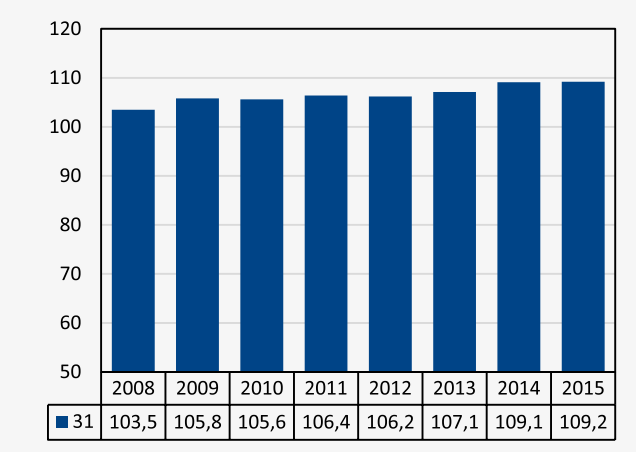
21.3 MAIN ECONOMIC INDICATORS

Graph 21.3.1 – Main economic indicators of division CZ-NACE 31 (2008 = 100%)



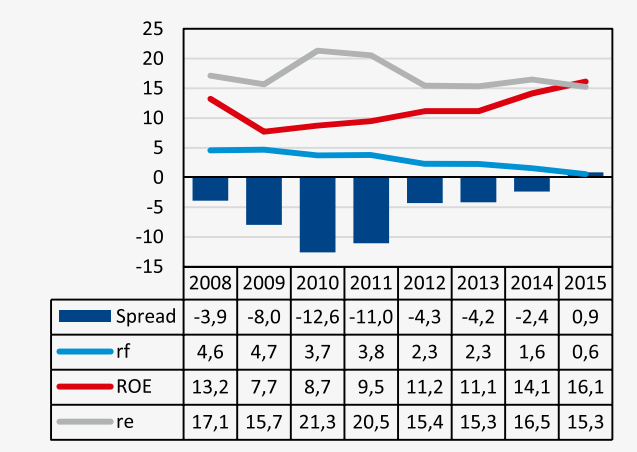
Source: CSO, MIT calculations
** This is the aliquot monthly share calculated from annual data*

Graph 21.3.2 – Price development CZ-CPA 31 (2005 = 100 %)



	2008	2009	2010	2011	2012	2013	2014	2015
31	103,5	105,8	105,6	106,4	106,2	107,1	109,1	109,2

Graph 21.3.3 – Spread (ROE – re) CZ-NACE 31 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	-3,9	-8,0	-12,6	-11,0	-4,3	-4,2	-2,4	0,9
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	13,2	7,7	8,7	9,5	11,2	11,1	14,1	16,1
re	17,1	15,7	21,3	20,5	15,4	15,3	16,5	15,3

Source: CSO, MIT calculationsSource: CSO, MIT calculations

The provided graphs depict the main economic indicators of the division and compared to 2014 we can see improved values for most indicators, including increased employment following the decline and stagnation in previous years. Only value added exceeded the pre-crisis level of 2008 in 2015. Efficiency measured by the Spread indicator reports an improving trend, and its value was in positive figures in 2015. The growth of labour productivity is also positive, growing faster than the average wage throughout the reviewed period. The sector forecast based on current data is moderately favourable.

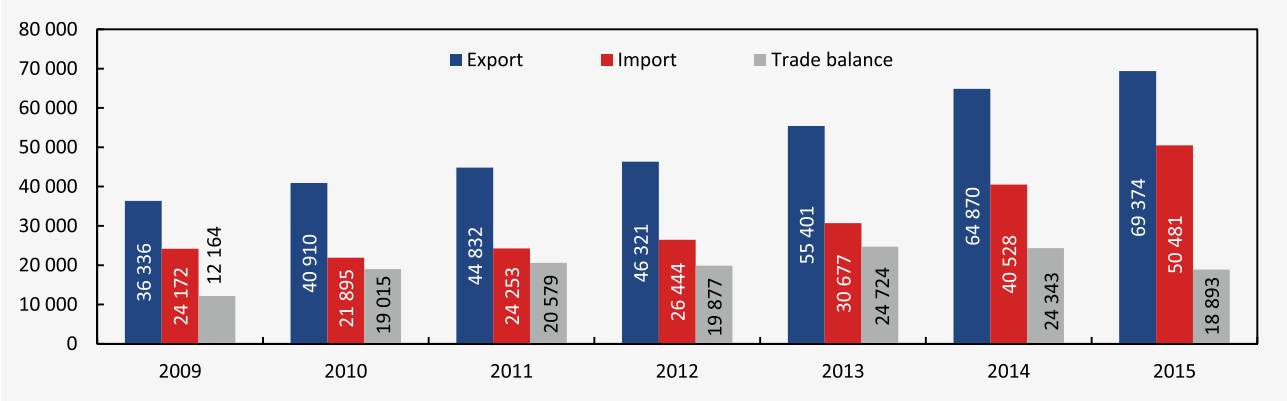
21.4 FOREIGN TRADE

21.4.1 DEVELOPMENT OF FOREIGN TRADE

The foreign trade results for CZ-CPA 31 production can be deemed favourable. The volume of exports increased by 91% from 2008 to 2015. This can be explained by the fact that domestic consumption is rising slowly, but products are selling well on foreign markets.

The positive foreign trade balance increased compared to 2009, and was actually double in 2014, declining in 2015 compared to the previous year.

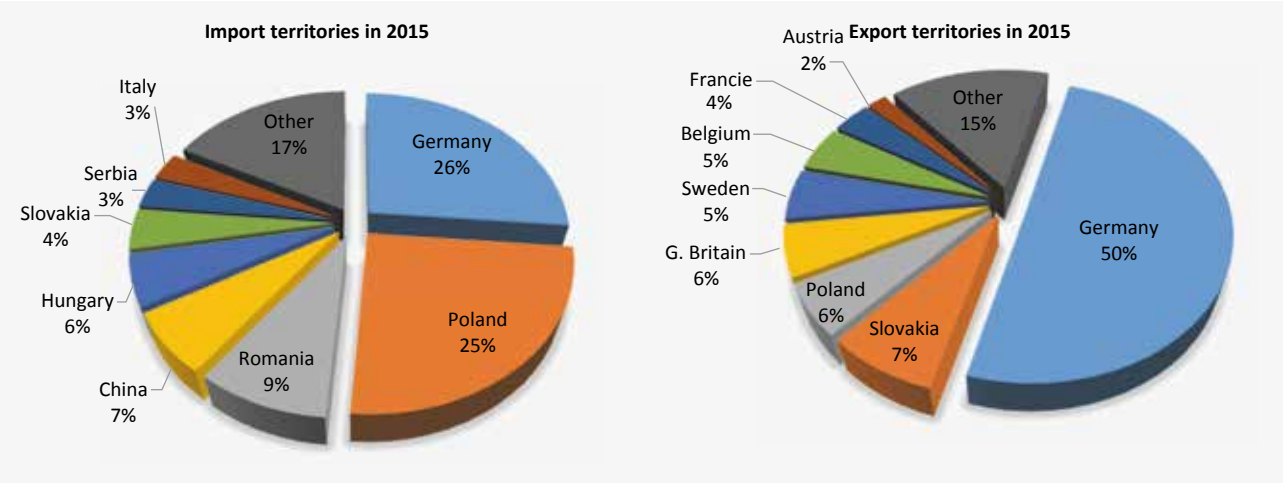
Graph 21.4.1 – Product export, import and balance of foreign trade in CZ-CPA 31 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

21.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Graph 21.4.2 – Foreign trade in CZ-CPA 31 products



Source: Source: CSO, data as at 28 February 2016

From a long-term perspective, foreign trade with furniture production has not changed markedly. The largest furniture importers to the Czech Republic are mainly large specialised furniture stores. On the other hand, it must be noted that Czech furniture manufacturers supply products to all major domestic specialised chains. The largest importers of furniture to the Czech Republic are Germany with a 26% share, followed by Poland with 25% and Romania in third place with 9%. In terms of exports, the dominant buyer is Germany (with a share of 50%), with Slovakia (8%), Poland and Great Britain (6% each) trailing far behind. The 2015 results show that exports strengthened even further. The export performance of the Czech furniture industry now exceeds 20%.

21.5 DIVISION SUMMARY AND PROSPECTS

Based on the latest available data (as at 30 April 2016), obtained from the Association of Czech Furniture Manufacturers, the largest furniture manufacturers are China, USA, Italy and Germany. The global trade in furniture in 2015 was around USD 130 bn, with the most being imported to the USA, Germany, Great Britain and France, while China, Germany, Italy and Poland dominated in terms of exports. The largest growth was expected in Asia, the Pacific and Africa, while trade in Western Europe stagnated.

The furniture trade is growing faster than its consumption, although its production is continuously moving into countries with lower manufacturing costs. Another important trend is the rapid growth of consumption of emerging markets. The share of Czech furniture manufacturers in global production remains very low – about two to three tenths of a percent.

The basis for strengthening the Czech furniture industry on the domestic and foreign market is increased investment activity. Thanks to the reviving economy, investment became more apparent in 2014, rising in volume by almost 44% compared to the previous year and reaching CZK 2.45 bn. Once decisive project was the opening of a new plant for manufacturing office furniture by a world leader in this segment – the American company Steelcase – at the Panatonni Logistics Park in West Bohemia at a cost of approximately CZK 600 mn. Another investment worth CZK 45 m is being planned by the purely Czech company Mias OC, spol. s r.o. (Krouny na Chrudimsku), also an office furniture manufacturer, and Dřevojas, v. d. from Svitavy, a producer of bathroom furniture, also invested into production development last year.

Given the fact that the results of the Czech furniture industry are still being accompanied by weakened domestic demand, it is understandable that this division will continue to be heavily reliant on exports in the forthcoming period. There are several reasons for this favourable development: apart from higher investment activity, it is the weaker crown which stimulates exports, and the gradual revival of the construction sector, which will help improve domestic demand. Important factors for further development will be the strengthening of trading relations on the internal EU market and with third countries (in 2015 our furniture manufacturers founded a joint venture in Vietnam with the aim of penetrating markets in Southeast Asia). However, the division will have to face rising competition from foreign retail chains, which have recently announced further expansion in the battle for market shares (e.g. Sconto Nábytek, XXXL Lutz, IKEA, etc.).

Compared the previous years, the results of the Czech furniture industry are also accompanied by the revived growth of domestic furniture consumption. The growth of furniture consumption in 2012 to 2014 was very moderate, but this trend has started to change. The growth factor of the volume of imported furniture from abroad essentially remains balance. At the same time, the share of imports in domestic consumption is rising.

A certain problem in the sector is the fact that customers are rarely aware of the origin of furniture. Usually, only wholesalers know where the furniture comes from. This is because goods are usually offered under the retailer's trademark. Hence, the Swedish IKEA corporation exploits a large part of furniture exports e.g. from Poland. Incidentally, its cooperation with Polish suppliers dates back to the time of the people's republic. However, many other companies paste their logos on couches and cabinets made in various countries of the world.

22.

CZ-NACE 32 OTHER MANUFACTURING

22.1 DIVISION CHARACTERISTICS

Breakdown of division CZ-NACE 32 into individual groups

- 32.1 Manufacture of jewellery, bijouterie and related articles;
- 32.2 Manufacture of musical instruments;
- .3 Manufacture of sports goods;
- 32.4 Manufacture of games and toys;
- 32.5 Manufacture of medical and dental instruments and supplies;
- 32.9 Manufacturing not elsewhere classified.

Division CZ-NACE 32 includes six product groups, which differ in the used input materials, production technologies and final products themselves. Some groups are material intensive, dependent on the manual skill and inventiveness of the designers and employees. Some groups have a lengthy tradition and considerable international acclaim (e.g. bijouterie, musical instruments, wooden toys, office supplies, etc.).

Group 32.9 is very diverse in its range, and in addition to bijouterie made of common metals, glass, wood, leather, etc. also includes school and office supplies, brush manufacturing, matches, umbrellas, parasols, etc.

Division CZ-NACE 32 contributes about 1.6% to the total revenues of the manufacturing industry (0.1 pp more than in 2014), whereas in terms of economic results of the division, three groups make a decisive contribution, namely: 32.4, 32.5 and 32.9, while the share of the other three groups is substantially lower, generally less than 10.0%. Only group CZ-NACE 32.1 Manufacture of jewellery, bijouterie and related articles is an exception from this fact as concerns the number of production units, where it has the second largest share. On the other hand, it has the second lower share in employee headcount. This is due to the character of manufacturing, because it mainly involves manual production carried out by individuals or micro-companies.

Table 22.1.1 – Shares of groups in division CZ-NACE 32 in 2015 (in %, division = 100%)

Group CZ-NACE	Personnel costs	Value added	Sales	Total revenues	Equity	Total assets	Number of employees	Number of units
32.1	4.7	5.4	6.2	6.6	6.9	6.7	6.6	29.3
32.2	2.8	3.0	2.0	2.0	2.0	1.9	2.9	3.6
32.3	8.1	7.5	6.5	6.4	5.5	5.2	8.7	5.7
32.4	21.8	22.2	33.8	34.2	35.7	40.1	19.4	6.3
32.5	43.8	42.1	33.3	33.1	30.3	30.4	40.1	29.4
30.9	18.8	19.7	18.1	17.7	19.5	15.8	22.2	25.7

Source: CSO, MIT calculations for 2015

22.2 DIVISION DEVELOPMENT

In terms of economic indicators, the division accounts for 1.54% of the manufacturing industry. Labour productivity in the division is at a level of 69.6% of the manufacturing industry and the average wage is at 84.8%.

The divisions' production is largely depending on the import of input materials and components, whereas the greatest share is achieved by input commodities from the division itself, and from the trading, chemical, rubber and plastics industries. 44% of the division's production goes to exports, over 13% consists of deliveries of an investment character, more than 17% is designated for end household consumption and 25% of consists of deliveries of interim consumption in related sectors. Most of this goes towards the division itself and also healthcare.

It is worth noting that in the reviewed period of 2008 to 2015, the number of production units increased steadily, with a slight fluctuation in 2011. In 2015 their number grew to a value 13.4% higher than in 2008. Restructuring and stabilisation of the main manufacturers in the division also took place. In a number of regions, leading companies from this sector are among the major employers and also set an example of business acumen and a social approach to employees. An essential condition for this positive development is the effective use of research, development and innovation potential.

The revenues of leading companies grow by more than 10.0% per year and they invest considerably into production or expanding their manufacturing range. Such companies include e.g. LINET, s.r.o. Slaný, RODENSTOCK ČR s.r.o. Klatovy, PETROF, s.r.o. Hradec Králové and a number of others.

22.3 MAIN ECONOMIC INDICATORS

The period of crisis was most apparent in division CZ-NACE 32 in the reduction of employment, which after an oscillating revival was 4.1% below the 2008 level in 2015. Turnover declined year-on-year only in 2009, and in 2010 exceeded the pre-crisis level and was 37% above the 2008 level in 2015 following year-in-year increments. Value added for the reviewed period of 2008 to 2015 increased by 18.4%, but there was a year-on-year decline in 2011 and 2015. This was also reflected in the development of labour productivity and relation to the development of average wage, which were negative in the two said years. Labour productivity increased by 23.5% in the reviewed period, while wages increased by 25.5%. Labour productivity declined by 3.6% in 2015 in all the groups except group CZ-NACE 32.2, where it increased slightly by 0.8%. Average wage in the division reported growth in all groups and was CZK 22,545 in 2015. It increased by 3.7% year-on-year and reach 84.9% of the average wage in the manufacturing industry.

The number of production units increased in the reviewed period of 2008 to 2015 by 13.4%.

As stated previously, the main economic indicators are substantially affected by the economic results of group CZ-NACE 32.4 Manufacture of games and toys and CZ-NACE 32.5 Manufacture of medical and dental instruments and supplies.

It must also be noted that production units with 20 or more employees, of which there were 218 in 2015, have a fundamental share in generating the economic results of the division overall, and of this mainly production units with 50 or more employees, of which there were 109 in 2015. In terms of individual indicators, production units with 20 or more employees contributed a total of 79.0% to revenues from products and services sold, 95.1% of value added and 79.7% of employee headcount.

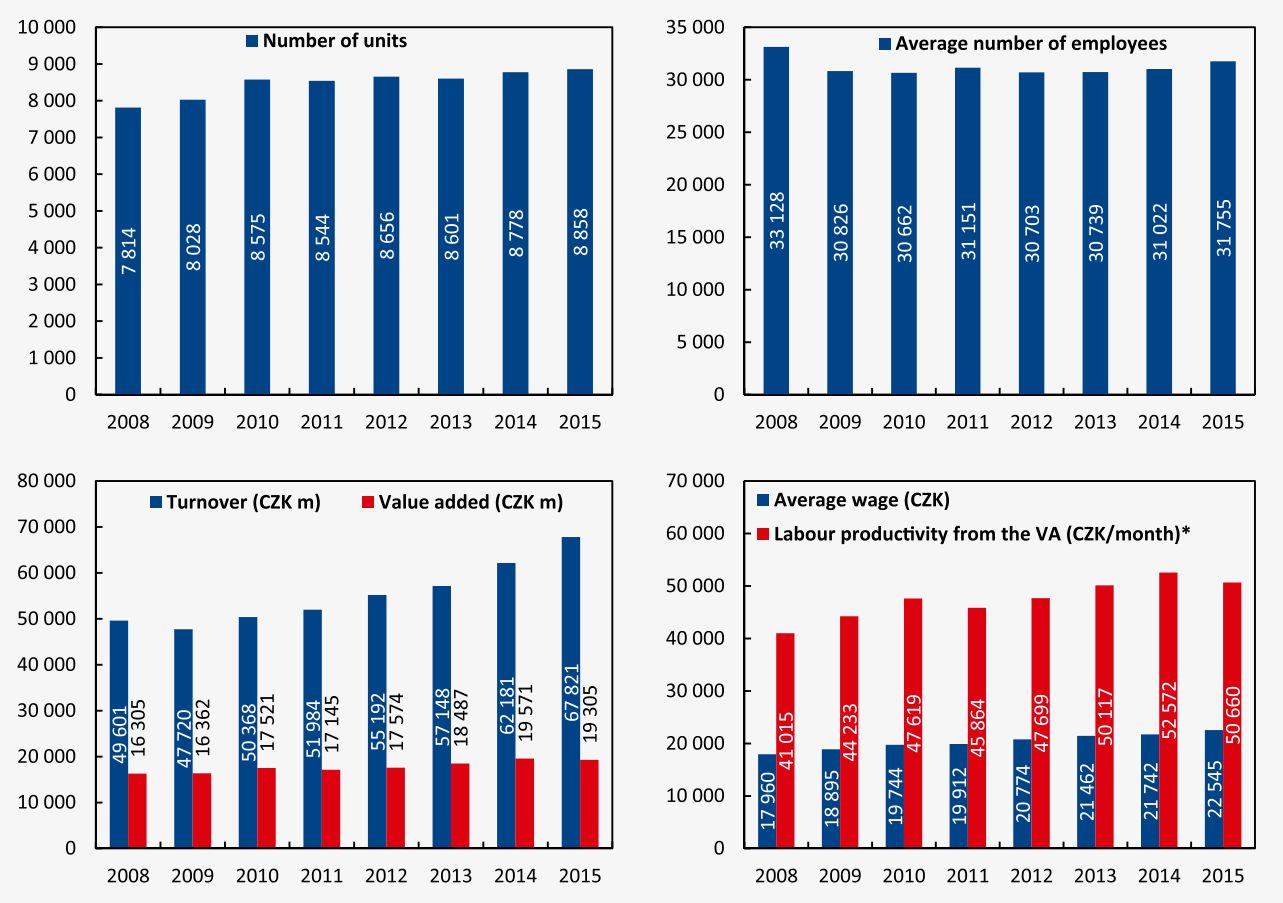
In 2015, the development of the number of production units in the individual division groups had a rather fluctuating tendency. In group CZ-NACE 32.1 Manufacture of jewellery, bijouterie and related articles the number of production units increased by 3.4 %, in group CZ-NACE 32.2 Manufacture of musical instruments

there was a decline in the number of production units by 3.0 %, in group CZ-NACE 32.3 Manufacture of sports goods an increase of 2.2 %, in group CZ-NACE 32.4 Manufacture of games and toys the number of production units decreased by 4.0 %, in group CZ-NACE 32.5 Manufacture of medical and dental instruments and supplies the number of production units increased by 6.4 % and in group CZ-NACE 32.9 Manufacturing not elsewhere classified the number of production units decreased by 5.9 %. Overall, it may be stated that the number of production units in 2015 was about the same as in 2014. In terms of the number of employees, however, there was an increase in most groups. Only in group CZ-NACE 32.1 the number of employees declined by 5.5% and in group CZ-NACE 32.9 the employee headcount remained about the same. Overall, the employee headcount in the division increased overall by 2.4% compared to 2014.

In terms of turnover, group CZ-NACE 32.1 saw a reduction of 2.2 %, group CZ-NACE 32.2 an increase of 2.9 %, group CZ-NACE 32.3 an increase of 7.0 %, group CZ-NACE 32.4 an increase of turnover by 19.5 %, group CZ-NACE 32.5 in increase of 4.8 % and group CZ-NACE 32.9 an increase of turnover of 5.2 %. Compared to 2014, there was an overall increase of turnover by 9.1%.

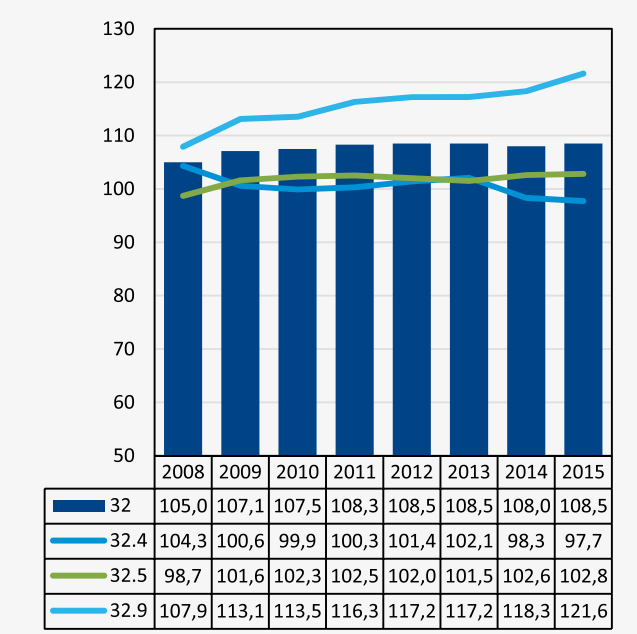
Value added in group CZ-NACE 32.1 was a substantial decline by 12.0%, and a decline was also registered in groups CZ-NACE 32.4 by 2.5% and CZ-NACE 32.9 by 2.5%. On the contrary, in group CZ-NACE 32.2, value added increased by 0.8%, in group CZ-NACE 32.3 there was an increase of 4.1% and in group CZ-NACE 32.5 an increase of 0.3%. Compared to 2014, value added in the division overall decreased by 1.4%.

Graph 22.3.1 – Main economic indicators of division CZ-NACE 32 (2008 = 100%)



Source: CSO, MIT calculations
** This is a monthly aliquot share calculated from annual data.*

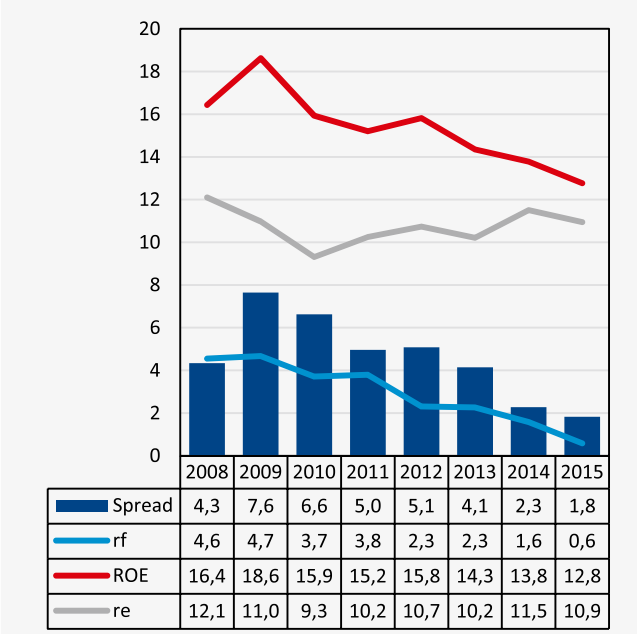
Graph 22.3.2 – Price development CZ-CPA 32 (2005 = 100%)



	2008	2009	2010	2011	2012	2013	2014	2015
32	105,0	107,1	107,5	108,3	108,5	108,5	108,0	108,5
32.4	104,3	100,6	99,9	100,3	101,4	102,1	98,3	97,7
32.5	98,7	101,6	102,3	102,5	102,0	101,5	102,6	102,8
32.9	107,9	113,1	113,5	116,3	117,2	117,2	118,3	121,6

Source: CSO, MIT calculations
Note: Groups 32.1, 32.2 and 32.3 are not monitored

Graph 22.3.3 - Spread (ROE – re) CZ-NACE 32 (in %)



	2008	2009	2010	2011	2012	2013	2014	2015
Spread	4,3	7,6	6,6	5,0	5,1	4,1	2,3	1,8
rf	4,6	4,7	3,7	3,8	2,3	2,3	1,6	0,6
ROE	16,4	18,6	15,9	15,2	15,8	14,3	13,8	12,8
re	12,1	11,0	9,3	10,2	10,7	10,2	11,5	10,9

Source: CSO, MIT calculations

Price indexes in the reviewed period have a rising tendency in a year-on-year comparison in almost all manufacturing groups except CZ-NACE 32.4 Manufacture of games and toys, which is due mainly to strong competition and the increased offer of the given production range on the market. Price development largely reflected the increased prices of inputs and energy and in some groups, also high materials intensity.

The Spread indicator, which expresses the division's overall efficiency, was positive throughout the reviewed period, but shows a declining trend. Nevertheless, we may state that the division managed to cope with a number of problems and its performance is among the better average in the manufacturing industry.

22.4 FOREIGN TRADE

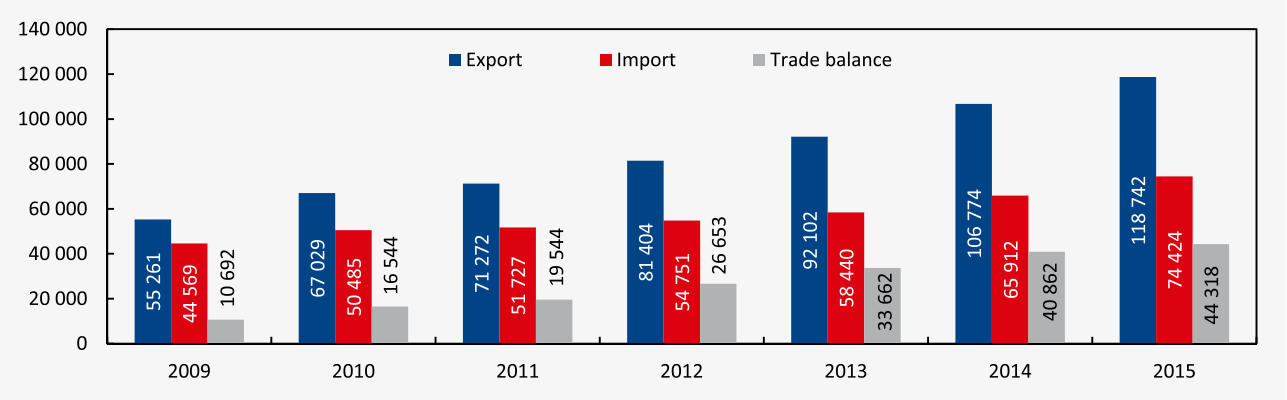
22.4.1 DEVELOPMENT OF FOREIGN TRADE

On a pan-European scale, CZ is a relatively small market for the sale of CZ-CPA 32 products, even though the range of these products is very wide and diverse. If manufacturers want to fill their capacity and compete with other European manufacturers, they must strive to assert themselves abroad. It may be stated that they do this quite successfully, not just be developing new and quality products, but also due to production cooperation with western partners. The entry of foreign capital substantially facilitates this fact.

The foreign trade balance of CZ-CPA 32 consistently maintains a positive value, meaning exports exceed imports. China has a lasting negative effect on the overall foreign trade balance, accounting for 20% of total imports in 2015. In the reviewed period of 2009 to 2015, the value of total imports and exports increased progressively.

In 2015, the total foreign trade turnover was CZK 193.2 bn, which is 11.9% more than in 2014. The largest trading partner in 2014 based on turnover was Germany, which accounted for 24.1% of the total turnover.

Graph 22.4.1 – Product export, import and balance of foreign trade in CZ-CPA 32 (in CZK m)



Source: Source: CSO, data as at 28 February 2016

In total, goods worth CZK 118.7 bn were exported, i.e. 11.2% more than in 2014. Goods worth CZK 74.4 bn were imported, i.e. 12.9% more than in 2014. The positive balance in 2015 amount to CZK 44.3 bn, which is 8.5% more than in 2014. In 2015, the greatest share in total foreign trade turnover was generated by CZ-CPA 32.4 products, which accounted for 47.8% (i.e. about the same share as in 2014), specifically 55.3% of exports and 35.7% of imports.

In product group CZ-CPA 32.1 Manufacture of jewellery, bijouterie and related articles, imports consistently exceeded exports and in 2014 the foreign trade balance reached a negative value of CZK -1.8 bn (i.e. 0.7% more than in 2014).

22.4.2 TERRITORIAL STRUCTURE OF FOREIGN TRADE

Among the main exports territories are EU-28 countries, i.e. Germany, Italy, Poland, Slovakia, Austria, France and Great Britain. The main import territories include Germany, Italy, China, Poland, Hungary, Austria, Denmark and also the USA.

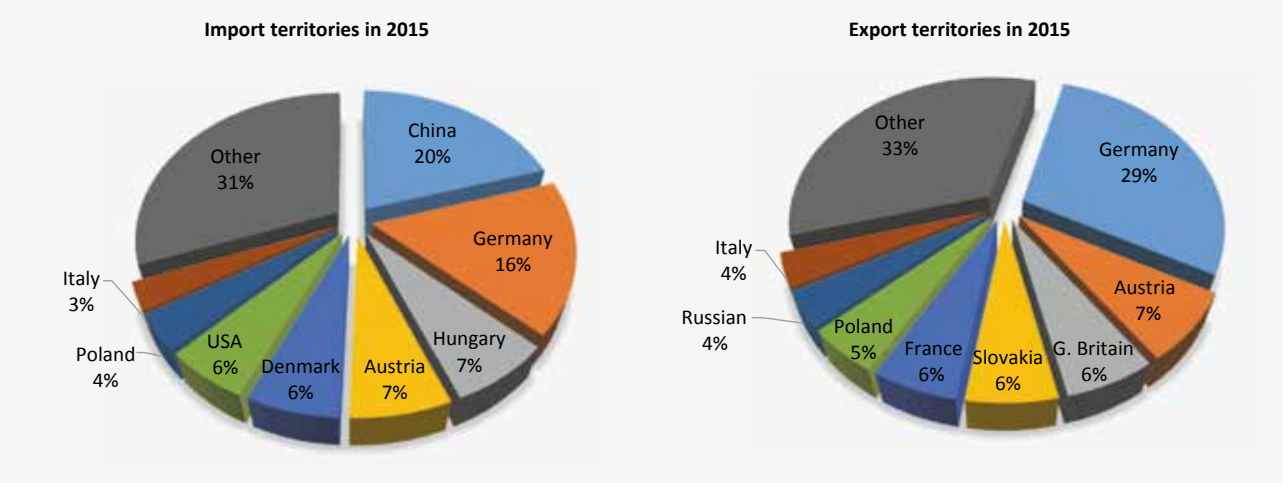
The largest foreign customers of CZ-CPA products was as usual Germany, to which goods worth more than CZK 34.1 bn were exported in 2015 and whose share in exports was at about the same level as in 2014. Other important customers are Austria, with exported goods worth CZK 8.8 bn (its share in exports declined by 0.7% compared to 2014, however), Great Britain with exported goods worth CZK 7.3 bn, and Slovakia with exported goods worth CZK 7.2 bn. Goods worth CZK 6.8 bn were exported to France, and goods worth CZK 5.9 bn were exported to Slovakia. Despite the declared sanctions, another important export territory is Russia, with goods worth CZK 4.5 bn exported in 2015.

Within the framework of imports, the most products were imported from China worth CZK 15.1 bn, whose share was 0.6 % higher than in 2014, followed by Germany with CZK 12.3 bn, Hungary with CZK 5.2 bn, Austria with CZK 5.0 bn, Denmark with CZK 4.6 bn and the USA with CZK 4.2 bn.

In terms of product exports, the largest share in 2015 was generated by group CZ-CPA 32.4 Manufacture of games and toys, with more than 55.3%. However, this share was 0.7% lower than in 2014. Products from group CZ-CPA 32.5 Manufacture of medical and dental instruments and supplies accounted for 23.3% of the total volume of exports and products in group CZ-CPA 32.9 Manufacturing not elsewhere classified accounted for 9.7 %.

The group products contributed to the total volume of imports as follows: CZ-CPA 32.4 had a share of 35.7 %, CZ-CPA 32.5 had a share of 34.4 % and CZ-CPA 32.9 had a share of 13.8 %.

Graph 22.4.2 – Foreign trade in CZ-CPA 32 products



Source: Source: CSO, data as at 28 February 2016

22.5 DIVISION SUMMARY AND PROSPECTS

A specific aspect of division CZ-NACE 32 is the very wide range of often vastly diverse products, both in terms of technology and in terms of end use. In terms of individual economic indicators, it may be stated that the development in practically all groups is positive and that not just revenues and turnover, but also employee headcount are successfully growing. The only exception is group CZ-NACE 32.1 Manufacture of jewellery, bijouterie and related articles, where the reviewed economic indicators have a rather fluctuating tendency. Nevertheless, even here the situation can be said to be improving.

As usual, the best results were reported by group CZ-NACE 32.4 Manufacture of games and toys. 2015 was a record-breaking year for toy manufacturers, because the 245 manufacturing companies operating in the Czech Republic manufactured toys worth almost CZK 2.7 bn, i.e. 12.5% more than in 2014. The share of exports in production reached 70%, which in absolute numbers was CZK 1.9 bn and was CZK 100 m more than in 2014. Among the largest Czech exporters is ABA factory, Abrex, BD Tova Brno, Moravská ústředna DUV Brno and Detoa Albrechtice. The share of Czech toys on the domestic market in only between seven to ten percent. In an effort to increase this share, the Czech Toy information portal was established, and presents about 60 companies. Its aim is to promote traditional Czech manufacturing, and in the future it wants to facilitate the selection of toys for customers by granting the “Czech Toy recommends” brand.

Equally positive development can be seen in group CZ-NACE 32.5 Manufacture of medical and dental instruments and supplies, where the leaders include LINET spol. s r.o., whose medical beds and other products are already well-known in more than one hundred countries around the world.

Manufacturers of musical instruments are also doing better, with turnover increasing by 2.9% year-on-year. Companies included in this group are seeing a rising number of contracts, especially from abroad, which applies also to the traditional upright and grand piano manufacturer Petrof spol. s r.o., Hradec Králové, which has changed its structure and after more than 150 years has become part of the Petrof Pianos Group, which controls 77% in the actual Petrof manufacturer. The company exports musical instruments to more than a dozen countries, focussing primarily on China, Russia and Japan. At present, it is trying to penetrate Africa.

In terms of the overall outlook for division CZ-NACE 32, it is essential for manufacturers to invest continuously into modern equipment and technologies, innovate their production and seek new opportunities for entry of foreign capital, possibly with the aid of investment incentives, in order to maintain and strengthen competitiveness. They should focus on renewing or expanding existing contacts, especially towards the East

and third countries. Participation at international exposition and trade fairs should be a matter of course in this effort. They should make use of support from the MIT in this regard.

A lasting challenge for the division is finding a way to face cheap, low-quality and often hazardous imports by the competition. This particularly applies to toys, where the Czech Trade Inspection Authority regularly finds the greatest deficiencies.

Processed for the MIT by: Section of Industry, Section of Construction and Raw Materials

External cooperation: Czech Statistical Office, Confederation of Industry of the Czech Republic, Ministry of Agriculture (MZe), Institute of Agricultural Economics and Information (IAEI), University of Economics - Doc. Ing. Inka Neumaierová, CSc.

Contributions to the publication provided by: Federation of the Food and Drink Industries of the Czech Republic, Association of Textile-Clothing–Leather Industry, Association of Forestry and Wood Processing Enterprises, Chemical Industry Association of the Czech Republic, Association of the Glass and Ceramic Industry of the Czech Republic, The Steel Federation, Inc., Association of Engineering Technology, Automotive Industry Association, Association of Aerospace Manufacturers of the Czech Republic, Association of the Czech Railway Industry, Association of Czech Furniture Manufacturers

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