b a c h

Bank for the Accounts of Companies Harmonized

OUTLOOK
7

Technological intensity of industries in European non-financial corporations from 2005 to 2017

November 2019

Abstract

Outlook #7, "Technological intensity of industries in European non-financial corporations from 2005 to 2017", uses data from 13 European countries (Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Italy, Luxembourg, Poland, Portugal, Spain and Slovakia) to analyse the technological intensity level of economies taking into consideration four groups of technological advancement. This edition of Outlook focuses on analysis of manufacturing sector in European countries which are available in the database, in different Research and Development (R&D) groups. The structure of companies in this section of activity in terms of the number of companies, employees, turnover and gross value added, as well as selected financial ratios was also analysed.

Disclaimer

This analysis is based exclusively on BACH data. Therefore, the evidence provided reflects the different national samples used to calculate BACH data and might differ from other sources. More information regarding methodological limitations and national sample specificities can be found on the BACH website. The opinions of the authors of this document do not necessarily reflect those of the national central banks to which they belong or those of the ECCBSO

FOREWORD

The European Committee of Central Balance-Sheet Data Offices (ECCBSO) is an informal body whose members consist of experts either from the Central Balance-Sheet Data Offices belonging to or associated with the National Central Banks of the European Community, or from National Statistical Institutes.

The Bank for the Accounts of Companies Harmonized Working Group (BACH WG) is one of ECCBSO's Working Groups. It was created within the foundation of developing and improving a European statistical database: the BACH database.

The BACH database provides comparable aggregated data (both economic and financial) based on the annual accounts of non-financial incorporated companies from European countries. Freely available, BACH includes data from 13 countries: Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Italy, Luxembourg, Poland, Portugal, Spain and Slovakia.

We sincerely hope you can benefit from this analysis and we invite you to visit the BACH database and explore it as much as possible by making your own analysis. Do not hesitate to share your results with the BACH WG.

Executive summary

Outlook #7 analyses technological intensity for 13 countries which provide data to the BACH database. The purpose of this study is to identify countries with the highest level of technological advancement (Germany, Denmark, Belgium and France). The development of technological advancement groups (high, medium-high, medium-low and low) during the period of the global financial crisis of 2008-2009 and the results achieved directly after the crisis was also examined.

The analysis shows that, although the gross value added of each technological group dropped during the global crisis, enterprises of high and medium-high intensity level achieved a significantly higher growth rate of GVA compared to the pre-crisis period. They also recovered faster compared to firms of other technological R&D groups.

The enterprises of high and medium-high industries adopted faster to the changing economic environment than other companies and were the main engine of improvement in the manufacturing sector as a whole.

The analysis of financial ratios also shows that high and medium-high tech companies were prospering better in changing economic conditions and were less exposed to the risk resulting from external financing sources.

INTRODUCTION

Firms in *high* technology industries play an important role in creating the international competitiveness of economies and they are an important factor of growth. For this reason they are an important subject for researchers, to be analysed deeper. Creating new technologies is one of the main engines of productivity and economic growth.

Technological advancement is also one of the most crucial factors affecting the rules of competition. It plays a key role in both the processes leading to structural changes within industrial branches and in the formation of new ones.

This analysis presents the importance and economic situation of *high* and *medium-high* technology industries, which include entities operating in selected divisions of the manufacturing sector of activity (according to the European Commission's classification[1]).

The main goal of this analysis is to assess the development of *high* and *medium-high* industries in changing economic circumstances, and the special role of these industries, in particular in the post-crisis period.

In this Outlook, BACH data from 2005-2017 on manufacturing industry from 11 out of 13 countries[2] is analysed. Although data for Slovakia are available up to 2017, this analysis covers only the period 2005-2013[3], and in the case of Denmark and Luxembourg up to 2016. When data on the year 2017 is computed, for the above mentioned countries the last year available is considered. For the values aggregated for all the analysed countries, data for 2014-2017 are biased because of lack of data.

According to the above-mentioned classification, all divisions which belong to the manufacturing section are divided into four groups of technological advancement. Enterprises from this section of activity constitute a relatively homogenous group, which ensures high comparability between countries.

Section 1 describes the BACH database and provides some methodological explanations on the classification criteria that were applied. Additionally, the weak points or possible constraints behind this classification are considered.

[1] *A detailed breakdown into categories of technological intensity according to the European Commission's classification can be found in Table B of the Annex.*

[2] *This analysis comprises data for following countries: Austria, Belgium, Croatia, the Czech Republic, Germany, Spain, France, Italy, Poland, Portugal and Slovakia. Data on Luxembourg and Denmark are taken into consideration only when analysing the manufacturing sector (section C) and economies as a whole (sector Zc).*

[3] *Data for this analysis are derived from BACH database as for 14th August 2019. Data for Slovakia for the period 2014-2017 were uploaded in September. Starting from 2014 data on Slovakian micro companies were excluded from the sample.*

Section 2 provides the manufacturing sector structure and characteristics by technological intensity in terms of the number of companies, turnover, number of employees and gross value added. It also describes the change of the structure in 2017 in comparison to the base year 2005[4].

In section 3, the gross value added (GVA) generated by particular countries in time is investigated. After that, the GVA in *high* and *medium-high tech* companies, which are the main focus of this study, was analysed more deeply at the division level. The aim was to assess, how these technologically advanced enterprises developed in the *pre* and *post-crisis* period.

Section 4 presents the evolution of return on equity ratio by countries and technological intensity, with special regard to the *post-crisis* period 2009-2017. The main goal was to check which industries improved the most after the financial crisis, influencing the economic developments in each country.

Section 5 includes an analysis of selected profitability ratios for defined technological intensity groups compared to the results of the manufacturing sector.

The Annex consists of a methodological note and data tables with more detailed statistical information for each country.

1. BACH DATA DESCRIPTION AND METHODOLOGY

Bach database characteristics

For the year 2017, the **BACH database** contains data on around 2.7 million enterprises[5]. It should be borne in mind that data does not cover all operating companies – data characteristics for individual countries can be found in table E in the Annex. Croatia, Italy and Portugal have covered the whole population in terms of number of companies, in other countries this coverage ratio fluctuated between 3.0% and 97.6%.

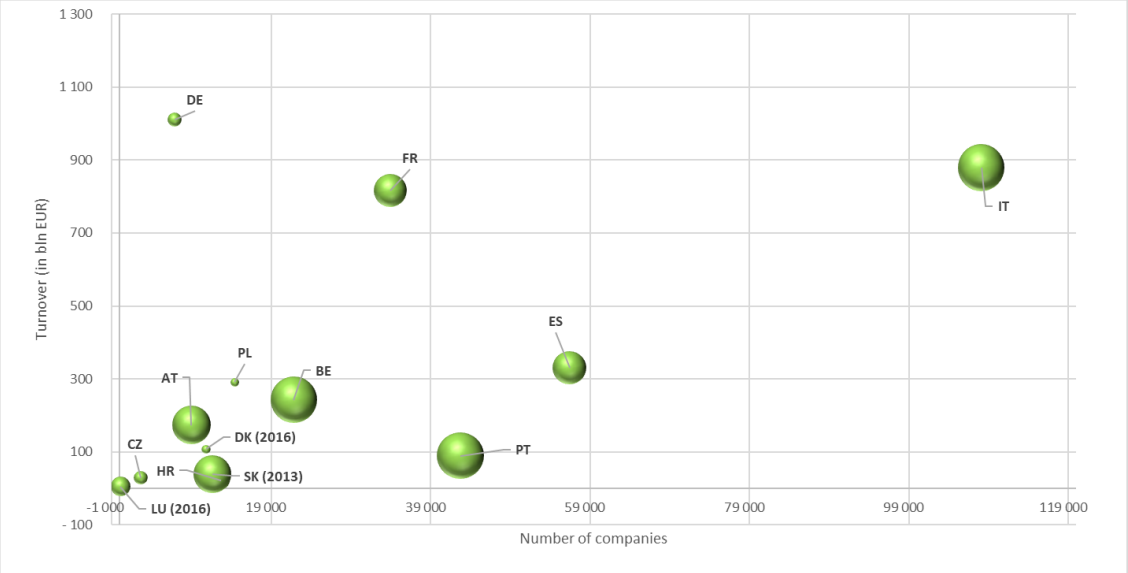
In 2017, enterprises in the analysed **manufacturing sector** (NACE C section) accounted for 12.3% of companies in the whole BACH database (331,420 companies) and their share in revenues from sales of products, goods and materials amounted to 32.2% (the lowest share was observed in Luxembourg – 5.8%, while the highest was in Germany – 43.3%). The most numerous in the manufacturing sector were Italian companies (representing around 32.6% of all companies), Spanish (17.0%) and Portuguese (12.9%). (See chart 1).

[4] *For countries which did not provide data since the year 2005 or which had a break in time series, the first comparable or delivered data are considered (Portugal 2006, Croatia 2008, Luxembourg 2011 were analysed as a base year).*

[5] *Data for the analysis were downloaded on the 14th August 2019 from BACH database. For the year 2017 Germany delivered only provisional data and there was also a break in the Czech Republic's data in 2016 due to applying BACH data validation rules. Czech data will be recalculated for the period 2005-2015 in the near future.*

The structure of the sample is different if we apply the turnover criterion. The highest share was attributed to German (25.0%), Italian (21.8%) and French (20.2%) companies. More detailed statistics on the share of manufacturing industry of individual countries are presented in table A in the Annex.

CHART 1 | TURNOVER (IN BLN EUR) AND THE NUMBER OF FIRMS IN THE MANUFACTURUNG SECTOR IN 2017



Classification of technological intensity – methodology used for analysis

In research on *high tech* enterprises the *industry view* dominates – enterprises involved in selected industries are identified and compared. When applying this solution one should bear in mind that it is not free of defects. The category of the sector is so wide that it can be comprised of individual enterprises with varying degrees of advancement in the technology and innovation used. There is also the possibility of technologically advanced enterprises outside the qualified industries.

The affiliation of enterprises to specific divisions of the NACE determines their allocation to particular categories of technological advancement (see table B in the Annex).

According to the OECD classification of Research and Development (R&D) intensity used in this study, there are four classes as follows:

1. ***High tech* intensity –** companies operating in two branches of the economy (NACE Rev. 2):
   NACE C21 – manufacture of basic pharmaceutical products and preparations,
   NACE C26 – manufacture of computer, electronic and optical products.
2. ***Medium-high tech* intensity –** companies from the following divisions *:*
   NACE C20 – manufacture of chemicals and chemical products,
   NACE C27 – manufacture of electrical equipment,
   NACE C28 – manufacture of machinery and equipment n.e.c.,
   NACE C29 – manufacture of motor vehicles, trailers and semi-trailers,

NACE C30 – manufacture of other transport equipment.

3. ***Medium-low tech* intensity –** companies from the following divisions:

   NACE C19 – manufacture of coke and refined petroleum products,

   NACE C22 – manufacture of rubber and plastic products,

   NACE C23 – manufacture of other non-metallic mineral products,

   NACE C24 – manufacture of basic metals,

   NACE C25 – manufacture of fabricated metal products, except machinery and equipment,

   NACE C33 – repair and installation of machinery and equipment.

4. ***Low tech* intensity –** companies from the following divisions:

   NACE C10 – manufacture of food products,

   NACE C11 – manufacture of beverages,

   NACE C12 – manufacture of tobacco products,

   NACE C13 – manufacture of textiles,

   NACE C14 – manufacture of wearing apparel,

   NACE C15 – manufacture of leather and related products,

   NACE C16 – manufacture of wood and of products of wood,

   NACE C17 – manufacture of paper and paper products,

   NACE C18 – manufacture of printing and reproduction of recorded media,

   NACE C31 – manufacture of furniture,

   NACE C32 – other manufacturing.

The assessment of the technological intensity of industries in European countries – using this classification – is a way of creating harmonised groups, which is useful for comparing countries by clustering structural levels of sectors. Nevertheless this classification has some limitations. For instance, many manufacturing firms could be considered as *high tech*, although they produce products ranging between *low* and *medium-high* technology. On the other hand, companies producing *high tech* products could be classified to *low tech* industries. Having this aspect in mind, some countries have, for traditional or cultural reasons, higher levels of *low tech* industries, but this does not indicate how the companies in these countries have been investing in new technologies in order to improve the value added of their products. Nowadays there are firms included in NACE activities classified as *low tech* activities that are in fact technologically advanced.

In fact, some recent literature has emerged proposing different or revised classifications based on the OECD Taxonomy. According to Galindo-Rueda and Verger (2016), for instance, "recent work on a methodological framework for statistics on the development, application and impact of technologies cautions about the inappropriate use of the term "technology" and its confinement to R&D performance". Based on that, the authors proposed additional levels using the ratio of R&D to value added within an

industry, covering not only manufacturing but also non-manufacturing industries, namely agriculture, mining, utilities, construction and a broad range of services.

Despite these constraints, this methodology is a simple and harmonised approach for comparing countries based on their technological intensity of industries, which may be applied to BACH database.

2. MANUFACTURING SECTOR CHARACTERISTICS BY TECHNOLOGICAL INTENSITY

In all the analysed countries, the *high* technological intensity sector comprises 10 426 enterprises and the *medium-high* intensity sector – 53 674 firms.

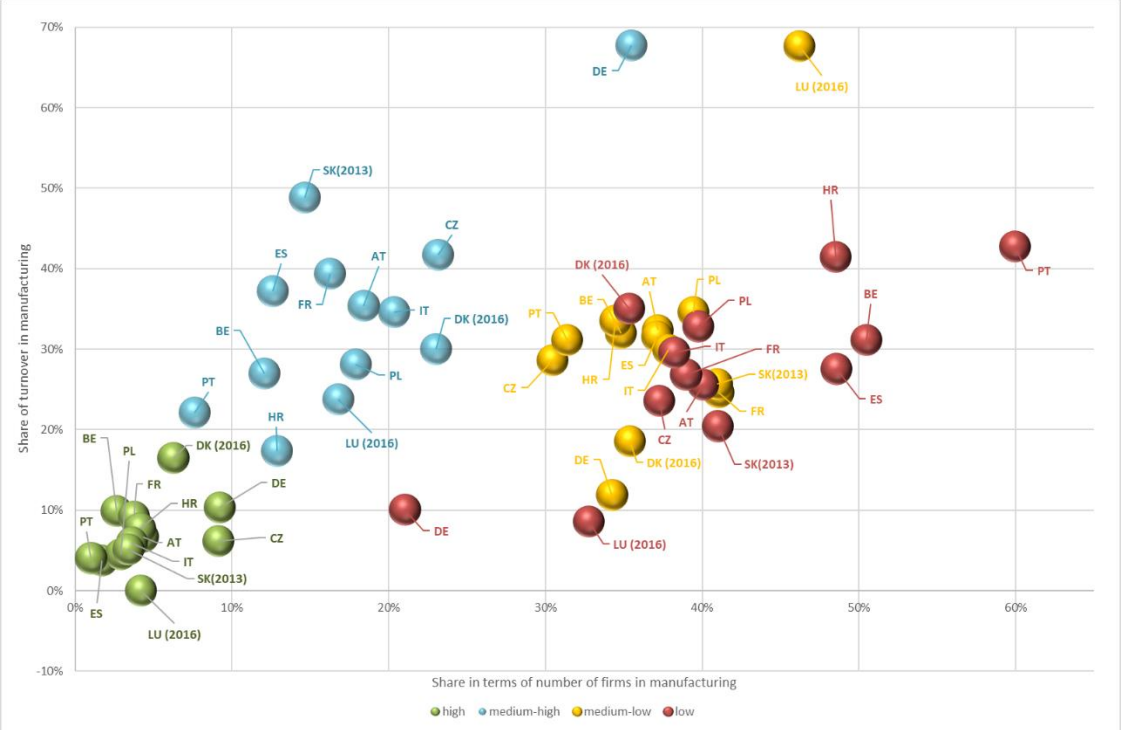
TABLE 1 | NUMBER OF COMPANIES BY TECHNOLOGICAL INTENSITY IN 2017

2017	*high*	*medium-high*	*medium-low*	*low*	*high & medium high*	Total (Section C)
	Number of firms in 2017					
Austria (AT)	390 (4.3%)	1 659 (18.4%)	3 349 (37.2%)	3 611 (40.1%)	**2 049 (22.7%)**	9 009
Belgium (BE)	574 (2.6%)	2 638 (12.1%)	7 598 (34.8%)	11 018 (50.5%)	**3 212 (14.7%)**	21 828
Czech Republic (CZ)	243 (9.1%)	616 (23.1%)	810 (30.5%)	992 (37.3%)	**859 (32.2%)**	2 661
Germany (DE)	631 (9.2%)	2 427 (35.5%)	2 343 (34.3%)	1 439 (21.0%)	**3 058 (44.7%)**	6 840
Denmark (DK) (2016)	680 (6.3%)	2 496 (23.0%)	3 838 (35.4%)	3 834 (35.3%)	**3 176 (29.3%)**	10 848
Spain (ES)	963 (1.7%)	7 128 (12.6%)	20 951 (37.1%)	27 404 (48.6%)	**8 091 (14.3%)**	56 446
France (FR)	1 269 (3.7%)	5 516 (16.2%)	13 940 (41.1%)	13 236 (39.0%)	**6 785 (19.9%)**	33 961
Croatia (HR)	527 (4.1%)	1 642 (12.9%)	4 396 (34.5%)	6 189 (48.5%)	**2 169 (17.0%)**	12 754
Italy (IT)	3 892 (3.6%)	21 989 (20.4%)	40 894 (37.8%)	41 311 (38.2%)	**25 881 (24.0%)**	108 086
Luxembourg (LU) (2016)	5 (4.2%)	20 (16.8%)	55 (46.2%)	39 (32.8%)	**25 (21.0%)**	119
Poland (PL)	421 (2.9%)	2 580 (17.9%)	5 687 (39.5%)	5 730 (39.7%)	**3 001 (20.8%)**	14 418
Portugal (PT)	434 (1.0%)	3 255 (7.6%)	13 423 (31.4%)	25 633 (60.0%)	**3 689 (8.6%)**	42 745
Slovakia (SK) (2013)	397 (3.4%)	1 708 (14.6%)	4 772 (41.0%)	4 776 (41.0%)	**2 105 (18.0%)**	11 653
Total	**10 426 (3.1%)**	**53 674 (16.2%)**	**122 056 (36.9%)**	**145 212 (43.8%)**	**64 100 (19.3%)**	**331 368**

In 2017, the largest share of *high tech* companies was observed in Germany (9.2%), in the Czech Republic (9.1%) and in Denmark (6.3%). Taking into account *high* and *medium-high* intensities, the share in terms of the number of companies was significantly higher in Germany (with 44.7%) in comparison with other countries. In the next, the Czech Republic, it was 32.2%, and in Denmark – 29.3%. (See table 1).

The highest share of *low tech* companies in terms of number of companies was noted in Portugal (60%), whereas in Luxembourg 46.2% firms operated in the *medium-low tech* sector. (See chart 2).

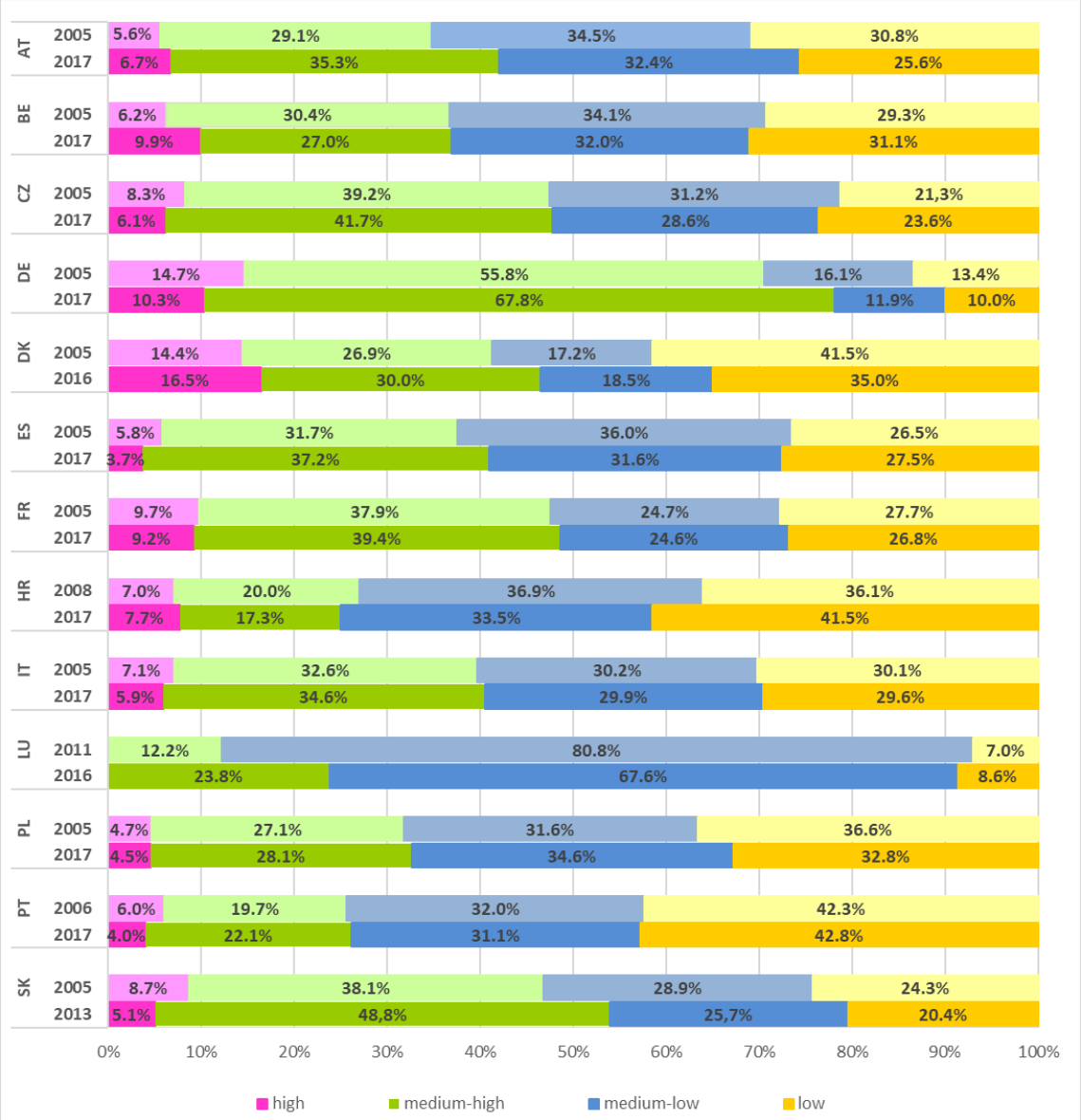
CHART 2 | WEIGHT OF TECHNOLOGICAL INTENSITIES BY NUMBER OF COMPANIES AND TURNOVER IN 2017



Enterprises of *high* and *medium-high* technologies achieved the highest share in terms of turnover in Germany (78.1%), Slovakia (53.9%), France (48.5%) and the Czech Republic (47.8%),.

It is worth highlighting that in 2017, *medium-high* sector in Germany gathered 67.7% of the turnover of manufacturing companies as a whole and in Luxembourg, the highest share of turnover was represented by entities of *medium-low tech* industries (approx. 70%). (See chart 3).

CHART 3 | WEIGHT BY TECHNOLOGICAL INTENSITY IN TERMS OF TURNOVER, 2005 VS. 2017



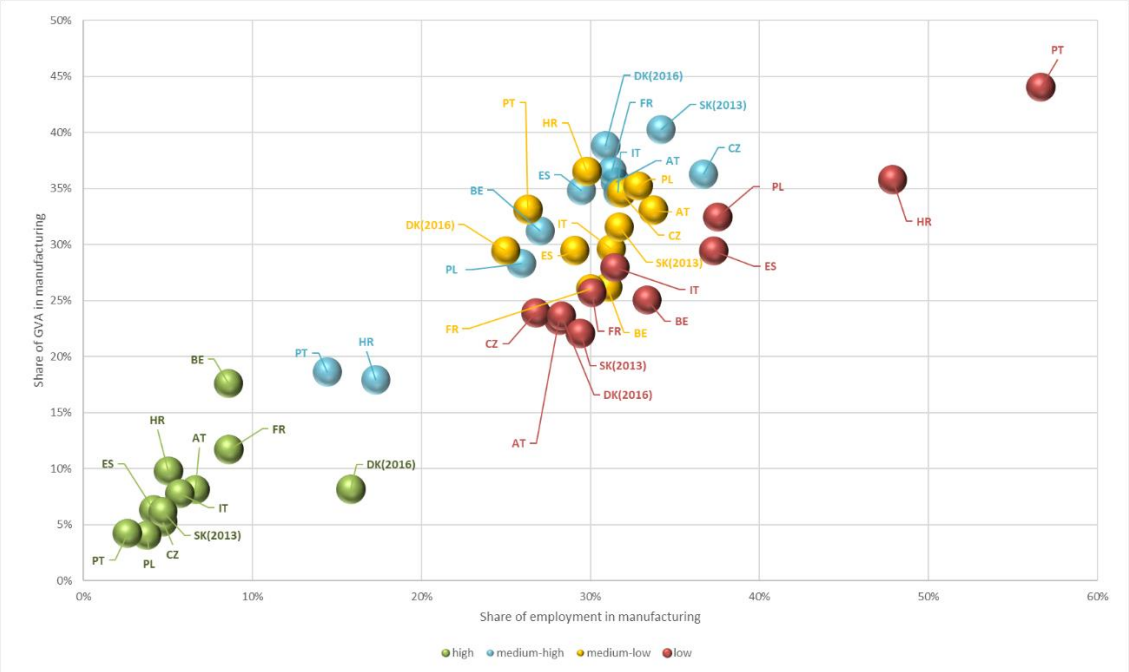
In the period 2005-2017, the highest increase in the share of *high* and *medium-high* firms in turnover was recorded in Luxembourg – up by 11.6 p.p. Also in Germany and Austria, these increases were relatively high – by 7.6 p.p. and 7.3 p.p., respectively. This proves the growing technological progress[6] of corporations in these countries and the increase in their importance in the European economy.

Considering only the *high* technology industry, in 2017 the share of this sector in sales of products and services in individual countries varied from 3.7% in Spain to 16.5% in Denmark (in 2016). In comparison with the base year 2005, the share of *high tech* industry sales dropped in more than half of the analysed countries: the highest in Germany by 4.4 p.p. (being the first in 2005) and in Slovakia by 3.6 p.p. (2013). No drops were recorded in Austria, Belgium, Croatia and Denmark. (See chart 3).

[6] Progress is defined by the increase of share *high* and *medium-high* companies in terms of turnover.

In 2017, the share of employment in both *high* and *medium-high* industries was the lowest in Portugal and Croatia. At the same time, only in Portugal and Croatia was a high share of employment in *low tech* industries recorded. (See chart 4).

CHART 4 | WEIGHT OF TECHNOLOGICAL INTENSITIES BY NUMBER OF EMPLOYEES AND GROSS VALUE ADDED IN 2017 *



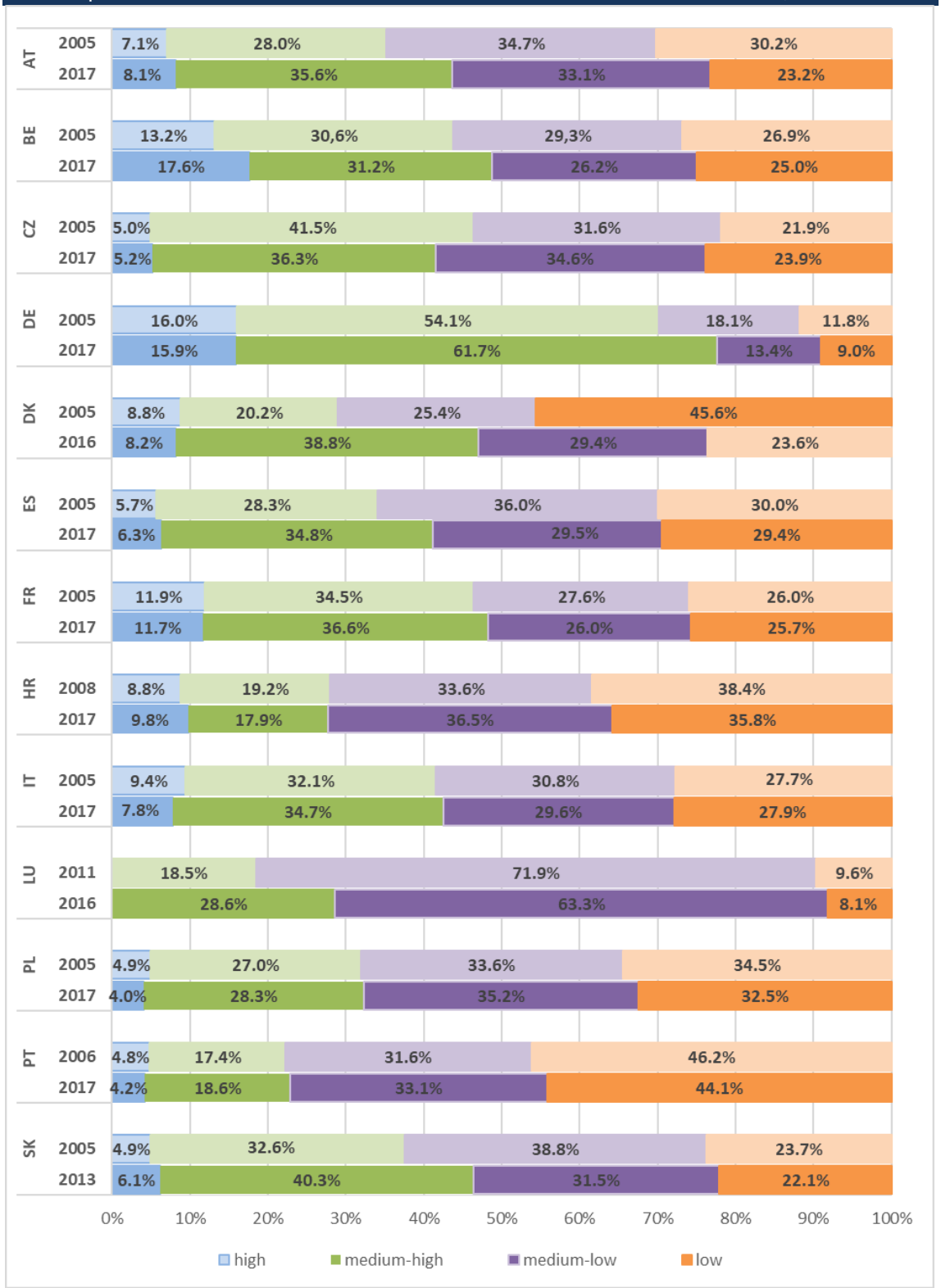
** for Germany and Luxembourg data on number of employees is not available*

In comparison with 2005, the share of gross value added generated by *high tech* companies in the majority of the analysed countries slightly decreased or remained at a similar level. One exception is Belgium, where this share increased by 4.4 p.p.

However, taking into account *high* and *medium-high tech* firms, an increase in the share of gross value added was observed in all countries (with the exception of the Czech Republic and Croatia) . Germany still boasts the largest share of *high* and *medium-high* companies in gross value added production – their total share in 2017 was 77.6% and 7.5 p.p. higher than in 2005. Also a high share was noticed in Belgium (48.8%), France (48.3%) and Denmark (46.9%). (See chart 5).

It should be emphasised that in Denmark there was the largest increase in the share in *high* and *medium-high* firms in creating gross value added in the manufacturing sector – since 2005 it has increased by 18 p.p. (from 28.9% to 47.0%). High growth was also recorded in Luxembourg (10.1 p.p), Slovakia (8.9 p.p.) and Austria (8.6 p.p.).

CHART 5 | WEIGHT BY TECHNOLOGICAL INTENSITY IN TERMS OF GROSS VALUE ADDED, 2005 VS. 2017



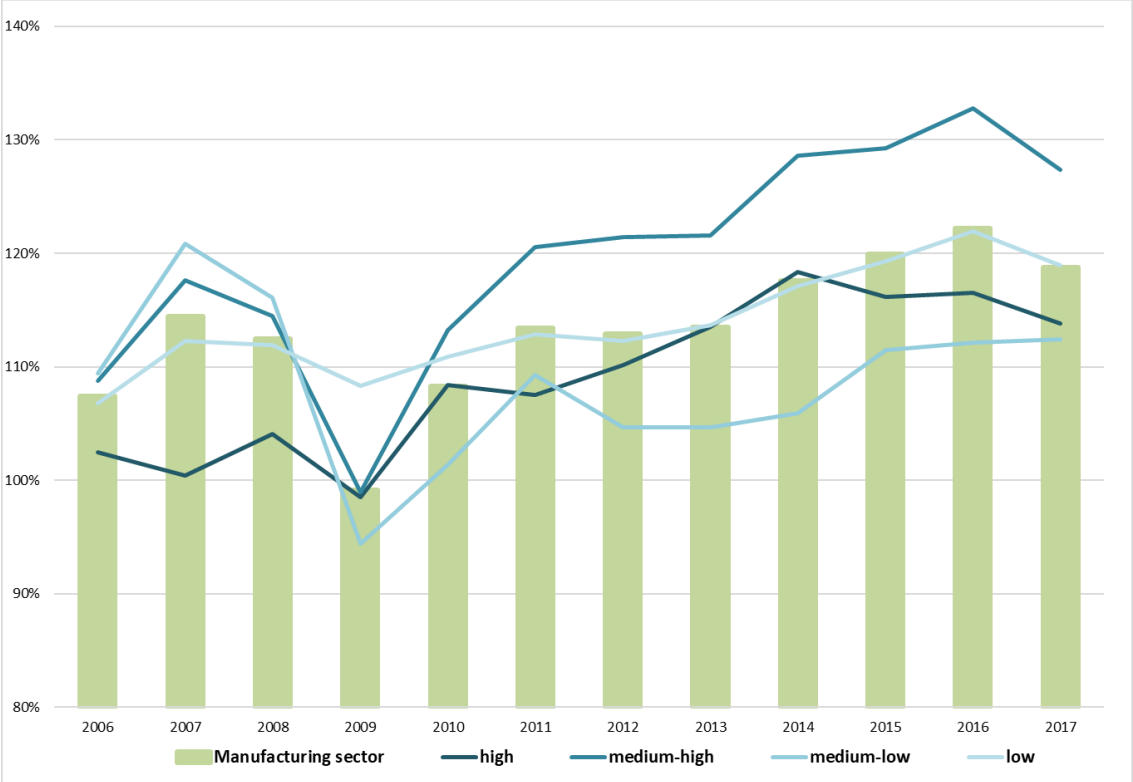
3. GROSS VALUE ADDED BY TECHNOLOGICAL INTENSITY (INDEX 2005=100)

How did non-financial corporations' gross value added evolve?

To evaluate the performance of the European non-financial corporations during the last decade it is important to start by observing the evolution of their gross value added.

A survey conducted by Eurostat[7] for 27 European Union countries indicates that since 2005 the industrial production index and other short-term statistics indicators developed much more favourably for EU-27 *high tech* manufacturing than for industry as a whole. Despite the financial and economic crisis, the value added of production in *high tech* companies increased by 26% between the first quarter of 2005 and the third quarter of 2012. For comparison, this index in the industry as a whole remained at the same level as 2005. Industries of *medium-low* and *low* technologies recorded a 5-6% fall in the index during the period under observation, while the *medium-high* technology companies increased by 7%.

CHART 6 | GROSS VALUE ADDED INDEX by technological intensity in 2005-2017, 2005=100



** This chart presents data for 10 countries, which delivered data for the whole analysed period of 2005-2017. Data for Denmark, Luxembourg and Slovakia were excluded.*
*** Provisional data for 2017 are presented in case of Germany.*

[7] T. Jeagers, C. Lipp-Lingua, D. Amil, *High-technology and medium-high technology industries main drivers of EU 27's industrial growth,* Eurostat Statistics in focus, January 2013. The subject of the research was the financial results of manufacturing sector enterprises from the 27 Member States of the European Union in the years 2005-2012.

While the results of the Eurostat's research indicated that the crisis of 2008-2009 had the slightest impact on *high tech* enterprises, this analysis for aggregated data for 10 countries[8] confirmed this conclusion. In 2009, there was a drop in the growth rate of gross value added in companies regardless of their technological intensity level. (See chart 6).

Nevertheless, while the gross value added compared to 2008 in the *high tech* sector decreased by 5.5 p.p., in *medium-high* companies it decreased by 15.5 p.p., and in *medium-low* by 21.6 p.p.

Already in the next year 2010, the gross value added in *high tech* firms was clearly higher than in 2006. Since then, its growth[9] has been increasing and remained above the pre-crisis level. This indicates the large possibilities, both adaptive and developing, of *high* technologically advanced firms.

The situation in *medium-high* industries was also favourable. After a clear drop in gross value added during the crisis, it grew rapidly in the following years (by 14.3 p.p. in 2010 as compared to 2009) and was significantly higher than in other R&D intensity groups.

The sustained increase in these two categories of technological intensity was the main driver of the economic growth in the manufacturing sector after the global downturn.

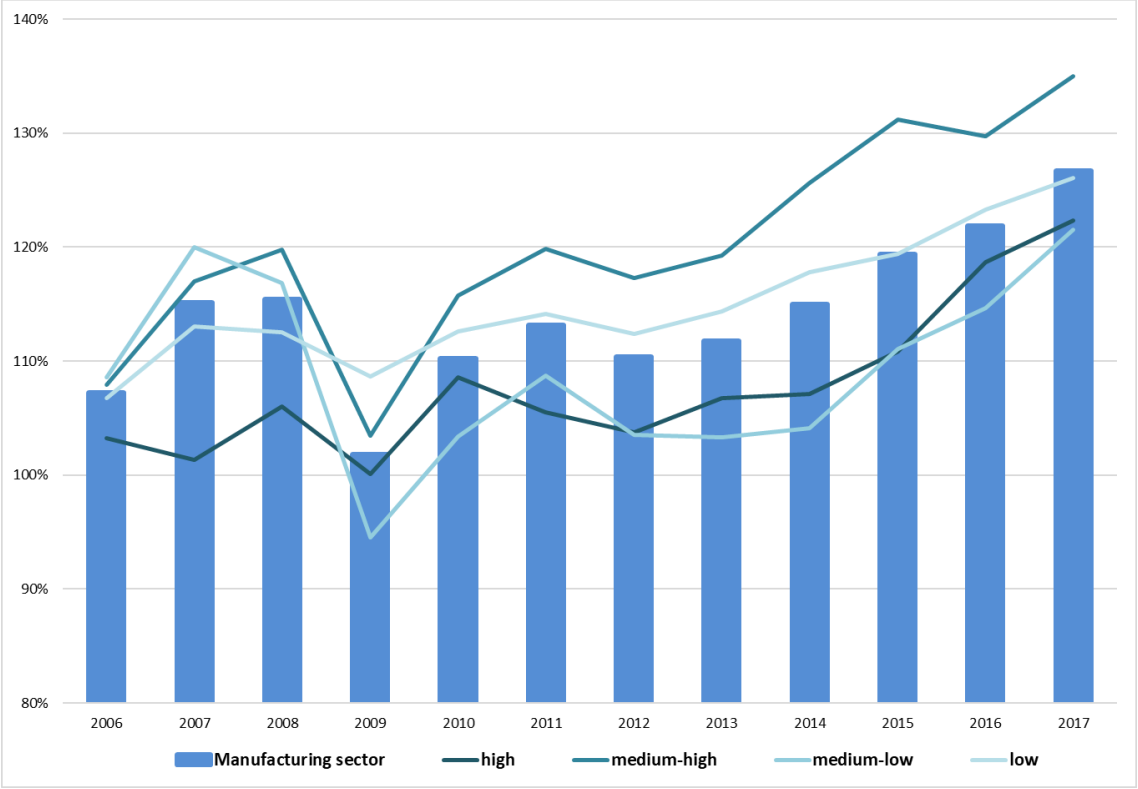
The results of *low tech* industries lead to slightly different conclusions. While in 2009 there was a decrease in gross value added, it remained at a higher level than in 2005. In this group, slow but steady growth has been observed since 2010.

The variable sample, which was used, allows to capture business dynamics, which is not possible using the sliding sample. Please note that, the same chart using the sliding sample is available in Chart D in Annex, just to emphasize that the evolution in 2017 comes from the sample and not from a real drop in the value added. The evolution of the indicators in 2017 using the variable sample is a valid analysis but it is worth comparing to the evolution obtained from the sliding sample as a robustness check, to avoid drawing conclusions that arise from the sample bias.

Since the share of gross value added of German economy is significant in the analysed sample, in order to present the *real value* of GVA's growth rate in 2017 German data were excluded and the evolution of GVA was calculated for 9 countries which delivered the final data. It allows to show the data which are not influenced by German provisional data for 2017. We can conclude that the increase of GVA in all technological advancement groups continued in 2017. (See chart 6A).

[8] Data for Denmark, Luxembourg and Slovakia are not included, since they did not provide data for the whole analysed period.
[9] 2005=100. See: ANNEX: information on gross value added index

CHART 6A | GROSS VALUE ADDED INDEX by technological intensity in 2005-2017, 2005=100 (FINAL DATA ONLY)



** This chart presents data for 9 countries which delivered the final data for the whole analysed period of 2005-2017. Data for Denmark, Luxembourg and Slovakia were excluded. German data were also not considered, because of possible bias due to availability of only provisional data for the year 2017.*

Gross value added index by countries & technological intensity level

The highest increase in gross value added in the economy compared to 2005 was recorded in Poland (100%), in Austria (69.9%) and in Belgium (44.7%). The smallest increase occurred in Croatia (13.6%)[10].

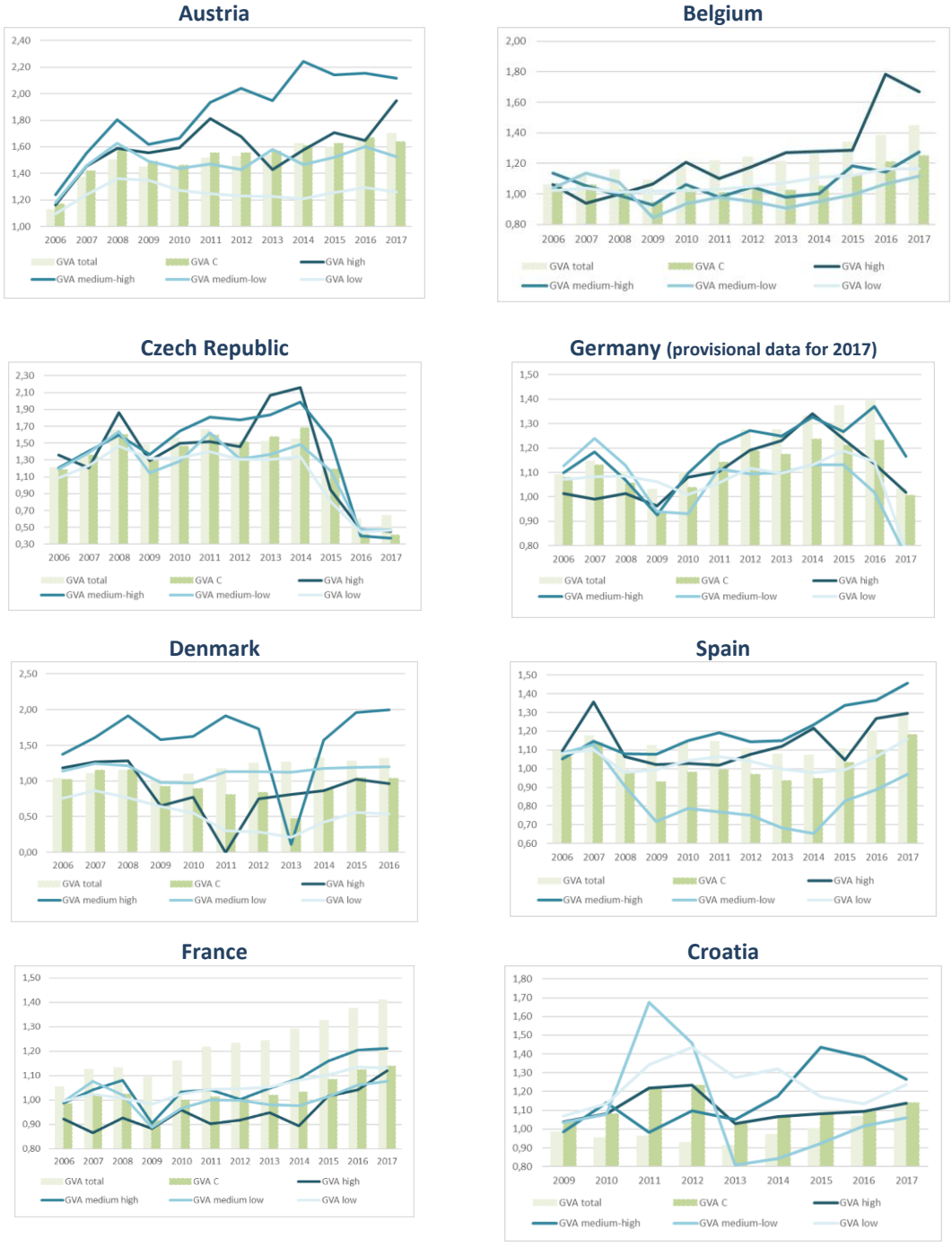
In all countries during the global crisis in 2008-2009, declines or deceleration of production were recorded. In 2017, there was an increase in gross value added compared to the *pre-crisis* period.

Analysis of the gross value added in the manufacturing sector (Section C) leads to similar conclusions. The largest increase since 2005 was noted in Poland (93.8%), in Austria (by 63.6%) and in Belgium (by 25.0%). This trend was mainly due to high increases in gross value added in the *high* and *medium-high tech* firms. In Poland, this increase was 58.2% for *high tech* and 103.0% for *medium-high tech.* In Austria, this value in both categories doubled when compared to 2005. It should be emphasized that in this country, even in the crisis years 2008-2009, the growth for *high tech* was higher (155.6%) than in previous years; for *medium-high* technologies it was even slightly higher again (162%).

[10] In the Czech data there was a break in the database in 2016 and for Germany only provisional data for 2017 are available

In the Czech Republic and Poland, the growth rate of gross value added in both categories was lower than in previous years, but it was at the level of over 25%. At that time, for example, in Germany, France and Italy, the gross value added decreased in companies operating in both technological advancement groups.

CHART 7 | GROSS VALUE ADDED BY COUNTRIES (INDEX 2005=100)



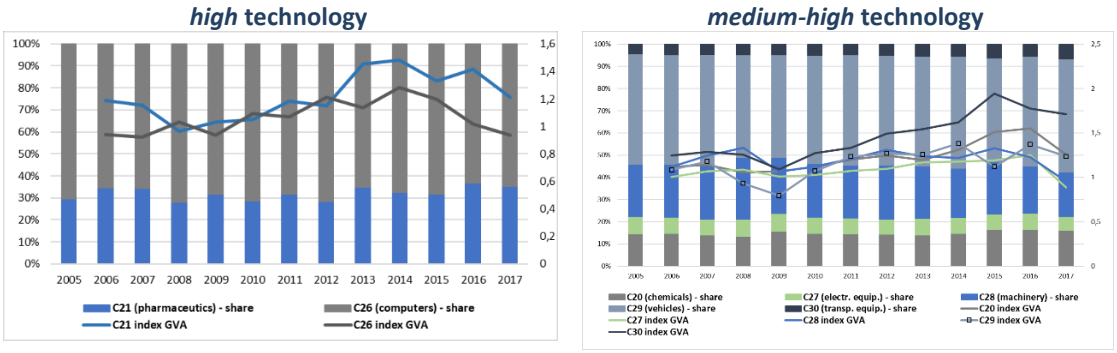
How did high and medium-high sectors' gross value added evolve?

In 2017, the highest share of *high* and *medium-high* industries in creating gross value added was achieved in Germany (77.6%), in Belgium (48.8%) and in France (48.3%).

In the *high tech* industries of the **German economy**, the computer industry (C26) was the dominant component in the whole analysed period (with a share of 65%-70%). On the other hand, the pharmaceutical industry (C21) – with a 30%-35% share in the creation of gross value added – recorded a higher GVA growth rate (an increase of 21% in 2017) than the computer industry (with a decrease of 6% at that time).

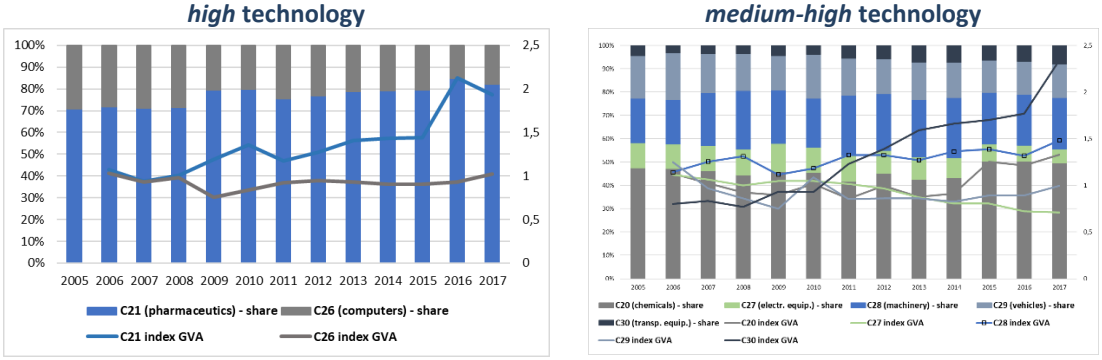
In the *medium-high* industries, the production of motor vehicles, trailers and semi-trailers (C29) had the highest share in the creation of GVA (about 50%), and the GVA of this division in relation to 2005 increased by 24%. However, the highest growth was recorded in production of other transport equipment (C30) – an increase of 71% – while the share of this division was relatively low (about 5-6%). (See chart 8).

CHART 8 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN GERMANY – SHARE AND INDEX (2005=100) – provisional data for 2017



Belgium was characterized by the highest share of the pharmaceutical industry (C21) in generating gross value added (82.3%). The GVA by enterprises in this division increased by 93% compared to 2005, whereas the computer industry's (C26) GVA increased by only 2%.

CHART 9 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN BELGIUM – SHARE AND INDEX (2005=100)



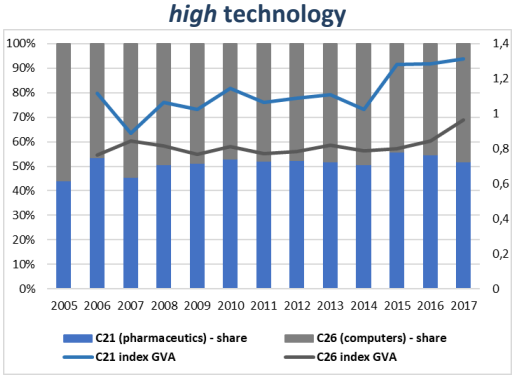
As far as the *medium-high* technology companies are concerned, in Belgium the highest share was in the manufacture of chemicals and chemical products (C20) (49.5% in 2017), while the highest growth was observed in the manufacture of other transport equipment (C30) and production of machinery and equipment n.e.c. (C28) (see chart 9).

In **France**, a balanced structure in creating GVA of the *high tech* industry, was observed in computers (C26) and pharmaceutics (C21). In the analysed period only slight changes in this structure occurred.

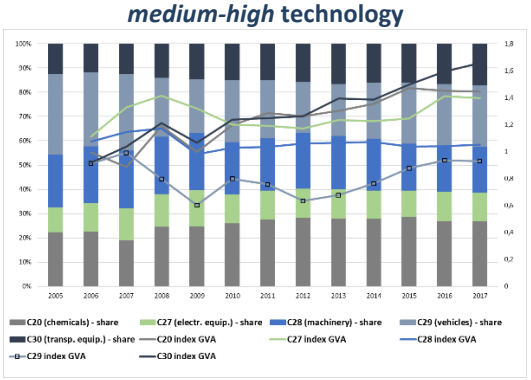
In France a 12% increase in the gross value added of the *high tech* sector was recorded. Similarly to the majority of the analysed countries, the pharmaceutical industry was characterized by a high rate of growth (131.3%), while the computer industry declined by around 3%. At the same time, *medium-high tech* firms generated higher GVA (by 21.0%). Among *medium-high* industries, the fastest production growth was noted in the manufacture of other transport equipment (C30) and the manufacture of chemicals and chemical products (C20). (See chart 10).

CHART 10 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN FRANCE – SHARE AND INDEX (2005=100)

high technology



medium-high technology

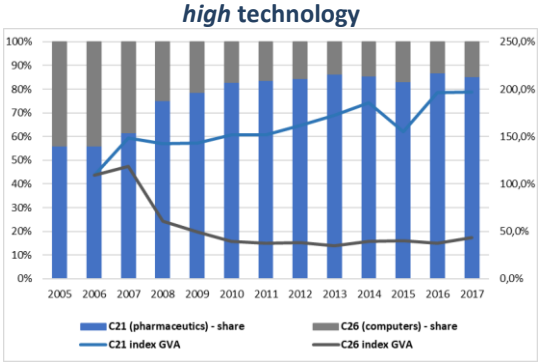


Similar to Belgium, **Spain** was characterized by a very high share (85.4%) of the pharmaceutical industry (C21) in creating GVA of the *high* technology sector. In the analysed period in Spain there was a significant increase in the share of pharmaceutics in generating the gross value added of the *high tech* sector (by 29.2 p.p), with a decrease in computer production (C26) at the same time.

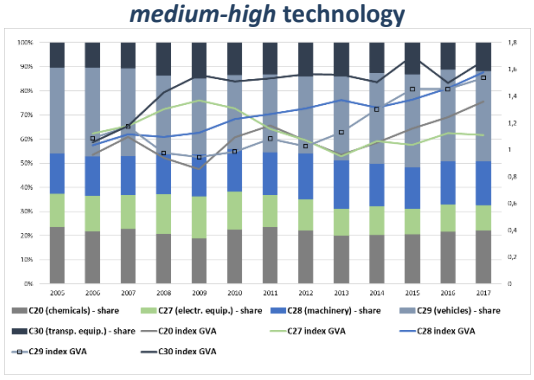
This increase in structure was caused by very high production growth in pharmaceutics (by 97.1% in 2017). At that time, the computer industry noted a significant decline (by 56.7%) compared to 2005.

CHART 11 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN SPAIN – SHARE AND INDEX (2005=100)

high technology



medium-high technology



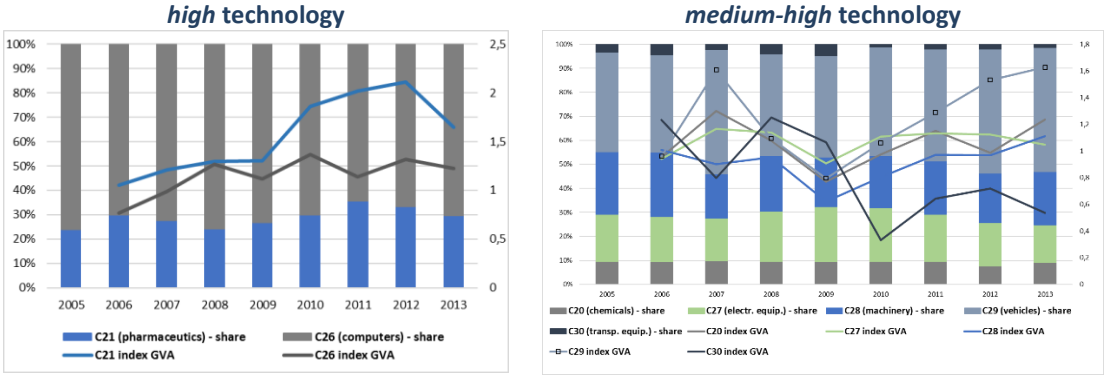
The production of motor vehicles, trailers and semi-trailers (C29) played an important role in creating the *medium-high* industry (the share in GVA generated increased up to 37.5%). Since 2005 this industry has increased its production by 53.6%. (See chart 11).

Also in **Slovakia** there was a huge increase in gross value added in the pharmaceutical industry (C21) – by 64.4% (2013), with a share of around 30% in the production of this division. The value added of computer production (C26) increased by 22.2%, which resulted in an increase in GVA of *high tech* industry by 32.3%.

The value added of *medium-high* industries went up by 30.5% compared to 2005. The increase was due to the high growth rate (162.8%) of motor vehicles production (C29) – with the share amounting to 51.5%.

The only division where a decrease (by 46.3%) was recorded was the manufacture of other transport equipment (C30). (See chart 12).

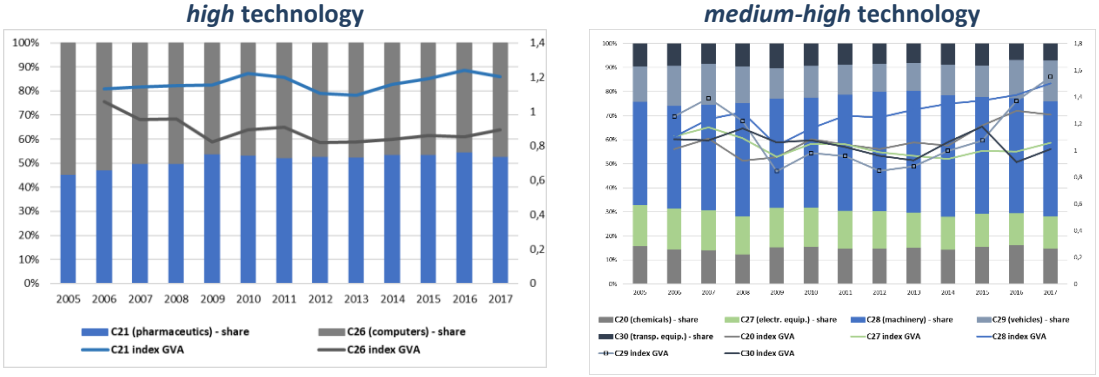
CHART 12 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN SLOVAKIA – SHARE AND INDEX (2005=100)



Since 2005, a change in the structure of *high tech* industries has been observed in **Italy**: there was an increase in the share of pharmaceutical industries (C21) in creating GVA (by approx. 7 p.p.). In the analysed period, the production of this division increased by 20.3%, while the value of the computer industry (C26) decreased by 10.4%. (See chart 13).

In Italy and Austria, unlike in other countries, the highest share in the *medium-high* sector was in the production of machinery and equipment n.e.c. (C28) – 48% and 43.5%, respectively. In both countries, this division was also characterized by the high growth (150.2% in Italy and 220.5% in Austria).

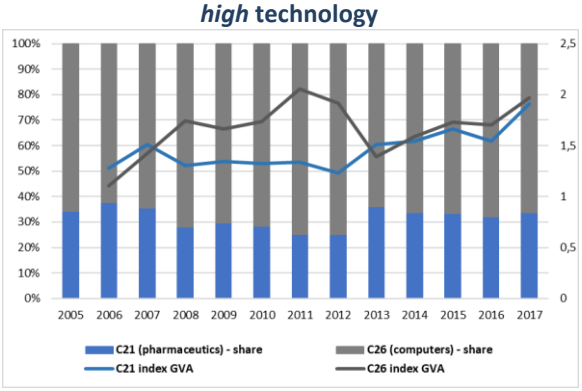
CHART 13 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN ITALY – SHARE AND INDEX (2005=100)



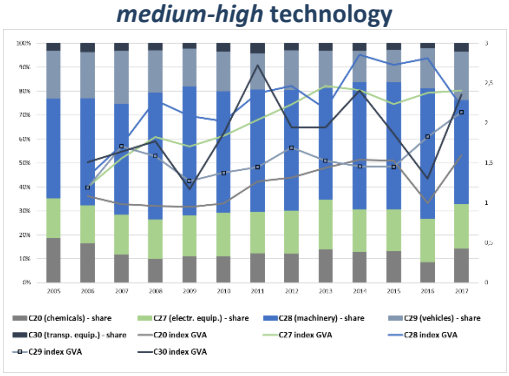
In **Austria** the gross value added of *high tech* industries increased by 94.7% compared to 2005. A high growth rate of GVA was recorded in the computer industry (C26) (96.7%), with an increase in pharmaceutical production (C21) (90.9%). The production of computers was also dominant in the structure of the *high tech* sector (66.4%).

CHART 14 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN AUSTRIA – SHARE AND INDEX (2005=100)

high technology



medium-high technology



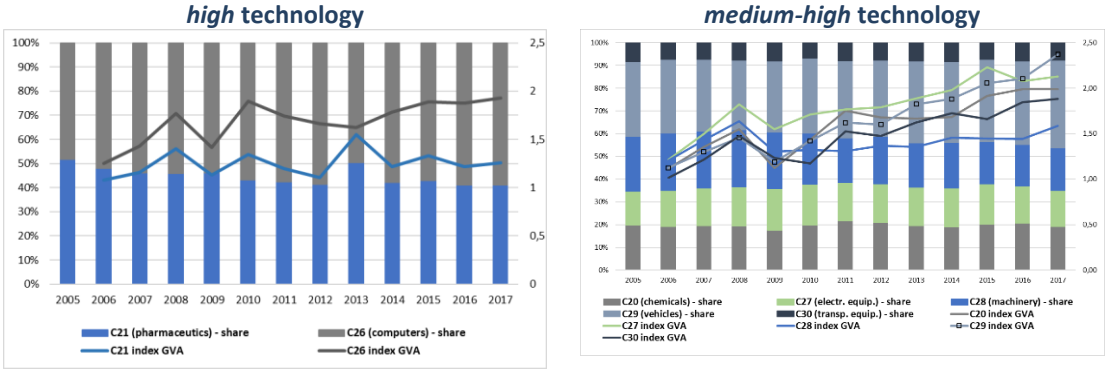
In 2017, the highest growth rate in the *medium-high* technologies was recorded in the production of electrical equipment (C27) (a twofold increase), although its share in the structure of GVA creating was relatively low (18.7% in 2017). (See chart 14).

In 2017 in **Poland** the gross value added of *high tech* industry increased by 58.2% compared to 2005. Similarly to the Czech Republic and Austria, computer production (C26) was dominant with a share of 59.0% in 2017.

The growth rate of GVA in this division was also higher (93.1% higher than 2005). During this period, the production of pharmaceutics (C21) increased by 25.6%. It should be emphasized that while the share (in terms of the number of companies, employees, turnover and gross value added) of *high tech* industries, was lower than in the other analysed countries, the growth rate of GVA was relatively high. This phenomenon could have been influenced by the fact that only a slight decrease was observed in the crisis years 2008-2009 compared to other countries.

The high growth (203.0%) in *medium-high* technology industries was also driving the growth of the manufacturing sector in Poland. The highest growth rates were observed in manufacturing of motor vehicles (C29) (237.1%) and electrical equipment (C27) (212.6%). (See chart 15).

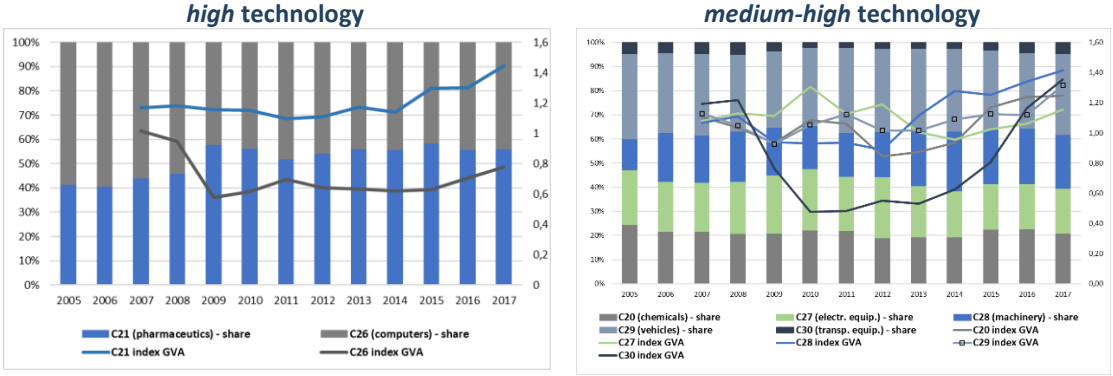
CHART 15 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN POLAND– SHARE AND INDEX (2005=100)



The lowest share (around 4%) of the *high tech* sector in generating GVA was recorded in **Portugal** and Poland. The GVA increase in Portuguese companies amounted to 5.2% (as compared to 2006) and resulted mainly from high growth in the pharmaceutical industry (C21) (144.6%), while the GVA of the computer production division (C26) decreased by 22.1%.

The *medium-high* industry was dominated by the production of motor vehicles, trailers and semi-trailers (C29), where the gross value added remained at an almost unchanged level in the analysed period. Production in the *medium-high* industry grew by 29.0% and was driven by the production of machinery and equipment n.e.c. (C28) (growth rate 141.6%) and other transport equipment (C30) (growth rate 135.4%). (See chart 16)

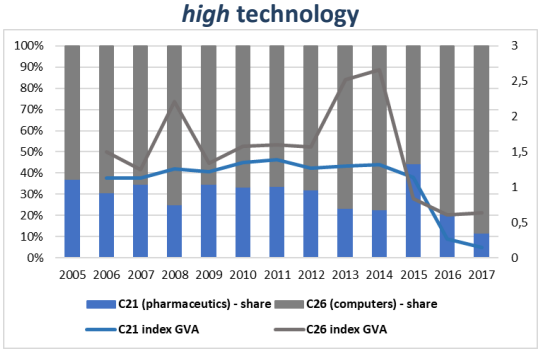
CHART 16 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN PORTUGAL– SHARE AND INDEX (2006=100)



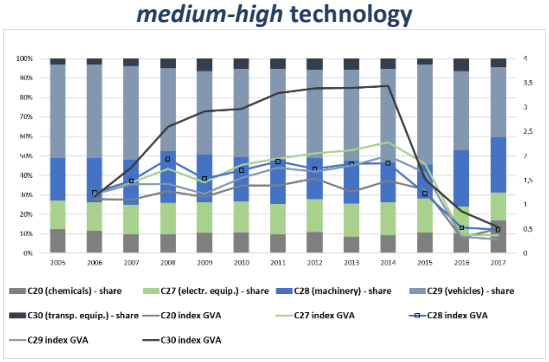
In **the Czech Republic** *high tech* firms recorded the highest dynamic of GVA (growth rate of 216.2% in 2014) among all analysed countries. Due to data break in 2016, only the period of 2005-2015 was analysed. Exceptionally high growth (265.9%) in relation to 2005 was recorded by the computer industry (C26), at the same time increasing its share by approximately 15 p.p. During the same period, the gross value added generated by the pharmaceutical industry (C21) increased by 31.8%.

CHART 17 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN CZECH REPUBLIC – SHARE AND INDEX (2005=100) – data breakdown in 2015

high technology



medium-high technology

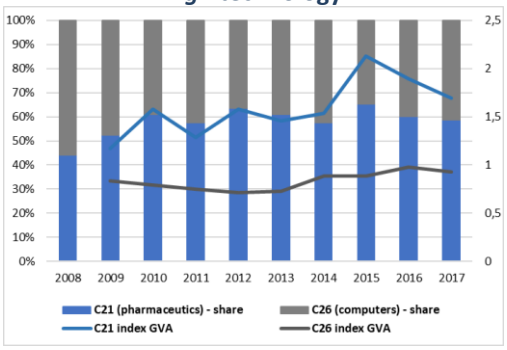


The growth of the GVA of the medium-high technology companies was also very high and amounted to 198.7%. As in the case of Germany, the highest growth was observed in the production of other transport equipment (C30) (240%), but this division constituted only a small share in this category (around 5%). The production of electrical equipment (C27) (a share of 16.8%), and the production of machinery and equipment not elsewhere classified (C28) (a share of 20.4%), reported quite a high growth rate (130% and 90% respectively). (See chart 9).

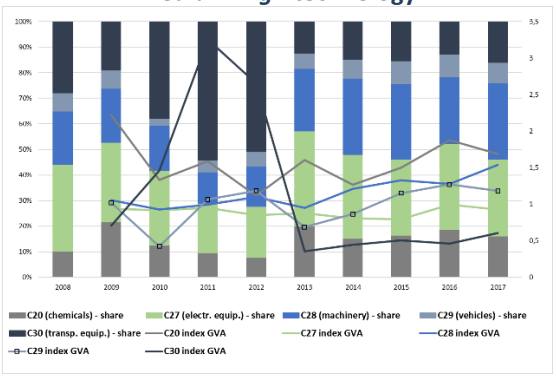
In **Croatia**, similar to Belgium and Spain, the pharmaceutics manufacturing division (C21) had a dominant share in GVA creation in the structure of the *high tech* industry. In the whole analysed period, the growth in GVA of this division was also significantly higher than GVA growth in the production of computers (C26) – it amounted to 169.1% and 93.0% respectively. (See Chart 18).

CHART 18 | GROSS VALUE ADDED IN HIGH AND MEDIUM-HIGH TECHNOLOGIES IN CROATIA – SHARE AND INDEX (2008=100)

high technology



medium-high technology



Starting from 2013, in the *medium-high* sector firms in the manufacturing of electrical equipment (C27) and manufacturing of machinery and equipment n.e.c. (C28) sectors accounted for the highest share. But the highest tempo of GVA growth was noted in manufacturing of chemicals and chemical products (C20).

4. RETURN ON EQUITY BY TECHNOLOGICAL INTENSITY

To provide a wider picture of enterprises' reaction to the effects of the financial crisis, several profitability ratios were analysed.

How did the financial crisis influence the return on equity ratio (ROE) of enterprises?

In 2017 in the manufacturing sector, the highest level of **return on equity ratio** (ROE) was noted in Austrian companies (18.2%), and also in Czech (13.7%) and French (13.0%) companies.

The most profitable companies in the *high tech* sector in 2017 were located in Slovakia (21.0% in 2013), France (15.4%), Croatia (14.8%) and Austria (13.5%). In the majority of analysed countries, enterprises of *medium-high* technologies also achieved high returns on equity (in Austria 19.3%, in France 15.5%, in Portugal 15.4%, and in Spain 14.3%).

In the entire analysed period, the ROE ratio was fluctuating significantly, especially during the financial crisis of 2008-2009. This phenomenon concerned both the entire population of companies and the disaggregation into particular sectors of R&D intensity.

In 2009, compared to the pre-crisis year of 2007, the highest decrease in ROE in the manufacturing sector was recorded in in Germany (by 14.8 p.p.), Slovakia (by 12.3 p.p), and in Spain (by 9.9 p.p.).

Despite the financial crises, in two of the analysed countries (Slovakia and Poland) the ROE in the *high tech* industry was not only lower, but slightly increased in 2009 compared to 2007. On the other hand, the highest fall in this ratio was noted in Portugal (by 36.4 p.p), the Czech Republic (by 13.7 p.p) and Austria (by 8.9 p.p).

Since 2010, ROE indicators in the manufacturing sector have improved in all the countries, but they have not reached the value from before the crisis.

Analysing the ROE in the *high tech* industries, it can be stated that in 2016 in all the countries (except Austria, Belgium, Poland, Portugal and Spain) it was higher than in the *pre-crisis* year of 2007. When it comes to *medium-high* technologies, the ROE was higher than before the crisis in Spain, France and Portugal.

It can be concluded that companies in *high tech* industries have adapted to the *post-crisis* market requirements more easily and have largely helped national economies to offset the losses caused by the crisis. (See chart 19).

CHART 19 | RETURN ON EQUITY 2005-2017 (%)

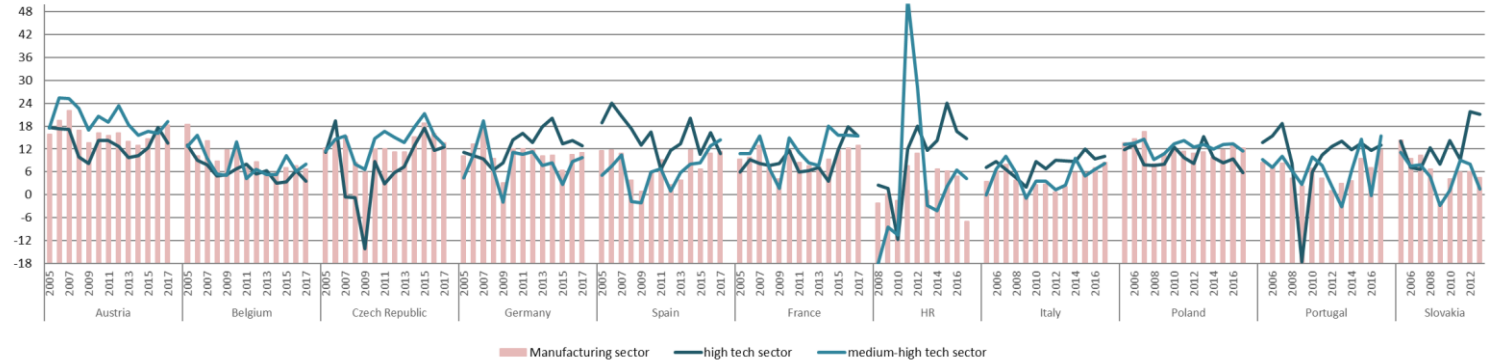
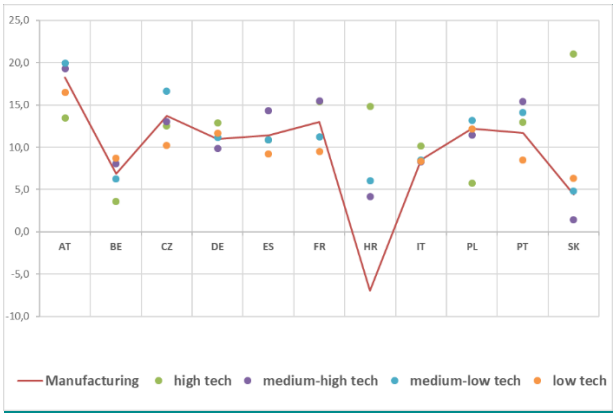
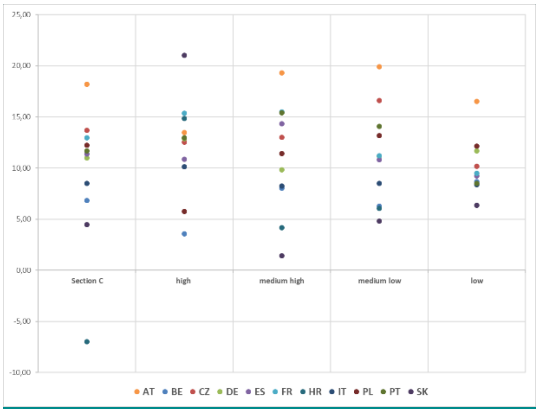


CHART 20 | RETURN ON EQUITY (ROE), 2017 (%)

By country



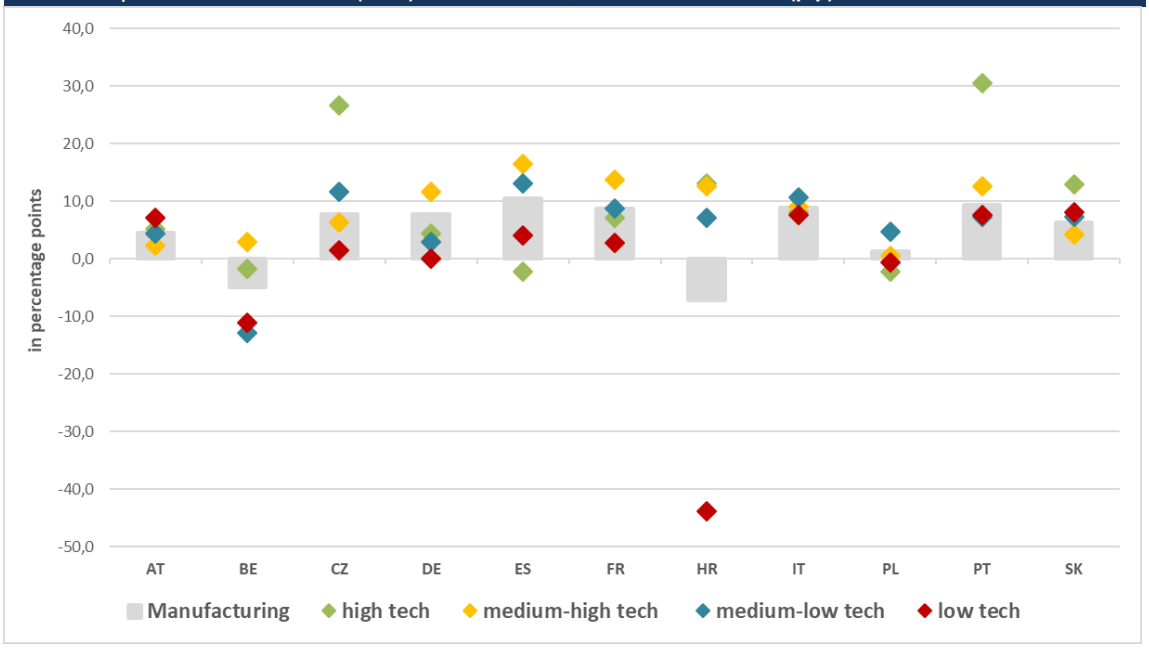
By technological intensity



In the majority of analysed countries, in 2017 the return on equity (ROE) in the *high* and *medium-high* sectors was higher than in manufacturing.

Among *high tech* intensity companies, the lowest ROE was noted in Belgium, and it was lower than for the entire manufacturing sector (except for Croatia). A similar phenomenon occurred in Austria, the Czech Republic, Poland and Spain. In other countries, the ROE in *high tech* enterprises was higher than in section C. (See chart 20).

CHART 21 | RETURN ON EQUITY (ROE) BY COUNTRY, variation 2009-2017 (p.p)

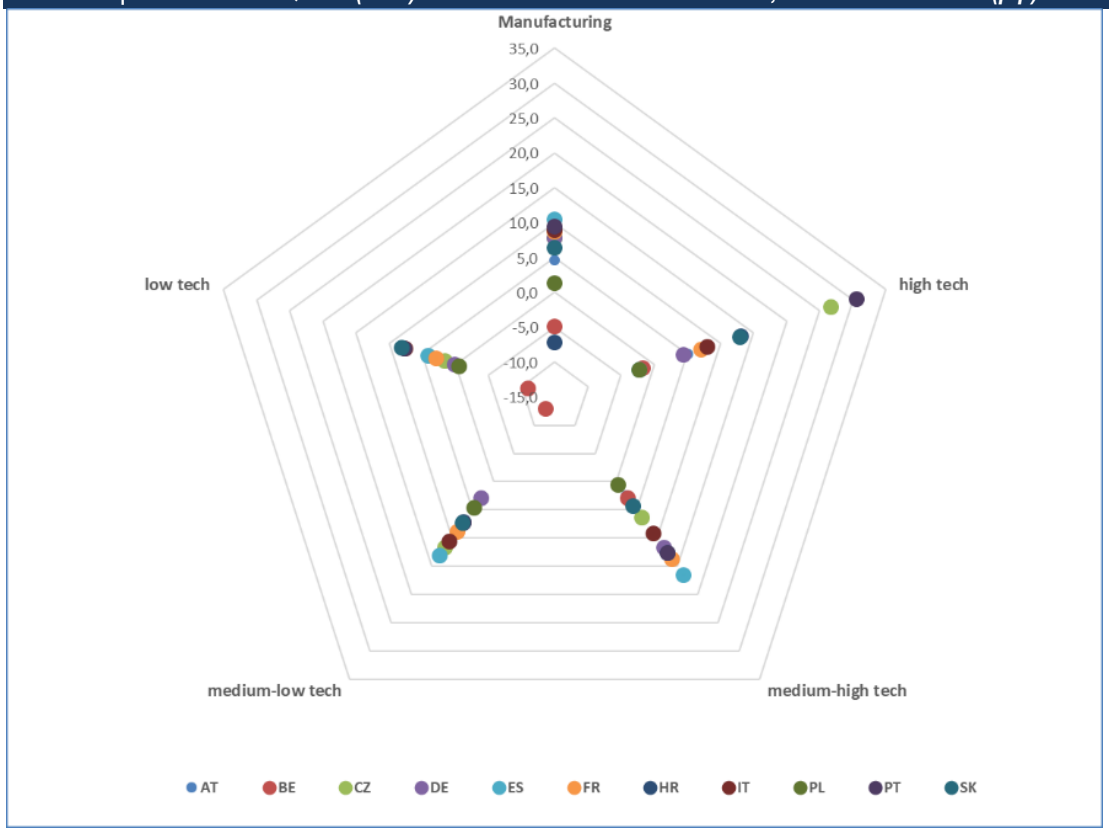


Compared to the crisis years of 2008-2009, in 2017, in all countries, except Belgium and Croatia, there was an increase in the ROE ratio in manufacturing sector. This was due to relatively high increases in this ratio in *high tech* enterprises (the highest growth was in Portugal, the Czech Republic, Croatia and Slovakia).

A significant increase in the ROE was also noted in the companies of *medium-high* R&D intensity – the highest was in Spain, France, and Portugal and Croatia (see chart 21 and chart 22).

This shows a real positive impact of profitability in these sectors on the development of the manufacturing sector.

CHART 22 | RETURN ON EQUITY (ROE) BY TECHNOLOGICAL INTENSITY, variation 2009-2017 (p.p)



5. FINANCIAL RATIOS BY TECHNOLOGICAL INTENSITY

To assess firms profitability in different technological groups, two further ratios were analysed:

- **EBITDA over net turnover,** which presents the earnings before interest, taxes, depreciation and amortization generated by the unit (1 EUR) of revenues. The ratio is defined as follows:

$$EBITDA\ over\ net\ turnover = \frac{EBITDA}{Net\ turnover}$$

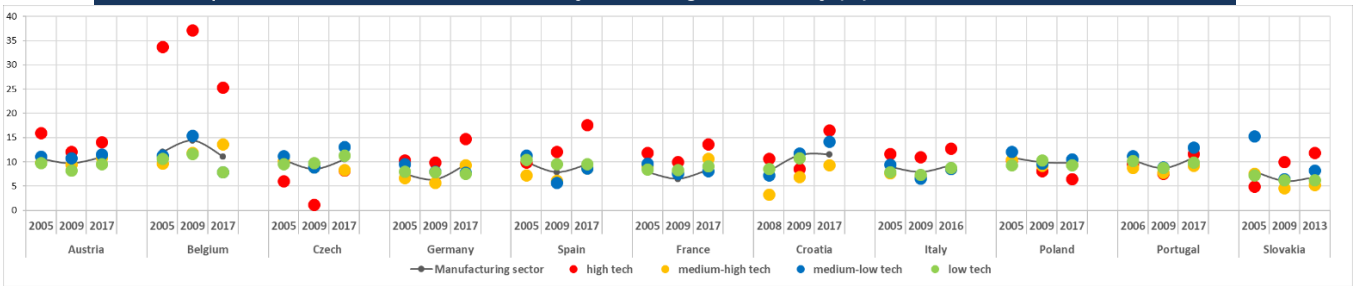
The analysis shows that in 2017, the highest profitability in the manufacturing sector was achieved by Croatian (11.6%), Belgian (11.1%), Austrian (11.0%), and Portuguese (10.9%) entities. In the entire period, the *high tech* sector was more profitable than other technological groups, and more profitable than the manufacturing sector enterprises as a whole (except for Poland and the Czech Republic). The results show

that there is significant heterogeneity regarding profitability in particular countries and in particular technological intensity levels. (See chart 23).

Analysis of this ratio for *high tech* enterprises in time shows that its highest value was noted in Belgium, although in 2017 it was lower than in 2005 (a decrease from 33.8% to 25.3% in 2017). In contrast, Spain achieved its highest increase: from 9.9% to 17.6% in 2017.

For other R&D intensity groups, no significant differences were observed, both in time and in comparison among countries. In the *medium-high tech* firms, Belgium also had the highest profitability rate.

CHART 23 | EBITDA OVER NET TURNOVER, by technological intensity (%)



- **Net operating profit over total assets,** which indicates the value of profit achieved with the use of assets owned, that is, it measures the effectiveness of resource management. This ratio is calculated as follows:

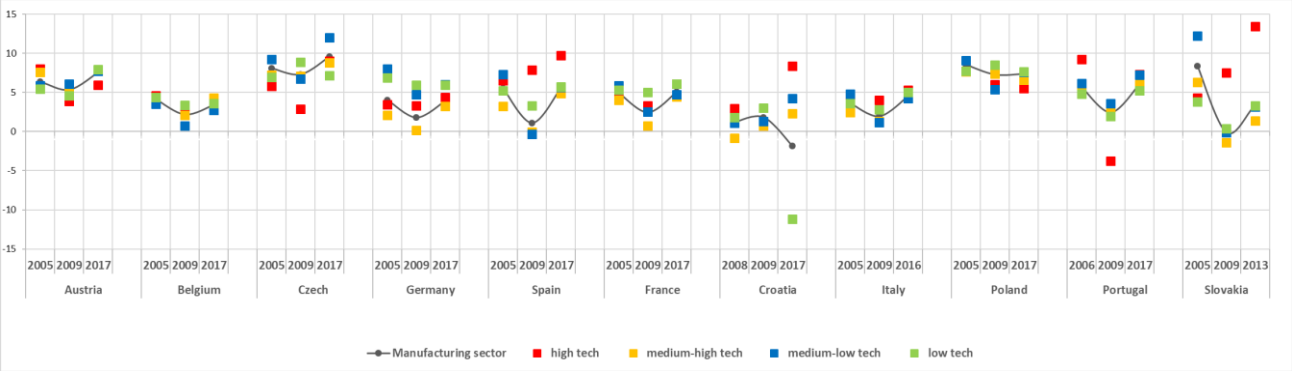
$$Net\ operating\ profit\ over\ total\ assest = \frac{Net\ operating\ profit}{Total\ balance\ sheet}$$

In the crisis year of 2009, in the *high tech* industries, only Portuguese enterprises suffered losses. In comparison with 2005, this ratio was lower in all countries except Slovakia and Spain.

In 2017, compared to 2005, after the crisis 6 out of 11 analysed countries made up for the losses and the level of profitability of assets was higher than before 2009.

A fall in profitability of *medium-high* companies was noted in all analysed countries in 2009. In 2017, their profitability was higher in comparison to 2005 in the majority of countries, whereas a decrease was recorded in Slovakia, and only a slight decrease was observed in Poland and Belgium. Slovak enterprises were most affected by the crisis in 2009. Their profitability was negative and in 2013 they did not achieve the level of profitability from before the crisis. In Belgian and Polish companies, profitability was also lower than in 2005. (See chart 24).

CHART 24 | NET OPERATING PROFIT OVER TOTAL ASSETS (%)



Current financial assets are a way to maintain operating and investment activities. During the crisis, they are also an alternative source of short-term loans, which reduces the risk related to the liquidity of enterprises.

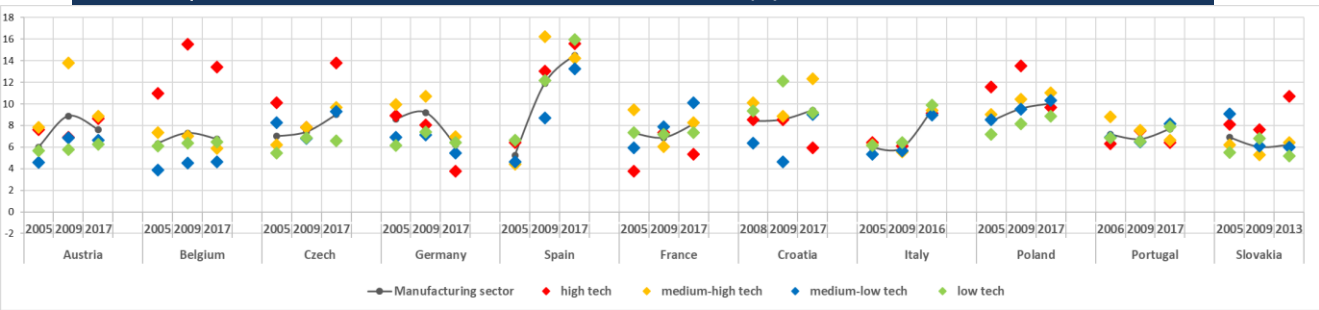
The **liquidity ratio** is defined as following:

$$Other\ financial\ assets\ and\ cash\ and\ bank\ over\ total\ balance\ sheet = \frac{Other\ financial\ assets\ and\ cash\ and\ bank}{Total\ balance\ sheet}$$

In the manufacturing sector, the lowest values of this ratio in 2017 were observed in Germany (6.2%) and Slovakia (6.0% in 2013), which may indicate a better commitment of financial resources. The highest liquidity was recorded in Spain (14.5%), which is mainly the effect of the continued high liquidity of *high* and *medium-high tech* firms as well as the growing value of this indicator in the *medium-low* and *low tech* sectors. A similar phenomenon occurred in Poland, where the value of this ratio was 10.0%. (See chart 25).

High values of this ratio may indicate a less effective commitment of cash.

CHART 25 | LIQUIDITY RATIO BY TECHNOLOGICAL INTENSITY, (%)



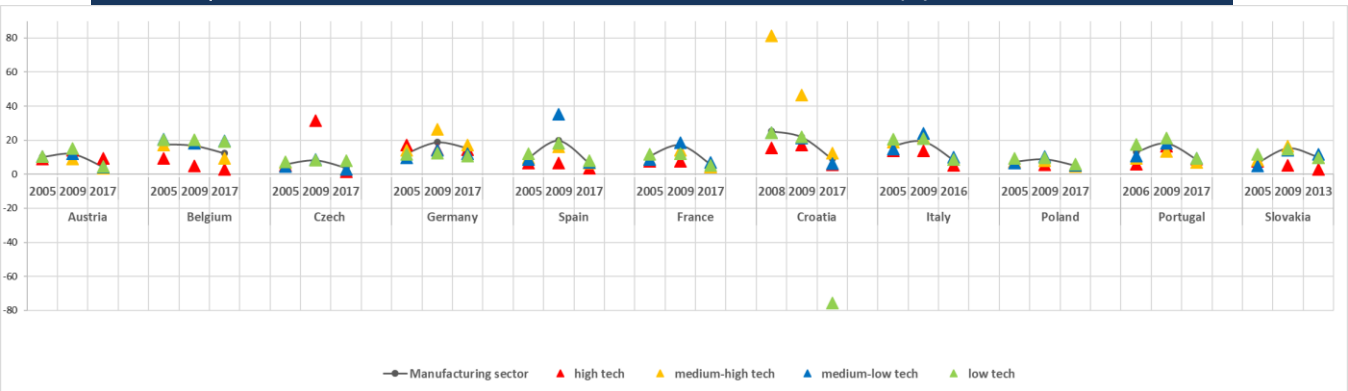
In order to asses financial stability, a **fragility ratio** was analysed, which is defined as:

$$Financial\ fragility\ = \frac{interests\ on\ finacial\ debts}{EBITDA}$$

This indicator shows the so-called financial pressure, which means the percentage of profit that is interest on debt.

In the manufacturing sector in all countries during the financial crisis of 2008-2009, this ratio was markedly higher. However, it should be borne in mind that the increase in debt servicing costs was influenced not only by its real value but also by interest rates increases.

CHART 26 | FINANCIAL FRAGILITY RATIO BY TECHNOLOGICAL INTENSITY, (%)



During the *post-crisis* period, this indicator showed a downward trend in all countries, except for Germany - where in 2015 there was a significant increase (to 26.3%)[11] and at the end of 2017 it reached the level of 15.4%. This rate was also relatively high in Belgium (12.5%). The Czech Republic (3.8%), Austria (4.5%), and Poland (5.2%) were characterized by the lowest values of this ratio in the whole analysed period. (See chart 26).

In 2017, the highest values of this indicator were observed in the *high tech* industries in Germany, Austria and Portugal – they reached the level of 14.5%, 9.2% and 9.1%, respectively. In all countries (except for Austria, Germany, Poland and Portugal), the financial stability indicator in the *high tech* sector was lower compared to the *medium-high, medium-low* and *low tech* industries. There were also lower ratios in the manufacturing sector as a whole (except for Germany, Austria and Portugal) .

This may indicate that the *high tech* sector companies were less exposed to the risk resulting from external financing sources.

FINAL CONCLUSIONS

- While the share of *high* and *medium-high* companies differed among countries in the analysed period, in 2017 compared to 2005 in all countries the gross value added generated by these enterprises increased.
- In all countries during the global crisis of 2008-2009, declines or deceleration of production in the manufacturing sector were recorded. In 2017, there was an increase in gross value added compared to the *pre-crisis* period.

[11] *One reason for this (rising expenditure in Germany) may be an interest-related increase in pension liabilities.*

- In the *post-crisis* year 2010, the gross value added in *high tech* firms was clearly higher than in 2006. Since then, its growth has been increasing and remained above the *pre-crisis* level. This indicates the large both adaptive and developing possibilities of *high* technologically advanced firms.
- The sustained increase in *high* and *medium-high* sectors of technological intensity was the main driver of the economic growth in the manufacturing sector after the global downturn.
- Companies of *high tech* industries have adapted to post-crisis market requirements more easily and have largely helped national economies to offset the losses caused by the crisis.
- Analysis shows that only one division – manufacture of basic pharmaceutical products and preparations (C21) has not noted any decrease of gross value added during the period of financial crisis in all the analyzed countries.
- In the entire analyzed period, the return on equity ratio was fluctuating significantly, especially during the financial crisis of 2008-2009. This phenomenon concerned both the entire population of companies and the disaggregation into particular sectors of R&D intensity.
- Performance based on analysis of ratios points to differences between R&D intensity through the 2005-2017 period, with *high* and *medium-high* R&D intensity sectors performing better in several economic and financial indicators.
- Companies in the *high tech* sector were less exposed to the risk resulting from external financing sources.

ANNEX

Gross value added index, 2005=100

Variable	BACH codes
Gross value added (GVA)	Gross value added

The gross value added index is a chain index obtained from variable samples. The first step is to obtain a year-to-year ratio for each sample:

$$gva_{\,2006/2005} = \frac{gva_{2006}}{gva_{2005}}$$

$$gva_{2007/2006} = \frac{gva_{2007}}{gva_{2006}}$$

$$(\cdots)$$

$$gva_{2017/2016} = \frac{gva_{2017}}{gva_{2016}}$$

The chain index for each year is obtained by multiplying the current and previous ratios:

$$gva\ index_{2006,2005=100} = gva_{\,2006/2005}$$

$$gva\ index_{2007,2005=100} = gva_{\,2006/2005} \times gva_{\,2007/2006}$$

$$(\cdots)$$

$$gva\ index_{2017,2005=100} = gva_{\,2006/2005} \times gva_{\,2007/2006} \cdots \times gva_{2017/2016}$$

TABLE A | *WEIGHT OF MANUFACTURING SECTOR IN PARTICULAR COUNTRIES IN TERMS OF ASSETS, TURNOVER, GROSS VALUE ADDED, NUMBER OF FIRMS AND NUMBER OF EMPLOYEES*

		Share of manufacturing in total %												
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
AUSTRIA	Total assets	19.2%	18.1%	17.4%	16.5%	16.0%	15.8%	17.1%	16.4%	16.6%	15.5%	17.3%	17.1%	15.9%
	Turnover	27.1%	27.7%	27.1%	27.6%	28.0%	26.5%	27.9%	26.9%	26.6%	25.4%	27.9%	28.3%	26.0%
	Gross value added	27.3%	28.3%	28.2%	29.0%	28.1%	27.9%	28.1%	27.8%	27.7%	27.1%	27.8%	27.8%	26.3%
	Number of companies	13.7%	13.8%	13.9%	14.0%	13.6%	13.2%	12.9%	12.6%	12.4%	12.0%	11.8%	12.1%	11.9%
	Number of employees	24.8%	25.4%	25.6%	27.0%	27.3%	26.0%	25.7%	25.8%	25.5%	25.0%	25.6%	25.4%	24.1%
BELGIUM	Total assets	31.4%	31.4%	30.8%	29.3%	28.3%	29.1%	27.7%	27.6%	26.8%	25.7%	28.5%	27.9%	27.8%
	Turnover	27.3%	27.6%	28.6%	27.6%	25.2%	26.3%	26.3%	26.7%	26.3%	25.7%	25.7%	25.2%	25.9%
	Gross value added	32.1%	32.4%	30.3%	28.3%	27.8%	28.1%	26.6%	26.8%	27.0%	26.8%	27.0%	28.1%	27.8%
	Number of companies	7.8%	7.6%	7.3%	7.1%	6.8%	6.7%	6.4%	6.2%	6.1%	6.0%	5.9%	5.8%	5.7%
	Number of employees	28.9%	28.5%	27.6%	26.5%	26.5%	24.7%	24.0%	23.8%	24.0%	22.8%	22.3%	22.6%	21.9%
CZECH REPUBLI	Total assets	35.1%	34.2%	34.3%	33.3%	30.6%	30.2%	30.6%	30.9%	32.1%	32.6%	30.9%	21.9%	20.9%
	Turnover	40.6%	39.2%	38.7%	37.8%	34.8%	36.3%	36.9%	37.9%	38.4%	40.0%	37.9%	26.1%	22.9%
	Gross value added	41.8%	40.8%	40.9%	40.5%	36.4%	39.1%	40.2%	42.5%	43.3%	45.5%	42.6%	29.0%	26.9%
	Number of companies	29.3%	28.0%	27.2%	26.4%	27.6%	26.9%	26.8%	24.7%	24.7%	23.7%	24.5%	21.4%	20.6%
	Number of employees	44.2%	43.1%	43.1%	43.8%	42.1%	42.5%	43.0%	44.3%	44.6%	44.4%	42.1%	31.7%	30.5%
GERMANY	Total assets	44.2%	44.5%	43.7%	43.2%	42.9%	42.8%	42.4%	44.3%	44.7%	44.4%	43.8%	43.0%	46.1%
	Turnover	47.7%	45.4%	46.4%	44.9%	41.1%	41.8%	41.9%	41.2%	41.0%	41.9%	41.2%	40.6%	43.3%
	Gross value added	48.4%	47.9%	47.7%	46.4%	43.6%	45.7%	46.3%	45.1%	44.5%	45.0%	42.6%	42.8%	47.1%
	Number of companies	26.0%	26.2%	26.4%	25.3%	24.5%	24.4%	24.0%	23.8%	23.2%	22.8%	22.3%	23.2%	23.9%
	Number of employees	.	.	.	.	.	.	.	.	.	.	.	.	.
DENMARK	Total assets	19.5%	18.1%	18.1%	18.9%	18.6%	17.7%	17.7%	17.1%	17.2%	17.1%	15.7%	15.6%	.
	Turnover	22.4%	22.7%	22.7%	22.5%	22.5%	22.5%	23.1%	23.5%	23.6%	23.8%	23.9%	24.2%	.
	Gross value added	17.9%	18.1%	18.9%	17.6%	17.4%	17.2%	16.7%	15.7%	16.1%	16.0%	18.9%	18.5%	.
	Number of companies	9.8%	9.2%	8.6%	8.3%	8.1%	7.9%	7.8%	7.6%	7.4%	7.2%	7.0%	6.9%	.
	Number of employees	29.4%	28.9%	28.1%	28.4%	27.8%	27.7%	28.1%	28.4%	27.6%	27.8%	21.2%	24.3%	.
SPAIN	Total assets	22.8%	22.4%	21.6%	22.3%	21.4%	21.4%	21.0%	21.0%	19.3%	19.2%	18.9%	18.7%	19.3%
	Turnover	28.4%	29.0%	28.9%	28.7%	25.7%	27.3%	28.4%	29.8%	29.5%	28.9%	28.8%	28.0%	28.6%
	Gross value added	26.1%	25.6%	25.3%	23.7%	21.5%	22.4%	22.6%	22.8%	22.6%	23.0%	24.4%	23.8%	23.9%
	Number of companies	14.6%	14.6%	13.7%	13.8%	13.1%	11.5%	11.4%	11.3%	11.2%	10.9%	11.1%	10.7%	10.5%
	Number of employees	22.7%	22.6%	21.6%	20.6%	19.7%	19.2%	19.2%	19.4%	19.1%	19.0%	19.3%	18.8%	18.3%
FRANCE	Total assets	31.3%	29.5%	28.7%	28.2%	26.0%	25.7%	24.7%	25.6%	25.6%	24.3%	24.2%	24.0%	23.2%
	Turnover	31.7%	30.7%	30.4%	30.1%	27.3%	27.6%	27.7%	27.3%	27.0%	27.4%	26.9%	26.5%	26.5%
	Gross value added	31.8%	29.7%	28.9%	28.8%	26.6%	27.4%	26.4%	25.9%	26.1%	25.4%	26.0%	26.0%	25.7%
	Number of companies	20.0%	19.1%	18.1%	17.5%	16.9%	16.2%	15.6%	15.7%	15.9%	15.7%	15.4%	15.0%	14.7%
	Number of employees	30.4%	28.6%	26.8%	26.4%	25.9%	25.1%	24.6%	24.2%	24.0%	23.4%	23.1%	22.6%	22.2%
ITALY	Total assets	36.2%	35.3%	34.3%	35.3%	31.7%	32.8%	32.6%	32.1%	32.2%	32.5%	33.1%	33.2%	34.0%
	Turnover	39.6%	39.0%	39.2%	39.4%	34.7%	36.1%	36.5%	35.9%	36.0%	36.2%	36.7%	36.9%	37.1%
	Gross value added	42.1%	41.1%	40.9%	40.6%	35.8%	37.7%	37.8%	37.5%	37.8%	37.6%	38.2%	38.2%	38.4%
	Number of companies	23.0%	22.4%	22.0%	21.5%	20.9%	20.7%	20.4%	20.1%	19.9%	19.9%	20.2%	20.4%	19.9%
	Number of employees	41.7%	39.6%	38.4%	37.6%	35.2%	35.5%	35.0%	34.4%	34.3%	34.1%	34.4%	33.9%	32.2%
LUXEMBOURG	Total assets	.	.	.	.	.	.	35.3%	10.2%	8.9%	7.6%	7.8%	6.7%	.
	Turnover	.	.	.	.	.	.	5.7%	8.5%	8.1%	7.7%	5.9%	5.8%	.
	Gross value added	.	.	.	.	.	.	12.1%	12.6%	11.7%	11.2%	10.9%	21.6%	.
	Number of companies	.	.	.	.	.	.	3.5%	3.5%	3.4%	3.5%	3.8%	4.0%	.
	Number of employees	.	.	.	.	.	.	.	.	.	.	.	.	.
POLAND	Total assets	31.6%	32.8%	32.5%	31.7%	31.5%	32.0%	32.0%	31.7%	31.3%	31.4%	31.7%	32.1%	32.3%
	Turnover	36.5%	37.1%	37.3%	35.3%	34.7%	35.8%	37.0%	37.2%	37.1%	37.3%	36.9%	37.1%	37.3%
	Gross value added	37.4%	37.5%	37.5%	34.9%	34.0%	33.7%	34.5%	34.4%	35.1%	35.2%	36.1%	37.0%	36.2%
	Number of companies	30.1%	30.0%	29.9%	27.9%	28.2%	27.8%	27.6%	27.5%	27.0%	27.3%	27.6%	27.3%	27.4%
	Number of employees	39.2%	39.3%	39.1%	36.6%	35.5%	35.7%	35.6%	35.8%	35.8%	36.3%	36.5%	36.7%	36.7%
PORTUGAL	Total assets	28.7%	24.7%	24.0%	23.3%	21.5%	22.8%	23.3%	23.5%	23.7%	23.6%	24.6%	24.5%	24.7%
	Turnover	30.9%	12.0%	11.6%	11.4%	11.2%	10.9%	10.7%	10.6%	10.5%	10.4%	10.3%	10.2%	10.0%
	Gross value added	34.4%	27.0%	26.0%	25.2%	24.3%	23.4%	23.6%	23.9%	24.0%	24.0%	23.9%	23.9%	23.5%
	Number of companies	30.9%	12.0%	11.6%	11.4%	11.2%	10.9%	10.7%	10.6%	10.5%	10.4%	10.3%	10.2%	10.0%
	Number of employees	34.4%	27.0%	26.0%	25.2%	24.3%	23.4%	23.6%	23.9%	24.0%	24.0%	23.9%	23.9%	23.5%
SLOVAKIA	Total assets	31.7%	29.6%	28.3%	26.1%	23.0%	22.6%	23.6%	21.5%	21.0%	.	.	.	.
	Turnover	39.4%	35.8%	37.4%	33.0%	29.3%	31.2%	34.0%	32.4%	31.7%	.	.	.	.
	Gross value added	39.6%	35.9%	35.0%	32.5%	28.5%	30.4%	32.6%	30.7%	31.6%	.	.	.	.
	Number of companies	13.3%	12.2%	11.3%	10.7%	10.2%	9.6%	9.5%	8.6%	8.7%	.	.	.	.
	Number of employees	44.7%	40.4%	40.0%	37.3%	36.0%	34.0%	37.5%	35.9%	33.3%	.	.	.	.

TABLE B | OECD/Eurostat technological intensity classification

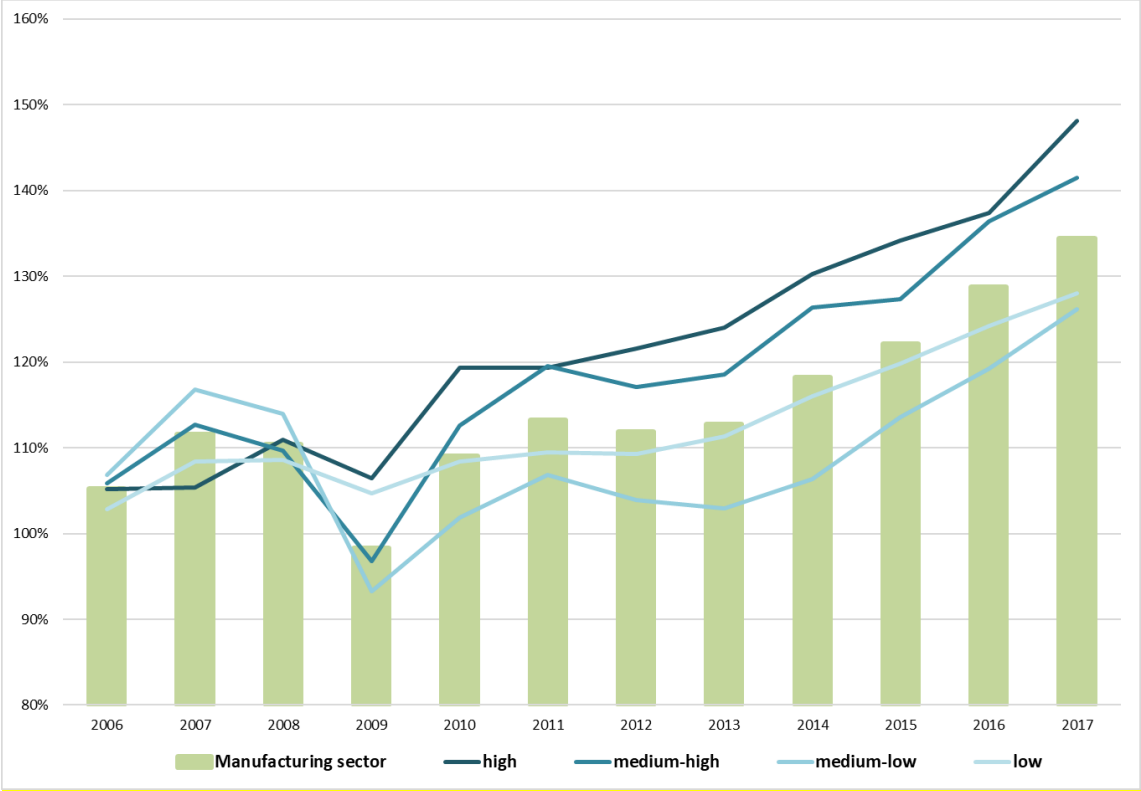
	NACE rev. 2	NACE division description
High technology	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
	26	Manufacture of computer, electronic and optical products
Medium-high technology	20	Manufacture of chemicals and chemical products
	27	Manufacture of electrical equipment
	28	Manufacture of machinery and equipment n.e.c.,
	29	Manufacture of motor vehicles, trailers and semi-trailers
	30	Manufacture of other transport equipment
Medium-low technology	19	Manufacture of coke and refined petroleum products
	22	Manufacture of rubber and plastic products
	23	Manufacture of other non-metallic mineral products
	24	Manufacture of basic metals
	25	Manufacture of fabricated metal products, except machinery
	33	Repair and installation of machinery and equipment
Low technology	10	Manufacture of food products
	11	Manufacture of beverages
	12	Manufacture of tobacco products
	13	Manufacture of textiles
	14	Manufacture of wearing apparel
	15	Manufacture of leather and related products
	16	Manufacture of wood and of products of wood
	17	Manufacture of paper and paper products
	18	Manufacture of printing and reproduction of recorded media
	31	Manufacture of furniture
	32	Other manufacturing

TABLE C | *GROSS VALUE ADDED BY COUNTRIES (INDEX, 2005=100)*

		Growth rate in % (2005 r. =100)											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
AUSTRIA	total	112.9	137.4	150.3	144.9	143.3	151.4	152.8	154.2	162.4	159.8	164.0	169.9
	C	116.9	141.8	159.4	148.9	146.1	155.4	155.4	156.5	160.8	162.4	166.5	163.6
	high	116.4	145.6	159.1	155.6	159.3	181.2	168.0	143.1	157.6	170.8	164.9	194.7
	medium-high	123.9	155.2	180.6	162.0	166.4	193.5	204.2	194.9	224.1	214.1	215.6	211.5
	medium-low	118.1	146.0	162.9	149.4	143.9	147.3	142.7	158.0	146.5	152.0	160.3	152.5
	low	109.4	123.7	136.0	134.9	127.2	124.6	123.0	122.6	120.8	125.7	129.6	125.9
BELGIUM	total	105.8	112.2	116.0	109.1	117.8	121.8	124.1	121.5	126.0	133.9	138.5	144.7
	C	106.6	105.8	102.2	94.5	103.2	100.7	103.7	102.2	105.2	112.6	121.1	125.0
	high	106.1	93.9	99.6	106.6	120.6	109.9	117.8	127.0	127.8	128.6	178.4	166.9
	medium-high	113.7	105.3	98.8	92.8	106.0	97.9	104.7	97.9	100.2	118.5	114.6	127.4
	medium-low	103.6	113.8	107.8	84.4	93.4	97.7	95.2	90.8	95.0	99.6	106.5	111.7
	low	102.2	103.6	101.0	101.6	102.0	102.8	104.9	107.3	110.9	112.2	116.2	116.4
CZECH REPUBLIC	total	121.0	138.2	165.2	148.1	156.1	165.9	148.9	152.1	154.5	116.8	60.3	64.0
	C	118.2	135.4	160.0	129.1	146.3	159.7	151.4	157.7	168.2	119.0	41.8	41.2
	high	136.1	120.8	186.0	129.3	149.7	152.1	146.0	207.1	216.2	94.7	47.9	45.1
	medium-high	120.9	140.7	159.7	136.6	164.4	181.2	177.8	183.6	198.7	154.2	40.0	37.5
	medium-low	119.2	138.4	163.5	114.8	128.9	162.2	131.4	136.5	148.3	117.0	47.1	46.9
	low	109.0	123.3	146.2	132.0	132.5	140.0	130.4	130.4	133.7	81.2	44.2	46.7
GERMANY	total	109.1	114.6	110.3	103.2	110.0	119.2	127.6	127.6	133.0	137.4	139.3	103.4
	C	107.8	113.0	105.7	93.1	103.9	114.1	118.8	117.4	123.6	121.1	123.1	100.5
	high	101.5	99.2	101.3	96.4	108.1	110.4	119.2	123.0	134.1	123.6	113.6	101.9
	medium-high	109.9	118.5	107.0	92.7	109.8	121.5	127.2	124.9	132.7	126.7	137.0	116.5
	medium-low	112.7	123.9	112.8	94.0	93.1	111.6	109.5	110.0	113.2	113.0	101.9	75.7
	low	107.1	108.2	108.5	106.3	100.9	105.9	111.6	109.8	113.1	118.9	114.4	78.4
DENMARK	total	103.3	110.2	115.2	102.8	109.6	117.5	124.6	126.2	132.5	128.3	132.0	.
	C	101.8	114.9	115.8	91.9	89.5	81.1	83.5	47.6	88.6	104.5	103.9	.
	high	118.4	126.8	128.7	65.0	77.3	.	75.1	81.1	86.2	102.8	96.7	.
	medium-high	137.5	161.4	191.8	158.0	162.4	191.2	173.3	11.2	157.0	196.1	199.6	.
	medium-low	113.8	124.6	121.2	97.7	97.1	112.7	113.2	112.1	117.4	119.4	120.3	.
	low	76.2	86.7	76.6	64.6	55.3	30.3	28.9	21.3	42.6	56.0	53.8	.
SPAIN	total	109.3	117.4	108.5	112.4	114.3	114.5	110.4	107.9	107.2	110.5	120.0	129.0
	C	107.4	113.9	98.6	92.8	98.1	99.2	96.8	93.6	94.7	103.4	109.7	118.3
	high	109.4	135.5	106.5	102.3	102.8	101.8	107.6	112.0	121.6	104.7	126.7	129.6
	medium-high	105.1	114.7	107.8	107.5	115.0	119.3	114.4	115.1	123.4	133.8	136.4	145.6
	medium-low	108.4	112.8	90.5	71.8	78.8	77.1	75.1	68.4	65.3	82.6	88.8	96.9
	low	107.9	110.2	98.0	99.6	104.4	106.4	104.0	99.9	97.8	99.3	106.4	116.0
FRANCE	total	105.3	112.5	113.2	109.4	116.0	121.6	123.3	124.3	129.1	132.5	137.6	141.0
	C	98.4	102.2	102.4	91.5	100.0	101.1	100.3	102.0	103.2	108.4	112.3	113.8
	high	92.1	86.5	92.6	88.2	95.9	90.2	91.8	94.8	89.3	101.5	104.1	112.0
	medium-high	98.7	104.1	108.1	90.5	103.4	104.2	100.2	104.9	108.8	116.0	120.4	121.0
	medium-low	99.5	107.6	102.0	88.7	96.6	100.0	99.8	98.0	97.7	101.3	106.0	107.7
	low	99.5	102.4	100.7	98.3	102.4	104.3	104.6	105.3	108.1	110.3	113.6	113.1
CROATIA	total	.	.	.	98.4	95.3	96.3	92.7	91.4	97.2	100.3	106.7	113.6
	C	.	.	.	103.9	108.0	121.9	123.4	102.9	106.6	108.3	109.4	113.9
	high	.	.	.	103.9	108.0	121.9	123.4	102.9	106.6	108.3	109.4	113.9
	medium-high	.	.	.	98.4	114.0	98.3	109.8	105.1	117.4	143.7	138.4	126.5
	medium-low	.	.	.	103.5	107.9	167.6	145.8	81.0	84.1	92.2	101.5	106.1
	low	.	.	.	106.8	113.5	134.3	143.6	127.5	132.1	117.1	113.5	123.8
ITALY	total	110.6	118.9	115.7	112.1	116.7	119.8	113.9	115.8	120.6	124.9	130.1	137.1
	C	107.8	115.4	111.5	95.1	104.3	107.4	101.4	103.9	107.8	113.2	117.9	124.9
	high	109.2	103.9	104.6	97.5	104.2	104.1	95.1	94.6	98.5	101.1	103.1	103.6
	medium-high	110.8	120.8	117.4	98.2	109.7	112.3	107.9	110.8	115.0	121.7	127.	135.0
	medium-low	107.0	116.6	110.9	84.6	94.7	100.2	91.9	93.3	95.0	103.2	107.5	119.9
	low	104.7	111.8	107.8	102.4	108.9	110.8	106.7	111.0	116.7	118.5	123.8	126.1

LUXEMBOURG	total	.	.	.	.	.	.	107.5	122.5	150.5	145.1	129.2	.
	C	.	.	.	.	.	.	112.0	118.1	139.2	130.3	231.1	.
	high	.	.	.	.	.	.	114.1	121.5	151.2	137.2	118.9	.
	medium-high	.	.	.	.	.	.	.	.	.	.	.	.
	medium-low	.	.	.	.	.	.	161.4	143.4	192.5	193.2	184.1	.
	low	.	.	.	.	.	.	104.2	118.8	149.6	129.3	104.6	.
POLAND	total	115.6	138.4	162.6	134.9	152.8	161.3	158.3	163.0	171.4	179.4	183.1	200.0
	C	115.9	139.0	151.5	122.6	137.6	148.7	145.5	153.0	161.3	173.1	181.2	193.8
	high	116.0	129.0	158.0	126.8	160.9	146.2	137.3	158.5	149.0	160.0	153.8	158.2
	medium-high	114.8	136.4	157.5	126.2	142.1	158.6	157.8	167.2	174.2	187.5	189.6	203.0
	medium-low	120.5	150.6	157.4	115.6	136.9	154.1	145.6	147.3	158.2	172.7	188.9	203.4
	low	112.4	131.0	140.0	126.0	131.4	136.1	136.9	146.5	156.1	164.2	171.1	182.4
PORTUGAL	total	.	108.5	110.4	105.8	107.0	101.1	94.5	95.4	99.1	105.2	111.8	120.6
	C	.	105.2	104.0	91.8	98.8	95.2	89.9	91.4	94.6	104.8	110.8	120.7
	high	.	107.8	104.4	81.3	83.4	86.1	83.3	85.4	83.3	90.1	94.7	105.2
	medium-high	.	110.4	108.3	96.2	106.2	104.4	96.8	98.1	104.6	112.5	118.0	129.0
	medium-low	.	103.8	110.2	90.4	99.5	94.7	87.3	86.1	88.8	104.1	112.5	126.7
	low	.	103.9	98.0	92.2	97.1	92.9	89.7	93.1	95.9	103.9	108.7	115.2
SLOVAKIA	total	92.9	119.8	122.4	104.2	117.1	112.6	124.7	121.5	.	.	.	.
	C	84.3	105.9	100.5	75.0	89.9	92.7	96.6	97.1	.	.	.	.
	high	83.8	104.3	127.5	116.2	148.6	135.0	150.8	132.3	.	.	.	.
	medium-high	97.8	128.0	107.0	77.9	97.0	114.1	122.5	130.5	.	.	.	.
	medium-low	72.9	110.7	112.8	76.9	94.1	91.4	90.8	85.7	.	.	.	.
	low	90.4	107.3	103.0	87.2	94.4	91.0	95.2	98.4	.	.	.	.

CHART D | GROSS VALUE ADDED INDEX by technological intensity in 2005-2017, 2005=100 ON SLIDING SAMPLE



** This chart presents data based **on sliding sample** for 10 countries, which delivered data for the whole analysed period of 2005-2017. Data for Denmark, Luxembourg and Slovakia were excluded.*
*** For Germany for 2017 only provisional data are presented.*

TABLE E | *NATIONAL SPECIFICITIES BY COUNTRY*

AUSTRIA (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**16 171 964**	**11 586 212**	**4 236 056**	**390**	**38 633**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	4 703 375	4 178 206	1 422 541	58	10 407
manufacture of computer, electronic and optical products (C26)	11 468 589	7 408 006	2 813 515	332	28 226
medium - high technology	**54 060 685**	**61 465 870**	**18 556 599**	**1 659**	**183 521**
manufacture of chemicals and chemical products (C20)	8 106 689	7 521 113	2 647 659	175	15 900
manufacture of electrical equipment (C27)	11 862 706	11 231 684	3 472 183	277	35 641
manufacture of machinery and equipment n.e.c. (C28)	21 837 289	24 386 880	8 073 231	991	89 838
manufacture of motor vehicles, trailers and semi-trailers (C29)	10 355 877	15 782 171	3 756 644	168	35 951
manufacture of other transport equipment (C30)	1 898 124	2 544 022	606 882	48	6 191
medium - low technology	**43 701 171**	**56 281 499**	**17 246 301**	**3 349**	**196 557**
menufacture of coke and refined petroleum products (C19)	3 691 023	5 758 950	634 301	9	1 223
manufacture of rubber and plastic products (C22)	5 596 249	8 279 742	2 473 949	462	31 770
manufacture of other non-metallic mineral products (C23)	6 916 444	7 429 897	2 729 382	609	34 259
manufacture of basic metals (C24)	10 065 175	14 350 075	3 682 383	192	33 029
manufacture of fabricated metal products, except machinery and equipment (C25)	15 205 393	17 613 140	6 740 123	1 724	84 817
repair and installation of machinery and equipment (C33)	2 226 887	2 849 695	986 163	353	11 459
low technology	**30 007 971**	**44 505 033**	**12 130 044**	**3 611**	**164 037**
manufacture of food products (C10)	8 834 144	15 651 104	3 364 715	996	51 652
manufacture of beverages (C11)	3 286 409	3 548 472	1 269 753	213	9 863
manufacture of tobacco products (C12)					
manufacture of textiles (C13)	1 208 062	1 522 390	510 449	183	8 429
manufacture of wearing apparel (C14)	679 909	804 536	233 797	94	5 145
manufacture of leather and related products (C15)	544 398	906 137	223 861	40	3 655
manufacture of wood and of products of wood (C16)	5 641 768	8 429 708	2 197 078	634	30 127
manufacture of paper and paper products (C17)	4 445 547	5 267 640	1 544 475	110	12 748
manufacture of printing and reproduction of recorded media (C18)	1 512 961	2 268 177	818 068	359	10 429
manufacture of furniture (C31)	1 653 604	2 760 728	1 128 258	619	19 852
other manufacturing (C32)	2 201 169	3 346 141	839 590	363	12 137
Section C	**143 941 791**	**173 838 614**	**52 169 000**	**9 009**	**582 748**
Sector Zc	**904 142 961**	**668 596 789**	**198 282 725**	**75 617**	**2 414 145**

BELGIUM (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**54 476 278**	**24 098 498**	**9 594 917**	**574**	**37 456**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	47 817 450	19 680 013	7 893 422	163	25 133
manufacture of computer, electronic and optical products (C26)	6 658 828	4 418 485	1 701 495	411	12 323
medium - high technology	**120 261 360**	**65 589 020**	**17 032 793**	**2 638**	**117 848**
manufacture of chemicals and chemical products (C20)	83 044 729	32 365 721	8 436 127	631	41 399
manufacture of electrical equipment (C27)	3 334 813	3 209 564	1 020 455	454	11 449
manufacture of machinery and equipment n.e.c. (C28)	19 086 990	12 209 739	3 770 907	1 162	31 863
manufacture of motor vehicles, trailers and semi-trailers (C29)	7 871 905	14 870 233	2 434 967	243	26 155
manufacture of other transport equipment (C30)	6 922 923	2 933 763	1 370 337	148	6 982
medium - low technology	**115 063 614**	**77 839 296**	**14 270 863**	**7 598**	**135 131**
menufacture of coke and refined petroleum products (C19)	56 258 194	24 993 198	1 628 296	16	3 837
manufacture of rubber and plastic products (C22)	8 560 225	8 119 745	2 170 263	673	21 036
manufacture of other non-metallic mineral products (C23)	13 717 347	8 072 006	2 292 288	1 170	24 092
manufacture of basic metals (C24)	21 585 165	19 343 499	3 258 879	214	23 833
manufacture of fabricated metal products, except machinery and equipment (C25)	12 767 759	13 930 911	4 018 752	4 331	51 257
repair and installation of machinery and equipment (C33)	2 174 924	3 379 937	902 385	1 194	11 076
low technology	**83 683 005**	**75 665 012**	**13 668 483**	**11 018**	**145 333**
manufacture of food products (C10)	31 030 041	41 181 559	6 181 791	3 625	68 021
manufacture of beverages (C11)	17 682 938	5 047 734	1 562 795	352	9 457
manufacture of tobacco products (C12)	2 581 003	4 400 244	186 600	28	1 157
manufacture of textiles (C13)	7 622 730	4 863 876	1 240 412	839	16 179
manufacture of wearing apparel (C14)	1 427 424	1 953 340	297 008	488	3 348
manufacture of leather and related products (C15)	529 618	544 006	112 755	66	1 008
manufacture of wood and of products of wood (C16)	5 920 877	3 296 695	806 176	946	8 901
manufacture of paper and paper products (C17)	9 267 432	5 815 846	1 147 216	218	10 755
manufacture of printing and reproduction of recorded media (C18)	2 330 167	2 688 641	907 004	2 192	10 436
manufacture of furniture (C31)	1 890 115	2 181 156	573 136	1 118	8 891
other manufacturing (C32)	3 400 660	3 691 915	653 590	1 146	7 180
Section C	**373 484 257**	**243 191 826**	**54 567 056**	**21 828**	**435 768**
Sector Zc	**1 343 062 569**	**939 447 421**	**196 608 449**	**382 828**	**1 986 980**

CZECH REPUBLIC (2014)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**7 061 221**	**11 580 622**	**1 819 994**	**426**	**44 720**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	1 766 082	1 290 338	411 185	72	9 202
manufacture of computer, electronic and optical products (C26)	5 295 139	10 290 284	1 408 809	354	35 518
medium - high technology	**41 422 166**	**61 051 769**	**13 953 882**	**1 437**	**347 055**
manufacture of chemicals and chemical products (C20)	5 168 017	6 476 516	1 332 632	214	25 066
manufacture of electrical equipment (C27)	5 518 516	8 855 139	2 348 359	282	74 112
manufacture of machinery and equipment n.e.c. (C28)	8 785 622	9 655 024	2 841 853	486	91 846
manufacture of motor vehicles, trailers and semi-trailers (C29)	19 424 211	34 004 466	6 730 666	339	135 377
manufacture of other transport equipment (C30)	2 525 800	2 060 624	700 372	116	20 654
medium - low technology	**24 017 880**	**32 184 710**	**7 944 315**	**1 677**	**252 256**
menufacture of coke and refined petroleum products (C19)	991 969	4 936 377	120 855	16	1 886
manufacture of rubber and plastic products (C22)	6 111 499	8 805 372	2 594 698	354	59 049
manufacture of other non-metallic mineral products (C23)	5 029 316	4 399 489	1 503 468	361	44 982
manufacture of basic metals (C24)	6 336 740	7 048 679	1 489 058	187	42 230
manufacture of fabricated metal products, except machinery and equipment (C25)	5 548 356	6 994 793	2 236 236	525	77 391
repair and installation of machinery and equipment (C33)	-	-	-	234	26 718
low technology	**17 542 899**	**21 288 090**	**4 965 091**	**2 196**	**181 010**
manufacture of food products (C10)	5 877 677	9 584 018	1 724 152	610	65 778
manufacture of beverages (C11)	3 281 346	2 247 799	693 663	124	11 930
manufacture of tobacco products (C12)	-	-	-	-	-
manufacture of textiles (C13)	1 642 433	1 779 145	472 982	187	19 625
manufacture of wearing apparel (C14)	161 013	246 560	97 631	181	8 403
manufacture of leather and related products (C15)	121 726	183 382	62 237	99	4 277
manufacture of wood and of products of wood (C16)	1 197 339	1 819 151	379 877	188	12 765
manufacture of paper and paper products (C17)	2 029 673	2 255 123	524 770	150	13 980
manufacture of printing and reproduction of recorded media (C18)	823 674	841 921	268 522	205	10 104
manufacture of furniture (C31)	554 845	745 062	204 993	211	11 043
other manufacturing (C32)	1 853 173	1 585 929	536 264	241	23 105
Section C	**90 044 166**	**126 105 191**	**28 683 282**	**5 736**	**825 041**
Sector Zc	**283 805 256**	**322 448 440**	**65 296 770**	**24 186**	**1 859 016**

CZECH REPUBLIC (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**1 398 593**	**1 806 953**	**379 937**	**243**	**10 625**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	158 444	100 200	44 533	25	1 038
manufacture of computer, electronic and optical products (C26)	1 240 149	1 706 753	335 404	218	9 587
medium - high technology	**8 015 489**	**12 259 298**	**2 634 318**	**616**	**82 723**
manufacture of chemicals and chemical products (C20)	1 735 193	1 957 833	449 511	106	7 412
manufacture of electrical equipment (C27)	893 929	1 160 473	377 357	135	15 722
manufacture of machinery and equipment n.e.c. (C28)	2 029 695	2 380 331	746 728	189	24 199
manufacture of motor vehicles, trailers and semi-trailers (C29)	2 974 231	6 454 376	951 364	134	31 532
manufacture of other transport equipment (C30)	382 441	306 285	109 358	52	3 858
medium - low technology	**6 820 984**	**8 411 523**	**2 513 219**	**810**	**71 770**
menufacture of coke and refined petroleum products (C19)	826	826	161	3	11
manufacture of rubber and plastic products (C22)	1 604 514	2 411 702	740 123	163	19 271
manufacture of other non-metallic mineral products (C23)	1 622 909	1 538 758	545 970	172	14 388
manufacture of basic metals (C24)	534 280	934 946	134 667	72	3 912
manufacture of fabricated metal products, except machinery and equipment (C25)	1 985 735	2 333 373	703 517	257	23 338
repair and installation of machinery and equipment (C33)	1 072 720	1 191 918	388 781	143	10 850
low technology	**6 500 016**	**6 931 478**	**1 735 398**	**992**	**60 354**
manufacture of food products (C10)	2 037 130	2 838 215	560 482	244	18 553
manufacture of beverages (C11)	1 412 292	451 224	142 097	52	2 802
manufacture of tobacco products (C12)	-	-	-	-	-
manufacture of textiles (C13)	561 695	597 792	142 466	79	4 738
manufacture of wearing apparel (C14)	145 782	203 128	75 703	97	4 872
manufacture of leather and related products (C15)	45 512	75 847	32 690	50	2 033
manufacture of wood and of products of wood (C16)	331 383	571 662	115 569	83	3 897
manufacture of paper and paper products (C17)	480 609	486 818	144 859	69	4 419
manufacture of printing and reproduction of recorded media (C18)	269 238	349 205	109 119	99	4 093
manufacture of furniture (C31)	334 975	469 517	131 605	97	5 020
other manufacturing (C32)	881 400	888 070	280 808	122	9 927
Section C	**22 735 082**	**29 409 252**	**7 262 872**	**2 661**	**225 472**
Sector Zc	**108 874 923**	**128 154 448**	**27 045 364**	**12 918**	**738 629**

GERMANY (2017) - provisional data	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies
high - technology	**181 787 580**	**99 676 795**	**35 398 306**	**631**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	58 934 783	31 256 884	12 465 111	75
manufacture of computer, electronic and optical products (C26)	122 852 797	68 419 911	22 933 195	556
medium - high technology	**754 368 707**	**654 715 934**	**136 970 794**	**2 427**
manufacture of chemicals and chemical products (C20)	148 009 538	84 334 687	21 403 438	351
manufacture of electrical equipment (C27)	27 737 841	34 661 745	8 182 803	333
manufacture of machinery and equipment n.e.c. (C28)	73 765 214	83 853 128	26 413 577	1 414
manufacture of motor vehicles, trailers and semi-trailers (C29)	472 979 644	418 155 862	72 295 164	252
manufacture of other transport equipment (C30)	31 876 470	33 710 512	8 675 812	77
medium - low technology	**79 702 444**	**114 951 234**	**29 767 200**	**2 343**
menufacture of coke and refined petroleum products (C19)	-	-	-	-
manufacture of rubber and plastic products (C22)	15 912 090	24 164 158	6 822 639	503
manufacture of other non-metallic mineral products (C23)	11 248 243	11 568 366	3 860 658	255
manufacture of basic metals (C24)	30 305 472	48 919 271	8 846 690	245
manufacture of fabricated metal products, except machinery and equipment (C25)	21 589 393	29 238 614	9 765 803	1 185
repair and installation of machinery and equipment (C33)	647 246	1 060 825	471 410	155
low technology	**64 713 841**	**97 041 184**	**20 033 976**	**1 439**
manufacture of food products (C10)	25 285 054	50 717 953	6 936 634	414
manufacture of beverages (C11)	6 157 930	6 681 839	2 030 962	82
manufacture of tobacco products (C12)	-	-	-	-
manufacture of textiles (C13)	2 611 852	3 978 011	1 000 454	111
manufacture of wearing apparel (C14)	305 995	558 281	132 035	37
manufacture of leather and related products (C15)	-	-	-	-
manufacture of wood and of products of wood (C16)	3 025 917	5 321 660	1 289 151	170
manufacture of paper and paper products (C17)	8 959 803	11 239 632	2 550 525	105
manufacture of printing and reproduction of recorded media (C18)	3 732 216	4 000 563	1 196 161	173
manufacture of furniture (C31)	1 393 046	3 030 548	829 469	101
other manufacturing (C32)	13 242 028	11 512 697	4 068 585	246
Section C	**1 080 572 572**	**966 385 147**	**222 170 276**	**6 840**
Sector Zc	**2 397 888 892**	**2 337 240 474**	**483 415 334**	**28 884**

DENMARK (2016)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**29 796 238**	**17 655 507**	**2 248 679**	**680**	**37 713**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	24 350 630	13 429 185	-	119	24 626
manufacture of computer, electronic and optical products (C26)	5 445 608	4 226 322	2 248 679	561	13 087
medium - high technology	**35 274 649**	**32 157 832**	**10 719 064**	**2 496**	**73 641**
manufacture of chemicals and chemical products (C20)	8 521 221	5 250 587	2 822 681	233	11 382
manufacture of electrical equipment (C27)	2 081 114	2 892 774	1 464 381	459	9 002
manufacture of machinery and equipment n.e.c. (C28)	23 529 579	22 381 625	5 820 858	1 544	48 267
manufacture of motor vehicles, trailers and semi-trailers (C29)	644 925	1 002 149	611 144	134	3 030
manufacture of other transport equipment (C30)	497 810	630 697	-	126	1 960
medium - low technology	**12 740 014**	**19 890 580**	**8 129 369**	**3 838**	**59 600**
menufacture of coke and refined petroleum products (C19)	-	4 113 369	-	9	-
manufacture of rubber and plastic products (C22)	2 597 006	2 967 762	2 055 473	466	10 602
manufacture of other non-metallic mineral products (C23)	3 140 838	3 220 052	1 574 678	302	11 534
manufacture of basic metals (C24)	1 038 876	1 276 131	-	116	4 277
manufacture of fabricated metal products, except machinery and equipment (C25)	4 688 085	6 444 174	4 499 218	1 881	26 331
repair and installation of machinery and equipment (C33)	1 275 209	1 869 092	-	1 064	6 856
low technology	**28 614 921**	**37 556 454**	**6 524 580**	**3 834**	**67 422**
manufacture of food products (C10)	17 703 285	23 719 934	4 025 083	935	38 443
manufacture of beverages (C11)	-	1 376 395	-	180	2 687
manufacture of tobacco products (C12)	-	-	-	11	-
manufacture of textiles (C13)	943 879	844 415	-	233	2 424
manufacture of wearing apparel (C14)	404 968	412 757	-	232	923
manufacture of leather and related products (C15)	28 951	30 076	-	42	63
manufacture of wood and of products of wood (C16)	932 105	1 500 335	1 002 285	333	5 865
manufacture of paper and paper products (C17)	1 296 859	1 300 761	-	124	4 095
manufacture of printing and reproduction of recorded media (C18)	689 298	878 315	-	514	3 917
manufacture of furniture (C31)	1 589 664	2 202 505	1 497 212	431	-
other manufacturing (C32)	5 025 912	5 290 961	-	799	9 005
Section C	**106 425 822**	**107 260 373**	**27 621 692**	**10 848**	**238 376**
Sector Zc	**783 071 417**	**443 176 218**	**246 062 450**	**157 417**	**1 153 075**

SPAIN (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**15 739 863**	**12 348 536**	**4 467 640**	**963**	**43 721**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	13 771 499	10 297 717	3 813 927	201	32 263
manufacture of computer, electronic and optical products (C26)	1 968 364	2 050 819	653 713	762	11 458
medium - high technology	**102 619 018**	**122 847 552**	**24 606 185**	**7 128**	**309 477**
manufacture of chemicals and chemical products (C20)	23 374 490	25 183 322	5 497 191	1 758	50 566
manufacture of electrical equipment (C27)	10 270 350	10 765 841	2 568 352	935	37 750
manufacture of machinery and equipment n.e.c. (C28)	13 113 851	13 462 417	4 451 887	3 346	69 629
manufacture of motor vehicles, trailers and semi-trailers (C29)	30 383 661	62 369 219	9 227 287	749	113 607
manufacture of other transport equipment (C30)	25 476 666	11 066 753	2 861 468	340	37 925
medium - low technology	**88 792 923**	**104 337 279**	**20 837 636**	**20 951**	**305 399**
menufacture of coke and refined petroleum products (C19)	23 230 624	38 351 728	3 359 943	16	8 739
manufacture of rubber and plastic products (C22)	11 395 939	14 745 738	3 919 070	2 060	56 615
manufacture of other non-metallic mineral products (C23)	16 560 560	8 760 249	2 619 084	2 855	43 846
manufacture of basic metals (C24)	15 587 750	20 724 325	3 339 695	1 067	43 182
manufacture of fabricated metal products, except machinery and equipment (C25)	17 441 635	17 665 398	5 967 753	10 406	118 330
repair and installation of machinery and equipment (C33)	4 576 415	4 089 841	1 632 091	4 547	34 687
low technology	**88 723 309**	**91 008 835**	**20 808 414**	**27 404**	**391 626**
manufacture of food products (C10)	38 421 341	48 895 890	8 809 760	7 296	170 380
manufacture of beverages (C11)	14 271 158	11 128 385	2 844 429	1 949	26 403
manufacture of tobacco products (C12)	3 994 545	526 932	243 921	8	885
manufacture of textiles (C13)	3 258 200	3 445 061	948 099	1 904	23 225
manufacture of wearing apparel (C14)	1 913 357	1 951 905	629 296	1 602	18 035
manufacture of leather and related products (C15)	1 935 886	2 882 619	788 224	1 647	23 543
manufacture of wood and of products of wood (C16)	4 123 967	4 026 293	1 111 037	2 948	26 113
manufacture of paper and paper products (C17)	11 184 183	8 776 249	2 195 254	754	24 651
manufacture of printing and reproduction of recorded media (C18)	3 852 962	3 583 783	1 344 828	4 385	31 762
manufacture of furniture (C31)	3 013 698	3 154 609	998 191	2 962	27 024
other manufacturing (C32)	2 754 012	2 637 109	895 375	1 949	19 605
Section C	**295 875 113**	**330 542 202**	**70 719 875**	**56 446**	**1 050 223**
Sector Zc	**1 535 447 628**	**1 157 475 770**	**296 096 723**	**535 455**	**5 728 341**

FRANCE (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**89 817 727**	**74 947 456**	**21 868 362**	**1 269**	**195 072**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	42 646 486	39 340 364	11 353 888	275	78 707
manufacture of computer, electronic and optical products (C26)	47 171 241	35 607 092	10 514 474	994	116 365
medium - high technology	**329 200 103**	**321 487 353**	**68 462 172**	**5 516**	**707 680**
manufacture of chemicals and chemical products (C20)	99 429 242	74 332 136	18 440 896	1 264	136 603
manufacture of electrical equipment (C27)	47 268 927	31 076 386	8 143 247	881	103 235
manufacture of machinery and equipment n.e.c. (C28)	39 450 174	48 697 899	12 884 665	2 377	168 382
manufacture of motor vehicles, trailers and semi-trailers (C29)	71 751 168	127 020 448	17 372 187	722	199 012
manufacture of other transport equipment (C30)	71 300 592	40 360 484	11 621 177	272	100 448
medium - low technology	**163 374 736**	**201 148 681**	**48 728 204**	**13 940**	**679 727**
menufacture of coke and refined petroleum products (C19)	13 239 991	38 435 294	2 199 209	38	9 643
manufacture of rubber and plastic products (C22)	35 175 983	36 648 081	10 409 199	1 967	147 779
manufacture of other non-metallic mineral products (C23)	29 666 529	24 907 268	6 848 583	1 461	91 479
manufacture of basic metals (C24)	28 062 135	31 963 622	6 202 480	527	81 376
manufacture of fabricated metal products, except machinery and equipment (C25)	38 014 549	46 936 623	15 248 472	6 684	238 179
repair and installation of machinery and equipment (C33)	19 215 549	22 257 793	7 820 261	3 263	111 271
low technology	**172 739 731**	**219 164 784**	**48 110 815**	**13 236**	**681 300**
manufacture of food products (C10)	73 768 693	118 332 205	20 828 383	5 131	330 161
manufacture of beverages (C11)	37 024 116	27 251 166	6 293 156	994	40 424
manufacture of tobacco products (C12)	3 437 272	946 118	460 231	6	2 132
manufacture of textiles (C13)	5 209 604	6 735 127	1 857 697	778	30 877
manufacture of wearing apparel (C14)	7 780 209	8 429 290	2 232 197	561	30 261
manufacture of leather and related products (C15)	3 628 518	6 367 405	2 049 008	254	24 301
manufacture of wood and of products of wood (C16)	8 546 307	10 106 701	2 558 500	1 626	45 341
manufacture of paper and paper products (C17)	12 477 062	17 127 730	4 018 603	712	56 234
manufacture of printing and reproduction of recorded media (C18)	6 126 819	7 019 922	2 505 768	1 401	41 154
manufacture of furniture (C31)	4 057 235	6 068 965	1 744 182	723	32 269
other manufacturing (C32)	10 683 896	10 780 155	3 563 090	1 050	48 146
Section C	**755 132 297**	**816 748 274**	**187 169 553**	**33 961**	**2 263 779**
Sector Zc	**3 260 295 594**	**3 078 319 282**	**728 751 872**	**230 404**	**10 212 728**

CROATIA (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**2 055 103**	**1 608 682**	**518 748**	**527**	**11 752**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	1 544 202	786 572	305 426	49	4 930
manufacture of computer, electronic and optical products (C26)	510 901	822 110	213 322	478	6 822
medium - high technology	**4 409 421**	**3 612 333**	**949 987**	**1 642**	**40 423**
manufacture of chemicals and chemical products (C20)	996 146	763 908	153 336	334	5 850
manufacture of electrical equipment (C27)	1 105 871	1 158 102	284 066	303	9 224
manufacture of machinery and equipment n.e.c. (C28)	931 260	900 359	285 156	580	11 634
manufacture of motor vehicles, trailers and semi-trailers (C29)	393 193	333 301	75 100	99	4 620
manufacture of other transport equipment (C30)	982 951	456 663	152 329	326	9 095
medium - low technology	**8 365 870**	**6 993 597**	**1 938 014**	**4 396**	**69 620**
menufacture of coke and refined petroleum products (C19)	2 614 468	2 371 671	481 808	18	4 556
manufacture of rubber and plastic products (C22)	701 829	729 959	154 956	695	8 428
manufacture of other non-metallic mineral products (C23)	1 686 975	1 087 948	338 797	668	10 584
manufacture of basic metals (C24)	632 255	399 064	93 342	102	4 689
manufacture of fabricated metal products, except machinery and equipment (C25)	2 332 108	2 049 891	724 825	2 006	34 552
repair and installation of machinery and equipment (C33)	398 235	355 064	144 286	907	6 811
low technology	**9 702 547**	**8 654 161**	**1 899 546**	**6 189**	**111 873**
manufacture of food products (C10)	4 565 799	4 193 844	692 595	1 660	42 357
manufacture of beverages (C11)	939 312	780 299	274 531	371	4 925
manufacture of tobacco products (C12)	332 837	134 692	55 066	3	718
manufacture of textiles (C13)	228 578	186 598	48 527	268	3 456
manufacture of wearing apparel (C14)	543 060	534 597	142 417	523	13 393
manufacture of leather and related products (C15)	319 614	441 823	82 483	141	10 244
manufacture of wood and of products of wood (C16)	1 168 199	953 093	201 954	1 045	14 852
manufacture of paper and paper products (C17)	453 518	450 749	99 489	182	3 895
manufacture of printing and reproduction of recorded media (C18)	450 631	347 036	128 538	798	5 992
manufacture of furniture (C31)	568 386	502 595	132 063	718	9 573
other manufacturing (C32)	132 613	128 835	41 883	480	2 468
Section C	**24 532 941**	**20 868 773**	**5 306 295**	**12 754**	**233 668**
Sector Zc	**119 099 705**	**82 128 146**	**21 054 265**	**113 549**	**880 045**

ITALY (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**64 601 285**	**52 166 534**	**15 602 249**	**3 892**	**155 496**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	38 748 843	29 468 816	8 240 212	463	59 660
manufacture of computer, electronic and optical products (C26)	25 852 442	22 697 718	7 362 037	3 429	95 836
medium - high technology	**316 924 052**	**303 935 750**	**69 652 164**	**21 989**	**860 358**
manufacture of chemicals and chemical products (C20)	49 126 926	47 786 265	10 365 589	2 905	98 266
manufacture of electrical equipment (C27)	38 276 305	37 673 650	9 285 644	3 944	130 211
manufacture of machinery and equipment n.e.c. (C28)	144 956 934	123 614 743	33 352 337	12 098	414 011
manufacture of motor vehicles, trailers and semi-trailers (C29)	59 314 750	77 157 487	11 769 487	1 477	153 891
manufacture of other transport equipment (C30)	25 249 137	17 703 605	4 879 107	1 565	63 979
medium - low technology	**267 346 036**	**263 094 642**	**59 504 673**	**40 894**	**849 801**
menufacture of coke and refined petroleum products (C19)	20 776 161	47 415 502	2 358 347	145	12 853
manufacture of rubber and plastic products (C22)	42 458 053	42 207 972	10 660 995	5 121	147 819
manufacture of other non-metallic mineral products (C23)	44 073 991	25 748 708	7 598 755	5 432	110 970
manufacture of basic metals (C24)	42 921 749	51 373 713	7 854 592	1 429	86 032
manufacture of fabricated metal products, except machinery and equipment (C25)	104 724 933	83 702 311	26 749 522	22 699	418 649
repair and installation of machinery and equipment (C33)	12 391 149	12 646 436	4 282 462	6 068	73 478
low technology	**262 615 649**	**259 988 461**	**56 176 363**	**41 311**	**855 893**
manufacture of food products (C10)	87 198 813	96 739 152	16 064 412	9 368	226 635
manufacture of beverages (C11)	20 635 931	14 928 071	3 268 098	1 251	26 118
manufacture of tobacco products (C12)	983 384	493 462	172 153	16	789
manufacture of textiles (C13)	20 788 916	18 812 199	5 000 783	3 744	83 693
manufacture of wearing apparel (C14)	33 845 205	29 547 494	7 079 421	5 277	113 970
manufacture of leather and related products (C15)	20 221 543	24 666 341	5 619 363	4 169	96 109
manufacture of wood and of products of wood (C16)	10 082 463	8 462 314	2 075 705	3 359	39 911
manufacture of paper and paper products (C17)	21 891 464	22 031 240	4 720 391	1 793	63 746
manufacture of printing and reproduction of recorded media (C18)	9 811 011	7 678 048	2 587 298	3 795	45 963
manufacture of furniture (C31)	17 688 322	18 670 944	4 658 371	4 583	85 030
other manufacturing (C32)	19 468 597	17 959 196	4 930 368	3 956	73 929
Section C	**911 487 022**	**879 185 387**	**200 935 449**	**108 086**	**2 721 548**
Sector Zc	**2 679 877 995**	**2 367 984 372**	**523 636 289**	**543 031**	**8 443 880**

LUXEMBOURG (2016)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies
high - technology	-	-	-	**5**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	-	-	-	1
manufacture of computer, electronic and optical products (C26)	-	-	-	4
medium - high technology	**816 735**	**1 059 330**	**336 996**	**20**
manufacture of chemicals and chemical products (C20)	152 732	251 185	49 309	6
manufacture of electrical equipment (C27)	-	-	-	-
manufacture of machinery and equipment n.e.c. (C28)	664 003	808 145	287 687	12
manufacture of motor vehicles, trailers and semi-trailers (C29)	-	-	-	2
manufacture of other transport equipment (C30)	-	-	-	-
medium - low technology	**7 095 896**	**3 010 223**	**746 436**	**55**
menufacture of coke and refined petroleum products (C19)	-	-	-	-
manufacture of rubber and plastic products (C22)	394 394	475 407	157 251	8
manufacture of other non-metallic mineral products (C23)	1 509 160	660 104	146 251	9
manufacture of basic metals (C24)	4 995 958	1 573 175	339 361	11
manufacture of fabricated metal products, except machinery and equipment (C25)	196 384	301 537	103 573	22
repair and installation of machinery and equipment (C33)	-	-	-	5
low technology	**258 454**	**382 260**	**95 992**	**39**
manufacture of food products (C10)	223 371	342 788	81 875	17
manufacture of beverages (C11)	-	-	-	3
manufacture of tobacco products (C12)	-	-	-	-
manufacture of textiles (C13)	-	-	-	3
manufacture of wearing apparel (C14)	-	-	-	1
manufacture of leather and related products (C15)	-	-	-	-
manufacture of wood and of products of wood (C16)	-	-	-	1
manufacture of paper and paper products (C17)	-	-	-	1
manufacture of printing and reproduction of recorded media (C18)	35 083	39 472	14 117	7
manufacture of furniture (C31)	-	-	-	1
other manufacturing (C32)	-	-	-	5
Section C	**8 171 085**	**4 451 813**	**1 179 424**	**119**
Sector Zc	**211 556 286**	**95 867 404**	**13 783 632**	**3 004**

POLAND (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**10 798 876**	**13 135 824**	**2 331 833**	**421**	**75 645**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	5 398 530	3 918 075	956 432	93	21 083
manufacture of computer, electronic and optical products (C26)	5 400 346	9 217 749	1 375 401	328	54 562
medium - high technology	**65 140 664**	**81 888 845**	**16 416 937**	**2 580**	**523 301**
manufacture of chemicals and chemical products (C20)	13 946 313	14 925 565	3 160 517	497	70 854
manufacture of electrical equipment (C27)	10 624 839	14 816 282	2 573 543	499	104 976
manufacture of machinery and equipment n.e.c. (C28)	10 053 115	10 645 699	3 082 057	975	111 832
manufacture of motor vehicles, trailers and semi-trailers (C29)	24 329 454	36 803 394	6 337 537	447	195 887
manufacture of other transport equipment (C30)	6 186 943	4 697 905	1 263 283	162	39 752
medium - low technology	**80 696 059**	**100 862 475**	**20 449 881**	**5 687**	**662 597**
menufacture of coke and refined petroleum products (C19)	17 692 710	30 132 751	2 349 698	45	13 352
manufacture of rubber and plastic products (C22)	16 452 602	20 247 546	4 926 990	1 391	179 314
manufacture of other non-metallic mineral products (C23)	13 629 756	11 954 035	3 510 743	728	104 375
manufacture of basic metals (C24)	11 060 300	13 042 537	2 112 874	281	62 196
manufacture of fabricated metal products, except machinery and equipment (C25)	17 335 851	20 031 227	5 630 578	2 424	228 051
repair and installation of machinery and equipment (C33)	4 524 840	5 454 379	1 918 998	818	75 309
low technology	**70 098 996**	**95 678 642**	**18 827 961**	**5 730**	**757 631**
manufacture of food products (C10)	32 560 433	50 389 744	8 148 651	2 187	317 989
manufacture of beverages (C11)	5 861 988	7 112 530	1 197 162	127	20 634
manufacture of tobacco products (C12)	2 195 374	3 221 879	445 354	11	6 747
manufacture of textiles (C13)	2 084 061	2 841 977	689 088	353	39 890
manufacture of wearing apparel (C14)	857 544	1 131 134	461 292	421	37 142
manufacture of leather and related products (C15)	694 389	983 659	246 452	134	14 331
manufacture of wood and of products of wood (C16)	6 704 119	6 725 831	1 576 674	740	71 562
manufacture of paper and paper products (C17)	8 515 051	8 989 233	2 135 617	434	51 704
manufacture of printing and reproduction of recorded media (C18)	2 268 867	2 646 573	876 074	366	31 381
manufacture of furniture (C31)	6 039 508	9 145 601	2 365 099	663	134 175
other manufacturing (C32)	2 317 662	2 490 481	686 498	294	32 076
Section C	**226 734 595**	**291 565 786**	**58 026 612**	**14 418**	**2 019 174**
Sector Zc	**702 739 851**	**781 857 799**	**160 106 391**	**52 708**	**5 507 138**

PORTUGAL (2017)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**3 442 155**	**3 602 016**	**900 089**	**434**	**17 710**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	1 961 856	1 274 856	505 520	158	7 420
manufacture of computer, electronic and optical products (C26)	1 480 299	2 327 160	394 569	276	10 290
medium - high technology	**16 302 799**	**19 715 856**	**3 997 991**	**3 255**	**98 009**
manufacture of chemicals and chemical products (C20)	4 315 125	4 377 488	839 286	737	12 594
manufacture of electrical equipment (C27)	2 571 706	3 157 229	742 208	555	19 349
manufacture of machinery and equipment n.e.c. (C28)	3 448 774	2 712 575	890 177	1 269	23 406
manufacture of motor vehicles, trailers and semi-trailers (C29)	5 022 005	8 671 326	1 340 265	477	37 292
manufacture of other transport equipment (C30)	945 189	797 238	186 055	217	5 368
medium - low technology	**28 386 426**	**27 766 013**	**7 114 292**	**13 423**	**178 598**
menufacture of coke and refined petroleum products (C19)	4 894 645	7 651 839	871 235	25	1 810
manufacture of rubber and plastic products (C22)	4 155 239	4 551 707	1 330 453	1 009	27 766
manufacture of other non-metallic mineral products (C23)	7 346 755	4 210 887	1 431 533	2 527	39 179
manufacture of basic metals (C24)	2 089 999	2 913 032	489 008	283	8 323
manufacture of fabricated metal products, except machinery and equipment (C25)	8 114 580	6 732 096	2 329 132	7 121	81 340
repair and installation of machinery and equipment (C33)	1 785 208	1 706 452	662 931	2 458	20 180
low technology	**39 412 694**	**38 196 894**	**9 459 055**	**25 633**	**384 590**
manufacture of food products (C10)	10 811 969	13 179 708	2 370 378	6 186	90 681
manufacture of beverages (C11)	6 445 344	3 350 474	877 745	1 221	14 500
manufacture of tobacco products (C12)	215 181	154 630	59 763	6	653
manufacture of textiles (C13)	4 515 830	3 705 283	1 090 168	2 046	44 929
manufacture of wearing apparel (C14)	2 881 538	3 869 466	1 281 479	4 646	87 507
manufacture of leather and related products (C15)	2 179 753	2 846 665	858 743	2 367	51 758
manufacture of wood and of products of wood (C16)	3 776 458	3 124 145	744 442	2 780	26 110
manufacture of paper and paper products (C17)	4 110 557	4 166 221	870 209	410	11 239
manufacture of printing and reproduction of recorded media (C18)	1 441 036	1 002 302	417 323	1 930	14 411
manufacture of furniture (C31)	1 992 788	1 738 856	560 646	2 507	29 255
other manufacturing (C32)	1 042 240	1 059 144	328 159	1 534	13 547
Section C	**87 544 074**	**89 280 779**	**21 471 427**	**42 745**	**678 907**
Sector Zc	**517 740 287**	**352 746 480**	**86 778 559**	**428 497**	**2 886 811**

SLOVAKIA (2013)	Total assets (in EUR thousands)	Turnover (in EUR thousands)	Gross value added (in EUR thousands)	Number of companies	Number of employees
high - technology	**1 278 034**	**2 031 828**	**441 889**	**397**	**15 500**
manufacture of basic pharmaceutical products and pharmaceutcal preparations (C21)	316 273	297 994	131 270	26	2 500
manufacture of computer, electronic and optical products (C26)	961 761	1 733 834	310 619	371	13 000
medium - high technology	**10 704 031**	**19 409 831**	**2 898 050**	**1 708**	**112 400**
manufacture of chemicals and chemical products (C20)	1 446 926	1 793 450	262 848	231	9 400
manufacture of electrical equipment (C27)	1 392 140	2 118 409	456 535	529	23 000
manufacture of machinery and equipment n.e.c. (C28)	2 171 851	2 672 763	642 033	698	29 000
manufacture of motor vehicles, trailers and semi-trailers (C29)	5 541 405	12 701 831	1 495 940	203	48 000
manufacture of other transport equipment (C30)	151 709	123 378	40 694	47	3 000
medium - low technology	**8 701 553**	**10 190 541**	**2 271 408**	**4 772**	**104 210**
menufacture of coke and refined petroleum products (C19)	51 612	30 004	8 617	13	210
manufacture of rubber and plastic products (C22)	1 786 422	2 486 807	531 265	656	26 000
manufacture of other non-metallic mineral products (C23)	1 708 505	1 442 928	399 170	542	15 000
manufacture of basic metals (C24)	1 236 056	1 256 407	193 727	91	11 000
manufacture of fabricated metal products, except machinery and equipment (C25)	2 828 086	3 875 277	829 262	2 716	39 000
repair and installation of machinery and equipment (C33)	1 090 872	1 099 118	309 367	754	13 000
low technology	**6 155 658**	**8 118 796**	**1 588 724**	**4 776**	**96 700**
manufacture of food products (C10)	2 007 651	3 174 528	477 117	859	27 000
manufacture of beverages (C11)	780 948	742 560	173 308	245	5 400
manufacture of tobacco products (C12)	-	-	-	3	-
manufacture of textiles (C13)	205 276	272 880	74 107	234	5 300
manufacture of wearing apparel (C14)	231 760	345 816	116 180	524	14 000
manufacture of leather and related products (C15)	285 949	574 732	141 148	133	9 500
manufacture of wood and of products of wood (C16)	877 317	792 351	120 148	1 395	9 300
manufacture of paper and paper products (C17)	684 657	868 855	144 535	147	5 700
manufacture of printing and reproduction of recorded media (C18)	374 407	381 837	84 883	518	4 900
manufacture of furniture (C31)	468 320	667 398	168 547	326	11 000
other manufacturing (C32)	239 373	297 839	88 751	392	4 600
Section C	**26 839 276**	**39 750 996**	**7 200 071**	**11 653**	**328 810**
Sector Zc	**128 051 707**	**125 289 258**	**22 793 702**	**133 359**	**990 000**