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Bank for the Accounts of Companies Harmonized

OUTLOOK
4

European non-financial corporations from 2007 to 2014

(October 2016)



Abstract

*This **Outlook #4**¹, entitled “European non-financial corporations from 2007 to 2014” uses BACH data to analyse recent developments in ten European economies: Austria, Belgium, Czech Republic, France, Germany, Italy, Netherlands, Poland, Portugal and Spain. This Outlook focuses on the 2008-2009 financial crisis’ immediate impact over non-financial corporations’ profitability and funding structure, as well as on the evolution in the subsequent periods, distinguishing short-term from long-term effects. A breakdown by sector, size and the distribution quartiles for some ratios are provided in order to better illustrate the diversity of situations among each country.*

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

¹ The Outlook #4 was prepared by the team of the Central Balance-Sheet Data Office of Portugal.

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 11 countries: Austria, Belgium, Czech Republic, France, Germany, Italy, Netherlands, 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.

HOW TO CONTACT BACH WG?

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Executive summary

Outlook #4 especially analyses the effects of the 2008-2009 financial crisis over non-financial corporations in several European countries, also providing a breakdown by sector, size and the distribution quartiles for some ratios. Results suggest that the impact of the financial crisis and enterprise's performances on subsequent periods presented similar patterns across the analysed European countries, despite the role of national and sectoral factors over the economic and financial indicators. The effects over enterprises' activity seem to have been temporary, as turnover recovered to its level prior to the financial crisis in most cases. Nevertheless, effects over profitability persisted throughout the period under analysis, due to a combination of several elements: the reduction of the net margin, the decrease in the asset turnover ratio's level and the increase of equity in the funding structure. Credit restrictions triggered by the financial crisis also had an impact on enterprises' funding structure, as they resorted less to the credit institutions and more to bonds and similar obligations and other financial debt.

INTRODUCTION

The 2008-2009 financial crisis had a strong impact across Europe. Though the first effects were felt mainly by the banking system, the restrictions it triggered in the credit markets rapidly extended this crisis to the entire economy. In the subsequent periods, a sovereign debt crisis arisen across Europe, as the yields of government bonds increased, culminating in the Economic Adjustment Programmes for Greece and Ireland, in 2010, and Portugal in 2011.

In this Outlook, BACH² data from 2007-2014 is analysed in order to understand the impact of the 2008-2009 financial crisis over European non-financial corporations. Whenever relevant, the 2007-2014 period is divided into three sub periods: 2007-2009, which covers the financial crisis; 2009-2011, corresponding to the rise of the sovereign debt crisis until the Economic Adjustment Programmes applied in some countries; and 2011-2014, which covers the stabilization period afterwards.

To provide a wider picture of enterprises' reaction to the effects of the financial crisis, several economic and financial indicators were used, covering profitability, as well as elements in which it can be decomposed, funding structure and financial pressure. Additional information on quartiles for some ratios are occasionally presented in this context.

A breakdown by sector of economic activity is provided in this analysis to understand which activities performed better or worse during this period. Through this analysis, it is possible to identify that the 2008-2009 financial crisis did not have the same impact on all activities. Further, a brief reference to the main developments by size class is also made, in order to understand if the overall conclusions apply to small, medium-sized and large enterprises as well.

This Outlook is divided in two main parts.

In the first part, *Activity and profitability*, the turnover and return on equity developments are analysed, by country and sector. Additional ratios, such as the net margin and asset turnover, are provided to better understand its evolution.

The second part, *Balance-sheet structure*, begins with an analysis of the evolution of total assets and of its composition. Afterwards, the funding structure is considered, paying special attention to the amounts owed to credit institutions, as well as to the financial pressure that arises from the interest burden.

A reference to the DuPont decomposition of return on equity is also provided in this Outlook to evaluate the different effects on the profitability during the period under analysis.

² The *Bank for the Accounts of Companies Harmonized* (BACH) is a database that provides comparable aggregated data (both economic and financial) based on the annual accounts of non-financial corporations of the following European countries: Austria, Belgium, Czech Republic, France, Germany, Italy, Netherlands, Poland, Portugal, Spain and Slovakia. All the information presented in this Outlook can be downloaded for free from the [BACH website](#); the methodology used in this Outlook is available in Annex.

Finally, and as a complement of the main conclusions, the results obtained for an analysis of variance (ANOVA) of some economic and financial ratios are further presented.

Data description

Outlook #4 was elaborated with the version of 21st September 2016 of the BACH database, concerning the 2007-2014 period. Both sliding and variable samples were considered. As the sectors of economic activity result from an aggregation of NACE sections, total amounts were obtained from income statement and balance-sheet items for all NACE sections, to be aggregated into the sectors and the key indicators used in this analysis. Holdings and head offices are excluded from this analysis, therefore the values for all enterprises correspond to Zc - Total NACE (without K642 and M701)³. Whenever the quartiles of individual ratios' distributions are provided, the variable sample for all enterprises (Zc) in the most recent year is considered. Annex 1 - Sector of economic activity and Annex 2 – Key indicators and methodology provide further information on the methodology adopted in this Outlook.

Data for Slovakia was not available by the time Outlook #4 was elaborated, therefore it was excluded from the analysis. As for Czech Republic and Netherlands, data is not available for the entire 2007-2014 period. Information concerning these two countries is provided on the charts and tables whenever possible; it is important to notice, however, that the results for Czech Republic and Netherlands are frequently not comparable with the results for the remaining countries, especially concerning cumulated variations for the 2007-2014 period.

Values for non-euro area countries (Poland and Czech Republic) are converted into euros using average exchange rate or the exchange rate as at the end of the year (depending on categories). The changes in the exchange rate influence items from both income statement and balance sheet. Some ratios are influenced by the exchange rate as well. A methodological note and an example are presented in Annex 3 – Converting data into euros from national currencies.

³ Due to rounding errors, values presented in this Outlook for all enterprises may differ from the ones available in BACH database for Zc.

ACTIVITY AND PROFITABILITY

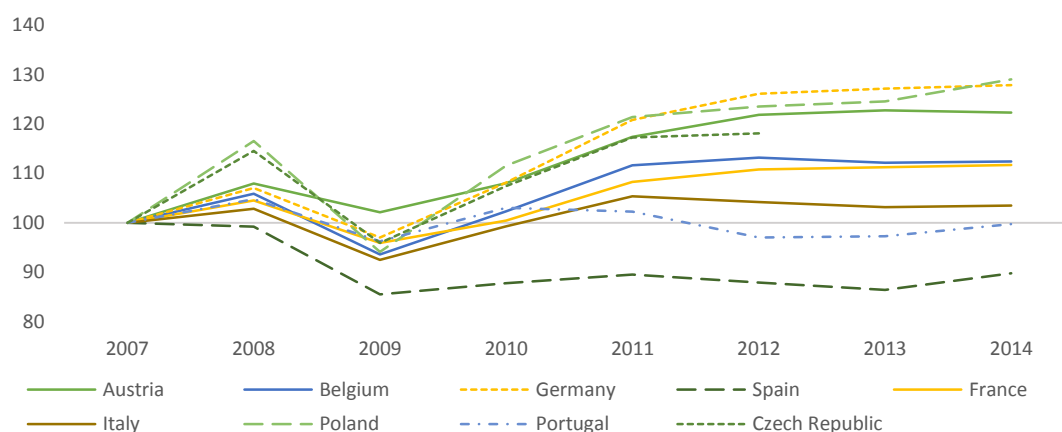
How did non-financial corporations' activity evolve?

The assessment of the performance of the European non-financial corporations during the last decade can be initiated by observing the evolution of their turnover, which represents the main source of income for the most enterprises.

From 2007 to 2014, developments on the **turnover index** of non-financial corporations had some similarities across countries (Chart 1). The 2008-2009 financial crisis had a strong impact on non-financial corporations' turnover in 2009. The decrease in the turnover index in 2009, when compared to its 2008 level, ranged from 6 points (Austria) to 22 points (Poland). In most countries, turnover recovered from the decrease in 2009 in the two subsequent years.

In 2014, turnover index reached 129 points for Poland and 128 points for Germany, countries which recorded the highest increases in turnover during the 2007-2014 period. On the other hand, in Spain and Portugal turnover remained in 2014 below its level in 2007.

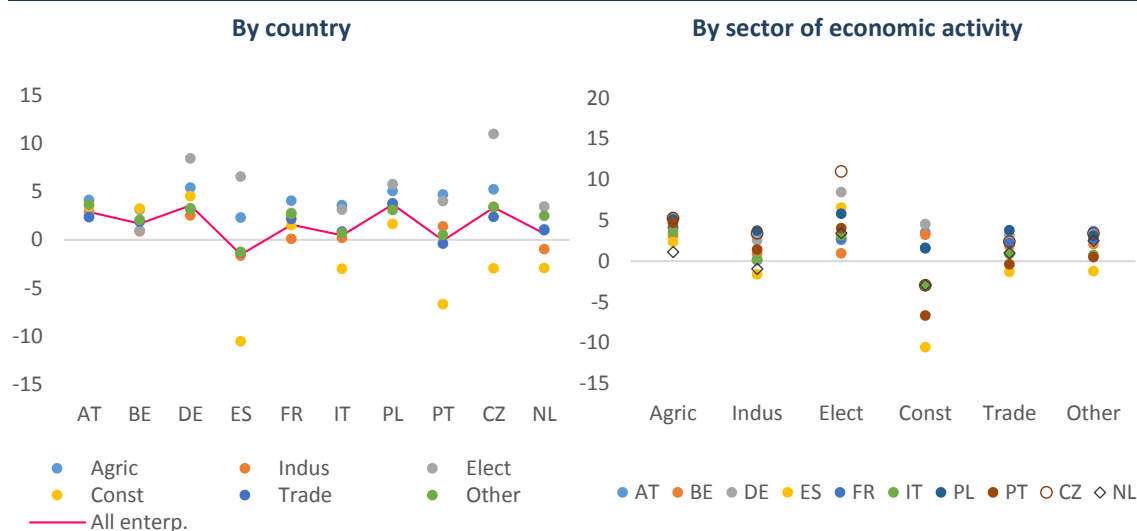
CHART 1 | TURNOVER INDEX, 2007=100



By sector of economic activity, **turnover's average annual growth rate** presented different patterns during the 2007-2014 period (Chart 2). *Electricity and water* recorded the highest average growth rates for this period, from 1% in Belgium to 8% in Germany. *Agriculture and fisheries* also recorded a growth in turnover from 2007 to 2014, standing above the value for all enterprises in all countries.

Construction and real estate, on the other hand, suffered a contraction in turnover that reached, on average, 11% per year in Spain and 7% per year in Portugal, determining the lower performance observed for these countries in the 2007-2014 period.

CHART 2 | TURNOVER'S AVERAGE ANNUAL GROWTH RATE, 2007-2014 (%)



Notes: Both charts have the same information, from different perspectives. Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

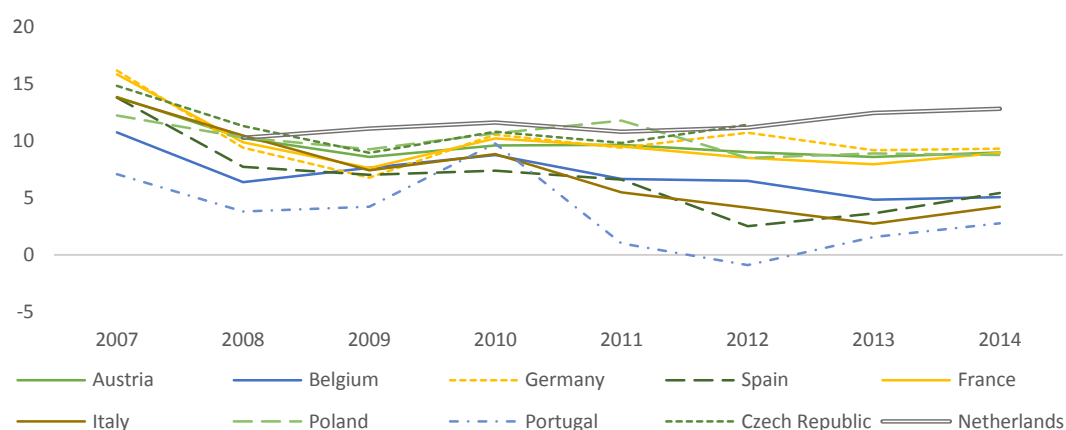
Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands; Agric. Fish. - Agriculture and fisheries; Indus. - Industry; Elect. - Electricity and water; Constr. - Construction and real estate; Other serv. - Other services.

How did non-financial corporations' profitability evolve?

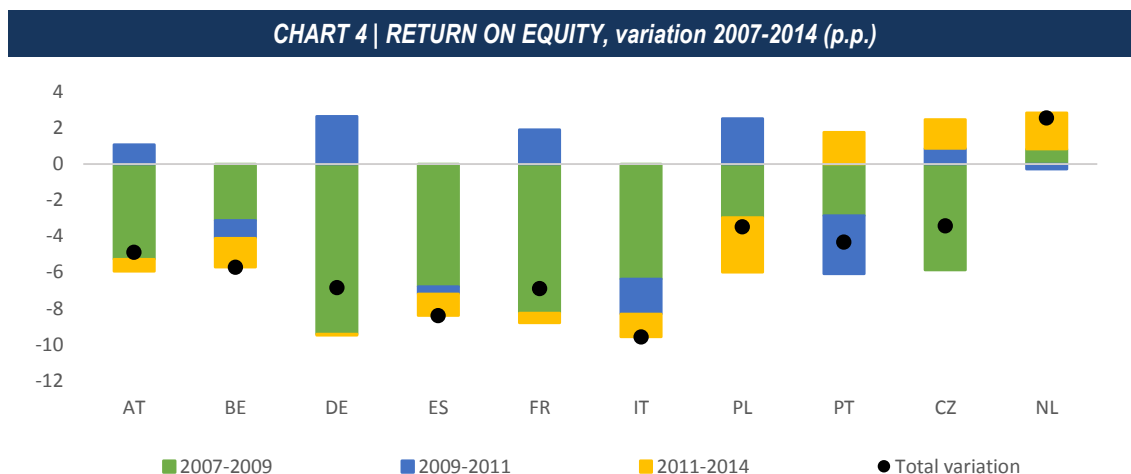
To evaluate the performance of non-financial corporations it is also necessary to know their capacity to be profitable, i.e., to generate a return on the amounts invested. **Return on equity** is widely used in order to measure enterprises' profitability, indicating the profit or loss for the period for each euro invested by the shareholders.

Despite different levels of profitability by country, return on equity showed a similar trend from 2007 to 2014 (Chart 3). In 2008, as a result of the financial crisis, this ratio decreased in all countries. However, unlike turnover, which returned to positive growth rates in 2010, return on equity remained below its 2007 level.

CHART 3 | RETURN ON EQUITY, 2007-2014 (%)



A more detailed analysis of the evolution of return on equity from 2007-2014 shows that all countries recorded a decrease in this ratio (from 3 p.p. in Poland to 10 p.p. in Italy), with most of the variation comprised in the 2007-2009 period (Chart 4). While some countries partially recovered from this decrease in the 2009-2011 period (Austria, Germany, France and Poland), Portugal just increased this ratio in the 2011-2014 period. On the other hand, decreases in all sub periods under assessment were registered in Belgium, Spain and Italy.

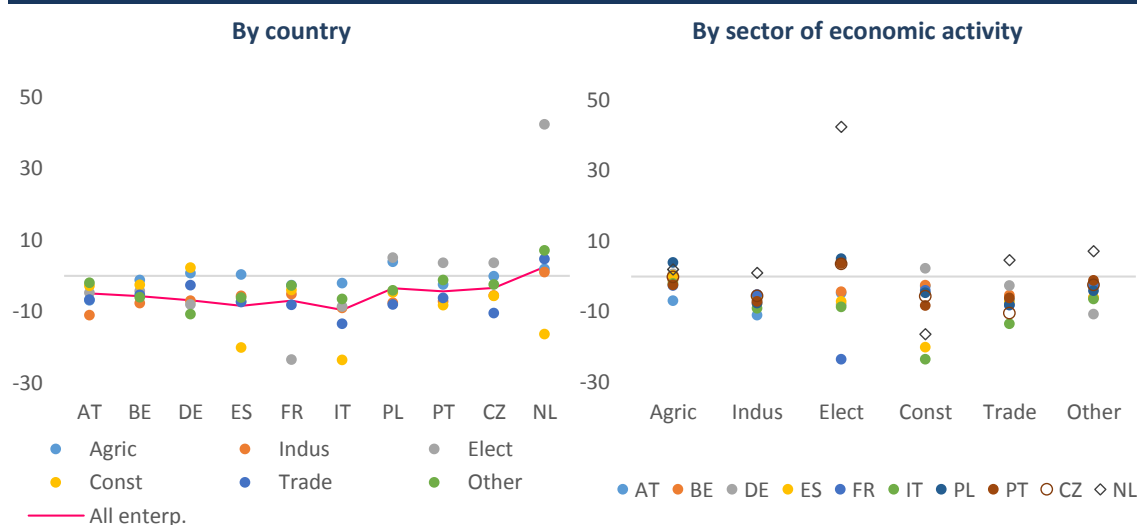


Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).
 Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

Profitability's decrease in the 2007-2014 period was also observed in most sectors of economic activity (Chart 5). As happened with turnover, *Construction and real estate* recorded the most significant decreases in this ratio, particularly in Italy (24 p.p.) and Spain (20 p.p.).

Despite the general drop in profitability from 2007 to 2014, and following the general pattern seen for turnover, enterprises in *Agriculture and fisheries* and *Electricity and water* performed better, on aggregated terms, than those on the remaining sectors, as the variation in return on equity for these sectors stood above the level registered by all enterprises in most countries.

CHART 5 | RETURN ON EQUITY, variation 2007-2014 (p.p.)

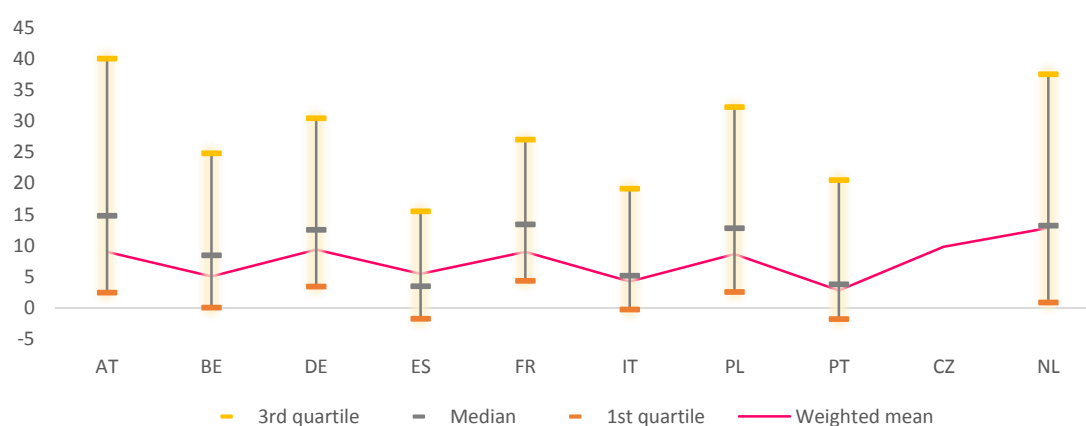


Notes: Both charts have the same information, from different perspectives. Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands; Agric. Fish. - Agriculture and fisheries; Indust. - Industry; Elect. - Electricity and water; Constr. - Construction and real estate; Other serv. - Other services.

To complete the analysis on return on equity, the quartiles may be analysed since the weighted means can hide the diversity of situations that can be found in each country⁴. The first (third) quartile indicates the value below (above) which 25% of all enterprises were standing. In 2014, the third quartile ranged from 14% (Spain) to 40% (Austria). On the other hand, Spain, Italy and Portugal posted negative values regarding the first quartile, thus at least 25% of the enterprises had a loss from their activity in 2014. In the remaining countries the first quartile was positive but, in all cases, below 5%.

CHART 6 | RETURN ON EQUITY, weighted means and quartiles, 2014 (%)



Note: Data concerning this ratio's quartiles is not available for Czech Republic.

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

⁴ It is important to point out that the quartiles may be influenced by the coverage rate of the samples, namely concerning small enterprises.

DuPont decomposition of return on equity

Non-financial corporations' profitability is a complex reality. Analysts often decompose it in order to better understand its level and evolution. The **DuPont decomposition of return on equity** is widely used, providing a breakdown for this ratio into three elements:

$$\text{return on equity} = \text{turnover's conversion into profit} \times \text{asset turnover ratio} \times \text{financial leverage}$$

The first element in the DuPont decomposition of return on equity is the turnover's conversion into profit, which measures the profit obtained by each euro of sales:

$$\text{turnover's conversion into profit} = \frac{\text{net profit or loss for the period}}{\text{turnover}}$$

An increase of this ratio, everything else constant, has a positive impact over profitability. Given that turnover represents more than 90% of total income in most countries and sectors of economic activity (this percentage being relatively constant over time), the **net margin** (profit or loss for the period / total income) will be used in the following section ("**How are non-financial corporations turning income into profit?**") as a proxy of this indicator, since it allows a link between profitability and the expenses' structure.

The second element in the DuPont decomposition of return on equity is the **asset turnover ratio**, which is a measure of the enterprises' efficiency:

$$\text{asset turnover ratio} = \frac{\text{turnover}}{\text{total assets}}$$

This ratio indicates the relation between the turnover and the assets employed to generate it. An increase on this ratio, everything else constant, has a positive impact over profitability. This ratio will be analysed in section "**Are non-financial corporations more efficient?**".

The third element in the DuPont decomposition of return on equity is a measure of financial leverage, indicating the increase in total assets enabled by investment financed by liabilities:

$$\text{financial leverage} = \frac{\text{total assets}}{\text{equity}}$$

The inverse of this ratio is the capital ratio (equity / total assets), which is the percentage of assets financed by equity; higher levels of capital ratio indicate lower financial leverage. An increase on **capital ratio**, everything else constant, has a negative impact over profitability, as profits are divided by a larger amount of equity. Capital ratio will be used in section "**How did non-financial corporations fund their assets?**" as a measure of financial leverage, since it allows a link between profitability and the funding structure.

How are non-financial corporations turning income into profit?

There are several factors affecting enterprises' profitability. The **net margin** is one of them, as it measures the capability enterprises have to turn their income (mainly from turnover) into profits, after deducting the expenses related to their activity.

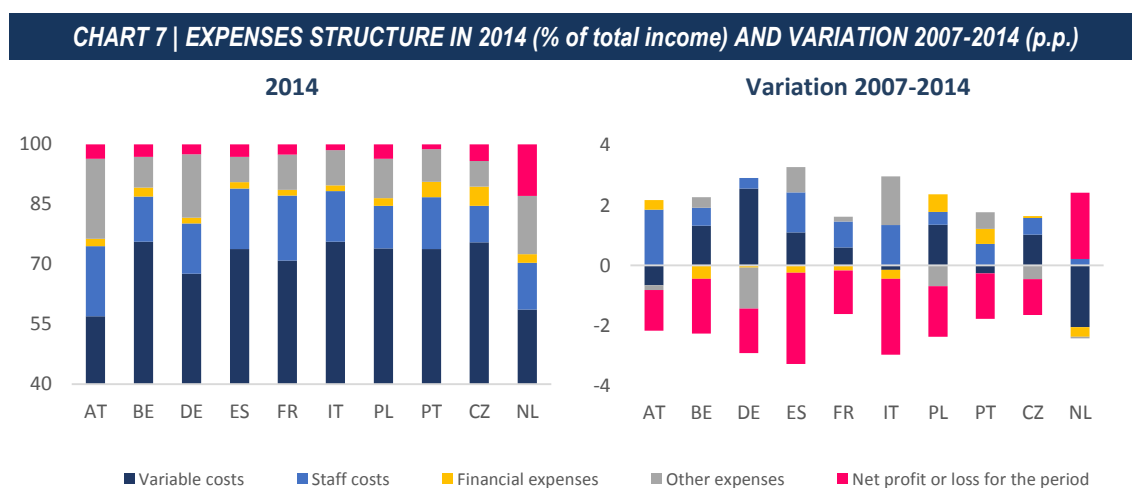
In 2014, enterprises' total expenses consisted mainly of variable costs (Cost of goods sold, materials and consumables and External supplies and services). These items absorbed 57% to 78% of total income in the analysed countries (Chart 7). Staff costs were also a relevant item, corresponding to 11% to 18% of total income in 2014. The remaining items' weight was residual in most cases. The percentage of income turned into profit or loss for the period, or net margin, ranged from 1% (Portugal) to 13% (Netherlands) in 2014.

Since 2007, the variation of the expenses' structure, in percentage of total income, revealed a similar pattern in all countries.

Though in different proportions, variable costs increased in most countries, recording the highest increase in Germany (3 p.p.). Staff costs also increased, in percentage of total income, from 0.4 p.p. in Germany and Poland to 2 p.p. in Austria. Both items contributed negatively to the variation of the net margin.

Financial expenses remained relatively stable during the 2007-2014 period in most countries. The most significant increases were recorded by Poland (0.6 p.p.) and Portugal (0,5 p.p.).

As a result, the enterprises' capability to turn income into profit reduced throughout the 2007-2014 period, as the net margin decreased in all countries, negatively affecting profitability. While in Austria it decreased 1 p.p., it fell 3 p.p. in Spain.



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

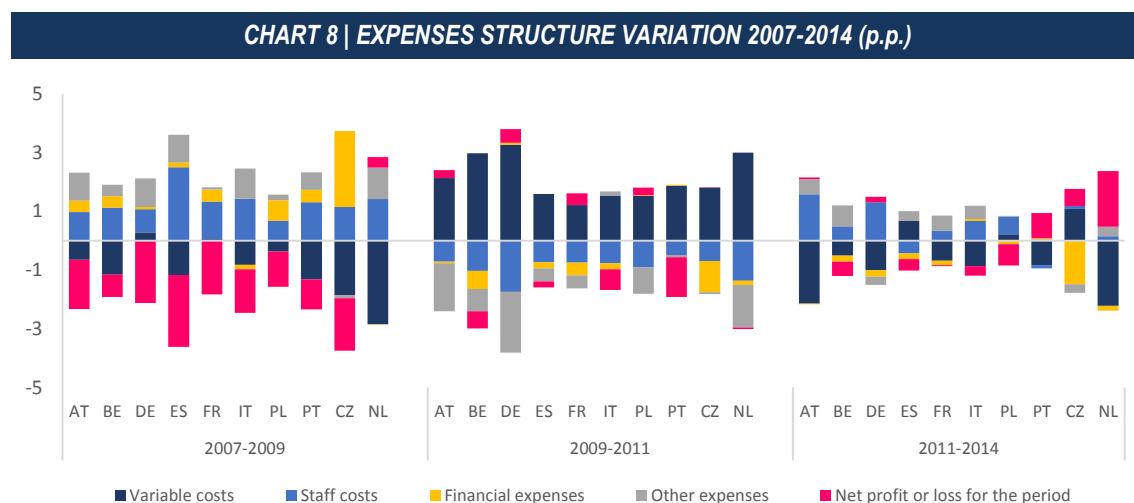
Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

It is interesting to note that the expenses items (in percentage of total income) reacted to the effects of the 2008-2009 financial crisis at different paces, following a similar pattern across the countries (Chart 8).

The decrease in the net margin occurred mostly between 2007 and 2009, along with a decrease in the proportion of variable costs. Staff costs and financial expenses, on the other hand, increased its proportion during this period.

The 2009-2011 period was characterized by an increase of variable costs in the expenses structure, along with a reduction of the proportion of staff costs and financial expenses.

Since 2011, the expenses structure remained relatively stable in most countries, since the majority of the cumulated variations stood below 1 p.p. during this period.



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

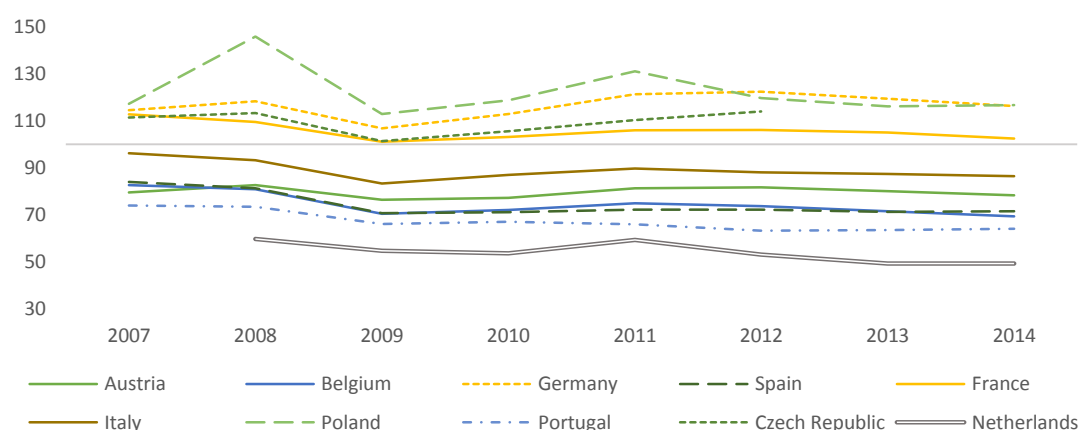
Are non-financial corporations more efficient?

Enterprises' profitability is also affected by their capacity to convert the amounts invested in assets into income. The **asset turnover ratio** is a measure of efficiency for non-financial corporations, indicating the percentage of assets covered by the annual turnover.

The asset turnover ratio observed a reduced variability over the 2007-2014 period, as it depends on features that assume a more structural behaviour (Chart 9). Germany, France, Poland and Czech Republic recorded ratios above 100% during this period, as the turnover covered the amount of assets every year. Oppositely, the ratio for Austria, Belgium, Spain, Italy, Portugal and Netherlands stood below 100% during this period, which means that in those countries enterprises operate with a higher amount of assets when compared to turnover.

Despite the stability in the asset turnover ratio, all countries observed a decrease in 2009, which ranged from 5 p.p. in Netherlands to 33 p.p. in Poland. This loss of efficiency persisted throughout the period under analysis, having a negative impact on non-financial corporations' profitability developments, as it can be observed by the fact that in 2014 the asset turnover ratio was below its value in 2008 in all countries.

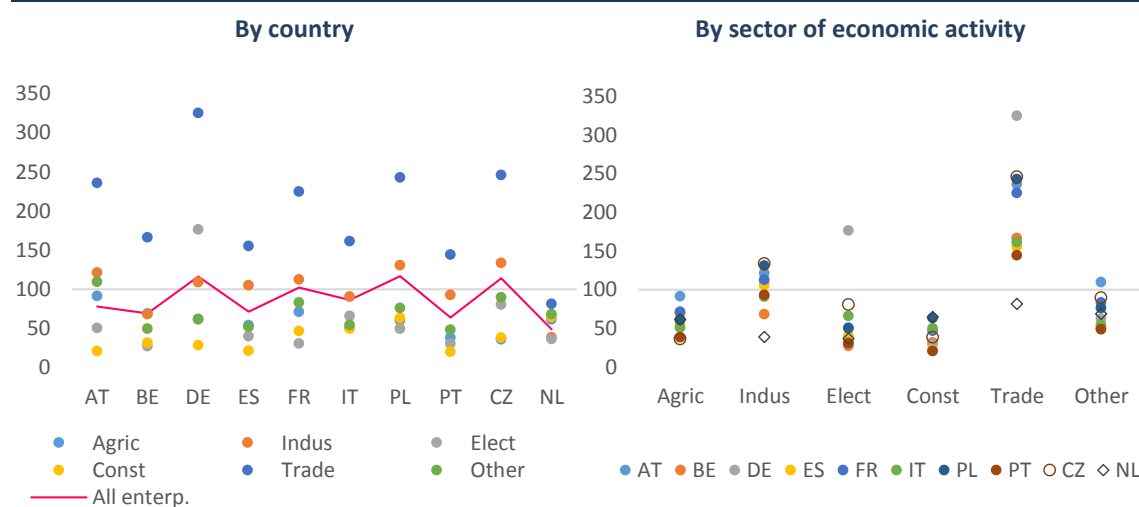
CHART 9 | ASSET TURNOVER RATIO (%)



The asset turnover ratio reflects the technological characteristics of each sector of economic activity, as some activities rely on a heavier asset structure (Chart 10). *Trade* was the sector that operated with the least amount of assets (less than one year of turnover in most countries). This sector's asset turnover ratio was rather disperse in 2014, ranging from 82% (Netherlands) to 325% (Germany). As *Trade* had a significant weight in non-financial corporations' total turnover, this dispersion strongly affected the differences across countries regarding this ratio for all enterprises.

The remaining sectors recorded similar values across countries, indicating that the asset turnover ratio is more closely linked to technological than to national specificities. *Electricity and water* and *Construction and real estate* recorded the lowest values for this ratio: between 20% and 80% in most cases, meaning that it takes, on average, 1.25 to 5 years of turnover to cover the amount of assets invested by enterprises in these sectors.

CHART 10 | ASSET TURNOVER RATIO, 2014 (%)



Notes: Both charts have the same information, from different perspectives. Data for Czech Republic concerns to 2012.
 Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands; Agric. Fish. - Agriculture and fisheries; Indust. - Industry; Elect. - Electricity and water; Constr. - Construction and real estate; Other serv. - Other services.

BALANCE-SHEET STRUCTURE

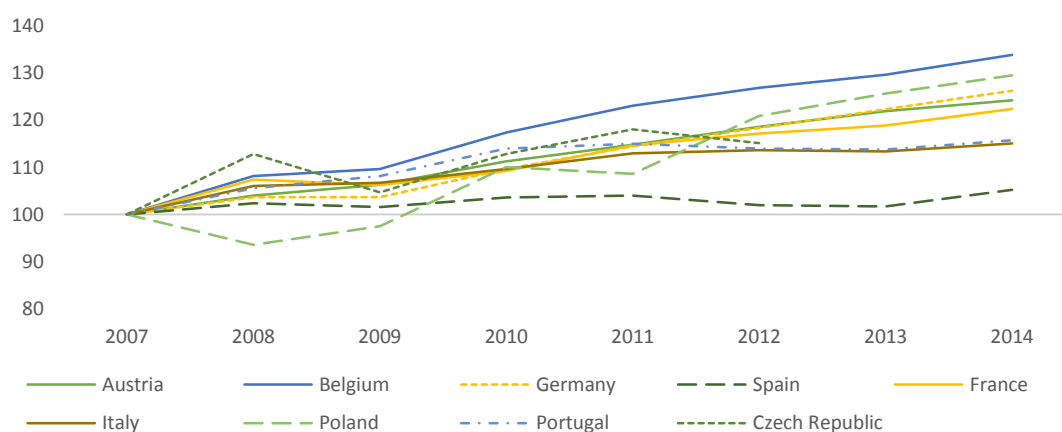
How did non-financial corporations' assets evolve?

Non-financial corporations make use of several types of assets to perform their activity, from investments in buildings, machinery, shares in other enterprises, or intangible assets such as brands and patents, to short-term assets such as inventories, trade receivables and cash and bank deposits.

In the 2007-2014 period the **total assets index** increased in all countries, though at different paces (Chart 11). The 2008-2009 financial crisis led to a stagnation on the assets level in most countries. In Poland, assets decreased 6% in 2008, remaining under its 2007 level in 2009.

From 2010, the total assets index returned to a positive growth trend in most countries, reaching 134 points in Belgium and 130 points in Poland in 2014. In Spain, the total assets index grew moderately, reaching 105 points in that year.

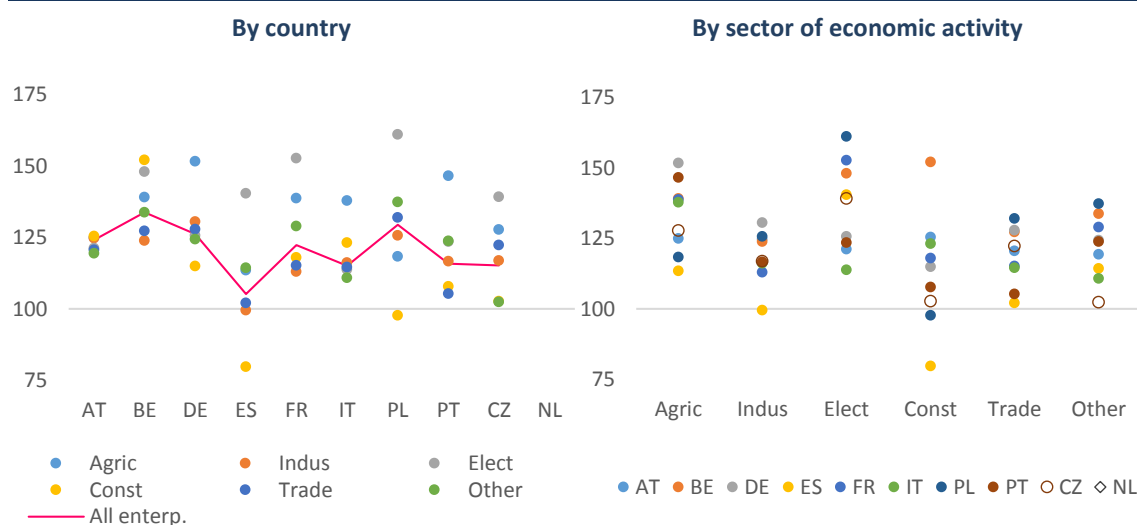
CHART 11 | TOTAL ASSETS INDEX, 2007=100



The increase in total assets in the 2007-2014 period was widespread across sectors of economic activity (Chart 12). *Agriculture and fisheries* and *Electricity and water* recorded again the highest increases, standing above the countries' total assets index for all enterprises in most cases. Further, *Other services* may be included in this group of sectors with major increases.

As for *Construction and real estate*, total assets index increased less than the countries' total during the 2007-2014 period in most countries. In 2014, it stood below 100 points in Spain (80 points) and Poland (98 points).

CHART 12 | TOTAL ASSETS INDEX, 2014, 2007=100

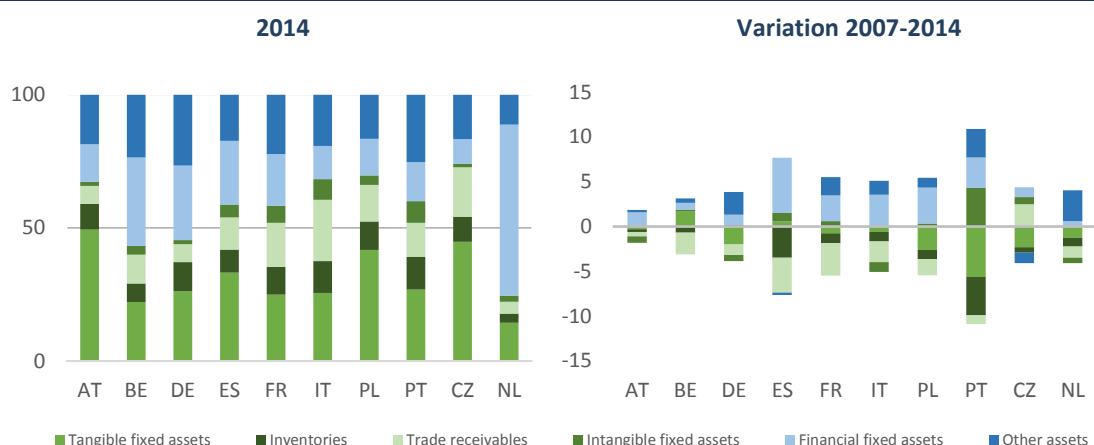


In 2014 the share of tangible fixed assets, inventories, trade receivables and intangible fixed assets as a whole (production-related assets, corresponding to the green items on Chart 13) represented more than half of total assets in most countries, reaching 70% in Poland. The exceptions were Germany (45%), Belgium (43%) and Netherlands (25%). Tangible fixed assets was the most relevant among the group of production-related assets.

Since 2007, production-related assets decreased its importance in all countries, although at different proportions: in Austria and Belgium, changes in the assets structure were residual, while in Portugal the relevance of production-related assets in percentage of total assets decreased 7 p.p., to which contributed a reduction in the proportion of tangible fixed assets (6 p.p.) and inventories (5 p.p.), partially compensated by an increase in the intangible fixed assets (4 p.p.).

On the other hand, financial fixed assets increased its relevance in the assets structure in all countries, standing as the major contribution to the total assets' increase registered during the 2007-2014 period.

CHART 13 | ASSETS STRUCTURE IN 2014 (% of total assets) AND VARIATION 2007-2014 (p.p.)



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; CZ - Czech Republic; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

How did non-financial corporations fund their assets?

The **funding structure** provides information regarding the sources used by non-financial corporations to finance their assets. Enterprises combine several sources of funding, which can be grouped into four categories: **equity** (own funds), **financial debt** (interest bearing debt), **trade payables** (credit granted by the enterprises' suppliers) and **other liabilities**. The share of equity in the funding structure corresponds to the **capital ratio**, which measures the share of investments not financed by debt. This ratio is related to profitability, considering that a higher percentage of equity in the funding structure has a negative impact over profitability (measured as the return on equity), everything else constant.

In 2014, equity and financial debt combined were the major sources of funding for non-financial corporations, standing for shares of total funding that ranged between 56% in Austria and 77% in Belgium and Spain (Chart 14). Equity was more relevant in Netherlands (56%), Poland (51%) and Belgium (47%); financial debt was most significant in Germany and Portugal (39%). Trade payables (which do not bear interest) also represented a relevant source of funding, whose weight ranged from 4% of all funding in Netherlands to 21% in Italy.

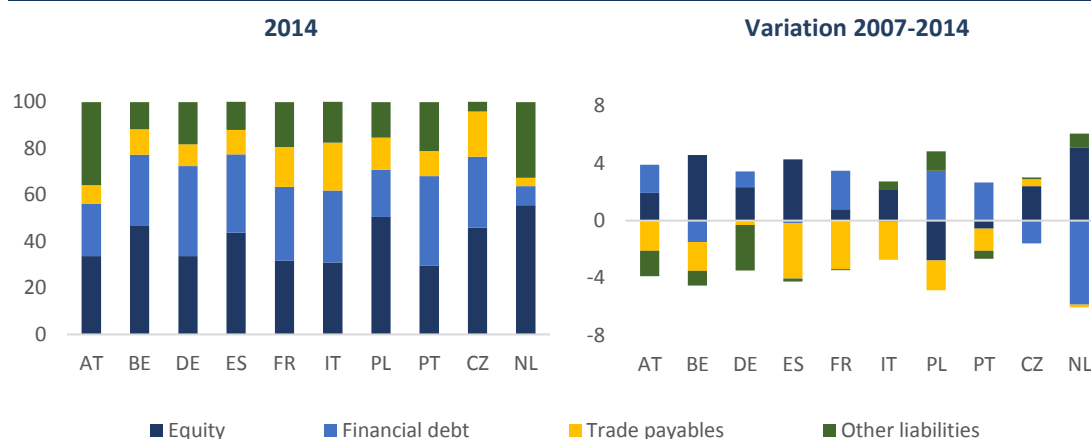
Although the funding structure depends on national specificities, leading to structural differences among countries, some common changes in the funding structure of non-financial corporations in the 2007-2014 period can be perceived. Non-financial corporations resorted more to equity in six countries; in Belgium, the capital ratio increased 5 p.p. from 2007 to 2014. In Poland and Portugal, on the other hand, the capital ratio decreased 3 and 1 p.p., respectively.

The weight of financial debt in total funding also increased from 2007 to 2014 in five countries. Poland recorded the most significant increase (4 p.p.), followed by Portugal and France (3 p.p.); in Belgium financial debt's weight decreased 2 p.p., keeping stable in Spain and Italy.

European non-financial corporations from 2007 to 2014

Trade payables (directly related to production activities) decreased their weight in total funding in all countries in the 2007-2014 period. As turnover increased less than total assets from 2007 to 2014 in most countries, the negative evolution registered by trade payables might be expected. Spain and France⁵ recorded the major decreases (4 p.p. and 3 p.p., respectively).

CHART 14 | FUNDING STRUCTURE IN 2014 (% of total assets) AND VARIATION 2007-2014 (p.p.)



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

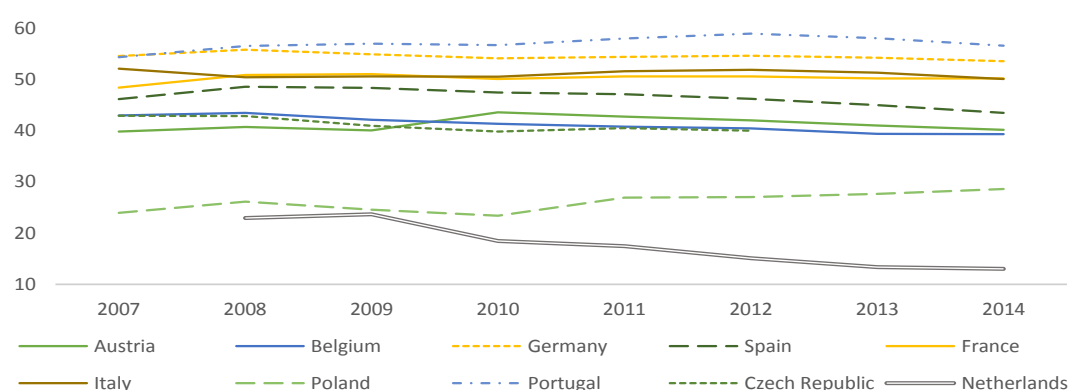
Legend: AT - Austria; BE - Belgium; CZ - Czech Republic; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

A more in-depth analysis of the non-financial corporations' funding structure may be observed through the analysis of the **financial debt over investments ratio**, which measures the weight of financial debt in the amounts invested in the companies (corresponding to equity and financial debt). A higher ratio indicates that companies rely more on interest bearing debt to fund their assets.

Financial debt over investments ratio showed structural differences among countries from 2007 to 2014, along with a reduced variability over time in most countries (Chart 15). In particular, during the 2008-2009 financial crisis, as well as the periods that followed it, this ratio showed year-to-year variations below 1 p.p. in most situations. Germany, France, Italy and Portugal recorded the highest values for this ratio, standing above 50%, while Poland and Netherlands stood under 30% during this period.

⁵ See Annex 5 – National specificities for an interpretation for this evolution.

CHART 15 | FINANCIAL DEBT OVER INVESTMENTS (%)

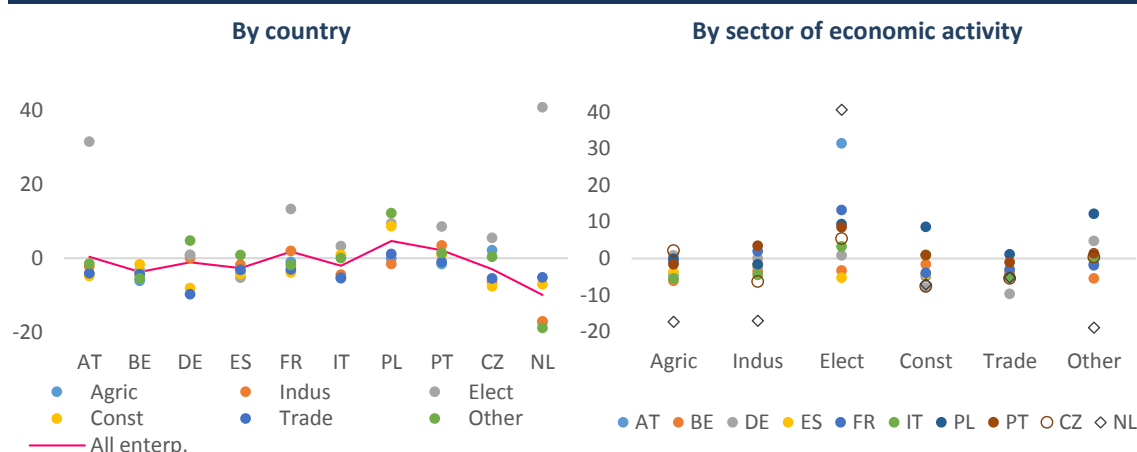


Despite the reduced variability in the 2007-2014 period for all enterprises, the financial debt over investments ratio recorded more significant changes when data by sector of economic activity is considered (Chart 16).

During this period, the ratio for *Electricity and water* increased more than the ratio for all enterprises in most countries, reaching 31 p.p. in Austria (41 p.p. in Netherlands in the 2008-2014 period), denoting a significant change in the funding structure for this sector across countries.

On the other hand, the ratio for *Agriculture and fisheries* and *Trade* recorded a decrease and stood below that observed for all enterprises in most countries, as these companies resorted more to equity to fund their assets.

CHART 16 | FINANCIAL DEBT OVER INVESTMENTS, variation 2007-2014 (p.p.)



Notes: Both charts have the same information, from different perspectives. Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands; Agric. Fish. - Agriculture and fisheries; Indust. - Industry; Elect. - Electricity and water; Constr. - Construction and real estate; Other serv. - Other services.

An interesting fact about financial debt is that, despite its importance in the funding structure, a significant number of enterprises do not resort to it at all (Table 1). The weight of amounts owed to credit institutions over total assets ranged, on average, between 6% and 21% in 2014. However, for most countries, this

ratio recorded a first quartile equal to zero, meaning that at least 25% of all enterprises did not resort to credit institutions to finance their activity. In Portugal and Italy, the percentage of enterprises without amounts owed to credit institutions was even higher than 50%⁶.

As for other financial debt⁷, the situation was similar: though representing between 13% and 26% of total funding on average (except for Poland, where it stood for only 1%), at least 25% of all enterprises did not record any value regarding this item in most countries. In Italy and Portugal, the percentage of enterprises in this situation was at least 50%.

Bonds and similar obligations represented only 1% to 4% of all funding in 2014 on average, being these amounts concentrated in less than 25% of enterprises across all countries.

TABLE 1 | FINANCIAL DEBT ITEMS (% total assets), 2014

	Bonds and similar obligations				Amounts owed to credit institutions				Other financial creditors			
	WM	1st Q	2nd Q	3rd Q	WM	1st Q	2nd Q	3rd Q	WM	1st Q	2nd Q	3rd Q
Austria	2	0	0	0	21	0	22	51	n.a.	n.a.	n.a.	n.a.
Belgium	n.a.	n.a.	n.a.	n.a.	13	8	22	44	17	4	7	16
Germany	2	0	0	0	10	0	7	29	26	5	12	28
Spain	1	0	0	0	16	0	0	21	18	0	2	19
France	4	0	0	0	11	0	7	22	17	0	2	10
Italy	3	0	0	0	15	0	0	21	13	0	0	5
Poland	3	0	0	0	16	0	6	23	1	0	0	0
Portugal	4	0	0	0	17	0	0	13	17	0	0	7
Czech Rep.	4	n.a.	n.a.	n.a.	11	n.a.	n.a.	n.a.	18	n.a.	n.a.	n.a.
Netherlands	3	0	0	0	6	0	0	0	n.a.	n.a.	n.a.	n.a.

Notes: (*) Not available; included in other financial debt. Grey cells indicate zeros regarding the quartile distribution.

Legend: WM – weighted mean; 1st Q – first quartile; 2nd Q – second quartile, or median; 3rd Q – third quartile.

Did the financial crisis affect the amounts owed to credit institutions?

In the previous section it was stated that financial debt was one of the main sources of non-financial corporations' funding in 2014, having its weight in total funding increased in some countries during the 2007-2014 period. As the 2008-2009 financial crisis affected the banking system across the European Union, it is relevant to understand its impact over the amounts owed by non-financial corporations to credit institutions, as well as the changes it spawned in non-financial corporations' financial debt's structure.

In 2009, the amounts owed to credit institutions ceased the significant growth observed in 2008 (Chart 17). In that year, the **amounts owed to credit institutions' index** decreased in most countries,

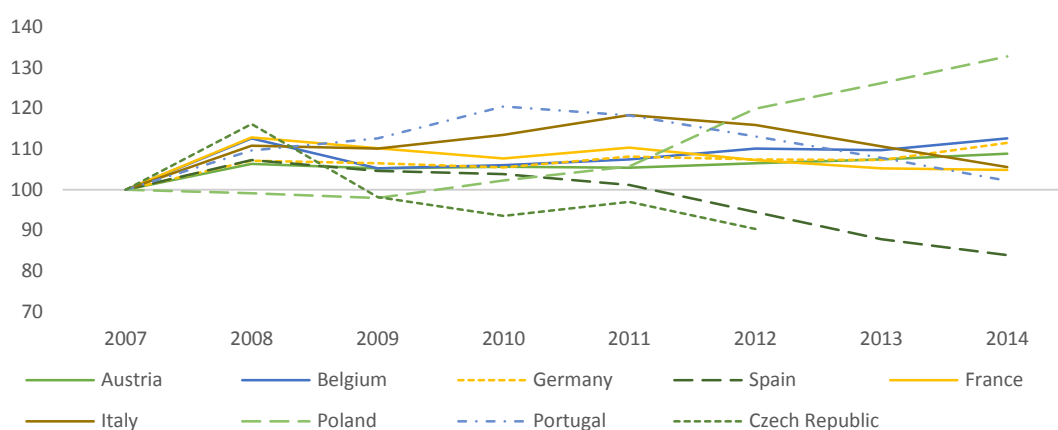
⁶ These results may be influenced by the coverage rate of the samples, namely concerning small enterprises.

⁷ Includes other funding with interest burden not included in the remaining items, such as loans from group companies.

compared with the previous year's level. In Belgium, the reduction reached 7 points in that year (18 points in Czech Republic); Portugal was the only exception, with a 3 points increase of this index.

In 2014, the amounts owed to credit institutions index recorded, in most countries, a similar level to the one registered in 2008, despite some fluctuations in between. Spain recorded the greatest fall on this item throughout this period (16 points from 2007 to 2014). The Czech index presented the lowest values from 2010 to 2012, standing at 90 points in 2012. On the opposite side, in Poland the amounts owed to credit institutions index was, by 2014, 33 points above its level in 2007.

CHART 17 | AMOUNTS OWED TO CREDIT INSTITUTIONS' INDEX, 2007=100



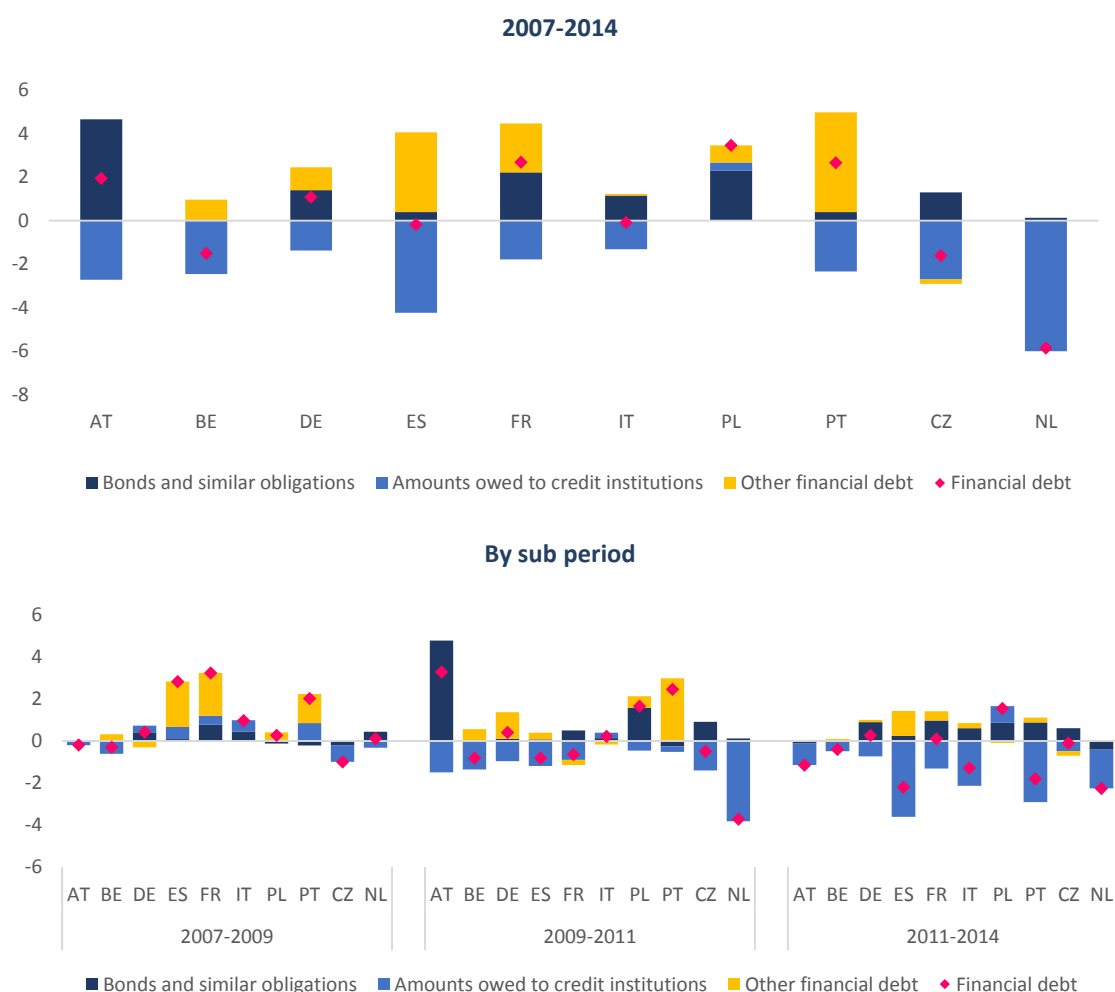
Considering that in the 2007-2014 period total assets increased in all countries, the stabilization of the amounts owed to credit institutions from 2008 onwards reveals that enterprises sought alternative sources of funding, which reflected in changes in the financial debt structure (Chart 18).

The weight of amounts owed to credit institutions in total funding decreased in the 2007-2014 period in most countries. This reduction was generalized in the 2009-2011 period, and reinforced in the 2011-2014 period, particularly in Spain (-4 p.p.) and Portugal (-3 p.p.). Poland was the only exception, given that this item's relevance as a source of funding slightly increased from 2007 to 2014.

Therefore, it is particularly relevant to determine what other sources of funding compensated the widespread decrease registered by this item. Despite its residual share in total funding, bonds and similar obligations increased its weight in all countries throughout the 2007-2014 period⁸. As for other financial debt, its increase as a source of funding was particularly relevant in Spain and France in the 2007-2009 period (2 p.p.), and Portugal in the 2009-2011 period (3 p.p.).

⁸ See Annex 5 – National specificities for an interpretation for the evolution recorded by Austria.

CHART 18 | FINANCIAL DEBT STRUCTURE (in % of total assets) - Variation 2007-2014 (p.p.)



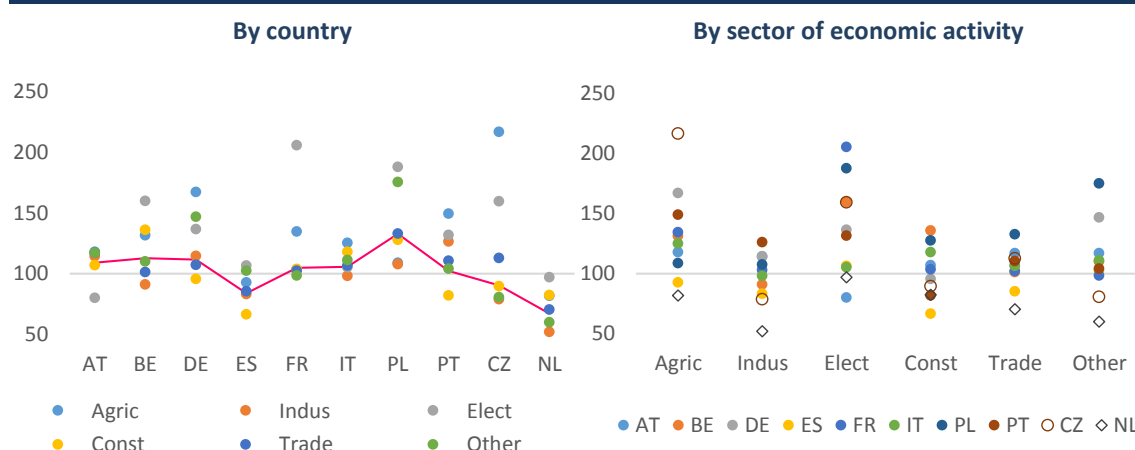
Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

Developments in the amounts owed to credit institutions from 2007 to 2014 were not uniform across sectors of economic activity (Chart 19). In Poland, all sectors stood in 2014 above its level in 2007 (from 8 points in *Industry* to 88 points in *Electricity and water*). On the opposite side, all sectors in Spain with the exception of *Electricity and water* and *Other services* stood in 2014 below its level in 2007, being this decrease particularly significant for enterprises in the *Construction and real estate* sector (34% from 2007 to 2014).

Agriculture and fisheries, *Electricity and water* and *Other services* were, in 2014, above the index for all enterprises in most cases; *Industry* and *Construction and real estate* were frequently below the countries' index for all enterprises, thus being those sectors the most affected by credit restrictions.

CHART 19 | AMOUNTS OWED TO CREDIT INSTITUTIONS' INDEX, 2014, 2007=100



Notes: Both charts have the same information, from different perspectives. Data for Czech Republic concerns to 2012, and for Netherlands it was considered 2008 as base year.

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands; Agric. Fish. - Agriculture and fisheries; Indust. - Industry; Elect. - Electricity and water; Constr. - Construction and real estate; Other serv. - Other services.

How did financial debt affect enterprises' profits?

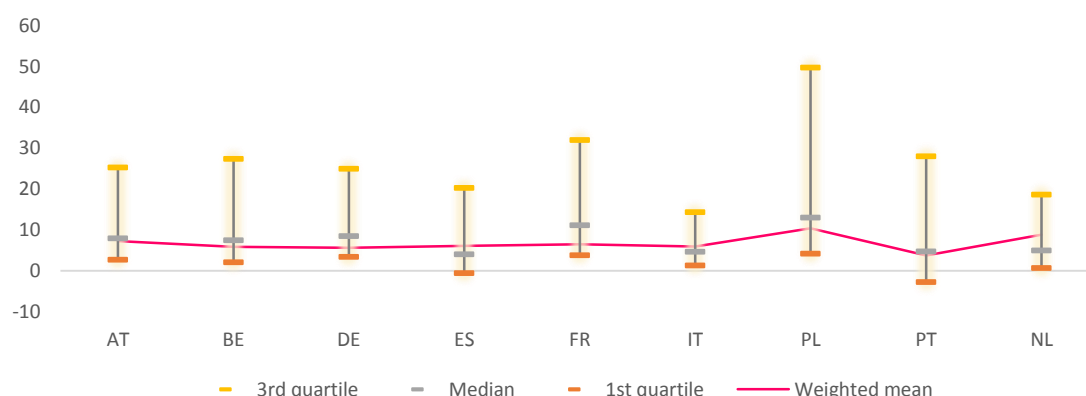
In addition to its importance in non-financial corporations' funding structure, financial debt has an impact on enterprises' profits, considering its interest burden. Nonetheless, financial expenses absorbed a residual percentage of total income in 2014, which has been decreasing since 2009 as seen before.

Though these amounts were not particularly relevant when compared to total income, the interest on financial debt absorbed a significant percentage of EBITDA in 2014, as shown by the **EBITDA over interest on financial debt ratio** (Chart 20). In most countries, EBITDA covered 4 to 7 times the amount of interest on financial debt. In Poland, financial pressure was lower, as the EBITDA generated in 2014 covered 10 times the amount of interest on financial debt.

A significant percentage of enterprises which paid interest on financial debt recorded a more favourable situation than that observed for all enterprises in 2014. EBITDA over interest on financial debt's distribution median was above the weighted mean in all countries except Italy and Netherlands. The third quartile was above 20 times in most countries. In Poland, 25% of enterprises generated EBITDA at least 50 times higher than the amount of interest on financial debt.

Still, a relevant number of enterprises were under more significant levels of financial pressure, as the first quartile of this ratios' distribution was below 5 times in all countries. In Portugal and Spain, at least 25% of interest owing enterprises had not generated enough EBITDA in 2014 to cover their interest expenses.

CHART 20 | EBITDA OVER INTEREST ON FINANCIAL DEBT, weighted means, quartiles, 2014 (nr. of times)

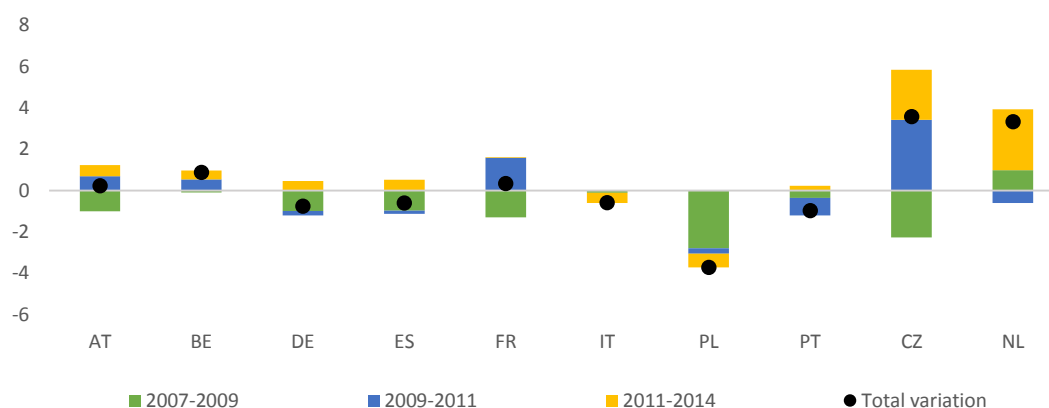


Note: Data concerning this ratio is not available for Czech Republic.

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

EBITDA over interest on financial debt ratio remained stable during the same period in most countries (Chart 21). In general terms, this ratio slightly decreased during the 2008-2009 financial crisis, and recovered in the subsequent periods. Poland, the country that registered between 2007 and 2014 the highest increase on financial debt's weight in the funding structure, also recorded a decrease in this ratio (from 14 times to 10 times), mostly from 2007 to 2009.

CHART 21 | EBITDA OVER INTEREST ON FINANCIAL DEBT, Variation 2007-2014 (number of times)



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

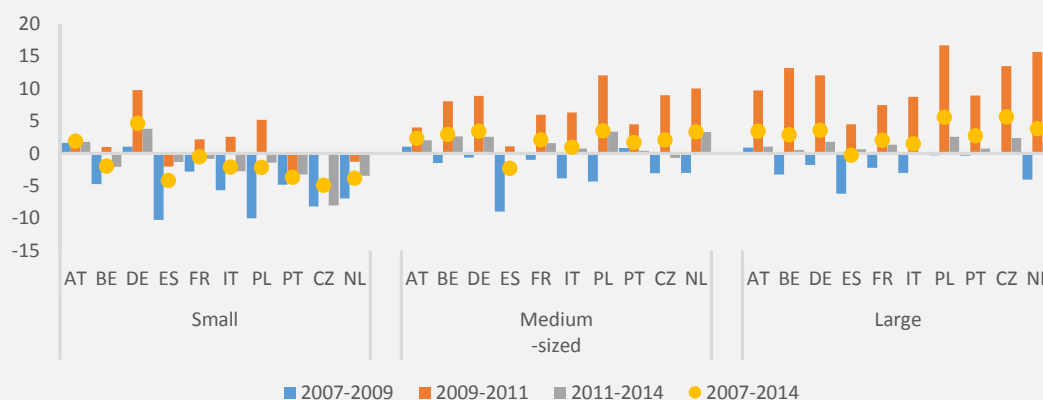
Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands..

Developments in the 2007-2014 period by size class

Despite the analysis on this Outlook focused mainly in the developments by sector of economic activity, some interesting results may be observed by size class, as small, medium-sized and large enterprises reacted differently to the 2008-2009 financial crisis.

As seen before, turnover decreased during the 2008-2009 financial crisis and recovered in the following periods in all countries. The same profile can be observed by size class: in general terms, turnover decreased from 2007 to 2009, being the recovery concentrated in the 2009-2011 period; nevertheless, small enterprises' turnover was more affected in the 2007-2009 period, with turnover's average annual growth rate reaching -10% in Spain and Poland (Chart 22). Turnover of medium-sized and large enterprises recovered in the subsequent periods and reached, by 2014, higher levels than those of 2007. Oppositely, the effects over small enterprises' turnover persisted in the years after the 2008-2009 financial crisis, as the average annual growth rate for the entire 2007-2014 period was negative in most countries.

CHART 22 | TURNOVER AVERAGE ANNUAL GROWTH RATE (%)

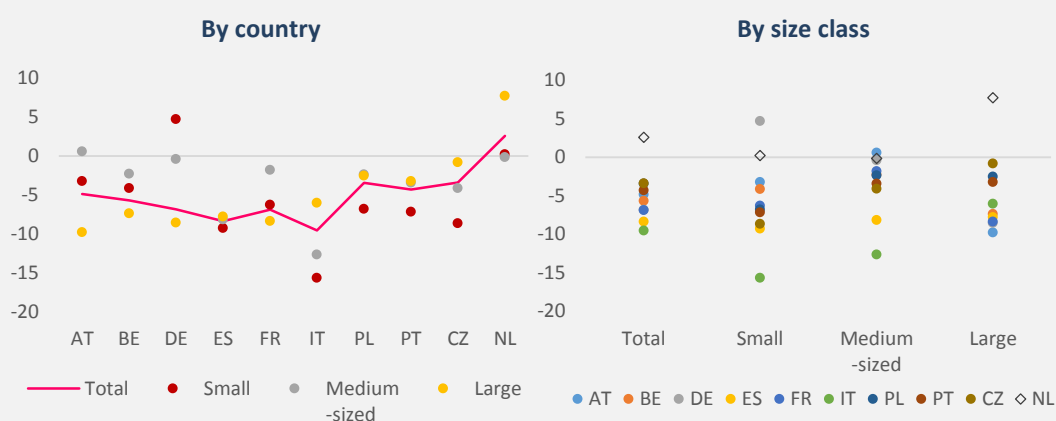


Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

Return on equity for all enterprises decreased in most countries in the 2007-2014 period, the same being observed in all size classes (Chart 23). Small enterprises recorded the greatest decreases in Spain, Italy, Poland and Portugal; in Austria, Belgium, Germany and France large enterprises stood in the lowest position. Medium-sized enterprises were above the country's total in most cases.

CHART 23 | RETURN ON EQUITY – variation 2007-2014 (p.p.)

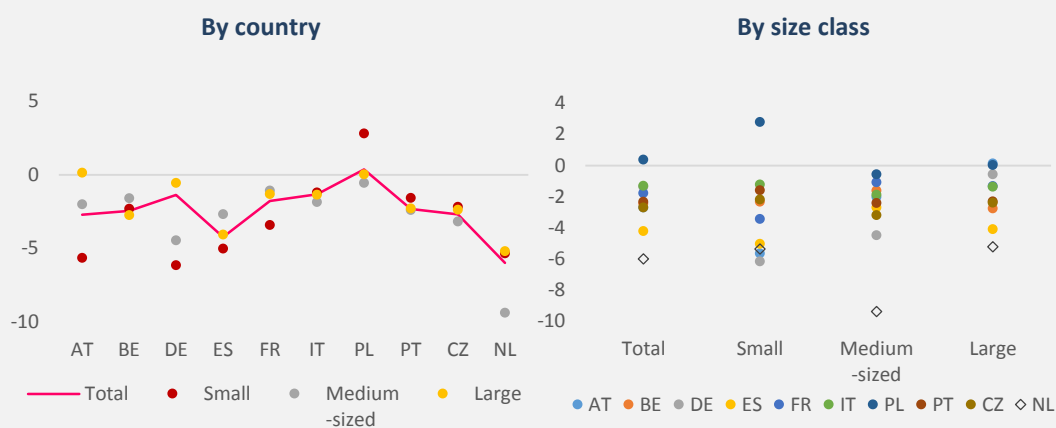


Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

Credit restrictions after the 2008-2009 financial crisis were also observable by size class (Chart 25). The decrease of the share of amounts owed to credit institutions in total funding was recorded in all size classes, though small enterprises felt it more significantly in Austria, Germany, Spain and France; in Poland, on the contrary, small enterprises resorted more to this type of funding, standing above the increase recorded for all enterprises.

CHART 25 | AMOUNTS OWED TO CREDIT INSTITUTIONS IN % OF TOTAL ASSETS – Variation 2007-2014



Note: Different periods were considered for Czech Republic (2007-2012) and Netherlands (2008-2014).

Legend: AT - Austria; BE - Belgium; DE - Germany; ES - Spain; FR - France; IT - Italy; PL - Poland; PT - Portugal; CZ - Czech Republic; NL - Netherlands.

In conclusion, though small enterprises' performance seem to have been more vulnerable towards the 2008-2009 financial crisis, standing its turnover in 2014 below the level in 2007 in most countries, the main conclusions of this Outlook apply to all size classes.

FINAL REMARKS

The 2008-2009 financial crisis had a clear impact over non-financial corporations across Europe. In 2009 enterprises' turnover dropped across countries and sectors of economic activity; since 2010, however, turnover's recovery was also widespread across countries and sectors, as most returned to positive growth rates in that year. In Italy, Portugal and Spain the recovery was conditioned by *Construction and real estate*, whose turnover kept decreasing until 2014.

Despite the fast recovery in turnover in the years after the 2008-2009 financial crisis, the effect over profitability persisted throughout the period under analysis. After a generalized fall of return on equity in 2008, this ratio stood in 2014 under its level in 2007 in all countries. Italy and Spain recorded the most significant decreases on this ratio during this period. By the DuPont decomposition of return on equity, all the underlying elements (net margin, the asset turnover ratio and the capital ratio) contributed to the reduction in profitability recorded across countries in general terms.

As for the first element, in the 2007-2014 period the net margin decreased in all countries, to which contributed the increase of variable and staff costs in the expenses structure. Italy and Spain recorded the most significant decreases on the net margin from 2007 to 2014.

During this period, there was also a loss in enterprises' efficiency in turning the amounts invested on assets into income, negatively affecting profitability. The asset turnover ratio decreased in 2009, standing in 2014 under its level in 2008 in all countries.

The variation in the funding structure also had a negative impact on profitability. In most countries, non-financial corporations resorted more to equity, reducing the financial leverage. The capital ratio increased most significantly in Belgium. As for trade payables; it decreased its weight in total funding in all countries.

Accordingly, the 2008-2009 financial crisis affected non-financial corporations' funding structure. Credit restrictions had an impact on the amounts owed by non-financial corporations to credit institutions, compensated by the remaining instruments of financial debt. In 2009, all countries (but Portugal) recorded a fall on the amounts owed to credit institutions. In the subsequent years, this item remained below its level in 2008 in most countries, with Spain recording the most important decrease. *Industry* and *Construction and real estate* were the most affected by credit restrictions in the years after the financial crisis.

The interest burden absorbed a significant percentage of enterprises' profits across the 2007-2014 period. Nevertheless, despite the increase in financial debt during this period, there were no significant changes in financial pressure, as EBITDA over interest on financial debt was stable for most of the countries.

Analysis of variance (ANOVA)

To further develop the analysis of non-financial corporations' profitability and funding structure during the 2007-2014 period, a two-factor analysis of variance (ANOVA) was performed in order to evaluate the existence of structural differences across countries and sectors of economic activity.

The ANOVA consists of a statistical test over the means of the conditional distributions of two or more categories. The null hypothesis states that all categories have the same mean value. Hence, it can be tested if all sets of observations are drawn from the same distribution. If the null hypothesis is rejected, there is statistical evidence that at least one category has a different mean value. The null hypothesis is rejected when the probability of it being true (*p-value*) is below the significance level, here defined as 5%. The two-factor ANOVA performed here tests the isolated effects of country (variable "Country") and sector of economic activity (variable "Sector") over the ratios, as well as the interaction of these two variables.

This analysis was performed for five ratios – return on equity, asset turnover ratio, capital ratio, financial debt over total assets and EBITDA over interest on financial debt. The data considered for each ratio consisted of a balanced panel data with three dimensions: "Country" (10 categories), "Sector" (6 categories) and "Year" (8 years), adding up to a sample of 480 observations, or 60 time-series by country and sector of economic activity, with eight observations each.

The results obtained with the two-factor ANOVA are in line with the conclusions of this Outlook, pointing to the existence of structural differences for these ratios across countries and sectors of economic activity (Table 2). At least one category in either "Country" or "Sector" has a mean value that differs from the ones for the remaining categories, as the *p-values* are zero for these variables in all cases. Thus, the above mentioned profitability and funding structure indicators depend on national as well as on sectoral characteristics.

The interaction effect between "Country" and "Sector" is also statistically significant for all ratios. This means that national characteristics do not have the same influence in all sectors, as well as sectoral characteristics do not have the same impact across countries.

As the observations for each combination "Country" / "Sector" consisted of a time-series, the variable "Year" was tested in order to evaluate the impact of the business environment on these ratios. As the *p-values* for the two-factor ANOVA show, "Year" was statistically significant for return on equity (as seen before, this ratio was strongly affected by the 2008-2009 financial crisis and presented a negative trend afterwards) and for the asset turnover ratio (which, though relatively stable, recorded a change regarding its level in 2009). "Year" was not statistically significant in the remaining ratios, which correspond to structural characteristics that tend to vary little over time.

Additionally, it can be seen that this dimension was independent of "Country" and "Sector", as the *p-values* for the interaction effect in the two-factor ANOVA are above 0,4 in all cases. Thus, even in the cases where the economic environment is statistically significant, it seems to have the same impact for all countries and sectors of economic activity.

TABLE 2 | P-VALUES FOR THE TWO-FACTOR ANOVA (2007-2014)

Ratio	Two-factor ANOVA Country x Sector			Two-factor ANOVA Country x Year			Two-factor ANOVA Sector x Year		
	Country	Sector	Interaction	Country	Year	Interaction	Sector	Year	Interaction
R38. Return on Equity	0,000	0,000	0,000	0,000	0,000	0,936	0,000	0,000	0,494
R42. Asset Turnover Ratio	0,000	0,000	0,000	0,000	0,81	1,000	0,000	0,048	0,999
R61 Capital ratio	0,000	0,000	0,000	0,000	0,998	1,000	0,000	1,000	1,000
R62. Financial Debt over Total Assets	0,000	0,000	0,000	0,000	0,995	1,000	0,000	0,998	1,000
R22. EBITDA over Interest on Financial Debt	0,000	0,000	0,000	0,000	0,323	1,000	0,000	0,535	0,993

Note: The blue cells indicate the effects not statistically significant at a significance level of 5%

The methodological notes, as well as the tables with the complete results for these statistical tests, are available in Annex 4 – ANOVA methodological notes and results.

ANNEX 1 – SECTOR OF ECONOMIC ACTIVITY

This Outlook provides a breakdown by sector of economic activity, as shown in the following table:

Sector of economic activity	NACE ⁹
<i>Agriculture and fisheries</i>	A
<i>Industry</i>	B + C
<i>Electricity and water</i>	D + E
<i>Construction</i>	F + L
<i>Trade</i>	G
<i>Other services</i>	H + I + J + (Mc) + N + P + Q + R + S
<i>TOTAL</i>	(Zc)

The indexes and ratios for each sector of economic activity were obtained through the aggregation of total amounts by NACE sections. For income statement items, these amounts are calculated as follows:

$$total\ amounts = \frac{income\ statement\ item}{100} * turnover$$

For balance sheet items, total amounts are calculated as follows:

$$total\ amounts = \frac{balance\ sheet\ item}{100} * total\ assets$$

⁹ In this Outlook, the activities in K642 – *Activities of holding companies* and M701 – *Activities of head offices* were excluded. Therefore, Mc and Zc correspond, respectively, to M- *Professional, scientific and technical activities* and *Total activities* without those referred above.

ANNEX 2 – KEY INDICATORS AND METHODOLOGY

Turnover index, 2007=100

Variable	BACH codes
Turnover	l1 * turnover

Turnover index is a chain index obtained from sliding samples. The first step is to obtain a year-to-year ratio for each sample:

$$\begin{aligned}
 ratio_{2008} &= \frac{turnover_{2008,sample\ 1}}{turnover_{2007,sample\ -1}} \\
 ratio_{2009} &= \frac{turnover_{2009,sample\ 1}}{turnover_{2008,sample\ -1}} \\
 &(\dots) \\
 ratio_{2014} &= \frac{turnover_{2014,sample\ 1}}{turnover_{2013,sample\ -1}}
 \end{aligned}$$

The chain index for each year is obtained from the multiplication of the current and previous ratios:

$$\begin{aligned}
 turnover\ index_{2008,2007=100} &= 100 \times ratio_{2008} \\
 turnover\ index_{2009,2007=100} &= 100 \times ratio_{2008} \times ratio_{2009} \\
 &(\dots) \\
 turnover\ index_{2014,2008=100} &= 100 \times ratio_{2008} \times ratio_{2009} \times \dots \times ratio_{2014}
 \end{aligned}$$

Turnover's annual growth rate 2007-2014

Variable	BACH codes
Turnover	l1 * turnover

Turnover's annual growth rate for the 2007-2014 period indicates the average annual growth rate observed for the turnover in the years from 2007 to 2014. The turnover's annual growth rate for the 2007-2014 period is that which fulfils the following condition:

$$\begin{aligned}
 (1 + TAGR_{2007-2014})^7 \times 100 &= turnover\ index_{2014,2007=100} \\
 \Leftrightarrow TAGR_{2007-2014} &= \sqrt[7]{\frac{turnover\ index_{2014,2007=100}}{100}} - 1
 \end{aligned}$$

Return on equity

Variable	BACH codes
Return on equity	Numerator: lt3 * turnover
	Denominator: E * total assets
	Weighted means and quartiles: R38

In order to get a time series for this ratio without the effect of sample changes (an effect known as 'sample composition bias'), this ratio's values were obtained by retropolation, starting with the value provided by the variable sample in 2014 and using the sliding samples to obtain the values in previous years:

$$\begin{aligned}
 ROE_{2014} &= ROE_{2014,sample\ 0} \\
 ROE_{2013} &= ROE_{2014} - (ROE_{2014,sample\ 1} - ROE_{2013,sample\ -1})
 \end{aligned}$$

(...)

$$ROE_{2007} = ROE_{2008} - (ROE_{2008, sample\ 1} - ROE_{2007, sample-1})$$

Expenses' structure

Variable	BACH codes
Variable costs (% of total income)	<i>Numerator:</i> (I5 + I6) * turnover <i>Denominator:</i> It1 * turnover
Staff costs (% of total income)	<i>Numerator:</i> I7 * turnover <i>Denominator:</i> It1 * turnover
Financial expenses (% of total income)	<i>Numerator:</i> (I83 + I10) * turnover <i>Denominator:</i> It1 * turnover
Other expenses (% of total income)	<i>Numerator:</i> (I81 + I82 + I84 + I85 + I9 + I11) * turnover <i>Denominator:</i> It1 * turnover
Net margin	<i>Numerator:</i> It3 * turnover <i>Denominator:</i> It1 * turnover

The expenses' structure decomposes total income into expenses and profit or loss for the period, thus corresponding to a set of ratios that adds up to 100%. The time series for these ratios are obtained with the same methodology as for the above mentioned return on equity ratio:

$$\begin{aligned}
 ratio_{2014} &= ratio_{2014, sample\ 0} \\
 ratio_{2013} &= ratio_{2014} - (ratio_{2014, sample\ 1} - ratio_{2013, sample-1}) \\
 &(\dots) \\
 ratio_{2007} &= ratio_{2008} - (ratio_{2008, sample\ 1} - ratio_{2007, sample-1})
 \end{aligned}$$

It should be noted that the variations obtained from sliding samples for these ratios add up to 0, ensuring that in all periods the condition that all ratios add up to 100% is met.

Asset turnover ratio

Variable	BACH codes
Asset turnover ratio	<i>Numerator:</i> I1 * turnover <i>Denominator:</i> A * total assets

The time series for this ratio follows the same methodology described for the return on equity ratio. It was obtained by retropolation, starting with the value provided by the variable sample in 2014 and using the sliding samples to obtain the values for previous years:

$$\begin{aligned}
 ATR_{2014} &= ATR_{2014, sample\ 0} \\
 ATR_{2013} &= ATR_{2014} - (ATR_{2014, sample\ 1} - ATR_{2013, sample-1}) \\
 &(\dots) \\
 ATR_{2007} &= ATR_{2008} - (ATR_{2008, sample\ 1} - ATR_{2007, sample-1})
 \end{aligned}$$

Asset structure

Variable	BACH codes
Tangible fixed assets (% of total assets)	<i>Numerator:</i> A12 * total assets <i>Denominator:</i> A * total assets
Inventories (% of total assets)	<i>Numerator:</i> A2 * total assets <i>Denominator:</i> A * total assets
Trade receivables (% of total assets)	<i>Numerator:</i> A3 * total assets <i>Denominator:</i> A * total assets
Intangible fixed assets (% of total assets)	<i>Numerator:</i> A11 * total assets <i>Denominator:</i> A * total assets
Financial fixed assets (% of total assets)	<i>Numerator:</i> A13 * total assets <i>Denominator:</i> A * total assets
Other assets (% of total assets)	<i>Numerator:</i> (A4 + A5 + A6 + A7) * total assets <i>Denominator:</i> A * total assets

The asset structure decomposes total assets into six categories, thus these ratios add up to 100%. The time series for these ratios are obtained with the same methodology as for the above mentioned return on equity ratio:

$$\begin{aligned}
 ratio_{2014} &= ratio_{2014, sample\ 0} \\
 ratio_{2013} &= ratio_{2014} - (ratio_{2014, sample\ 1} - ratio_{2013, sample-1}) \\
 &\quad (\dots) \\
 ratio_{2007} &= ratio_{2008} - (ratio_{2008, sample\ 1} - ratio_{2007, sample-1})
 \end{aligned}$$

It should be noted that the variations obtained from sliding samples for these ratios add up to 0, ensuring that in all periods the condition that all ratios add up to 100% is met.

Funding structure

Variable	BACH codes
Capital ratio (Equity in % of total assets)	<i>Numerator:</i> E * total assets <i>Denominator:</i> A * total assets
Financial debt (% of total assets)	<i>Numerator:</i> (L1 + L2 + L31) * total assets <i>Denominator:</i> A * total assets
Bonds and similar obligations (% of total assets)	<i>Numerator:</i> L1 * total assets <i>Denominator:</i> A * total assets
Amounts owed to credit institutions (% of total assets)	<i>Numerator:</i> L2 * total assets <i>Denominator:</i> A * total assets
Other financial debt (% of total assets)	<i>Numerator:</i> L31 * total assets <i>Denominator:</i> A * total assets
Trade payables (% of total assets)	<i>Numerator:</i> (L4 + L5) * total assets <i>Denominator:</i> A * total assets
Other liabilities (% of total assets)	<i>Numerator:</i> (Lp + L32 + L6) * total assets <i>Denominator:</i> A * total assets

The funding structure decomposes total assets into the instruments used to finance it, thus corresponding to a set of ratios that adds up to 100%. The time series for these ratios are obtained with the same methodology as for the above mentioned return on equity ratio:

European non-financial corporations from 2007 to 2014

$$\begin{aligned}
 ratio_{2014} &= ratio_{2014, sample\ 0} \\
 ratio_{2013} &= ratio_{2014} - (ratio_{2014, sample\ 1} - ratio_{2013, sample-1}) \\
 &(\dots) \\
 ratio_{2007} &= ratio_{2008} - (ratio_{2008, sample\ 1} - ratio_{2007, sample-1})
 \end{aligned}$$

It should be noted that the variations obtained from sliding samples for these ratios add up to 0, ensuring that in all periods the condition that all ratios add up to 100% is met.

Financial debt over investments

Variable	BACH codes
Financial debt over investments	<i>Numerator:</i> (L1 + L2 + L31) * total assets <i>Denominator:</i> (E + L1 + L2 + L31) * total assets

In order to get a time series for this ratio without the effect of sample changes, it was obtained by retropolation, starting with the value provided by the variable sample in 2014 and using the sliding samples to obtain the values in previous years:

$$\begin{aligned}
 FDoI_{2014} &= FDoI_{2014, sample\ 0} \\
 FDoI_{2013} &= FDoI_{2014} - (FDoI_{2014, sample\ 1} - FDoI_{2013, sample-1}) \\
 &(\dots) \\
 FDoI_{2007} &= FDoI_{2008} - (FDoI_{2008, sample\ 1} - FDoI_{2007, sample-1})
 \end{aligned}$$

Amounts owed to credit institutions' index

Variable	BACH codes
Amounts owed to credit institutions	L2 * total assets

Amounts owed to credit institutions' index is a chain index obtained from sliding samples. The first step is to obtain a year-to-year ratio for each sample:

$$\begin{aligned}
 ratio_{2008} &= \frac{AOtCI_{2008, sample\ 1}}{AOtCI_{2007, sample-1}} \\
 ratio_{2009} &= \frac{AOtCI_{2009, sample\ 1}}{AOtCI_{2008, sample-1}} \\
 &(\dots) \\
 ratio_{2014} &= \frac{AOtCI_{2014, sample\ 1}}{AOtCI_{2013, sample-1}}
 \end{aligned}$$

The chain index for each year is obtained from the multiplication of the current and previous ratios:

$$\begin{aligned}
 AOtCI\ index_{2008, 2007=100} &= 100 \times ratio_{2008} \\
 AOtCI\ index_{2009, 2007=100} &= 100 \times ratio_{2008} \times ratio_{2009} \\
 &(\dots) \\
 AOtCI\ index_{2014, 2007=100} &= 100 \times ratio_{2008} \times ratio_{2009} \times \dots \times ratio_{2014}
 \end{aligned}$$

To change the index's base to 2008, all values in the time series are divided by the index in 2008:

$$AotCI\ index_{i,2008=100} = \frac{AotCI\ index_{i,2007=100}}{AotCI\ index_{2008,2007=100}}$$

EBITDA over interest on financial debt

Variable	BACH codes
EBITDA over interest on financial debt	Numerator: (I1+I2+I3+I41+I42-I5-I6-I7-I81-I83) * turnover
	Denominator: I10 * turnover
	Weighted means and quartiles: R22

In order to get a time series for this ratio without the effect of sample changes, it was obtained by retropolation, starting with the value provided by the variable sample in 2014 and using the sliding samples to obtain the values in previous years:

$$\begin{aligned}
 R22_{2014} &= R22_{2014, sample\ 0} \\
 R22_{2013} &= R22_{2014} - (R22_{2014, sample\ 1} - R22_{2013, sample-1}) \\
 &\quad (\dots) \\
 R22_{2007} &= R22_{2008} - (R22_{2008, sample\ 1} - R22_{2007, sample-1})
 \end{aligned}$$

ANNEX 3 - CONVERTING DATA INTO EUROS FROM NATIONAL CURRENCIES

Non-euro area countries (Poland and Czech Republic) provide data converted from their national currencies to euros.

- In case of items from balance sheet (BS) the exchange rate as at the end of the period is used.
- In case of items from income statement (IS) the annual average exchange rate is used.
- The expenses structure, assets structure, funding structure are robust and do not depend on the exchange rate.

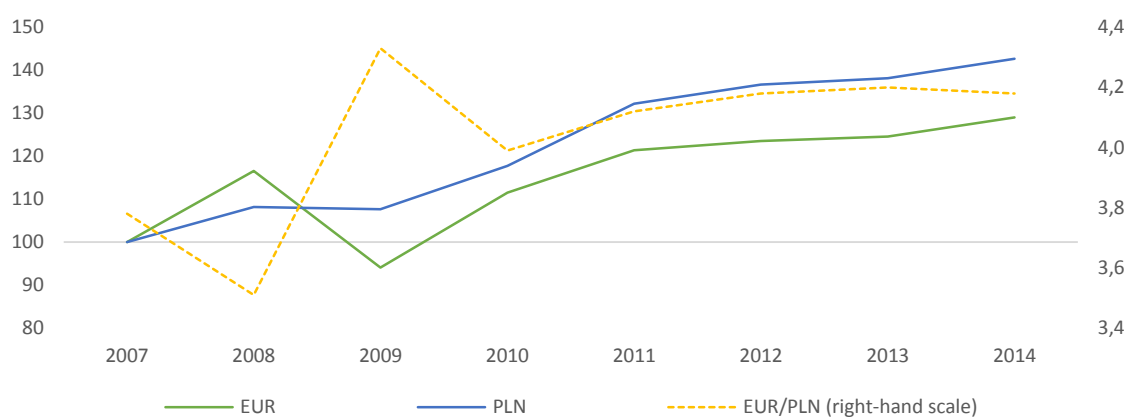
When the volatility of exchange rate is high, the growth rate calculated on the basis on national currency and euro would differ. Changes in exchange rate can influence the growth rates of items from balance sheet and profit and loss account, but also indexes of these items.

As previously mentioned, balance-sheet and income statement items are converted into euros using different exchange rates. Therefore, ratios using variables from the same statement do not suffer any effect from the conversion into euros, as both numerator and denominator are multiplied by the same exchange rate. When the ratios combine variables from both statements, numerator and denominator are converted into euros using different exchange rates, so they may change significantly when exchange rates have higher volatility.

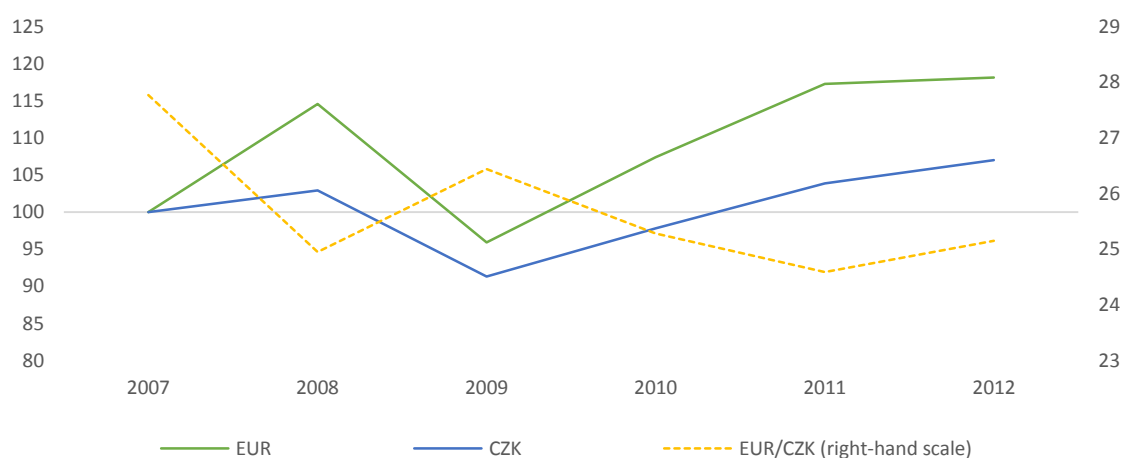
Below you will find tables and charts outlining differences between trends of turnover ratios and indices for Poland and Czech Republic.

TABLE 3 | TURNOVER RATIO AND INDEX, POLAND

	Turnover ratio (year-to-year)		Turnover index (2007=100)		EUR/PLN
	EUR	PLN	EUR	PLN	
2007			100,00	100,00	3,78
2008	1,165	1,082	116,52	108,16	3,51
2009	0,807	0,995	94,08	107,61	4,33
2010	1,185	1,094	111,52	117,74	3,99
2011	1,089	1,123	121,40	132,21	4,12
2012	1,018	1,033	123,55	136,64	4,18
2013	1,008	1,011	124,54	138,16	4,20
2014	1,036	1,033	129,02	142,68	4,18

CHART 24 | TURNOVER INDEX, POLAND (2007=100)

TABLE 4 | TURNOVER RATIO AND INDEX, CZECH REPUBLIC

	Turnover ratio (year-to-year)		Turnover index (2007=100)		EUR/CZK
	EUR	CZK	EUR	CZK	
2007			100	100	27,77
2008	1,145	1,029	114,55	102,91	24,95
2009	0,837	0,887	95,92	91,32	26,44
2010	1,120	1,071	107,38	97,78	25,28
2011	1,092	1,062	117,25	103,84	24,59
2012	1,007	1,030	118,11	106,98	25,15

CHART 25 | TURNOVER INDEX, CZECH REPUBLIC (2007=100)


ANNEX 4 – ANOVA METHODOLOGICAL NOTE AND RESULTS

Though the results of the several ANOVA here performed are strong (as the null hypothesis is clearly accepted or rejected), it is worthwhile to mention that the characteristics of BACH data may have an influence on these results, as the differences between countries and sector of economic activity may partially result from differences in the samples used, in particular due to different coverage rates across countries and, in each country, among different sectors of economic activity.

TABLE 3 TWO-FACTOR ANOVA RESULTS – Sector x Country							
R38. Return on Equity	Source of Variation	SS	df	MS	F	P-value	F crit
	Sector	2737,2	5	547,431	39,333	0,000	2,235
	Country	2356,2	9	261,803	18,811	0,000	1,902
	Interaction	3477,7	45	77,283	5,553	0,000	1,400
	Within	5845,4	420	13,918			
	Total	14416,6	479				
R42. Asset Turnover Ratio	Source of Variation	SS	df	MS	F	P-value	F crit
	Sector	46951,3	5	9390,254	197,954	0,000	2,235
	Country	18874,4	9	2097,157	44,210	0,000	1,902
	Interaction	24639,1	45	547,535	11,542	0,000	1,400
	Within	19923,3	420	47,437			
	Total	110388,1	479				
R61. Capital ratio	Source of Variation	SS	df	MS	F	P-value	F crit
	Sector	11924,1	5	2384,824	635,616	0,000	2,235
	Country	31271,3	9	3474,592	926,067	0,000	1,902
	Interaction	20486,4	45	455,253	121,336	0,000	1,400
	Within	1575,8	420	3,752			
	Total	65257,7	479				
R62. Financial Debt over Total Assets	Source of Variation	SS	df	MS	F	P-value	F crit
	Sector	9859,9	5	1971,975	473,377	0,000	2,235
	Country	30211,1	9	3356,794	805,806	0,000	1,902
	Interaction	17439,1	45	387,536	93,029	0,000	1,400
	Within	1749,6	420	4,166			
	Total	59259,8	479				
R22. EBITDA over Interest on Financial Debt	Source of Variation	SS	df	MS	F	P-value	F crit
	Sector	19446957,4	5	3889391,5	32,951	0,000	2,235
	Country	69294248	9	7699360,9	65,230	0,000	1,902
	Interaction	60252161,6	45	1338936,9	11,344	0,000	1,400
	Within	49574414,3	420	118034,3			
	Total	198567781	479				

TABLE 4 | TWO-FACTOR ANOVA RESULTS – Country x Year

	Source of Variation	SS	df	MS	F	P-value	F crit
R38. Return on Equity	Country	2474,6	9	274,961	12,703	0,000	1,903
	Year	1900,5	7	271,505	12,543	0,000	2,032
	Interaction	996,7	63	15,821	0,731	0,936	1,345
	Within	8658,5	400	21,646			
	Total	14030,3	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R42. Asset Turnover Ratio	Country	18975,3	9	2108,368	9,795	0,000	1,903
	Year	2197,6	7	313,938	1,459	0,181	2,032
	Interaction	2944,8	63	46,743	0,217	1,000	1,345
	Within	86098,8	400	215,247			
	Total	110216,5	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R61. Capital ratio	Country	31644,1	9	3516,006	41,713	0,000	1,903
	Year	57,8	7	8,253	0,098	0,998	2,032
	Interaction	604,0	63	9,587	0,114	1,000	1,345
	Within	33716,5	400	84,291			
	Total	66022,3	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R62. Financial Debt over Total Assets	Country	29981,0	9	3331,221	46,613	0,000	1,903
	Year	68,5	7	9,784	0,137	0,995	2,032
	Interaction	344,4	63	5,466	0,076	1,000	1,345
	Within	28586,5	400	71,466			
	Total	58980,3	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R22. EBITDA over Interest on Financial Debt	Country	69851445,6	9	7761271,7	26,290	0,000	1,903
	Year	2403507,6	7	343358,2	1,163	0,323	2,032
	Interaction	7736016,1	63	122793,9	0,416	1,000	1,345
	Within	118086519	400	295216,3			
	Total	198077488	479				

TABLE 5 | TWO-FACTOR ANOVA RESULTS – Sector x Year

	Source of Variation	SS	df	MS	F	P-value	F crit
R38. Return on Equity	Sector	2509,0	5	501,804	24,333	0,000	2,235
	Year	1900,5	7	271,505	13,165	0,000	2,031
	Interaction	711,8	35	20,336	0,986	0,494	1,450
	Within	8909,0	432	20,623			
	Total	14030,3	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R42. Asset Turnover Ratio	Sector	47468,9	5	9493,787	66,279	0,000	2,235
	Year	2052,5	7	293,209	2,047	0,048	2,031
	Interaction	2046,4	35	58,468	0,408	0,999	1,450
	Within	61879,6	432	143,240			
	Total	113447,4	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R61. Capital ratio	Sector	12629,2	5	2525,831	20,064	0,000	2,235
	Year	36,3	7	5,182	0,041	1,000	2,031
	Interaction	239,6	35	6,846	0,054	1,000	1,450
	Within	54385,2	432	125,892			
	Total	67290,2	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R62. Financial Debt over Total Assets	Sector	9404,4	5	1880,873	16,283	0,000	2,235
	Year	82,3	7	11,755	0,102	0,998	2,031
	Interaction	407,9	35	11,653	0,101	1,000	1,450
	Within	49899,5	432	115,508			
	Total	59794,1	479				
	Source of Variation	SS	df	MS	F	P-value	F crit
R22. EBITDA over Interest on Financial Debt	Sector	19359212,2	5	3871842,4	9,853	0,000	2,235
	Year	2375230,7	7	339318,7	0,863	0,535	2,031
	Interaction	6905845,0	35	197309,9	0,502	0,993	1,450
	Within	169765694	432	392976,1			
	Total	198405982	479				

ANNEX 5 – NATIONAL SPECIFICITIES

TABLE 6 | NATIONAL SPECIFICITIES BY COUNTRY (2007 - 2014)

	Notes
AT – Austria	The 2010 increase in Bonds and similar obligations (L.1) was caused by an outlier.
BE – Belgium	
CZ – Czech Republic	Sliding samples from 2012 to 2014 were not available by the time Outlook #4 was elaborated. The indexes' and ratios' calculations were adapted, in order to provide information for the 2007-2012 period.
FR – France	In 2009 the Law of the Modernization of the Economy stipulated that outstanding trade debt to suppliers is to be settled within 60 days, leading to a decrease on trade payables.
DE – Germany	
IT – Italy	-
PL – Poland	
PT – Portugal	
ES – Spain	-
SK – Slovakia	Data not available by the time Outlook #4 was elaborated.
NL – Netherlands	Data available since 2008. The indexes are not available; the ratios' calculations were adapted, in order to provide information for the 2008-2014 period.



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