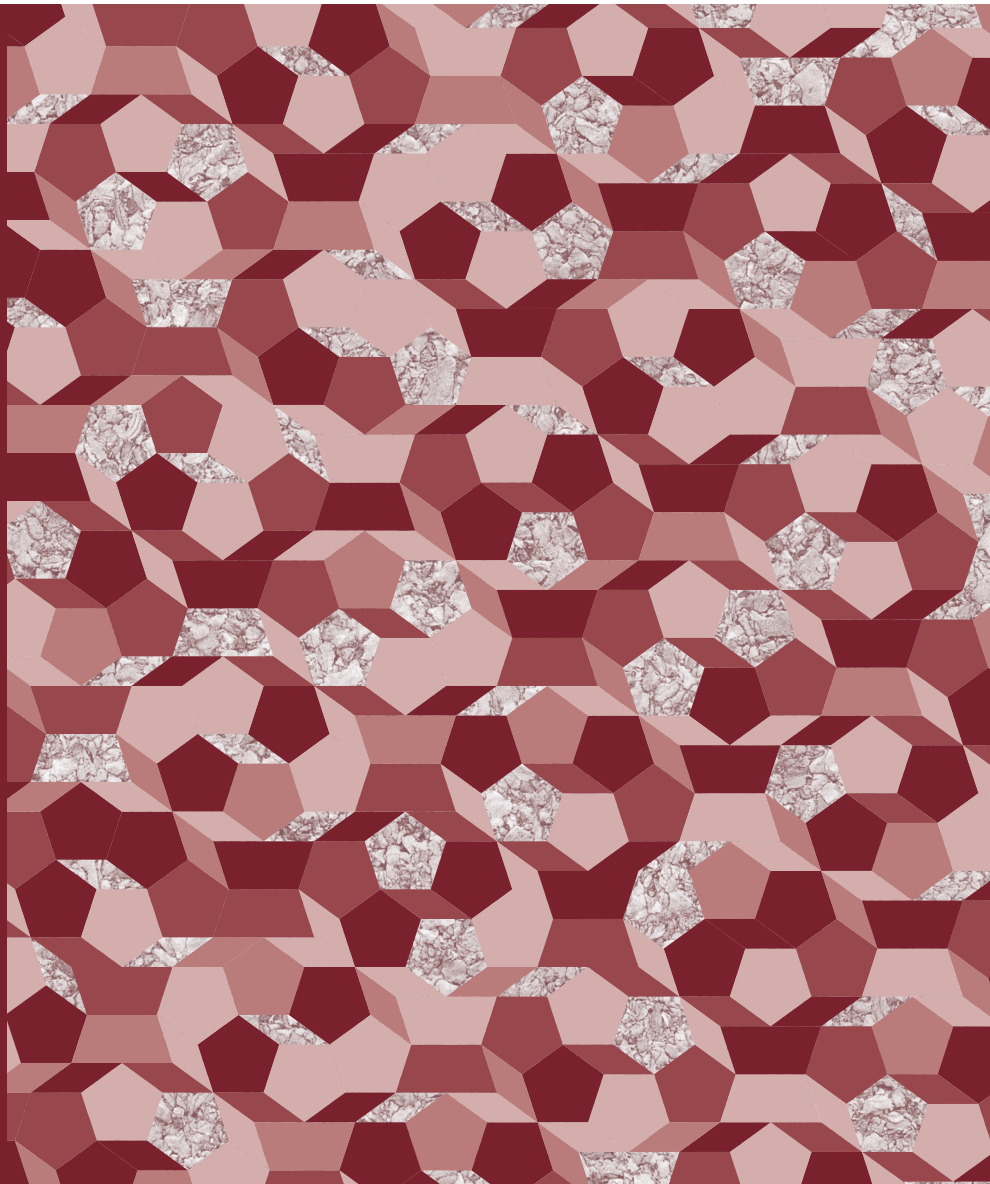
Profitability of Portuguese and European enterprises

Central Balance Sheet Studies

September | 2017

BANCO DE PORTUGAL
EUROSYSTEM

29



29

Profitability of Portuguese and European enterprises

2006-2015

Central Balance Sheet Studies
September | 2017

BANCO DE PORTUGAL
EUROSYSTEM

Lisbon, 2017 • www.bportugal.pt

Profitability of Portuguese and European enterprises 2006-2015 | Central Balance Sheet Studies 29 | 2017 • Banco de Portugal Av. Almirante Reis, 71 | 1150-012 Lisbon • www.bportugal.pt • Publisher Statistics Department • Design Communications Directorate | Image and Graphic Design Unit • ISBN 978-989-678-557-4 (online) • ISSN 2182-1712 (online) • Legal Deposit No 320300/10

Foreword

The study *Profitability of Portuguese and European enterprises 2006-2015* was prepared on the basis of data compiled from the BACH database (Bank for the Accounts of Companies Harmonized), which is managed by the European Committee of Central Balance-Sheet Data Offices (ECCBSO). The database features aggregate information on non-financial corporations in ten European countries (Austria, Belgium, Czech Republic, France, Germany, Italy, Poland, Portugal, Slovakia and Spain). Access to BACH (via *https://www.bach.banque-france.fr/*) is public and free of charge.

BACH's information corresponds to a series of economic and financial ratios, grouped as follows: income statement, assets and liabilities, financial structure, financial and debt service, profitability, activity, technical and working capital ratios. Information can be broken down by economic activity sectors, to the second digit of the Statistical Classification of Economic Activities in the European Community[1] (NACE Rev. 2), and size classes[2] (microenterprises, small, medium-sized and large enterprises). BACH data is updated on an annual basis, as a rule during the year following the data reference period (e.g. data for 2015 is updated in 2016).

The analysis presented in this study follows the methodology adopted in the study *European non-financial corporations from 2007 to 2014* (BACH's Outlook #4) published in October 2016 on BACH's website.

It covers the 2006-15 period, focusing on the group of countries for which information was available for all years during the period (Austria, Belgium, France, Germany, Italy, Spain, Poland and Portugal).

Banco de Portugal has participated in the BACH database with information since 2000, with data being initially collected from the Central Balance Sheet Database annual survey and, as of 2006, through *Informação Empresarial Simplificada* (Simplified Corporate Information, Portuguese acronym: IES).

Through IES, all the information enterprises must provide about their annual accounts is submitted just once, to the Ministry of Finance, the Ministry of Justice, Banco de Portugal and Instituto Nacional de Estatística (Portuguese National Statistical Institute, Portuguese acronym: INE).

IES is usually reported within six and a half months from the financial year end, which, for most enterprises resident in Portugal, corresponds to 15 July of the year following the reference year.

Information reported by enterprises under IES is submitted to quality control procedures by Banco de Portugal. This mainly aims to ensure that accounting information for the financial year is coherent and that the main aggregates are consistent throughout the years.

Characterisation of BACH samples

BACH information is compiled by the various countries according to different methodologies and purposes, which should be taken into account when interpreting results.

In the case of Belgium, Italy and Portugal, information compiled on non-financial corporations is comprehensive and reflects the real situation and developments in their national enterprises.

For other countries, BACH information is obtained from data on enterprises selected for monetary policy purposes (e.g. assessment of collateral and monitoring of monetary policy effects) that are not statistically treated to ensure representativeness. Furthermore, the criteria used to select enterprises may change over time and, as such, variable samples may be affected by the 'sample composition bias', which means that changes in statistical series may be due to changes in the group of selected

enterprises rather than to real economic phenomena.

Therefore, results should be interpreted taking into account:

i. The coverage levels across samples from the various countries and, for each country, the coverage levels by sector of activity and size class, which may result in the under- or overrepresentation of a few groups in the sample and, consequently, a bias of the results for total enterprises;

ii. The 'sample composition bias', mitigated by the focus on developments in sliding samples for two consecutive years available in BACH.

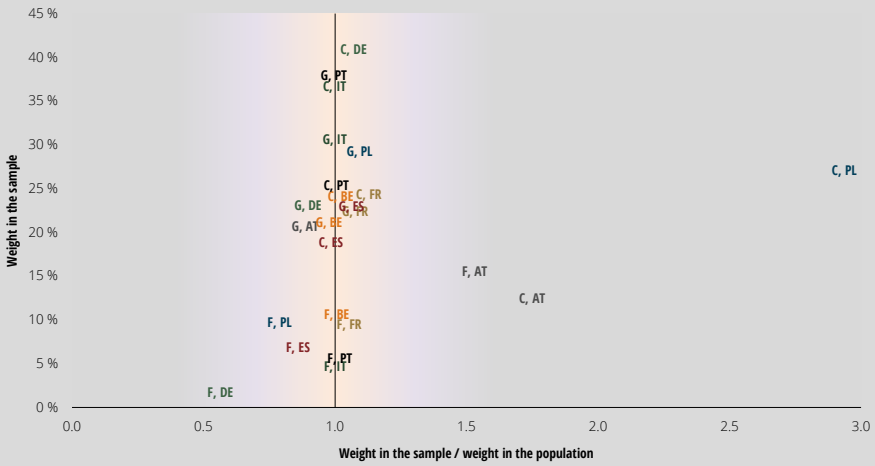
Chart 1 illustrates the differences in the composition of the samples of BACH participating countries for the three NACE Rev. 2 sections with the largest weight in the countries' samples (C – Manufacturing, F – Construction, and G – Wholesale and retail trade).

The structure of samples for Belgium, Italy and Portugal are similar to the structure of the population (the ratio between the weight of the sectors in the sample and in the population stands at around 1).

In the case of Poland, manufacturing is overrepresented, with a weight in the sample three times higher than its weight in the population. Manufacturing and construction are also overrepresented in the sample for Austria. In turn, in the German sample, construction is underrepresented.

Turning to the composition of samples by size class (information available for only five countries), a number of samples are also biased towards larger enterprises (Chart 2). Once again, Belgium, Italy and Portugal have samples with a structure similar to that of the population. In the French sample, microenterprises and small enterprises are underrepresented, with a weight in the sample 20 per cent lower than in the population. In the German sample, the representativeness of microenterprises and small enterprises is only 15 per cent of its weight in the total population; likewise, medium-sized enterprises are underrepresented in the sample, with a weight 35 per cent lower than in the population.

Chart 1 • Weight of the economic activity sector in the sample and ratio between the weight of the economic activity sector in the sample and its weight in the population | By country and NACE Rev.2 section

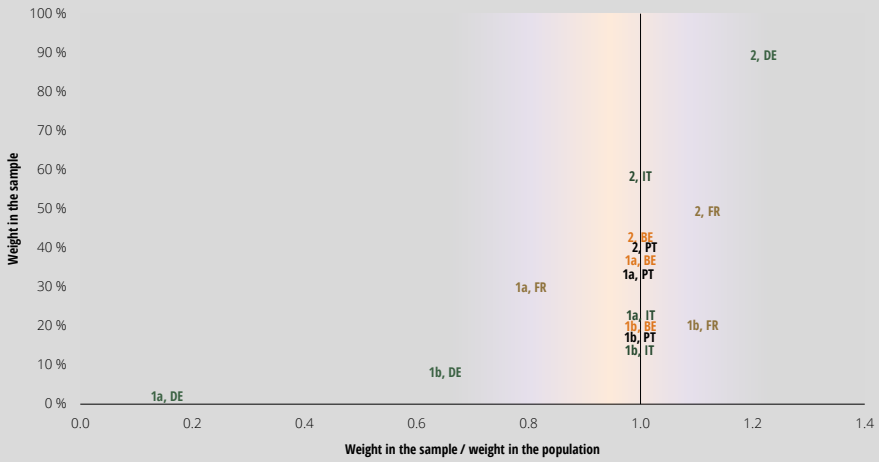


Source: *Chapter 2 – National Samples*, BACH Documents.
Notes: Annual data, with different reference periods: Austria, Italy, Poland, Portugal: 2014; Belgium, France, Germany, Spain: 2013. The dots illustrate the combination (NACE Rev.2 section – country); C – Manufacturing; F – Construction; G – Wholesale and retail trade; AT – Austria; BE – Belgium; DE – Germany; ES – Spain; FR – France; IT – Italy; PL – Poland; PT – Portugal.

The methodology used to calculate the results presented in this study was set out to minimise limitations arising from the characteristics of countries' samples. A description of calculations is included as an annex.

Additional information on the characteristics of samples by country in the BACH database is available in the annex to this study or in BACH Documents available on the BACH website.

Chart 2 • Weight of the size class in the sample and ratio between the weight of the size class in the sample and its weight in the population | By country and size class



Source: *Chapter 2 – National Samples*, BACH Documents.
Notes: Annual data, with different reference periods: Italy, Portugal: 2014; Belgium, France, Germany: 2013. The dots illustrate the combination (size class – country); 1a – Microenterprises and small enterprises; 1b – Medium-sized enterprises; 2 – Large enterprises; BE – Belgium; DE – Germany; FR – France; IT – Italy; PT – Portugal.

Summary

The study *Profitability of Portuguese and European enterprises 2006-2015* analyses the situation and developments in non-financial corporations (NFCs) resident in Portugal,[3] comparing them with NFCs in a group of seven European countries: Austria, Belgium, France, Germany, Italy, Poland and Spain.

Between 2006 and 2015 the profitability of European enterprises decreased. This reduction was more marked in the 2006-09 period (due to the effects of the international financial crisis), although, for most countries, it extended into the following periods.

Portuguese enterprises posted profitability levels regularly below their European counterparties. However, in the series' most recent periods, return on equity posted favourable developments among Portuguese enterprises, reaching 7 per cent in 2015, the fourth highest figure of the eight countries under review.

The spread between the profitability of enterprises in the group of countries analysed and that of Portuguese enterprises was determined, in most cases, by an intrinsic effect associated with Portuguese enterprises' idiosyncrasies.

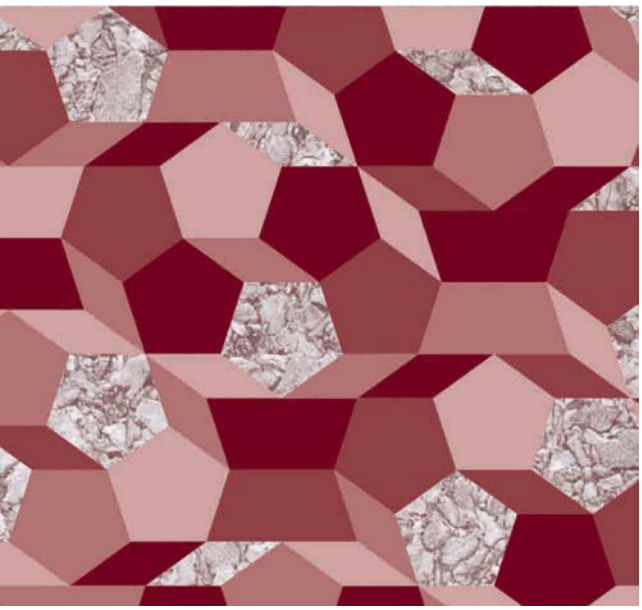
In this study, the DuPont analysis is used to understand, on the one hand, the reasons behind the lower profitability levels of Portuguese enterprises and, on the other hand, the causes that led to their recent favourable developments.

The DuPont analysis breaks down return on equity into three explanatory factors: (i) return on sales, which quantifies enterprises' ability to generate profit margins from their activity, (ii) asset turnover, which measures enterprises' efficiency in obtaining income, and (iii) financial leverage, which reflects the breakdown of enterprises' funding into equity and debt.

For most of the period under review, Portuguese enterprises were amongst those generating lower profit margins and the least efficient in the group of countries analysed, which were key factors behind their lower profitability. Portuguese enterprises also posted particularly high leverage levels, compared with enterprises in other countries. Although this made a positive contribution to return on equity, it was not enough to offset the comparatively low levels of return on sales and asset turnover.

Recent developments in Portuguese enterprises' profitability were driven by a recovery in return on sales, which increased by 3 p.p. between 2012 and 2015. This positive change (higher than that in the other countries analysed) made it possible, together with positive developments in asset turnover, to improve Portuguese enterprises' positioning vis-à-vis the remaining in terms of return on equity.

Contents



Profitability of Portuguese and European enterprises 2006-2015

1. Introduction

The study *Profitability of Portuguese and European enterprises 2006-2015* was prepared on the basis of data compiled from the BACH database (Bank for the Accounts of Companies Harmonized), which is managed by the European Committee of Central Balance-Sheet Data Offices (ECCBSO). The database features aggregate information on non-financial corporations in ten European countries (Austria, Belgium, Czech Republic, France, Germany, Italy, Poland, Portugal, Slovakia and Spain).

The analysis covers the 2006-15 period, which corresponds to the last year available in the BACH database. It covers eight countries (Austria, Belgium, France, Germany, Italy, Spain, Poland and Portugal), excluding the Czech Republic and Slovakia, for which information was not available for all years during the period.

The BACH database includes information reported by Banco de Portugal, collected from the Central Balance Sheet Database.[4] The adoption of a methodology to guarantee that data is harmonised across the various countries, more specifically as regards the definition of economic and financial ratios, precludes a direct comparison between the results for enterprises established in Portugal which are presented and those included in other statistical publications released by the Central Balance Sheet Database.[5]

Given that information compiled in the BACH database reflects different representativeness levels of data reported by each participating country, and with the purpose of enhancing the comparability of data, new statistical series were created to illustrate developments in relevant aggregates based on original statistical series calculated on a constant sample. For more information on the methodology adopted, see the Annex.

Furthermore, for a number of indicators, the value obtained for enterprises in the various countries is compared to that for Portuguese enterprises, breaking down the differential into intrinsic and structural effects according to the methodology presented by the European Central Bank (2017).[6] This methodology assesses whether the sample composition is a key factor behind differences between enterprises across countries.

The study starts, in Chapter 2, with an analysis on the profitability of Portuguese and European enterprises during the 2006-15 period, taking into account developments in return on equity. Chapter 3 features the DuPont analysis,[7] which breaks down return on equity into three factors (return on sales, asset turnover and financial leverage), and, subsequently, the impact of these factors on return on equity levels and developments.

As an Annex, a characterisation of the samples by country is presented, together with a summary table featuring the main indicators and a methodological summary where the main concepts used throughout the study are explained, as well as a description of the methodology adopted in the construction of statistical series. The statistical series under review (in Excel format) are also available on Banco de Portugal's website.

2. Profitability analysis

2.1. Situation in 2015

Return on equity indicates the net income for the period for each euro invested by shareholders. As such, it makes it possible to ascertain enterprises' ability to repay the capital invested by their shareholders.

Taking into account total enterprises in each country under review, return on equity in 2015 stood between 4.9 per cent in Italy and 10.1 per cent in Austria (Chart 3). Portugal ranked fourth, with 7 per cent return on equity.

The profitability levels of enterprises may be influenced, inter alia, by their economic activity sector, given that, typically, some activities are more profitable than others. Their size may also determine profitability levels, given that it has an impact, inter alia, on their bargaining position against customers and suppliers.

Return on equity for the main economic activity sectors and size classes in each country under review illustrates this diversity (Chart 4). Nevertheless, there seems to be a link between profitability in the various economic activity sectors within a country: in a given country, high profitability in one specific sector compared with other countries tends to be associated with high profitability also in other sectors.

Chart 3 • Return on equity (2015)

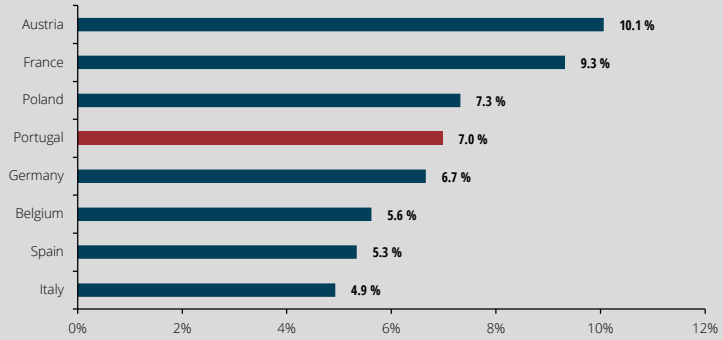
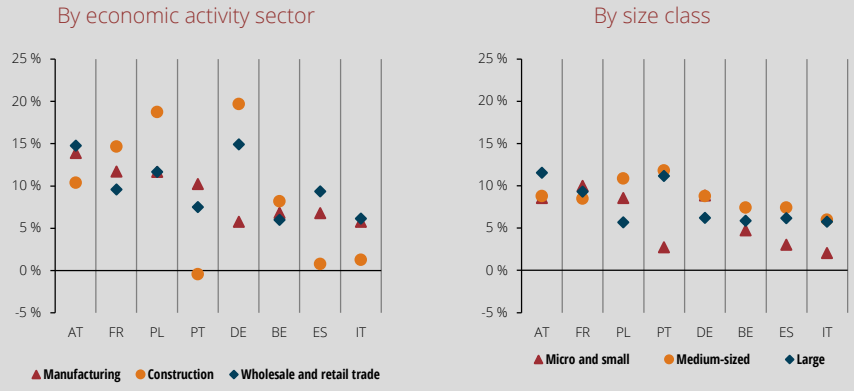


Chart 4 • Return on equity | By economic activity sector and size class (2015)



Note: Countries in descending order in terms of return on equity for total enterprises.
AT – Austria; BE – Belgium; DE – Germany; ES – Spain; FR – France; IT – Italy; PL – Poland; PT – Portugal.

Portuguese enterprises operating in the construction sector posted, as a whole, a negative return on equity of 0.5 per cent in 2015, while this ratio was positive in other countries. Compared with other sectors of activity in Portugal, this profitability was lower than the 10 per cent of manufacturing and the 7 per cent of wholesale and retail trade.

By size class, the spreads between profitability levels were lower, but still considerable: in Portugal, microenterprises and small enterprises had a 3 per cent return on equity in 2015, compared with 12 per cent in medium-sized enterprises and 11 per cent in large enterprises.

Therefore, the profitability levels for total enterprises in a given country may depend, in addition to the inherent features of its own enterprises, on the composition of its corporate structure. Countries with a greater share of enterprises with more profitable activities tend to post overall profitability levels above those of other countries, even if their profitability is inherently similar. Likewise, a greater share of large enterprises in the samples of a number of countries will tend to bias the results for total enterprises, which, consequently, may differ from the figures for countries whose samples cover a greater share of smaller enterprises. To assess the contribution made by each factor, the differential of the return on equity for each country vis-à-vis Portugal was broken down, in accordance with the methodology set out by the European Central Bank (2017).

The differential between enterprises' profitability in the group of countries under review and that posted by Portuguese enterprises was determined, in most cases, by an intrinsic effect, which points to idiosyncrasies setting Portuguese enterprises apart from their European counterparties (Chart 5).

Only the higher profitability levels in Poland were chiefly due to the composition by economic activity sector and size class of enterprises included in its sample. In this case, intrinsic factors even made a negative contribution to the differential against Portuguese enterprises, which means that enterprises in a similar economic activity sector and size class were, in Poland, less profitable than in Portugal.

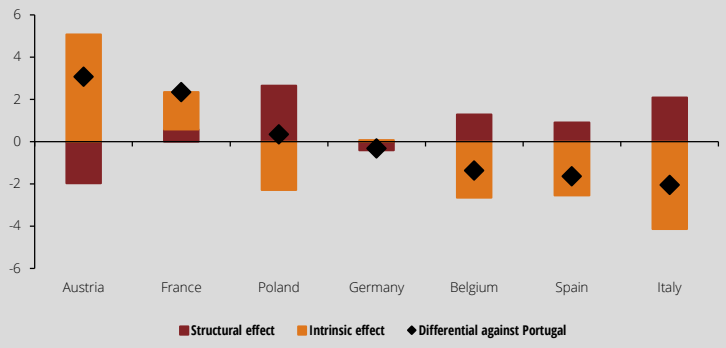
The negative contribution of intrinsic factors to the profitability differential is also noticeable when comparing the profitability levels of Portuguese enterprises with those of Belgian, Italian and Spanish enterprises.

2.2. Developments

The positioning of Portuguese enterprises' amongst the group of countries under review, in 2015, showed an improvement compared with the previous periods. Between 2006 and 2014 Portuguese enterprises often posted the lowest profitability levels in this group of countries.

Comparing 2015 with 2006, developments in return on equity for Portuguese enterprises

Chart 5 • Return on equity | Breakdown of the differential against Portugal (percentage points, 2015)



were more favourable than in the profitability levels of enterprises in the other countries under review (Chart 6). Nevertheless, the reduction in return on equity for enterprises between 2006 and 2015 was broadly based, although this change was only marginally negative in Portugal. In fact, this ratio narrowed by 9 p.p. in Italy and Spain.

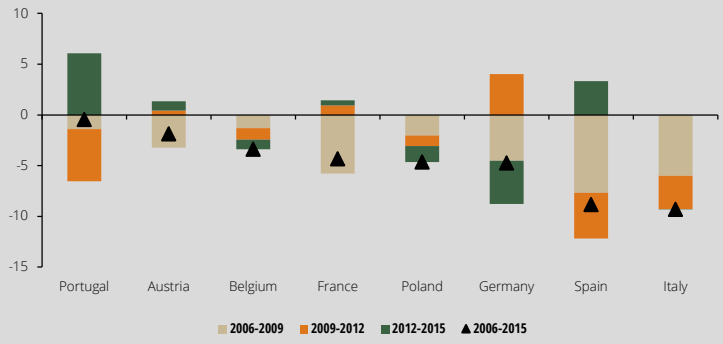
Breaking down these developments into several sub-periods, the 2006-09 period, which was characterised by the international financial crisis, concentrated the largest share of the reduction in European enterprises' profitability in the 2006-15 period. Between 2006 and 2009 developments in return in equity were negative across all countries. This decrease extended, for most countries, to the 2009-12 period, with a notable 5 p.p. fall in Portugal.

In the following periods, while in most countries profitability levels remained on a downward path, in Portugal return on equity recovered (6 p.p. increase between 2012 and 2015).

To sum up, Portugal ranked fourth in 2015 in terms of profitability among the eight countries under review. These profitability levels stemmed mostly from enterprise-specific factors. However, this was a recent change: Portuguese enterprises posted the lowest return on equity during most of the period analysed, but in the last periods of the series reversed the overall downward trend in profitability displayed by enterprises in other countries.

To better understand the profitability levels of Portuguese enterprises compared with other countries and to assess the factors determining profitability developments for European enterprises, this study provides a DuPont decomposition of return on equity, which is presented in more detail in the next chapter.

Chart 6 • Changes in return on equity (percentage points, 2006-15)



3. Factors underlying profitability

3.1. DuPont analysis

Return on equity of Portuguese enterprises compared with their European counterparties, as well as developments in this ratio between 2006 and 2015 in the group of countries under review, are analysed in this chapter, taking into account a number of explanatory factors obtained from the **DuPont analysis** for the decomposition of return on equity. According to this methodology, return on equity can be broken down into three factors, as follows:

$$\text{return on equity} = \frac{\text{NIP}}{\text{E}} = \frac{\text{NIP}}{\text{T}} \times \frac{\text{T}}{\text{assets}} \times \frac{\text{assets}}{\text{E}}$$

The first factor in the DuPont decomposition is **return on sales:**

$$\frac{\text{net income for the period (NIP)}}{\text{turnover (T)}} = \text{return on sales}$$

This ratio, measured as a percentage, indicates the share of turnover converted into net income for the period. As such, it serves as an indicator of enterprises' ability to obtain profit margins from their activity.

An increase in this ratio, *ceteris paribus*, has a positive impact on return on equity.

The second factor in the DuPont decomposition of return on equity is **asset turnover:**

$$\frac{\text{turnover (T)}}{\text{assets}} = \text{asset turnover}$$

This ratio indicates the turnover generated for each euro invested in assets, reflecting enterprises' efficiency in using their resources.

The greater the asset turnover, *ceteris paribus*, the greater the enterprises' ability to obtain return on their equity.

The third factor in the DuPont decomposition of return on equity is **financial leverage**:

$$\frac{\text{assets}}{\text{equity (E)}} = \text{financial leverage}$$

This ratio's value, which quantifies equity covered by total assets, will be higher the lower is the share of equity in the financing structure.

An increase in financial leverage, *ceteris paribus*, has a positive impact on return on equity, given that it reflects a reduction in the share of equity to be remunerated.

This analysis looks into the autonomous impact of each of the three factors on return on equity (all other conditions being the same) and, as such, their dependencies are not analysed. In particular, a change in financial leverage affects return on sales, given that, overall, debt instruments bear associated costs. These costs cause a reduction in return on sales and grow in tandem with indebtedness and risk levels.

For the sake of simplicity, these interdependencies were not taken into account in this study. In the following sub-sections, each of the three factors behind return on equity is independently analysed.

3.2. Return on sales

Return on sales is an indicator of the margin obtained by enterprises, and quantifies enterprises' ability to turn their income (mostly, from turnover) into net worth, net of operating expenses.

In 2015 return on sales ranged from 1.8 per cent in Italy to 4.6 per cent in Austria (Chart 7). That year, Portuguese enterprises posted a 3.4 per cent return on sales, ranking third, together with Spanish enterprises, in the group of countries under review.

Breaking down these differentials by each aggregate's contributions (sectoral and size class), intrinsic effects account for the largest share of the differential between the return on sales of Portuguese enterprises and those in other countries. However, the structural effect was broadly positive, which indicates that more profitable aggregates account for a greater share in other countries (economic activity sector plus size class) than in Portugal (Chart 8).

During the period under review, return on sales of Portuguese enterprises was often among the lowest in this group of countries. The better standing of Portuguese enterprises in 2015 was due to the 3 p.p. increase in this ratio in the 2012-15 period, by contrast to most other countries in the same period (Chart 9). This ratio also increased for Austrian, French and Spanish enterprises (although not sufficiently to cover the reduction in previous periods).

In the other countries, overall negative developments in this ratio in 2006-09 spilled over into the following periods, reflecting enterprises' lower ability to retain profit from sales.

Chart 7 • Return on sales (2015)

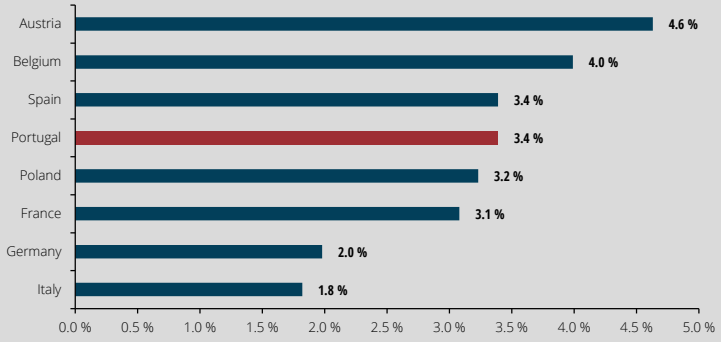
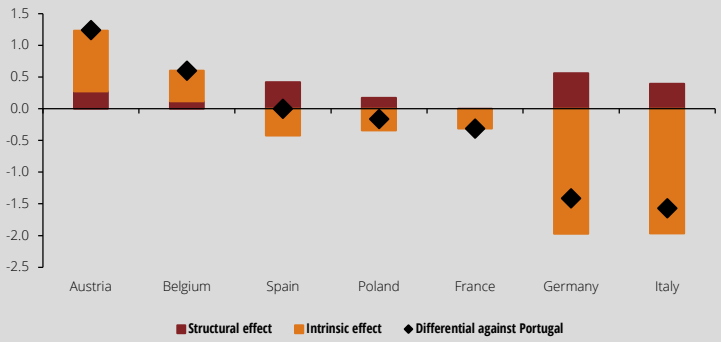


Chart 8 • Return on sales | Breakdown of the differential against Portugal (percentage points, 2015)



Developments in return on sales reflect changes in enterprises' cost structure. Employee expenses and financial expenses put some pressure on these developments, thus contributing to a relatively overall fall in profitability (excluding developments in Germany, as regards employee expenses, and Italy, in terms of financial expenses) (Chart 10). In Portugal, marginally positive developments in return on sales stemmed from the positive contribution of variable costs and other net expenses, by contrast to developments in Italy and Spain, whose enterprises posted negative developments in other net expenses.

3.3. Asset turnover

Asset turnover is one of the factors behind enterprises' profitability, given that it relates the amounts invested in assets to the income generated by them. By quantifying the percentage of assets covered by annual turnover, 100 is taken as reference. Above this percentage, turnover generated each year by enterprises fully covers total assets. The inverse of this ratio also makes it possible to assess the number of years of activity needed to cover the value of assets.

In 2015 asset turnover was low among Portuguese enterprises (65 per cent, the lowest in the group of countries under review, together with Belgium) (Chart 11). Annual turnover exceeded the value of assets only in Poland and Germany (113 per cent ratio in both cases).

Given that this indicator reflects the technical features of enterprises and is influenced by enterprises' efficiency in using assets, it may vary greatly across sectors of activity. As such, it is important to assess whether lower asset turnover in Portugal results from the

Chart 9 • Changes in return on sales (percentage points, 2006-15)

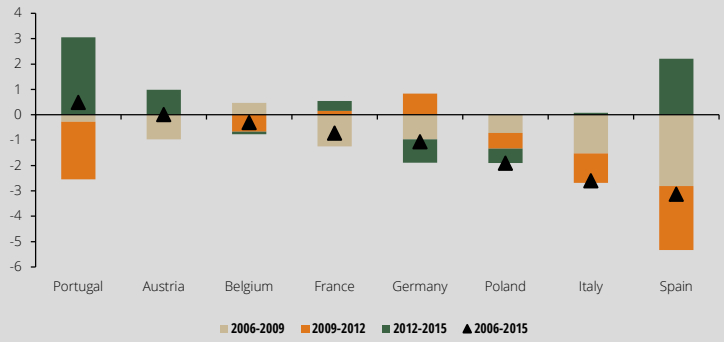
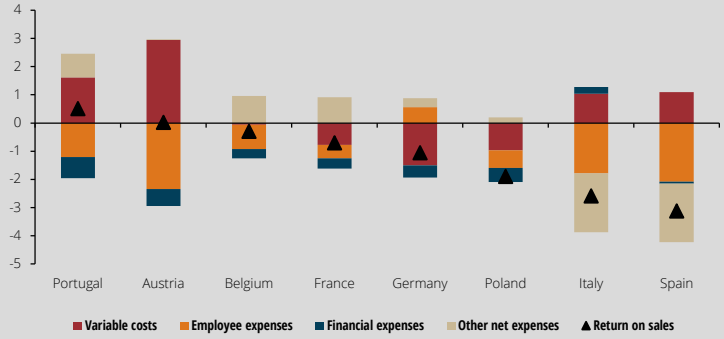


Chart 10 • Changes in return on sales | Breakdown by type of expense (percentage points, 2006-15)



composition of its corporate structure, by sector and size class.

The intrinsic effect played a crucial role in the differential between the asset turnover of four of the countries under review vis-à-vis Portugal (Germany, Poland, France and Austria), showing that Portuguese enterprises, compared with those in the same economic activity sector and size class resident in these countries, were indeed less efficient (Chart 12).

However, the structural effect was key to differences between asset turnover for Italian, Belgian and Spanish enterprises and that for Portuguese enterprises. By contrast to these countries, the main factor behind the lower asset turnover of Portuguese enterprises was due to the sectoral composition underlying country data, rather than to the idiosyncrasies of Portuguese enterprises.

Low asset turnover levels are a structural feature of Portuguese enterprises. In fact, this ratio deteriorated in the period under review (Chart 13). This reduction (both in Portugal and in most other countries) was more substantial in the 2006-09 period, during which the financial crisis impacted on enterprises' activities (with a reduction in turnover between 2008 and 2009, associated with a contraction in international trade).

The reduction in asset turnover, seen across the countries under review, shows that during the 2006-15 period enterprises' assets grew proportionally more than turnover, which points to lower efficiency and, consequently, contributes to lower profitability.

Chart 11 • Asset turnover (2015)

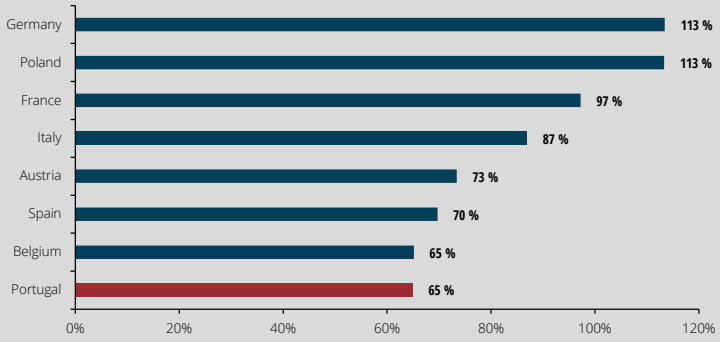
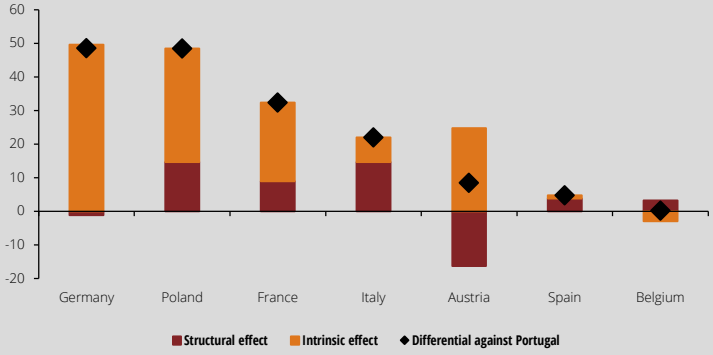


Chart 12 • Asset turnover | Breakdown of the differential against Portugal (percentage points, 2015)



However, developments in the two variables were not linear throughout the period under review (Chart 14). While enterprises' assets displayed a relatively similar growth pattern during the period under review (thus pointing to a slowdown in the 2012-15 period), turnover showed more mixed developments (also associated with closer links with the economic environment).

Among the effects of the international crisis was a fall in turnover between 2008 and 2009, which led to a general loss in enterprises' efficiency over the 2006-09 period. Between the end of 2009 and 2012 economic activity recovered, with most countries under review posting high average annual changes in turnover, above those for assets, leading to efficiency gains for enterprises. Nevertheless, this recovery was not enough to offset the reduction seen in the previous period.

In the 2009-12 period, average annual developments in turnover for Portuguese enterprises were virtually zero, leading to a deterioration in asset turnover (by contrast with the other countries under review in the 2009-12 period).

Between 2012 and 2015, average annual growth rates in turnover decreased and were close to developments in assets in most countries, thus stabilising developments in asset turnover. Once again, Portugal was the exception, as its changes in turnover during this period were above those in total assets, which points to an increase in Portuguese enterprises' efficiency.

Chart 13 • Changes in asset turnover (percentage points, 2016-15)

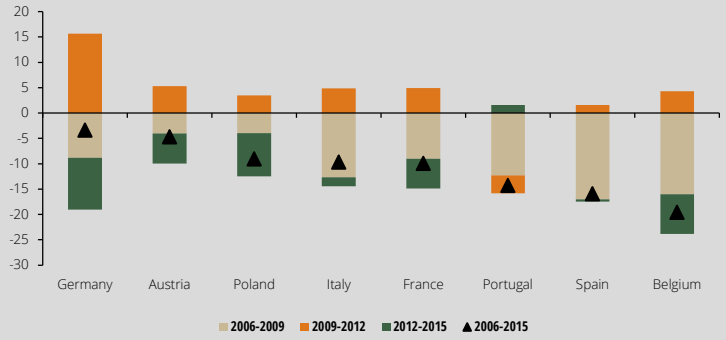
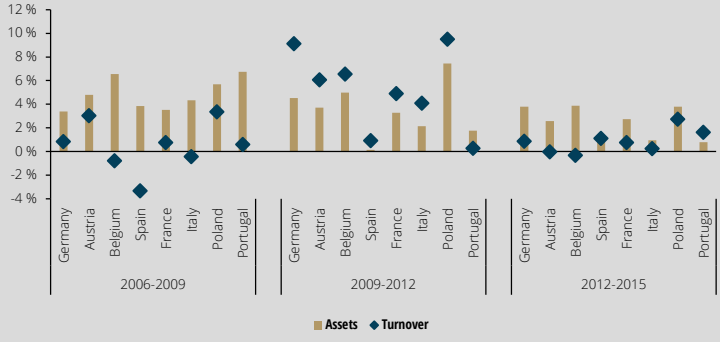


Chart 14 • Average annual growth rates in assets and turnover



3.4. Financial leverage

Enterprises' financing structure is one of the main factors behind return on equity, which reflects the share of assets (used by enterprises to generate income) funded by shareholders. The lower the share, *ceteris paribus*, the higher is the return by equity unit.

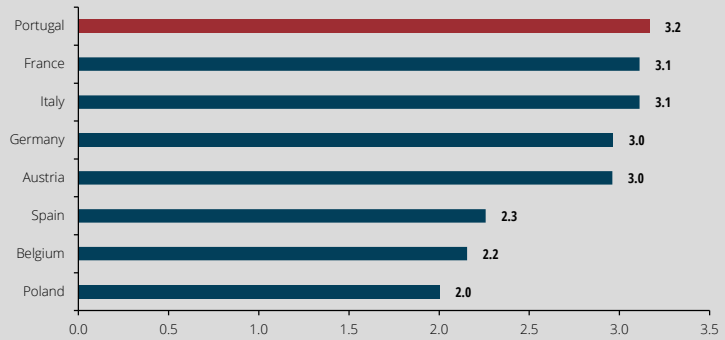
In addition to equity, enterprises may turn to debt to fund their assets, including interest-bearing debt (debt securities, bank loans and other financing), trade credits and other liabilities. **Financial leverage** makes it possible to quantify the combination of equity and debt used by enterprises, by providing the number of times that equity is covered by assets. This ratio is greater, the higher the borrowed capital. Furthermore, greater financial leverage makes a positive contribution to return on equity levels, *ceteris paribus*.

In the 2006-15 period, Portuguese enterprises had higher financial leverage levels than their European counterparties, although in 2015 French and Italian enterprises had financial leverage levels close to those posted by Portuguese enterprises (Chart 15). In 2015 financial leverage for enterprises in these countries was above three. By contrast, in 2015 Polish enterprises had the lowest financial leverage of the eight countries analysed: for every two euros in assets, one euro was funded by equity.

The higher financial leverage of Portuguese enterprises stems from intrinsic factors. Portuguese enterprises turned more to debt, compared with enterprises in other countries in similar sectors and size classes (Chart 16). However, the composition of the Portuguese corporate structure, with a greater share of less leveraged sectors of activity and size classes, made it possible to partially mitigate this differential.

Comparing the financial leverage levels seen in 2015 with the situation in 2006, this ratio narrowed across countries, excluding Poland (Chart 17). Portuguese enterprises' assets were 3.3 times the value of equity in 2006, declining to 3.2 in 2015, less than for enterprises in other countries. As such, Portuguese enterprises, which had the fourth lowest ratio in 2006, showed the higher value in 2015. Given the positive contribution of financial leverage to return on equity, these developments were more favourable to the profitability of enterprises in Portugal than in most countries.

Chart 15 • Financial leverage (2015)



The breakdown of financial leverage developments into sub-periods shows, however, that the deleveraging process of Portuguese enterprises started later on. In the 2006-09 period, the financial leverage ratio followed a downward path across all countries under review, excluding Portugal and Spain (marginally). In the 2009-12 period, this trend proceeded: reduction in financial leverage in most countries and marginal increase in this indicator in Portugal (in this case, accompanied by a more substantial increase among Italian enterprises). In the period between 2012 and 2015, Portuguese enterprises posted the largest reduction in financial leverage among the countries under review.

The reduction in financial leverage of European enterprises (and, in particular in the 2012-15 period, of Portuguese enterprises) is set against a broader restructuring of enterprises' financing. By comparing the liabilities structure of enterprises in 2015 with that in 2006, there is a shift in the various types of debt (Chart 18).

The largest restrictions in access to bank loans resulted in a lower recourse to this source of financing across the countries under review (but more considerably in the case of Portuguese enterprises).

The share of trade credits also declined, associated with the smaller increase in economic activity of enterprises compared with asset growth.

Conversely, the reduction in the weight of bank loans and trade credits was offset, in most cases, by greater recourse to other financial debt (an interest-bearing debt category, which covers, in particular, intra-group financing). This set-off was particularly substantial in Portugal, Belgium and Spain, although recourse to the issuance of debt securities increasingly accounts for a substantial share in Portuguese

Chart 16 • Financial leverage | Breakdown of the differential against Portugal (2015)

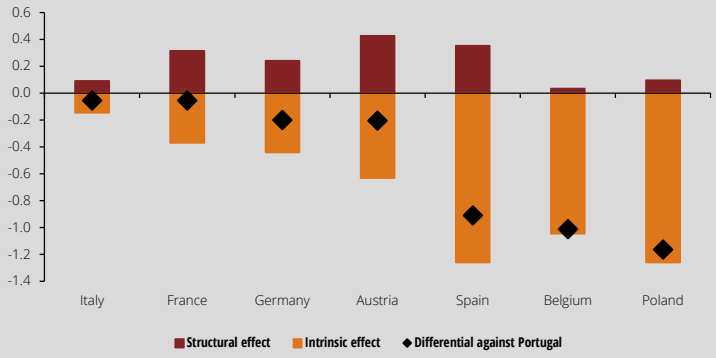
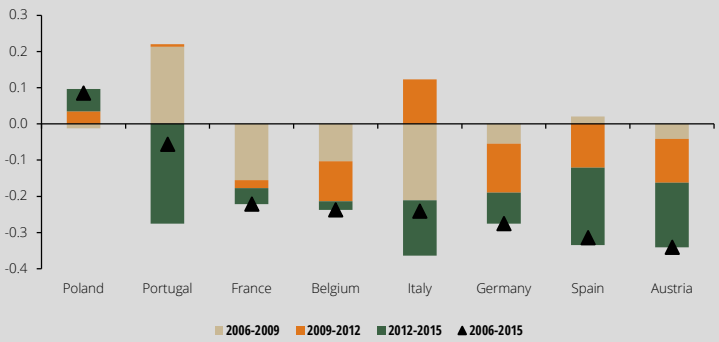


Chart 17 • Changes in financial leverage (2016-15)



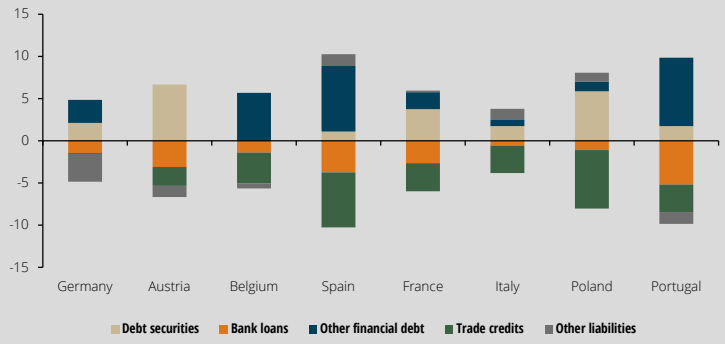
enterprises' liabilities (although to a lesser extent than in Austria, France and Poland).

To sum up, profitability for Portuguese enterprises is idiosyncratic, thus setting them apart from enterprises in other countries. These features chiefly stem from low return on sales and asset turnover levels, which contributed to systematically lower return on equity during most of the period under review.

However, recent growth in return on sales and asset turnover led to an increase in Portuguese enterprises' profitability, which compares more favourably with enterprises in other countries. The combined effect of both factors exceeded the negative contribution made by the recent deleveraging of Portuguese enterprises to return on equity.

These developments can be assessed on the basis of information presented in Table 2, in the Annex, which summarises return on equity developments in each country, broken down into the various sub-periods of the 2006-15 period, most notably taking into account the contribution made by each profitability component.

Chart 18 • Changes in the liabilities structure (percentage points, 2006-15)



Notes

1. The statistical classification of economic activities in the European Community (NACE Rev. 2) was established by Regulation (EC) No 1893/2006, of the European Parliament and of the Council, of 20 December 2006, which standardises the classification of economic activities in the European Union. The Portuguese Classification of Economic Activities (CAE Rev.3) is broadly compatible with NACE Rev. 2.

2. The classification of enterprises by size class follows the European Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. However, due to the need to match different degrees of information available among participating countries, only the turnover criterion envisaged in the Recommendation was adopted and, therefore, the classification by size class in BACH may differ from that adopted for the other statistical products of Banco de Portugal. In BACH, small enterprises are those with an annual turnover below €10 million, medium-sized enterprises are those with an annual turnover between €10 million and €50 million, and large enterprises those with an annual turnover above €50 million.

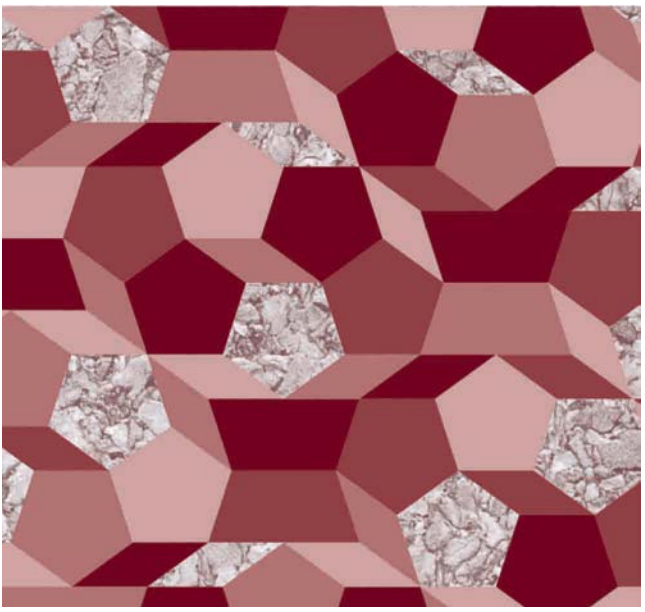
3. For the sake of simplicity, this study refers to 'enterprise' and 'corporation' interchangeably. Both refer to enterprises that comprise the institutional sector of non-financial corporations (NFCs). The NFC sector is one of the economy's institutional sectors. The institutional sectorisation of economic agents is carried out in accordance with the 2010 European System of National and Regional Accounts (ESA 2010), approved by Regulation (EU) No 549/2013, of the European Parliament and of the Council, of 21 May 2013. ESA 2010 is a harmonised reference on the compilation methodology and deadline for release of the national accounts of EU countries, including statistics under Banco de Portugal's responsibility. Underlying the series under review is a definition of the ESA 2010 population, for Portugal and other countries participating in BACH. Based on the national accounts standard, sole proprietors are included in the households' institutional sector. Hence, all data on the NFC sector throughout this study excludes sole proprietors (in Portugal these represent around two-thirds of the number of enterprises, but only 5 per cent of the respective turnover).

4. The Central Balance Sheet Database of Banco de Portugal is a database with economic and financial information on NFCs in Portugal. Information is based on annual accounting data reported within the scope of *Informação Empresarial Simplificada* – IES (Simplified Corporate information) and quarterly accounting data reported by enterprises through the quarterly survey on non-financial corporations. Annual data cover nearly all NFCs and quarterly data cover around 4,000 enterprises, representing 50 per cent of the sector's turnover. For more details on the activities of the Central Balance Sheet Database, see *Supplements to the Statistical Bulletin* 1/2008 – *Simplified reporting: inclusion of the Simplified Corporate Information in the Statistics on Non-Financial Corporations from the Central balance Sheet Database* and 2/2013 – *Statistics on non-financial corporations of the Central Balance Sheet Database – Methodological notes*, as well as Central Balance Sheet Study |19 – *Sector Tables and Enterprise and Sector Tables: Methodological Notes | Long Time Series 1995-2013*, of November 2014.

5. BACH's Userguide provides users with a better picture of the methodology adopted to harmonise information provided in this database by the various countries, and makes them aware of potential data comparability problems.

6. With the purpose of understanding differences between economic and financial indicators in Portugal and the other countries under review, their differential was broken down into the effect of the intrinsic component (intrinsic effect – associated with the fact that enterprises in a given country have certain idiosyncrasies setting them apart from enterprises in other countries as regards the analysed indicators) and the effect of its structural composition (structural effect – associated with the composition by sector of activity and size class in each country and the way in which these structures condition the values of the respective aggregate indicators). The methodology used is detailed in the ECB Statistics Paper No 21, entitled *Decomposition techniques for financial ratios of European non-financial listed groups*, May 2017.

7. The DuPont analysis is commonly mentioned in literature on the financial analysis of enterprises. One example is Ross *et. al.* (2010) and Brandão (2003).



Annex

Characterisation of BACH database samples

Main indicators of Portuguese and European enterprises

Methodological summary

Methodology for the compilation of statistical series

ANNEX • Characterisation of BACH database samples

Table 1 • Characterisation of BACH database samples

NACE Rev. 2 / Size class	AT (Enter., 2014)		BE (NE, 2013)		FR (NE, 2013)		DE (T, 2013)		IT (T, 2014)		PL (NE, 2014)		PT (T, 2014)		ES (NE, 2013)	
	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)	Weight sample / population	Weight sample (%)
A	1.0	1.0	1.7	1.0	1.0	0.5	0.2	0.1	1.0	0.8	3.8	2.3	1.0	1.3	n.a.	1.6
B	n.a.	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.0	2.3	3.0	0.6	1.0	1.1	0.0	0.3
C	1.8	12.5	1.0	24.2	1.1	24.5	1.1	41.0	1.0	36.8		27.2	1.0	25.5	1.0	19.0
D	1.0	1.0	0.9	1.0	1.2	1.7	1.4	17.7	1.0	7.1		0.8	1.0	6.1	1.4	0.6
E	1.0	1.0	0.8	1.0	1.1	1.3	0.8	0.7	1.0	1.3		2.5	0.9	0.9	1.3	1.9
F	1.5	15.6	1.0	10.1	1.0	9.1	0.6	1.8	1.0	4.3	0.8	9.8	1.0	5.7	0.9	7.0
G	0.9	20.8	1.0	21.2	1.1	22.5	0.9	23.2	1.0	30.7	1.1	29.3	1.0	37.8	1.0	23.6
H	1.3	5.2	1.0	10.1	0.9	9.0	0.9	3.6	1.0	5.4	0.8	5.7	1.0	5.8	1.2	7.2
I	0.7	7.3	0.9	3.0	0.9	4.0	0.4	0.3	1.0	1.3	0.8	2.1	1.0	2.5	0.9	6.8
J	0.7	4.2	0.9	4.0	0.9	4.6	0.9	4.0	1.0	4.3	0.8	3.4	1.0	3.7	1.1	4.9
L	1.2	14.6	1.3	1.0	0.5	0.8	1.1	1.3	1.0	0.2	1.6	3.8	1.0	1.2	0.9	1.1
M (excl. head off.)	0.7	9.4	1.1	5.1	0.9	5.3	0.5	1.3	1.0	2.2	n.a.	4.7	1.0	2.9	1.0	5.9
N	1.0	4.2	1.0	13.1	1.1	12.2	0.6	1.5	1.0	2.5	1.0	3.3	1.0	2.9	1.0	12.4
P	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.1	n.a.	n.a.	0.2	0.6	1.0	0.4	0.6	1.5
Q	1.0	1.0	1.1	3.0	0.6	2.8	1.8	2.5	n.a.	n.a.	0.3	2.9	1.0	1.7	0.9	3.9
R	0.5	1.0	1.7	1.0	0.8	0.6	0.6	0.3	1.0	0.7	0.4	0.4	1.0	0.5	0.6	1.1
S	0.5	1.0	1.0	1.0	0.5	0.6	0.4	0.2	1.0	0.2	0.1	0.4	0.9	0.3	1.0	1.2
Micro and small ent.	n.a.	88.0	1.0	37.0	0.8	30.1	0.2	2.1	1.0	22.8	n.a.	84.1	1.0	36.6	n.a.	47.0
Medium-sized ent.	n.a.	9.0	1.0	20.0	1.1	20.3	0.7	8.3	1.0	18.6	n.a.	12.5	1.0	19.9	n.a.	14.5
Large enterprises	n.a.	3.0	1.0	43.0	1.1	49.7	1.2	89.5	1.0	58.6	n.a.	3.4	1.0	43.5	n.a.	38.5

Source: *Chapter 2 – National Samples*, BACH Documents.

Notes: The country is shown in the first line (variable used to assess sample coverage, year). AT – Austria; BE – Belgium; FR – France; DE – Germany; IT – Italy; PL – Poland; PT – Portugal; ES – Spain; Enter. – number of enterprises; T – turnover; NE – number of employees; n.a. – not available.

ANNEX • Main indicators of Portuguese and European enterprises (2015)

Table 2 • Main indicators of Portuguese and European enterprises (2015)

		DE	AT	BE	ES	FR	IT	PL	PT
Return on equity	Value (%)	6.7	10.1	5.6	5.3	9.3	4.9	7.3	7.0
	Position	5	1	6	7	2	8	3	4
Return on sales	Value (%)	2.0	4.6	4.0	3.4	3.1	1.8	3.2	3.4
	Position	7	1	2	3	6	8	5	4
Asset turnover	Value (%)	113.4	73.4	65.2	69.7	97.3	87.0	113.3	64.9
	Position	1	5	7	6	3	4	2	8
Financial leverage	Value	3.0	3.0	2.2	2.3	3.1	3.1	2.0	3.2
	Position	4	5	7	6	2	3	8	1
Change 2006-15 (p.p.) and contributions									
Return on equity	Change (p.p.)	-4.8	-1.9	-3.4	-8.9	-4.4	-9.3	-4.7	-0.5
	Direction of change *	↘	↘	↘	↘	↘	↘	↘	↘
Direction of contribution to return on equity 2006-15**	Return on sales	↘	↗	↘	↘	↘	↘	↘	↗
	Asset turnover	↘	↘	↘	↘	↘	↘	↘	↘
	Financial leverage	↘	↘	↘	↘	↘	↘	↗	↘
Change 2006-09 (p.p.) and contributions									
Return on equity	Change (p.p.)	-4.5	-3.2	-1.3	-7.7	-5.8	-6.0	-2.0	-1.4
	Direction of change *	↘	↘	↘	↘	↘	↘	↘	↘
Direction of contribution to return on equity 2006-09**	Return on sales	↘	↘	↗	↘	↘	↘	↘	↘
	Asset turnover	↘	↘	↘	↘	↘	↘	↘	↘
	Financial leverage	↘	↘	↘	↗	↘	↘	↘	↗
Change 2009-12 (p.p.) and contributions									
Return on equity	Change (p.p.)	4.0	0.4	-1.2	-4.5	0.9	-3.3	-1.0	-5.1
	Direction of change *	↗	↗	↘	↘	↗	↘	↘	↘
Direction of contribution to return on equity 2009-12**	Return on sales	↗	↗	↘	↘	↗	↘	↘	↘
	Asset turnover	↗	↗	↗	↗	↗	↗	↗	↘
	Financial leverage	↘	↘	↘	↘	↘	↗	↗	↗
Change 2012-15 (p.p.) and contributions									
Return on equity	Change (p.p.)	-4.3	0.9	-0.9	3.3	0.5	0.0	-1.6	6.1
	Direction of change *	↘	↗	↘	↗	↗	↘	↘	↗
Direction of contribution to return on equity 2012-15**	Return on sales	↘	↗	↘	↗	↗	↗	↘	↗
	Asset turnover	↘	↘	↘	↘	↘	↘	↘	↗
	Financial leverage	↘	↘	↘	↘	↘	↘	↗	↘

*↗ Shows a positive change in return on equity; ↘ shows a negative change in return on equity.

** ↗ Indicates that ratio developments had a positive impact on changes in return on equity;
↘ indicates that ratio developments had a negative impact on changes in return on equity.
Note: AT – Austria; BE – Belgium; DE – Germany; ES – Spain; FR – France; IT – Italy; PL – Poland; PT – Portugal.

Methodological summary

Asset turnover: Ratio of turnover to assets.

Structural effect: When breaking down the differential between the value of an economic and financial ratio in a country against the reference country, it corresponds to the contribution stemming from differences in the composition of the corporate structure in terms of economic activity sector and size class. The methodological summary presents the calculations to break down the differential of an economic and financial ratio between two countries.

Sliding sample: Based on data from common enterprises over two consecutive years, making it possible to circumvent the effect of changes in the sample on the calculation of annual changes in the indicators. In BACH, values for the sliding samples in year i correspond, for the most recent year, to the value in year i with a reference to 'sample 1', and, for the earliest value, the value in year $i-1$ with a reference to 'sample -1'.

Economic activity sector: As regards total enterprises, this analysis excludes enterprises classified in Group 701 – *Activities of head offices* and Sections K – *Financial and insurance activities*, O – *Public administration and defence; Compulsory social security*, T – *Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use* and U – *Activities of extraterritorial organisations and bodies* of CAE Rev.3, as they are not included in the NFC institutional sector.

Financial leverage: Ratio of assets to equity.

Intrinsic effect: When breaking down the differential between the value of an economic and financial ratio in a country against the reference country, it corresponds to the contribution stemming from differences in the values for that ratio in each economic activity sector and size class in both countries. The methodological summary presents the calculations to break down the differential of an economic and financial ratio between two countries.

Return on sales: Ratio of net income for the period to turnover.

Return on equity: Ratio of net income for the period to equity. As both items (numerator and dominator) may be positive or negative, the indicator is only calculated at individual level in situations where equity is positive.

Turnover: Aggregate of sales and provision of services by enterprises during the financial year.

Variable sample: Sample that includes, for each year, all enterprises with available data, regardless of whether enterprises can provide data for other years. In BACH, the values for the variable sample in year i correspond to the value in the year i with a reference to 'sample 0'.

Methodology for the compilation of statistical series

1. Basic concepts

The table below summarises the concepts used in this analysis.

Correspondence between the concepts used in the study and BACH codes

Concept	BACH aggregate
Turnover	$I1 \times turnover$
Return on equity	$\frac{It3 \times turnover}{E \times total\ assets}$
Variable expenses	$(I5 + I6) \times turnover$
Employee expenses	$I7 \times turnover$
Financial expenses	$(I83 + I10) \times turnover$
Return on sales	$\frac{It3 \times turnover}{I1 \times turnover}$
Asset turnover	$\frac{I1 \times turnover}{A \times total\ assets}$
Assets	$A \times total\ assets$
Financial leverage	$\frac{A \times total\ assets}{E \times total\ assets}$
Equity	$E \times total\ assets$
Interest-bearing debt	$(L1 + L2 + L31) \times total\ assets$
Debt securities	$L1 \times total\ assets$
Bank loans	$L2 \times total\ assets$
Other financing	$L3 \times total\ assets$
Trade credits (liabilities)	$(L4 + L5) \times total\ assets$

Notes: BACH data is compiled on the basis of accounting information provided by enterprises. The correspondence between the various accounting standards and BACH codes may be consulted in 'Documents - Database contents' on BACH's website.

2. Economic activity sectors

Economic activity sectors taken into account in this study are summarised in the table below.

Correspondence between economic activity sectors and sectoral aggregates in BACH

Economic activity sector	BACH aggregate
Manufacturing	C
Construction	F
Wholesale and retail trade	G
Total enterprises	Zc

Notes: Sectoral aggregates in BACH are defined in accordance with NACE Rev. 2, which is generally compatible with CAE Rev.3. The sectoral breakdown used in this study is associated with NACE Rev. 2 sections. The 'Zc' aggregate corresponds to total enterprises excluding Group 701 (Activities of head offices) and Sections K (Financial and insurance activities), O (Public administration and defence; compulsory social security), T (Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use) and U (Activities of extraterritorial organisations and bodies) of NACE Rev. 2.

3. Average annual growth rates

Average annual growth rates between year t and year $t+n$ are deducted from the base index in year t as follows:

$$average\ annual\ rate\ of\ change = \sqrt[n]{base\ index\ year\ t_{year\ t+n}} - 1$$

Indices are calculated on the basis of moving-base indices obtained from sliding samples. Moving-base indices are calculated as follows:

$$moving - base\ index_{year\ i} = \frac{value_{year\ i,sample\ 1}}{value_{year\ i-1,sample\ -1}}$$

Where $sample\ 1$ indicates that the most recent year in the sliding sample is being taken into account and $sample - 1$ indicates that the earliest year in the sliding sample is being taken into account.

The base index year t for year $t+n$ is obtained by multiplying moving-base indices:

$$base\ index\ year\ t_{year\ t+n} = moving - base\ index_{year\ t+1} \times (\cdots) \times moving - base\ index_{year\ t+n}$$

4. Ratios

The time series in economic and financial ratios were recalculated to eliminate the effect of changes in the sample. The series used in this study were obtained by backward projection, starting in the most recent year for the variable sample ($sample\ 0$) and turning to the estimated developments on the basis of sliding samples, as follows:

$$value_{year\ i} = \begin{cases} value_{year\ i,sample\ 0}, & if\ year\ i = 2015 \\ value_{year\ i+1} - \left(value_{year\ i+1,sample\ 1} - value_{year\ i,sample-1}\right), & other\ cases \end{cases}$$

The change between year t and year $t+n$ is obtained by the difference between the value of the ratio in year $t+n$ and the value of the ratio in year t, and corresponds to cumulative changes that may be directly obtained though sliding samples in BACH.

5. Breakdown of the differential of an economic and financial ratio between two countries – structural effect and intrinsic effect

To understand the differences between Portuguese enterprises and those in other countries under review as regards the value for the series of economic and financial ratios analysed, the methodology used is that addressed by the European Central Bank (2017) to break down the differential for an economic and financial ratio between two countries.

In this study, the reference value is the ratio obtained for Portugal. The differential between the ratio of country i, provided by r_i, against the Portuguese ratio (r_{PT}) is provided by the sum of the structural effect and the intrinsic effect, as follows:

$$r_i - r_{PT} = Structural\ effect + Intrinsic\ effect$$

$$= \sum_j \left[\frac{r_{i,j} + r_{PT,j}}{2} \times \left(w_{i,j} - w_{PT,j} \right) \right] + \sum_j \left[\frac{w_{i,j} + w_{PT,j}}{2} \times \left(r_{i,j} - r_{PT,j} \right) \right]$$

Where j indicates the aggregate for economic activity sectors and size classes and $w_{i,j}$ indicates the weight of aggregate j in the variable taken into account in the denominator for the ratio of country i.

The aggregates for economic activity sector and size classes used in this breakdown are as detailed as possible in BACH, cross-checking NACE Rev.2 Divisions with three size classes (1a – microenterprises and small enterprises, 1b – medium-sized enterprises and 2 – large enterprises). Missing aggregates due to confidentiality issues are included in a residual class, for which structural and intrinsic effects are estimated using the same method as other aggregates.

Structural effect

The term $\frac{r_{i,j}+r_{PT,j}}{2} \times \left(w_{i,j} - w_{PT,j} \right)$ corresponds to the contribution of aggregate j to the total difference between both countries, assuming that the value for this aggregate was identical in both countries (taking into account the average of actual values for aggregate j in both countries). As such, it quantifies the contribution of the various weights of aggregate j in each country to the total difference in the ratios.

At the very most, if country i has the same corporate structure as Portugal, then $\left(w_{i,j} - w_{PT,j} \right) = 0$ for all aggregates and the structural effect is zero, with the difference between both ratios stemming from the intrinsic effect.

Intrinsic effect

The term $\frac{w_{i,j}+w_{PT,j}}{2} \times \left(r_{i,j} - r_{PT,j} \right)$ corresponds to the contribution of aggregate j to the total difference between both countries, assuming that this aggregate had a similar weight in both corporate structures (taking into account the actual average weight for aggregate j in both countries). As such, it quantifies the contribution to the total difference in the ratios stemming from varied levels of ratios for aggregate j in each country.

At the very most, if all aggregates post the same value in country i and in Portugal, then $\left(r_{i,j} - r_{PT,j} \right) = 0$ for all aggregates and the intrinsic effect is zero, with the difference between both ratios stemming from the structural effect.

6. Conversion of national currency-denominated amounts to euros

Data for Poland in BACH are converted to euros in accordance with the following rule:

- Balance sheet: the exchange rate at the end of the data reference period is used;
- Profit and loss account: the annual average exchange rate is used.

The ratios that link variables from only one financial statement are robust to exchange rate variations, which means that they do not vary due to changes in the rate. In turn, the ratios that link variables from both financial statements may be impacted by the exchange rate effect, particularly against a background of high currency volatility. Time development indicators (average annual growth rates, in this study) may also be affected by exchange rate volatility.

Abbreviations and acronyms

BACH	Bank for the Accounts of Companies Harmonized
CAE	Portuguese Classification of Economic Activities
ECCBSO	European Committee of Central Balance-Sheet Data Offices
ESA 2010	European System of National and Regional Accounts 2010
IES	*Instituto Nacional de Estatística* (Simplified Corporate Information)
INE	Instituto Nacional de Estatística (Portuguese National Statistical Institute)
NACE	*Nomenclature statistique des activités économiques dans la Commnauté européenne*
NFC	non-financial corporation
p.p.	percentage points

References

BACH (2016), *European non-financial corporations from 2007 to 2014*, Outlook #4, October 2016
https://www.bach.banque-france.fr/index.php?page=telechargementFile&file=Outlook4.pdf

BACH (2017), *Userguide*, January 2017
https://www.bach.banque-france.fr/index.php?page=telechargementFile&file=Summary_Userguide.pdf

Banco de Portugal (2008), *Simplified reporting: inclusion of the Simplified Corporate Information in the Statistics on Non-Financial Corporations from the Central Balance Sheet Database,* Supplement 1/2008 to the Statistical Bulletin, May 2008.
https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/sup-be-1-2008-en.pdf

Banco de Portugal (2013), *Statistics on non-financial corporations of the Central Balance Sheet Database: Methodological notes*, *Supplement* 2/2013 to the Statistical Bulletin, October 2013.
https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/suplemento-2-2013-en.pdf

Banco de Portugal (2014), *Sector Tables and Enterprise and Sector Tables: Methodological Notes. Long Time Series 1995-2013,* Central Balance Sheet Studies, No 19, November 2014.
https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/study%20cb%2019_2014_en.pdf

Banco de Portugal (2016), *Sectoral analysis of non-financial corporations in Portugal, 2011-2016*, Central Balance Sheet Studies, No 26, November 2016.
https://www.bportugal.pt/sites/default/files/anexos/pdf-boletim/study_cb_26_2016_en.pdf

Brandão, Elísio (2003), *Finanças*, Porto Editora, September 2003.

Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC).

Decree-Law No 381/2007 of 14 November 2007 on the definition of the Portuguese Classification of Economic Activities, Revision 3 (CAE-Rev.3) (Portuguese version only).

European Central Bank (2017), *Decomposition techniques for financial ratios of European non-financial listed groups*, Statistics Paper Series, No 21, May 2017.
https://www.ecb.europa.eu/pub/pdf/scpsps/ecb.sps.21.en.pdf?7987429d9f97a422b02d19666f69ef7c

Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities.

Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European system of national and regional accounts in the European Union.

Ross, Stephen A., Westerfield, Randolph W. and Jaffe, Jeffrey F. (2010), *Corporate Finance*, 9th edition, McGraw-Hill / Irwin.

Central Balance Sheet Studies

1 | Enterprise and sector tables, November 2010
2 | Structure and dynamics of non-financial corporations in Portugal, December 2010
3 | Sectoral analysis of non-financial corporations in Portugal, September 2011
4 | Sectoral analysis of manufacture of food products, November 2011
5 | Sectoral analysis of accommodation and food service activities, November 2011
6 | New enterprise and sector tables: adjustment to the accounting standards system, December 2011
7 | Sectoral analysis of non-financial corporations in Portugal 2010/2011, April 2012
8 | Sectoral analysis of non-financial corporations in Portugal 2011/2012, November 2012
9 | Sectoral analysis of the manufacture of textiles and wearing apparel, November 2012
10 | Sectoral analysis of the manufacture of footwear, November 2012
11 | Analysis of the agricultural sector, December 2012
12 | Structure and dynamics of non-financial corporations in Portugal 2006-2012, November 2013
13 | Sectoral analysis of non-financial corporations in Portugal 2012/2013, November 2013
14 | Analysis of the automobile industry, December 2013
15 | Sectoral analysis of the construction sector, January 2014
16 | Analysis of the information and communication activities sector, April 2014
17 | Analysis of the tourism sector, October 2014
18 | Sectoral analysis of non-financial corporations in Portugal 2009-2014, November 2014
19 | Sector Tables and Enterprise and Sector Tables: Long Time Series 1995-2013, November 2014
20 | Analysis of the mechanical engineering sector, March 2015
21 | Analysis of enterprises in the maritime sector, May 2015
22 | Analysis of enterprises in the export sector in Portugal, June 2015
23 | Sectoral analysis of non-financial corporations in Portugal 2010-2015, November 2015
24 | Analysis of enterprises in the wood, cork and paper sectors, January 2016
25 | Analysis of enterprises in the pharmaceutical sector, July 2016
26 | Sectoral analysis of non-financial corporations in Portugal 2011-2016, November 2016
27 | Analysis of enterprises in the manufacture of beverages sector, January 2017
28 | Analysis of enterprises in the transport sector, July 2017
29 | Profitability of Portuguese and European enterprises 2006-2015, September 2017