

BACH Database and its Possible Use

Introduction

BACH (Bank for the Accounts of Companies Harmonized)¹ is a database of aggregated and harmonised accounting data of non-financial companies in European countries, based on their national accounting standards. The database currently includes data for 10 countries (Austria, Czech Republic, France, Germany, Italy, Poland, Portugal, Slovakia, Spain and Belgium), with 3 more countries planning to join soon (Luxembourg, Netherlands and Romania).

The database is managed by the European Committee of Central Balance-Sheet Data Offices (ECCBSO), composed of experts from national central banks and national statistical institutes of the European Union. Under the aegis of ECCBSO, the BACH Working Group is responsible for maintaining and improving the aforementioned database. Národná banka Slovenska became a member of this Working Group in 2011 and joined the BACH database in September 2014, with aggregated data of non-financial companies for 2005-2012. Thus NBS has provided the public with access to a large database, which can be used as underlying data in analyses for research, academic and other purposes.

The data sources for this database include financial statements (balance sheets and income statements) of individual non-financial corporations². The organisations are aggregated according to NACE (revision 2) business sectors and size classes³, with a

¹ <https://www.bach.banque-france.fr/?lang=en>

² The database includes organisations that fall within the following ESA95 institutional sub-sectors: 11001, 11002 and 11003, i.e. Public non-financial corporations, Private non-financial corporations and Foreign owned non-financial corporations. The allowed legal forms of the organisations are: 111 - General partnership, 112 - Limited liability company, 113 - Limited partnership, 121 - Public limited company and 421 - Foreign entity, legal entity with its registered office outside the territory of the Slovak Republic.

³ There are 3 size classes based on the organisation's turnover: small enterprises with a turnover of less than €10 million, medium-sized enterprises with a turnover of at least €10 million and below €50 million, and large enterprises with a turnover of at least €50 million.

minimum number of companies in each group in order to maintain confidentiality. The indicators included in the database (95 indicators in total) were harmonised at the level of individual accounting items of statements, while respecting essential changes in reporting as such and maintaining year-on-year comparability. In terms of calculation, these indicators can be divided into two groups. One group includes what is known as balance-sheet and income-statement items (such as non-current assets, inventories, equity, provisions, wage costs, etc.) in relative terms, of course. The other group is composed of well-known ratio indicators of companies (such as assets to equity, liabilities to equity, return on equity, etc.). Each indicator includes 5 characteristics: weighted mean, first, second and third quartile, and the number of companies from which the value has been calculated. All data are calculated on an annual basis for 3 different company groups created based on their stability. In addition to data for the most recent year, where data of all currently existing companies are used, indicators are also calculated for only what is known as stable companies, which do not change their size or sector from one year to the next. Besides indicators, the database also includes descriptive information, coverage rates, and volume characteristics (such as number of employees, number of companies in the sector, amount of turnover, etc.).

BACH database data are very useful for analyzing the development of companies' situation in Europe, in particular for making comparisons between individual countries. Numerous papers⁴ are based on these data, with the data being used by institutions such as EBA (European Banking Authority), which made use of the data in its Report on the assessment of SME proposals for CRD IV/CRR⁵ (1).

Preparation of data for the database

Emphasis on the data quality is an essential prerequisite for further processing and analysing data in the database. Similarly, when building up the database, essential data quality requirements must be met such as data accuracy, completeness, timeliness, consistency and interpretability. When processing data and storing them in a data warehouse, the data quality management becomes a comprehensive process. Its key component is data cleaning, which is

⁴ The list is available at https://www.bach.banque-france.fr/index.php?page=telechargementFile&file=BACH_Bibliography_201407.pdf

⁵ Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (CRD IV). Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms (CRR).

based on the definition of standardised rules, the identification of problematic elements and their further processing. The task of Národná banka Slovenska was to create such input aggregated company data that would meet the high data quality standards defined by the ECCBSO.

To ensure adequate data quality, the company data were cleansed directly in the input files, i.e. at the financial statement level. Those statements were discarded that failed to meet essential accounting principles (“error type 1”), e.g. when the sums total of sub-accounts were inconsistent with the main account. Likewise, statements of inactive companies were also discarded, i.e. companies with zero assets, sales, or equity and liabilities (“error type 2”). A negligible number of statements was discarded because of the inconsistency of the statements from one year to the next (“error type 3”), and the last group of discarded statements included those which unjustifiably contained 0 in most items (“error type 4”). It should be noted that the quality of data reported by companies improved over the years (Figure 1) and the share of statements labelled as erroneous decreased from almost 35% in 2004 to approximately 23% in 2012. The greatest decrease occurred among erroneous statements that violated accounting principles, yet more than 20% of companies still appear to be inactive, i.e. with zero sales, assets or liabilities.

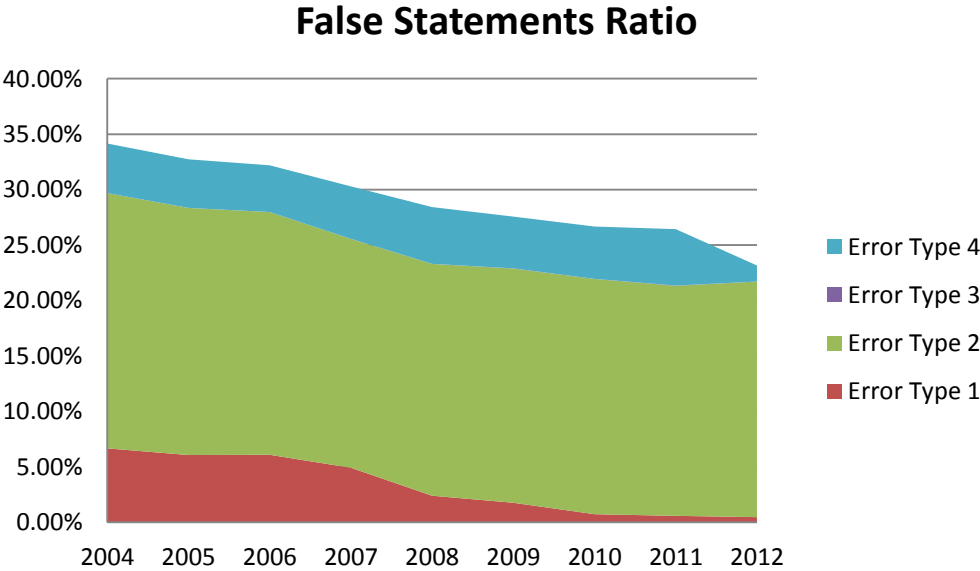


Figure 1: Development of erroneous statements by the types of errors

The data error rate also had an impact on the coverage of the market by data from the database. After cleaning, the database only contains company data from approximately 55% of all companies on the market in the year concerned (Figure 2).

Development of number of companies in the database

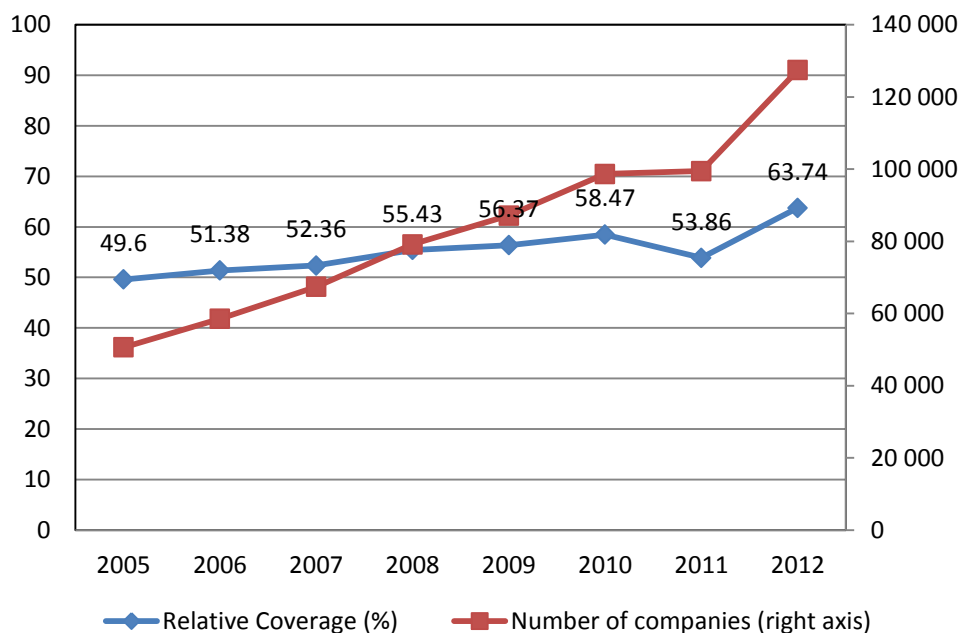


Figure 2: Number of companies in the database and relative coverage of the market

Details of the database of companies from the Slovak Republic

According to EBA (1), the BACH database is the most reliable source of financial data on European companies. The data structure reflects the business sector of each country albeit deviations and limitations on mutual comparability may occur⁶.

The database mostly contains data of small organisations⁷ (Figure 3), with *wholesale and retail trade* – NACE Section G (Figure 4) being currently the most represented sector. Over the course of time, however, we can see a declining share of companies in this sector in favour of *professional, scientific and technical activities* and *other service activities* (Figure 5).

⁶ For details, see

https://www.bach.banque-france.fr/index.php?page=telechargementFile&file=Summary_Userguide.pdf

⁷ Organisations with an annual turnover of less than €10 million.

Number of companies by size

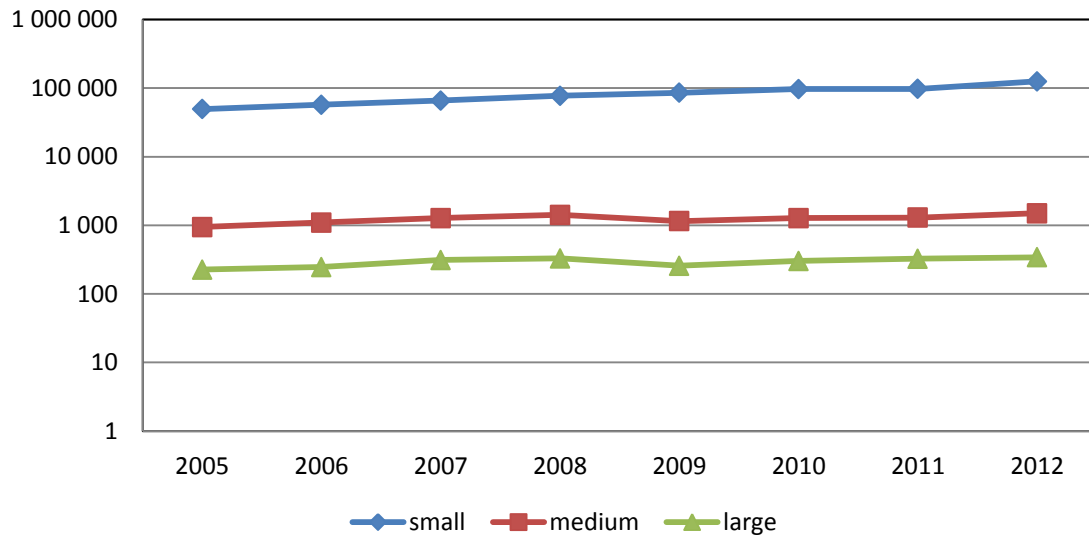


Figure 3: Development of the number of companies by size

Distribution of Sectors by number of companies

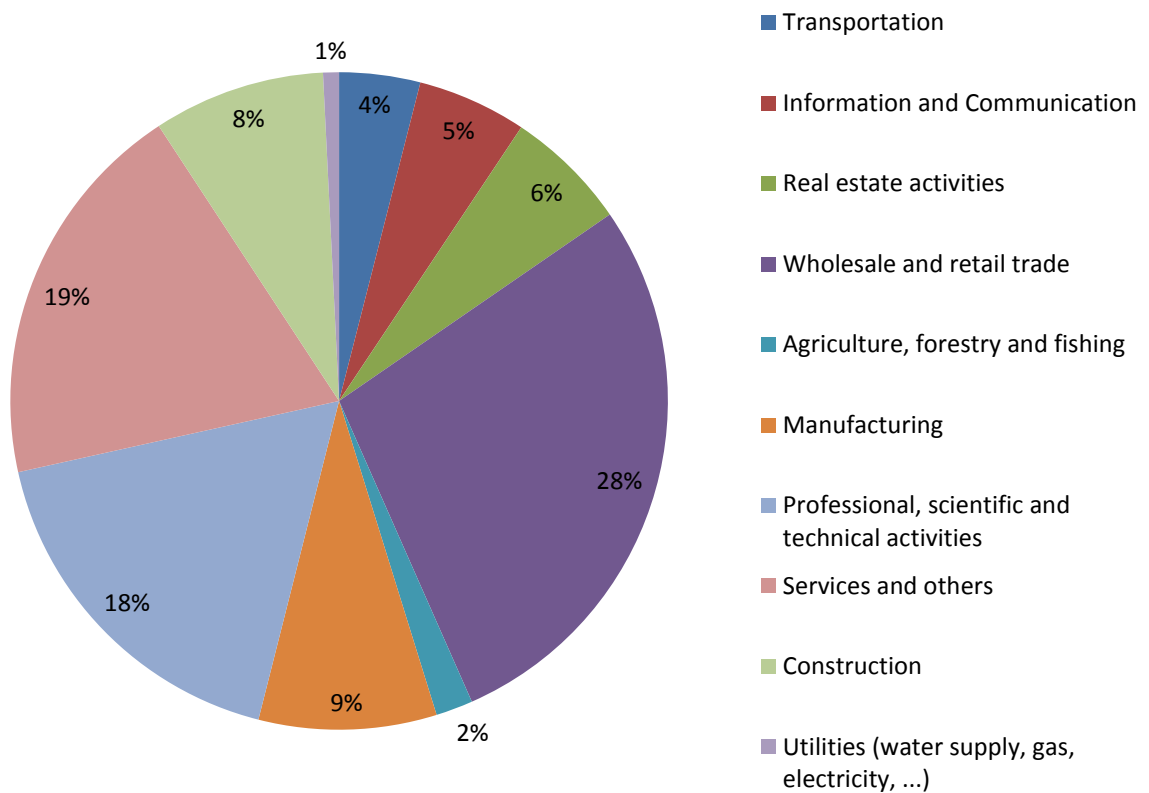


Figure 4: Share of companies within sectors in 2012

Change in Sector size for years 2005 - 2012

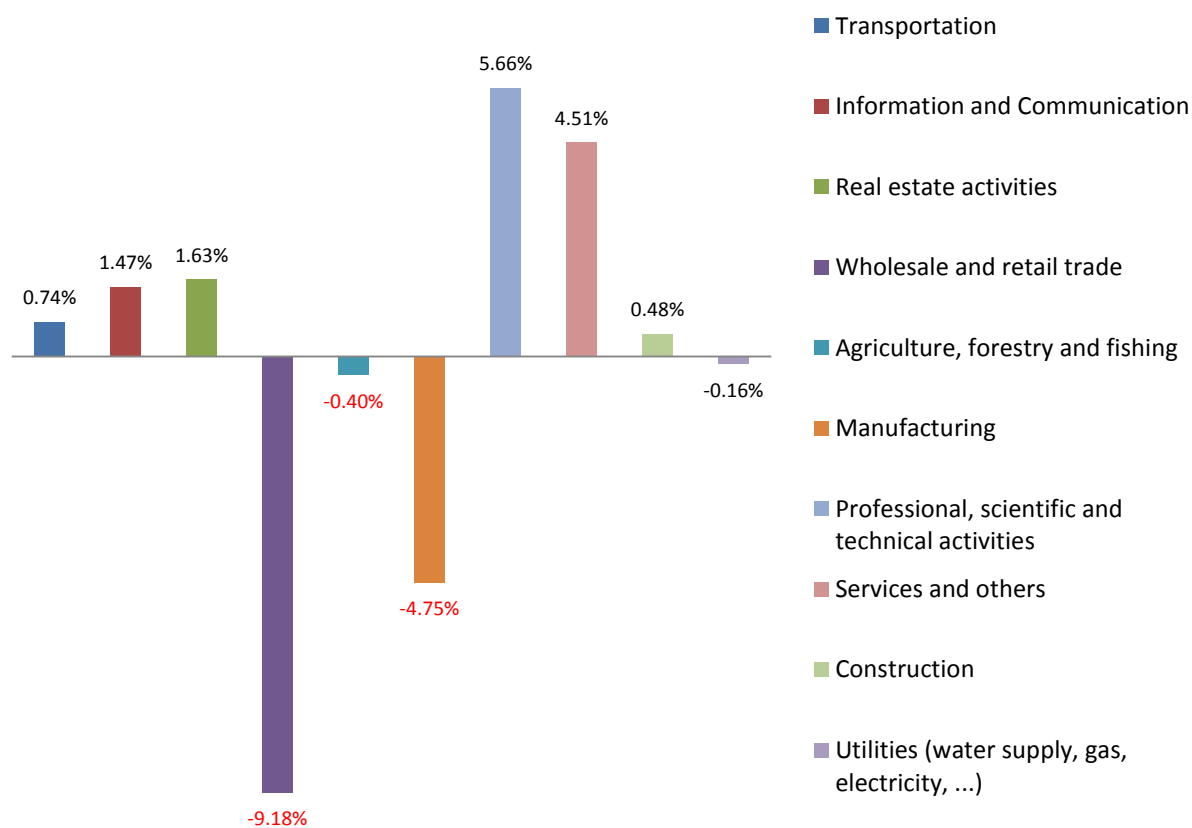


Figure 5: Change in Sector size by number of companies for years 2005 - 2012

A detailed view of the development of companies in the individual sectors by size (Figure 6) reveals that the decline in the number of trade and manufacturing companies only occurred in the group of small enterprises. Their representation in the large and medium-sized enterprises is fairly stable over time, and accounts for approximately 70% among large enterprises (30% of which in *trade* and 40% in *manufacturing*).

Number of companies by sector and size

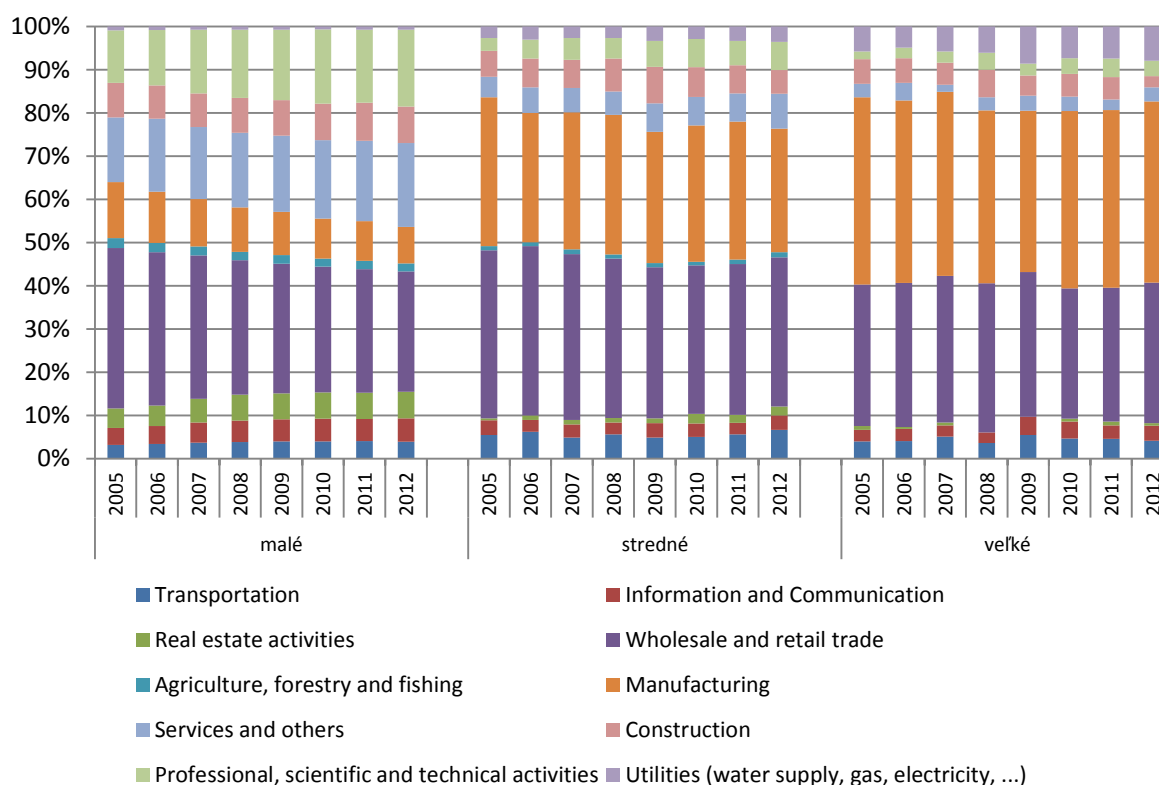


Figure 6: Development of companies in the individual sectors by size

The technological intensity⁸ in industry differs between the size classes of organisations. Figure 7 shows the shares of sectors in gross value added for the industrial sector as a whole, broken down by 4 groups of technological intensity and by company size. Small organisations are predominantly active in “Low tech” and “Medium-low tech” sectors. Large enterprises predominantly operate in “Medium-high tech” industry, with its share growing over years. Between 2011 and 2012, “High-tech” sectors saw their greatest year-on-year growth in the group of medium-sized enterprises, by almost 1.5% to 4.9%; in 2012, however, the largest share of these sectors was among large enterprises (5.7%).

⁸ The technological intensity is defined according to Eurostat and OECD criteria. Sectors have been distributed into 4 groups as follows: “High-tech” is represented by NACE sectors 21 and 26; “Medium-high tech” by NACE 20, 27-30; “Medium-low tech” by NACE 19, 22-25, 33; and finally “Low tech” is represented by NACE 10-18, 31-32.

Structure by technological intensity

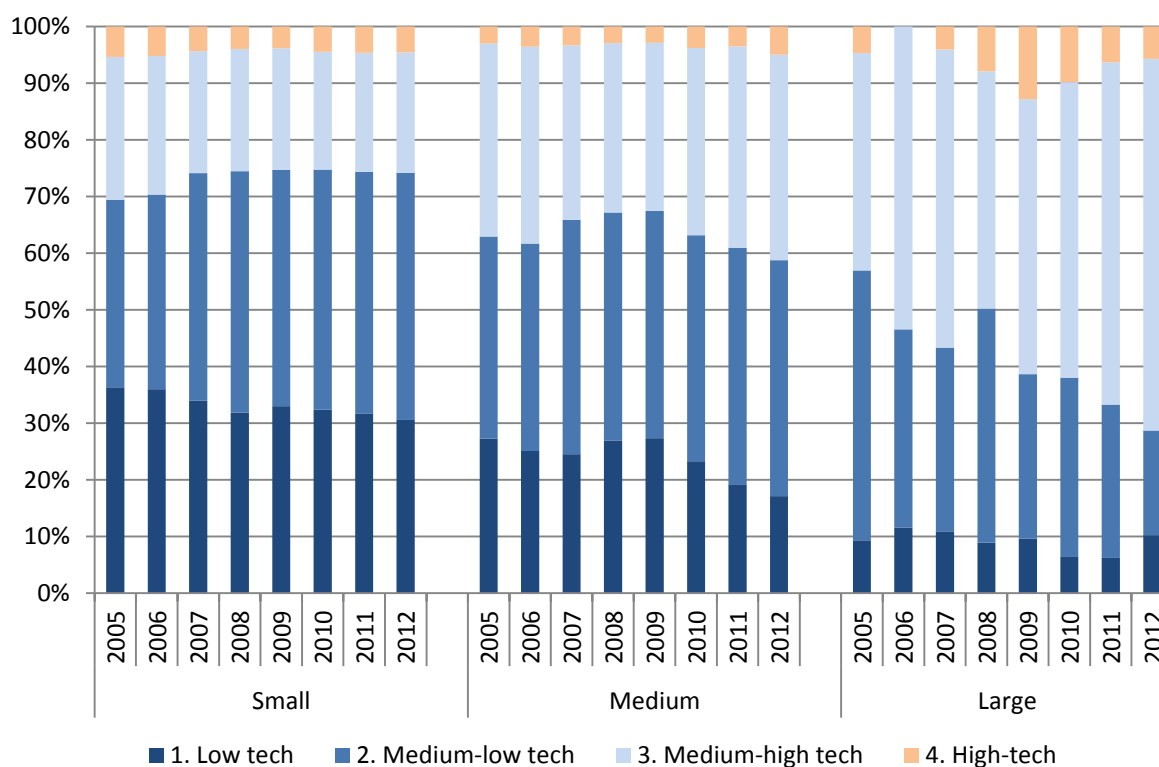


Figure 7: Technological intensity by share on GVA in Manufacturing.

The turnover of companies (Figure 8) slumped to the greatest extent in 2009, with large trade and manufacturing enterprises being most affected in terms of the absolute change in turnover. The impact of the crisis had perceivably lower implications for small and medium-sized enterprises, and the total turnover of small enterprises even exceeded the turnover of large enterprises.

Turnover in each sector

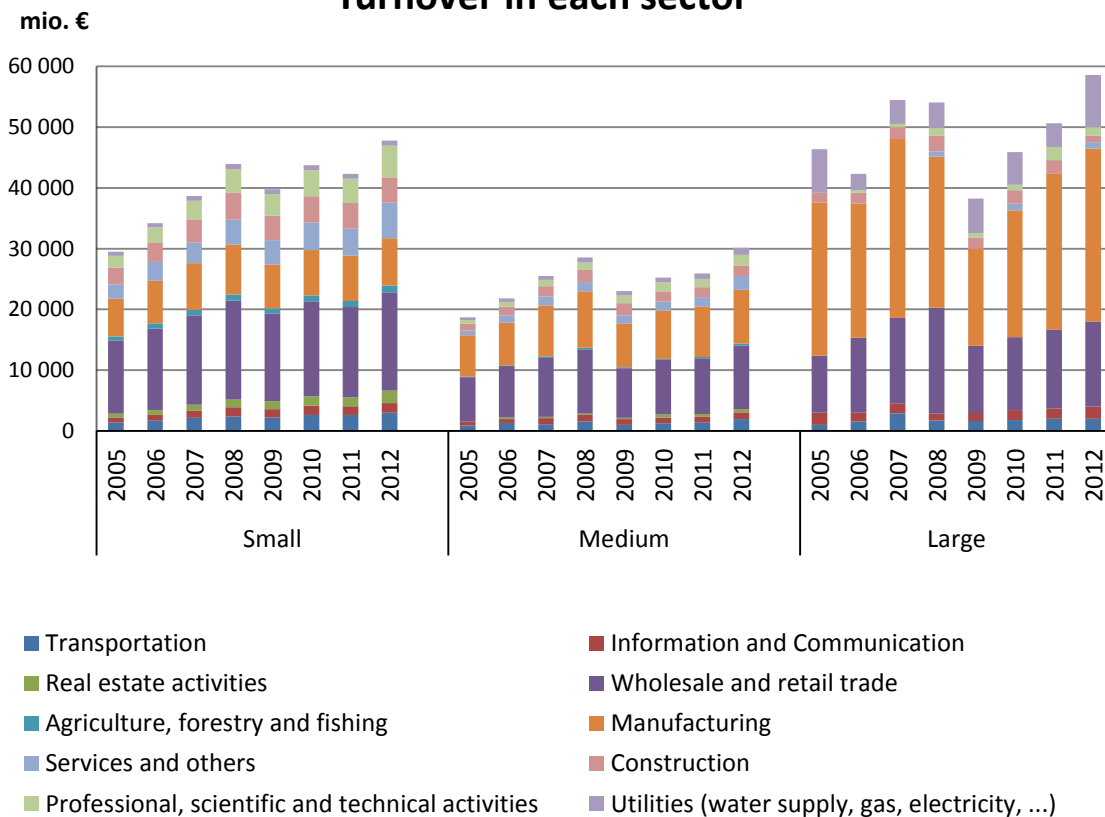


Figure 8: Turnover distribution for 2005 - 2012 by company size

The profitability of companies shows no clear trend in any size class (Figure 9).

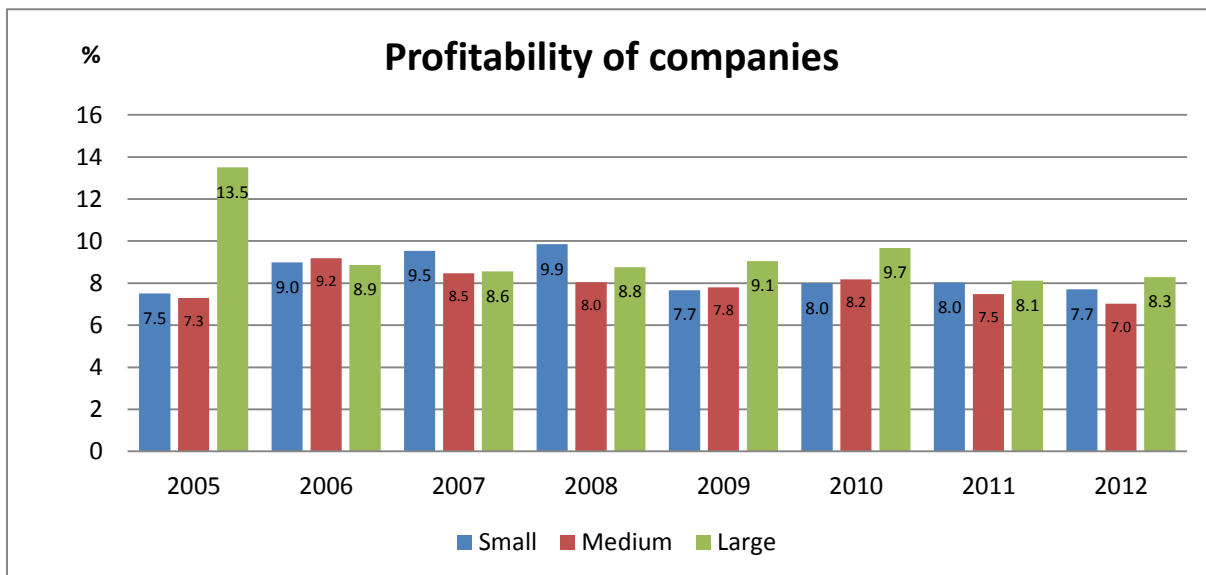


Figure 9: EBITDA on Net Turnover by size

Looking at employee expenses over gross value added (Figure 10), we find that the dispersion of this indicator is comparable between medium-sized and large enterprises albeit both the median and the 3rd quartile are slightly higher for medium-sized enterprises. For small enterprises, we can see a growing dispersion, which is much greater than for medium-sized and large enterprises, while we can see a declining trend in the median of expenses. This trend does not occur among larger enterprises.

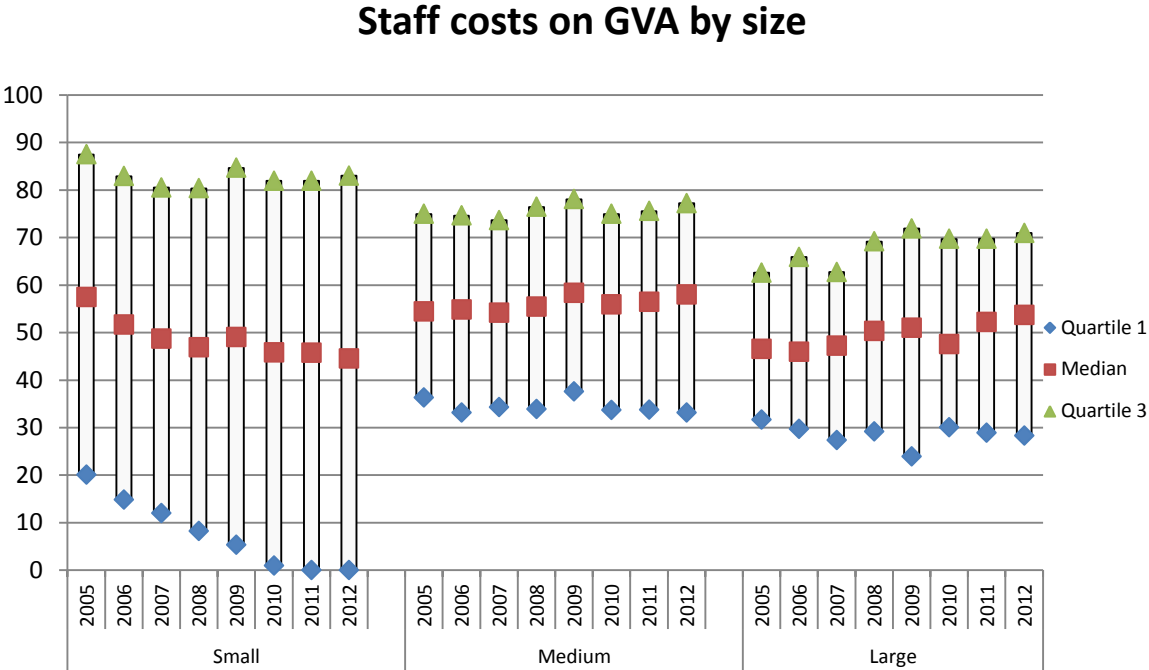


Figure 10: Distribution of staff costs as a % of gross value added by size of the company⁹

When employee expenses by sector for 2012 are compared (Figure 11), we can see an asymmetric distribution in the sectors of *real estate activities*, *information and communication*, and *professional, scientific and technical activities*. *Manufacturing* is among the sectors with the highest employee expenses over gross value added. By contrast, *real estate activities* show the lowest ratio.

⁹ Staff costs on GVA is calculated according to BACH methodology

Staff costs on GVA by NACE (2012)

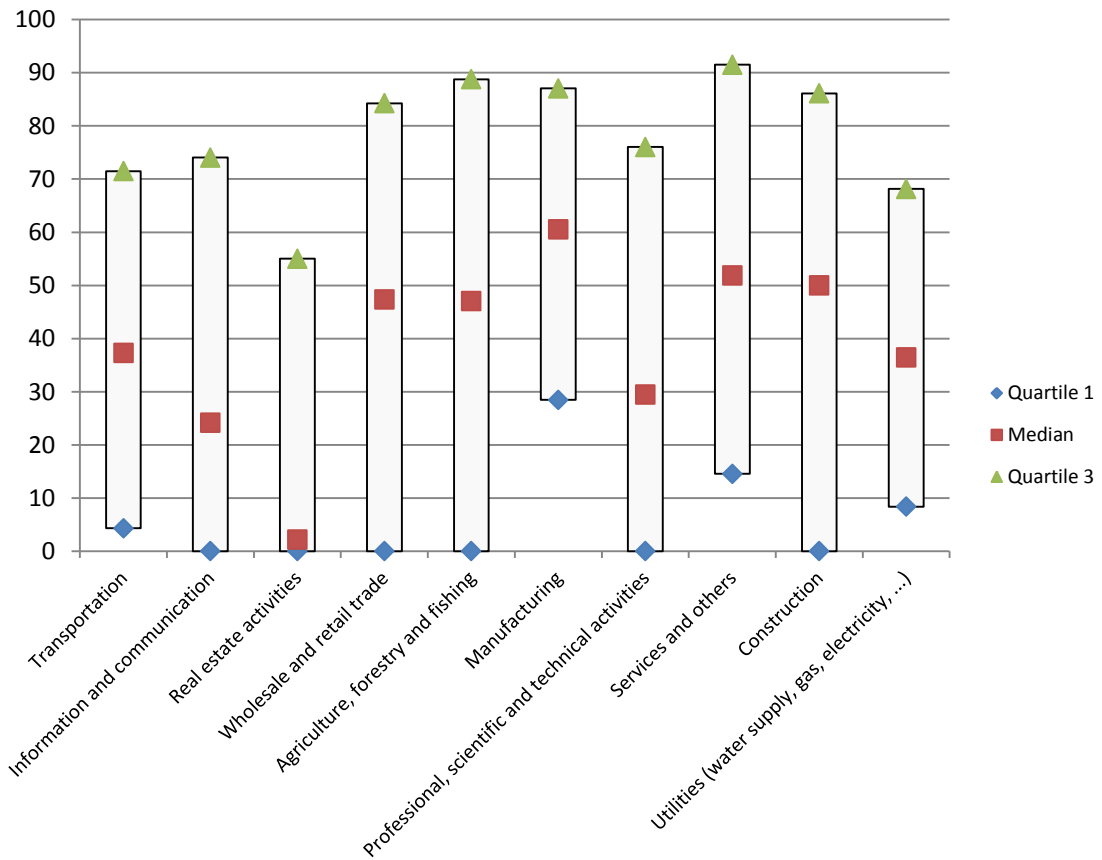


Figure 11: Distribution of staff costs as a % of gross value added by sector of the company for year 2012

Company financing methods differ significantly between small and large enterprises (Figure 12) Equity is most prevalent among large enterprises while total debt is most widespread among small enterprises, where bank loans play a greater role than in large enterprises. Over years, there has been a growing share of deferred liabilities and provisions among large enterprises whereas in small enterprises we can see the source of finance move from trade payables to other payables.

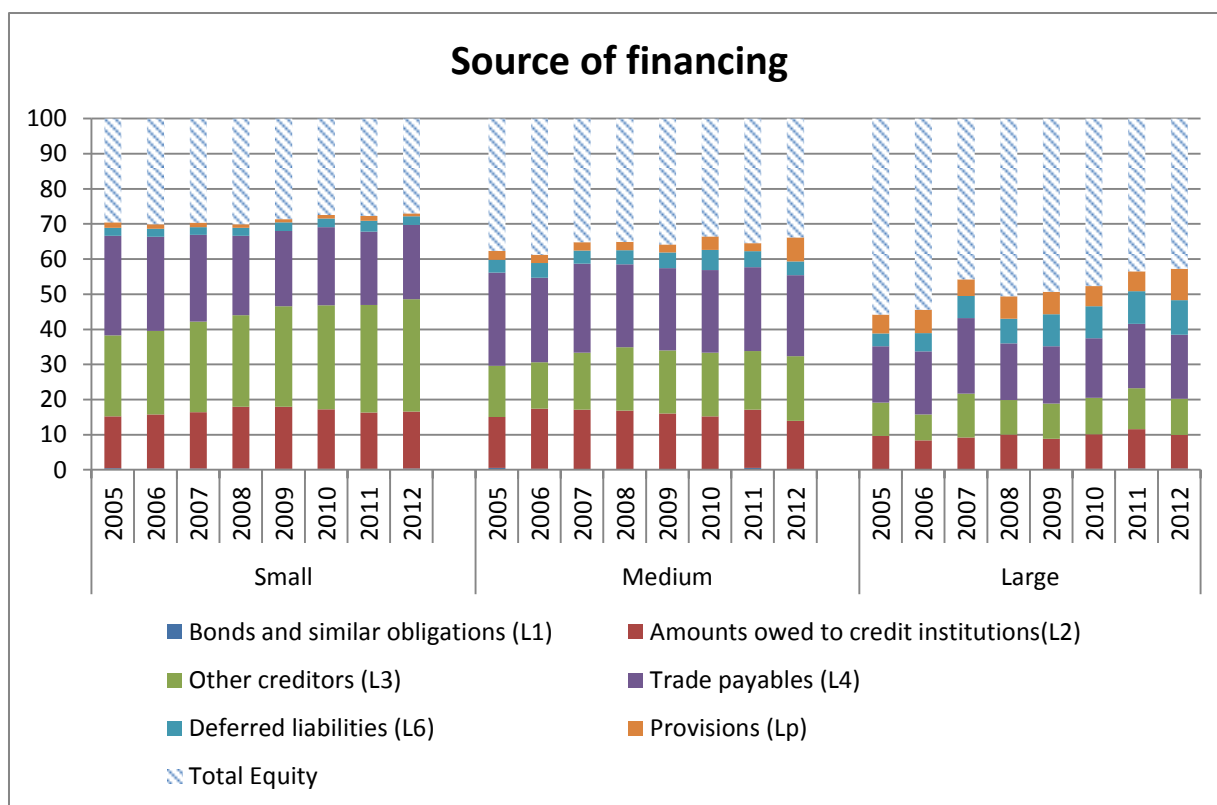


Figure 12: Weight of each source of financing on total liabilities

The present value of company debts by sector (Figure 13) shows that large enterprises are less indebted than their small and medium-sized counterparts in all sectors except *professional, scientific and technical activities*. Companies in *wholesale and retail trade* are highly indebted (at more than 60% of their asset value) irrespective of the company size. Apart from *wholesale and retail trade*, the most indebted sectors include *construction* (with the present value of debt at approximately 50% of the asset value), *professional, scientific and technical activities* for large and medium-sized enterprises, and *information and communication* along with *service activities* for small enterprises.

The above examples are just a small demonstration of the BACH database possibilities in analysing the Slovak business sector as well as making comparisons between Slovakia and other countries whose data are available in the database.

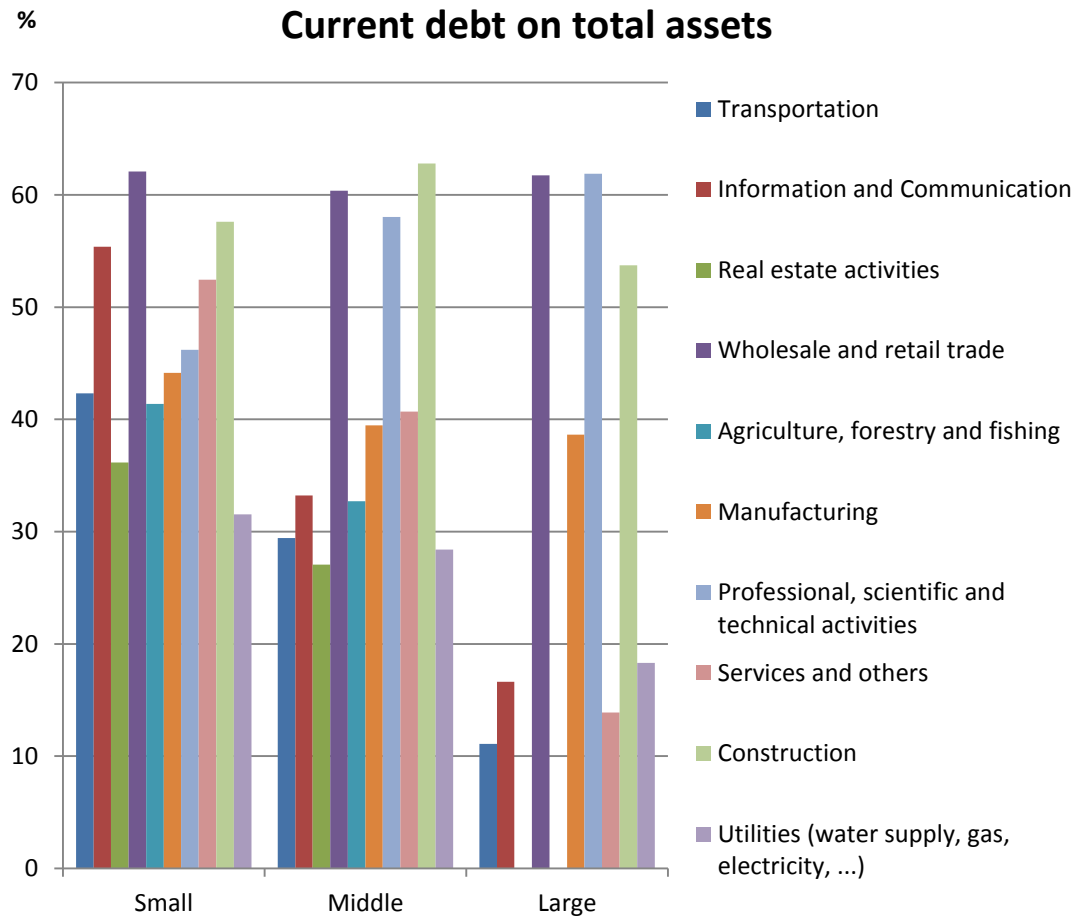


Figure 13: Current debt on total assets by enterprise size and sector type¹⁰

Conclusion

Various assessment methods are available to analysts in analysing the business sector. They can use data from what is known as micro-databases at the level of individual countries or they can base their analyses on macro-databases, one of which is the BACH database. Analysts who choose the latter option must envisage that the database is harmonised for individual countries and involves certain limitations (in order to maintain confidentiality and comparability). On the other hand, such an analyst obtains a more global view of the business environment. In either case, the database is composed of data of individual companies, and the essential prerequisite for a quality data basis is that the companies report their data in a correct and reliable manner.

¹⁰ Current debt on total assets is calculated according to BACH methodology

Sources used:

1. **(EBA), EUROPEAN BANKING AUTHORITY.** *Report on the assessment of SME proposals for CRD IV/CRR* . September 2012.
2. **National Bank of Romania, Costeiu Adrian.** *Twenty years after: Structural changes in the Romanian economy during the last two decades*. November 2014.
3. **BANK FOR THE ACCOUNTS OF COMPANIES HARMONIZED.** *Get Insights into 2012 data*. July 2014