Main results Innovation survey 2016

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Executive summary

The Community Innovation Survey (CIS) is a survey of innovation activity in enterprises and is carried out by EU member states, and a number of associated member countries. The CIS was first launched in 1992, but it has evolved a lot since then.
Results are primarily used for international comparison, making the use of an international manual and the coordinating role Eurostat plays in the whole process essential for European member states. The CIS 2016 survey is the 10th Innovation Survey conducted in Belgium. It adheres to Eurostat's methodological recommendations, which in turn are based on the Oslo Manual (OECD, 2005).

Overall, the results of the 2016 Community Innovation Survey (CIS) in Belgium are in line with the EU28 results. The share of innovating firms in Belgium rose from 56% in 2012 to 68% in 2016.
The rising number of innovative firms may be an indication of an increased focus on innovation from policy makers, the marketplace, and society at large. More public money is made available to firms for innovation projects, innovation is a term often used in marketing campaigns, society seems to have placed its faith in innovation to resolve today's challenges, etc. Considering this, the increase in innovative firms in the CIS2016 may also be the result of a desire to give the socially most desirable answer (i.e. social desirability bias). There may, to a lesser degree, also be a learning effect as the CIS has been launched every two years since 2005, making respondents more familiar with the terminology used in the survey.
It may, though, be the reflection of a real increase in innovative firms, or a combination of all of the above.

A surprising result is the remarkable drop in the number of firms reporting collaboration on innovation with other firms or institutions for their innovations. This tendency goes contrary to what is happening in the EU28 as a whole and it is at odds with the idea of open innovation. When compared to some of the neighbouring countries such as Germany and the Netherlands it seems Belgium is not alone in this decrease in collaboration.
The CIS identifies small and medium-sized enterprises (SME's) as the main actor of this decrease. But SME's are closing the gap with large firms in terms of innovativeness, giving grounds to the hypothesis that the decreasing number of collaborating firms is mainly due to SME's innovating by themselves or by outsourcing the innovation process altogether.

This report highlights the most salient figures, either because of their unexpectedness, or because of their effect. It is *not* a full report of all variables contained in the CIS2016. Aggregate results can be found on our website: https://www.belspo.be/belspo/stat/b23_en.stm, or on request.

1. Introduction

The present report describes the main results from the European Community Innovation Survey (CIS) 2016 in Belgium. Results are compared, whenever data are available, with those of neighbouring countries, the EU, Denmark, and Austria. Comparisons are also made between the CIS 2016 results and those from CIS 2014, and CIS 2012.

2. Methodology

The Belgian Science Policy Office (Belspo) coordinates the Belgian CIS so as to assure maximum comparability between the regions as well as internationally, in close cooperation with the Regional authorities: Innoviris for the Brussels Capital Region and DG06 (SPW) for the Walloon region, and data producers: ECOOM for the Flemish region.

The CIS is a stratified survey. Each region samples firms by size (small: 10-49 employees, medium: 50-249 employees, and large: 250+ employees) and aggregated sector. Not all sectors are covered, as prescribed by Eurostat (cf. Annex1).

The reference population was provided by the business register from the National Social Security Office (RSZ-ONSS) extracted on December 31, 2016. The frame population has 14 097 firms of which 7736 firms were sampled. The overall response rate was 59% and extrapolations were made to represent the entirety of the population.

3. Definitions and classifications

The Oslo Manual (OECD, 2005, p. 46) defines innovation as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method or a new organisational method in business practices, workplace organisation or external relation".
An innovative firm is one that has implemented an innovation during the period under review, in this case, 2014-2016.

- A *product innovation* is defined as the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses.
- A *process innovation* is defined as the implementation of a new or significantly improved production or delivery method (including support activities).
- A *marketing innovation* happens when a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing is implemented.
- An *organisational innovation* is defined as the implementation of a new organisational method in the firm's business practices, workplace organisation, or external relations (excluding mergers and acquisitions).

The first two types listed above are often referred to as technological innovations, the last two types as non-technological innovations.

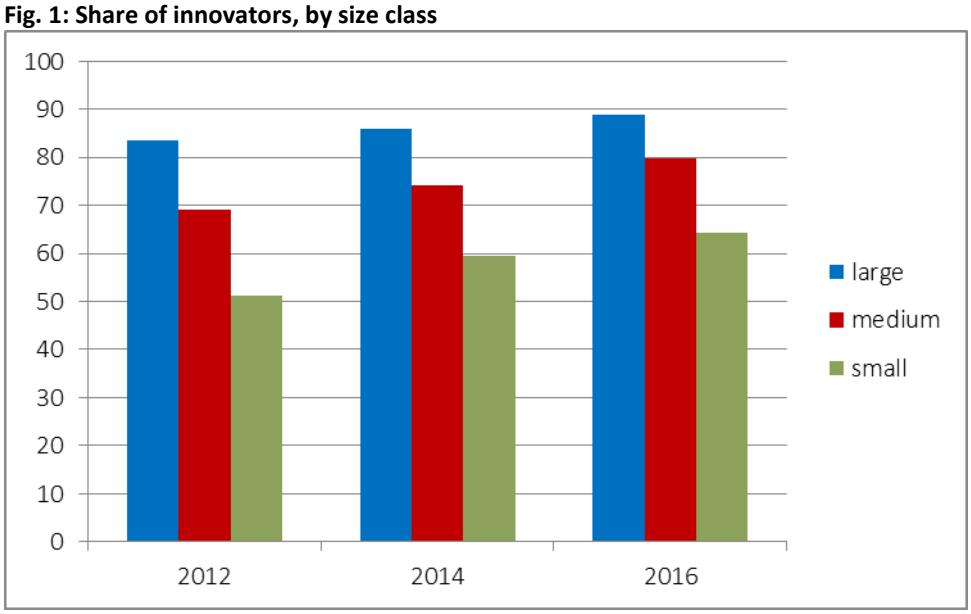
"An innovation-active firm is one that has had innovation activities during the period under review, including those with ongoing and abandoned activities" (OECD, 2005, p. 59), and regardless of whether the activity resulted in the implementation of an innovation or not. Innovation activities include R&D, the acquisition of advanced machinery, know-how, inventions, training for personnel for the development or introduction of innovations, market research, design, etc.

4. Main results CIS 2016

4.1. Innovators

One important trend is the increasing share of innovators (i.e. firms who introduced any type of innovation, including ongoing or abandoned innovation activities) from 56% in 2012 to 68% in 2016. This increase is especially marked for small and medium-sized firms. Large firms, however, are still the most likely size-class to be innovators (89%) and small firms the least likely (64%). A convergence over time of all size classes is noticeable, see fig.1.

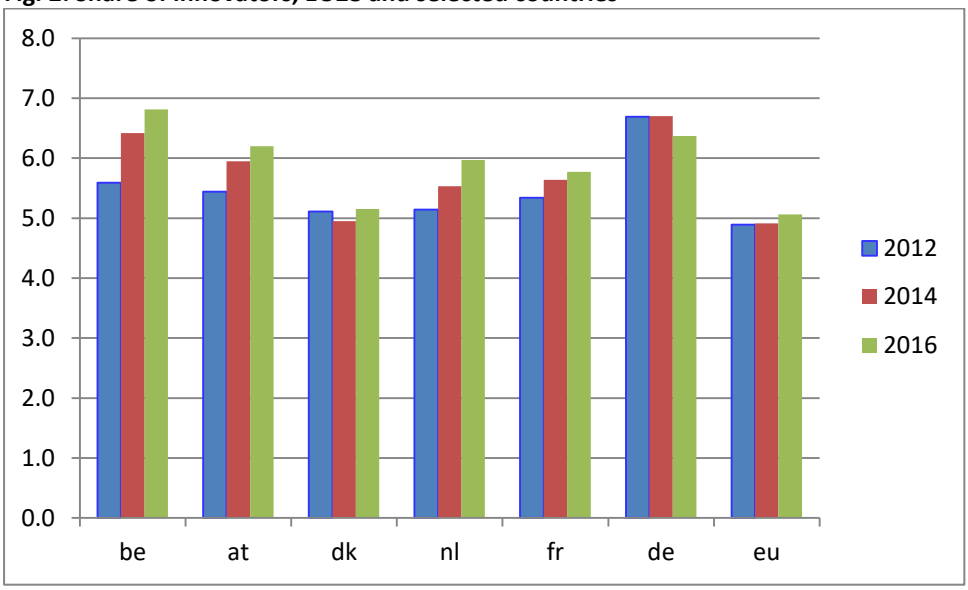
Fig. 1: Share of innovators, by size class



source: Eurostat https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database

Figure 2 shows the evolution over the same time-period for a select number of European countries. The picture is similar for Austria, France, and the Netherlands, i.e. rising share of innovators. But it is very different for Germany where the share of innovators has declined between 2014 and 2016. Denmark seems to hover around the same equilibrium, as does the EU28 average. It is rather surprising that Belgium has surpassed Germany in terms of overall innovators in 2016, albeit by a relatively small margin.

Fig. 2: Share of innovators, EU28 and selected countries



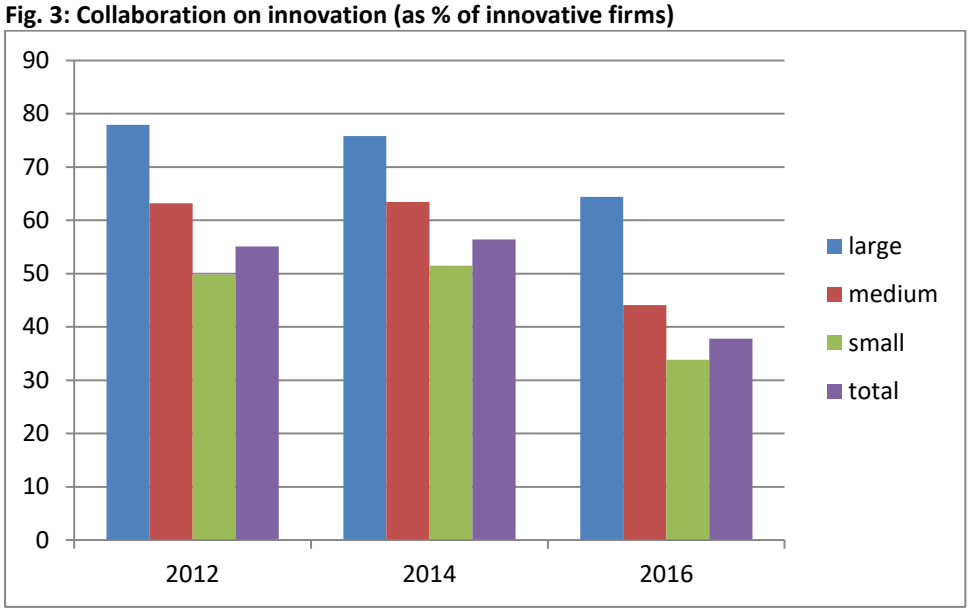
source: Eurostat https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database

4.2. Collaboration on innovation

Collaboration between firms when developing innovations of any kind seemed to remain rather stable between 2012 (55%) and 2014 (56%), but dived sharply in 2016 (38%). Especially small and medium-sized firms account for this steep decrease in collaboration, see fig. 3. This evolution is remarkable, as the EU28 seems to have very stable collaboration results. There is need for further analysis to offer an explanation for why the Belgian results on this particular subject differ so much from the EU28 results. This should be nuanced, though, as there are other EU member states with declining collaboration results, such as Germany, France, and the Netherlands, see fig. 4, but none of these countries' collaboration figures show as drastic a decline in collaboration as the Belgian figures. However, Belgium remains in the top three when it comes to collaboration. Only Austria and Denmark do better than Belgium.

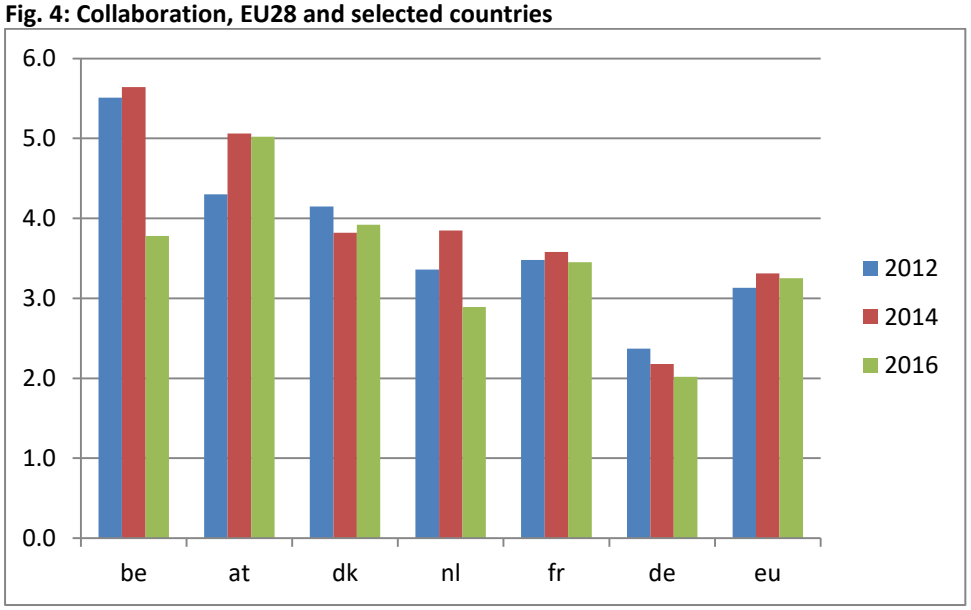
It may mean small and medium-sized firms are increasingly developing their innovations by themselves or outsourcing the development and/or the implementation of their innovations, considering the same two size-classes are the main drivers behind the increase of innovative firms in general (see fig.1).

Fig. 3: Collaboration on innovation (as % of innovative firms)



source: Eurostat https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database

Fig. 4: Collaboration, EU28 and selected countries

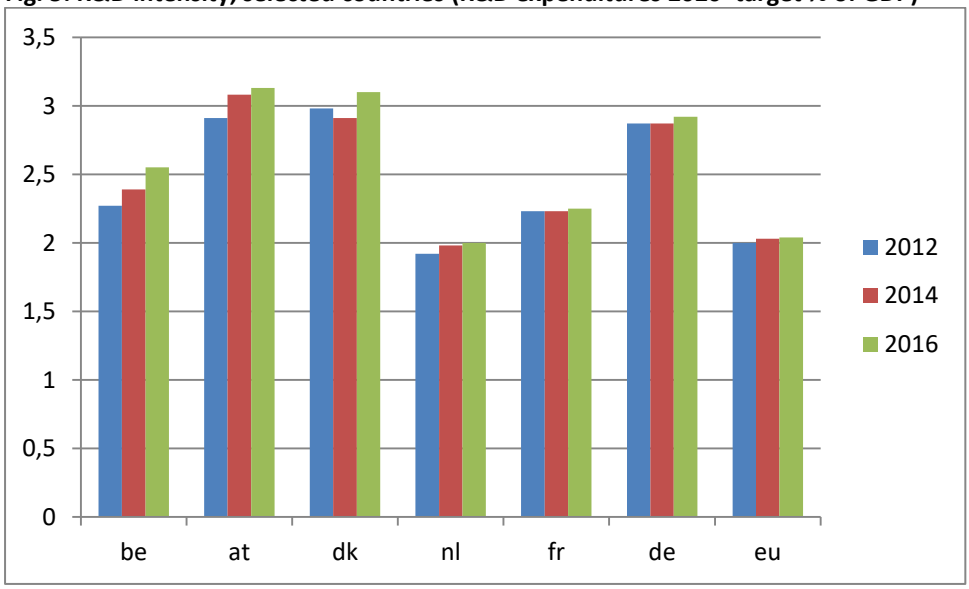


source: Eurostat https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database

4.3. R&D and innovation

Research and Development (R&D) is considered to be one of the many possible inputs in the innovation process, but it is often the most widely used one. Its aim is to increase knowledge, which can then be used to develop new goods, services, or business processes. It is a well-established measure in business statistics, and often used as a proxy for innovation.
When comparing R&D expenditures as a percentage of GDP, Belgium is doing well above the EU average and some of its neighbors (the Netherlands and France). Belgium also seems to enjoy a more pronounced growth in R&D expenditures by comparison. Even power-houses such as France and Germany have almost flat growth rates in R&D expenditures as a percentage of GDP.

Fig. 5: R&D intensity, selected countries (R&D expenditures 2020=target % of GDP)



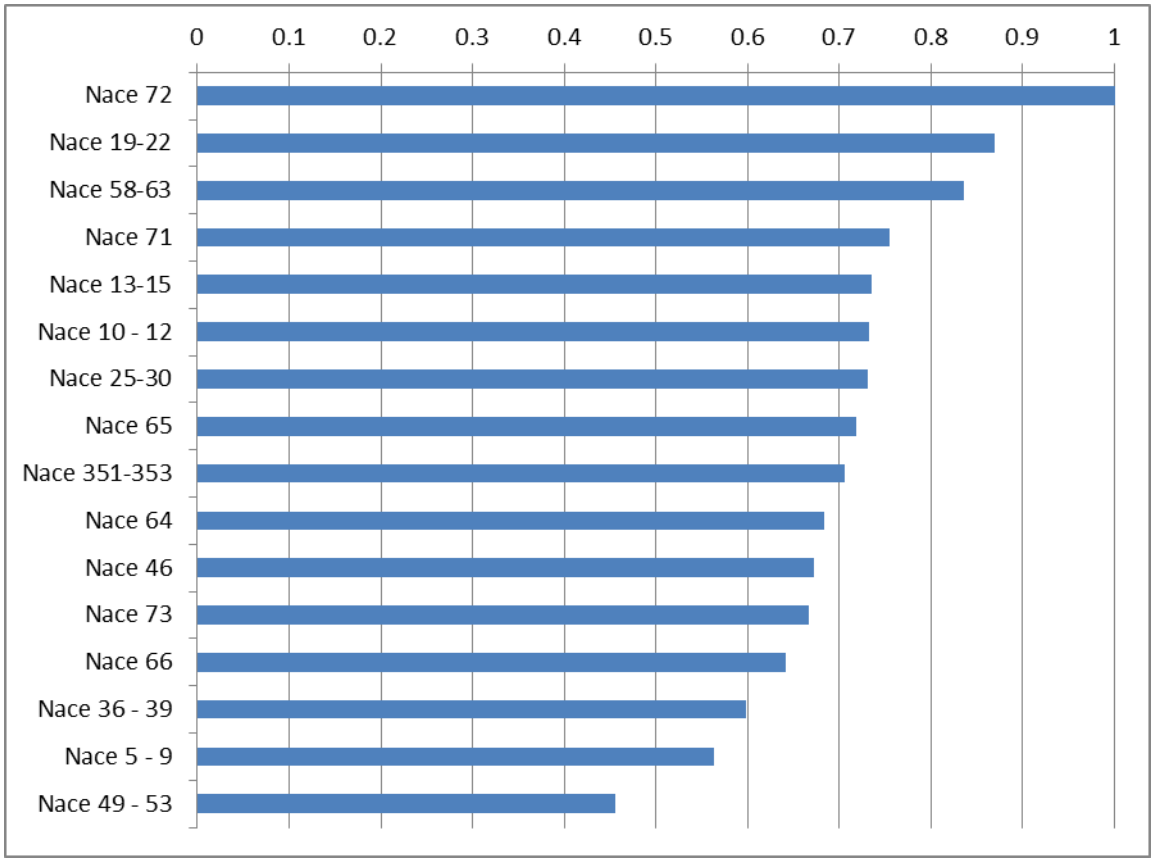
source: Eurostat https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database

Innovation is not necessarily the result of R&D. Innovation can be obtained by purchasing more sophisticated or technically advanced machinery, or by acquiring the necessary know-how from a third party, or even by copying products, methods or processes from other firms. In other words, innovations can be implemented in a firm without the firm having conducted R&D prior to the innovation's implementation, and R&D can be conducted in a firm *without* resulting in innovations such as firms conducting R&D as a service for their clients.

4.4. Ranking sectors by innovation

One could rank the different sectors by how likely a firm is to be innovative depending on the sector it belongs to. Figure 6 shows the innovation ranking in Belgium by sector or sector group.
To nuance the following ranking, it is important to highlight a few points. First of all, the ranking does not take into account a sector's *level of* innovativeness, nor does it take into account the level of resources involved in the innovative process. In other words, firms with several innovations will be labelled innovative just as a firm with only *one* innovation will be. In the same vein as a firm who invested a large amount of resources in the development of new goods or processes does not differ in this ranking from a firm who bought the innovation from a third party.
Also, Research and Development is considered to be an innovation activity therefore *all* Nace 72 firms are considered to be innovative. This may sound a little counter-intuitive as typically these firms do not implement any of the new knowledge created by their R&D activities in their own businesses, but sell them to other firms (R&D as a service) as input for their innovation activities and they serve as cooperation partners or as third party to which R&D is outsourced.

Fig. 6: Ranking sectors in Belgium by innovation (in % of total firms in the sector)



source: Belspo

Nace 72	Scientific research and development
Nace 19-22	Manufacture of petroleum, chemical, pharmaceutical, rubber and plastic products
Nace 58-63	Information and communication
Nace 71	Architectural and engineering activities; technical testing and analysis
Nace 13-15	Manufacture of textiles, wearing apparel, leather and related products
Nace 10 - 12	Manufacture of food products, beverages and tobacco
Nace 25-30	Manufacture of fabricated metal products (except machinery and equipment), computer, electronic and optical products, electrical equipment, motor vehicles and other transport equipment
Nace 65	Insurance, reinsurance and pension funding, except compulsory social security
Nace 351-353	Electricity, gas, steam and air conditioning supply
Nace 64	Financial service activities, except insurance and pension funding
Nace 46	Wholesale trade, except of motor vehicles and motorcycles
Nace 73	Advertising and market research
Nace 66	Activities auxiliary to financial services and insurance activities
Nace 36 - 39	Water supply; sewerage, waste management and remediation activities
Nace 5 - 9	Mining and quarrying
Nace 49 - 53	Transportation and storage

Although it is no surprise to find Scientific R&D, the petrochemical industry, IT, and engineering at the top of this ranking, it is interesting to see that "Wholesale" is *not* at the bottom of the list. The sector ranks right below the "Financial service" sector, which is rather surprising as wholesale has traditionally been considered to be a sector which does not change/innovate so much.

5. Conclusion

The main take-away from the CIS2016 results in Belgium is that the country is doing considerably and comparatively well. Overall, firms in Belgium seem to follow the same path as most of its neighboring countries and the EU28. There are some exceptions, such as collaboration with other firms or institutions to develop innovations where Belgium seems to go against the trend within the EU28. Surprisingly, Germany -- traditionally seen as one of Europe's most innovative countries -- shows a rather significant decrease of innovative firms in 2016 (63.7% in 2016, down from 66.9% in 2012), contrary to the overall EU28 trend.

It will be interesting to see whether the observed trends will be prolonged when the CIS2018 results will be available. Following the Oslo Manual revision in 2018, the CIS underwent an overhaul to take into account the changes in the Oslo Manual. Most likely, there will be a break in series. The underlying factors causing this break in series will be difficult to disentangle, though, if not impossible.