

Public sector efficiency in Belgium

D. Cornille
P. Stinglhamber
L. Van Meensel

Introduction

Efficiency is defined as the ability to obtain the best possible results using as few resources as possible. The constant quest for efficiency in public sector management is essential for all constituent parts of the State machinery. So, general government as a whole is expected to make a continued effort to improve services provided to the community or to reduce expenditure, or even pursue these two goals at the same time.

The theme of this article is an analysis, from a macroeconomic perspective, of the efficiency of public action in Belgium. It is split into three parts. The first part sets out a commonly used method for analysing how efficiently the government sector is run. The second part compares public expenditure in Belgium with spending in the other European countries. And in the third and final section, public spending levels are matched against the results obtained from a series of public action functions on the basis of the method presented at the beginning of the article. This approach makes it possible to compare efficiency between countries and identify reference countries that can provide inspiration for the Belgian government. The article winds up with a few conclusions.

1. How can public sector efficiency be measured?

1.1 Efficiency frontier

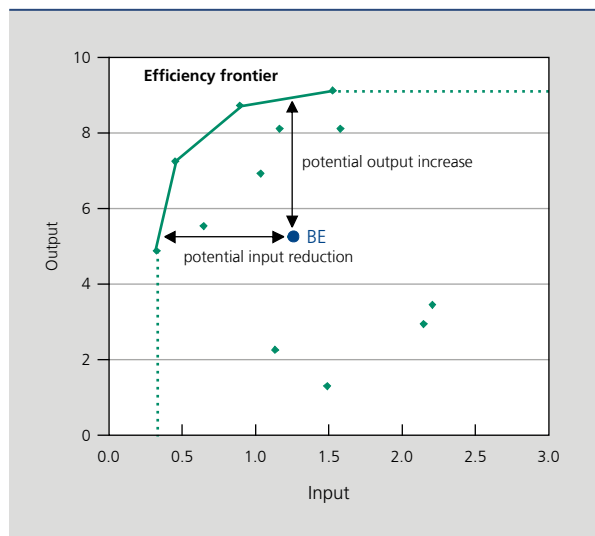
Studies devoted to public sector efficiency are often based on a similar methodology, a simplified version of which is taken up for the purposes of this analysis.

Firstly, each country from the sample under study is represented by a point, which measures the level of expenditure (input) on the horizontal axis and the results obtained (output) on the vertical axis, in each case for a well-defined function of public action.

The next step is to trace an 'efficiency frontier' linking up the countries with the best output-input combinations. In this case, the data envelopment analysis (DEA) method is used. This technique involves surrounding the data with an imaginary frontier demarcated by the most efficient countries from the sample. This line is not an absolute reference for efficiency; it just links up countries from the sample that apply the best practices, from the country using the least resources to the country obtaining the best results. On this frontier, there is no better performance at the same level of input, nor any less costly input at the same level of performance. Obviously, the line traced by this frontier is influenced by the number and nature of the countries taken into consideration: the method therefore only measures relative efficiency compared with these countries and there is nothing to suggest that the nations lying along the efficiency frontier really are efficient.

Lastly, the graphic distribution of the surveyed countries is then examined. The most efficient countries are those that can be found in the upper left-hand section of the graph, with a high output and low input. Conversely, the countries that are in the lower right-hand part of the graph are relatively inefficient because they combine a comparatively large amount of resources and weak results. By definition, all countries that fall under the frontier still have some potential for efficiency gains. For each one of them, there is at least one other country that either performs better for the same cost or spends less

CHART 1 ESTIMATION OF AN EFFICIENCY FRONTIER
(theoretical example, DEA method)



Source: NBB.

to produce the same performance. The distance to the efficiency frontier as measured on the output axis corresponds to the potential for qualitative improvements. Between these two extremes, there is a multitude of combinations of potential efficiency gains consisting of both cost-cutting and performance-enhancing capabilities.

1.2 Evaluation of input and output

Analysing the efficiency of public sector performance is no easy task, especially when it comes to measuring output. The quality of services provided by general government is often hard to grasp. Besides, public services are by definition non-market services. So, their value cannot be quantified in terms of price. Relevant indicators can nevertheless be found for some functions, while that is obviously not possible for others. For instance, on what basis can output by the army or the diplomatic corps be estimated? This limitation implies that any analysis of public sector efficiency from a macroeconomic perspective is confined to very specific functions, such as public action in the fields of health, education, security and mobility. This article attempts to assess just how efficient Belgium is in these four functions, in comparison to the other European Union countries.

Input, on the other hand, can quite simply be estimated on the basis of expenditure made. The data used to make this comparison come from the Classification of the Functions of Government (COFOG) drawn from the

national accounts, which gives a breakdown of expenditure by function. However, in some areas, households also account for a good part of the expenditure, making it impossible to separate the respective share of public and private spending in the end result. This is notably the case for health and education, where private expenditure contributes to a greater or lesser extent to the final result, for instance in terms of life expectancy or level of education reached. So as not to distort the analysis, public expenditure is therefore supplemented by household spending figures taken from the Classification of Individual Consumption by Purpose (COICOP). For the rest, expenditure is examined on the basis of averages established over the last sixteen years (2000-2015 period), in view of the fact that current findings tend to be attributed to spending made over a relatively long period. Thus, it is the cumulative efficiency of the public authorities' action over a given period of time that is assessed, and not just a simple – and potentially distorted – reflection of the current situation. Also, each recent change in the expenditure trend – for example due to the great recession and sovereign debt crisis in Europe, as well as the measures taken by government in the wake of these events – is therefore weakened somewhat in the measured input.

Although the method chosen is widely used for analysing efficiency, it is nonetheless restrained by some limitations. It is effectively a purely macroeconomic approach that does not come with any magic formula for greater efficiency. However, a closer examination of the composition of the most efficient countries' input and output does give some indication.

As for the output figures, even where there are data available for all countries, they are not always given on a harmonised basis. Some of the indicators used are taken from surveys based on relatively small samples of business-type respondents, which tends to make them less representative. Even if it implies arbitrary choices, the use of composite indices nevertheless enables less weight to be given to these rather biased findings that are flawed by a margin of error. Ultimately, this can give a rather nuanced picture of a country's results for a given function.

On the input side, there are other factors than expenditure that are not taken into consideration in the analysis, even though they may have some potential impact on efficiency, such as the type of policy followed, regulations in force, features of the tax system, etc. Moreover, some factors that are beyond the public authorities' control affect the results without being taken into account as an input. For instance, it has been shown that life expectancy is also influenced by factors that are not very sensitive to health

care spending policies, such as eating habits, smoking, air quality or the socio-economic environment.

These limitations should be borne in mind when interpreting the findings of the analysis in part 3. Meanwhile, the second section gives a more general overview of total public spending, notably in order to gauge the relative importance of the functions under study.

2. Overview of public expenditure

While in the early 2000s, primary government expenditure – i.e. spending excluding interest charges – in Belgium stood at a fairly similar level to the average for the euro area and for the countries making up the EU15⁽¹⁾, since then a gap has opened up. For instance, expenditure increased from 42.4 % of GDP in 2000 to 50.6 % in 2016. That is a rise of 8.2 percentage points of GDP, whereas the average increase in the other European countries was more moderate, at around 4 percentage points of GDP.

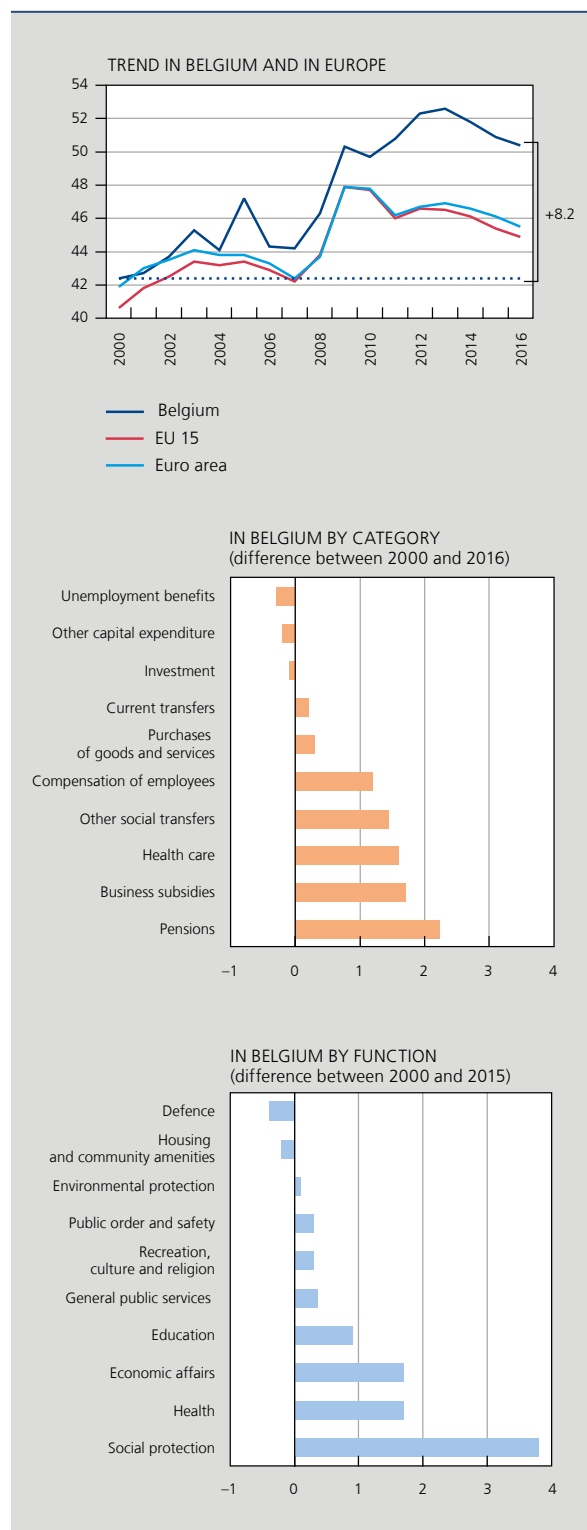
Up until 2008, Belgium’s public expenditure did not grow very much and stayed in line with the European average. As a result of the economic and financial crisis, expenditure rose considerably and to a similar extent in Belgium and in Europe. While most of the other European countries managed to reverse the trend from 2011, Belgium’s public expenditure continued to rise in 2013. It has since fallen a bit, but is still significantly higher than the European average.

2.1 Trend and composition of primary expenditure in Belgium

The marked increase in spending observed in Belgium between 2000 and 2016 is mainly attributable to three categories of expenditure: social benefits, civil service pay and business subsidies.

Expenditure on social benefits rose by 4.9 percentage points of GDP, 2.2 points of which went on pensions and 1.6 for health care. Conversely, unemployment benefits contracted a little, notably because of the tightening up of conditions for granting them. As far as public sector pay is concerned, the rise of 1.2 percentage points of GDP is the result of a 1.6 point increase for the Communities and Regions and local authorities, partially offset by a 0.4 point reduction for the federal government. Over the

CHART 2 PRIMARY EXPENDITURE
(in % of GDP, unless otherwise stated)



Source: NAI.

same period, business subsidies rose by 1.7 percentage points of GDP. This is primarily spending to keep labour

(1) Or the “European Union of the Fifteen” which refers to the group of countries that belonged to the European Union between 1995 and 2004. These are Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Denmark, Ireland, the United Kingdom, Greece, Spain, Portugal, Finland and Sweden.

costs down through cuts in payroll tax, targeted reductions in social security contributions and activation programmes for getting people back to work. Expenditure on purchases of goods and services also increased by 0.3 of a percentage point, almost entirely due to the Communities and Regions and local authorities. Together with the above-mentioned unemployment benefits, capital expenditure is the only category of expenditure to record a global decline over the whole period under review, while investment, which forms part of this category, is generally regarded as productive public spending that boosts the economy's growth potential.

An alternative approach to analysing primary expenditure involves looking separately at public expenditure per function. Under this approach, which makes a distinction between ten principal functions and a series of sub-items, it is possible to pinpoint areas in which public spending increased the most over the period 2000-2015 (as the year 2016 is not yet available under the COFOG classification).

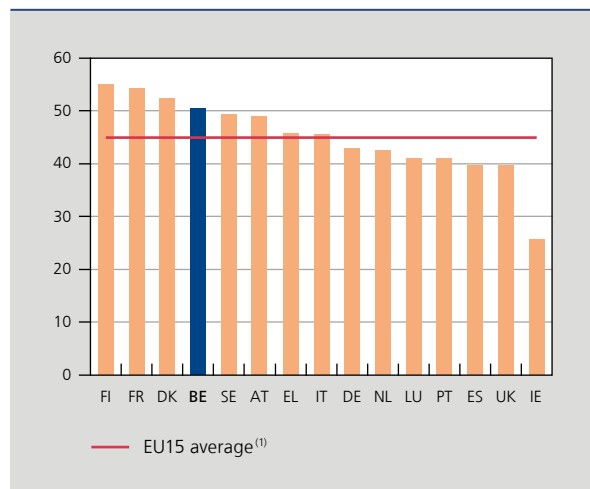
The four functions that pushed up expenditure the most are social protection (+3.8 percentage points of GDP), economic affairs⁽¹⁾ (+1.7 percentage points of GDP), health (+1.7%) and education (+0.9%). Spending on the "Recreation, culture and religion", "Public order and safety", "General public services excluding interest charges" and "Environmental protection" functions rose too, albeit to a lesser extent; they nevertheless jointly accounted for +1.1 percentage points of GDP. On the other hand, spending on defence and on housing and community amenities showed a decline – although quite small – over this period.

2.2 International comparison

For this analysis, the fifteen European countries that made up the old EU15 have been selected so as to position Belgium in relation to other sufficiently comparable countries, in terms of standard of living or availability of harmonised statistics, for example.

As for spending levels expressed as a percentage of GDP, Belgium lies in fourth place among the fifteen European countries selected. Along with the Nordic countries, France and Austria, it is one of the States with above-average public expenditure. Germany and the Netherlands, two other countries with which Belgium

CHART 3 LEVEL OF PRIMARY EXPENDITURE IN THE EU15
(in % of GDP, 2016)



Source: EC.
(1) Unweighted average.

is often compared, record much lower expenditure, by about 8 percentage points of GDP.

As statistics on public expenditure per function are also available for the other European countries on a harmonised basis, it is possible to compare these figures for 2015 function by function. They show that Belgium's expenditure is above average for all functions, with the exception of spending on "defence" and "housing and community amenities".

With regard to spending on social protection, the function that weighs most heavily on Belgium's public coffers, this country fares slightly above average, about 4 percentage points of GDP lower than the top three, namely Finland, France and Denmark. In terms of health care too, spending is higher in Belgium, which comes in fifth place. Belgium is ahead of Germany for most functions.

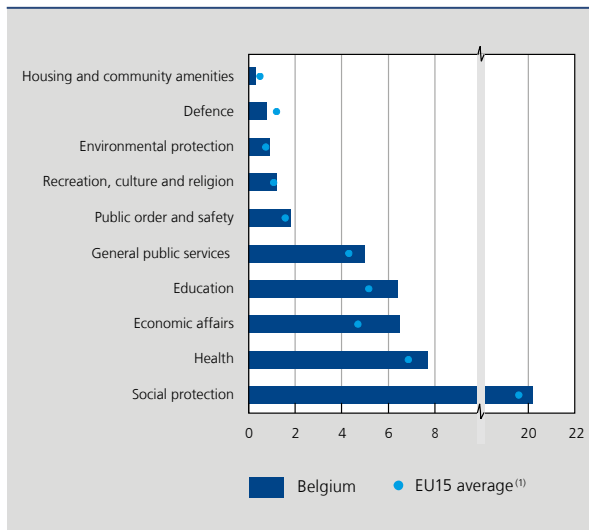
Expenditure on functions that fall under the "economic affairs" category, namely business subsidies in the context of employment policy as well as spending on the "communication" or "transport" sub-items, is relatively high in Belgium, which thus features in second place, just behind Greece and ahead of Austria.

As for the "education" function, Belgium lies in third place, behind Denmark and Sweden.

Expenditure on the "general public services" function covers operation of the legislative and executive organs, financial and fiscal affairs, external affairs, foreign

(1) Category that encompasses the following sub-items: "General economic, commercial and labour affairs", "Transport", "Communication", "Fuel and energy", "Mining, manufacturing and construction" and "Agriculture, forestry, fishing and hunting".

CHART 4 PRIMARY EXPENDITURE BY FUNCTION
(in % of GDP, 2015)



Source: EC.
(1) Unweighted average.

economic aid, general services, basic research, etc. For these functions, Belgium always pays out more than the average for the other countries, behind the Scandinavian countries and Greece, but ahead of neighbouring countries like France and Germany in spending terms. The same observation can be made for “public order and safety”, although in the latter case Belgium is in front of the Scandinavian countries, with higher-than-average spending that is nearer the figures for the Southern European countries, the United Kingdom and the Netherlands.

As far as “recreation, culture and religion” and “environmental protection” are concerned, Belgium’s spending patterns are systematically above average, while among the other countries, the positioning is more variable. The Nordic countries, for instance, come under the average for spending on the environment, while the opposite is true for spending on “recreation, culture and religion”. The opposite generally holds true for the Southern European countries.

3. Efficiency of public action in Belgium compared with the other European countries

As already mentioned, it is tricky to estimate the efficiency of total public expenditure. Nevertheless, some organisations have come up with indicators, mainly based on survey findings, designed to assess the overall

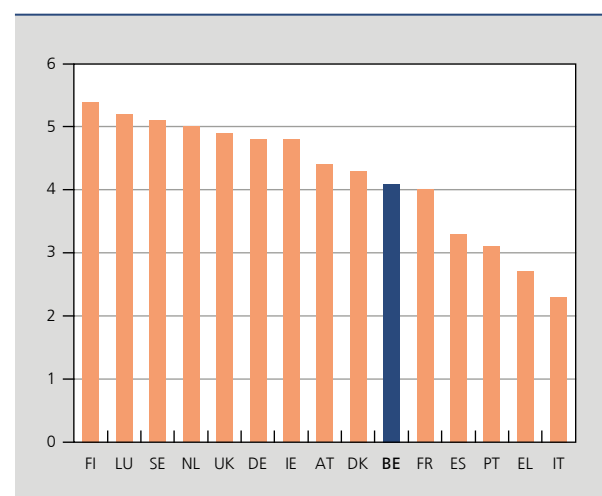
efficiency of public authorities. For instance, according to the World Economic Forum’s 2016 survey, Belgium is given a similar score to France for efficiency levels, in front of the Southern European countries but behind the rest of the EU15.

This third part of the article puts forward a more nuanced analysis of this observation, by applying the method described in the first section to several different public action functions: health, education, public order and safety, and mobility. The countries selected are once again those from the EU15, which tend to be more homogeneous and for which there are generally reliable and comparable data for each of these functions. Together, the selected categories account for 36% of primary expenditure in Belgium. Functions that were not taken into consideration include social protection, economic affairs, general public services, defence, environmental protection, etc. Indeed, it is either hard to find any representative indicators for these functions or not very relevant to try and make a connection between the results obtained and the budgets allocated by public authorities.

3.1 Health

Seven indicators were selected to make up the composite index for measuring output on the health front: life expectancy, healthy life expectancy, child mortality, waiting times to get a doctor’s appointment, perceived health, satisfaction with the health care system and quality of the health care infrastructure. As far as input is concerned,

CHART 5 GENERAL PUBLIC EFFICIENCY
(assessed by respondents on a scale of 1 to 7, survey conducted in 2016)



Source: WEF.

private expenditure is added to public spending on health, so as not to distort the comparisons.

Belgium registers fairly good results when it comes to health care. However, the high output comes at a very high cost too, with Portugal being the only country to spend as much as Belgium on health. Moreover, seven countries are more efficient than Belgium, posting better results despite using fewer resources. Luxembourg is a special case. Since its GDP per capita is artificially inflated by the large number of border workers, its level of expenditure expressed as a percentage of GDP is often low. This is notably the case for spending on health. It is therefore preferable to compare Belgium with other countries, such as Sweden, the Netherlands or Spain, which produce better results while spending less.

Belgium does quite well when it comes to the health indicators. It gets the highest score for three indicators: quality of the health care infrastructure, general satisfaction of beneficiaries with the health care system and waiting times to get a doctor's appointment. Conversely, its overall result is pulled down by poorer scores regarding child mortality and life expectancy. It should be noted that the latter indicator is probably determined by a whole host of factors, with health spending being just one among many, such as lifestyle and genetic predisposition. It is even possible that there is a negative correlation between the budget for health care and life expectancy. For example, factors like smoking or bad eating habits tend to reduce life expectancy and at the same time increase the risk of illnesses requiring costly treatment.

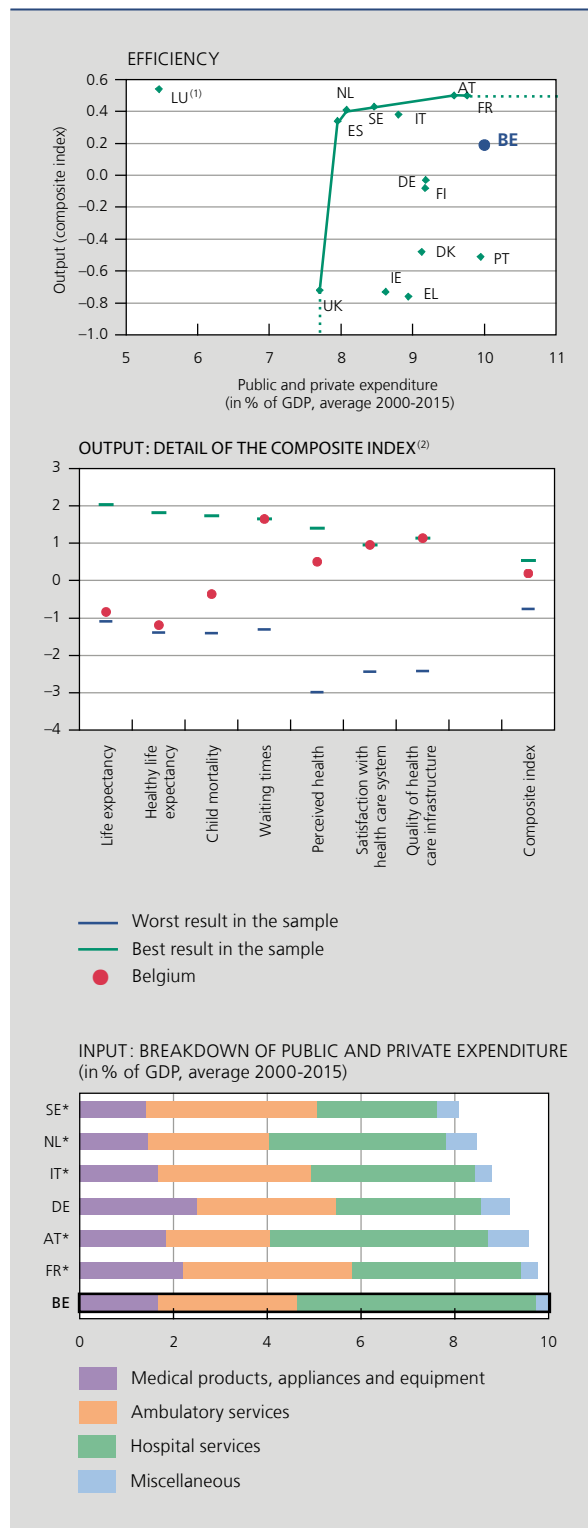
On the expenditure front, it is mainly for hospital services that Belgium stands out from the reference countries. The other categories of health spending, principally for outpatient consultations, as well as for medical products, appliances and equipment, put Belgium among the average of the most efficient countries.

So, there is potential for efficiency gains in the Belgian hospitals. More specifically, the challenge lies in curbing spending without affecting the high quality of the care. Here, Belgium could draw inspiration from the practices used in the most efficient countries. For instance, prevention or early screening campaigns could be reinforced in order to reduce the number and duration of hospital stays.

3.2 Education

To measure the input that goes into education, both public and private expenditure has to be taken into account. Output is then estimated on the basis of a composite

CHART 6 HEALTH



Sources: EC, other.

(*) The countries marked with a * are those pinpointed by the analysis as being very efficient.

(1) Luxembourg has been deliberately excluded from the delimitation of efficiency frontier for the reasons mentioned above.

(2) The composite index has been calculated as the weighted average of the selected indicators. They were standardised beforehand by subtracting the average and dividing them by the standard deviation. Each indicator therefore has an average of 0 and standard deviation of 1.

index that contains the following indicators: school pupil scores in the OECD's PISA (Programme for International Student Assessment) tests (mathematics, reading and science), the share of the population with a secondary or higher education qualification, linguistic skills, citizens' satisfaction with the education system, the perceived quality of the education system and the availability of skilled labour.

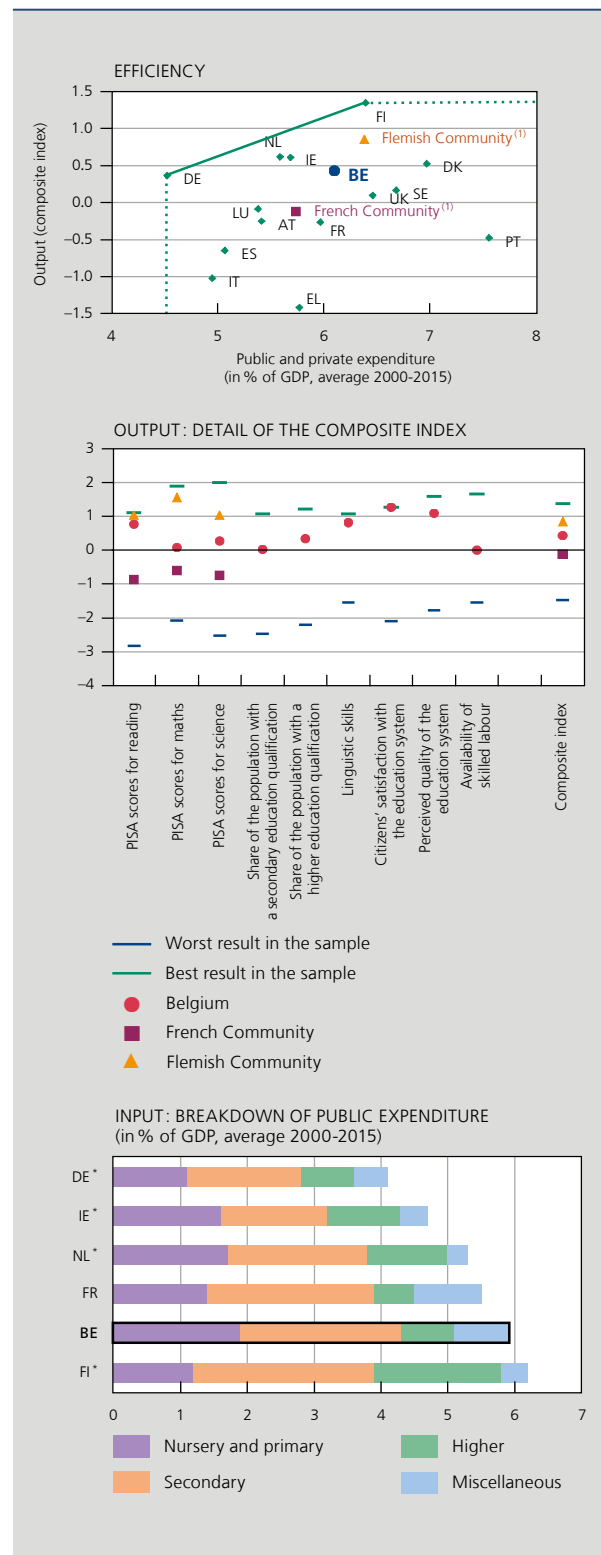
When it comes to education, the analysis shows Germany and Finland to be the most efficient countries. By contrast, the countries of Southern Europe report widely varying spending levels, but overall this region has the weakest results. Belgium occupies an intermediate position, aligning fairly closely with the comparatively efficient countries: its expenditure and results are below those of Finland but better than Germany's.

Belgium mainly scores better than average when it comes to citizens' satisfaction with the education system, perception of the quality of education and linguistic skills, as well as the share of the population with a higher education diploma, although to a lesser extent. It has an average score as far as the availability of skilled labour is concerned, as well as the share of the population with a secondary education qualification, even though it comes 11th out of 15 for this criterion. School pupils' results in the OECD's PISA tests for mathematics, reading and science (which account for half of the composite index weighting) lie above the EU15 average, but below those for Finland, Ireland, Germany, the Netherlands and Denmark.

Disparities in terms of performance and costs can also be observed even within the same country, as is the case in Belgium. The PISA survey in fact shows that scores for mathematics, reading and science are on average higher in the Flemish Community than in the French Community. Among the factors that generally tend to be mentioned to explain these divergences – apart from the limitations of the survey itself – are most notably the socio-economic standing of the parents, the proportion of pupils from an immigrant background (whose mother tongue is usually not French or Dutch) and spending levels per pupil. However, these elements probably do not explain the whole difference; some authors suggest that factors like programmes and teachers' and school management autonomy could also play a role. Incidentally, the French Community has taken these two aspects into account in drafting the *pacte d'excellence* for education that it intends to implement.

Compared with the reference countries, Belgium spends a lot of money on nursery and primary education. Conversely, the expenditure it devotes to higher education

CHART 7 EDUCATION



Sources: EC, WEF, OECD, NBB.

(*) The countries marked with a * are those countries pinpointed by the analysis as being very efficient.

(1) Not all the indicators used for the international comparison were available for the Flemish and French Communities. In terms of output, their results were therefore approximated on the basis of the results of the 2015 PISA survey, while the input measurement was based on an estimate of the spending per student in 2012 (Schmitz V. and R. Deschamps, 2014).

is relatively low. It would nevertheless be risky to recommend a simple trade-off between these two levels of education in order to improve the results, without raising expenditure too. A more in-depth analysis is needed, given the many different aspects to take into account. For instance, the relatively high cost of nursery, primary and secondary education in Belgium could be due to the language Community split, the coexistence of different networks, a high grade repeat rate or compulsory schooling until the age of eighteen.

An international comparison shows that the low cost of nursery and primary education in Germany may be explained by a system where child care in kindergartens – which is not free nor compulsory – does not always cover a whole day and is rationed in some regions where demand exceeds supply. In this kind of system, the parents probably bear a considerably large share of the costs, either by paying themselves or via unpaid hours worked by the parent who does not work (full time), on a voluntary basis or owing to a lack of places in nursery schools.

3.3 Public order and safety

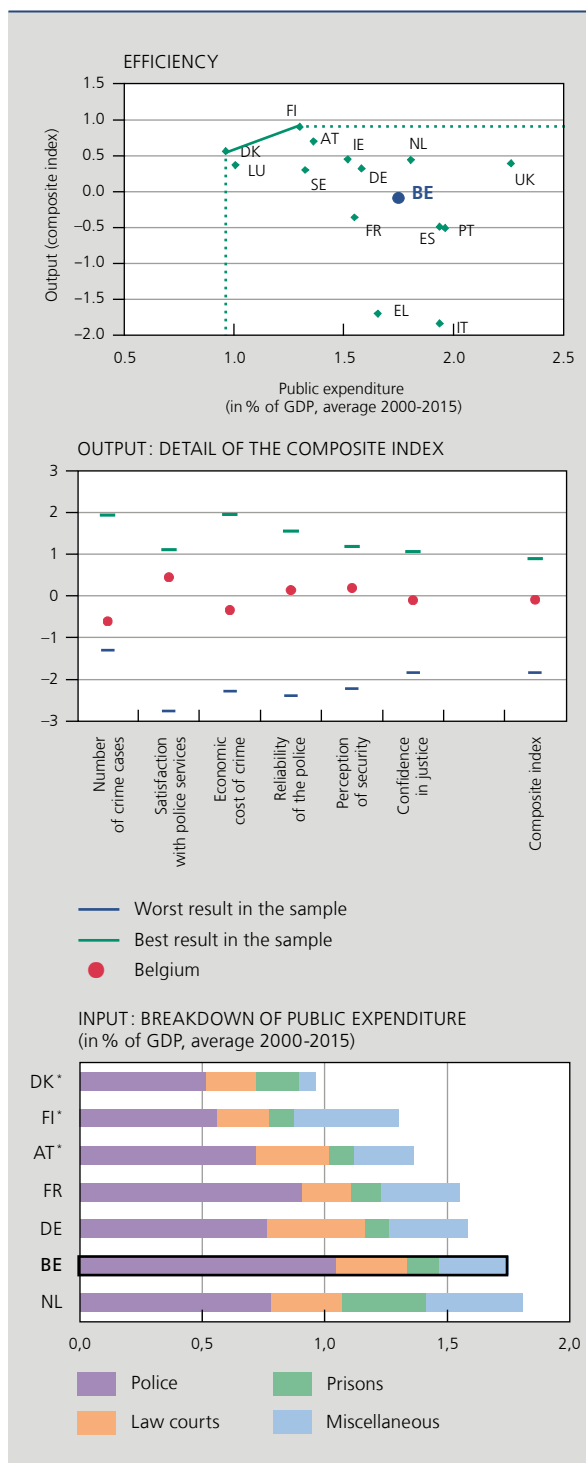
Six indicators were included in the composite index for measuring output regarding public order and safety: the number of crime cases, satisfaction with the police services, the economic cost of crime, reliability of the police, perception of security and confidence in justice.

Denmark and Finland feature among the most efficient countries when it comes to public order and safety, followed closely by Austria and Luxembourg. The countries of Southern Europe together lie at the bottom of the league. Here, too, Belgium lies in the middle of the rankings. Eight nations prove to be more efficient: they post better results with less expenditure. France and the United Kingdom are just about as efficient as Belgium, albeit with radically different choices: less spending and less good results in France's case, and more expenditure and better results in the United Kingdom's case.

A more in-depth analysis of the indicators used makes it possible to single out the areas where Belgium stands out in terms of results. For instance, Belgian citizens' satisfaction with the police services is higher than the European average. Conversely, Belgium fares relatively poorly on the number and economic cost of crime cases.

A breakdown of expenditure by sub-item reveals that Belgium spends a great deal of money on police services, while the budgets for the law courts and prisons are comparable to those of the reference countries.

CHART 8 PUBLIC ORDER AND SAFETY



Sources: EC, other.
 (*) The countries marked with a * are those pinpointed by the analysis as being very efficient.

This observation nevertheless needs to be qualified. For instance, some regions in Europe, such as Scandinavia, enjoy a geographic location that distances them from international organised crime traffic. More generally

speaking, it would appear that the size of the budget allocated to public order constitutes a corollary of the level of insecurity observed, rather than its most important determinant. This assumption goes a long way towards explaining the apparent negative correlation noted in the Western European countries between the level of spending, on the one hand, and the results obtained, on the other hand. Therefore, a State would have relatively little room for manoeuvre to act sustainably on public order and safety plans simply via public spending. This expenditure, which is principally intended for repression (police, law courts, prisons), would just reflect the degree of insecurity, itself determined by a whole range of elements. Besides the economic, demographic or geographic context, there is also the government's prevention policy, something that is only partly taken into consideration in the public order and safety function, even though it is a potentially crucial explanatory factor behind the results obtained.

3.4 Mobility

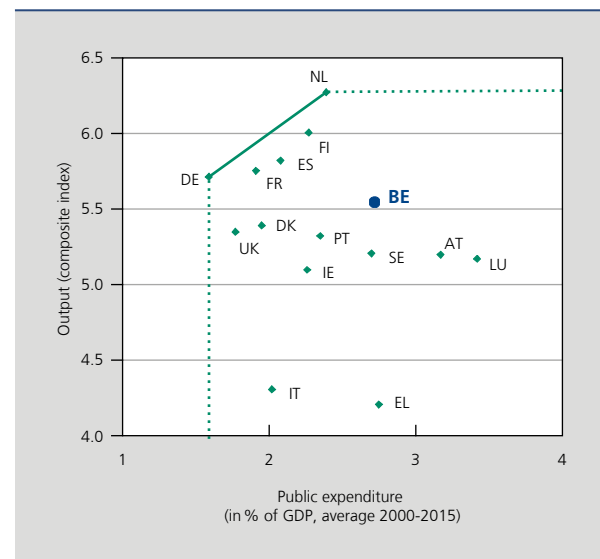
Efficiency of public spending on transport is relatively poor in Belgium (private expenditure is not taken into account here). A lot of resources are devoted to this function for mediocre results. These results are estimated on the basis of a composite index for transport infrastructure (road, rail, waterways, air), taken from the Global Competitiveness Report published by the World Economic Forum. Belgium does not score as well as – on both expenditure and quality – Germany, France, the Netherlands, Spain and Finland. Other countries spend less than Belgium, but they also have worse results. Only Austria and Luxembourg are even less efficient than Belgium.

Belgium's strengths are mainly its port and, to a lesser extent, its airport infrastructure. However, it does not perform so well on the railway infrastructure front and certainly not when it comes to the road network. One possible assumption that could explain Belgium's poor showing is the extremely tight-knit network of means of communication in comparison to other countries with similar – or even higher – population density (like the Netherlands, which also posts the best results for road networks). This element tends to pose complications for maintenance, which seems to be less frequent and/or more costly in Belgium. Moreover, Belgium suffers from endemic congestion problems, due to the predominance of the private car. These features are associated with the strong urban sprawl in Belgium, whereas urbanisation is more concentrated in other countries, which facilitates the organisation of transport and reduces costs, especially for public transport.

France's good results may partly be attributable to the privatisation of its road network, which seems to have helped the State make substantial savings. In Spain, efficiency of its infrastructure may well have benefited from European structural aid, that enabled major improvements in quality without generating expenditure on the same scale. Luxembourg's poor score is mainly due to its limited port and airport infrastructure.

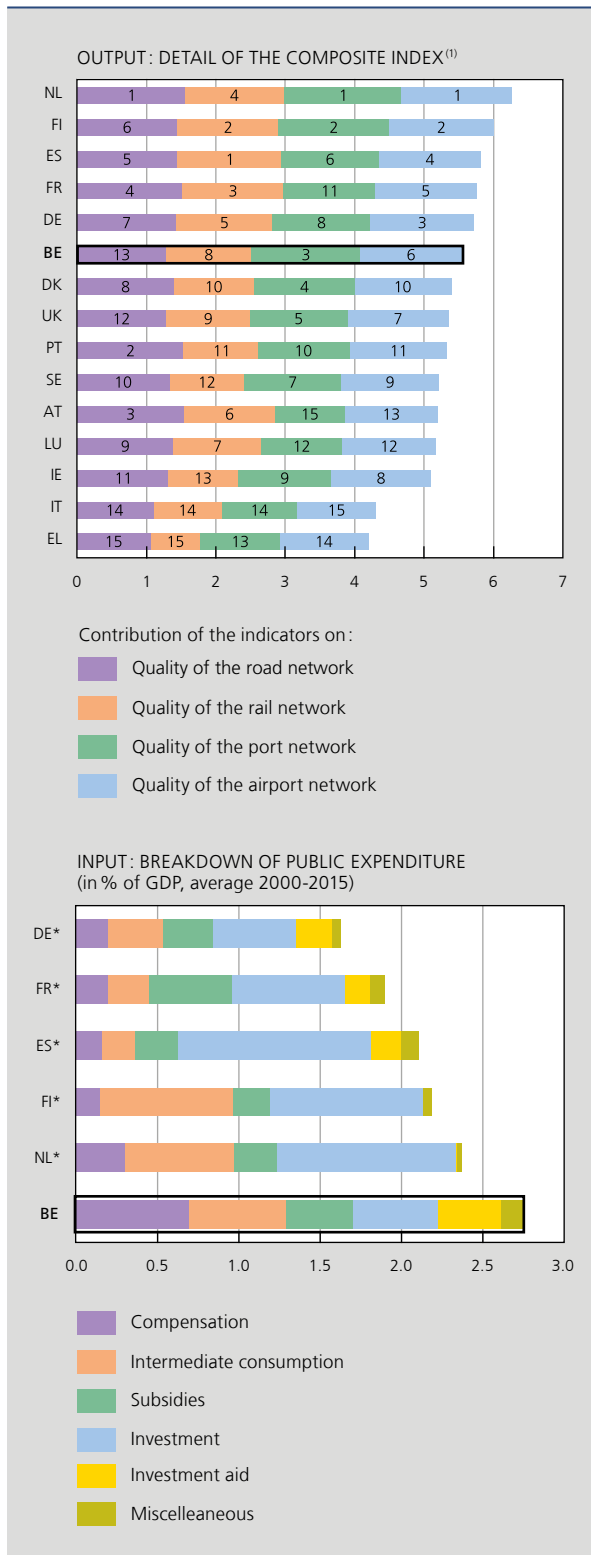
Spending on investment in transport appears to be systematically higher in the reference countries than in Belgium. On the other hand, this additional cost is largely offset by much lower staff costs in the efficient countries. Although, on the basis of this model, the budget currently devoted to transport should enable Belgium to improve its performance, by focusing more on targeted investment expenditure and less on operating costs, this assumption should nevertheless be qualified. The share of private expenditure going towards public transport operating costs, or its corollary, the subsidy percentage, can vary considerably. Although this limited analysis does not make it possible to put forward specific recommendations, the data suggest that, as far as mobility is concerned, it would perhaps be worthwhile envisaging extra investment in transport infrastructure to reduce congestion problems and maintain the quality of the existing infrastructure. Societal choices regarding land use and planning would undoubtedly benefit from greater attention, especially as regards the consequences in terms of costs incurred, and most notably for transport.

CHART 9 MOBILITY



Sources: EC, WEF, NBB.

CHART 10 MOBILITY: DETAILED ANALYSIS



Sources: WEF, NBB.

(*) The countries marked with a * are those pinpointed by the analysis as being very efficient.

(1) The figures given in the chart correspond to the country rankings on the criterion in question, with each country being ranked between 1 (best score) and 15 (worst score).

Conclusion

Belgium has a particularly high level of public spending. Public administrations nevertheless produce very average results in terms of efficiency. Public action therefore offers undeniable potential for efficiency gains. Guaranteeing more efficient public policies is thus an important task which requires constant efforts to keep down costs while improving the provision of services.

Over the next few years, greater efficiency of public action should in any case be a key objective for all levels of power in Belgium. First of all, in order to achieve this objective, it will be necessary to adopt a systematic approach enabling the whole range of public sector missions to be analysed and choices to be made. Then, it would be appropriate to look at which level of power is best placed to carry out these missions; any overlap should be avoided and economies of scale aimed for. And lastly, we have to work towards the most appropriate organisation of the way in which the various public services operate, notably by making the best use of IT applications and by simplifying procedures. Any reforms that may be needed must be envisaged from a long-term perspective and be rigorously enforced.

Bibliography

- Dembour C. (2014), *Efficiëntie van de overheid: aanzienlijke winst mogelijk !*, VBO-analyse, February.
- Dutu R. and P. Sicari (2016), *Public Spending Efficiency in the OECD: Benchmarking Health Care, Education and General Administration*, OECD Economics Department Working Papers 1278.
- EC (2016), *Report on Public Finances in EMU*, Institutional Paper 045, December.
- Eugène B (2008), *The efficiency frontier as a method for gauging the performance of public expenditure: a Belgian case study*, NBB Working Paper 138.
- Hindriks J. and M. Verschelde (2010), *L'École de la Chance*, Regards économiques 77, February.
- Hirtt N. (2008), *Pourquoi les performances PISA des élèves francophones et flamands sont-elles si différentes ?*, APED, January.
- IMD (2015), *World Talent Report 2015*.
- IMF (2016), *IMF Country Report 16/78: Belgium*.
- Lambotte J.M. et al. (2008), "Étalement urbain et services collectifs: Les surcoûts d'infrastructures liés à l'eau", *Revue d'Économie Régionale & Urbaine 2008/1* (March), 21-42.
- NBB (2017), "Making government more efficient", *Report 2016*, Box 6, 141-144.
- OECD (2010), *Gérer la congestion urbaine (Managing Urban Traffic Congestion)*, OECD Publishing.
- OECD (2008), *Handbook on Constructing Composite Indicators: methodology and user guide*, OECD Publishing.
- OECD (2015), *Education at a Glance 2015: OECD Indicators*, OECD Publishing.
- OECD (2016), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, PISA, OECD Publishing, Paris.
- Schmitz V. and R. Deschamps, 2014, *Financement et dépenses d'enseignement et de recherche fondamentale en Belgique: évolutions et comparaisons communautaires et internationales*, Cahiers du CERPE 73.
- Siedentop S. and S. Fina (2012), "Who sprawls most? Exploring the patterns of urban growth across 26 European countries", *Environment and Planning A*, 44, 2765–2784.
- World Economic Forum (2016), *The Global Competitiveness Report 2016-2017*, Geneva.