

Monetary distribution effects of Horizon 2020 (up to mid-2018): Some remarkable developments ...

Following-up on earlier analysis for Horizon 2020 (THINK Pieces 1/2016 and 2/2017), this paper looks at Horizon 2020 in terms of monetary redistribution between Member States for the period from 2014 up to mid-2018. The paper is structured in four parts: The first two are of a more technical nature and provide a description of the data used and a mainly descriptive overview on the key findings. The third part presents a closer look on how the overall picture has evolved over the last decade from the beginning of FP7 until mid-2018. Finally, part four presents an estimation of the participation patterns over the last year (from mid-2017 to mid-2018), which highlights some remarkable developments...

0. Intro

This paper¹ is deliberately not touching on the key objectives for Horizon 2020, such as strengthening the knowledge base, developing human capital, increasing the international competitiveness, supporting the development of new goods and services, and providing evidence for designing better public policy. Instead, the intention of this paper is to look at the (basically unintended) monetary distribution effects of the Framework Programme, notably the direct distribution effects between Member States. Horizon 2020 was never meant to be a policy tool for monetary re-distribution, but nevertheless it is of some importance to get an idea on the size and directions of these effects.

Within the EU budget, the Framework Programme for Research and innovation is in a rather singular situation, as two totally different approaches are used to define the relative shares of the Member States:

¹ This paper follows up on an analysis of FP7 in [THINK Piece 2/2015](#), a first analysis of Horizon 2020 in [THINK Piece 1/2016](#), and a second analysis roughly one year ago in [THINK Piece 2/2017](#).

- For the spending on the Framework Programme (“money out”), funds are coming from the overall EU budget, for which the national contributions are based on economic strength and political bargaining (the most significant example for this is the “British rebate”). The distribution of the financial burden is thus the result of a political negotiation process.
- For the income from the Framework Programme (“money in”), funds are mainly coming through co-financed research projects. The selection is based on a scientific peer-review system, aiming at identifying the proposals of highest scientific quality. The distribution of funds is therefore based on the judgement of independent experts – and entirely outside any political influence.

Against this background it is not surprising at all that the two distributional approaches lead on balance to diverging results – and such differences are therefore not per se “bad” or “unfair”.

1. Data

For the subsequent analysis, three datasets were used (The complete data and calculations are presented in the Table 1 in the Annex, together with links to the public sources used):

- For the spending on Horizon 2020 (“money out”), the assumption is made that the financing of the FP budget by Member States follows the same pattern as the financing of the overall EU budget. Since the real expenditure on Horizon 2020 is linked to the “life time” of the supported projects and will thus cover a period from 2014 up to 2020 or even later, it appears justifiable to use the EU budget for the year 2017 as reference point for the period from 2014 to mid-2018 – assuming that differences for the previous years and the yet unknown changes in the subsequent years are likely to roughly level out. The figures used refer to the “total own resources” per Member State, which are the “final” figures after all calculations for rebates and adjustments have been made.
- For the income from FP7 (“money in”), the European Commission published in August 2018 in the “European Union Open Data Portal” several files providing funding information for some 82.000 project participants. This information is constantly updated as new contracts are signed. Data presented here have thus to be regarded as a “snapshot” at a given (random) moment in time.

For the sake of comparability and clarity these data have been adjusted by excluding two projects from the calculations:

- “Eurofusion” is the flagship project in fusion research, both for its huge budget (427 million €) and its unusual structure (roughly 75% of the funds going to one single country (DE)). Since Fusion Projects were not included in public FP7 data, an inclusion would also hamper a direct comparison between these two Framework Programmes.
- “H2020” is a block grant of 137 million € devoted to finance COST activities across Europe, formally (and misleadingly for the analysis undertaken here) attributed to Belgium (only).
- Given the huge differences in the size of Member States, population figures from Eurostat for 2015 are used to complement absolute figures with calculations “per capita”.

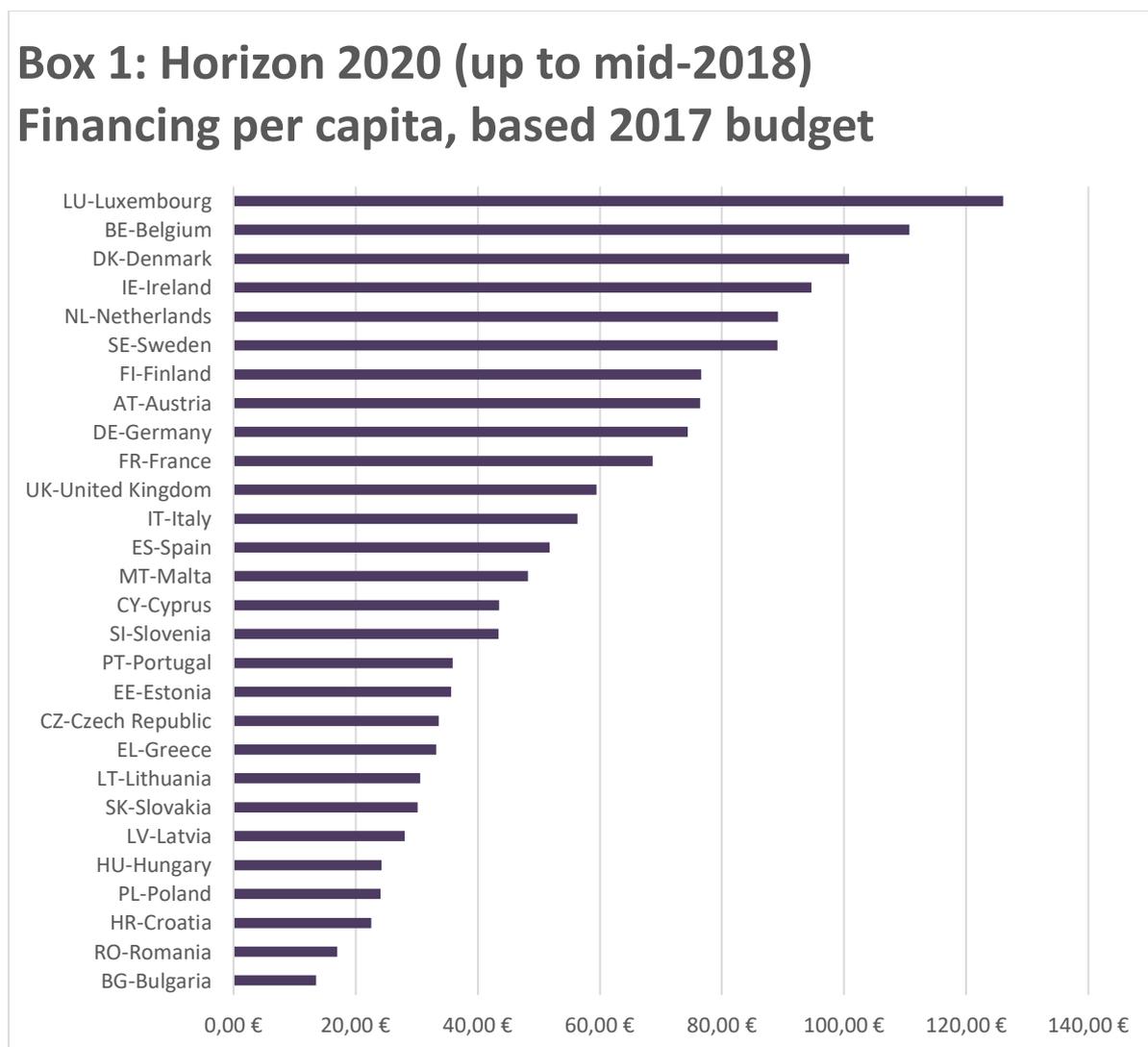
For the sake of simplicity, the subsequent analysis is exclusively focused on spending and income related to the 28 Member States – making it a “zero sum game”. The funding of project partners from associated states or third countries is therefore not included here, nor are the contributions from associated countries considered. These restrictions are however of limited impact, as almost 95% of the Horizon 2020 funding goes to project partners in Member States.

2. Analysing Horizon 2020

2.1. Spending on FP7 (“Money out”)

Table 1 in the annex presents in column 6 the “total own resources” per Member State for the EU budget 2017. Column 7 shows the percentage share per country, with Germany and France in the lead, contributing 20.6 % and 15.5 % respectively to the EU budget. In column 8 these percentage shares are used to calculate the “virtual” financial contribution per Member State to the total Horizon 2020 funding (on project partners in Member States) for the period from 2014 to mid-2018.

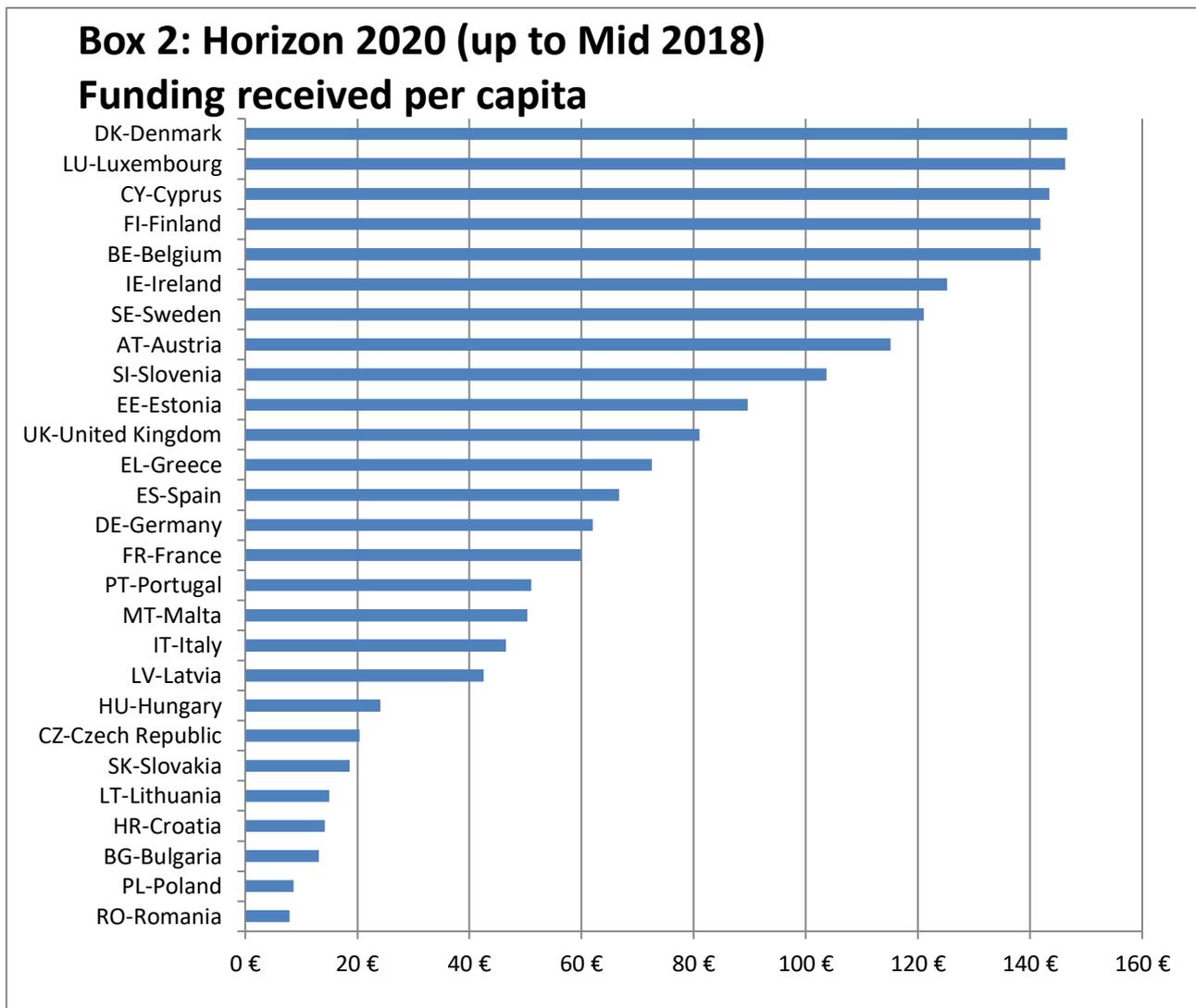
Box 1 presents the amount of spending so far on Horizon 2020 per capita as shown in column 9. Whereas Luxembourg, Belgium and Denmark spent each more than 100 € per capita, the corresponding amounts for Bulgaria and Romania turn around 15 €.



2.2. Income from Horizon 2020 (“money in”)

The table in the Annex presents in column 3 the amount of Horizon 2020 funding going to research organisations or firms from the different Member States. The total financial support across the 28 Member States amounts so far to more than 29 billion €. Column 4 shows the percentage share per country, with Germany and the United Kingdom in the lead with shares of 16.6 % and 16.0 % respectively.

May-be more revealing is a breakdown of the income from FP7 per capita, as presented in column 5 and illustrated in Box 2. While the Netherlands, Denmark, Luxembourg, Cyprus and Finland assured so far a total income from Horizon 2020 per capita of above 140 €, these returns per capita were less than 10€ for Romania, Poland and Bulgaria.



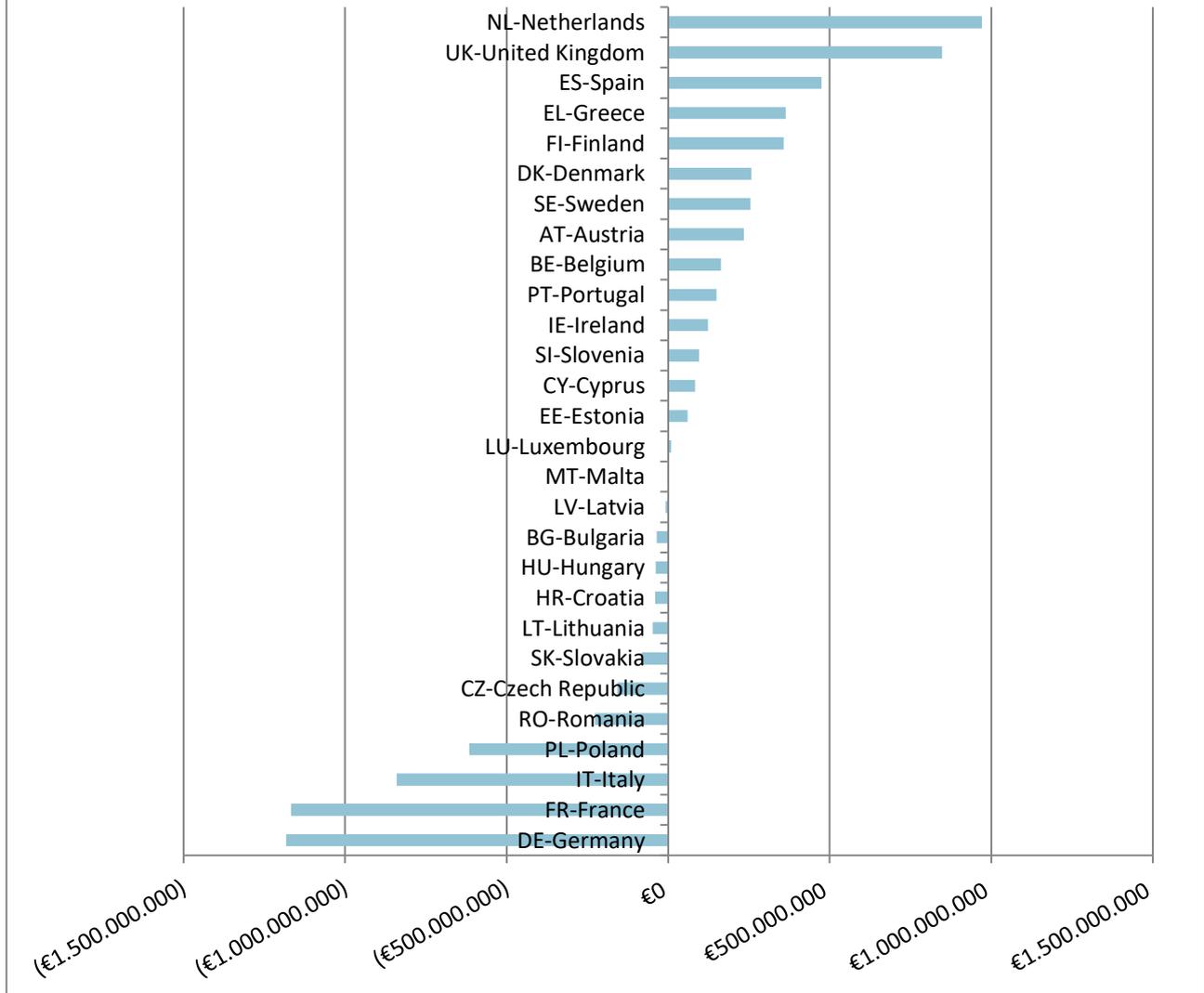
2.3. Net monetary distribution effects

The most interesting part of this analysis is now the direct comparison between the spending on Horizon 2020 and the income from Horizon 2020.

In the table in the Annex, column 10 presents the difference in absolute amounts per Member State, whereas column 11 shows the difference as percentage figures. Column 12 indicates for all

Member States what amount is received so far by Horizon 2020 projects for one € financial contribution. Finally, column 13 shows the net results on a per capita basis.

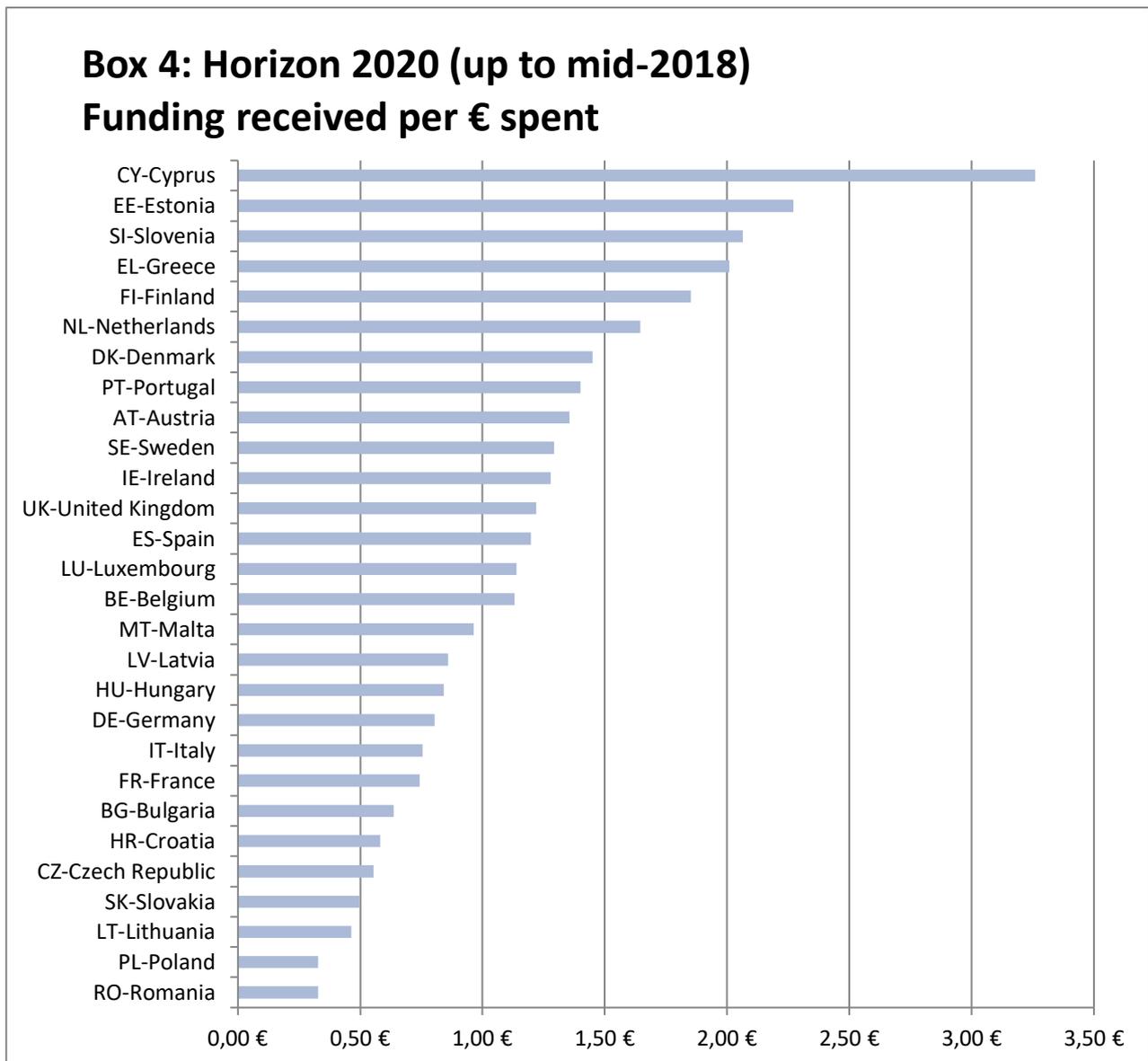
Box 3: Horizon 2020 (up to Mid 2018) Net distribution effect



Box 3 (based on column 10) illustrates the position of each Member States in terms of absolute amounts. The “Breaking News” from this updated analysis is that the United Kingdom is no longer the (by far) largest net beneficiary of Horizon 2020, but comes in only second after the Netherlands. Somewhat surprisingly two Mediterranean countries (Spain and Greece) come in on third and fourth position, well ahead of many allegedly “stronger” countries from Northern and Western Europe.

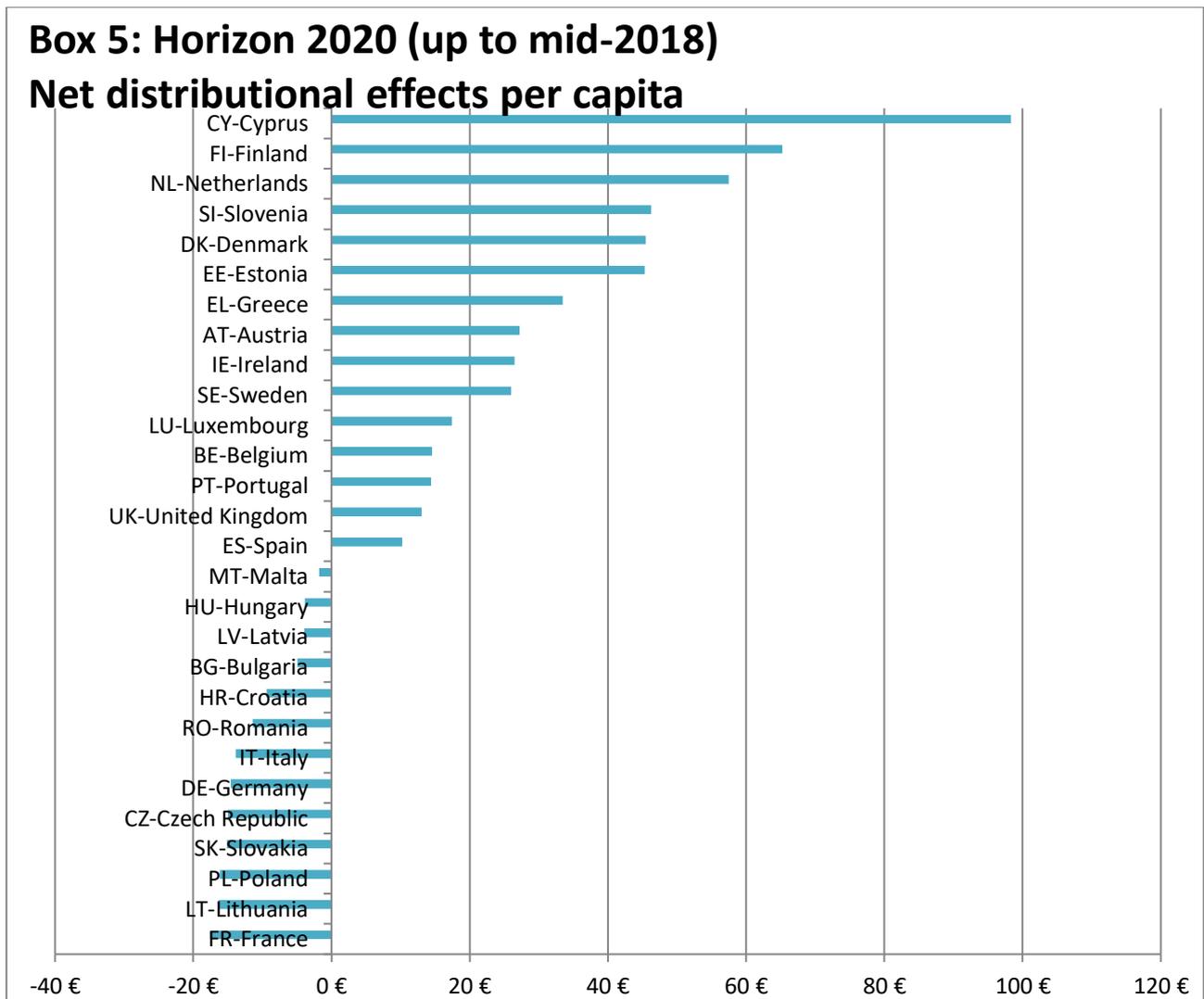
At the bottom of the table one could find with Germany, France, Italy and Poland four of the larger Member States, accompanied by some of the smaller EU-13 countries. To get an idea of the absolute size of these redistribution effects it might be useful to highlight that the Netherlands so far received a financial surplus from Horizon 2020 in the order of one billion €, whereas Germany and France both incurred financial losses of almost 1.2 billion € each.

Box 4 (based on column 12) illustrates the relative “success” of Member States in Horizon 2020 so far by indicating what amount of Horizon 2020 funding they receive for every € spent on the Horizon 2020 budget.



Cyprus comes out with the highest return ratio, receiving more than 3€ for every € spent on the Horizon 2020 budget so far, followed by Estonia, Slovenia and Greece with a return of over 2 € per € invested. At the other end of the scale, Romania, Poland, Lithuania and Slovakia received less than 50 cents out of Horizon 2020 for every € spent.

Finally, Box 5 (based on column 13) looks at the situation per capita, estimating the net distributional effects of FP7 for each inhabitant of the EU Member States.



Horizon 2020 generated per head of population a net gain of almost 100 € for Cyprus. For Finland and the Netherlands this surplus is around 60 € per capita, and for Slovenia, Denmark and Estonia still some 45 €.

At the opposite end, the net loss per capita is around 15 € for France, Lithuania, Poland, Slovakia, the Czech Republic and Germany.

3. A first comparison between FP7 and Horizon 2020

While the period covered by the Horizon 2020 data is limited to some 4 years from 2014 to 2018, a comparison with the data for FP7 allows to cover a time range of well over a decade (2007 to 2018). While a comparison of absolute figures might not be meaningful over such a long period, a closer look at the “market shares” and the “relative successes of Member States shows remarkable developments.

3.1. “Market Shares” in FP7 and Horizon 2020

Since the calculations presented in this paper are limited to the role of EU Member States in FP7 and Horizon 2020, the “market shares” of all Member States is always adding up to 100%, and any change in the “market share” of a specific country leads to changes in the opposite direction for other countries. Comparing the “market shares” in Horizon 2020 with those in FP7 is thus a good indicator whether the relative strength of a given country has improved or deteriorated over time in comparison with the other EU Member States.

Although such changes should not be over-interpreted and might in many cases just reflect “normal” fluctuations over time, a couple of observations seem justifiable:

- Some very small countries do significantly better in Horizon 2020 than in FP7, notably Luxemburg, Cyprus and Estonia.
- Whereas most of the smaller “New Member States” show a positive trend, the market share of most of the larger EU-13 countries is further decreasing (Poland, Romania, Bulgaria).
- Looking at the larger Member States overall, the most impressive positive change can be noted for Spain, whose market share grew from 7.9% in FP7 to 9.8% in Horizon 2020. On the other side, France, Italy and most notably Germany show a weaker performance in Horizon 2020 as compared to FP7. The market share of the UK remained basically unchanged for the two programmes.

Table 1: “Market Shares” in FP7 and Horizon 2020 for EU Member States

| Member State | FP7 Funding Received 2007 - 2013 | FP7 Market Share % | H2020 Funding Received 2014 until mid 2018 | Horizon 2020 Market Share % | Change in Market Share from FP7 to Horizon 2020 |
|--------------------------|----------------------------------|--------------------|--|-----------------------------|---|
| AT-Austria | 1.114.900.000 € | 2,99% | 889.168.622 | 3,03% | 1% |
| BE-Belgium | 1.806.300.000 € | 4,84% | 1.409.460.210 | 4,80% | -1% |
| BG-Bulgaria | 95.200.000 € | 0,26% | 61.975.896 | 0,21% | -17% |
| CY-Cyprus | 78.900.000 € | 0,21% | 120.164.872 | 0,41% | 94% |
| CZ-Czech Republic | 249.300.000 € | 0,67% | 196.516.796 | 0,67% | 0% |
| DE-Germany | 6.967.400.000 € | 18,68% | 4.860.021.425 | 16,57% | -11% |
| DK-Denmark | 978.200.000 € | 2,62% | 828.063.197 | 2,82% | 8% |
| EE-Estonia | 90.200.000 € | 0,24% | 106.415.064 | 0,36% | 50% |
| EL-Greece | 924.000.000 € | 2,48% | 724.129.973 | 2,47% | 0% |
| ES-Spain | 2.947.900.000 € | 7,91% | 2.881.069.497 | 9,82% | 24% |
| FI-Finland | 898.100.000 € | 2,41% | 776.094.405 | 2,65% | 10% |
| FR-France | 4.653.700.000 € | 12,48% | 3.389.735.087 | 11,56% | -7% |
| HR-Croatia | 74.200.000 € | 0,20% | 55.462.052 | 0,19% | -5% |
| HU-Hungary | 278.900.000 € | 0,75% | 200.817.588 | 0,68% | -8% |
| IE-Ireland | 533.000.000 € | 1,43% | 560.403.497 | 1,91% | 34% |
| IT-Italy | 3.457.100.000 € | 9,27% | 2.583.406.034 | 8,81% | -5% |
| LT-Lithuania | 55.100.000 € | 0,15% | 41.543.580 | 0,14% | -4% |
| LU-Luxembourg | 39.800.000 € | 0,11% | 80.749.580 | 0,28% | 158% |
| LV-Latvia | 40.700.000 € | 0,11% | 47.912.484 | 0,16% | 50% |
| MT-Malta | 18.600.000 € | 0,05% | 19.951.075 | 0,07% | 36% |
| NL-Netherlands | 3.152.500.000 € | 8,45% | 2.477.806.142 | 8,45% | 0% |
| PL-Poland | 399.400.000 € | 1,07% | 299.265.645 | 1,02% | -5% |
| PT-Portugal | 470.900.000 € | 1,26% | 521.570.867 | 1,78% | 41% |
| RO-Romania | 148.700.000 € | 0,40% | 110.178.760 | 0,38% | -6% |
| SE-Sweden | 1.595.000.000 € | 4,28% | 1.122.083.097 | 3,82% | -11% |
| SI-Slovenia | 164.300.000 € | 0,44% | 184.927.467 | 0,63% | 43% |
| SK-Slovakia | 72.300.000 € | 0,19% | 81.279.796 | 0,28% | 43% |
| UK-United Kingdom | 5.984.700.000 € | 16,05% | 4.705.403.497 | 16,04% | 0% |
| All Member States | 37.289.300.000 € | 100,00% | 29.335.576.205 | 100,00% | 0% |

3.2. “Return per € spent” in FP7 and Horizon 2020

Potentially even more relevant than a comparison of “market shares” is a comparison of the relative financial position of Member States in both Framework Programmes. The “Return per € spent” is the best indicator available, as it is not influenced by the size of a country or the budget of a programme. Table 2² and Box 6 below illustrate these developments.

² Data for FP7 are taken from Annex 1 in [THINK Piece 2/2015](#), Data for Horizon 2020 are taken from the Annex

Table 2: Funding per € spent in FP7 and in Horizon 2020 (up to mid-2018)

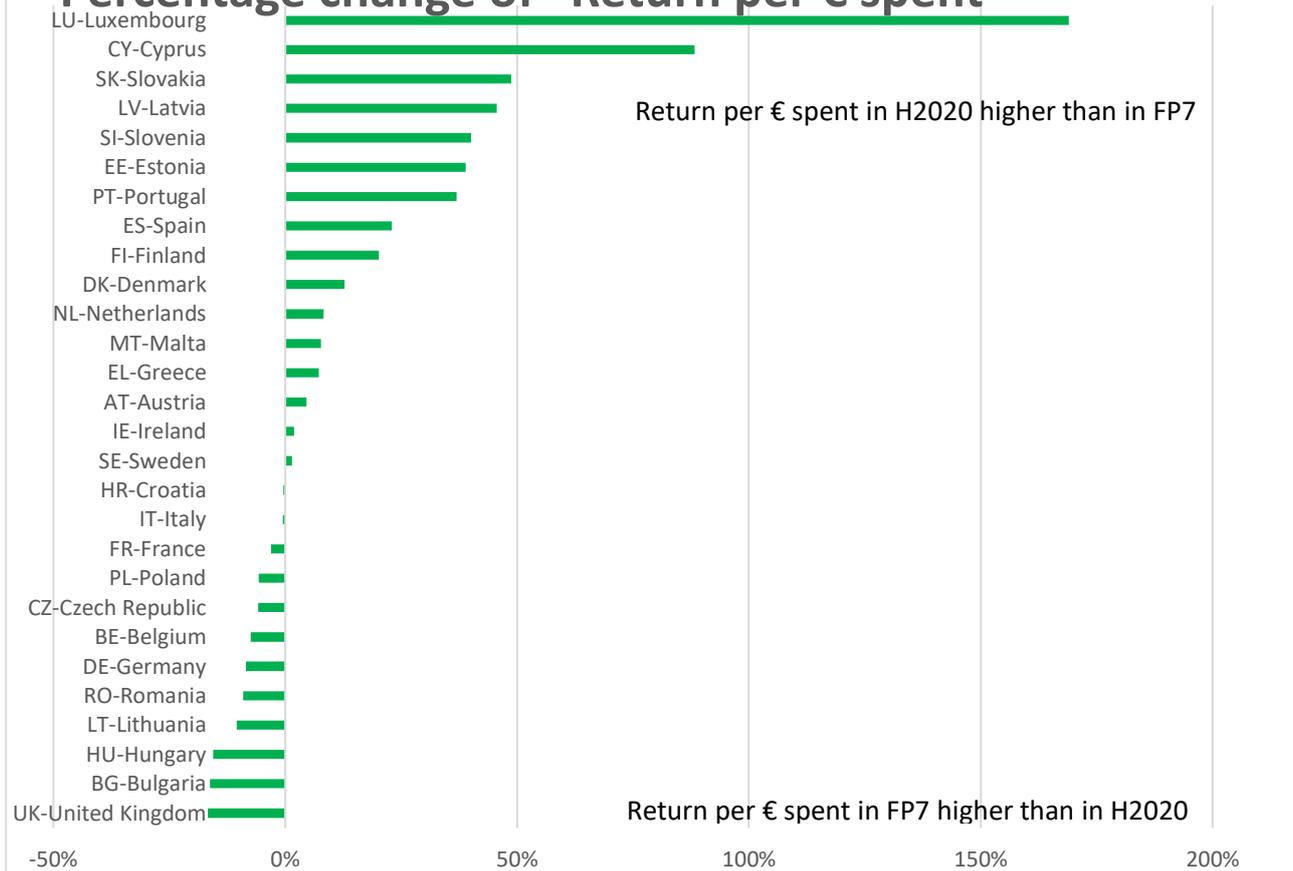
| Member State | FP 7 Funding received per € spent | H2020 (up to mid-2018) Funding received per 1 € spent | Change rate between H2020 and FP7 in % |
|-------------------|-----------------------------------|---|--|
| AT-Austria | 1,30 € | 1,36 € | 4,6% |
| BE-Belgium | 1,22 € | 1,13 € | -7,4% |
| BG-Bulgaria | 0,76 € | 0,64 € | -16,3% |
| CY-Cyprus | 1,73 € | 3,26 € | 88,3% |
| CZ-Czech Republic | 0,59 € | 0,55 € | -5,9% |
| DE-Germany | 0,88 € | 0,80 € | -8,5% |
| DK-Denmark | 1,29 € | 1,45 € | 12,8% |
| EE-Estonia | 1,63 € | 2,27 € | 38,9% |
| EL-Greece | 1,87 € | 2,01 € | 7,2% |
| ES-Spain | 0,97 € | 1,20 € | 22,9% |
| FI-Finland | 1,54 € | 1,85 € | 20,2% |
| FR-France | 0,77 € | 0,74 € | -3,0% |
| HR-Croatia | 0,58 € | 0,58 € | -0,3% |
| HU-Hungary | 1,00 € | 0,84 € | -15,5% |
| IE-Ireland | 1,26 € | 1,28 € | 1,9% |
| IT-Italy | 0,76 € | 0,75 € | -0,5% |
| LT-Lithuania | 0,52 € | 0,46 € | -10,5% |
| LU-Luxembourg | 0,42 € | 1,14 € | 169,0% |
| LV-Latvia | 0,59 € | 0,86 € | 45,6% |
| MT-Malta | 0,89 € | 0,96 € | 7,7% |
| NL-Netherlands | 1,52 € | 1,64 € | 8,2% |
| PL-Poland | 0,35 € | 0,33 € | -5,7% |
| PT-Portugal | 1,02 € | 1,40 € | 37,0% |
| RO-Romania | 0,36 € | 0,33 € | -9,1% |
| SE-Sweden | 1,27 € | 1,29 € | 1,4% |
| SI-Slovenia | 1,47 € | 2,06 € | 40,1% |
| SK-Slovakia | 0,33 € | 0,50 € | 48,7% |
| UK-United Kingdom | 1,46 € | 1,22 € | -16,7% |

From this perspective, two observations seem to be particularly relevant:

- With the notable exception of Spain, which does remarkably better in Horizon 2020, all other larger Member States (Germany, United Kingdom, France, Italy, Poland) show a lower return per € spent in Horizon 2020 than in FP7.
- Since there is a particular attention on the UK in the current political context, it is worth being noted that the UK shows in Horizon 2020 so far still a positive return of 1.22€ per € spent, which is however substantially less positive than in FP7 with 1.46€.

Box 6: Comparison of Horizon 2020 with FP7

Percentage change of "Return per € spent"



4. What happened last year?

As the European Commission publishes data sets on the Horizon 2020 participation frequently, but in somewhat irregular intervals, it is not possible to calculate figures for the participation patterns during a given period, for instance a specific year.

The best proxy is a comparison between two datasets published at different points in time, for instance those published in mid-2017³ and in mid-2018. Although a small (or even very small) part of this difference might be due to corrections and adaptations in the stock of contracts, most changes will be caused by new contracts added during this period. The following analysis should thus be handled with some care, as the Horizon 2020 data are in this sense somewhat more “dirty” than usual. The calculations are therefore presented as “estimations” only.

³ The data for Horizon 2020 up to early 2017 were presented in [THINK Piece 2/2017](#), notably Annex 1; the data for Horizon 2020 up to mid-2018 are taken from the table in Annex.

Table 2: Horizon 2020 - Developments between mid-2017 and mid 2018 (estimation)

| Member State | H2020 Funding Received mid-2017 to mid-2018 | H2020 "Market Share" % | EU Budget Contribution 2017 | Contribution % | Horizon 2020 Budget Contribution mid-2017 to mid-2018 | Net position in € | Return per € spent |
|-------------------|---|------------------------|-----------------------------|----------------|---|-------------------|--------------------|
| AT-Austria | 266.855.492 € | 3,20% | 2.943.714.738 € | 2,23 | 186.147.628 € | 80.707.865 | 1,43 € |
| BE-Belgium | 435.334.460 € | 5,23% | 5.593.812.339 € | 4,25 | 353.728.193 € | 81.606.266 | 1,23 € |
| BG-Bulgaria | 17.411.377 € | 0,21% | 437.149.184 € | 0,33 | 27.643.400 € | -10.232.023 | 0,63 € |
| CY-Cyprus | 43.080.030 € | 0,52% | 165.567.422 € | 0,13 | 10.469.759 € | 32.610.271 | 4,11 € |
| CZ-Czech Republic | 48.782.239 € | 0,59% | 1.591.411.121 € | 1,21 | 100.633.869 € | -51.851.630 | 0,48 € |
| DE-Germany | 1.300.805.706 € | 15,62% | 27.133.174.702 € | 20,60 | 1.715.783.135 € | -414.977.429 | 0,76 € |
| DK-Denmark | 265.530.472 € | 3,19% | 2.562.802.045 € | 1,95 | 162.060.377 € | 103.470.095 | 1,64 € |
| EE-Estonia | 36.526.076 € | 0,44% | 210.397.875 € | 0,16 | 13.304.640 € | 23.221.436 | 2,75 € |
| EL-Greece | 240.633.200 € | 2,89% | 1.618.799.437 € | 1,23 | 102.365.787 € | 138.267.414 | 2,35 € |
| ES-Spain | 837.700.880 € | 10,06% | 10.801.972.271 € | 8,20 | 683.069.418 € | 154.631.462 | 1,23 € |
| FI-Finland | 282.463.030 € | 3,39% | 1.881.375.732 € | 1,43 | 118.969.962 € | 163.493.068 | 2,37 € |
| FR-France | 1.008.693.402 € | 12,11% | 20.461.949.747 € | 15,53 | 1.293.924.086 € | -285.230.684 | 0,78 € |
| HR-Croatia | 20.196.420 € | 0,24% | 427.792.927 € | 0,32 | 27.051.751 € | -6.855.331 | 0,75 € |
| HU-Hungary | 54.947.751 € | 0,66% | 1.071.971.878 € | 0,81 | 67.786.807 € | -12.839.055 | 0,81 € |
| IE-Ireland | 164.841.465 € | 1,98% | 1.966.427.019 € | 1,49 | 124.348.232 € | 40.493.233 | 1,33 € |
| IT-Italy | 772.826.573 € | 9,28% | 15.373.807.011 € | 11,67 | 972.172.224 € | -199.345.650 | 0,79 € |
| LT-Lithuania | 16.193.935 € | 0,19% | 401.629.844 € | 0,30 | 25.397.312 € | -9.203.378 | 0,64 € |
| LU-Luxembourg | 20.552.932 € | 0,25% | 318.612.177 € | 0,24 | 20.147.639 € | 405.293 | 1,02 € |
| LV-Latvia | 10.568.311 € | 0,13% | 250.147.672 € | 0,19 | 15.818.243 € | -5.249.932 | 0,67 € |
| MT-Malta | 3.108.962 € | 0,04% | 92.939.088 € | 0,07 | 5.877.061 € | -2.768.099 | 0,53 € |
| NL-Netherlands | 701.810.099 € | 8,43% | 6.764.946.307 € | 5,14 | 427.785.576 € | 274.024.522 | 1,64 € |
| PL-Poland | 96.936.356 € | 1,16% | 4.102.918.458 € | 3,11 | 259.450.594 € | -162.514.238 | 0,37 € |
| PT-Portugal | 140.257.723 € | 1,68% | 1.671.714.798 € | 1,27 | 105.711.922 € | 34.545.801 | 1,33 € |
| RO-Romania | 28.958.999 € | 0,35% | 1.512.731.007 € | 1,15 | 95.658.484 € | -66.699.485 | 0,30 € |
| SE-Sweden | 328.979.567 € | 3,95% | 3.899.785.787 € | 2,96 | 246.605.374 € | 82.374.194 | 1,33 € |
| SI-Slovenia | 49.128.004 € | 0,59% | 402.105.845 € | 0,31 | 25.427.413 € | 23.700.592 | 1,93 € |
| SK-Slovakia | 16.104.700 € | 0,19% | 733.690.300 € | 0,56 | 46.395.361 € | -30.290.662 | 0,35 € |
| UK-United Kingdom | 1.120.039.918 € | 13,45% | 17.324.631.734 € | 13,15 | 1.095.533.835 € | 24.506.083 | 1,02 € |
| All Member States | 8.329.268.081 € | 100,00% | 131.717.978.465 € | 100,00 | 8.329.268.081 € | 0 | 1,00 € |

These data confirm many of the trends and patterns described already for the entire lifetime of Horizon 2020 so far.

Two countries, however, deserve a more careful look, as there seem to be remarkable developments:

- The market share of the **United Kingdom** has dropped sharply to 13.45%, as compared to 16.05% for FP7 and even 17.07% for the first three years of Horizon 2020.

One is tempted to see this in relation to the Brexit vote in June 2016, as the period analysed here (mid-2017 to mid-2018) is the first one reflecting the new situation in the proposals submitted and contracts concluded. The figure seems to confirm that the pending uncertainty about the consequences of Brexit might have had a considerable negative impact both on the motivation of potential UK participants and/or on the willingness of coordinators to include partners from the UK in the consortia.

As a direct consequence of this lower market share, the UK lost its traditional position as the largest net beneficiary of the Framework Programme (to the Netherlands ...). The situation has deteriorated to such an extent that the UK received in 2017/2018 just 1.02 € back for every € spent, compared to a return of 1.46 € in FP7.

The dramatic change might be best illustrated by the fact that the UK, for many years far ahead of all other Member States in terms of net financial benefit from the Framework Programmes, finds itself now in a situation where the net return from Horizon 2020 for the period from mid-2017 to mid-2018 was around 25 million € and thus in the same order of magnitude as the surplus achieved by countries like Cyprus, Estonia or Slovenia ...

Even if these figures are just estimates, they might give a first indication that the very favourable financial situation of the UK in the Framework Programmes might have come to an end – and that the potential “gains” to be made by other Member states once the UK is no longer member of the EU might be considerably lower than some might assume (and hope for).

- While many smaller Member States perform strongly, the largest Member State shows again a somewhat unexpected poor overall performance: The market share of **Germany** in FP7 was at 18.7%, for the first three years of Horizon 2020 it stood at 16.9%, and for the period from mid-2017 to 2018 it fell further down to 15.6%.

In terms of return per € invested the situation of Germany is also steadily worsening: whereas in FP7 the return was still 0.88 €, it went down to 0.80 € for the past 12 months.

In absolute terms, the financial loss for Germany from Horizon 2020 for the last 12 months in 2017/2018 was well over 400 million € - or more than one million € per day ...

Contrary to the situation for the UK, there is not a single issue which seems plausible as an explanation for this steady decline: The much lower success rates in Horizon 2020, the new focus on innovation and applicability, the competition with national programmes (such as the “Exzellenzinitiative”) – all these might be factors to weigh in, but even added together they do not provide a convincing explanation.

Politically, Germany (as well as France, which is in a similar situation...) is arguing for more EU investments in research and innovation – even though the country has been losing out money in this field for many years. The continued worsening of the situation, as these estimations seem to indicate, could however lead to a somewhat more nuanced position, and might in fact not really be helpful in all attempts to increase the budget for the next Framework Programme.

5. Four simple conclusions from this analysis

At a point in time where discussions on the size and scope of the next Framework Programme “Horizon Europe” are in full swing, the analysis provided here provides four simple, but politically important conclusions:

5.1. The European Research Area seems far away...

The Netherlands or Denmark receive roughly 20 to 25 times more funding per capita from Horizon 2020 than Poland or Romania.

These differences highlight that the enormous regional differences in the breadth and depth of the European research and innovation landscape do persist and that contrary to the political ambition location still matters a lot ...

5.2. There is no catching up for the larger EU-13 countries...

Within the group of “new” Member States (EU-13) there are huge differences, and especially some smaller countries such as Slovenia and Estonia do remarkably well in Horizon 2020. But larger countries such as Poland, Romania and Bulgaria continue to perform badly – and moreover show a downward trend.

The data do not point at a general EU-13 problem, but rather at very specific problems in some Member States, notably in Romania and Poland.

5.3. Small winners, big losers ...

The financial flows resulting from Horizon 2020 show a somewhat peculiar pattern, since most of the relative winners are comparatively small countries, whereas the larger Member States are the biggest losers: France, Germany, Italy and Poland are all losing out on their Horizon 2020 participation, taken together accumulating a massive deficit of almost 4 billion €. These figures do obviously not provide the best possible arguments for the national governments concerned to support a further budget increase in Horizon Europe.

Since many of the classical (intellectual rather than monetary) arguments for a European Research Programme apply also more strongly to smaller countries (better access to the international knowledge production, increased connectivity, ...), one could argue that Horizon 2020 is a programme which provides clearly positive effects for (most) smaller Member States. For (most) of the large Member States, the general view is implicitly that the intellectual added value generated through the Horizon 2020 participations outweighs the financial losses. It is a valid (albeit worrying) question, however, for how long this view will prevail, in case the financial losses will further aggravate in the years to come.

5.4. The UK has lost momentum ...

Although from a formal and legal perspective the United Kingdom continues to have full rights in Horizon 2020, the Brexit vote in 2016 and the subsequent discussions seem to have had a massive negative impact on the UK participation, resulting in a record low market share of just above 13% and a net gain just above zero. For the last twelve months, the United Kingdom was apparently no longer a real beneficiary from Horizon 2020 in financial terms.

Version 1.0 – 30.08.2018 - Feedback: mail@peter-fisch.eu

Annex - Table 1

| Column 1 | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
|--------------------------|--------------------|---------------------------------------|---------------|--|-----------------------------|----------------|--|---|--|--|---|---|
| Member State | Population 2015 | H2020 Funding Received up to mid-2018 | Funding % | H2020 Funding received up to mid-2018 per capita | EU Budget Contribution 2017 | Contribution % | H2020 Contribution up to mid-2018 based on Budget 2017 | H2020 contribution up to mid-2018 based on Budget 2015 per capita | Difference between H2020 Funding received and contribution to H2020 budget | Difference between H2020 Funding received and contribution to H2020 budget, in % | H2020 Funding received per 1 € contribution to H2020 budget | Difference between H2020 Funding received and contribution to H2020 budget per capita |
| AT-Austria | 8.576.261 | 889.168.622 € | 3,03 | 103,68 € | 2.943.714.738 € | 2,23 | 655.609.576 € | 76,44 € | 233.559.046 € | 0,80 | 1,36 € | 27,23 € |
| BE-Belgium | 11.258.434 | 1.409.460.210 € | 4,80 | 125,19 € | 5.593.812.339 € | 4,25 | 1.245.826.197 € | 110,66 € | 163.634.013 € | 0,56 | 1,13 € | 14,53 € |
| BG-Bulgaria | 7.202.198 | 61.975.896 € | 0,21 | 8,61 € | 437.149.184 € | 0,33 | 97.359.703 € | 13,52 € | -35.383.807 € | -0,12 | 0,64 € | -4,91 € |
| CY-Cyprus | 847.008 | 120.164.872 € | 0,41 | 141,87 € | 165.567.422 € | 0,13 | 36.874.357 € | 43,53 € | 83.290.515 € | 0,28 | 3,26 € | 98,33 € |
| CZ-Czech Republic | 10.538.275 | 196.516.796 € | 0,67 | 18,65 € | 1.591.411.121 € | 1,21 | 354.431.208 € | 33,63 € | -157.914.412 € | -0,54 | 0,55 € | -14,98 € |
| DE-Germany | 81.197.537 | 4.860.021.425 € | 16,57 | 59,85 € | 27.133.174.702 € | 20,60 | 6.042.966.370 € | 74,42 € | -1.182.944.945 € | -4,03 | 0,80 € | -14,57 € |
| DK-Denmark | 5.659.715 | 828.063.197 € | 2,82 | 146,31 € | 2.562.802.045 € | 1,95 | 570.774.586 € | 100,85 € | 257.288.611 € | 0,88 | 1,45 € | 45,46 € |
| EE-Estonia | 1.313.271 | 106.415.064 € | 0,36 | 81,03 € | 210.397.875 € | 0,16 | 46.858.773 € | 35,68 € | 59.556.291 € | 0,20 | 2,27 € | 45,35 € |
| EL-Greece | 10.858.018 | 724.129.973 € | 2,47 | 66,69 € | 1.618.799.437 € | 1,23 | 360.530.998 € | 33,20 € | 363.598.975 € | 1,24 | 2,01 € | 33,49 € |
| ES-Spain | 46.449.565 | 2.881.069.497 € | 9,82 | 62,03 € | 10.801.972.271 € | 8,20 | 2.405.761.798 € | 51,79 € | 475.307.699 € | 1,62 | 1,20 € | 10,23 € |
| FI-Finland | 5.471.753 | 776.094.405 € | 2,65 | 141,84 € | 1.881.375.732 € | 1,43 | 419.010.691 € | 76,58 € | 357.083.714 € | 1,22 | 1,85 € | 65,26 € |
| FR-France | 66.415.161 | 3.389.735.087 € | 11,56 | 51,04 € | 20.461.949.747 € | 15,53 | 4.557.184.168 € | 68,62 € | -1.167.449.081 € | -3,98 | 0,74 € | -17,58 € |
| HR-Croatia | 4.225.316 | 55.462.052 € | 0,19 | 13,13 € | 427.792.927 € | 0,32 | 95.275.923 € | 22,55 € | -39.813.871 € | -0,14 | 0,58 € | -9,42 € |
| HU-Hungary | 9.855.571 | 200.817.588 € | 0,68 | 20,38 € | 1.071.971.878 € | 0,81 | 238.744.271 € | 24,22 € | -37.926.683 € | -0,13 | 0,84 € | -3,85 € |
| IE-Ireland | 4.628.949 | 560.403.497 € | 1,91 | 121,06 € | 1.966.427.019 € | 1,49 | 437.952.893 € | 94,61 € | 122.450.604 € | 0,42 | 1,28 € | 26,45 € |
| IT-Italy | 60.795.612 | 2.583.406.034 € | 8,81 | 42,49 € | 15.373.807.011 € | 11,67 | 3.423.978.202 € | 56,32 € | -840.572.168 € | -2,87 | 0,75 € | -13,83 € |
| LT-Lithuania | 2.921.262 | 41.543.580 € | 0,14 | 14,22 € | 401.629.844 € | 0,30 | 89.449.011 € | 30,62 € | -47.905.431 € | -0,16 | 0,46 € | -16,40 € |
| LU-Luxembourg | 562.958 | 80.749.580 € | 0,28 | 143,44 € | 318.612.177 € | 0,24 | 70.959.727 € | 126,05 € | 9.789.853 € | 0,03 | 1,14 € | 17,39 € |
| LV-Latvia | 1.986.096 | 47.912.484 € | 0,16 | 24,12 € | 250.147.672 € | 0,19 | 55.711.651 € | 28,05 € | -7.799.167 € | -0,03 | 0,86 € | -3,93 € |
| MT-Malta | 429.344 | 19.951.075 € | 0,07 | 46,47 € | 92.939.088 € | 0,07 | 20.698.934 € | 48,21 € | -747.859 € | 0,00 | 0,96 € | -1,74 € |
| NL-Netherlands | 16.900.726 | 2.477.806.142 € | 8,45 | 146,61 € | 6.764.946.307 € | 5,14 | 1.506.655.357 € | 89,15 € | 971.150.785 € | 3,31 | 1,64 € | 57,46 € |
| PL-Poland | 38.005.614 | 299.265.645 € | 1,02 | 7,87 € | 4.102.918.458 € | 3,11 | 913.781.691 € | 24,04 € | -614.516.046 € | -2,09 | 0,33 € | -16,17 € |
| PT-Portugal | 10.374.822 | 521.570.867 € | 1,78 | 50,27 € | 1.671.714.798 € | 1,27 | 372.316.045 € | 35,89 € | 149.254.822 € | 0,51 | 1,40 € | 14,39 € |
| RO-Romania | 19.870.647 | 110.178.760 € | 0,38 | 5,54 € | 1.512.731.007 € | 1,15 | 336.907.962 € | 16,96 € | -226.729.202 € | -0,77 | 0,33 € | -11,41 € |
| SE-Sweden | 9.747.355 | 1.122.083.097 € | 3,82 | 115,12 € | 3.899.785.787 € | 2,96 | 868.540.988 € | 89,11 € | 253.542.109 € | 0,86 | 1,29 € | 26,01 € |
| SI-Slovenia | 2.062.874 | 184.927.467 € | 0,63 | 89,65 € | 402.105.845 € | 0,31 | 89.555.024 € | 43,41 € | 95.372.443 € | 0,33 | 2,06 € | 46,23 € |
| SK-Slovakia | 5.421.349 | 81.279.796 € | 0,28 | 14,99 € | 733.690.300 € | 0,56 | 163.403.872 € | 30,14 € | -82.124.076 € | -0,28 | 0,50 € | -15,15 € |
| UK-United Kingdom | 64.875.165 | 4.705.403.497 € | 16,04 | 72,53 € | 17.324.631.734 € | 13,15 | 3.858.456.229 € | 59,48 € | 846.947.268 € | 2,89 | 1,22 € | 13,06 € |
| All Member States | 508.450.856 | 29.335.576.205 € | 100,00 | 57,70 € | 131.717.978.465 € | 100,00 | 29.335.576.205 € | 57,70 € | 0 € | 0,00 | 1,00 € | |

Data Sources:

Column 2 Population Figures Eurostat table tps000001

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&tableSelection=1&labeling=labels&footnotes=yes&language=de&pcode=tps00001&plugin=0>

Column 3 Horizon 2020 Funding received CORDIS – EU research projects under Horizon 2020 (2014-2020), Version updated 2018-08-06

<https://data.europa.eu/euodp/de/data/dataset/cordish2020projects>

Column 6 EU Budget 2015 Definitive Adoption (EU, Euratom) 2017/292 of the European Union's general budget for the financial year 2017, OJ L 51/2017 of 28.2.2017, Table 7, page 21

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2017:051:TOC>