Applied Studies in Agribusiness and Commerce – APSTRACT
Center-Print Publishing House, Debrecen
DOI: 10.19041/APSTRACT/2017/3-4/10

SCIENTIFIC PAPER

ALLOCATION OF STRUCTURAL FUNDS BEFORE AND AFTER THE BREXIT: AN EXERCISE IN THE ECONOMICS OF CAKE-SHARING

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Abstract: *What impact has the Brexit on the allocation of money from the structural funds? As the UK is a net contributor to the EU budget, the budget for Structural and Cohesion Policy will shrink. This will have an impact on the allocations of the structural funds to the remaining members of the EU. In order to estimate the allocation of the structural funds to the remaining EU members an allocation model is developed in this article. It appears that the model results do not only show the sharing of the cake, but also the size of it.*

Keywords: *EU Budget, Structural and Cohesion Policy, Allocation of structural funds, Economics of cake-sharing*
(JEL Code: *F00, Q00*)

INTRODUCTION

EU's budget contains two major parts: The Common Agricultural Policy (CAP) and the regional and structural policy dealing with the allocation of the Structural Funds. These funds include: European Regional Development Fund, European Social Fund, Cohesion Fund, European Solidarity Fund, Instrument for Pre-Accession (IPA). The European Agricultural Fund for Rural Development is also an instrument of structural policy but is an instrument of the CAP (2nd pillar). Roughly the break-down of the EU-budget of € 1020 Billion for the 7-years period 2014-2020 is as follows (Table 1):

Table 1: EU Budget 2014-2020

Item	Billions of Euro	%
CAP	410	40
Regional and Cohesion Policy	350	34
Other	260	26
Total	1020	100

Source: EC (2017)

It is foreseen that The Rural Development Fund will spend € 95 Billion in the period

indicated. The British contribution to the total budget is estimated at 13.5% of the total amount which equals around € 138 Billion (Statista, 2017). In the remainder of this article I aim to estimate the financial consequences of the Brexit for the allocation of the structural funds. First I will indicate the distribution in the 7-years period 2014-2020. Then I will estimate what would have happened if the funds would have been allocated in the situation the UK would have left before 2014. Finally I will develop an allocation model to estimate the budget and allocation of the funds for the period 2020-2026.

SHARING THE CAKE AFTER BREXIT

Assume that the British contribution to the budget *B* of the structural funds had been withdrawn for the period 2014-2020 and that the UK-share *suk* in the allocation of the funds had to be reallocated over the remaining member states. The new share s_i^n of each of these member states would become:

$$s_i^n = \frac{s_i}{1 - s_{uk}},$$

In which *si* is the member state's original share in allocation of structural funds. Further the new budget *Bn*, without the British contribution, equals:

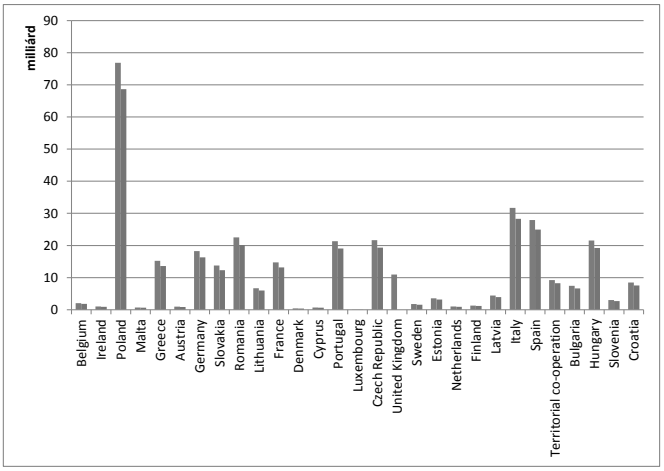
$$B_n = (1 - b_{uk})B,$$

In which *buk* represents the share of the British contribution in the total budget *B* of the structural funds. The new allocation A_i^n to each of the remaining member states can now be computed as:

$$A_i^n = \frac{(1-b_{uk})}{(1-s_{uk})} s_i B = \frac{(1-b_{uk})}{(1-s_{uk})} A_i,$$

With *Ai* for the original allocation from the structural funds to a member state. The conclusion is that the remaining member states receive a larger share of a smaller cake. The net outcome of this depends on the values of *buk* and *suk*. If *buk* = *suk*, the new allocation A_i^n will be equal to the original allocation A_i; if *buk* < *suk*, $A_i^n > Ai$; if *buk* < *suk*, $A_i^n < A_i$. Because the British share *buk* in the budget *B* equals 13.5% and the British share *suk* in the allocation equals 3.14%, the remaining country's allocation A_i^n will be reduced by approximately 10.7%. Figure 2 presents this situation.

Figure 1: Allocations for the period 2014-2020, with the UK (left bars) and without the UK (right bars).



Source: EC (2015), http://ec.europa.eu/regional_policy/en/funding/available-budget/, own calculations.

It appears that especially Poland benefits from the present allocation. In the period indicated Poland is planned to receive around 2.5 times as much as Italy, which is the number 2 in the ranking. For a country like Hungary Brexit before 2014 would have meant a decrease of the present budget from 21.5 billion to 19.2 Billion Euro for the period 2014-2020.

Taking only into account Brexit with respect to the forecast of the budget and budget allocation for the period 2021-2027 is useful for a first approach. For a more sophisticated estimation of the budget and its allocation over the member states a model is needed.

AN ALLOCATION MODEL

In order to estimate how the structural funds could be allocated after 2020 I developed the following simple model (See also Heijman and Koch, 2011):

$$A_i = \alpha e^{\beta s_i} P_i^{\gamma} I_i^{\delta},$$

with S_i for the per member country share of the NUTS-2 Regions with a per capita GDP below 75% of the EU average; P_i for the total population per country and I_i for the per capita GDP per country. The difference between Heijman and Koch's model is the introduction of the variable *S*.1 The idea behind it is that NUTS-2 regions with a GDP per head below 75% of the EU-average are likely to be eligible for EU-funding of regional projects. The introduction of the variable in the model will probably lead to a higher percentage of the variance explained (R^2) compared to its original version, which include only the variables *P* and *I*. The model will be estimated in its linear transformation:

$$\ln A_i = \ln \alpha + \beta S_i + \gamma \ln P_i + \delta \ln I_i,$$

in which γ and δ are elasticities. The data used for this model are presented in Table 2.

Table 2: Share Si of under 75% of the average EU GDP regions (NUTS-2), total population and GDP per capita per member state

Member State	S_i	Population (adj.)	GDP/ capita
Belgium	0.4	12.3428608	44300
Ireland	0.5	5.4964302	68574
Poland	0.9375	32.6892954	12271
Malta	1	0.3857144	21272
Greece	0.846154	8.8714312	34832
Austria	0.111111	9.3535742	44600
Germany	0.2	78.107166	46352
Slovakia	1	4.7250014	18440
Romania	0.875	13.4035754	9615
Lithuania	1	2.3142864	13674
France	0.692308	69.7178778	49489
Denmark	0.2	6.0750018	56500
Cyprus	0	1.0607146	20600
Portugal	0.714286	8.7750026	23930
Luxembourg	0	0.6750002	118538
Czech Republic	0.875	10.7035746	19100
United Kingdom	0.459459	74.250022	45731
Sweden	0	12.1500036	56703
Estonia	1	1.1571432	14600
Netherlands	0.083333	17.4535766	54640
Finland	0.2	5.6892874	53616
Latvia	1	1.446429	15097
Italy	0.428571	61.232161	41259
Spain	0.473684	38.3785828	41565
Territorial Co-operation	0	18.3875	3100
Bulgaria	1	5.5928588	6300
Hungary	0.857143	9.0642884	13231
Slovenia	1	1.928572	28398
Croatia	1	3.375001	13400

Source: StatisticsTimes (2017), Eurostat (2016).

1 The reason why I use $e^{\beta s_i}$ instead of βs_i is that in the linear transformation I make use of natural logarithms. If $s_i = 0$, which is the case in some countries, the natural logarithm $\ln s_i$ does not exist.

In order to make the make the model work I have allocated a population of around 18.4 million people to the extra-territorial region, which is the average number of inhabitants of all the present member states. This is about 3.6% of the total EU population. This percentage is used to reduce the population numbers of all the member states. Further we assume that the people populating the extra territorial region are producing €31,000 per capita which is about the EU average GDP per capita.

RESULTS

The linear regression procedure gave the following results (*t*-values in brackets):

$$(1)\quad \ln A_i = \underset{(10.42)}{29.17} + \underset{(3.69)}{1.67}\, S_i + \underset{(10.94)}{0.93}\ln P_i - \underset{(-3.75)}{0.95}\ln I_i,$$
$$R^2 = 0.8$$

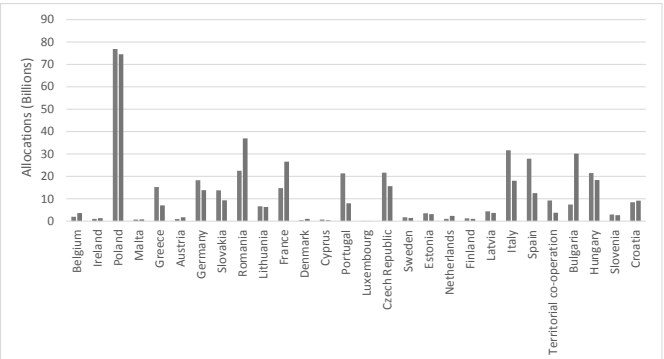
The constant and the variables involved are all highly significant. If the model is estimated without *S*, the result is (with t-values in brackets):

$$(2)\quad \ln A_i = \underset{(17.43)}{37.2} + \underset{(8.69)}{0.89}\ln P_i - \underset{(7.74)}{1.63}\ln I_i,$$
$$R^2 = 0.81$$

Apparently Model (1) explains a higher percentage of the variance than Model (2), the original model (Heijman and Koch, 2011).

On the basis of the model I am now able to estimate the allocation for the period 2021-2027 and compare it to the period 2014-2020 (Figure 3).

Figure 2: Model allocations of the structural funds for the period 2021-2027 (right bars) compared to the actual allocations for the period 2014-2020 (left bars), excluding the UK.



Model (1) allocates an amount of around € 315 Billion for the period 2021-2027, which is around10% less than the original budget of € 350 Billion for the period 2014-2020. Roughly, this equals the budget cut necessary because of the Brexit.

It appears that especially the new member states Romania and Bulgaria may look forward to a higher allocation from the structural funds in the period 2021-2027, probably due to the relatively low absorption capacity in the present period. Central European member states like Poland, Czech Republic, Slovakia and Hungary may expect some reduction. The model estimates a significant decrease in the allocation to South European members Italy, Spain, Greece and Portugal. Remarkably, also the Territorial Cooperation is expected to lose a substantial part of its subsidies. Germany will also lose part of it, where other West European members, like France may look forward to an increase.

CONCLUSION

Because at present the UK is a net payer to the EU budget, the budget will probably cut by more than 10% in the period 2021-2027 relative to the present period. From around € 350 Billion the budget for Structural and Cohesion Policy will be reduced to around € 315 Billion. In the first approach the budget for the remaining members was cut by this percentage. However, it is not only the Brexit that will influence the budget and the budget allocation. In order to find out the consequences for the remaining members in a more sophisticated way an allocation model was developed, based upon three variables: share of low income NUTS-2 regions on national level, total population and GDP per head.

This model was used not only to estimate the 'cake-sharing', but also the total size of the 'cake'. On the basis of the model it could be estimated that the necessary budget for 2021-2027 would be 10% less than in the previous period, which is in line with the financial consequences of Brexit. Further, especially Romania and Bulgaria would receive larger allocations from the funds, where the allocations towards South Europe would be significantly less. A number of East European members and Germany would receive smaller amounts, where France and other West European members would receive larger allocations.

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