Modelling the European Union's next Multiannual Financial Framework after Brexit

Annex to Zsolt Darvas and Guntram B. Wolff (2018) 'Rethinking the EU's post-Brexit budget priorities', *Policy Brief* 2018/01, Bruegel

This annex presents the detailed calculations behind the results reported in Darvas and Wolff (2018).

The United Kingdom has been a net contributor to the EU budget and consequently Brexit might leave a large hole. We present a number of different scenarios showing how the EU budget could develop after Brexit. The UK might contribute to the next Multiannual Financial Framework (MFF, 2021-2027) and some of the commitments made under the current MFF are planned to be spent in the UK after 2020. However, the UK contribution to the EU budget and EU spending in the UK is uncertain until the EU27-UK withdrawal treaty is signed and ratified[1]. We therefore first present scenarios that completely exclude the UK from the next MFF. Subsequently, we assess possible UK contributions.

The 2021-27 MFF without any UK contribution

EU budgeting, which is based on an outdated French accounting system no longer used elsewhere, differentiates between 'commitments' and 'payments' on the expenditure side. The seven-year MFF includes planned commitments and planned payments for each year. Planned commitments have exceeded planned payments by about €10 billion per year and actual annual budgets tend to follow the seven-year plan[2]. Some of each year's planned commitments are planned to be paid in the same year, while some commitments are deferred for payment from subsequent annual budgets. This system leads to an ever-rising volume of outstanding budgetary commitments, known as the *reste à liquider* (RAL). RAL is expected to exceed €250 billion by 2020.

The problem that this strange budgeting system poses for our calculation is that detailed ceilings are available only for commitments. For example, the total planned commitment for the Common Agricultural Policy (CAP) in 2014-20 is €408 billion, while the total planned commitment for cohesion and regional policy is €367 billion. These are the numbers used in everyday debates on the budget. For payments, only a ceiling for total payments is available[3]. However, EU budget revenues must match planned payments and not planned commitments, so we need to know what the planned payments are for the major subheadings of the EU budget. European Commission (2018), the report prepared ahead of the February 2018 informal European Council, did not dare to discriminate between commitments and payments, but presented the commitments numbers (without specifying that these numbers relate to commitments and not payments).

We therefore assumed that the ratio of payments to the commitment ceiling is the same for CAP, cohesion spending and all other spending as the ratio between the totals, which allows us to approximate planned EU payments by major sub-headings such as the CAP and cohesion policy. On this basis, Table 1 breaks down the 2014-20 MFF.

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[1] The draft of the withdrawal agreement (as prepared by the EU27 side) was published on 15 March 2018: https://ec.europa.eu/commission/publications/draft-agreement-withdrawal-united-kingdom-great-britain-and-northern-ireland-european-union-and-european-atomic-energy-community_en.

[2] There was one year in the past MFF, 2014, when actual commitments were smaller by €14 billion than actual payments, but this was compensated for in 2015 when actual commitments were €23 billion more than actual payments.

[3] See the principles here: http://ec.europa.eu/budget/mff/ceilings/index_en.cfm , simplified data here: http://ec.europa.eu/budget/mff/figures/index_en.cfm and more detailed data here: http://ec.europa.eu/budget/mff/lib/COM-2017-473/COM_2017_473_EN.pdf.

As regards revenues, beyond member state contributions, the EU has some 'other revenues', mostly from fines and contributions from non-EU countries, such as Norway. We calculate the average annual value of such revenues between 2010-16 and multiply by seven to get an estimate for the possible total of such revenues in 2014-20, which is €48 billion. The rest, that is the difference between total payment ceilings and these other revenues, are to be collected from member states, which is called 'total own resources' in EU budget terminology and comprises GNI-based and VAT-based member state contributions and customs duties.

Table 1: The 2014-20 MFF (28 member states) (€ billions)

	Expenditures		Revenues	
	Commitment ceilings	Payment ceilings		
CAP	408	387	Total own resources	978
Cohesion	367	348	Other revenues	48
Other spending	307	291		
Total	**1,082**	**1,026**	**Total**	**1,026**
			Balance	**0**
Total percent GNI	1.0%	1.0%	Total percent GNI	1.0%

Source: Bruegel.

Next, we exclude the UK from the 2014-20 MFF (Table 2). Again, data is available on commitments: of the €408 billion in planned commitments for the CAP in 2014-20, €28 billion is planned to be committed to be spent in the UK, while of the €367 billion in planned cohesion commitments, the UK's portion is €12 billion. For all other EU spending commitments (€307 billion) we assumed that the share to be spent in the UK is 5.7 percent, which was the UK's average share of actual expenditure under the 2014-2016 annual budgets. To calculate payment ceilings for subheadings we follow the same methodology as in Table 1 – we apply the ratio of total payments to total commitments. On the revenue side we subtract the UK's expected contribution in 2014-20 to get the value for the 27 member states. This projection is based on the European Commission's November 2017 GNI forecast for the UK and assumes an unchanged sterling/euro exchange rate. We have no information to estimate the UK's share of 'other revenues', so we assume the UK's share in these revenues is 10 percent and thus for the 27 member states, the value of these revenues would be €43 billion instead of the €48 billion number included for the EU28 in Table 1. Our calculations presented in Table 2 show that without the UK on both the spending and the revenue sides, the 2014-20 EU budget would have missed €73 billion.

Table 1: The 2014-20 MFF for 27 member states excluding the UK from both revenues and spending (€ billions)

	Expenditures		Revenues	
	Commitment ceilings	Payment ceilings		
CAP	381	362	Total own resources	856
Cohesion	355	336	Other revenues	43
Other spending	290	275		
Total	**1,026**	**973**	**Total**	**900**
			Balance	**-73**
Total percent GNI		1.1%	Total percent GNI	1.0%

Source: Bruegel.

In our projections to 2021-27 we disregard commitments, because revenues will have to match payments and not commitments.

In fact, one of our proposals in Darvas and Wolff (2018) is to get rid of this outdated and complicated budgeting system and instead introduce an accrual-based multiannual budgeting framework, similarly to the best practices of EU governments and multinational organisations.

A GNI projection up to 2027 is needed for our budgetary projections. We estimate (Box 1) that the total GNI of the 27 EU member states will be 28.1 percent higher in 2021-27 than in 2014-20. Of that, 13.6 percent is real growth and 12.7 percent is inflation (note that 1.136*1.127=1.281).

Box 1: Estimating GNI growth up to 2027

EU27: The November 2017 European Commission forecast includes constant and current price GNI forecasts for the EU27 not including the UK up to 2019; we use these forecasts. The IMF October World Economic Outlook includes real GDP growth and CPI inflation forecasts for the EU up to 2022[4]. We assume that GNI growth in 2020-27 is the same as GDP growth in this period. In order to obtain nominal GDP growth from the IMF forecast, we first estimate the GDP deflator by reducing CPI inflation forecasts with the 2010-19 difference (as included in the Commission forecast) between CPI inflation and the GDP deflator (which is 0.2 percent per year) for the EU27. We then calculate the product of real GDP growth and our projected GDP deflator to obtain nominal GDP growth. For 2023-27 we use the 2022 values, which are 1.7 percent in real terms and 3.6 percent in nominal terms.

UK: The November 2017 European Commission forecast includes constant and current price GNI forecasts for the UK up to 2019, giving current price GNI in both sterling and euro. IMF WEO includes

[4] Unfortunately, the IMF forecast does not include a forecast for the GDP deflator for the European Union. While it presents current price GDP forecasts for the EU in US dollars and purchasing power parity international dollars, such data does not allow the GDP deflator to be calculated in an easy way, and we wished to avoid making complex assumptions.

GDP projections in sterling at both current and constant prices. We assume that the sterling/euro exchange rate remains unchanged after 2019. On this basis, we use the 2019 Commission forecast in euro as the starting point and increase it in line with the IMF nominal GDP forecast for 2020-22. Similarly to the EU27, we assume that growth in 2023-27 will be the same as the 2022 forecast, which is 1.7 percent real growth and 3.8 percent nominal growth for the UK.

In our calculations we assume revenues will increase at the same 28.1 percent rate as GNI, implying that the share of national contributions to the EU budget would remain the same as a percentage of GNI in 2021-27 as it was in 2014-20. We also assume that non-CAP and non-cohesion spending will increase with GNI. We present three possible scenarios for CAP and cohesion spending:

1) Increase by 28.1 percent in line with GNI (implying that the real value of CAP and cohesion spending would increase with the real GNI growth of 13.6 percent);

2) Increase only with inflation, ie by 12.7 percent (implying that the real value of CAP and cohesion spending would be unchanged);

3) Fix at the current 2014-20 MFF levels in nominal terms (implying that the real value of CAP and cohesion spending would decrease by 12.7 percent).

Table 3 reports the results of the three scenarios. If the UK's net contribution to the next MFF is zero and all spending in and revenue from the EU27 increases with GNI, there would be a big hole in the next MFF amounting to €94 billion for 2021-27, or about €13 billion per year (scenario 1). Without any relative reduction in certain expenditures, that would necessitate a significant increase in national contributions, which would need to be increased further if some of the new spending priorities, such as border control, defence and youth mobility, are agreed on.

Table 2: The 2021-27 MFF for 27 countries, assuming no UK contribution or spending in the UK, under alternative scenarios for CAP and cohesion spending, while other spending and all revenues increase with GNI

Payments				Revenues	
	Scenario 1: C&C increase with GNI	Scenario 2: C&C increase with inflation	Scenario 3: C&C nominal fix at previous MFF level		
CAP	463	408	362	Total own resources	1,097
Cohesion	431	379	336	Other revenues	55
Other spending	352	352	352		
Total	**1,246**	**1,139**	**1,050**	**Total**	**1,152**
Balance	**-94**	**13**	**102**		
Total percent GNI	1.1%	1.0%	0.9%	Total percent GNI	1.0%

Source: Bruegel; see Darvas and Wolff (2018). Note: C&C = CAP and cohesion.

Next, we check scenario 2, freezing the real value of CAP and cohesion spending. Such a scenario would balance the next MFF and would even make available a small surplus of €13 billion for 2021-27, or about €2 billion per year, for other spending priorities.

Finally, we check the impact of nominally frozen CAP and cohesion payments under scenario 3. This would result in an overall surplus in the MFF for new spending priorities of about €102 billion, or about €14 billion a year.

While these scenarios are illustrative, they do show that the Brexit hole in the budget could be filled by, for example, freezing the real value of CAP and cohesion spending, which would still involve a nominal increase of 12.7 percent. European Commission (2018) did not discuss this option and rather suggested nominal cuts would be necessary. In fact, our scenario 3 shows that without any nominal cut, nominal freezing of CAP and cohesion spending would make available €102 billion for other spending priorities.

Assessing possible UK contributions to the 2021-27 MFF

The possible contribution of the UK to future EU budgets is highly uncertain. However, the UK might substantially contribute to the next MFF if:

- An exit deal is signed and the principles laid down in the December 2017 agreement on the financial settlement between the EU27 and the UK are implemented[5], and

- The EU and UK sign a comprehensive economic partnership agreement for the post-2020 period, which would involve a UK contribution to the EU's budget, similarly to, for example, Norway's contribution.

On the first point, the December 2017 agreement resulted in the acknowledgement of the broadest possible liabilities for the UK: for 2019-20, the UK will contribute as if it were a member of the EU and for the post-2020 period the UK will pay its share of all liabilities and commitments that the EU accumulates by 31 December 2020. Moreover, the UK will not benefit from a share of EU assets, such as EU buildings. We quantify possible UK payments to the EU budget using the methodology developed in Darvas *et al* (2017) [6]. We extrapolate their calculations to end-2020. As regards the pension liability (for which Darvas *et al*, 2017, do not include a projection), we first calculate the nominal (ie non-discounted) value of pension liabilities using the discounted value data available in the EU consolidated accounts and the discount rate. We then project the nominal value of this liability to end-2020, using the pre-2016 trend increase in this liability. Since the December 2017 agreement between the EU27 and the UK concluded that UK will pay its share of EU liabilities when these liabilities actually become due, the UK could possibly pay for EU employee pensions for several decades after 2020, unless the UK and EU agree otherwise. We do not have data on the age profile of EU pensioners and their life expectancy, so we simply assume that the pension liability will be paid off gradually over 19 years, which is the average duration of the liability. This assumption only influences the estimated time profile of the UK's contribution to the pension liability, but not its estimated magnitude.

The December 2017 document clearly explains the principles of financial settlement with the exception of one important question, namely whether rebate-adjusted or non-adjusted historical contributions will be used to calculate the UK's share of post-2020 contributions[7]. Informally, we heard

[5] See Joint report from the negotiators of the European Union and the United Kingdom Government on progress during phase 1 of negotiations under Article 50 TEU on the United Kingdom's orderly withdrawal from the European Union, 8 December 2017, https://ec.europa.eu/commission/sites/beta-political/files/joint_report.pdf.

[6] See Darvas *et al* (2017) for a discussion of the various uncertainty factors. They conclude that there is little uncertainty about MFF-related liabilities, because the 2014-20 MFF commitments are known and they assumed a usual amount of decommitments for 2017-20 (which is quite small). Other uncertainties relate to economic growth forecasts and possible changes in the sterling/euro exchange rate.

[7] The December 2017 Joint report included the following (see point 67.b on page 11): "*Except for the UK payments relating to UK participation to Union annual budgets to 2020 as set out in paragraphs 59 and 60, the UK share in relation with the Union budget will be a percentage calculated as the ratio between the own resources made available by the UK from the year 2014 to 2020 and the own resources made available by all Member States, including the UK, during the same period.*" However, the June 2017 European Commission Article 50 Task Force position paper on principles of financial settlements said that (see the bottom of page 3): "*Should the financial settlement include all the obligations mentioned above, the United Kingdom share of the Union obligations should be established as the ratio (in percentage) between all own resources transferred by the United Kingdom to the EU budget and the total own resources transferred by the Member States (EU28) over 2014-2018. These amounts include all specific adjustments of national contributions as defined by the ORD.*" That is, in June 2017 the guideline added a specific sentence saying that "*all specific adjustments of national contributions*" are to be considered when calculating the share, but this sentence was missing from the December 2017 joint report.

that the rebate-adjusted share is planned to be used, but since this is not clear from the published document, we calculate two scenarios (Table 4).

Table 3: Our estimate for the UK's net contribution to the EU budget after 2020 from the financial settlement of EU membership (€ billions)

	2021-27	Post-2027
Net UK contribution (if non-rebate adjusted share)	28	8
Net UK contribution (if rebate adjusted share)	17	6

Source: Bruegel using the methodology of Darvas *et al* (2017). Note: post-2027 UK contributions primarily relate to EU staff pension payments. The overall 'Brexit bill' is larger than the numbers included in the table, because typically, the 'Brexit bill' expression used to refer to the UK's post-Brexit net contribution to the EU budget based on 2014-20 MFF commitments and other liabilities (such as pension of EU employees), but the table does not include UK contributions in April 2019 – December 2020, which is a period following the likely Brexit date. The calculation requires an estimate for the UK's share in EU budget contributions in 2017-2018: we made such projections using the European Commission's GNI growth forecast and assuming that the exchange rate between the pound sterling and the euro will remain unchanged.

Moreover, the exit fee might not be the UK's only contribution to the post-2020 EU budgets. If the UK and the EU sign a comprehensive economic partnership agreement for the post-2020 period and the UK participates in certain EU programmes, such as research (Horizon 2020) and student mobility (Erasmus+) programmes, the UK might also make annual contributions to the EU budget, as Norway and Switzerland do. Table 5 shows that Norway's net contribution to the EU has been historically about half of the UK's relative to GNI[8]. Switzerland's net contribution has been much smaller, while Iceland was in fact a net beneficiary of EU spending in 2015. Canada (like other countries with which the EU has a trade agreement) does not contribute, yet the free trade agreement with Canada is much narrower than the single market access of Norway and Switzerland, and Canada does not benefit from EU programmes like Horizon 2020 or Erasmus+. Whether the UK will contribute to the EU budget, and if so by how much, in exchange for preferential access to the EU's markets and participation in EU programmes will be probably not known before the next MFF is agreed. In the right-hand column of Table 5 we calculate illustrative UK contributions to the 2021-27 MFF should the UK's net contribution as a share of GNI be the same as the numbers in the first data column. A Swiss-type contribution would suggest only €3 billion for the full seven-year period (that is, about half a billion per year), while a Norway-type contribution would suggest €31 billion, or about €4.5 billion per year[9].

We note that the €65 billion number which results if the UK's own historical share is used, is smaller than the €94 billion gap that Brexit leaves in the EU budget if everything increases with GNI (see Table 3, scenario 1). The main reason for this discrepancy is the depreciation of the British pound against the euro after the Brexit referendum in June 2016. Thereby, UK GNI expressed in euro declined significantly so the same share of UK GNI amounts to a lower value in euros. Another reason for the discrepancy is that we use the 'operating budgetary balance' indicator for the UK's historical net

[8] About half of Norway's gross contribution is paid directly into the EU budget, while the other half goes to European Economic Area (EEA) and Norway grants to promote European cohesion efforts.
[9] The difference between the net contributions of Norway and Switzerland is mainly related to their gross contributions: Norway pays about 0.2 percent of GNI, while Switzerland pays about 0.06 percent of GNI. EU expenditure in the two countries is the same as the share of their GNI, 0.04 percent.

contribution, which differs from the cash-flow balance[10]. And a further reason is that UK economic growth from 2014-20 to 2021-27 is expected to be somewhat lower than EU27 growth.

Table 4: Possible UK contribution to the 2021-27 EU budget for some form of access to EU markets and participation in EU programmes

	Historical contributions (percent GNI)	Total UK net contribution in 2021-27 if its GNI share as in the first data column (€ billion)
Iceland	-0.05%	-11
Canada	--	0
Switzerland	0.02%	3
Liechtenstein	0.03%	7
Norway	0.16%	31
United Kingdom	0.33%	65

Sources: contribution by the four EFTA countries is from Darvas (2016), using data received from the Directorate-General for Budget of the European Commission upon request; UK's historical contribution is from European Commission budget execution tables and refers to the 'operating budgetary balance' concept; GNI and population data is from AMECO (November 2017 version) for all countries except GDP of Liechtenstein, which is based on UN data; our projection of UK GNI for 2021-27 is described in Box 1. Note: historical contribution is the average of 2010-16 for the UK and average of 2014-15 for the non-EU countries.

Therefore, if there is both an exit deal and a new comprehensive economic partnership agreement between the EU and the UK, the Brexit-sized hole in the next MFF will be smaller than that implied by a no-deal scenario.

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[10] See the methodology at: http://ec.europa.eu/budget/financialreport/2015/annex/3/index_en.html.

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