

# Cyclical Adjustment of Public Finance Modelling

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## Introduction

1.1 This note builds on recently published HM Treasury analysis to estimate the impact of a vote to leave the EU on the government's underlying fiscal position.<sup>1</sup>

## Structural and cyclical effects on Public Sector Net Borrowing (PSNB)

1.2 Economic modelling, on which HM Treasury's short-term analysis is based, can be used to produce an estimate of how much of the estimated increase in borrowing in 2017-18 is due to the structural deterioration in the economy and how much is due to the cyclical downturn.

1.3 In the 'shock scenario' presented in the short-term analysis, in 2017-18, real GDP would be 2.9% lower than baseline, but potential GDP would have declined by 2.1% compared to the baseline. This implies that roughly 75% of the decline in GDP in 2017-18 is due to the structural deterioration in the economy. This ratio is then applied to the overall £ billion increase in PSNB presented in the short-term paper to derive the structural and cyclical increases in PSNB. The analysis assumes that the split between the structural and cyclical reduction in GDP can be applied directly to the fiscal numbers. The same approach is applied for the 'severe shock scenario'.<sup>2</sup>

**Table 1.A: The 2017-18 increase in PSNB separated into structural and cyclical components**

Difference from baseline (£ billion)	Shock	Severe shock
PSNB	24	39
<i>Structural</i>	18	25
<i>Cyclical</i>	6	13

## Modelling the path of structural PSNB

1.4 The long-term analysis published by HM Government assumes that, 15 years after a vote to leave the EU, the nature of the UK's future relationship with the EU would be clear, uncertainty would have been resolved and the economy would have adjusted to a new structure. The long-term analysis provides estimates of the size of the structural decline in public sector current receipts net of EU contributions in this new 'steady-state', in 2015 terms. For the purposes of the analysis below an additional assumption is made that these estimates are equal to the structural increase in PSNB. In the case of a negotiated bilateral agreement the structural increase in PSNB is £36 billion, in the case of the World Trade Organisation (WTO) alternative the structural increase in PSNB is £45 billion.

1.5 In the short-term analysis the 'shock scenario' is linked to a negotiated bilateral agreement and the 'severe shock scenario' is linked to the WTO alternative. Therefore, this analysis links the short-term structural PSNB impacts from the 'shock scenario' and 'severe shock scenario' to the

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<sup>1</sup> HM Treasury analysis: the long-term economic impact of EU membership and the alternatives, HM Government (April 2016) - hereafter 'long-term analysis'. HM Treasury analysis: the immediate economic impact of leaving the EU, HM Government (May 2016) - hereafter 'short-term analysis'.

<sup>2</sup> In the 'severe shock scenario' real GDP is 5.0% lower than baseline in 2017-18 and potential GDP is 3.3% lower than baseline. This implies that 66% of the decline in GDP in 2017-18 is structural.

long-term structural PSNB impacts of the negotiated bilateral agreement and WTO alternatives respectively. For the 'shock scenario' and the 'severe shock scenario' the structural increase in PSNB in 2017-18 is projected to the level implied by the long-term document linearly, taking into account inflation and the real growth in the economy across the period. It is assumed that the cyclical increase in borrowing linearly declines to zero by 2020-21 in both scenarios.

**Table 1.B: The increase in PSNB across the Budget 2016 forecast horizon**

(£ billion)	2016-17	2017-18	2018-19	2019-20	2020-21
<b>Shock scenario</b>					
PSNB	12	24	25	25	26
<i>Structural PSNB<sup>3</sup></i>	9	18	21	23	26
<i>Cyclical PSNB</i>	3	6	4	2	0
<b>Severe shock scenario</b>					
PSNB	19	39	37	36	35
<i>Structural PSNB<sup>3</sup></i>	13	25	28	32	35
<i>Cyclical PSNB</i>	6	13	9	4	0

1.6 The table below shows how much the increase in borrowing would add to public sector net debt (PSND) if no action were taken to reduce borrowing.<sup>4</sup>

**Table 1.C: The increase in PSND from increased borrowing**

(£ billion)	2016-17	2017-18	2018-19	2019-20	2020-21
Shock scenario	12	36	61	86	112
Severe shock scenario	19	58	95	131	166

<sup>3</sup> Structural PSNB in 2016-17 is estimated using the same ratios as for 2017-18 as described in paragraph 1.3.

<sup>4</sup> This analysis assumes extra borrowing flows straight through to the debt position. An increase in PSNB does not always lead to an equivalent increase in PSND. This is because PSNB is an accrued measure whereas PSND is a cash measure. However, the components of the increases in PSNB do not have substantial accruals to cash adjustments. Therefore it is reasonable to make this assumption in this case.