



UK Government  
Investments

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Meg Hillier MP  
Chair of the Committee of Public Accounts  
House of Commons  
London  
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18 October 2018

Dear Meg,

**Sale of pre-2012 income contingent student loans: further information on the economic assumptions underpinning the Transitions-based Earnings and Repayments Model (TERM)**

Further to my letter of 9 October, I understand the Committee would like more specific information on the inputs and outputs of the model, including a list of the main assumptions in the model and the figures used and the annual undiscounted cash flows produced by the model.

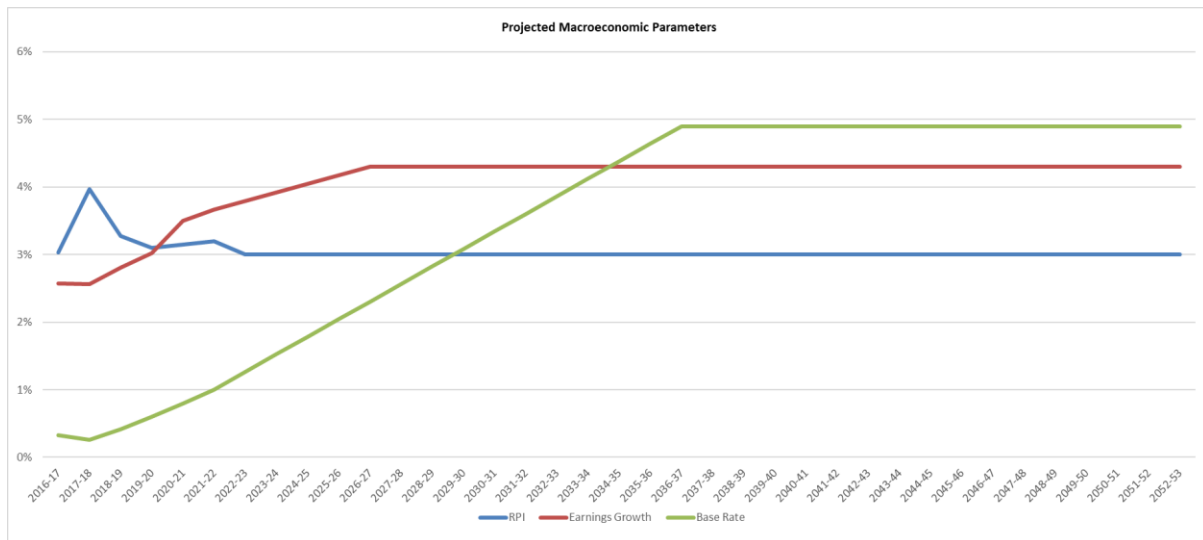
In the case of macroeconomic forecasts the source of the data is the Office for Budget Responsibility and for historic earnings the data sources are the Student Loans Company and HMRC - this is set out in more detail in the charts below. These inputs were used to assess the Government's retention value. It is worth clarifying, however, that investors were provided with the model and data on a non-reliance basis such that they could produce their own inputs and corresponding outputs, and amend the model accordingly. Their assessment of pricing will therefore reflect their collective view of the appropriate level to set the macroeconomic and other assumptions.

As previously advised, we would be very happy to arrange a meeting to help members understand the modelling process in further detail if this would be helpful.

## Main assumptions in the model

### Economic Factors

The primary economic factors for which we require assumptions are (i) inflation (as measured by RPI); (ii) real increases in average earnings; and (iii) the Bank base rate. These are taken directly from the Office for Budget Responsibility's (OBR) *Economic and Fiscal Outlook* (short term) and *Fiscal Sustainability Report* (long term) forecasts at the sale launch<sup>1</sup> and are shown in the following chart:



### Transition matrices

As set out in my previous letter, in addition to the general increases in average earnings, we model individuals moving between different levels of earnings. In our assumptions, this is broken down into three components:

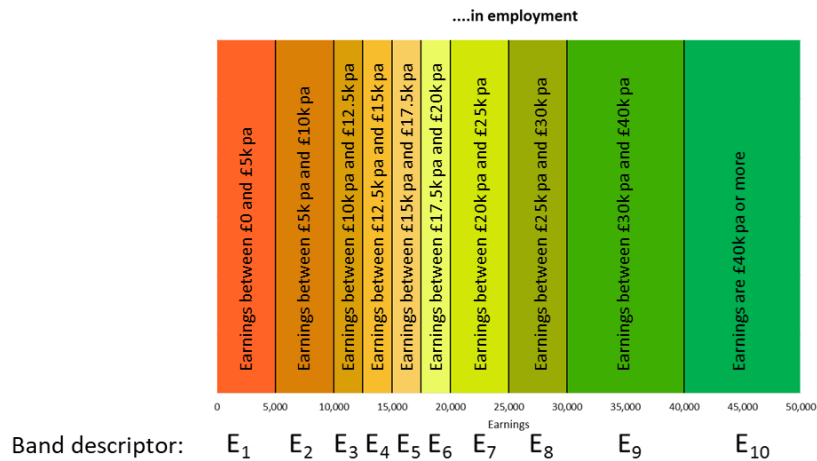
- Probability of having earnings in a year and still having earnings the next year (called 'within-job transitions')
- Probability of having earnings in a year and not having earnings the next year (called 'to inactivity transitions')
- Probability of not having earnings in a year and having earnings the next year (called 're-employment transitions')

These assumptions were set using Student Loans Company data of around 800,000 borrowers over a 7-year period. Where there was insufficient data, particularly at older ages, anonymised HMRC data of 10% of the taxpaying population was utilised. This contained over 3 million working age taxpayers covering a 10-year period. Overall, the input files for the model utilises tens of millions of data points to set over 4,000 assumptions in the transition matrices.

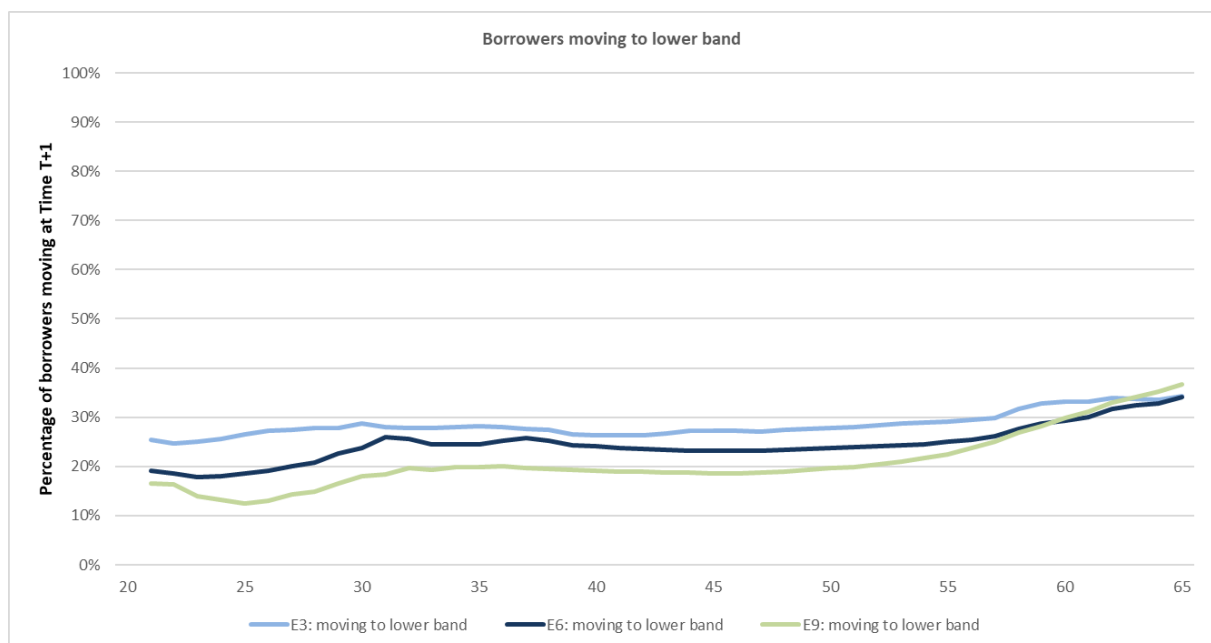
<sup>1</sup> <http://budgetresponsibility.org.uk/efo/economic-fiscal-outlook-march-2017/> and <https://obr.uk/fsr/fiscal-sustainability-report-january-2017/>

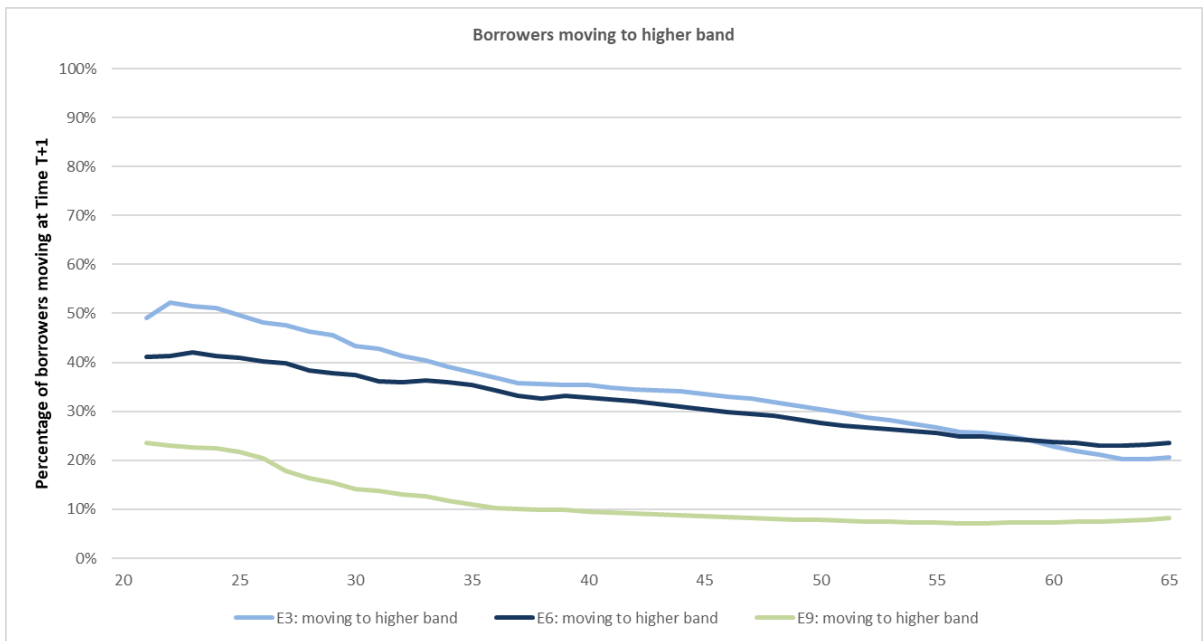
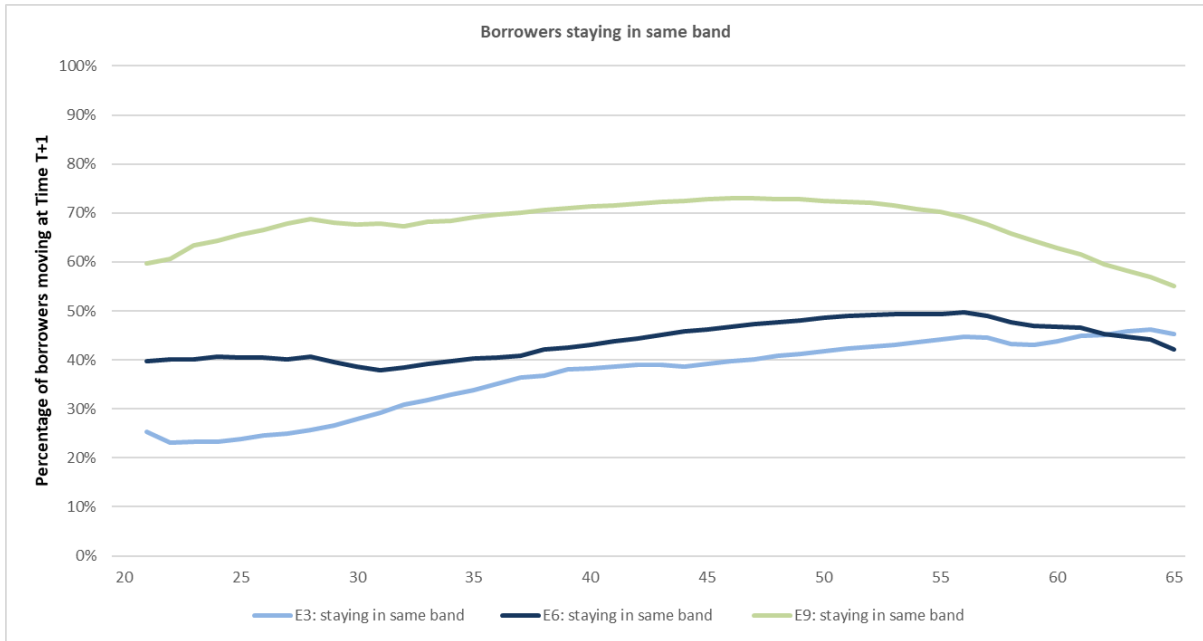
### Within-job transitions

For the within-job transitions, we considered ten earnings bands, with the lowest being £0 - £5,000 per year and the highest being above £40,000 per year, as shown in the figure below.



As a borrower can move from any state to any state in a given year, there are 100 possible transitions for a given age and we have different assumptions for each age, totalling around 4,000 transition assumptions. The file at Annex A contains all of the transitions, but to illustrate the assumptions adopted we have considered three earnings bands (E3, E6 and E9) and have shown their probability of moving to a lower band, staying in the same band or moving up a band and how these vary by age, in the three charts below.





### To inactivity transitions

For the transitions to inactivity, we considered the probability of moving from the 10 earnings bands. These assumptions do not vary by age in our base case, but the model has the flexibility to do so, and are set out in the table below:

Year Y Status	Percentage chance of becoming inactive in Year Y+1
E1	25%
E2	10%
E3	6%
E4	4%
E5	3%
E6	2%
E7	1%
E8	1%
E9	1%
E10	1%

### Re-employment transitions

For the transitions back into employment, we consider the probability of becoming employed again depending on how long they have been economically inactive and their last earnings level when they were previously employed. These assumptions do not vary by age and are set out in the tables below:

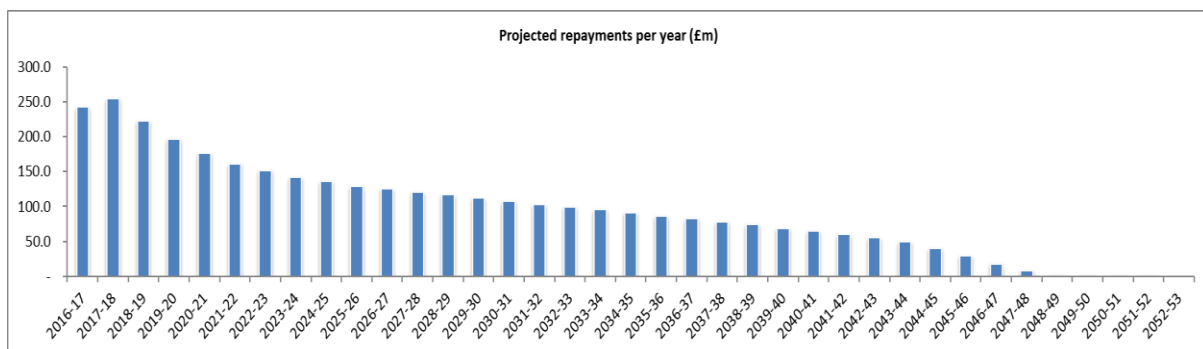
Year Y Status	Percentage chance of becoming employed in Year Y+1
Been inactive for 1 year (I1)	40%
Been inactive for 2 years (I2)	27.5%
Been inactive for 3 year (I3)	22.5%
Been inactive for 4 year or more years (I4)	20%

Earnings Band Prior to Inactivity	Earnings Band Upon Returning to Unemployment									
	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10
E1	48.8%	25.6%	6.5%	4.5%	3.7%	2.6%	3.5%	2.1%	1.5%	1.2%
E2	36.0%	29.3%	8.5%	6.4%	4.4%	3.5%	4.6%	2.6%	2.8%	1.9%
E3	30.6%	24.8%	9.7%	7.7%	6.9%	4.3%	6.2%	3.9%	3.6%	2.4%
E4	27.7%	22.9%	8.6%	9.8%	7.1%	5.2%	6.5%	4.3%	5.3%	2.6%
E5	24.0%	20.0%	8.7%	7.7%	10.0%	7.4%	8.9%	4.9%	4.8%	3.6%
E6	20.3%	20.8%	7.4%	7.1%	8.0%	9.0%	11.8%	5.9%	5.7%	3.9%
E7	18.0%	17.5%	6.5%	6.1%	5.8%	5.5%	14.8%	11.6%	8.5%	5.8%
E8	13.0%	12.5%	5.7%	4.6%	4.1%	4.8%	9.5%	16.4%	21.0%	8.3%
E9	7.8%	10.0%	3.6%	3.1%	3.2%	3.3%	6.0%	8.8%	31.9%	22.1%
E10	4.3%	7.6%	2.3%	1.4%	1.5%	1.0%	2.6%	3.1%	8.3%	68.0%

## Undiscounted cash-flows emerging from the model

The projected repayments are a key cashflow output of the model. The following chart illustrates, on the base case set of assumptions, the projected repayments from the cohorts of borrowers eligible for the sale completed in December 2017. The balance at 31 March 2016 was of **£3.7bn** (allowing for interest to that date, and with prior repayments deducted).

The expected future nominal amount of repayments comes to a total of **£3.5bn**. This allows for the addition of interest on the 2016 balance, but also allows for the fact that some loans will be written off in future (where borrowers do not have earnings above the threshold for repayments). It is also worth noting this projection includes repayments for the 5% of borrowers that were retained by government (i.e. not sold) for regulatory reasons.



I hope the Committee finds that this additional information addresses their questions. I am copying this letter to Jonathan Slater, Permanent Secretary Department for Education, Charles Roxburgh, Second Permanent Secretary HM Treasury, Sir Amyas Morse, Comptroller and Auditor General and Richard Brown, Treasury Officer of Accounts.

Yours sincerely,

**JUSTIN MANSON**

**DEPUTY CHIEF EXECUTIVE**

**UK GOVERNMENT INVESTMENTS**