

## ADVISORY PANEL ON CONSUMER PRICES – TECHNICAL

**Calculating a price index for student loan repayments**

Status: final

Expected publication: alongside minutes

**Purpose**

1. This paper addresses the feedback on *APCP-T(18)06 Calculating a price index for student loan repayments* discussed in May 2018. It presents a student loans repayments index based on Living Costs and Food Survey data, and gives an alternative version of the previous model, which uses the mean graduate salary rather than the median.

**Action**

2. Members of the Panel are invited to:
  - a) comment on the use of survey data to estimate student loan repayments
  - b) comment on the robustness of the model which was first proposed in *APCP-T(18)06*, and on whether mean graduate salaries are preferred to medians for the estimation of student loan repayments.
  - c) endorse ONS's recommendation to implement the model on mean graduate salaries in the HCIs publication planned for early 2019

**Background**

3. The Household Cost Indices (HCIs) aim to reflect UK households' experience of changing prices and costs. They are intended to measure how much the nominal disposable income of different household groups would need to change, in response to changes in prices and costs, to enable household groups to purchase the same quantities of goods and services at a fixed quality. The broad approach of the HCIs is thus to measure the outgoings of households.
4. In December 2017, the first preliminary estimates of the Household Cost Indices were published. The accompanying methodological paper highlighted the development of a price index for student loan repayments as a further component for inclusion in the HCIs. In CPIH, the weight of university tuition fees for UK students using the acquisition approach varied between 7 and 9.5 parts per thousand between 2014 and 2017. We intend to include the student loans repayment index in the next HCIs publication planned for early 2019.
5. A method was proposed in *APCP-T(18)06* which consisted of estimating student loan repayments by comparing median graduate salaries against the repayment threshold. The Panel advised to:
  - a. use the mean graduate salary or a distribution of salaries, rather than the median;
  - b. estimate student loans repayments from data, such as the Living Costs and Food Survey (LCF);
  - c. look to remove maintenance loans
6. Hereafter, the method proposed in *APCP-T(18)06* will be defined as the "threshold model".

## Calculating a price index from the LCF

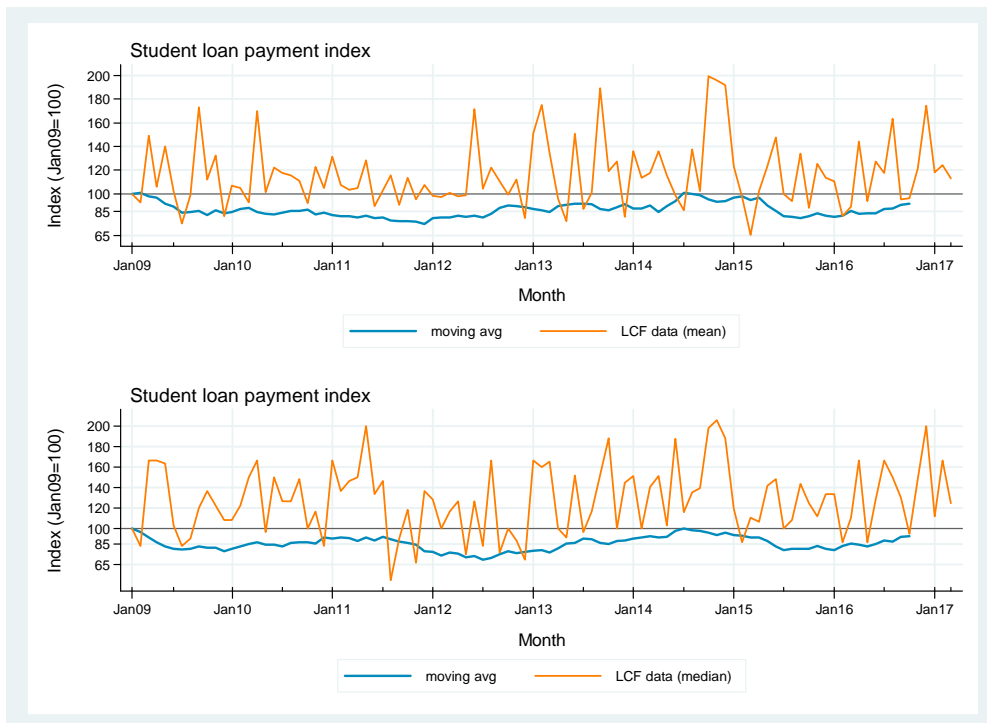
7. In April 2001, the Family Expenditure Survey and the National Food Survey were combined to form the Expenditure and Food Survey (EFS). In 2008, the EFS questionnaire became known as the LCF module of the Integrated Household Survey, from which the LCF came out in April 2014.
8. The LCF sample is a multi-stage stratified random sample with clustering. Postal sectors are the primary sampling units. 638 postal sectors are randomly selected after being arranged in strata defined by regions (subdivided into metropolitan and non-metropolitan areas) and two census variables: socio-economic group of the head of the household and ownership of cars.
9. The weights are produced in two stages. Firstly, the data are weighted to compensate for non-response (sample-based weighting). Secondly, the sample distribution is weighted so that it matches the population distribution in terms of region, age groups and sex (population-based weighting).
10. The LCF is affected by low response rates: for example, in 2014 the response rate was 48 per cent which dropped to 45 per cent in 2017. The downward trend in rates of response has been a common issue for continuous household surveys over the past 10 years. Low response in the LCF also combines with a 5 per cent sample cut introduced in the former EFS survey in 2006. This results in “volatility in the time series at lower-level, item breakdowns” ([Living Costs and Food Survey, National Statistics Quality Review: Series 2, May 2016](#), page 24), including student loan repayments.
11. The analysis presented here refers to LCF data from January 2008 onwards when information on student loan repayments is available continuously (latest data: March 2017). Further work could be done to establish if EFS data could be used before 2008.
12. The repayment amount includes both the capital and interest element of the loan. Sample means and medians were estimated monthly. However, with a very small sample size ranging from 1 (in July 2014) to 25 households (in May 2015) (Figure 1A, Appendix), repayment estimates were affected by high volatility.
13. The adoption of either averages or interpolation did not address volatility successfully. Therefore, a smoothing technique (12-month moving average) was applied (Figure 1), and price indices were thus derived for the smoothed series of sample means and of medians. Price indices and annual growth are plotted in Figures 2 and 3, respectively. It is noted that the smoothed series did not fully resolve fluctuations.

**Figure 1. Student loan repayments (original and smoothed series for sample mean and sample median). Living Costs and Food Survey, January 2008 to March 2017.**



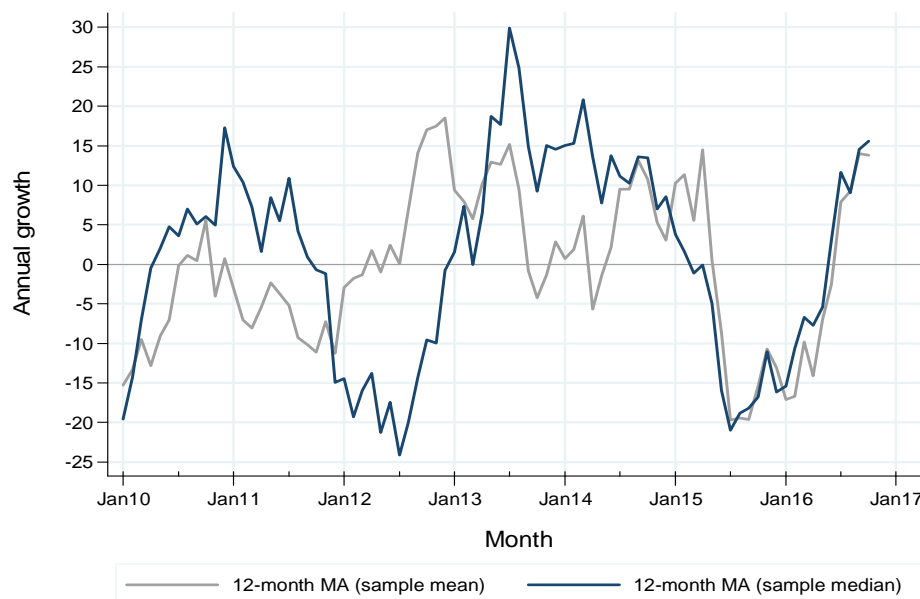
Source: LCF (own analysis)

**Figure 2. Price indices for student loan repayments (original time series and smoothed series for sample mean and sample median). Living Costs and Food Survey, January 2008 to March 2017.**



Source: LCF (own analysis)

**Figure 3. Annual growth for student loan repayments (based on 12-month moving average). Living Costs and Food Survey, January 2008 to March 2017.**



Source: LCF (own analysis)

14. For this paper, student loan repayments in the HMT data source (OSCAR) were also explored. This indicated that the student loan repayment category not only includes repayments but also new loans. In light of this, an OSCAR-based price index was ruled out.

#### ***Survey-based index: Strengths and limitations***

15. Survey data on representative random samples, such as the LCF, enable generalizations to the UK population, which is a valued criterion for the HCIs. This advantage, however, is currently diminished by the small sample size.
16. Student loan repayments refer to both maintenance loans and tuition fee loans. However, if purchases using the maintenance loan are included in the index as well as the repayment of the maintenance loans, this may result in double counting of students' and graduates' expenditure within the HCIs.
17. A further limitation is related to survey data not being timely which will impact on HCI publications.

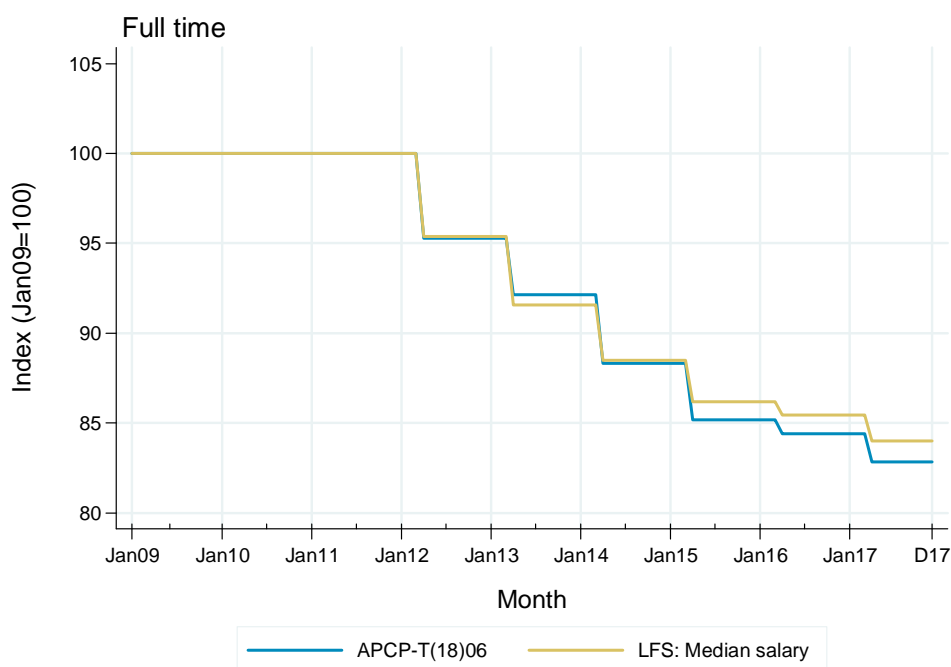
#### **Calculating a price index from the “threshold” model**

18. The “threshold” model presented in APCP-T(18)06 was based on the [Graduate Labour Market Statistics](#) (GLMS), which are produced by the Department of Education. In GLMS, a graduate salary is given in terms of median annual salary for those in full-time work and aged between 16 and 64. No other statistics are provided.
19. For the aim of this paper, graduate statistics were requested from the ONS Labour Force Survey (LFS) team. The LFS team produced graduate statistics in line with the definition of a graduate in the [Labour Market](#) statistics. “The word “graduates” refer to those people who

have left education with qualification above A level standard. This includes those with higher education and those with degrees'. The population is all adults living in the UK and aged between 21 and 64.

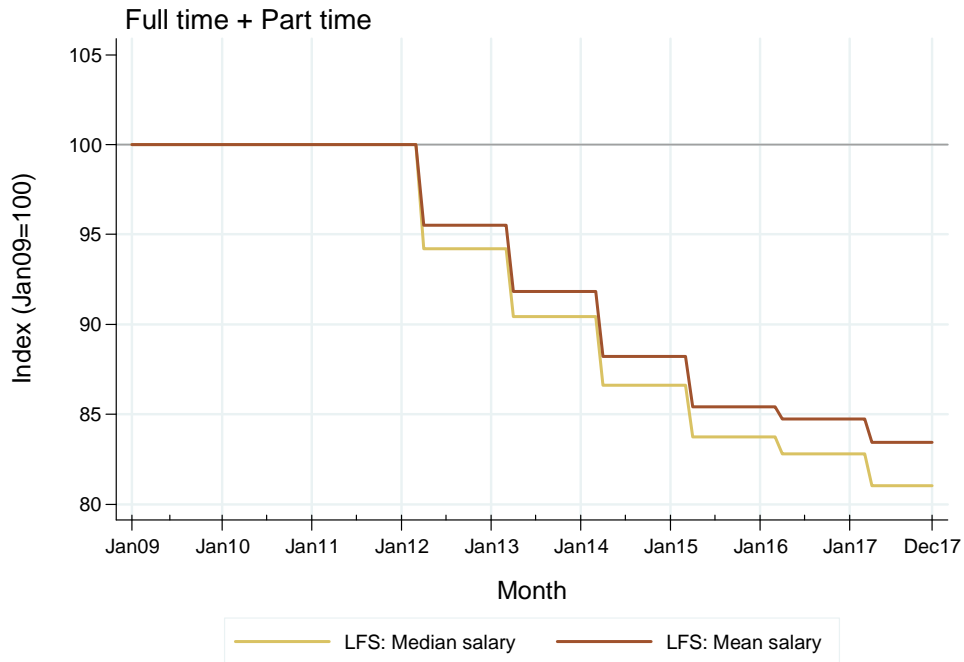
20. In terms of the notation adopted in APCP-T(18)06, the price indices presented here are "unadjusted for AWE". Also, price indices are computed relative to January 2009, rather than 2006, in order to allow comparison with the LCF-based indices. The repayment amount includes both the capital and interest element of the loan.
21. Since the data modelled in the former and in the present paper were drawn from different sources, an initial comparison was undertaken to verify the closeness in results. Figure 4 indicates a nearly overlapping pattern.

**Figure 4. Price index for student loan repayments in APCP-T(18)06 (GLMS) and based on LFS quarters. Median. January 2009 to December 2017.**

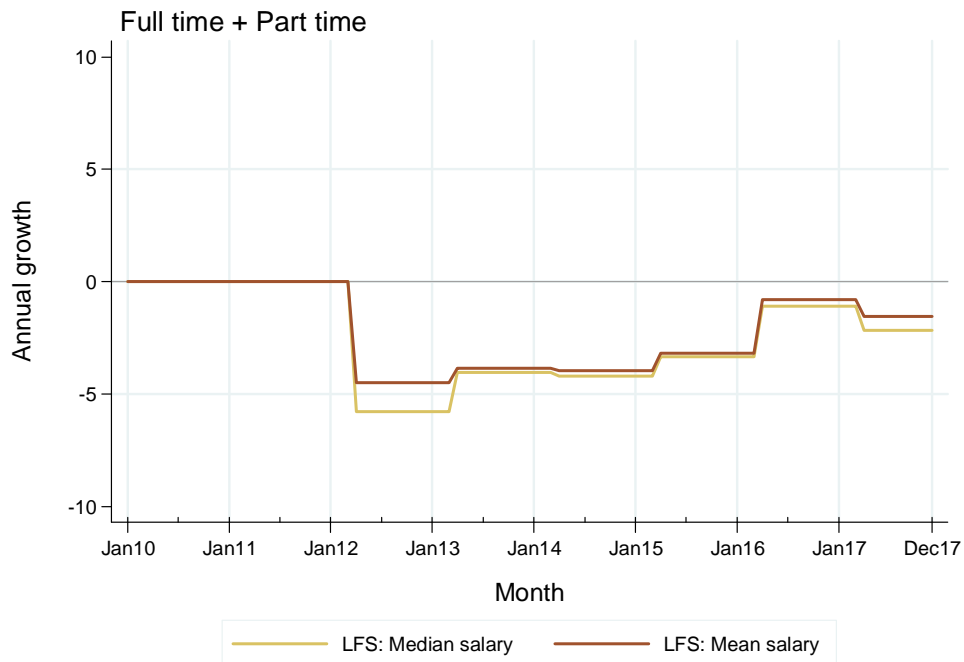


22. Hereafter, results will be presented for both full time and part time workers which is deemed to better reflect student loan repayments in the UK population.
23. Figures 4 and 5 point to a downward trend in student loan repayments relative to January 2009. In the absence of other information on repayments, this study attempts to identify it indirectly. Two sources were informative in this regard: the repayment threshold and the graduate salary. This is because graduate workers pay 9 per cent above the difference between their gross salary and the repayment threshold; hence, long-term movements of these two series impact on the price index for student loan repayments. The annual growth is presented in Figure 6.

**Figure 5. Price index for student loan repayments based on mean and median graduate salary. January 2009 to December 2017.**

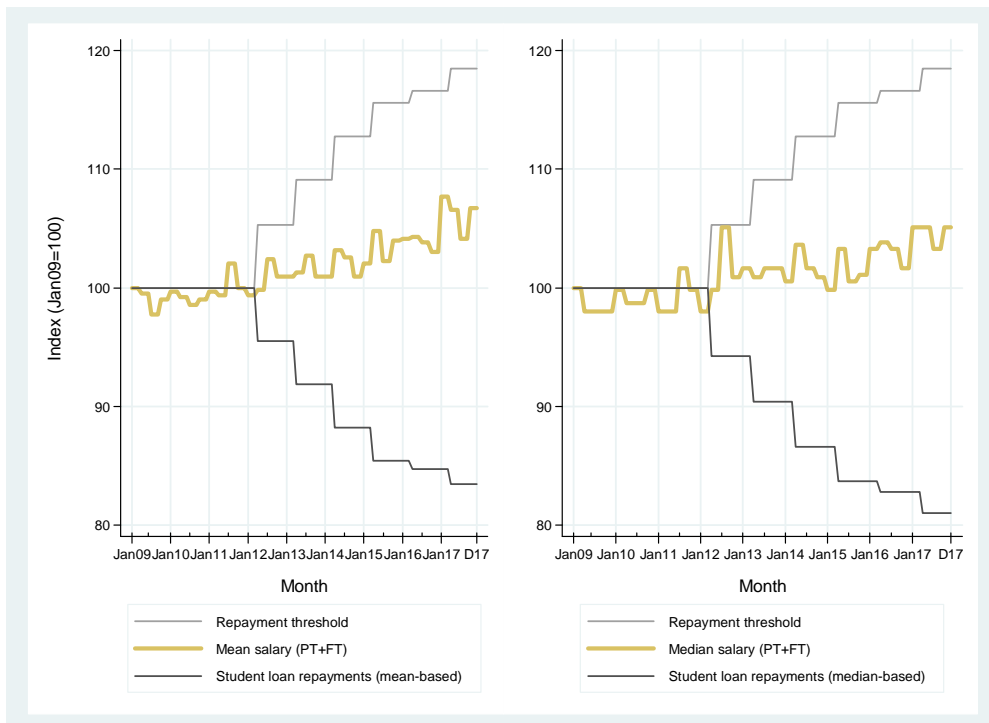


**Figure 6. Annual growth for mean and median graduate salary. January 2009 to December 2017.**

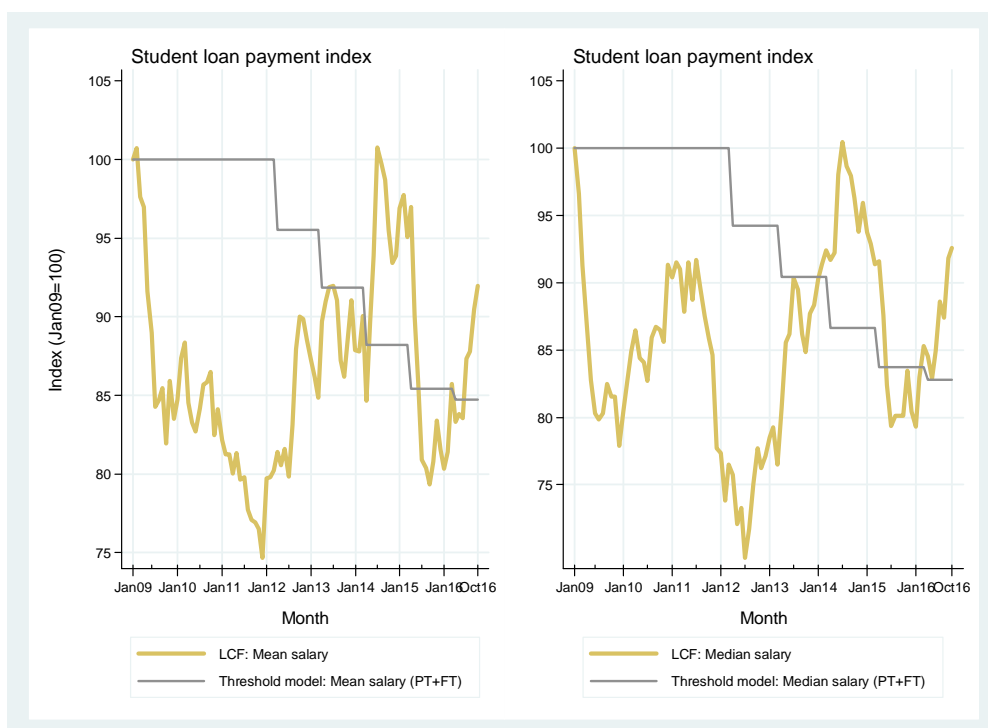


24. Figure 7 indicates that graduate salaries and the repayment threshold both had an upward trend; however, the latter increased at a faster rate. Since the index for the repayment threshold exceeds that for graduate salaries, the index for student loans repayments is expected to decrease. Such was the pattern estimated from the threshold model (also plotted in Figure 7) which suggests that the threshold model is capable of capturing the real long-term movement of student loan repayments in the UK. Further corroboration in this direction comes from the long-term downward trend of LCF-based indices (Figure 8).

**Figure 7. Indices for repayment threshold, graduate salary and student loan repayments. January 2009 to December 2017.**



**Figure 8. Price index for student loan repayment from the LCF and from the threshold model. January 2009 to October 2016.**



### ***Threshold model: Strengths and limitations***

25. As discussed above, the threshold model has a strength in that it appears to capture the student loan repayments' trend in the UK.
26. A further advantage is that a model informed by data from the ONS LFS team is deemed to allow a timely inclusion of student loan repayments in the HCIs.
27. A drawback is related to the cross-sectional nature of the data informing the model. In fact, graduate salaries should refer to those still paying their loans which could be obtained from graduate student cohorts followed longitudinally. This information is however not available. There is also an obvious disadvantage in using a model rather than data.
28. There are also limitations similar to those affecting LCF-based estimates. The model yields student loans repayments as a combination of maintenance and of tuition fees loans, whereas a disaggregation would be more suitable to reduce double counting in the HCIs. The next section describes a method that could be deployed to address this issue.
29. We therefore recommend that for the early 2019 publication of experimental Household Costs Indices we include the mean threshold model for student loan repayments with a view to making improvements to the measure in time for the next publication.

### **Further development**

30. The Students Loans Company publishes teaching fees loans and maintenance loans every academic year, where the latter identifies student cohorts (e.g. 2016-17 for [England](#), [Wales](#), [Scotland](#), [Northern Ireland](#)). It follows that, although repayments of teaching fees and of



maintenance loans are not recorded separately by the SLC, separate estimates could be derived indirectly from the application of the frequency distribution at the time of borrowing. Work on this has begun, although it has not been feasible to include results in this paper.

31. On the other hand, student loans repayments are not fully informative of the expenditure of households with (former) students. This is because a proportion of households pay directly to the education provider. Hence, teaching fees paid upfront should similarly inform the HCIs. To this purpose, an estimation method has been designed which consists of deriving teaching fees paid upfront as a difference between Higher Education Providers' income (based on teaching fees) and teaching fees loans for each academic year. The former is published by HESA (e.g. [2012-13](#)), whereas the latter are published by the [SLC](#).
32. A concurrent stream of development relates to exploring further data sources such as the Student Income and Expenditure Survey. Other surveys, such as Understanding Society and the English Household Survey, do not have information on student loan repayments.

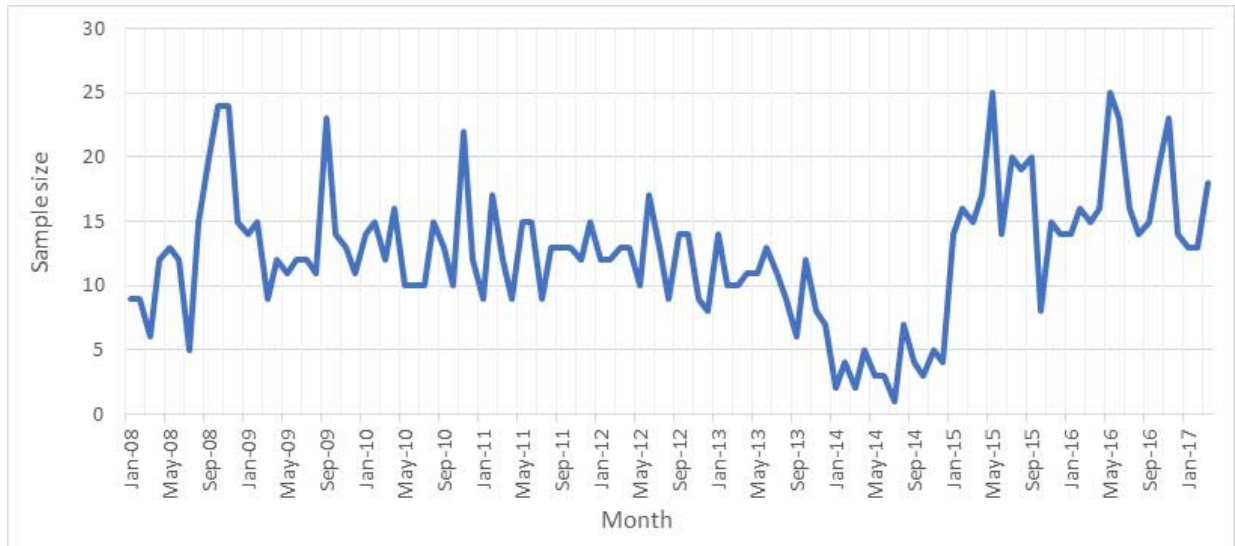
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**December 2018**

**List of Annexes:**

<b>Annex A</b>	Student loans repayments sample size
<b>Annex B</b>	LCF student loans questions

**Annex A – Student loans repayments sample size**

**Figure 1A. Student loan repayments (LCF): Sample size.**



Source: LCF (own analysis)

**Annex A – LCF student loans questions**

The following LCF questions on student loans, at household level, were taken into account for the estimation of student loan repayments:

- 1) Are (any of) you at present making regular payments to any of the organisations shown on this card?*
- 2) What is the source of the loan? [asked for (up to) the first eight loans currently being paid by the respondent to a loan source on the relevant card]*
- 3) How much was the last payment?*
- 4) What period did this cover?*