Student Loan Finance Model

Data Modelling and Analysis - Lecture 3

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Background

Affording a place to study at university concerns all potential students. There may be fees to pay for the courses and there will certainly be a need for finance for cost-of-living expenses. Many students take up part-time employment whilst at university, sometimes working during term time as well as vacations. Support agencies offer help in a variety of ways with scholarships and bursaries.

Problem Statement

Study4Less, a Student Loans Company, can provide the maintenance aspect of student finance (e.g. food, transport, school materials, utilities, etc). The company loans students a given sum at the beginning of each of the three or four academic years covering the duration of the degree.

Repayment of the loan will start once the graduate is working and earning above a certain (cut-off) salary. Repayments are collected through National Insurance Contributions in the UK and the amount repaid by an individual depends on marginal income earned above the cut-off.

Study4Less loans include a 0.25% monthly interest over the compounded sum borrowed.

Problem description

Use mathematical modelling to solve these two problems:

1. Create a mathematical model to calculate, given a number of months, how much money a student will have to pay monthy.
2. Use your model to calculate how much a student who was in a 4-year programme and borrowed £2000 per annum from Study4Less will have to pay if they want to settle their debt in 10 years and interest .

*Adapted from Edwards and Hamson's *Guide to Mathematical Modelling*