The payday loan 1

(by Alan Champneys)

Loans-R-Us, a so-called pay-day loan shop, is offering three different interest rates

(a) 3500% per year, (b) 35% per month, (c) 1% per day,

Interest is charged at the beginning of each period. So that if I borrow £1 for just one hour, under interest rate (a) I would pay pay £36, under (b) I would pay .35, and under (c) I pay £1.01.

Each time interest is charged, it is calculated on the whole amount owed, including any unpaid interest.

Calculate the total amount I would owe under each interest rate, if I were to borrow £1 for a whole year, under each interest rate scheme, assuming that I don't pay anything back until the end of the year.

Which interest rate should I choose?

The payday loan 2

(by Alan Champneys)

You should have found that the amounts you pay back under each rate are:

$$\text{(a) } 3500\%\text{per year} \quad \text{Total} = £36, \tag{1}$$

$$\text{(b) } 35\%\text{per month} \quad \text{Total} = £(1+0.35)^{12} = £36.64, \tag{2}$$

$$\text{(c) } 1\%\text{per day} \quad \text{Total} = £(1+0.01)^{365} = £37.78. \tag{3}$$

So you should choose option (c) even though it looks like the worst deal.

This is because of the exponential growth of compound interest, and shows how so-called "pay day loan" companies prey on the poor and vulnerable to make huge profits. It is also why, by law, all loans must specify an equivalent *Anuual Percentage Rate* (APR). This calculation shows that the APR of a loan that is advertised as '1% per day' is actually 3678 % , which does not sound so appealing

But it gets worse. Suppose I choose rate (c) and borrow £1 for 5 years. How much would I owe at the end of 5 years?

What if I were to only pay back after 10 years? where could I find such money from?