

Coping with Inflation

In Chapter 3, in the section entitled "Coping with Inflation", I promise to explain the discrepancy between an expected increased rate of return needed to cope with inflation affecting a simple annual interest account, and the true value. The situation is as follows. You have a simple annual interest account earning 5%. You are pursuing an 18-year savings program (for college tuition). The magic number for that kind of lump sum account is 1.05^{18} . Thus, if you deposit D dollars, after 18 years it is worth a target value of $V = D \times 1.05^{18}$. But the target is increasing because of inflation at an annual rate of 3%, so $newV = V \times 1.03^{18}$. At the same time, it is your intention to not increase the amount D of base dollars that you deposit at the inception of the program. The naïve assumption is that an 8% return rate (5+3) would be necessary to achieve the new target amount. In the book, I asserted that the actual rate required is 8.15%. Why is this so?

Indeed, if we combine the above equations, we get

$$newV = 1.03^{18}V = 1.03^{18}1.05^{18}D = (1.03 \times 1.05)^{18}D.$$

This says exactly that the new magic number is $(1.03 \times 1.05)^{18}$, meaning that the rate of return you must achieve is $1.03 \times 1.05 = 1.0815$. End of story.