

READING Intertemporal Shifting Over Time

e.g.
Intertemporal Cash Flow Shifting over time
Intertemporal Consumption Shifting over time

Reading

Consider this example: Yelberton is a young man starting off at his first job. He thinks of the "present" as his working life and the "future" as after retirement. Yelberton's plan is to save money from ages 30 to 60, retire at age 60, and then live off his retirement money from ages 60 to 85. On average, therefore, he will be saving for 30 years. If the rate of return that he can receive is 6% per year, then \$1 saved in the present would build up to \$5.74 after 30 years (using the formula for compound interest, $\$1(1 + 0.06)^{30} = \5.74). Say that Yelberton will earn \$1,000,000 over the 30 years from age 30 to age 60 (this amount is approximately an annual salary of \$33,333 multiplied by 30 years). The question for Yelberton is how much of those lifetime earnings to consume during his working life, and how much to put aside until after retirement. This example is obviously built on simplifying assumptions, but it does convey the basic life-cycle choice of saving during working life for future consumption after retirement.

Figure 2 and Table 16 show Yelberton's **intertemporal budget constraint**. Yelberton's choice involves comparing the utility of present consumption during his working life and future consumption after retirement. The rate of return that determines the slope of the intertemporal budget line between present consumption and future consumption in this example is the annual interest rate that he would earn on his savings, compounded over the 30 years of his working life. (For simplicity, we are assuming that any savings from current income will compound for 30 years.) Thus, in the lower budget constraint line on the figure, future consumption grows by increments of \$574,000, because each time \$100,000 is saved in the present, it compounds to \$574,000 after 30 years at a 6% interest rate. If some of the numbers on the future consumption axis look bizarrely large, remember that this occurs because of the power of compound interest over substantial periods of time, and because the figure is grouping together all of Yelberton's saving for retirement over his lifetime.