

WEB BOX 6.1

SUBSTITUTION, INCOME,
AND WEALTH EFFECTS

An increase in interest rates has an ambiguous effect on current consumption. The effect depends on whether the consumer was a borrower or a lender. In Figure W6.1 more detail is provided. The increase in the interest rate leads the consumer to move from point R to point \bar{R} . This response can be decomposed into three effects, which have different relative magnitudes depending on whether the consumer is a borrower (panel (a)) or a lender (panel (b)).

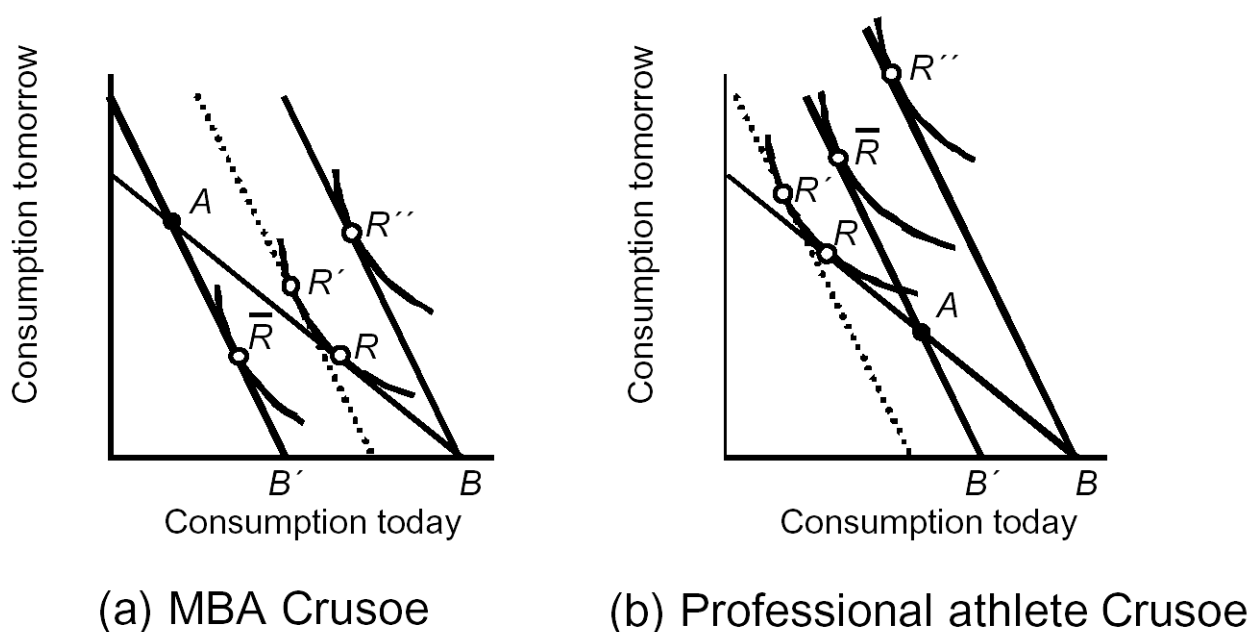


Figure W6.1. Decomposing the Effect of an Interest Rate Increase

The first effect is a substitution effect. At higher interest rates, future consumption is relatively cheaper (at price $1/(1+r)$). Even keeping utility constant, current consumption today should fall and future consumption tomorrow should rise. For both borrowers and lenders, the effect is to move from R to R' . The extent of the move depends on Crusoe's readiness to substitute consumption today for consumption tomorrow.

The second effect is the income effect. For a given level of wealth (point B) an increase in interest rates makes future consumption cheaper, so Crusoe's real command over resources for given level of wealth rises. Keeping initial wealth at OB , the new budget line corresponding to the new interest

rate determines the corresponding optimal consumption pattern at point R'' . The shift from R' to R'' illustrates the income effect, which comes on top of the substitution effect from R to R' . The income effect implies a consumption increase in both periods. The income and substitution effect work in opposite directions for current consumption.

The third effect is a wealth effect, moving from R'' to R^* with consumption falling in both periods. Wealth is reduced because higher interest rates reduce the present discounted value of income tomorrow. MBA Crusoe who earns most tomorrow, is hit worse.

The increase in the interest rate has three effects, which are shown for both the borrower (a) and the lender (b). At constant utility, the substitution effect (from R to R') implies more consumption tomorrow and less consumption today, since the relative price of goods tomorrow $1/(1+r)$ falls. At constant wealth, this relative price decline also produces an income effect (from R' to R''), since more consumption is possible in both periods. The sum of the income and substitution effects on consumption today is ambiguous. For both consumers, however, the increase in the interest rate reduces the present value of income, and reduces consumption. This wealth effect (from R'' to R^*) hits the borrower harder.