Chapter 2

Consumer Financial Decisions

1. a. In a perfect capital market under circumstances of certainty every financial instrument is the same as every other in terms of its credit risk and the rate of interest it yields when that rate is computed on the instrument's market price. In a world of certainty, no money is lent or invested unless it is known that the borrower will repay, so credit risk does not exist at all.

   b. It would not be necessary for borrower to pay a higher rate of interest than any other because there are many lenders and the borrower knows the rates they all charge. For this reason, it is not necessary to borrow at rates in excess of the market interest rate. Moreover, no lender will provide credit at interest rates lower than the market rate because the market rate always can be obtained on alternative transactions.

2. In a perfect capital market, financial decisions are easy to make, and the principles on which they are based are easy to discern. Because everyone borrows or lends at the same market interest rate (a rate that may differ from one time period to the next), financial transactions can be reduced to a single measure, that of their present value.

3. a. A ulility function is used to conventiently express the preferences. So long as the consumer's preferences satisfy certain assumptions, attitudes toward different consumption standards can be represented by a numerical utility function that assigns a larger number to the preferred alternative, if either, of a given pair.

   b. Graphically an indifference curve is expressed using contour lines. The indifference curves represent loci of points at equal height on a utility surface defined above a plane on which time 1 and time 2 consumption standards are measured. Any point on any indifference curve represents a combination of time 1 and time 2 consumption expenditures that is as satisfactory as any other point on the same curve, as reflected by the fact that each indifference curve is a set of points for all of which the utility function attains the same value.

   c. The marginal rate of substitution between present and future consumption is the slope of an indifference curve at any point and indicates the consumer's preference for trading off consumption at the present time against consumption in the future.

4.

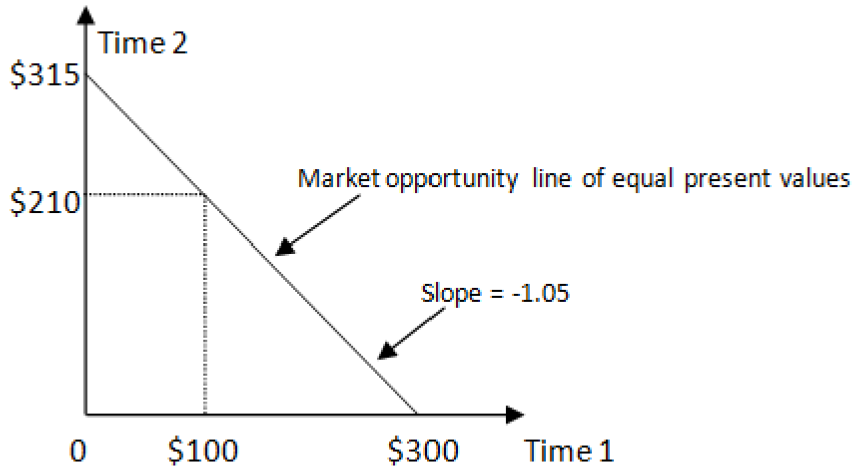


Figure 1. Market opportunity line of equal present values with interest rate 5%

Present value at Time 1: $w_1 = \$100 + \frac{\$210}{1.05} = \$300.$

Present value at Time 2: $w_2 = \$100 \times 1.05 + \$210 = \$315.$

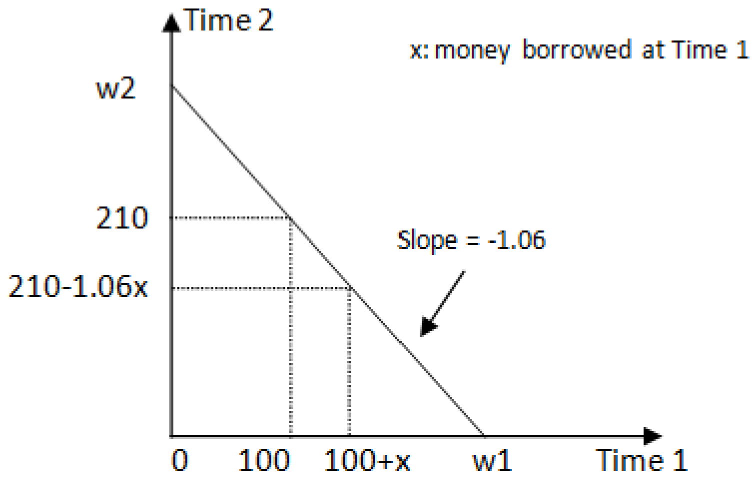


Figure 2. Market opportunity line of equal present values with borrowing

Total wealth at Time 1: $w_1 = \$100 + \frac{\$210}{1.06} = \$298.11.$

(Borrow $ 198.11 at Time 1 and repay $210 at Time 2)

Total wealth at Time 2: $w_2 = \$210 + \$100 * 1.06 = \$316.$

(Lend $100 at Time 1 and collect interest and commission of $106 at Time 2)

The market opportunity lines of equal present values represent different combinations of funds that can be obtained by arranging financial transactions. Consumers can choose any consumption expenditure pattern the consumer can choose lies within, or one the boundaries of 0w1w2. This set plays a role as budget constraint of a consumer.

5.

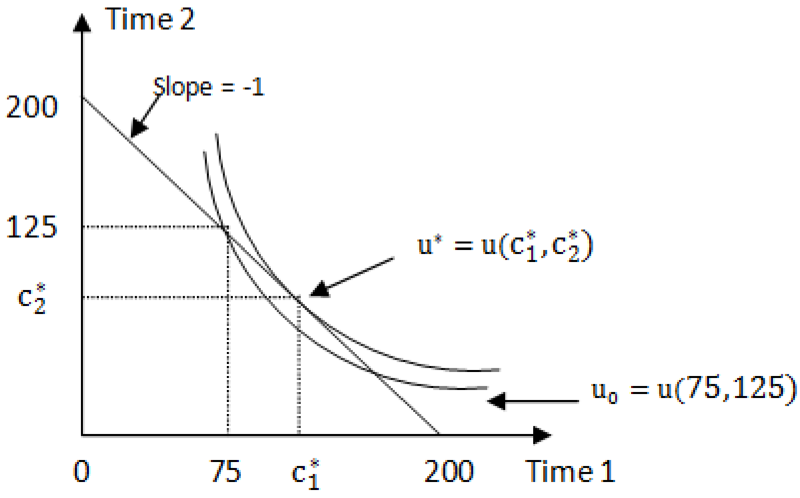


Figure 3. Optimal consumption

Since the interest rate is zero, $w_1 = w_2 = \$200$. If there is no borrowing or lending, the consumer's utility is $u_0 = u(75,125)$. If borrowing and lending are allowed with no cost, the optimal consumption should be the tangent point of indifference curves and the boundaries of budget constraint. Then the consumer's consumption is c_1^* at Time 1 and c_2^* at Time 2, the utility is $u^* = u(c_1^*, c_2^*)$.

6. If there were a 1% brokerage charge and the person wanted to receive c_1 at Time 1, he would have to borrow $\$1.01 \times c_1$ at Time 1. Then

$$w_1 = \frac{\$110}{1.10} - \$1.01 \times 40 = \$59.6.$$

The cash flow should satisfy

$$1.01 \times c_1 + \frac{c_2}{1.1} = 59.6.$$

But $1.01 \times (-10) + \frac{77}{1.1} = \$59.9 > \$59.6$.

7. a. Figure 3 just illustrated a case where the consumer is better off because of the existence of a capital market. Without a capital market, the consumer can only have a utility u_0, while his utility increases to u^* when borrowing and lending are allowed. To obtain this conclusion, we have to assume that any amount of money can be lent or borrowed at the same interest rate.

b. Figure 4 illustrates a case where the consumer is worse off when lending amount is restricted. $\tilde{c}_1 - c_1$ is the maximum amount of money that can be lent at Time 1. In this case the consumer's optimal utility becomes $\tilde{u} < u^*$.

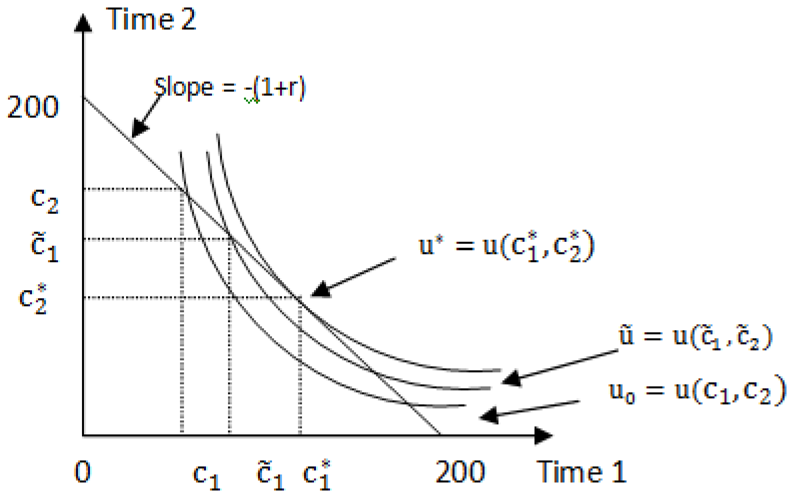


Figure 4. The consumer is worse off under restricted lending

c. Lending constraints might be a good policy in the real world, especially in times of national emergency. If a consumer borrowed all the money available at Time 1 and left none for Time 2, he would not have any money for use in dealing with the emergency. Generally speaking, lending constraints are poor policy because they are too easy to avoid.

8.

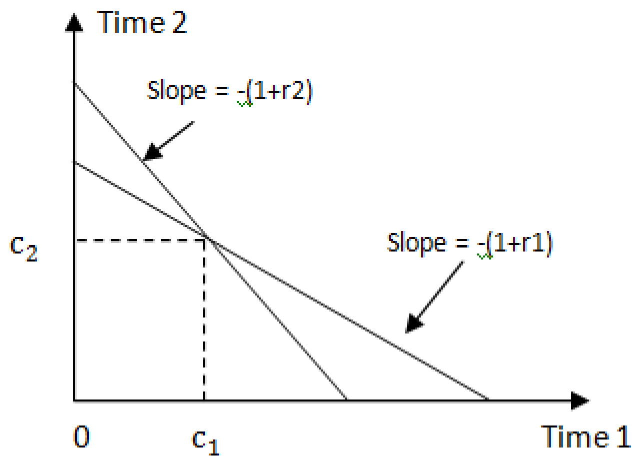


Figure 5. $r2 > r1$

Consumers will borrow less as interest rates rise. The slope of the market opportunity line is $-(1 + r)$, so the line will be steeper as r increases. The present value at Time 1 decreases, so consumers will borrow less.

9. This case is just the same as a two-period planning problem under certainty, where dividends are like consumption at Time 1 and capital gains are like consumption at Time 2. When the consumer's utility only depends on the present value of the total cash flow, he would be indifferent between dividends and capital gains, assuming

either that there are no taxes or that dividends and capital gains are taxed at equal rates.

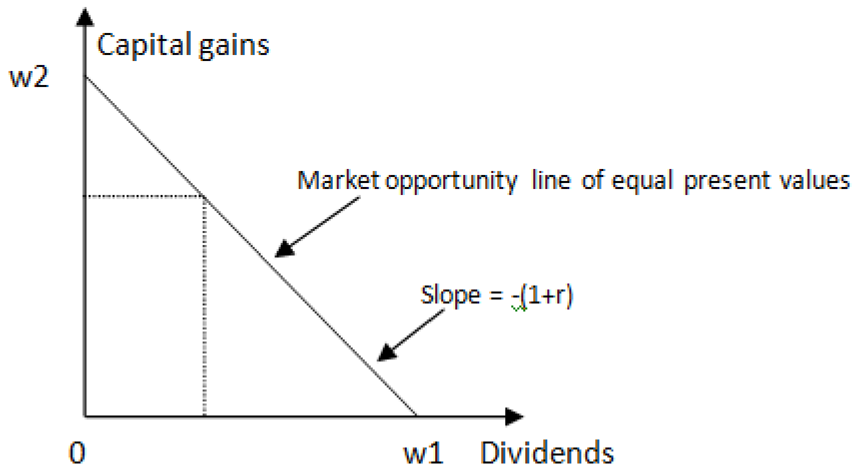


Figure 6. Tradeoff between dividends and capital gains

10.

$$\max_{(c_1,c_2)} \ln(c_1 c_2^{0.6}) = \ln c_1 + 0.6\ln c_2$$

$$\text{s.t. } c_1 + \frac{c_2}{1.08} \leq 2000 + {}^{1296}/_{1.08} = 3200$$

$$L = \ln c_1 + 0.6\ln c_2 + \gamma(3200 - c_1 - \frac{c_2}{1.08})$$

$$\text{F.O.C. } \frac{\partial L}{\partial c_1} = \frac{1}{c_1} - \gamma = 0$$

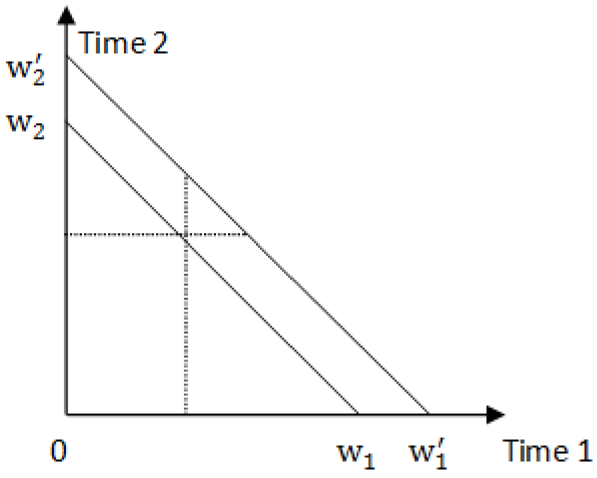
$$\frac{\partial L}{\partial c_2} = \frac{0.6}{c_2} - \frac{\gamma}{1.08} = 0$$

$$\frac{\partial L}{\partial \gamma} = 3200 - c_1 - \frac{c_2}{1.08} = 0$$

$$c_1^* = 2000, c_2^* = 1296$$

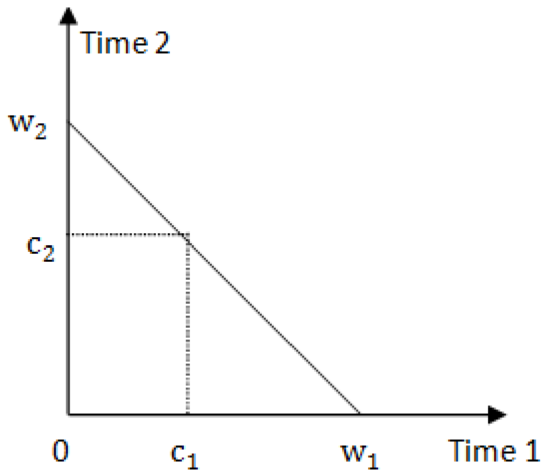
The consumer is neither a borrower nor a lender.

11.



When income increases, the market opportunity line shifts. Then the new optimal consumption point will be on the new market opportunity line. Therefore the consumer will consume more of at least one good as income rises.

12.



Assume that the person's income is w_1 at Time 1. If he has no income at Time 2, $w_2 = \frac{w_1}{1+r}$. If the person spends c_1 at Time 2, he will have $c_2 = \frac{w_1 - c_1}{1+r}$ for Time 2.

13. The statement is incorrect. In a perfect capital market, theory demonstrates that individuals in economies are never made worse off, and are usually made better off, by their ability to borrow or lend freely in choosing consumption patterns.

14. In an imperfect capital market, one or more assumptions necessary for a perfect capital market are violated. When an assumption is violated, it is said to be a capital market imperfection. Transactions costs and unequally distributed information are two examples of capital market imperfections.