Problem 1. Other things the same, if the government increases transfer payments to households, then the effect of this on the governments budget

(a) will make investment rise.

(b) will make the rate of interest rise.

(c) will make public saving rise.

(d) All of the above are correct.

This one is tricky, so don't waste a ton of time if you can't figure it out as quickly as you'd probably like.

Answer

Problem 1: (b). You might have to read through this a few times to get it. The variable T represents *the amount that the government collects from households in taxes minus the amount it pays back to households in the form of transfer payments.* So if transfer payments increase, T decreases.

We have to consider how households respond to the decrease in T. Intuitively, we would expect households to consume more if the government is giving them money (i.e. the increase transfer payments), so C increases. Using Δ as the symbol for "the change in," we have

$$\Delta T < 0, \quad \Delta C > 0.$$

- Consider public saving. We can write $\Delta S^{public} = \Delta T - \Delta G$. In this case, G does not change but T does change, so $\Delta S^{public} = \Delta T$.
- Now consider private saving. We can write $\Delta S^{private} = \Delta Y - \Delta T - \Delta C$. There is no change in Y, so we can write $\Delta S^{private} = -\Delta T - \Delta C$.
- Because national saving equals private saving plus public saving, we can write

$$\begin{aligned} \Delta S &= \Delta S^{private} + \Delta S^{public} \\ &= (-\Delta T - \Delta C) + \Delta T \\ &= -\Delta C. \end{aligned}$$

Because C increases, $\Delta C > 0$, and therefore $-\Delta C < 0$. Therefore $\Delta S < 0$. So there is a decrease in the supply of loanable funds. Shifting the supply curve to the left, we get a higher interest rate.

Problem 2. Which of the following events could explain an increase in interest rates together with an increase in investment?

(a) The government runs a larger deficit.

(b) The government institutes an investment tax credit.

(c) The government replaces the income tax with a consumption tax.

(d) None of the above is correct.

Problem 3. In 2008, XYZ Corporation had total earnings of $200 million and 50 million shares of the corporations stock were outstanding. If the price-earnings ratio for XYZ is 20, then what is the price of a share of its stock?

(a) $5

(b) $10

(c) $80

(d) $50

Answer

Problem 2: (b). If the government institutes an investment tax credit, then people will want to invest more at any interest rate—it is less expensive to invest now. In other words, the demand for loanable funds will shift to the left. There will be a higher interest rate and a higher equilibrium level of $S = I = q^*$ in the economy.

Problem 3: (c). The price-earnings ratio, often called the P/E, is the price of a corporation's stock divided by the amount the corporation earned per share over the past year.

$$E = \frac{\$200 \text{ million}}{50 \text{ million shares}} = \$4 \text{ per share} \quad \Longrightarrow \quad \frac{P}{E} = \frac{P}{\$4}.$$

We are told that $P/E = \$20$, and therefore

$$\frac{P}{\$4} = \$20 \quad \Longrightarrow \quad P = \$80.$$

Problem 4. For an imaginary economy, when the real interest rate is 5 percent, the quantity of loanable funds demanded is \$1,000 and the quantity of loanable funds supplied is \$1,000. Currently, the nominal interest rate is 9 percent and the inflation rate is 2 percent. Currently,

(a) the market for loanable funds is in equilibrium.

(b) the quantity of loanable funds supplied exceeds the quantity of loanable funds demanded, and as a result the real interest rate will rise.

(c) the quantity of loanable funds supplied exceeds the quantity of loanable funds demanded, and as a result the real interest rate will fall.

(d) the quantity of loanable funds demanded exceeds the quantity of loanable funds supplied, and as a result the real interest rate will rise.

Problem 5. A scholarship gives you \$1,000 today and promises to pay you \$1,000 one year from today. What is the present value of these payments?

(a) $\$2000/(1+r)^2$

(b) $\$1000+\$1000/(1+r)$

(c) $\$1000/(1+r)+\$1000/(1+r)^2$

(d) $\$1000(1+r)+\$1000(1+r)^2$

Answer

Problem 4: (b). The economy is in equilibrium—quantity supplied of loanable funds equals quantity demanded of loanable funds—when the real interest rate is 5%. The nominal interest rate is 9% and inflation rate is 2%, and therefore the real interest r is

$$r = 9\% - 2\% = 7\%.$$

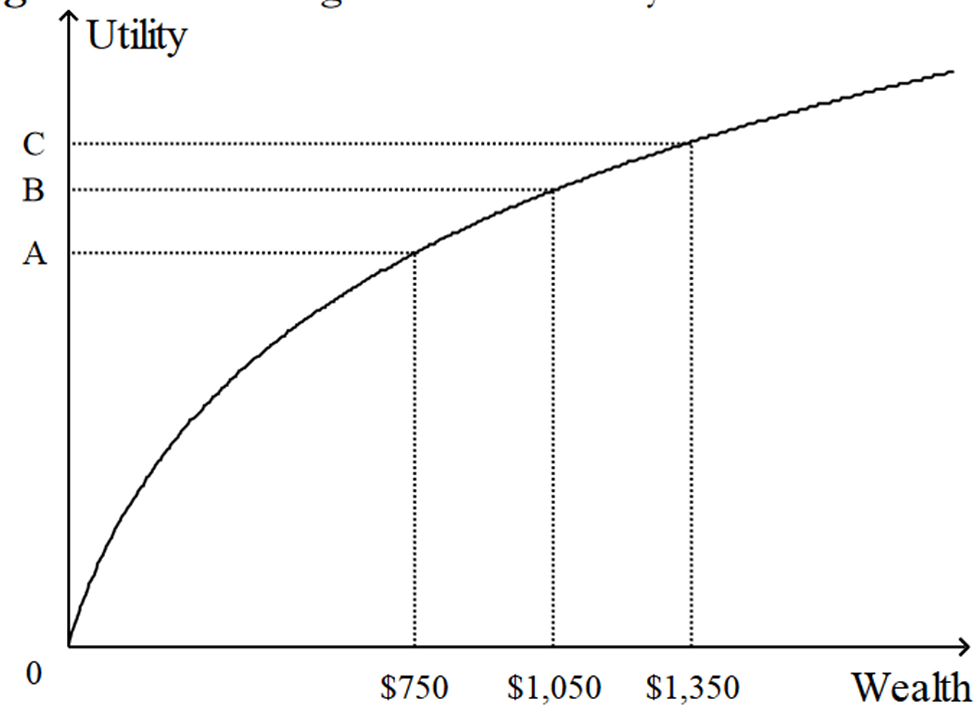
So the real interest rate is *above* the equilibrium rate. If you draw this on the supply/demand graph, you will see the the quantity supplied exceeds the quantity demanded.

Because there's too much quantity supplied of loanable funds, there will be downward pressure on the interest rate, which will reduce the quantity supplied and increase the quantity demanded until equilibrium is once again established at $r = 5\%$.

Problem 5: (b). The present value of \$1000 today is, um, \$1000. To find the present value of the \$1000 a year from now, we have to discount it by the interest rate r, which gives $\$1000/(1+r)$.

Problem 6.

Figure 14-2. The figure shows a utility function for Mary Ann.



From the appearance of the utility function, we know that

(a) Mary Ann is risk averse.

(b) Mary Ann gains less satisfaction when her wealth increases by X dollars than she loses in satisfaction when her wealth decreases by X dollars.

(c) the property of diminishing marginal utility applies to Mary Ann.

(d) All of the above are correct.

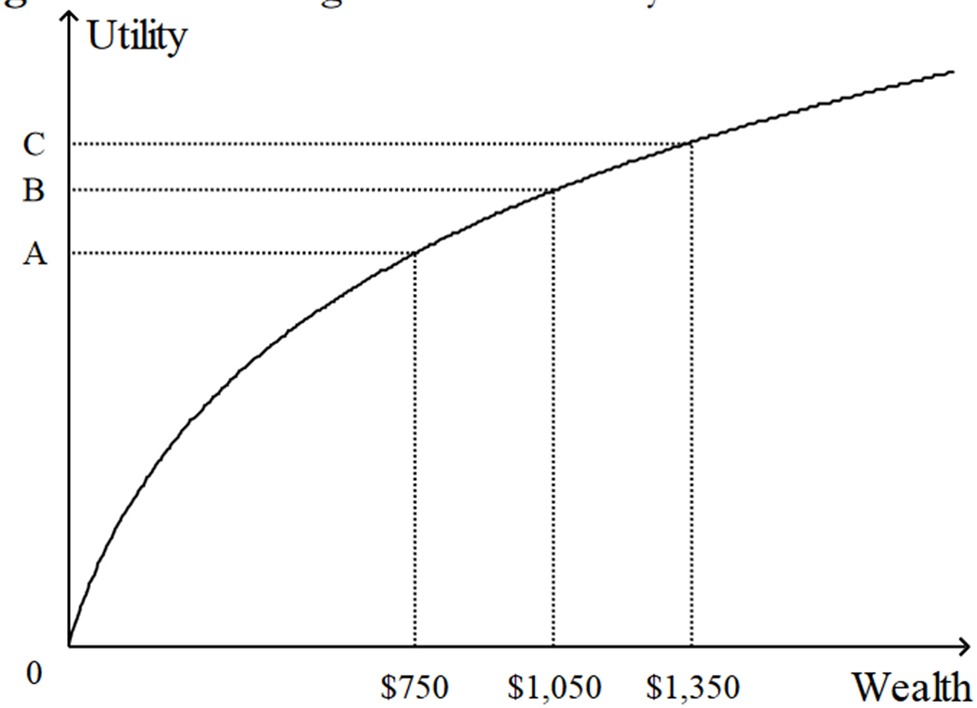
Answer

Problem 6: (d). Answer (b) explains the idea. So if there's a 50% chance of losing X and a 50% chance of gaining X, it's equally likely that her utility will decline a lot with a loss, than it will increase a little with a win—she'd rather not take that risk, so she is *risk averse*.

From the shape of the utility function, every increase in wealth causes less and less of an increase in utility—that is, diminishing marginal utility.

Problem 7.

Figure 14-2. The figure shows a utility function for Mary Ann.



Suppose Mary Ann begins with \$1,050 in wealth. Which of the following coin-flip bets would she definitely not be willing to accept?

(a) If it is heads, she wins \$100; if it is tails, she loses \$95.

(b) If it is heads, she wins \$150; if it is tails, she loses \$150.

(c) If it is heads, she wins \$150; if it is tails, she loses \$140.

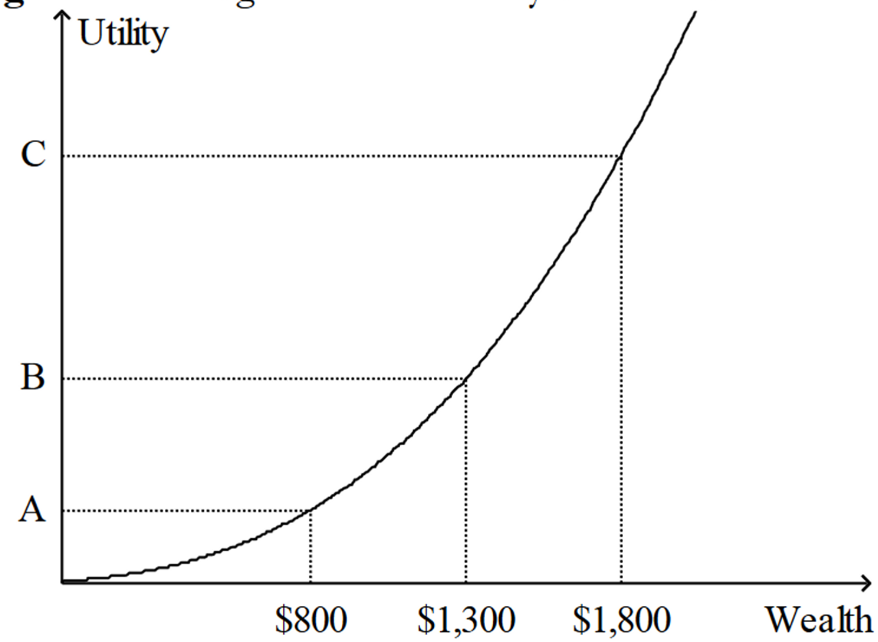
(d) She definitely would not accept any of these bets.

Answer

Problem 7:(b). Since she is risk averse, she would need a bigger payoff for winning than a loss for losing. So she might accept (a), and she might accept (c). But (b) means she'll win or lose the same amount, so she will not accept that bet.

Problem 8.

Figure 1. The figure shows a utility function for Dexter.



In what way(s) does the graph differ from the usual case?

(a) The utility function shown here is upward-sloping, whereas in the usual case the utility function is downward-sloping.

(b) The utility function shown here is bowed downward (convex), whereas in the usual case the utility function is bowed upward (concave).

(c) On the graph shown here, wealth is measured along the horizontal axis, whereas in the usual case saving is measured along the horizontal axis.

(d) On the graph shown here, utility is measured along the vertical axis, whereas in the usual case satisfaction is measured along the vertical axis.

Answer

Problem 8: (b). Yeah, it's convex. Usually it's a concave function like in problems 6 and 7. A convex utility function is strange because it implies that people get happier *at a faster rate* for each new dollar they receive. In other words, a person with only \$100 receives more utility from finding a \$10 dollar bill on the ground than someone with \$1000. Such a utility function exhibits *increasing marginal utility.*

As an analogy, consider satisfaction from eating pizza. Normally you'd really enjoy that first slice. The second slice is also pretty good, but not quite as satisfying as the first. The third slice is still good, but not as good as the second. By the time you get to the 18th slice, you're not even sure why you're eating it anymore.[1] This is what a concave utility function would represent—*diminishing marginal utility.*

For a convex function, you'd enjoy the second slice of pizza even more than the first; and the third slice of pizza even more than the second; and so forth. It's weird.

[1] From experience.