UNIT 10

ANSWERS TO EXERCISES

coreecon

EXERCISE 10.1 THE CONSEQUENCES OF PURE IMPATIENCE

1. Draw the indifference curves of a person who is more impatient than Julia in Figure 10.3b, for any level of consumption now and consumption later.
2. Draw a set of indifference curves for Julia if she does not experience diminishing marginal returns to consumption but has pure impatience. Would she then want to smooth her consumption?
3. Draw a set of indifference curves for Julia if she does not experience diminishing marginal returns to consumption and has no pure impatience.

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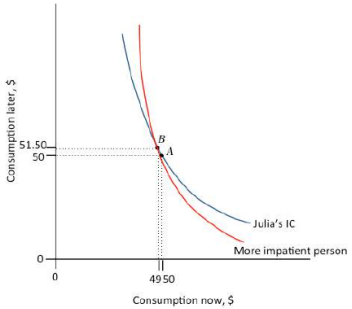
Answer

1. This is a question about impatience 'as a person'. A higher degree of pure impatience implies a higher MRS at every given horizontal axis value. In other words, at every level of future consumption, a unit of current consumption is worth more (in terms of future consumption) for this person than Julia. As a consequence, the indifference curves will be steeper at every level of consumption now and consumption later.



2. In this case, the indifference curves would be linear because the marginal return to consumption would not decrease as she increased her consumption in either period. If she has pure impatience, then the indifference curves will have a slope which is greater than 1 in absolute value, indicating that it takes more than one unit of consumption later to compensate for a loss of one unit of

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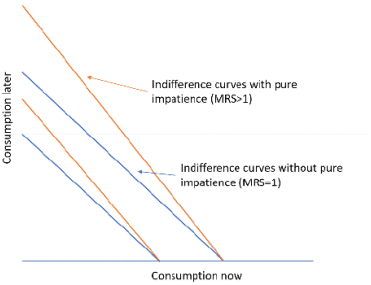
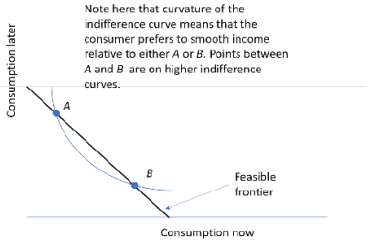
consumption now (red lines). Without diminishing marginal returns to consumption, Julia has no desire to smooth consumption even if she is impatient: any two points on an indifference curve give the same utility as all the points in between.

3.

4. In the case where she has no pure impatience and no diminishing marginal returns to consumption, her indifference curves are straight lines with a slope (MRS) of -1 (blue lines).



From Q3, pure impatience alone is not enough to induce consumption smoothing, but diminishing marginal returns to consumption on its own is. Consumption smoothing is therefore a consequence of diminishing marginal returns to consumption (non-linear indifference curves mean that the consumer is strictly better off from choosing some consumption now and some later, compared to consuming all goods in one period).



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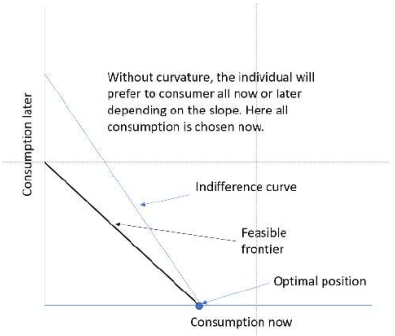

EXERCISE 10.2 INCOME AND SUBSTITUTION EFFECTS

1. Use Figure 10.4 to show that the difference in current consumption at the lower and higher interest rate (at E and G), namely $23, is composed of an income effect and a substitution effect. It will be helpful to review income and substitution effects from Unit 3 before doing this.
2. Why do the income and substitution effects work in the same direction in this example?

Answer

1. The diagram is below. In this case the interest rate begins at the lower rate, giving E as the initial equilibrium. The increase in the interest rate makes it more expensive to borrow, reducing Julia's feasible set.

   To isolate the income effect, the constraint line at this original interest rate can be moved down so that it is just tangential to the new indifference curve going through the final position G (shown by the dashed line going through H). Thus, the income effect of the interest rate rise is the movement from E to H, which reduces current consumption because of the implied reduction in income associated with a rise in the interest rate. The substitution effect is the remaining movement from H to G. The substitution effect also reduces current consumption because there is a substitution from the now relatively higher priced good (current consumption) towards the now relatively cheaper good (future consumption).

2. The substitution effect of a rise in the interest rate always reduces current consumption because of the shape of the indifference curves (the substitution effect is a movement along the indifference curve). The income effect also reduces current consumption in this case because the interest rate increase reduces Julia's income and so she consumes less now and in the future.

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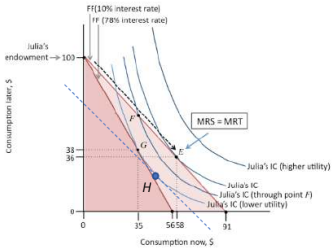


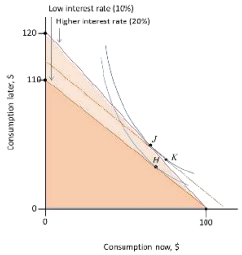
EXERCISE 10.3 AN INCREASE IN THE INTEREST RATE

1. Use a diagram like Figure 10.4 to show the income and the substitution effects of an increase in the interest rate for Marco who receives his endowment today.
2. Compare these effects with those for Julia in Exercise 10.2 and explain your results.

Answer

1. See diagram below. In this case, the budget line pivots out to increase potential consumption later because Marco is now able to make more money than before by lending. In contrast to Julia, his feasible set becomes larger. By moving the old budget line outwards to a point of tangency with the new indifference curve, we can isolate the income effect (H to K) and the substitution effect (K to J).

2. In contrast with Julia, Marco's income possibilities have increased with the interest rate change, and so the income effect increases his current consumption (this is due to the assumption that consumption increases with income). However, the substitution effect reduces his consumption towards the "cheaper" consumption in the future ($1 goes further in the future than it does now), compared to Julia's substitution toward future consumption. In the case shown, the substitution effect is strong enough to outweigh the income effect, but this is not a general result.



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EXERCISE 10.4 LIFETIME INCOME

Consider an individual's income over his or her lifetime from leaving school to retirement. Explain how an individual may move from a situation like Julia's to one like Marco's over the course of their lifetime (assume that their pure impatience remains unchanged over their lifetime).

Answer

Early in one's career, income may be very low or non-existent, so current expenditures such as education (e.g. student fees) and house purchases may be paid through borrowing at interest (as with Julia). As one's working life develops, the income generated is higher than consumption. The savings will, on average, pay off the debts accrued earlier in life, and contributions toward pensions may accumulate. Such savings are a form of lending, which moves consumption into the future for retirement when income falls below consumption. Depending on one's inherited assets it may also be possible at some point, like Marco, to invest at high returns for future income and then borrow against this collateral.

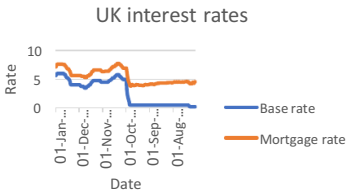
EXERCISE 10.5 INTEREST RATE MARKUPS

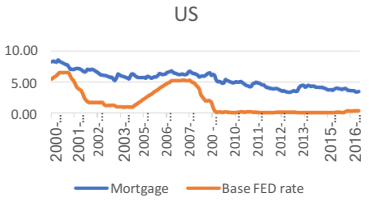
Use the websites of two central banks of your choice to collect data on the monthly policy interest rate and the mortgage interest rate between 2000 and the most recent year available.

1. Plot the data, with the date on the horizontal axis and the interest rate on the vertical axis.
2. How does the banking markup (interest rate margin) compare between the two countries?
3. Do banking markups change over time? Suggest possible reasons for what you observe.

Answer

1. Examples chosen are the UK and the US.





2. The banking markup in the UK was around 1.5% before 2008, and around 4% after 2008. The banking markup in the US varies more than the UK, ranging from less than 0.5% to 5% before 2008, and fluctuating at around 4% after 2008.

3. In both the UK and the US, the banking markup widens after the 2008 recession. The central bank may lower the base rate during a recession to stimulate aggregate demand and discourage saving, which explains why the base rate was close to zero for both the UK and US after this period. The mortgage rates did not fall by as much during the recession and stayed low, which reflects banks' perceptions of greater uncertainty in the economy and the likelihood of default.

EXERCISE 10.6 INTEREST RATES AND CONSUMPTION SPENDING

Think about the income and substitution effects of a rise in the interest rate, as analysed in Exercise 10.2 and 10.3. Comment on whether a rise in the interest rate would be expected to reduce consumption expenditure in an economy in which a proportion of households are like Julia, and a proportion are like Marco.

Answer

As the previous exercise questions show, individuals like Julia are likely to constrain their current consumption, because borrowing to bring consumption forward is more expensive. The income effect for borrowers like Julia reinforces the substitution effect. Individuals like Marco may increase their consumption as their feasible sets expand. However, even for these individuals, the substitution effect will tend to move consumption from the present to the future. The net effect will therefore depend on the magnitude of the income effect associated with Marco-type individuals.

In all, if income effects are not too large for lenders, then consumption is likely to be reduced because of a substitution of consumption from the current period to the future.

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EXERCISE 10.7 MICROFINANCE AND LENDING TO THE POOR

Read the paper 'The Microfinance Promise'. The Grameen Bank in Bangladesh makes loans available to groups of individuals who together apply for individual loans, under the condition that the loans to the group members will be renewed in the future if (but only if) each member has repaid the loan on schedule.

Explain how you think such an arrangement would affect the borrower's decision about what to spend the money on, and how hard she will work to make sure that repayment is possible.

Morduch, Jonathan. 1999. 'The Microfinance Promise.' *Journal of Economic Literature* 37 (4) (December): pp. 1569–1614. (tinyco.re/2004502)

Answer

The paper reports that repayment rates for the microfinance projects it considered are above 95%, despite the fact that little or no collateral is available to secure the lending. One of the keys to the success of these programmes is "group lending", where the group bears collective responsibility for the repayment of the loan. This group lending has a number of benefits. For example, individuals may self-select into groups of similar types, which mitigates the problem of asymmetric information, namely that lenders cannot identify high-risk individuals. Individuals within groups may also have effective and non-intrusive mechanisms to ensure that effort is kept high (for example, through knowledge of sales figures of fellow group members and warnings when these figures drop, or the social pressure when taking out a loan with friends and family members would incentivise effort). As a result, it is more likely that repayment schedules will be met. Thus, the group's "social assets" and social capital norms reduce the problem posed by the lender's dilemma.

EXERCISE 10.8 UNPOPULAR BANKS

Why do you think that banks tend to be more unpopular than other profit-making firms (Honda or Microsoft, for example)?

Answer

Students may respond in various ways. In recent years, much of the unpopularity has resulted from a perception that the banks were responsible for the kinds of lending which led to the financial crash and subsequent systemic problems. Other problems that have been widely reported include the selling of mislabelled financial products, market manipulation (LIBOR rates), large bonuses, and low levels of lending to SMEs.

Firms in other sectors can also become unpopular due to bad publicity, such as product safety issues. However, these issues are not as systemic or widespread as the issues caused by banks. Other private firms do not have the same systemic integration with the economy, and are therefore less likely to expose the economy to excessive risk or need to be bailed out by the government. The expectation of bailout by banks imposes a negative external effect because it leads banks to take on too much risk.

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EXERCISE 10.9 LIMITS ON LENDING

Many countries have policies that limit how much interest a moneylender can charge on a loan.

1. Do you think these limits are a good idea?
2. Who benefits from the laws and who loses?
3. What are likely to be the long-term effects of such laws?
4. Contrast this approach to helping the poor gain access to loans with the Grameen Bank in Exercise 10.7.

Answer

1. The opinion should be informed by the analysis below.

2. Limits on the interest rate are a prevalent form of restriction. They could benefit poorer members of society (or those who suffer negative income shocks) by allowing them to borrow at lower rates, and this would allow them to smooth consumption. They would also help individuals to avoid accumulating huge amounts of debt. Banks and lenders would lose out if the restrictions were binding. The policy could result in an increase in credit exclusion.

3. Banks and lenders (especially those who are only willing to lend under high interest rates) may be induced either to leave the industry or move elsewhere, reducing the supply of loans available. In such conditions, lenders may prioritise borrowers with high collateral and security, which could prevent low-income groups from borrowing. Such reductions could also cause reductions in investment in various industries (compare the access of borrowers to the money lenders in Chambar with their access to the commercial banks). It may also be that more innovative, and thus risky, investments get crowded out.

4. The case of the Grameen bank is discussed in Exercise 10.7. The approach here is to increase access to funds by using social norms (discussed in Unit 4) and group cohesion to provide collateral for lending, rather than restrictions on the price of borrowing. In contrast, policies that limit the amount of interest on a loan may result in decreased access to funds, especially among low-income groups.