

7. & 8. Inflation

Exercise 7.1. (Barro 7.7.: Prepayments of Mortgages and Callability of Bonds)

Mortgages typically allow the borrower to make early payments of principal, which are called prepayments. Sometimes the mortgage contract specifies a penalty for prepayments, and sometimes there is no penalty. Many state governments prohibit prepayment penalties on mortgages. (Lenders do, however, usually charge some fees for setting up a new mortgage) Similarly, long term bonds – although most of those issued by the U.S. Government – typically allow the issuer to prepay the principal after a prescribed date and with a specified penalty. When the bond issuer exercises this option to repay, he or she is said to call the bond. Bonds that allow this option are said to be callable or to have a call provision.

- a) When would a borrower want to repay (or call) his or her mortgage or bond? Would we see more prepayments when nominal interest rates had unexpectedly increased or decreased?
- b) From the late 1970s until 1982, banks and savings and loan associations were eager for their customers to repay their mortgages. Why was this the case? Later on, the customers wanted to repay prepay. Why did they want to do so.
- c) Suppose that there is an increase in the year-to-year fluctuations of nominal interest rates. From the Standpoint of a borrower, hoe does this change affect the value of having a prepayment option – that is, callability – in his or her mortgage bond?

Exercise 7.2. (Barro. 7.9. a. b: Indexed Bonds)

Consider a bond that costs 1000\$. Suppose that the bond pays a year later the principal of \$1000 plus interest of 100\$.

- a) What is the nominal interest rate on the bond? What are the actual and expected real interest rates? Why is the nominal known but the real rate uncertain?
Suppose that someone issues an indexed bond, which adjusts the payments to compensate for inflation. For example, assume that the total amount paid a year later is the quantity $\$1000(1 + \pi)$ where π is the rate of Inflation over the year.
- b) What is the real interest rate on the indexed bond? Why is the real rate known but the but the nominal uncertain?

Exercise 8.1. (Barro 8.7)

Critically review the following statement: “The quantity theory of money predicts that the rate of inflation must equal the rate of monetary growth. In fact, the two are not equal; therefore the theory is wrong.” How do factors such as anticipated increases in inflation or gradual adjustments in the demand for money alter the prediction? What about factors considered in Chapter 7, such as growth in output.

Exercise 8.2 (Barro 8.10: Wealth and Substitution effects from Inflation)

Suppose that the expected inflation rate, π^e , and the nominal interest rate, R , each increase by one percentage point. Thus, the expected real interest rate on bonds does not change.

- a) What happens to the real demand for money?
- b) Underlying this change in the demand for money, what happens to the real amount of transaction costs that people incur?
Assume now that we do not neglect the role of transaction costs in households budget constraints.
- c) What is the effect of higher inflation on people's wealth? How do consumption and leisure respond.
- d) Does higher expected inflation also exert substitution effects on consumption and leisure? (Not that unlike Consumption, leisure does not require people to use money.) Therefore, what is the overall effect of higher expected inflation on consumption and leisure.

Exercise 8.3.

Consider an economy where velocity V equals 5, output grows at three percent a year, and money supply grows at five percent a year. What is the annual inflation rate?

Exercise 8.4.

In the quantity theory, we assumed that velocity was constant. In reality, the velocity of money varies across countries. Would you expect countries with high inflation to have higher or lower velocity than low-inflation countries? Justify your answer. (Hint: You should draw both on Chapter 4 and Chapter 8 to answer this question.)