Introductory Macroeconomics

In-Tutorial #2
Week Starting 15th March 2021

Questions.

1. Inflation and the value of money:
   (a) The average quarterly inflation rate in Australia from 1973-1979 was 2.9 percent. What is the implied average annual inflation rate for each of these periods?
   (b) Suppose an individual began 1973 with $100 and the quarterly inflation rate was 2.9 percent. What would the individual's real value of wealth (in 1973 dollars) be at the end of 1979 if they had held their wealth in cash with a zero nominal interest rate?
   (c) A *hyperinflation* is a situation where the inflation rate becomes very high for a period of time. A specific but somewhat arbitrary definition is that a hyperinflation occurs when the monthly inflation rate exceeds 50 percent. Suppose an individual began with $100 of wealth in 1973 and the *monthly* inflation rate was 50 per cent. What would be the individual's real value of wealth (in 1973 dollars) be at the end of 1979 if they held their wealth in cash with a zero nominal interest rate?
2. Briefly discuss the *costs of inflation* during a hyperinflation.
3. Label each of the following statements true, false or uncertain and give a brief explanation:
   (a) Since 1980, the participation rate in Australia has remained roughly constant at 60%.
   (b) Each month, the flows in and out of employment are very small compared with the size of the labour force.
   (c) On average, about one-fifth of unemployed workers exit unemployment each month.
   (d) The unemployment rate tends to be high in recessions and low in expansions.

Solutions to In-Tutorial Work.

1. (a) If the quarterly rate is 2.9 percent then the annual rate will be $(1.029^4 - 1) \times 100 = 12.1$ percent.

   Perhaps the easiest way to see why this calculation is correct is to note that if quarterly inflation rate is calculated as:

   $$100 \times \frac{\text{CPI}_t - \text{CPI}_{t-1}}{\text{CPI}_{t-1}} = 100 \times \left(\frac{\text{CPI}_t}{\text{CPI}_{t-1}} - 1 \right)$$

   The annual inflation rate is:

   $$100 \times \frac{\text{CPI}_t - \text{CPI}_{t-4}}{\text{CPI}_{t-4}} = 100 \times \left(\frac{\text{CPI}_t}{\text{CPI}_{t-4}} - 1 \right)$$

   but

   $$\frac{\text{CPI}_t}{\text{CPI}_{t-4}} = \left(\frac{\text{CPI}_t}{\text{CPI}_{t-1}} \right) \left(\frac{\text{CPI}_{t-1}}{\text{CPI}_{t-2}} \right) \left(\frac{\text{CPI}_{t-2}}{\text{CPI}_{t-3}} \right) \left(\frac{\text{CPI}_{t-3}}{\text{CPI}_{t-4}} \right)$$

   An average annual inflation rate of 2.9 percent implies $\text{CPI}_t/\text{CPI}_{t-1} = \text{CPI}_{t-1}/\text{CPI}_{t-2} = \cdots = \text{CPI}_{t-3}/\text{CPI}_{t-4} = 1.029$

   (b) The length of time from the beginning of 1973 to the end of 1979 is seven years or 28 *quarters*. The real value of wealth at the end of 1979 could be calculated as

   $$\frac{100}{1.029^{(7\times4)}} = 44.91$$

   Over this seven year period an individual's wealth is more than halved.

   (c) A similar calculation using a *monthly* inflation rate of 50% gives

   $$\frac{100}{1.50^{(7\times12)}} \approx 0$$

2. During a hyperinflation, all of the standard costs of inflation become large. For example:

   - Shoe leather costs: during the hyperinflation in Weimar Germany during the 1920s people were paid multiple times a day and rushed to the store to purchase goods as soon as possible.
   - Noise in the price system: during a hyperinflation, individuals sometimes resort to barter trade rather than using money since the value of money disappears so quickly.
   - Unexpected redistribution of wealth: People who invested in financial assets saw the real value of these assets disappear. People who had large financial debts had to repay virtually nothing.
   - Menu costs: During a hyperinflation, the cost of goods in stores would change multiple times a day.

3. (a) False. See Lecture 4 slide 17. The overall participation rate has steadily increased because of increased participation by women. In fact, the rise in women's participation has been sufficiently large so as to more than offset a decline in participation by men.

   (b) False. See Lecture 4 slide 20. The flows into and out of employment are large. In an average *month*, approximately 427,000 people move into employment from either unemployment ($0.21 \times 0.7 = 0.147$ million) or from out of the labour force ($0.04 \times 7 = 0.288$ million). Moreover this does not include 'job-to-job' transitions where people move from one job to a new job within the employment category.

   (c) False. See Lecture 4 slide 18. Approximately *half* of all unemployed workers exit the unemployment pool each *month* (the sum of the exit rates to employment and not in the labour force is $0.21 + 0.23 = 0.46$, so approximately half of unemployed workers exit unemployment and half of unemployed workers remain unemployed each month).

   (d) True. See Lecture 4 slide 16. Rising unemployment is a key feature of recessions. Unemployment in Australia rose to about 11% in the 1991 recession, for example.