FIN204-Week4-Ch5-12310903刘华杰

本章作业 Ch5 # 2，3，4

2.Suppose a country has a money demand function

$$(M/P)^d = kY$$

where k is a constant parameter. The money supply grows by 12 percent per year, and real income grows by 4 percent per year.

- a. What is the average inflation rate?

Answer:
首先定义公式中变量的增长率为：

$$\%M(money\ supply) = \frac{M' - M}{M}$$
$$\%P(price) = \frac{P' - P}{P}$$
$$\%Y(real\ income) = \frac{Y' - Y}{Y}$$

解出$M = \frac{M'}{1+\%M}$（P,Y同理），带入货币供给函数：

$$\frac{1+\%P}{1+\%M} \cdot \frac{M'}{P'} = k\frac{Y'}{1+\%Y}$$

$$\begin{aligned} &=> \%Y + \%P = \%M \\ &=> \%P = \%M - \%Y \\ &=> \%P = 12\% - 4\% = 8\% \end{aligned}$$

- b. How would inflation be different if real income growth were higher? Explain.

Answer:
根据 $\%Y + \%P = \%M$,更高的真实收入增长会抑制价格上升/通胀

- c. How do you interpret the parameter k? What is its relationship to the velocity of money?

Answer:
参数 k 定义了人们希望收入中一个货币单位所代表的货币量（how much money people wish to hold for each dollar of income）。其他条件不变的情况下，货币流通速度越高，每单位货币用于交易的次数就越多，每人持有的货币就会越少，每人就会希望购买相同的商品和服务所使用的货币越少，k 就越小。因此 k 和货币流通速度成反比。

- d. Suppose, instead of a constant money demand function, the velocity of money in this economy was growing steadily because of financial innovation. How would that affect the inflation rate? Explain.

Answer：
根据Quantity equation:

$$M \times V = P \times Y$$
$$\%M + \%V = \%P + \%Y$$

货币流通速度 V 增长，在实际产出 Y 和货币供给 M 不变时，价格水平 P 将会上升，即通货膨胀率上升。

3.LaunchPad· An economy has the following money demand function:

$$(M/P)^d = .2Y/i^{1/2}.$$

- a. Derive an expression for the velocity of money. What does velocity depend on? Explain why this dependency may occur.

Answer：
根据Quantity Equation的一般形式：

$$M \times V = P \times Y$$
$$\frac{M}{P} = \frac{Y}{V} = \frac{.2Y}{i^{1/2}}$$
$$=> V = 5i^{1/2}$$

i 在此处为名义利率（nominal interest rates）。名义利率越高，人们更不愿意持有现金，而是愿意进行消费/投资等活动，减少潜在的利息损失（不存钱就会损失比较高的利息），因此货币流通速度越高。

- b. Calculate velocity if the nominal interest rate i is 4 percent.

Answer：

$$V = 5i^{1/2} = 10$$

- c. If output Y is 1,000 units and the money supply M is $1,200, what is the price level \$P$?

Answer:

$$P = \frac{5i^{1/2}M^d}{Y} = 10 \times \frac{\$1200}{1000} = 12$$

- d. Suppose the announcement of a new head of the central bank, with a reputation of being soft on inflation, increases expected inflation by 5 percentage points. According to the Fisher effect, what is the new nominal interest rate?

Answer:
Fisher Effect: $i' = r + \pi = 4\% + 5\% = 9\%$

- e. Calculate the new velocity of money.

Answer:

$$V = 5\sqrt{i'} = 15$$

- f.If, in the aftermath of the announcement, both the economy's output and the current money supply are unchanged, what

happens to the price level? Explain why this occurs.

根据Fisher Effect，实际利率不变的情况下，名义利率的增加会导致通货膨胀的增加。因为人们投资行为的根据是对未来的预期（即名义利率）。
总产出和货币供给量不变的情况下，名义利率增加，导致货币交换速度增加，货币需求增加，进而导致价格水平增长，通货膨胀率上升。

- g. If the new central banker wants to keep the price level the same after the announcement, at what level should she set the money supply?

根据f题所述，应该增加货币供给以满足货币需求。

4.Suppose that the money demand function takes the form

$$(M/P)^d = L(i, Y) = Y/(5i)$$

- a. If output grows at rate g and the nominal interest rate is constant, at what rate will the demand for real balances grow?

Answer： M/P 以 g 的速率增长

- b. What is the velocity of money in this economy?

Answer:

$$\begin{aligned} M \times V &= P \times Y \\ \frac{M}{P} &= \frac{Y}{V} = \frac{Y}{5i} \\ => V &= 5i \end{aligned}$$

- c. If inflation and nominal interest rates are constant, at what rate, if any, will velocity grow?

Answer: 名义利率不变，货币流通速度不变。

- d. How will a permanent (once-and-for-all) increase in the level of interest rates affect the level of velocity? How will it affect the

subsequent growth rate of velocity?

Answer：其他条件不变，名义利率提高后保持不变，货币流通速度提高后也保持不变，不会有后续变化。

- e. If the central bank wants to achieve a longrun target inflation rate of π, at what rate should the money supply grow?

Answer：
Inflation rate of π：

$$\pi = \frac{\Delta M}{M} - \frac{\Delta Y}{Y} = \%M - \%Y$$

在总产出不变，货币流通速度不变的情况下，名义货币供给量必须要以π的速率增长。（由于是长期行为，调整后的货币流通速度为常量，因此调整名义货币供给量导致的流通速度变化忽略不计。）

作业部分结束，助教您幸苦了

本章小结-本次作业涉及的知识点
Ch 5 Inflation: Its Causes, Effects, and Social Costs

1.The quantity equation

货币数量论：调整货币供给量，就能调整名义GDP增速

$$M \times V = P \times Y$$

V = velocity
P = Price of output (GDP deflator)

Y = quantity of output (real GDP)
P $\times$ Y = value of output (nominal GDP)

2.Money demand and the quantity equation

古典经济学派 $(M/P)^d = KY$ 流通速度$V = \frac{1}{k}$不变
M/P = real money balances

$$(M/P)^d = kY$$

k = how much money people wish to hold for each dollar of income.

$$\pi = \frac{\Delta M}{M} - \frac{\Delta Y}{Y} = \%M - \%Y$$

Hence, the quantity theory predicts a one-for-one relation between changes in the money growth rate and changes in the inflation rate.

3.Fisher effect

The Fisher equation: $i = r + \pi$
Hence, an increase in π causes an equal increase in i.
π = actual inflation rate (not known until after it has occurred)
$E\pi$ = expected inflation rate

4.The money demand function

凯恩斯 流动性偏好理论

$$(M/P)^d = L(i^-, Y^+)$$

假定只有现金投资和债券，名义利率上升，对货币需求下降，买债券利息回报更高

货币流通速度

$$V = PY/M = \frac{Y}{L(i^-, Y^+)}$$

利率和货币流通速度同增同减

纳入Fisher Equation考虑，货币流通速度：

$$V = \frac{Y}{L(r + E\pi^-, Y^+)}$$

如果央行声称会扩大供给量，提高货币预期，就加快货币流通速度，推高通胀。
均衡Equilibrium

$$\frac{M}{P} = L(r + E\pi^-, Y^+)$$

推断：均衡时M确定，$i = r + E\pi$, 相当于提高预期$E\pi$ 大小。经济参与者做决策看预期$E\pi$，推高价格。所以通胀一定程度上能提高经济。

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