

## TOPIC 24: INFLATION II

- I. Why inflation really matters
- a. When inflation is anticipated, we can adjust a rate (such as inflation or growth rate) to compensate. We thus have the *real* rate, or the interest rate adjusted for inflation:

$$\text{real rate} = \text{nominal rate} - \text{inflation rate}$$

- i. Note this is a simple way to adjust for inflation; there is a more complex, but more accurate way, to adjust.<sup>1</sup>
- ii. Okay since other people keep track of inflation and can adjust for it, so it doesn't really matter. Right?
- b. Wrong. Yes, at some level the market makes inflation immaterial; if you double all prices and you double all wages, there should be no change. So what if inflation's high? It typically doesn't matter much if the inflation's foreseen but unanticipated inflation can cause real problems for...
- i. Fixed-income receivers. Sometimes their income is adjusted for inflation, but it takes time to calculate. If inflation's unexpectedly high, it can create a real problem.
- ii. Savers. If unanticipated, the interest you receive will be less than the inflation. Even if you're gaining more money in nominal terms, you'll losing it in real terms.
- iii. Creditors. Unanticipated inflation harms those who lend money out for similar reasons as it harms savers.
- c. "Unanticipated" means whatever's different from the anticipated inflation rate.
- i. If inflation is expected to be 4% but it's really 5%, then savers, etc. are worse off because their real interest rate is lower than it should be ("should" determined by the market rate).
- ii. If inflation is expected to be 4% but it's really 3%, then savers, etc. are better off because their real interest rate is higher than it should be ("should" determined by the market rate).
- d. Lots of unanticipated inflation deters saving, which creates problems for long-term economic growth. It does, however, encourage spending

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<sup>1</sup> The actual equation is:  $(1+\text{nominal rate})/(1+\text{inflation rate}) - 1 = \text{real rate}$ .

(since you can either invest/save your money or spend it) which is good for short-term economic growth.

- e. What's bad for savers is good for borrowers. If you have a lot of student loans, pray for unexpected inflation because it will be easier to earn more and thus easier to pay back your bank.
  - f. All these problems become disastrous under *hyperinflation*—when the price level grows really fast. So fast, what prices should be become difficult to determine.
    - i. In Germany after WWI, prices would rise so fast, customers sometimes had to pay twice as much when they paid the bill compared to when they ordered their food.
    - ii. In 2008, Zimbabwe's inflation was about 14.9 *billion* percent.
- II. What causes inflation?
- a. An inflation game
  - b. Inflation is ultimately caused by the money supply, an idea referred to the quantity theory of money.
  - c. The most common cause is an increase in the money supply. We call this *demand-pull* inflation: when too much money chases too few goods. Here's the equation of exchange, a mathematical version of the quantity theory of money (I often will use "quantity theory of money" and "equation of exchange" interchangeably as they boil down to essentially the same thing):

$$Mv = p_L Y_R$$

- i. Where M is the money supply;
  - ii. And v is the velocity of money (how often money changes hands);
  - iii. And  $p_L$  is the price level;
  - iv. And  $Y_R$  is real GDP.
- d. If you increase the money supply, either you have to be buying and selling more things ( $Y_R$ ), a decline in velocity (v), or you have more inflation ( $P_L$  increases).
- i. This theory also illustrates why deflation is particularly nasty.
  - ii. If people expect prices to fall, they won't buy anything (because they want to wait until later, when prices are lower).
  - iii. In addition, people are getting paid less (because prices are lower), which is a reduction in GDP.
  - iv. Both effects put downward pressure on velocity, which puts *more* downward pressure on the price level.

- v. Because deflation is so nasty, countries prefer to have a little inflation (about 2%). Deflation is very hard to get out of.
- e. Changes in the price level also depend on people's expectations and beliefs. Money matters, but so does velocity. If a lot of money's printed but people just shove it under the mattress (M increases but v falls), then the money supply hasn't *really* increased.