

### Notes on Money and Inflation

- The major costs of perfectly anticipated inflation are the costs of changing prices and the tax on cash balances.
- The nominal interest rate is the opportunity costs of holding cash balances. Higher expected inflation will raise the nominal interest rate and lead to a fall in the quantity of money demand.
- The efficiency cost of this can be measured by the lost triangle under the demand for money curve.
- The fall in the quantity of money demand generates a corresponding increase in velocity.
- The greatest costs of inflation come from uncertainty about future rates of inflation. We have lots of empirical evidence (some of it produced by CMC professors Burdekin, Keil, and Willett) that above a single digit threshold higher inflation generally becomes more variable, generating more uncertainty and reducing the information content of the signals from the price system, thus reducing economic efficiency, depressing investment, and slowing economic growth over the medium and longer terms. (An unexpected increase in inflation may increase growth in the short-run via the short-run Phillips curve to be discussed later.)
- Both the efficiency costs and distribution effects of inflation can be illustrated by looking at the differences generated between the ex ante expectations of the real rate of interest and the ex post rate that actually occurs.

- To a rough approximation an increase in expected inflation will raise the nominal interest rate by the same amount to leave the expected real rate the same through the equation  $i = er + ep$ 
  - Where  $i$  = nominal interest rate
  - $er$  = expected real rate
  - $ep$  = expected inflation
- So if  $er = 3$  and  $ep = 2$ , then  $i = 5$ . If the actual  $p = ep$  and the ex post real rate  $r = er$ , there are only minor efficiency costs and distributional effects from the inflation. The same is approximately true if  $ep$  moves up to 10 but the expectations are accurate.
- For practice calculate the possible range of ex post real interest rates under the following two sets of assumptions.  $er = 3$ ,  $ep = 20$ , and expectations may be wrong by +2 to -2 percent versus  $ep = 10$  but expectations may be wrong by +5 to -5.