Optimal Inflation

$$r_N = r_R + \eta_e = 0$$

The Optimal Inflation Rate

- The private cost of holding money is r_N
- Economic Efficiency requires setting PC=SC.

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SC = 0

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$$\eta_e = \frac{\Delta M}{M} - \frac{\Delta Y}{Y}$$

$$\frac{\Delta M}{M} = \frac{\Delta Y}{Y} - r_R < 0$$

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$$\rightarrow \quad \frac{\Delta M}{M} = \frac{\Delta Y}{Y} - r_R < 0$$

Conclusion

- A 1% inflation rate costs ≅ $250 million
- Concentrate on price stability

Uncertainty Costs

- Suppose next year's inflation rate is equally likely to be three, six, or nine percent.

$$P(3\%) = \frac{1}{3}$$

$$P(6\%) = \frac{1}{3}$$

$$P(9\%) = \frac{1}{3}$$

Production

- The CEO of Acme Widgets must price the product a year in advance.

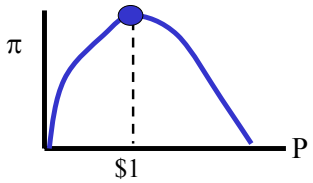
$$P(3\%) = \frac{1}{3}$$

$$P(6\%) = \frac{1}{3}$$

$$P(9\%) = \frac{1}{3}$$

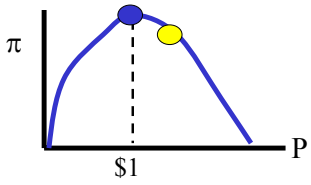
Production

- If the inflation rate turns out to be exactly six percent, the right price would be $1.00 each.



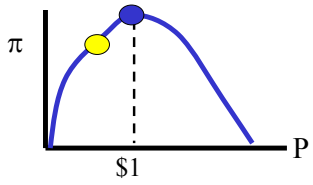
Production

- If the inflation rate turns out to be 3%, he will have overpriced.



Production

- If the inflation rate turns out to be 9%, he will have under priced.



Production

- If the inflation r
  percent, the righ
- If the inflation r
  widgets would b
  more, but make
- If the inflation r
  percent, widget
  both demand an

If the uncertainty can be ended, Acme can make more money.

At 3%, π =$70

At 6%, π = $100

At 9%, π = $70

Production

- If the inflation rate turns
  percent, the right price v
- If the inflation rate turns
  widgets would be priced
  more, but make less mon

At 3%, π = $70

At 6%, π = $100

At 9%, π = $70

$$E(\pi) = \frac{1}{3}\$70 + \frac{1}{3}\$100 + \frac{1}{3}\$70 = \$80$$

Production

- If the inflation rate tur
  percent, the right price
- If the inflation rate tur
  widgets would be priced 3% too low. He will sell more, but make less money.
- If the inflation rate turns out to be only three percent, widgets will be priced 3% too high and both demand and profits will suffer.

If no uncertainty,

π =$100

Extra Uncertainty

Suppose

$$P(0\%) = \frac{1}{3}$$

$$P(6\%) = \frac{1}{3}$$

$$P(12\%) = \frac{1}{3}$$

At 0%, π = $50

At 6%, π = $100

At 12%, π = $50

Extra Uncertainty

Suppose

$P(0\%) = \frac{1}{3}$

At 0%, π = $50

At 6%, π = $100

$E(\pi) = \frac{1}{3}\$50 + \frac{1}{3}\$100 + \frac{1}{3}\$50 = \$67$

$P(12\%) = \frac{1}{3}$

At 12%, π = $50

Extra Uncertainty

Suppose

$P(0\%) = \frac{1}{3}$

At 0%, π = $50

$P(6\%) = \frac{1}{3}$

$100

$P(12\%) = \frac{1}{3}$

= $50

Moral: the greater the uncertainty, the greater the chance you have made a mistake that costs you money.

End