• Let’s divide both sides by $P_{t-1}$

$$\frac{P_t}{P_{t-1}} = \frac{P_t^e}{P_{t-1}} (1 + \mu) (1 - \alpha u_t + z)$$

as

$$\frac{P_t}{P_{t-1}} = 1 + \pi_t$$

• We have

$$1 + \pi_t = (1 + \pi_t^e)(1 + \mu) (1 - \alpha u_t + z)$$

• So

$$\frac{1 + \pi_t}{(1 + \pi_t^e)(1 + \mu)} = (1 - \alpha u_t + z)$$

• If $\pi$, $\pi^e$, and $\mu$ are small, the following approximation

$$\frac{1 + \pi_t}{(1 + \pi_t^e)(1 + \mu)} \approx (1 + \pi_t - \pi_t^e - \mu) \quad \text{holds}$$