Answers to problem on loss-minimizing ....

I)

1)

$$L = E\left[\tfrac{1}{2}(\pi^e - ksr + k\varepsilon)^2 + \tfrac{1}{2}a(y^e - sr + \varepsilon)^2\right]$$

where $E\left[(\pi^e - ksr + k\varepsilon)^2\right] = (\pi^e - ksr)^2 + k^2\sigma^2$

$$E\left[(y^e - sr + \varepsilon)^2\right] = (y^e - sr)^2 + \sigma^2$$

$$r_t^* = \tfrac{1}{s}\, y^e + \frac{k}{s(k^2+a)}\,\pi^e$$

2)

$$\text{Realized } y_t = -\frac{k}{k^2+a}\,\pi^e + \varepsilon_t$$

$$\pi_t = \frac{a}{k^2+a}\,\pi^e + k\varepsilon_t$$

II)

1)

a) i) $y = \frac{a}{a+k^2} y^*$ $\quad \pi = k \frac{a}{a+k^2} y^*$

$r = -\frac{1}{5} \frac{a}{a+k^2} y^*$

ii) No

b) i) $\pi = \frac{a}{a+k^2} \hat{\pi}^e + \frac{ak}{a+k^2} y^*$

$y = -\frac{k}{a+k^2} \hat{\pi} + \frac{a}{a+k^2} y^*$

$r = \frac{1}{5} \frac{k}{a+k^2} \hat{\pi} - \frac{1}{5} \frac{a}{a+k^2} y^*$

ii) $\bar{\pi} = \frac{a}{k} y^*$

comes for setting $\hat{\pi} = \pi_t$ and solving.

2) Public is better off with conservatives.

3) Public is better off if they act as if $y^* = 0$.