7 Lemon Banking

$$\max_{q} \quad E\pi = \left(p(q)q - r\right)F$$
$$p'(q)q + p(q) = 0$$

$$E\pi = p(q)\left[sC + (q-r)\,F\right] + (1-p(q))\max(sC - rF, 0) - sC$$

$$E\pi = p(q)\left[sC + (q-r)\,F\right] - sC$$
$$E\pi = \left(p(q)q - r\right)F + (rF - sC)\,(1-p(q))$$

$$\max_{q,C} \quad E\pi = \left(p(q)q - r\right)F + (rF - sC)\,(1-p(q)) \quad \text{s.t.} \quad C \geq \varepsilon$$

$$\left(p'(q)q + p(q)\right)F - p'(q)\,(rF - sC) = 0$$

$$s\,(1-p(q)) = \lambda$$

$$\lambda\,(C - \varepsilon) = 0$$

$$\max_{q} \quad W = \left(p(q)q - s\right)F$$
$$p'(q)q + p(q) = 0$$

$$\frac{\partial^2 E\pi}{\partial q^2}\,dq - p'(q)s\,d\varepsilon = 0$$
$$\frac{dq}{d\varepsilon} = -\frac{p'(q)s}{\frac{d^2 E\pi}{dq^2}}$$

$$\max_{\varepsilon} \quad W = \alpha\,EU + \beta\,E\pi$$

$$EU = p(q)rF + (1-p(q))\,s\varepsilon - sF$$
$$E\pi = p(q)\,(q-r)\,F - (1-p(q))\,s\varepsilon$$

$$\frac{\partial W}{\partial \varepsilon} = (\alpha - \beta)\,(1-p(q))\,s + \alpha\frac{dq}{d\varepsilon}\left[p'(q)\,(rF - s\varepsilon) + \frac{\beta}{\alpha}\frac{dE\pi}{dq}\right]$$
$$= (\alpha - \beta)\,(1-p(q))\,s + \alpha\frac{dq}{d\varepsilon}p'(q)\,(rF - s\varepsilon)$$