Samuelson Neutral Corporate Taxation:

(a) Allow the firm deductibility of true economic depreciation before tax
(b) Allow interest payment from borrowing deductibility (this changes discount rate from r to $r(1-\tau)$, for τ the tax rate.)

Denote "depreciation" by D_t (equals $q_t \dfrac{d\pi(q_t)}{dq_t}$ in our model).

$$V(S_t) = \pi(q_t) - \tau\left[\pi(q_t) - D_t\right] + \frac{\pi(q_{t+1}) - \tau\left[\pi(q_{t+1}) - D_{t+1}\right]}{1 + r(1-\tau)} + \frac{\pi(q_{t+2}) - \tau\left[\pi(q_{t+2}) - D_{t+2}\right]}{[1 + r(1-\tau)]^2} + \dots$$

$$V(S_{t+1}) = \pi(q_{t+1}) - \tau\left[\pi(q_{t+1}) - D_{t+1}\right] + \frac{\pi(q_{t+2}) - \tau\left[\pi(q_{t+2}) - D_{t+2}\right]}{1 + r(1-\tau)} + \dots$$

$$V(S_t) - \frac{V(S_{t+1})}{1 + r(1-\tau)} = \pi(q_t) - \tau\left[\pi(q_t) - D_t\right]$$

$$V(S_t) - V(S_{t+1}) + r(1-\tau)V(S_t) = (1-\tau)\pi(q_t) + \tau\left[\pi(q_t) - D_t\right]$$

For $V(S_t) - V(S_{t+1}) = D_t = q_t \dfrac{d\pi(q_t)}{d(q_t)}$, we get

$$q_t \frac{d\pi(q_t)}{d(q_t)} + rV(S_t) = \pi(q_t)$$ i.e tax washes out.

Result: extraction program under samuelson tax scheme is same as no tax extraction program AND $V(S_t)$ with tax program equals $V(S_t)$ for no tax program.