Model Solution with Bargained Prices

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Surplus sharing in transaction i:

$$p_i = (1-\beta)(1+\tau(x))\, p$$

All transactions are same: $p_i = p$ for all i

Surplus sharing becomes:

$$1 = (1-\beta)\left[1+\tau(x)\right]$$

$$\tau(x) = \frac{1}{1-\beta} - 1 = \frac{\beta}{1-\beta}$$

$$\boxed{x = \tau^{-1}\left(\beta/_{1-\beta}\right)}$$

Tightness under surplus sharing

We know that x is given by $AD = AS$

$$y^d(x, p) = y^s(x)$$

Price p under surplus sharing is such

$$y^d\left(\tau^{-1}(\beta/1-\beta), p\right) = y^s\left(\tau^{-1}(\beta/1-\beta)\right)$$

→ unique p that satisfies this condition

→ aggregate bargained price

$$y^d(x, p) = \frac{X^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \frac{\mu}{p}$$

$$\Rightarrow y^d\left(\tau^{-1}(\beta/1-\beta), p\right) = \frac{X^\varepsilon}{[1+\beta/_{1-\beta}]^{\varepsilon-1}} \cdot \frac{\mu}{p}$$

$$= \frac{X^\varepsilon}{[1/_{1-\beta}]^{\varepsilon-1}} \cdot \frac{\mu}{p}$$

$$y^d\left(\tau^{-1}\left(\tfrac{\beta}{1-\beta}\right), p\right) = \underline{X^\varepsilon (1-\beta)^{\varepsilon-1}} \cdot \frac{\mu}{p}$$

$$y^S\left(\tau^{-1}(\beta/1-\beta)\right) = \underline{f\left(\tau^{-1}(\beta/_{1-\beta})\right) \cdot k}$$

Bargained price satisfies:

$$p = \frac{X^\varepsilon (1-\beta)^{\varepsilon-1} \cdot \mu}{f\left(\tau^{-1}(\beta/1-\beta)\right) \cdot k}$$

bargaining power

AD

$$\boxed{p = \frac{X^\varepsilon \cdot \mu}{k} \times \frac{(1-\beta)^{\varepsilon-1}}{f\left(\tau^{-1}(\beta/1-\beta)\right)}}$$

AS

$$p^n = [\qquad]$$

Price norm capturing surplus sharing.