- buyer gets p^n units of money, which provides utility:

$$p^n \frac{\partial u}{\partial m} = \left(\frac{p^n}{p}\right) \frac{1}{1+X} \frac{\varepsilon-1}{\varepsilon} \cdot \left(\frac{\nu}{p}\right)^{-1/\varepsilon}$$

- Seller enjoys surplus from trade:

$$S = \left(\frac{p^n}{p}\right) \frac{1}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \left(\frac{\nu}{p}\right)^{-1/\varepsilon}$$

All prices are the same, given by price norm, so $p^n = p$.

$$\boxed{S = \frac{1}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \left(\frac{\nu}{p}\right)^{-1/\varepsilon}} \qquad \boxed{S > 0}$$

. Buyer enjoys surplus from trade:

$$B = \frac{X}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} c^{-1/\varepsilon} - \left(\frac{p^n}{p}\right) \frac{1}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \left(\frac{\nu}{p}\right)^{-1/\varepsilon}$$

$$B = \frac{1}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \left[X c^{-1/\varepsilon} - \left(\frac{p^n}{p}\right)\left(\frac{\nu}{p}\right)^{-1/\varepsilon} \right]$$

$$B = \frac{1}{1+X} \cdot \frac{\varepsilon-1}{\varepsilon} \cdot \left[X c^{-1/\varepsilon} - \left(\frac{\nu}{p}\right)^{-1/\varepsilon} \right] \quad \text{(all prices are same)}$$

FOC from household's problem: (used to compute AD curve)

$$X c^{-1/\varepsilon} = [1+\tau(x)] \, (\nu/p)^{-1/\varepsilon}$$

$$B = \frac{1}{1+X} \cdot \frac{\varepsilon - 1}{\varepsilon} \cdot \left[\left(1 + \tau(x)\right) (\nu/p)^{-1/\varepsilon} - (\nu/p)^{-1/\varepsilon} \right]$$

$$\boxed{B = \frac{1}{1+X} \cdot \frac{\varepsilon - 1}{\varepsilon} \, \tau(x) \cdot (\nu/p)^{-1/\varepsilon}} \qquad \boxed{B > 0}$$

Conclusion:

- $\boxed{\text{seller surplus, } S > 0}$
- $\boxed{\text{buyer surplus: } B > 0}$
- total surplus from match:

$$\boxed{T = S + B > 0}$$