

NTU IO (I) : Contract Renegotiation and Coasian Dynamics

Hart and Tirole (RES 1988)

Model: Suppose there is one buyer and one seller. Each period, the buyer consumes at most one unit of good manufactured by the seller. The buyer has two possible types, high type or low type. The high type and the low type buyers' per period valuations for the good are \bar{b} and \underline{b} , respectively. The seller's prior belief is $b = \bar{b}$ with probability μ_1 . μ_t is the posterior probability at the beginning of date t that $b = \bar{b}$. There are $T (< \infty)$ periods and the cost of production by the seller is zero. Suppose the buyer and the seller have common discount factor δ . Let x_t be the probability that a consumer consumes 1 unit at date t , $x_t \in [0,1]$. Let $X_t \equiv \sum_{s=t}^T \delta^{s-t} x_s$ and $\Delta_t = \sum_{s=t}^T \delta^{s-t}$.

Sale (durable good): $x_t = 1$ implies $x_s = 1$ for $s \in \{t+1, \dots, T\}$.

Rental (non-durable good) : No constraint over $\{x_t\}$

Let p denote the present discounted value of payments from the buyer to the seller.

The buyer's utility: $U = E(-p + X_1 b)$

and the seller's utility : $\pi = Ep = \mu_1 (\bar{X}_1 \bar{b} - \bar{U}) + (1 - \mu_1) (\underline{X}_1 \underline{b} - U)$.

Assume $\mu_1 \bar{b} > \underline{b}$

π_1 =seller's expected profit under commitment ($\pi_1 = \mu_1 \Delta_1 \bar{b}$)

π_2 =seller's expected profit under non-commitment in the sale model. (Coase profit)

π_3 =seller's expected profit under non-commitment in the rental model. (Ratcheting effect)

$\pi_1 > \pi_2 > \pi_3$

Ratcheting effect (Laffont and Tirole, Econometrica 1988) If the buyer's valuation is identified early on, the seller that he has all the bargaining power) can use this to price discriminate perfectly and capture all the buyer's consumer surplus in later periods. As a result the noncommitment equilibrium will involve very little information being revealed in early stages of the game, i.e., it will be characterized by extensive pooling.

Result 1 :

Anonymous buyers		
	Commitment	Non-commitment
Sale:	π_1	π_2
Rental:	π_1	π_1

Result 2:

Non-Anonymous buyers			
	Commitment	Non-commitment	Commitment and Renegotiation
Sale:	π_1	π_2	π_2
Rental:	π_1	π_3	π_2