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Undescribable Events: Al-Najar, Anderlini, Zelli  
 • ReStud '06

Simple Insurance Problem: 2 parties

$$\text{if } s \in \bar{Z} \subseteq S, \quad u_1(t, s) = V(1+t) \quad \text{and} \quad u_2(t, s) = V(-t)$$

$$s \in \overline{\bar{Z}} \quad \text{complement of } \bar{Z}, \quad u_1(t, s) = V(t) \quad \quad \quad u_2(t, s) = V(1-t)$$

FB transfer  $t^*(s) = \begin{cases} t_{\bar{Z}} & \text{if } s \in \bar{Z} \\ t_{\overline{\bar{Z}}} & \text{if } s \in \overline{\bar{Z}} \end{cases}$  with  $1+t_{\bar{Z}} = t_{\overline{\bar{Z}}}$

Suppose  $S$  is countably infinite:  $S = \{s^1, \dots, s^n, \dots\}$

Each state  $s^n$  is an infinite sequence  $(s_n^1, s_n^2, \dots, s_n^i, \dots)$   
 where each  $s_n^i \in \{0, 1\}$

$$\forall Q \subseteq S, \text{ let } \chi_Q(s_n) = \begin{cases} 1 & \text{if } s_n \in Q \\ 0 & \text{else} \end{cases}$$

Density of  $Q$ ,  $\mu(Q) = \lim_{N \rightarrow \infty} \frac{1}{N} \sum_{n=1}^N \chi_Q(s_n)$ , when it exists

Define  $A(i, j) = \{s_n \in S \mid s_n^i = j\}$

Finitely definable sets are those that can be obtained by complements, finite intersections, finite unions, of sets  $A(i, j)$

Finite contract: contract that specifies transfers only conditional on finitely definable sets

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Undescribable event:  $Z \subseteq S$  is undescrivable if  $\mu(Z) \in (0,1)$   
 and  $\mu(Z|A) = \mu(Z) \forall A$  which is finitely  
 definable.

If  $Z$  is undescrivable, the optimal contract is no contract.  
 (\*) Might be a good idea to try to improve on these  
 complexity papers. Measurable ambiguity as  
 complexity?

Hart-Moore '08: Contracts as Reference Points

- Buyer, Seller problem
- No investments ex ante
- Symmetric information
- Risk neutrality
- No wealth constraints

(\*) incomplete contracts as  
 optimal contracts subject  
 to reasonable restrictions

$t=0$ : perfect competition between buyers and between  
 sellers

$t=1$ : bilateral monopoly

Two new assumptions:

1] Ex post trade is only <sup>(interesting direction)</sup> partially contractible  
 2] "aggreement"  
 • perfunctory vs consummate  
 performance

- consummate performance does not cost more.
- benefit or cost of "shading" depending on whether you  
 feel you have been unfairly or fairly treated.

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$$U_B = \underbrace{\bar{u}_B}_{\text{gross payoff from the contract}} - \underbrace{\sigma_S}_{\text{loss from S's shading}} - \max\{\underbrace{\theta}_{0 \leq \theta \leq 1} \underbrace{a_B - \sigma_B}_{\text{aggreement}}; 0\}$$

Difference between what you get and what you feel entitled to.

$$U_S = \bar{u}_S - \sigma_B - \max\{\theta a_S - \sigma_S; 0\}$$

(\*) if there is a distribution of  $\theta$ 's, can we offer a menu of contracts to screen potential sellers?

Simplest case:  $v=100$   
 $c=0$

Without a contract, each feels entitled to a surplus of 100:

$$\begin{aligned} U_B &= 100 - p - \theta(100 - p) \\ U_S &= p - \theta p \end{aligned} \quad \left. \vphantom{\begin{aligned} U_B &= 100 - p - \theta(100 - p) \\ U_S &= p - \theta p \end{aligned}} \right\} \text{loss of } 100\theta \text{ w/rt the FB.}$$

Thursday: Garicano, JPE