Dominant Strategy equilibrium.

(Video: Golden Balls: £100,000 spilt or steal 14/03/08)

⇒ self dominant strategy ⇒ simple

× take opponant into consideration

⇒ sometime do not have DS

The Spilt-the-difference machanism

does not elicit truthtelling

(buyer underestimate / seller over estimate → v<c)

So ① direct mechanism →

buyer/seller simultanetendy & indepandly report a valuation and cost to machanism then executes trade

② indirect mechanism

any game results in trade

eg. asymmetric spilt-the-difference

- Spilt-the-difference game

seller name asking price

buyer offer

- seller/buyer/random offer game

- twice-repeated seller/buyer/ramdom offer game ....

⇒ revelation principle

For every equilibrium, of every indirect mechanism, there exists

a truthtelling equilibrium of some direct mechanism that induce the same outcome. dominant strategy equilibrium

(c', v') traders report valuation / cost.

function $p(c', v')$ = probability of trade ↙ randomness

(indirect ⋯ occur some of the time)

$t(c', v')$ = expected transfer from buyer to seller

? truthtelling ⇒ dominant strategy.

telling the truth is optimal no matter what your opponent's choice.

IC_b Insentive of compatibility — buyer $v\,p(c,v) - t(c,v) \geq v\,p(c,v') - t(c,v') \quad \forall v', v, c$

IC_s — seller $t(c,v) - c\,p(c,v) \geq t(c',v) - c\,p(c',v) \quad \forall c, c', v$

Incentive compatibility constraint

Individual Rationality Constraint.

IR_b $\quad v\,p(c,v) - t(c,v) \geq 0$

IR_s $\quad t(c,v) - c\,p(c,v) \geq 0.$

Lemma $\quad p(c,v) = 0 \Rightarrow t(c,v) = 0$

proof. $\begin{cases} IR_b & -t(v,c) \geq 0 \\ IR_s & t(v,c) \geq 0 \end{cases} \Rightarrow t = 0.$