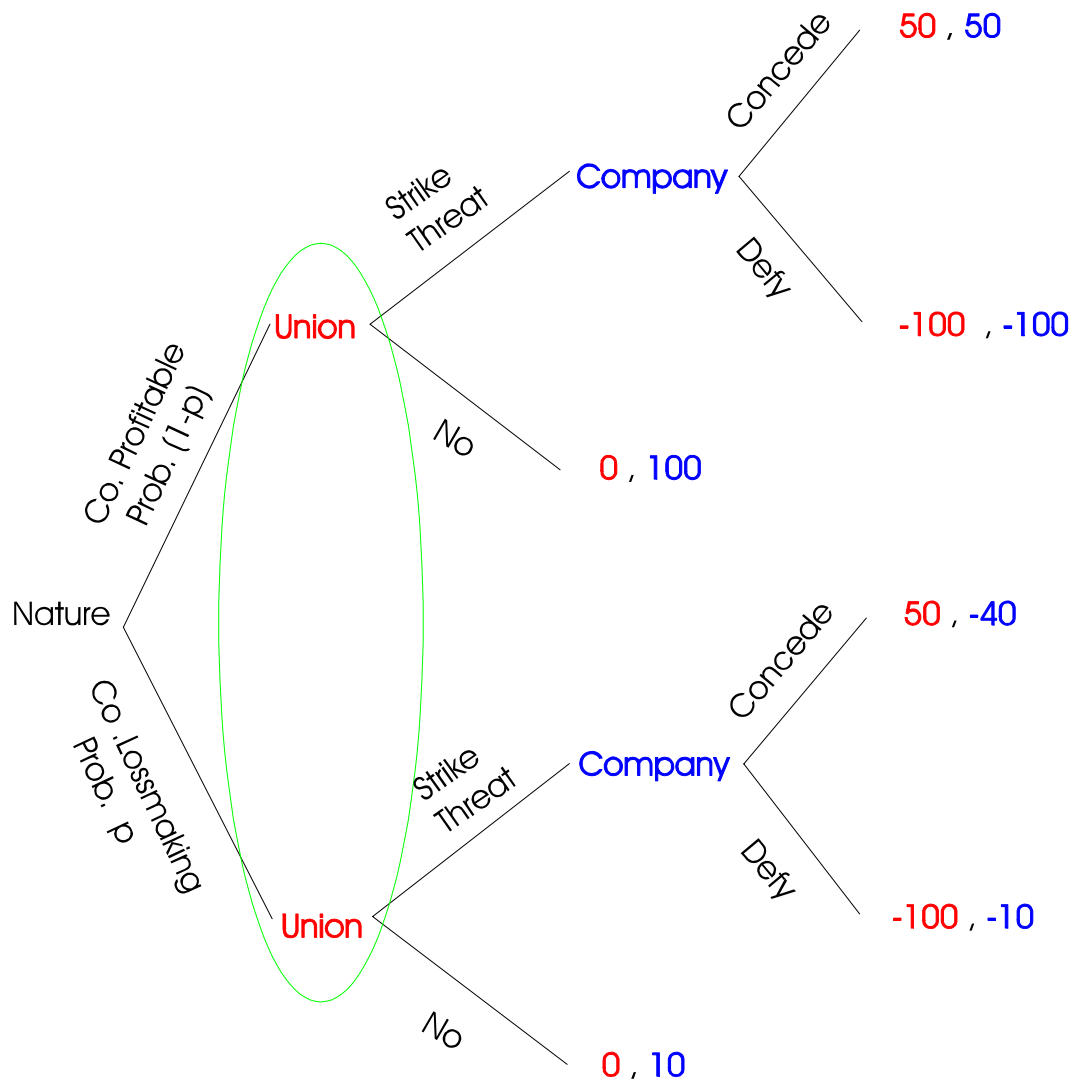# ECO 199 – GAMES OF STRATEGY
Spring Term 2004 – April 6
BRINKMANSHIP

Company and labor union bargaining over wages and benefits
Union must make a strike threat without knowing
     whether company is profitable

PURE THREAT

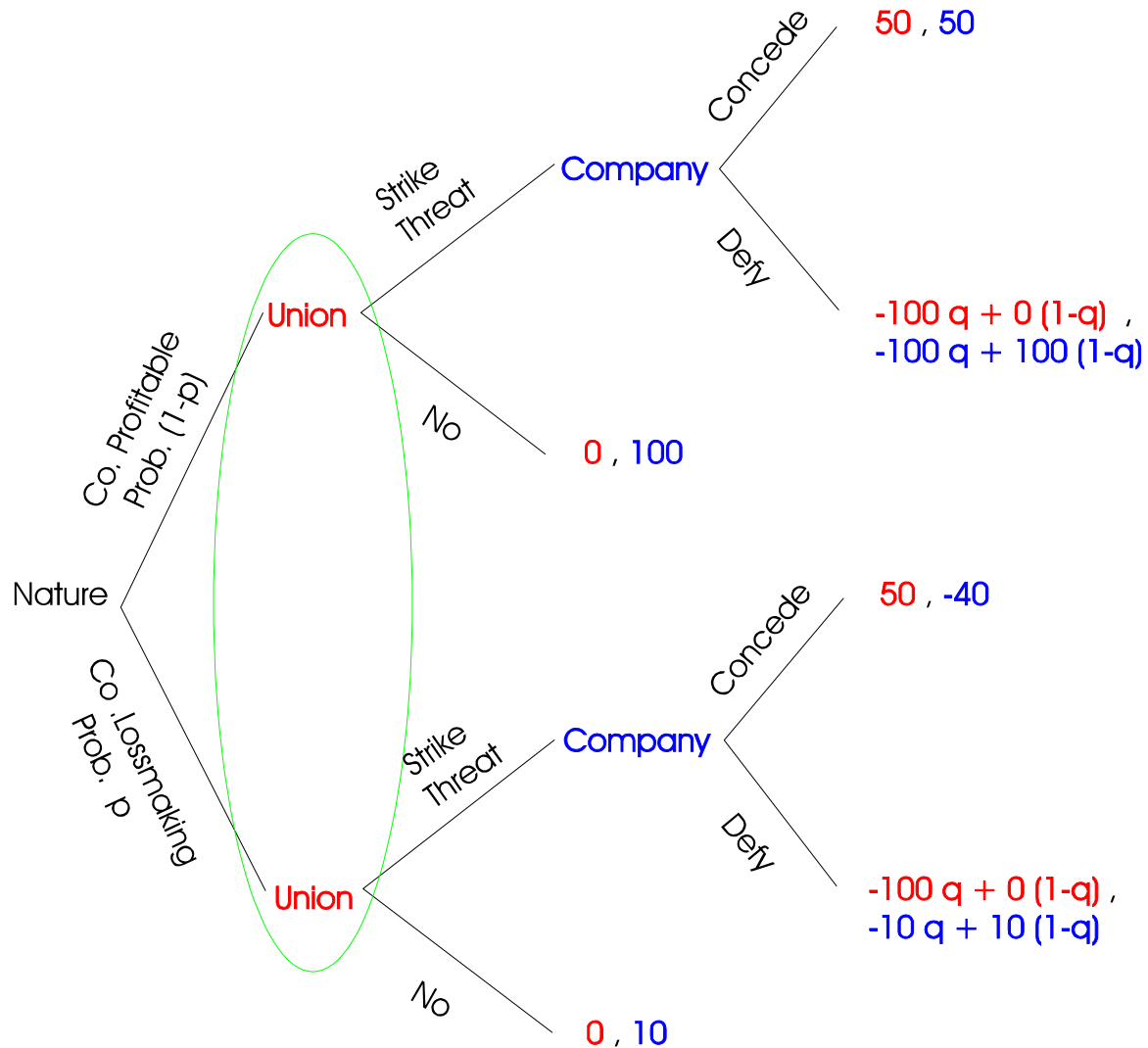Union's expected payoff with no threat is 0
 With threat, 50 (1-p) -100 p = 50 - 150 p. This is > 0 if p < 1/3
Threat too risky for union if p > 1/3

BRINKMANSHIP

Probability(Actual strike if Company defies union) = q
Union chooses q in advance; then actual action outside its control

Concede
50 , 50

Strike
Threat

Company

Defy

-100 q + 0 (1-q) ,
-100 q + 100 (1-q)

Union

No

0 , 100

Co. Profitable
Prob. (1-p)

Nature

Co .Lossmaking
Prob. p

Concede
50 , -40

Strike
Threat

Company

Defy

-100 q + 0 (1-q) ,
-10 q + 10 (1-q)

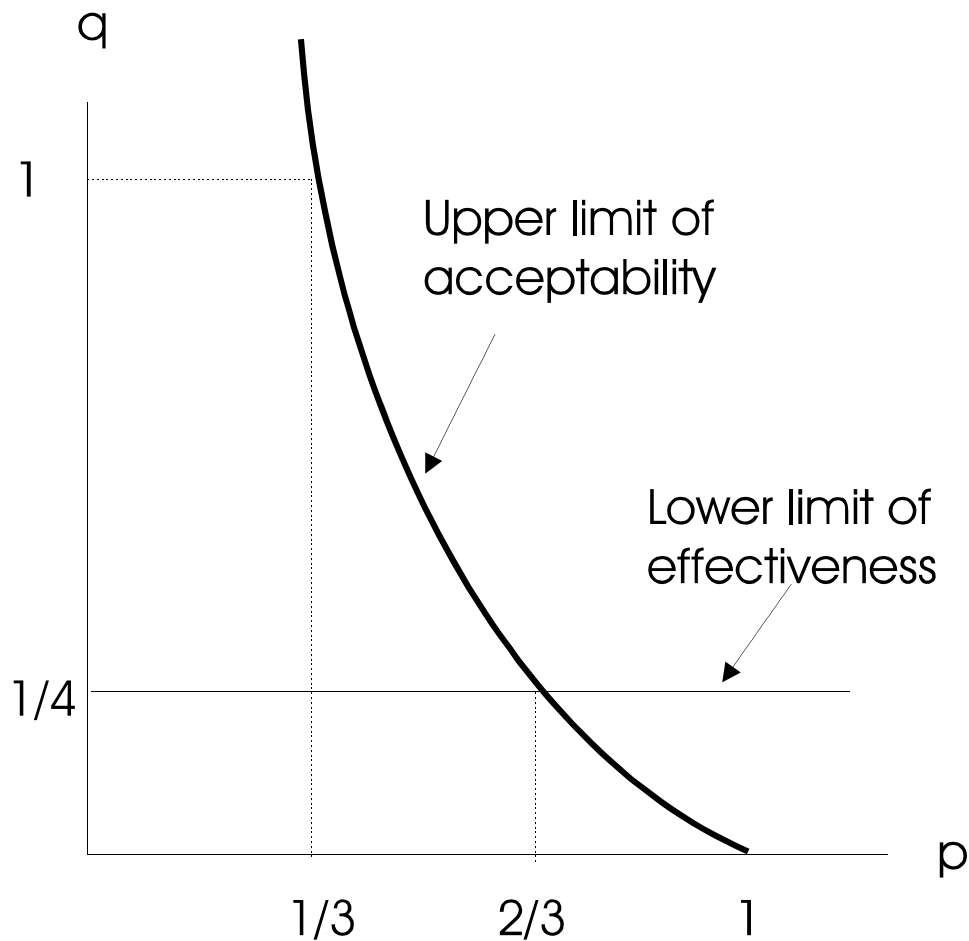Union

No

0 , 10

Effectiveness condition -
    Profitable company concedes if 50 > - 100 q + 100 (1-q)
    200 q > 50,   q > 1/4
Acceptability condition -
    Union's expected payoff   50 (1-p) + [-100 q + 0 (1-q)] p > 0
    q < 0.5 (1-p) / p

If p < 1/3, any choice 1/4 < q # 1 is effective and acceptable -
    pure threat OK
If 1/3 < p < 2/3, need 1/4 < q < point on thick curve -
    need probabilistic threat (brinkmanship)
If p > 2/3, even brinkmanship is too risky

In practice, don't know the precise value of p
    don't know precise limits of q
    can't control q very precisely
So start safe (very low q) and escalate gradually
    until other side complies, or you find risk intolerable
or bad outcome happens while each waits for other to concede

BRINKMANSHIP SUMMARY

1.	I set up randomization device with stated probability
	Threat – If you defy, bad outcome will occur with this probability
		I don't have control over actual action at that point

2.	Paradoxically, internal dissension within your "team"
		helps in achieving this loss of control
	But need to control the degree of risk, and
		"controlled loss of control" hard to achieve in practice

3.	Actual outcome is left to chance; disaster can happen
		Hence should start safe and raise risk gradually
	Actual game has asymmetric information –
		each player is exploring the other's risk-tolerance

4.	Implied promise (safety on compliance) must be credible

5.	Schelling – The brink in brinkmanship is
		NOT a sharply defined cliff from which
		I threaten deliberately to jump, taking you with me.
		It is a slippery slope getting gradually steeper.
		I carry you gradually down it. Risk of both slipping increases.
		Up to you to comply; then we can both pull back to safety.
	It is dynamic or real-time version of Chicken
		Question is not whether to swerve, but when
		Increasing risk of crash if you leave it too late

6.	In real-life confrontations, most threats have risk of error
		Therefore element of brinkmanship in all threats