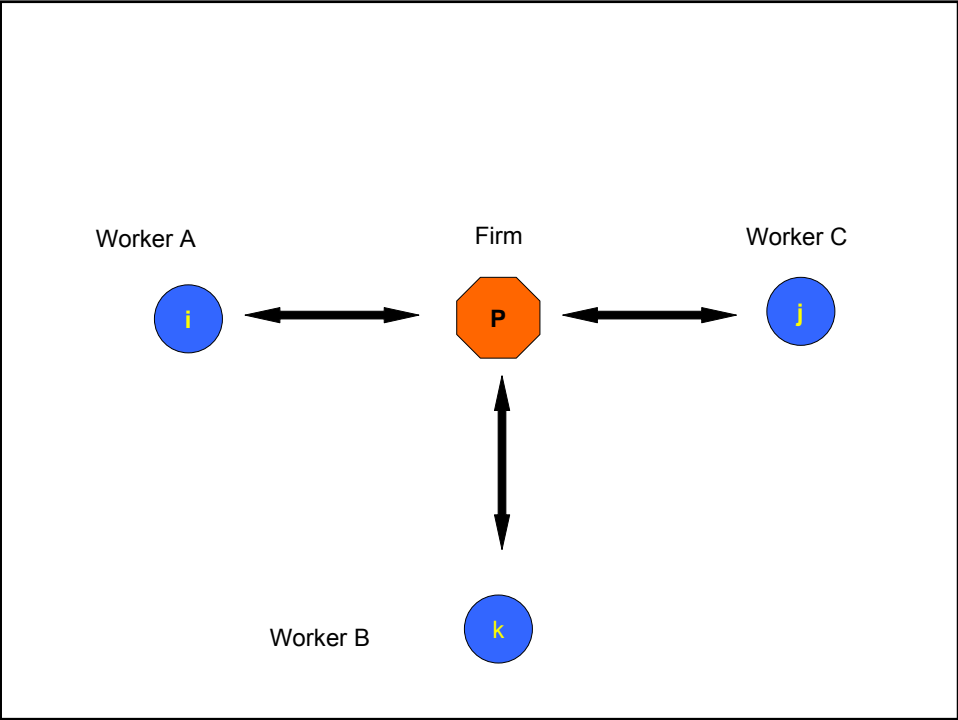
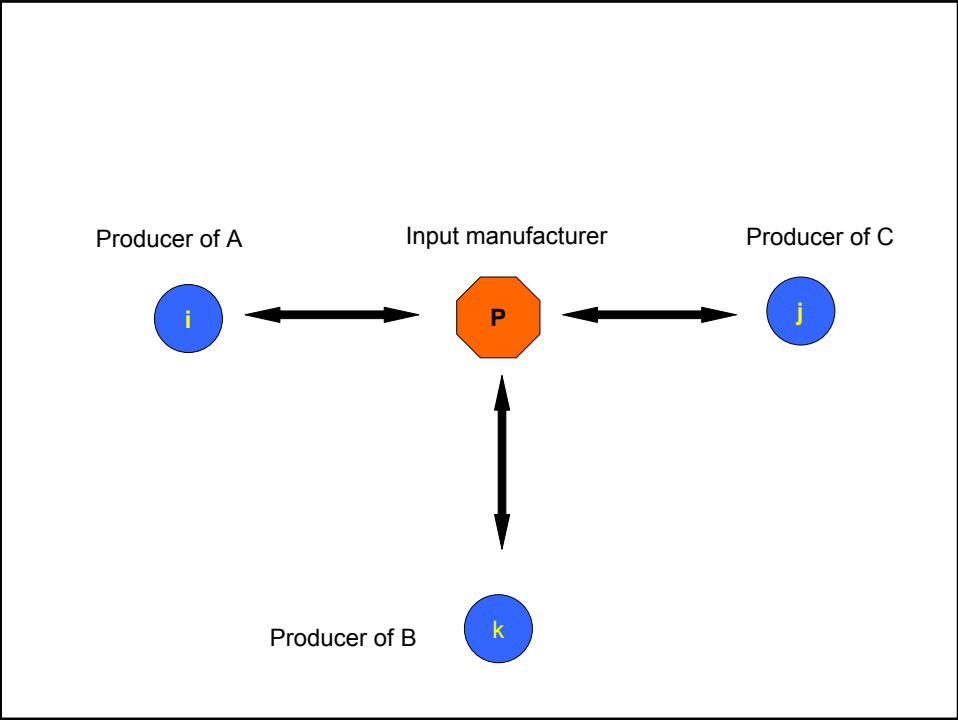


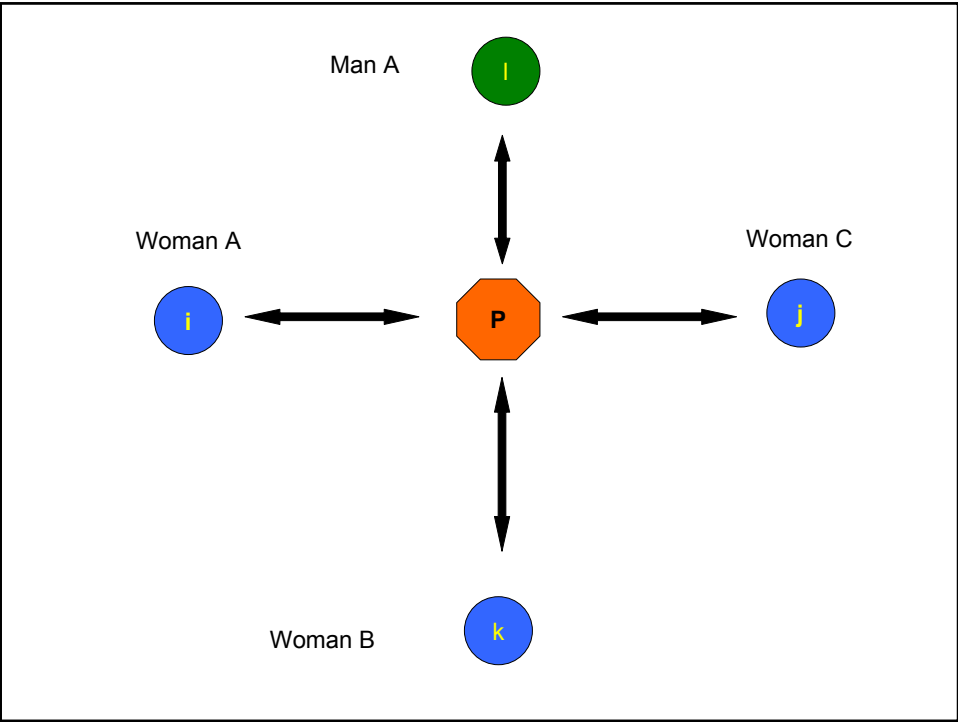
Bargaining with a principal:

contracts v. agreements

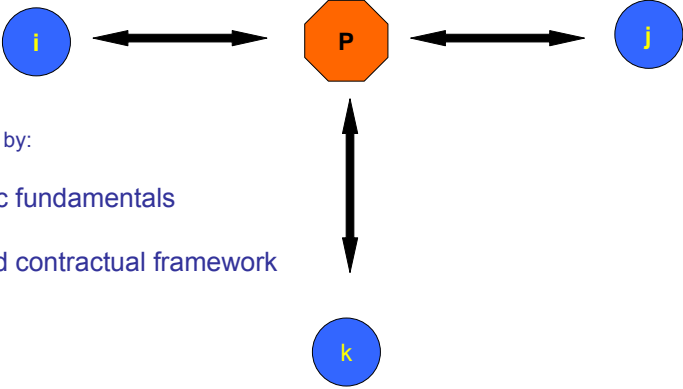
Joao Montez







Endogenous bargaining power



determined by:
Economic fundamentals
Legal and contractual framework

Economy

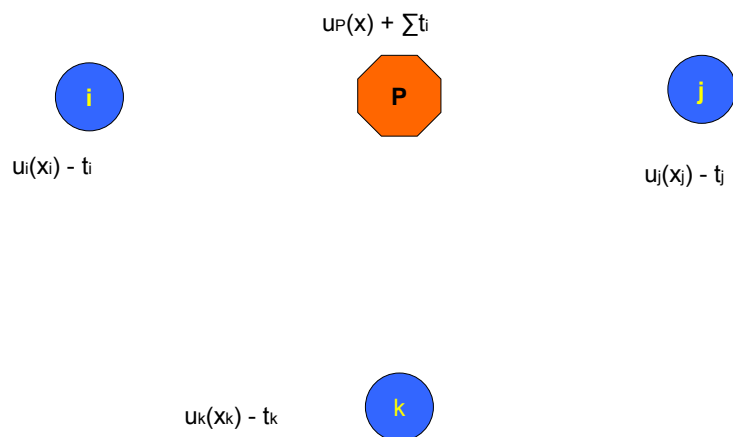
Agents' utilities are $u_i(x_i) - t_i$ with $u_i(0) = 0$

Principal utility is $u_P(x) + \sum t_i$

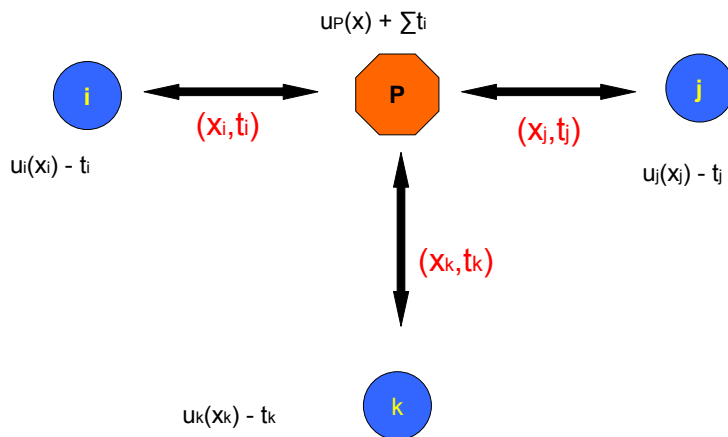
Economy surplus from trade x is $u_P(x) + \sum u_i(x_i)$

Players' payoffs IR on and off equilibrium

Economy

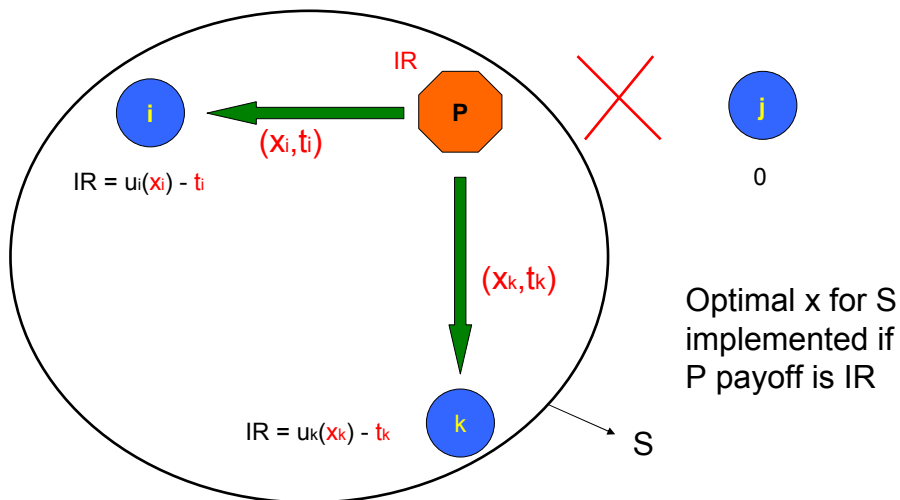


1st stage: bilateral bargaining



2nd stage

Principal makes t.o.l.i. offers to agents who signed in 1st stage



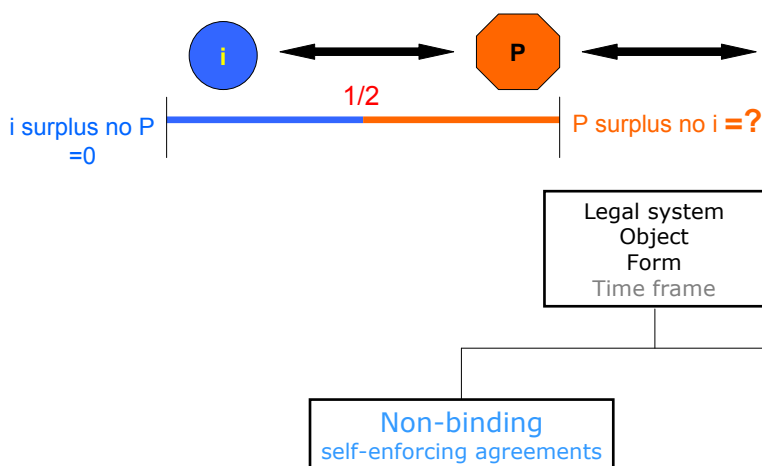
1st stage: contract equilibrium

set of contracts (x_i, t_i) and associated payoffs

no individual player can improve his payoff in bilateral split-the-difference bargaining

taking contracts with all remaining agents as given

1st stage bilateral contracts

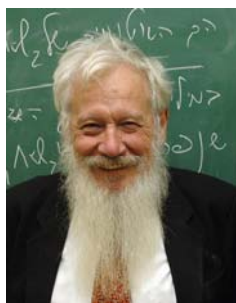


Principal's fallback position

Binding contracts: total surplus without i
minus remaining agents' equilibrium payoffs if non-negative

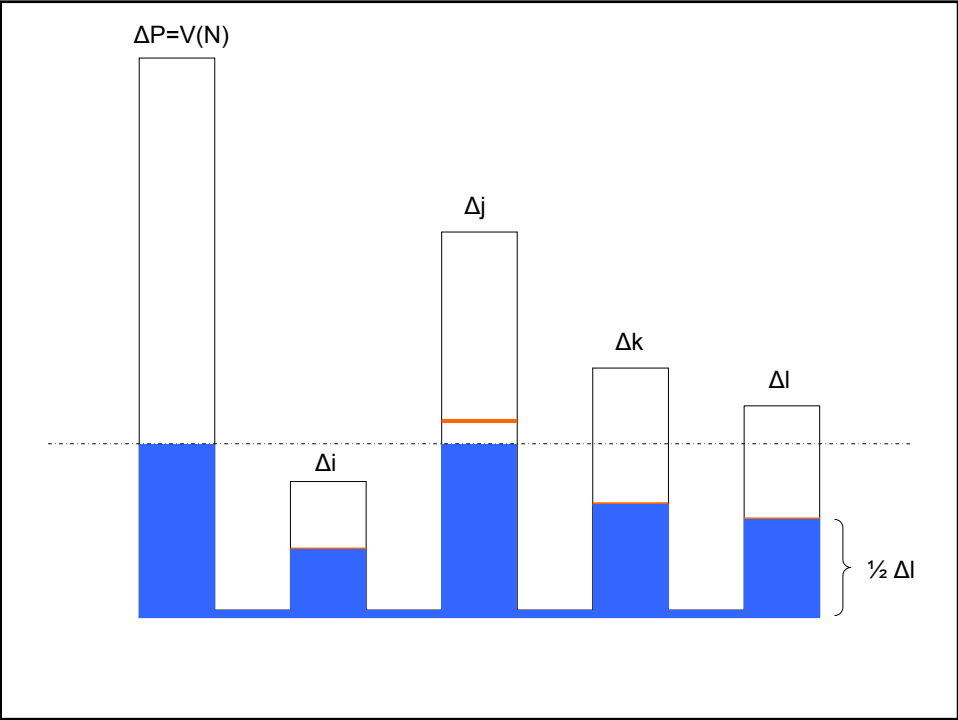
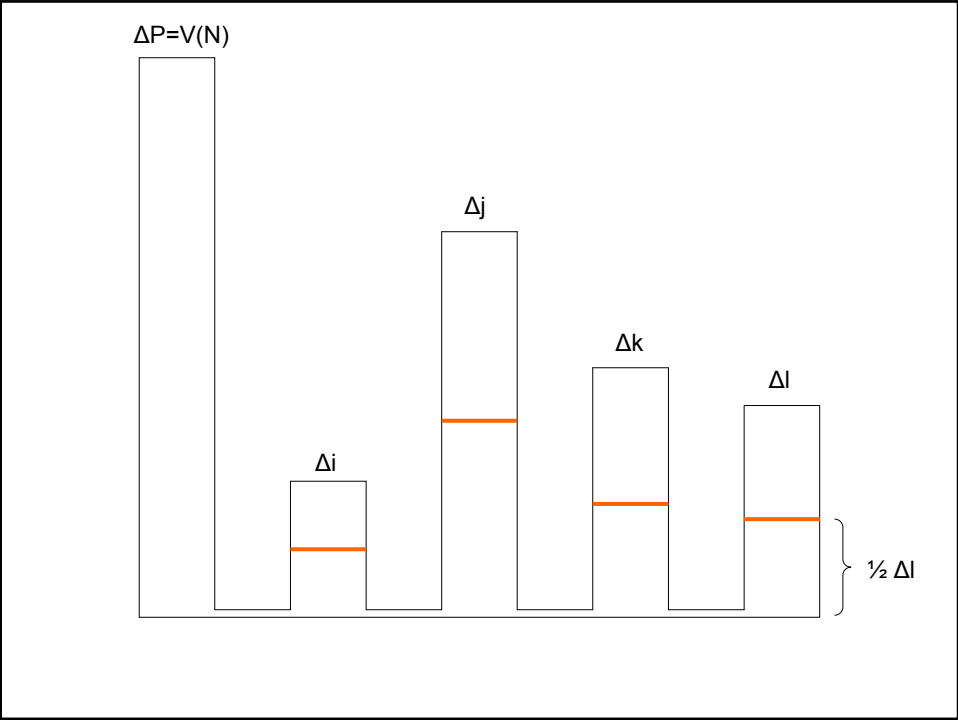
Non-binding: equilibrium payoff in game without i

Binding contracts



Unique contract equilibrium payoff satisfies the Talmud rule

So it coincides with **nucleolus of a bankruptcy** problem:
economic surplus of N is estate
each players' marginal contribution a claim



Non-binding contracts



The contract equilibrium payoff is unique.
It coincides with the **Shapley value** of the underlying coalitional game:
each player gets a weighted average of his marginal contribution to all possible subgames

Substitutes and complements

Does the marginal contribution of one agent decrease with the presence of another for all S ?

Substitutes: economic surplus is submodular with respect to agent inclusion

“concave” surplus if agents are similar

Complements: surplus is supermodular

“convex” surplus if agents are similar

perfect complements (unanimity) and independent (additive)

Binding v. non binding

Substitute agents: principal + agents -

Complement agents: principal - agents +

unanimity or independent games = for all

Two sided markets: principal and short side +

Binding contracts & integration

P+i unprofitable or same agents +

Substitutes: i+j + P - other agents =

Complements: i+j - P + agents + (bargaining paradox)

Non-binding & integration

Substitutes:

P+i + agents -
i+j ? P - agents ? waterbed

Complements:

P+i - agents + bargaining paradox
i+j ? P + agents ? waterbed

Conclusion

Framework to study the role of economic fundamentals and contracts on surplus appropriation for principal/agent problems

Complementarities and substitution give the structure to answer some questions on:

contracts and bargaining power
bargaining effects of mergers