Added Value in Trade

Price formation through negotiations in two agent trade

Two Player Transactions

- Buyer-Seller Exchange (Bilateral Monopoly)
  - Electricity generator and coal mine
  - Actors and sequels
  - Firm-specific human capital
- Cost Sharing Arrangements
  - Research joint ventures
  - Back office functions
  - Cleaning services

Price Formation

Buyer-Seller Exchange

Show Tickets

- Adam has four tickets to the musical “Rent.” Two of the tickets have no value for him while the others have value, in monetary terms, of $50 each (i.e., his willingness-to-pay).
- Eve does not have any tickets. She is willing-to-pay $25 each for two tickets while she would pay only $10 for a third and fourth ticket.
- There are no other sources of tickets.

When should exchange occur?

- There are gains from trade here. By giving up two tickets, Adam loses nothing but gains up to $50.
- However, by giving up the third and fourth ticket, Adam loses $100 and can gain at most $20.
- Therefore, there are gains to trade for two but not four tickets.

Upper and lower price bounds

- What price do these tickets exchange for?
- Suppose Adam can make a take-it-or-leave-it offer to Eve. How much will he demand per ticket?
- Suppose Eve can make a take-it-or-leave-it offer to Adam. What price will she pay?

Added Value

- If you can make a take-it-or-leave-it offer to the other party, you can claim your entire added value.
- In general, however, neither party has this ability.
- If there are no other buyers or sellers, the price they agree upon depends on their negotiating skill. If they were an equal match, this might be a price of

BATNAs ("Best Alternative to Negotiated Agreement")

- What is the relationship between added value and BATNAs?
  - A BATNA or outside option is a party's best alternative value in the absence of an agreement.
    - Adam's BATNA is $0 for the two tickets (or $100 overall)
    - Eve's BATNA is $0 in value.
  - You should receive at least your BATNA in negotiations
- The BATNA approach and added value are the same when there are two players.

Negotiating skill

- What determines negotiating skill in reality?
  - Relative patience
  - Ability to hold-out
  - Understanding the other person's options
  - Fairness?

Patience

- Ben wants to sell an ice cream to Jerry.
- The ice cream will melt after one round of negotiations so there is only time for Ben to make a single offer to Jerry
- Jerry's WTP for the ice cream is $1
- What price will result?

More Patience

- Suppose now that the ice cream takes two periods to melt – half each period.
- There is now enough time for Jerry to make a counter offer if no agreement is reached in the first round.
- At what price will Ben offer to sell the ice cream?

Union Negotiations

- Hotel at a summer resort
- Season lasts 101 days
- Hotel makes profit of $1000 per day
- Union strikes until agreement reached

Ability to Hold Out

		Union's Share		Management's Share	
Days to Go	Offer by	Total	Per Day	Total	Per Day
1	U	$1000	$1000	$0	$0
2	M	1000	500	1000	500
3	U	2000	667	2000	333
4	M	2000	500	2000	500
5	U	3000	600	2000	400
...					
100	M	50000	500	50000	500
101	U	51000	505	50000	495

Variants

- Workers can earn $300 in alternative employment
- Management can hire ‘scabs’ and still realise $500 in profit
- Workers intensify picketing. Reduce alternative earnings to $200 but reduce management profit by $200 per day

Variant 1: Alternative Work

		Union's Share		Management's Share	
Days to Go	Offer	Total	Per Day	Total	Per Day
1	by U	$1000	$1000	$0	$0
2	M	1300	650	700	350
3	U	2300	767	700	233
4	M	2600	650	1400	350
5	U	3600	720	1400	280
...					
100	M	65000	650	35000	350
101	U	66000	653	35000	347

Understanding Outside Options

- Workers can earn $300 in alternative employment
  - Wage = ($1000 + $300)/2 = $650
- Management can hire ‘scabs’ and still realise $500 in profit
  - Wage = ($1000 - $500 + $300)/2 = $400
- Workers intensify picketing. Reduce alternative earnings to $200 but reduce management profit by $200 per day
  - Wage = ($1000 - $300 + $200)/2 = $450

Ultimatum Experiments

- The Game is follows: pairs of subject play a non-repeated two player game.
  - Player 1 is given a sum of money and ask to divide it between themself and player 2.
  - Then player 2 has the option of accepting 1's offer or rejecting it.
  - If accepted, each gets 1's proposed division.
  - If rejected each gets nothing. (E.g., player 1 proposes to divide $10 but keeping $7 and giving 2 $3. If 2 accepts they each get this, but if 2 rejects they each get $0).
- Note that the game has a unique equilibrium with 1 offering 2 one cent, and 2 accepting this.

Results: Fairness?

	Actual	Predicted
Avg % of Total Demanded by 1	67.1	99+
% of Proposed 50-50 splits	25.5	0
% rejected by 2	21.5	0
Avg % Demanded by 1 in Rejected Proposals	85.3	100
Avg % Demanded by 1 in Accepted Proposals	61.0	99+
% of 1's demands > 90%	11.8	100

‘Price’ Formation

Cost Sharing Arrangements

Worked Example

Lawnmower Games

Lawnmower Games

- What is total value created from a joint relationship?
  - What would happen if separated?
  - Ned would go it alone while Homer would go without. Lose Homer's value of $100.
- What is each player's added value?
  - Each is essential to value created from joint relationship.
  - So both Homer and Ned have an added value of $100.

Equal Bargaining Power

- Total value = $150
- Ned's BATNA or outside option = $50
- Homer's BATNA or outside option = $0
- Each gets outside option plus half of what's left.
  - What's left? $150 - $50 - $0 = $100
  - Split this and add to outside option ... so H gets $50 and N gets $100

Classifying Cost Sharing Value

Where is the source of value in joint relationship?

- Low Asset Costs: Avoid duplication of costs
- Medium Asset Costs: Realise scale economies
- High Asset Costs: Make venture feasible

Talmudic Logic

- How to allocate a bankrupt estate?
  - Today's law: equal proportion
- But is there another way?
  - Talmudic law and added value

An Example

- Estate has debts of 300 zuz
  - A is owed 100 zuz
  - B is owed 200 zuz
- There is less than 300 zuz in the estate

Talmudic Division

Estate	Creditor A	Creditor B
50	25	25
150	50	100
250	75	175