Trading Recyclables Game

- Imagine you are one of about 40 firms in the recycling business.
- There are four product markets
 - 1. Plastics
 - 2. Metals
 - 3. Glass
 - 4. Paper
- Your upstream collectors have endowed you with 10 units of each product. You also have \$400 of liquid assets (cash) for trading in these four product markets.

Valuations

- You have also developed a network of clients that will buy all your stock at the end of the garbage collection/disposal period, say a week.
- At the end of the week you dispose of all your recycled material a unit (product specific) price or value that is given to you at the beginning of the game.
- Let's call the unit value of plastic units V(Plastic), and so on for the others. You sell each unit of plastic you own at V(Plastic) at the end of the week, and so on.
- Your values are independently drawn from a uniform distribution with support [0,10].
- For example, if you draw V(Plastic) = 9 but V(Metal) = 1, then acquiring plastic is much more valuable than acquiring metal.

Value of the firm

The initial value of your firm is:

Cash +10* [V(Plastic) + V(Metal) + V(Glass) + V(Paper)]

Your aim is to maximize the value of your firm at the end of the collection/disposal week.

Let's call the units of plastic you have at the end of the game Q(Plastic). The value of your firm at the end of the collection/disposal period is:

Cash + V(Plastic) Q(Plastic) + V(Metal) Q(Metal) + V(Glass) Q(Glass) + V(Paper) Q(Paper)

Login instructions

1. Click on Client Play

2. Click on Available games: "01_recycling game.mgd"

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Design View Assignment Execution Data	Client Play		
Username			
Server	-	-	
		-	
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01_recycling game.mg	gd - 128.237.10	4.189:9876	
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01_recycling game.mg	gd - 128.237.10	4.189:9876	
01_recycling game.mg	gd - 128.237.10	4.189:9876	
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Continuing login instructions

- 1. Server address: 128.237.104.189 will appear
 - automatically after selecting "01_recycling game". If
 - not type 128.237.104.189 in training in the second second
- 2. Write a username.
- 3. Click on "Login".

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Design	View Assignment Execution	on Data C	lient Play		 	
	Ucornama Ari		[
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Trading window before all subjects login

- 1. In each session sixteen subjects must login before any of them see a trading window.
- 2. Information about the number of subjects waiting to start the game is shown at the bottom left corner.

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Username: Ari Id	: 12 Identity:	
F History		T Limit order book
Name		Price Quantity Cumulative Player id Player type
View more history		
Cash	Duration 600	Price 0 Quantity 1 Sell Buy
	Valuation Endowment Sell orde	rs Buy orders Bid (Quantity) Ask (Quantity) Trading price (Quantity)
Subject's own limit ord	ers Transa	ction history
Price Quantity	Revenue\Cost Duration Pr	ice Quantity Buyer ID Buyer Type Seller ID Seller Type Time
Waiting 15 of 16 subj	ects to start a session!	Round:

Trading window 1. To trade in a specific market like "Paper", click on that market (i.e. Paper). 2. The selected market is highlighted in blue in "Summary data". ComLabGames X ComLabGames Username: Clara Id: 19 Identity: 3 Plastics Username: Clara Id: 19 Identity: 3 History* imit order book 19:20:19 (27) 19:20:18 (28) Name Price Quantity Cumulative Player id Player type History Limit order book **Total Asset Value** 718.61 0 19:20:19 (152) 19:20:18 (153) Price Quantity Cumulative Player id Player type Name 0 Difference 0 718.61 Total Asset Value Plastics 9.16 9,16 Difference 0 0 Paper 5.35 5.35 You know that you are trading in Plastic market if V(Plastics) appears in History and matches the V(Paper) = 5.35 in History View more history matches V(Paper) in summary 1÷ Sell Buy 4.7 0-Cash 400 Duration 600 Price Quantity Summary data Sell Buy 1 0 Quantity 600 Cash 400 Duration Price Sell orders Buy orders Bid (Quantity) Ask (Quantity) Assetname Valuation Endowment Trading price (Quantity) Summary data Plastics 9.16 10 Assetname Valuation Endowment Sell orders Buy orders Bid (Quantity) Ask (Quantity) Trading price (Quantity) Metals 8.21 ÎÛ Plastics 9.16 10 10 Glass 9.14 8.21 10 Metals Paper 5.35 10 0.14 40 Glass Paper 5.35 10 Subject's own limit orders Transaction history Price Quantity Revenue\Cost Duration Buyer ID Buyer Type Seller ID Seller Type Time Price Quantity Subject's own limit orders Transaction history Plastic market is selected. Quantity BuyerID BuyerType SellerID SellerType Time Price Quantity Revenue\Cost Duration Price Paper market was selected. Player type:Firm (3) Round: 1 Player type:Firm (3)

Submit a price/quantity in a specific market

- 1. Select the market you want to trade in.
- 2. Type a price and quantity, and then click to sell and to buy.

Buy

3. The limit order book shows outstanding limit orders for a specific market.

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Username: Ar Id: 18 Identity: 2	Username: Clara Id: 19 Identity: 3
Plastics Vision of the second of the se	Paper History Name 19:20:19 (24 19:20:18 (24 Total Asset Value 718.61 0 Old Market 0 0 Paper 5.35 5.35 Submitted buy order Price Quantity Cumulative Price 19 Firm View more history Total Asset name Valuation Endowment Sell Buy Summary data Asset name Valuation Endowment Sell orders Buy prices Bid (Quantity) Ask (Quantity) Trading price (Quantity) Plastics 9.16 10 0 (0) 5 (2) Metals 8.21 10 Paper 5.35 10 3 (18) 6 (3) Price Quantity Trading price (Quantity) Price Quantity Revenue/Cost Duration Price Quantity Buyer ID Buyer Type Seller ID Seller Type Time
Player type:Firm (2)	Player type:Firm (3)
Round: 1	Round: 1

Trading window description

 Limit order book shows all outstanding sell orders in red and all outstanding buy orders in green.
 Summary data shows the bid (ask) in green (red).

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E History			THE	FL imit ord	ler book —				F History					
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Name	19:20:19 (7	19:20:18 (7		Price	Quantity	Cumulative	Player in	Player type	Name 19:20:19 (7 19:20:18 (7 Price Quantity Cumulative Player id Player typ)e				
Total Asset Value	519.38	0		1.2	2	0	11/	Firm (1) Firm (3)	Total Asset Value 519.38 0 7.2 2 0 17 Firm (1)					
Paper	0.52	0.52		6.1	4	5	(17)	Firm (1)	Difference 0 0 1 7 3 2 19 Firm (3)	\mathbb{H}				
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	/			3.6	1	3	18	Firm						
				0.3	2	4	17	Firm	. Difference – undated asset value					
-	Sell orde	rs show tota	il outsta	nding	quanti	ty submi	tted by	a subject ar						
View more history	the brack	tets, total va	alue of a	ll subj	ject's (l	Manuel's) sell or	ders. There	<u>re after a trade – previous total</u>					
their more motory	<u>six sell or</u>	ders for \$3	8.8.						View more bistoria to Value					
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Cash 39	of all sur	mitted by	orders	is \$0.6	and is	written i	in brack	Kêtš. Buy						
r Summary data				- 81					Cash 399.4 Duration 600 Price 0.3 Quar lity 2 Sell	Buy				
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Plastics	0.78 1	0						5 (2)	Asset name Valuation Endowment Sell orders Buy orders Bid (Quantity) Ask (Quantity) Trading price (Qua	ntity)				
Metals	1.72 1	0							Plastics 0.78 10 5 (2)					
Glass	8.92 1	0					_		Metals 1.72 10					
Paper	0.52	4 6 (38.8)	2 (0.6		5 (3)	6.1 (4)			Glass 8.92 10					
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r Subject's own limit o	rders	1¢r:	Transaction his	tory —										
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			Player type	:Firm (1)										
						Round: 1			Player type:Firm (1)					

Trading

 To buy/sell directly select the best order by clicking on the price of the order and click Buy / Sell .
 Summary data and Transaction history show the executed order.

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Username: Ari Id: 18 Identity: 2	Disemanie. An Id: 16 Identity. 2					
Paper	r History					
Limit order book	Name 00:29:17 (7) 20:27:27 (1 19:20:19 (1 Price Quantity Cumulative Player id Player type					
Name 20:27:27 (1., 19:20:18 (1., 19:20:18 (1., Price Quantity Cumulative Player id Player type	Total Asset Val 675.23 668.3 663.36 5 3 0 18 Firm					
Total Asset Val 668.3 663.36 0 7 3 0 19 Firm (3)	Difference 11.86 4.94 0 3.6 1 3 18 Firm					
Paper 9.31 9.31 9.31 3.6 3 18						
Price \$7 was selected and by clicking on Buy.						
the price of which have and and encourted in W7						
the price at which buy prder is executed is \$7						
(i.e. the highest outstanding sell limit order price	View more history					
Vièw more history						
	Sell Buy					
Cash 391.4 Duration 800.000 Price 7 Quantity 3 SII Buy	r summary days					
r Summerv deta	Asset name Variation Endowment Sell orders Buy orders Pid (Quantity) Ask (Quantity) Trading price (Quantity)					
Asset name Valuation Endowment Sell orders Buy orders Bid (Quantity) Ask (Quantity) Trading price (Quantity)	Plastics 2.53 8 5 (2)					
Plastics 2.53 8 5 (2)	Metals 6.93 10					
Metais 6.93 10	Paper 9.31 13 4 (18.6) 5 (3) 7 (3)					
Paper 9.31 10 0 (0) 4 (18.6) 5 (3) 7 (3)						
	r Subject's own limit orders					
r Subject's own limit orders	Price Quantity Revenue\Cost Duration Price Quantity Buyer ID Buyer Ty., Seller ID Seller Ty., Time					
Price Quantity Revenue\Cost Duration Price Quantity Buyer ID Buyer Ty. Seller ID Seller Ty. Time	5 3 15 787801 x 7 3 18 Firm (2) 19 Firm (3) 00:29:16					
5 3 15 787842 x	3.6 1 3.6 787823 x					
<u>3.6 1 3.6 787863 x</u>						
	Player type:Firm (2)					
Player type:Firm (2)	Round: 1					
Round: 1						

Trading in a different market

- 1. Summary data shows last trading price(quantity) for each market.
- 2. Transaction history shows all transactions for the selected market (in our example it shows "Glass" market)

listory					Gla	Limit ord	er book —			
Name	08:37:5	6 (25) 00:29	:17 (29	. 20:27:2	27 (43	Price	Quantity	Cumulative	Player id	Player type
Total Asset Va	alue 750	73 7	37.03	732	.09	7.3	1	0	20	Firm (4)
Difference	32.	13 1	8.43	13.	.49	6	2	0	17	Firm
Glass	9.1	4	9.14	9.	14	5	6	2	19	Firm
View more hist	lory									Sell
Cash ummary data —	345	Duration	80,	000	Price		6.4	Quantity	5	
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Cash ummary data — Asset name Plastics Metals Glass Paper ubject's own lim Price Quanti 5 6	Valuation 9.16 8.21 9.14 5.35 hit orders ty Revenue 30	Endowmen 13 10 15 7 Cost Durati 7963	80, t Sell 0	orders (0) (0) (7) (ransa Pri 6.	Price Buy ord 6 (30) 0 (0) httion histor ce Q 4	ry	6.4 6 (2) 5 (3) Buyer ID 19	Ask (Quantity	5 ty) Tradi	ng price (Quantit 5 (2) 6.4 (5) 7 (3) ler Type Tim rm (4) 08:37

Price \$6.4 and quantity 5 was selected and by clicking on **Buy**, buyer (id = 19) bought glass from seller id = 20. Her cash decreased to \$345. Her current total asset value is \$750.73 = 370 + 9.16*13 + 8.21*10 + 9.14*15+ 7*5.35.

Summary page for trading game

ComLabGames - Client

Username: Simone Id: 20 Identity: 4

Player ID	Final Total Asset Value	Initial Total Asset Value	Difference	Q(Plastics)	Q(Metal)	Q(Glass)	Q(Paper)
17	519.38	519.38	0	10	10	10	10
18	675.23	663.36	11.86	8	10	10	13
19	752.57	718.61	33.97	13	10	16	7
20	611.62	599.47	12.15	9	10	4	10

Market		nd: 1		Continu	2					
Player type:Firm (4)										
Game is ove	Game is over!									