

Appendices

Appendix A: Computing the GINI coefficient of glutinous rice assemblers

Traders	(P _i)	Sold volume	% of Total	(S _i)	P _{i-1}	S _{i-1}	S _i * P _{i-1}	S _{i-1} *P _i	$\frac{S_i * P_{i-1}}{-S_{i-1} * P_i}$
1	2.13	2,450	3.80	3.80	0	0	0	0	0
2	4.26	2,300	3.57	7.37	2.13	3.80	15.68	16.18	0.50
3	6.38	2,300	3.57	10.94	4.26	7.37	46.55	47.05	0.50
4	8.51	2,150	3.34	14.28	6.38	10.94	91.13	93.11	1.98
5	10.64	2,050	3.18	17.46	8.51	14.28	148.58	151.88	3.30
6	12.77	2,050	3.18	20.64	10.64	17.46	219.57	222.87	3.30
7	14.89	2,040	3.17	23.81	12.77	20.64	303.89	307.39	3.50
8	17.02	1,980	3.07	26.88	14.89	23.81	400.31	405.19	4.89
9	19.15	1,950	3.03	29.90	17.02	26.88	509.00	514.68	5.68
10	21.28	1,860	2.89	32.79	19.15	29.90	627.90	636.25	8.35
11	23.40	1,830	2.84	35.63	21.28	32.79	758.09	767.43	9.34
12	25.53	1,750	2.72	38.35	23.40	35.63	897.45	909.70	12.25
13	27.66	1,650	2.56	40.91	25.53	38.35	1,044.42	1,060.63	16.21
14	29.79	1,580	2.45	43.36	27.66	40.91	1,199.27	1,218.48	19.22
15	31.91	1,560	2.42	45.78	29.79	43.36	1,363.63	1,383.77	20.14
16	34.04	1,560	2.42	48.20	31.91	45.78	1,538.29	1,558.43	20.14
17	36.17	1,460	2.27	50.47	34.04	48.20	1,717.98	1,743.40	25.42
18	38.30	1,450	2.25	52.72	36.17	50.47	1,906.74	1,932.72	25.98
19	40.43	1,450	2.25	54.97	38.30	52.72	2,105.08	2,131.06	25.98
20	42.55	1,420	2.20	57.17	40.43	54.97	2,311.11	2,338.97	27.87
21	44.68	1,420	2.20	59.37	42.55	57.17	2,526.51	2,554.38	27.87
22	46.81	1,350	2.09	61.47	44.68	59.37	2,746.44	2,779.16	32.72
23	48.94	1,350	2.09	63.56	46.81	61.47	2,975.29	3,008.01	32.72
24	51.06	1,340	2.08	65.64	48.94	63.56	3,212.29	3,245.77	33.48

25	53.19	1,320	2.05	67.69	51.06	65.64	3,456.56	3,491.62	35.06
26	55.32	1,280	1.99	69.68	53.19	67.69	3,706.24	3,744.60	38.37
27	57.45	1,260	1.96	71.63	55.32	69.68	3,962.65	4,002.73	40.08
28	59.57	1,260	1.96	73.59	57.45	71.63	4,227.39	4,267.47	40.08
29	61.70	1,250	1.94	75.53	59.57	73.59	4,499.52	4,540.53	41.01
30	63.83	1,220	1.89	77.42	61.70	75.53	4,777.03	4,820.91	43.88
31	65.96	1,200	1.86	79.28	63.83	77.42	5,060.62	5,106.48	45.86
32	68.09	1,200	1.86	81.15	65.96	79.28	5,352.13	5,398.00	45.86
33	70.21	1,200	1.86	83.01	68.09	81.15	5,651.57	5,697.43	45.86
34	72.34	1,190	1.85	84.85	70.21	83.01	5,957.84	6,004.79	46.95
35	74.47	1,100	1.71	86.56	72.34	84.85	6,261.87	6,318.92	57.05
36	76.60	1,100	1.71	88.27	74.47	86.56	6,573.16	6,630.22	57.05
37	78.72	1,000	1.55	89.82	76.60	88.27	6,879.83	6,948.77	68.94
38	80.85	1,000	1.55	91.37	78.72	89.82	7,193.10	7,262.04	68.94
39	82.98	950	1.47	92.85	80.85	91.37	7,506.70	7,581.92	75.21
40	85.11	940	1.46	94.30	82.98	92.85	7,825.29	7,901.79	76.50
41	87.23	750	1.16	95.47	85.11	94.30	8,124.99	8,226.59	101.60
42	89.36	750	1.16	96.63	87.23	95.47	8,429.65	8,531.24	101.60
43	91.49	520	0.81	97.44	89.36	96.63	8,707.36	8,840.85	133.49
44	93.62	500	0.78	98.22	91.49	97.44	8,985.66	9,121.99	136.33
45	95.74	450	0.70	98.91	93.62	98.22	9,260.01	9,403.60	143.59
46	97.87	400	0.62	99.53	95.74	98.91	9,529.89	9,680.92	151.02
47	100.00	300	0.47	100.00	97.87	99.53	9,787.23	9,953.45	166.21
Sum								2,121.9	

GINI = 0.212191

Appendix B: Computing the GINI coefficient of glutinous rice dryers

Traders	(P _i)	Sold volume	% of Total	(S _i)	P _{i-1}	S _{i-1}	S _i * P _{i-1}	S _{i-1} *P _i	$\frac{S_i * P_{i-1}}{-S_{i-1} * P_i}$
1	2.56	3,100	5.05	5.05	0	0	0	0	0
2	5.13	3,000	4.89	9.94	2.56	5.05	25.48	25.90	0.42
3	7.69	2,900	4.72	14.66	5.13	9.94	75.18	76.43	1.25
4	10.26	2,650	4.32	18.98	7.69	14.66	145.98	150.36	4.39
5	12.82	2,500	4.07	23.05	10.26	18.98	236.40	243.30	6.89
6	15.38	2,500	4.07	27.12	12.82	23.05	347.71	354.61	6.89
7	17.95	2,450	3.99	31.11	15.38	27.12	478.65	486.80	8.14
8	20.51	2,350	3.83	34.94	17.95	31.11	627.14	638.21	11.07
9	23.08	2,050	3.34	38.28	20.51	34.94	785.23	806.32	21.09
10	25.64	1,980	3.23	41.51	23.08	38.28	957.81	981.53	23.72
11	28.21	1,950	3.18	44.68	25.64	41.51	1,145.68	1,170.66	24.98
12	30.77	1,900	3.09	47.78	28.21	44.68	1,347.54	1,374.82	27.27
13	33.33	1,900	3.09	50.87	30.77	47.78	1,565.28	1,592.55	27.27
14	35.90	1,800	2.93	53.80	33.33	50.87	1,793.45	1,826.16	32.70
15	38.46	1,800	2.93	56.74	35.90	53.80	2,036.66	2,069.37	32.70
16	41.03	1,790	2.92	59.65	38.46	56.74	2,294.28	2,327.62	33.33
17	43.59	1,650	2.69	62.34	41.03	59.65	2,557.50	2,600.19	42.69
18	46.15	1,560	2.54	64.88	43.59	62.34	2,828.11	2,877.19	49.08
19	48.72	1,550	2.52	67.41	46.15	64.88	3,111.01	3,160.83	49.83
20	51.28	1,500	2.44	69.85	48.72	67.41	3,402.88	3,456.67	53.80
21	53.85	1,280	2.09	71.93	51.28	69.85	3,688.90	3,761.07	72.17
22	56.41	1,270	2.07	74.00	53.85	71.93	3,984.74	4,057.79	73.05
23	58.97	1,250	2.04	76.04	56.41	74.00	4,289.35	4,364.24	74.89
24	61.54	1,250	2.04	78.07	58.97	76.04	4,604.40	4,679.29	74.89
25	64.10	1,220	1.99	80.06	61.54	78.07	4,926.89	5,004.78	77.90
26	66.67	1,200	1.95	82.02	64.10	80.06	5,257.48	5,337.46	79.98
27	69.23	1,200		83.97			5,598.09	5,678.07	79.98

			1.95		66.67	82.02			
28	71.79	1,200	1.95	85.93	69.23	83.97	5,948.73	6,028.71	79.98
29	74.36	1,200	1.95	87.88	71.79	85.93	6,309.39	6,389.37	79.98
30	76.92	1,100	1.79	89.67	74.36	87.88	6,667.96	6,760.06	92.10
31	79.49	1,000	1.63	91.30	76.92	89.67	7,023.19	7,127.82	104.63
32	82.05	950	1.55	92.85	79.49	91.30	7,380.30	7,491.41	111.10
33	84.62	900	1.47	94.32	82.05	92.85	7,738.67	7,856.45	117.78
34	87.18	750	1.22	95.54	84.62	94.32	8,083.88	8,222.34	138.46
35	89.74	590	0.96	96.50	87.18	95.54	8,412.63	8,573.81	161.18
36	92.31	560	0.91	97.41	89.74	96.50	8,741.92	8,907.49	165.57
37	94.87	550	0.90	98.31	92.31	97.41	9,074.39	9,241.46	167.07
38	97.44	540	0.88	99.19	94.87	98.31	9,409.91	9,578.52	168.62
39	100.00	500	0.81	100.00	97.44	99.19	9,743.59	9,918.55	174.96
Sum								2551.8	

GINI = 0.25518

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Appendix C: Computing the GINI coefficient of glutinous rice millers

Traders	(P_i)	Sold volume	% of Total	(S_i)	P_{i-1}	S_{i-1}	$S_i * P_{i-1}$	$S_{i-1} * P_i$	$S_i * P_{i-1} - S_{i-1} * P_i$
1	4.17	25,000	9.34	9.34	0	0	0	0	0
2	8.33	24,500	9.16	18.50	4.17	9.34	77.07	77.85	0.78
3	12.50	20,000	7.47	25.97	8.33	18.50	216.43	231.22	14.79
4	16.67	18,500	6.91	32.88	12.50	25.97	411.06	432.86	21.80
5	20.83	18,000	6.73	39.61	16.67	32.88	660.19	685.10	24.91
6	25.00	17,600	6.58	46.19	20.83	39.61	962.26	990.28	28.03
7	29.17	17,500	6.54	52.73	25.00	46.19	1,318.20	1,347.16	28.96
8	33.33	12,000	4.48	57.21	29.17	52.73	1,668.69	1,757.60	88.91
9	37.50	12,000	4.48	61.70	33.33	57.21	2,056.55	2,145.46	88.91
10	41.67	10,500	3.92	65.62	37.50	61.70	2,460.76	2,570.69	109.93
11	45.83	9,500	3.55	69.17	41.67	65.62	2,882.10	3,007.60	125.50
12	50.00	9,000	3.36	72.53	45.83	69.17	3,324.46	3,458.52	134.06
13	54.17	8,900	3.33	75.86	50.00	72.53	3,792.97	3,928.91	135.93
14	58.33	8,600	3.21	79.07	54.17	75.86	4,283.13	4,425.14	142.00
15	62.50	7,600	2.84	81.91	58.33	79.07	4,778.28	4,942.08	163.80
16	66.67	7,500	2.80	84.72	62.50	81.91	5,294.75	5,460.89	166.14
17	70.83	5,800	2.17	86.88	66.67	84.72	5,792.23	6,000.72	208.49
18	75.00	5,600	2.09	88.98	70.83	86.88	6,302.47	6,516.26	213.78
19	79.17	5,500	2.06	91.03	75.00	88.98	6,827.35	7,043.94	216.59
20	83.33	5,500	2.06	93.09	79.17	91.03	7,369.36	7,585.95	216.59
21	87.50	5,000	1.87	94.96	83.33	93.09	7,912.93	8,145.09	232.16
22	91.67	4,800	1.79	96.75	87.50	94.96	8,465.53	8,704.22	238.70
23	95.83	4,500	1.68	98.43	91.67	96.75	9,022.80	9,271.77	248.97
24	100.00	4,200	1.57	100.00	95.83	98.43	9,583.33	9,843.05	259.72
Sum									3,109.4

GINI = 0.3109

Appendix D: Computing the GINI coefficient of glutinous rice wholesalers

Traders	(P _i)	Sold volume	% of Total	(S _i)	P _{i-1}	S _{i-1}	S _i * P _{i-1}	S _{i-1} *P _i	$\frac{S_i * P_{i-1}}{-S_{i-1} * P_i}$
1	5.56	23,200	8.933	8.93					
2	11.11	22,300	8.59	17.52	5.56	8.93	97.33	99.26	1.93
3	16.67	21,100	8.12	25.64	11.11	17.52	284.94	292.00	7.06
4	22.22	20,800	8.01	33.65	16.67	25.64	560.90	569.89	8.98
5	27.78	20,700	7.97	41.62	22.22	33.65	925.00	934.84	9.84
6	33.33	18,400	7.09	48.71	27.78	41.62	1,353.06	1,387.50	34.44
7	38.89	17,600	6.78	55.49	33.33	48.71	1,849.57	1,894.28	44.71
8	44.44	15,300	5.89	61.38	38.89	55.49	2,386.94	2,466.09	79.15
9	50.00	13,400	5.16	66.54	44.44	61.38	2,957.26	3,068.93	111.67
10	55.56	12,500	4.81	71.35	50.00	66.54	3,567.58	3,696.57	128.99
11	61.11	11,800	4.54	75.90	55.56	71.35	4,216.40	4,360.37	143.97
12	66.67	10,900	4.20	80.09	61.11	75.90	4,894.54	5,059.68	165.15
13	72.22	10,500	4.04	84.14	66.67	80.09	5,609.04	5,784.45	175.42
14	77.78	9,500	3.66	87.79	72.22	84.14	6,340.65	6,543.88	203.23
15	83.33	9,300	3.58	91.37	77.78	87.79	7,106.92	7,316.13	209.22
16	88.89	8,800	3.39	94.76	83.33	91.37	7,896.93	8,122.19	225.26
17	94.44	8,400	3.23	98.00	88.89	94.76	8,710.91	8,949.86	238.95
18	100.00	5,200	2.00	100.00	94.44	98.00	9,444.44	9,799.77	355.32
Sum									2,143.2

$$\text{GINI} = 0.2143$$

Note that: (P_i): Cumulative percentage of glutinous rice traders

(S_i): Cumulative percentage of volume glutinous rice bought

Appendix E: Descriptive statistics of assemblers' characteristics

	Mean	Min	Max	Std. Error of Mean	Variance	Std. Error of Kurtosis	Std. Deviation	N
Total amount bought (tons)	1371	300.	2450	76.21	272983.62	.681	522.47	47
Price bought (VND per kg)	2511	2093	2676	14.65	10091.83	.681	100.45	47
Marketing Cost (1000VND per ton)	103	94	117	.72	24.62	.681	4.96	47

Appendix F: Descriptive statistics of dryers' characteristics

	Mean	Min	Max	Std. Error of Mean	Variance	Std. Error of Kurtosis	Std. Deviation	N
Total amount bought (tons)	1574	500	3100	115.25	518077.46	.74	719.77	39
Price bought (VND per kg)	2655	2523	2773	11.03	4747.06	.74	68.89	39
Marketing Cost (1000VND per ton)	72	67.	78	.3	5.64	.74	2.37	39

Appendix G: Descriptive statistics of millers' characteristics

	Mean	Min	Max	Std. Error of Mean	Variance	Std. Error of Kurtosis	Std. Deviation	N
Total amount bought (tons)	11150	4200	25000	1326.89	42255652.17	.91	6500.43	24
Price bought (VND per kg)	4035	3546	4253	28.69	19768.43	.91	140.60	24
Marketing Cost (1000VND per ton)	150	143	155	.69	11.58	.91	3.40	24

Appendix K: Descriptive statistics of wholesalers' characteristics

	Mean	Min	Max	Std. Error of Mean	Variance	Std. Error of Kurtosis	Std. Deviation	N
Total amount bought (tons)	14427	5200	23200	1320.12	31369183.00	1.03	5600.81	18
Price bought (VND per kg)	6257	6080	6530	31.08	17390.85	1.03	131.87	18
Marketing Cost (1000VND per ton)	113	106	119	.82	12.19	1.03	3.49	18

Appendix L: Marketing cost and profit margin of traders by small-scale-level.

Traders	Cost and price	Total marketing margin	Total marketing cost	Profit margin	
				Amount	% of total cost
Assemblers					
		134,000	109,700	24,300	0.93
1. Average buying price	2,517,000				
2. Total marketing cost	109,700				
3. Total cost (3=1+2)	2,626,700				
4. Average selling cost	2,651,000				
Dryers					
		776,000	691,640	84,360	2.52
1. Average buying price	2,657,000				
2. Total marketing cost	73,700				
3. Losses by reduce moisture content (18%)	617,940				
4. Total cost (4=1+2+3)	3,348,640				
5. Average selling cost	3,433,000				
Millers					
		2,210,000	2,152,480	57,520	0.93
1. Average buying price	4,039,000				
2. Total marketing cost	152,800				
3. Losses by conversion ratio (32%)	1,999,680				
4. Total cost (4=1+2+3)	6,191,480				
5. Average selling cost	6,249,000				
Wholesalers					
		187,000	116,200	70,800	1.11
1. Average buying price	6,259,000				
2. Total marketing cost	116,200				
3. Total cost (3=1+2)	6,375,200				
4. Average selling cost	6,446,000				

Appendix M: Marketing cost and profit margin of traders by medium-scale-level.

Traders	Cost and price	Total marketing margin	Total marketing cost	Profit margin	
				Amount	% of total cost
Assemblers					
		140,000	102,200	37,800	1.45
1. Average buying price	2,511,000				
2. Total marketing cost	102,200				
3. Total cost (3=1+2)	2,613,200				
4. Average selling cost	2,651,000				
Dryers					
		779,000	689,320	89,680	2.68
1. Average buying price	2,655,000				
2. Total marketing cost	71,200				
3. Losses by reduce moisture content (18%)	618,120				
4. Total cost (4=1+2+3)	3,344,320				
5. Average selling cost	3,434,000				
Millers					
		2,214,500	2,148,940	65,560	1.06
1. Average buying price	4,035,000				
2. Total marketing cost	149,100				
3. Losses by conversion ratio (32%)	1,999,840				
4. Total cost (4=1+2+3)	6,183,940				
5. Average selling cost	6,249,500				
Wholesalers					
		189,000	112,200	76,800	1.21
1. Average buying price	6,257,000				
2. Total marketing cost	112,200				
3. Total cost (3=1+2)	6,369,200				
4. Average selling cost	6,446,000				

Appendix N: Marketing cost and profit margin of traders by large-scale-level.

Traders	Cost and price	Total marketing margin	Total marketing cost	Profit margin	
				Amount	% of total cost
Assemblers					
		141,000	98,300	42,700	1.64
1. Average buying price	2,510,000				
2. Total marketing cost	98,300				
3. Total cost (3=1+2)	2,608,300				
4. Average selling cost	2,651,000				
Dryers					
		780,500	692,810	87,690	2.62
1. Average buying price	2,654,000				
2. Total marketing cost	74,600				
3. Losses by reduce moisture content (18%)	618,210				
4. Total cost (4=1+2+3)	3,346,810				
5. Average selling cost	3,434,500				
Millers					
		2,215,500	2,150,600	64,900	1.05
1. Average buying price	4,034,500				
2. Total marketing cost	150,600				
3. Losses by conversion ratio (32%)	2,000,000				
4. Total cost (4=1+2+3)	6,185,100				
5. Average selling cost	6,250,000				
Wholesalers					
		190,500	111,300	79,200	1.24
1. Average buying price	6,256,000				
2. Total marketing cost	111,300				
3. Total cost (3=1+2)	6,367,300				
4. Average selling cost	6,446,500				

Curriculum Vitae

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