

Chapter 2

Appendix B: Longline model parameter estimates

Model Summary	
Model Variables	3
Parameters	107
Equations	3
Number of Statements	194

Note: The parameter beta12 is shared by 2 of the equations to be estimated.

Note: The parameter beta13 is shared by 2 of the equations to be estimated.

Note: The parameter beta23 is shared by 2 of the equations to be estimated.

The 3 Equations to Estimate	
redgrplbs =	F(alpha1, beta11, beta12, beta13, a1, a2, a3, a4, a5, a6, a7, a8, a9, c1, d1, e1, z1, j1, m2a, m3a, m4a, m5a, m6a, m7a, m8a, m9a, m10a, m11a, m12a, g1, g2, g3, mx1, y2, y3)
swgrplbs =	F(beta12, alpha2, beta22, beta23, a10, a11, a12, a13, a14, a15, a16, a17, a18, c2, d2, e2, z2, j2, m2b, m3b, m4b, m5b, m6b, m7b, m8b, m9b, m10b, m11b, m12b, g5, g6, g7, mx2, y5, y6)
l_misclbs =	F(beta13, beta23, alpha3(esf_a2), beta33(esf_a1), a19, a20, a21, a22, a23, a24, a25, a26, a27, c3, d3, e3, z3, j3, m2c, m3c, m4c, m5c, m6c, m7c, m8c, m9c, m10c, m11c, m12c, g9, g10, g11, mx3, y8, y9)

Observations will be weighted by	inv
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NOTE: At FIML Iteration 0 CONVERGE=0.001 Criteria Met.

Data Set Options	
DATA=	NEW9
OUT=	LREST
OUTEST=	LFIN

Minimization Summary	
Parameters Estimated	102
Method	Gauss
Hessian	GLS
Covariance Estimator	Cross
Iterations	0

Final Convergence Criteria	
R	7.805E-6
PPC(beta12)	0.001566
RPC	.
Object	.
Trace(S)	245903.3
Gradient norm	2.5E-12
Log likelihood	-115304

Observations Processed	
Read	4335
Solved	4335

Nonlinear FIML Summary of Residual Errors							
Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq
redgrplbs	34	4301	4.3314E8	100707	317.3	0.3807	0.3759
swgrplbs	34	4301	1.2337E8	28684.2	169.4	0.2073	0.2012
l_misclbs	34	4301	5.0948E8	118456	344.2	0.1970	0.1908

Nonlinear FIML Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > t
alpha1	-11.0978	1.4775	-7.51	<.0001
beta11	584.4821	123.4	4.74	<.0001
beta12	-129.741	99.5708	-1.30	0.1926
beta13	-65.3452	25.5266	-2.56	0.0105
a1	52.891	169.7	0.31	0.7553
a2	90.27728	54.5083	1.66	0.0978
a3	132.0686	50.4295	2.62	0.0089
a4	148.4518	48.2471	3.08	0.0021
a5	217.1422	46.3563	4.68	<.0001
a6	193.8976	48.5302	4.00	<.0001
a7	47.28764	58.7311	0.81	0.4208
a8	17.37914	53.9162	0.32	0.7472
a9	-56.6514	84.7403	-0.67	0.5038
c1	-184.158	49.9112	-3.69	0.0002
d1	-384.685	125.1	-3.07	0.0021
e1	93.81104	22.3329	4.20	<.0001
z1	-0.22795	0.0525	-4.34	<.0001

Nonlinear FIML Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > t
j1	0.173122	2.2549	0.08	0.9388
m2a	-55.1146	29.3979	-1.87	0.0609
m3a	-100.634	31.7367	-3.17	0.0015
m4a	-47.519	24.3958	-1.95	0.0515
m5a	-90.6397	28.3590	-3.20	0.0014
m6a	-61.3235	24.6018	-2.49	0.0127
m7a	-104.946	25.5661	-4.10	<.0001
m8a	-96.2745	28.8022	-3.34	0.0008
m9a	-88.1003	36.6604	-2.40	0.0163
m10a	-15.9322	25.7010	-0.62	0.5354
m11a	-11.1121	27.6592	-0.40	0.6879
m12a	-30.6702	30.4477	-1.01	0.3138
g1	-45.754	33.1444	-1.38	0.1675
g2	12.29663	39.5525	0.31	0.7559
g3	-15.4488	27.1363	-0.57	0.5692
mx1	-93.1365	45.3558	-2.05	0.0401
y2	-25.6861	18.9674	-1.35	0.1757
y3	-20.6623	16.4813	-1.25	0.2100
alpha2	0.564535	0.6456	0.87	0.3820
beta22	204.901	94.2646	2.17	0.0298
beta23	12.51757	18.0657	0.69	0.4884
a10	66.91073	37.0232	1.81	0.0708
a11	46.06344	22.1802	2.08	0.0379
a12	52.97429	23.0811	2.30	0.0218

Nonlinear FIML Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > t
a13	77.85235	22.1556	3.51	0.0004
a14	78.58377	21.5591	3.65	0.0003
a15	99.40517	21.9136	4.54	<.0001
a16	67.28472	25.0362	2.69	0.0072
a17	40.38138	23.6707	1.71	0.0881
a18	-20.236	33.4866	-0.60	0.5457
c2	-86.8883	41.0684	-2.12	0.0344
d2	-136.85	88.4986	-1.55	0.1221
e2	22.43947	12.2512	1.83	0.0671
z2	-0.0846	0.0267	-3.17	0.0016
j2	-0.03308	1.4677	-0.02	0.9820
m2b	-29.4669	14.1813	-2.08	0.0378
m3b	-24.5222	14.8708	-1.65	0.0992
m4b	-15.634	11.7481	-1.33	0.1833
m5b	-35.4489	13.1662	-2.69	0.0071
m6b	-16.8242	11.7752	-1.43	0.1531
m7b	-49.0264	13.0579	-3.75	0.0002
m8b	-58.6691	16.2095	-3.62	0.0003
m9b	-64.2687	22.2246	-2.89	0.0038
m10b	-27.7629	14.0324	-1.98	0.0479
m11b	-22.873	13.2705	-1.72	0.0849
m12b	-15.7292	14.8910	-1.06	0.2909
g5	40.59907	13.3010	3.05	0.0023
g6	-80.8546	30.7554	-2.63	0.0086

Nonlinear FIML Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > t
g7	-11.8162	12.2766	-0.96	0.3359
mx2	30.37003	20.3107	1.50	0.1349
y5	-24.5433	9.1188	-2.69	0.0071
y6	-8.35394	8.2613	-1.01	0.3120
alpha3	-7.15934	1.9854	-3.61	0.0003
beta33	394.4959	47.6186	8.28	<.0001
a19	19.41328	30.5729	0.63	0.5255
a20	-274.233	16.8985	-16.23	<.0001
a21	-221.609	30.3789	-7.29	<.0001
a22	-232.284	34.8709	-6.66	<.0001
a23	-307.635	33.5191	-9.18	<.0001
a24	-316.924	51.2166	-6.19	<.0001
a25	-136.346	34.6652	-3.93	<.0001
a26	-95.8506	37.2141	-2.58	0.0100
a27	-34.3777	47.3596	-0.73	0.4679
c3	238.5754	24.7573	9.64	<.0001
d3	373.1588	61.1053	6.11	<.0001
e3	-84.1884	39.6717	-2.12	0.0339
z3	0.138661	0.0337	4.12	<.0001
j3	-3.55343	3.5816	-0.99	0.3212
m2c	-21.0557	29.9102	-0.70	0.4815
m3c	80.33252	28.2248	2.85	0.0044
m4c	42.93565	26.5783	1.62	0.1063
m5c	29.77663	30.6510	0.97	0.3314

Nonlinear FIML Parameter Estimates				
Parameter	Estimate	Approx Std Err	t Value	Approx Pr > t
m6c	40.57716	31.8482	1.27	0.2027
m7c	122.15	22.3264	5.47	<.0001
m8c	39.85997	36.6765	1.09	0.2772
m9c	117.5159	49.9723	2.35	0.0187
m10c	32.29677	40.6083	0.80	0.4265
m11c	10.38093	40.5194	0.26	0.7978
m12c	9.758166	39.7091	0.25	0.8059
g9	13.01238	36.5397	0.36	0.7218
g10	32.14804	53.8406	0.60	0.5505
g11	47.73718	29.4459	1.62	0.1051
mx3	397.4728	27.7559	14.32	<.0001
y8	38.54461	20.6815	1.86	0.0624
y9	-3.35261	19.5010	-0.17	0.8635

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Own-price supply elasticity of r	0.339924	0.1910	1.78	0.0752	$(-0.5) * (\beta_{12} * \sqrt{x_{pswgrp}/x_{predgrp}}) + \beta_{13} * \sqrt{x_{l_pmisc}/x_{predgrp}}) * (x_{esf_a1}/x_{redgrplbs})$

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Own-price supply elasticity of s	0.497411	0.4192	1.19	0.2355	$(-0.5) * (\beta_{12} * \sqrt{x_{predgrp} / x_{pswgrp}} + \beta_{23} * \sqrt{x_{l_pmisc} / x_{pswgrp}}) * (x_{esf_a1} / x_{swgrplbs})$

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Own-price supply elasticity of o	0.219431	0.1028	2.14	0.0328	$(-0.5) * (\beta_{13} * \sqrt{x_{predgrp} / x_{l_pmisc}} + \beta_{23} * \sqrt{x_{pswgrp} / x_{l_pmisc}}) * (x_{esf_a1} / x_{l_misclbs})$

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price red grouper wrt sw g	-0.24523	0.1882	-1.30	0.1926	$(0.5) * (\beta_{12} * \sqrt{x_{pswgrp} / x_{predgrp}}) * (x_{esf_a1} / x_{redgrplbs})$

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price red grouper wrt misc	-0.09469	0.0370	-2.56	0.0105	$(0.5) * (\beta_{13} * \sqrt{x_{l_pmisc} / x_{predgrp}}) * (x_{esf_a1} / x_{redgrplbs})$

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price sw grouper wrt red g	-0.54191	0.4159	-1.30	0.1926	(0.5)*(beta12*sqrt(xpredgrp/xpswgrp))* (xesf_a1/xswgrplbs)

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price sw grouper wrt misc	0.044496	0.0642	0.69	0.4884	(0.5)*(beta23*sqrt(xl_pmisc/xpswgrp))* (xesf_a1/xswgrplbs)

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price misc wrt red	-0.27869	0.1089	-2.56	0.0105	(0.5)*(beta13*sqrt(xpredgrp/xl_pmisc))* (xesf_a1/xl_misclbs)

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Cross-price misc wrt sw grouper	0.059262	0.0855	0.69	0.4884	(0.5)*(beta23*sqrt(xpswgrp/xl_pmisc))* (xesf_a1/xl_misclbs)

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Scale of red grouper	0.700795	0.1950	3.59	0.0003	(xesf_a1/xredgrplbs)*(2*alpha1*xesf_a1+ beta11+beta12*sqrt(xpswgrp/xpredgrp)+beta13*sqrt(xl_pmisc/xpredgrp))

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Scale of sw grouper	0.989693	0.2403	4.12	<.0001	(xesf_a1/xswgrplbs)*(2*alpha2*xesf_a1+beta22+beta12*sqrt(xpredgrp/xpswgrp)) +beta23*sqrt(xl_pmisc /xpswgrp))

Nonlinear FIML Estimates					
Term	Estimate	Approx Std Err	t Value	Approx Pr > t	Label
Scale of misc	1.586286	0.3021	5.25	<.0001	(xesf_a1/xl_misclbs)*(2*alpha3*xesf_a1+beta33+beta13*sqrt(xpredgrp/xl_pmisc) +beta23*sqrt(xpswgrp/xl_pmisc))

Test Results				
Test	Type	Statistic	Pr > ChiSq	Label
Test0	Wald	92.72	<.0001	alpha1, alpha2, alpha3
Test1	Wald	8.78	0.0324	beta12, beta13, beta23
Test2	Wald	107.91	<.0001	beta11,beta22,beta33
Test3	Wald	8.41	0.0149	beta12, beta13
Test4	Wald	2.13	0.3441	beta12, beta23
Test5	Wald	6.86	0.0324	beta13, beta23
Test6	Wald	45.64	<.0001	z1,z2,z3
Test7	Wald	103.62	<.0001	c1,c2,c3
Test8	Wald	46.05	<.0001	d1,d2,d3
Test9	Wald	19.14	0.0003	e1,e2,e3
Test10	Wald	1.00	0.8024	j1,j2,j3
Test11	Wald	95.25	<.0001	m2a, m3a, m4a, m5a, m6a, m7a, m8a, m9a,
Test12	Wald	341.58	<.0001	g1,g2,g3, g5,g6,g7 ,g9,g10,g11,mx1,mx2,

Test Results				
Test	Type	Statistic	Pr > ChiSq	Label
Test13	Wald	480.03	<.0001	a1,a2,a3,a4,a5,a6,a7,a8,a9,a10,a11,a12,
Test14	Wald	16.71	0.0104	y2,y3 ,y5,y6, y8,y9

Number of Observations		Statistics for System	
Used	4335	Log Likelihood	-115304
Missing	0		
Sum of Weights	351.9400		

Heteroscedasticity Test					
Equation	Test	Statistic	DF	Pr > ChiSq	Variables
redgrplbs	White's Test	261.8	462	1.0000	Cross of all vars
swgrplbs	White's Test	352.0	462	1.0000	Cross of all vars
l_misclbs	White's Test	1187	462	<.0001	Cross of all vars