Appendix A

Output Statistics

Table A.1: The effects of Sample size for estimators using only N_1 observations, given 25% degree of censoring and normally distributed error terms.

		100		200		400	
		β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
True values		1.000	1.000	1.000	1.000	1.000	1.000
OLSP	EM*	0.760	0.788	0.746	0.782	0.754	0.782
	SE	0.093	0.167	0.064	0.132	0.045	0.089
	BIAS	-0.240	-0.212	-0.254	-0.218	-0.246	-0.218
	RMSE	0.257	0.270	0.262	0.255	0.250	0.236
H2S	EM	0.989	0.991	0.986	0.985	0.998	0.995
	SE	0.190	0.234	0.150	0.185	0.099	0.124
	BIAS	-0.011	-0.009	-0.014	-0.015	-0.004	-0.005
	RMSE	0.190	0.234	0.151	0.185	0.099	0.124
WH2S	EM	0.987	0.985	0.985	0.982	0.996	0.993
	SE	0.186	0.233	0.145	0.182	0.095	0.122
	BIAS	-0.013	-0.015	-0.015	-0.018	-0.004	-0.007
	RMSE	0.186	0.234	0.146	0.182	0.095	0.123
3SE	EM	0.985	0.989	0.989	0.988	0.997	0.996
	SE	0.113	0.186	0.079	0.147	0.056	0.098
	BIAS	-0.015	-0.011	-0.011	-0.012	-0.003	-0.004
	RMSE	0.114	0.186	0.080	0.148	0.056	0.098
W3SE	EM	0.987	0.986	0.991	0.989	0.998	0.997
	SE	0.112	0.187	0.078	0.148	0.054	0.098
	BIAS	-0.013	-0.014	-0.009	-0.011	-0.002	-0.003
	RMSE	0.113	0.187	0.078	0.148	0.054	0.098
NLSP	EM	1.014	1.011	1.010	1.007	1.004	1.005
	SE	0.215	0.291	0.144	0.199	0.100	0.130
	BIAS	0.014	0.011	0.010	0.007	0.004	0.005
	RMSE	0.215	0.291	0.144	0.199	0.100	0.130

* EM=Estimated Mean, SE=Standard Error, RMSE=Root Mean Square Error.

Table A.2: The effects of Sample size for estimators using only N_1 observations, given 25% degree of censoring and chi-square distributed error terms.

		100		200		400	
		β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
True values		1.000	1.000	1.000	1.000	1.000	1.000
OLSP	EM*	0.753	0.768	0.725	0.739	0.731	0.746
	SE	0.110	0.197	0.080	0.138	0.056	0.100
	BIAS	-0.247	-0.232	-0.275	-0.261	-0.269	-0.254
	RMSE	0.271	0.304	0.286	0.296	0.275	0.273
H2S	EM	1.013	0.995	1.028	1.023	1.032	1.017
	SE	0.172	0.232	0.134	0.178	0.093	0.123
	BIAS	0.013	-0.005	0.028	0.023	0.032	0.017
	RMSE	0.173	0.232	0.138	0.181	0.098	0.124
WH2S	EM	0.999	0.978	1.007	1.003	1.015	0.999
	SE	0.183	0.247	0.144	0.193	0.100	0.132
	BIAS	-0.001	-0.022	0.007	0.003	0.015	-0.001
	RMSE	0.183	0.247	0.144	0.193	0.101	0.132
3SE	EM	0.928	0.922	0.935	0.936	0.939	0.934
	SE	0.118	0.202	0.087	0.146	0.060	0.104
	BIAS	-0.072	-0.078	-0.065	-0.064	-0.061	-0.066
	RMSE	0.138	0.216	0.109	0.159	0.085	0.123
W3SE	EM	0.900	0.886	0.907	0.902	0.912	0.897
	SE	0.129	0.222	0.096	0.161	0.064	0.116
	BIAS	-0.100	-0.114	-0.093	-0.098	-0.088	-0.103
	RMSE	0.163	0.249	0.134	0.188	0.109	0.155
NLSP	EM	1.145	1.108	1.149	1.112	1.136	1.111
	SE	0.267	0.326	0.178	0.234	0.119	0.152
	BIAS	0.145	0.108	0.149	0.112	0.136	0.111
	RMSE	0.304	0.344	0.232	0.259	0.181	0.188

* EM=Estimated Mean, SE=Standard Error, RMSE=Root Mean Square Error.

Table A.3: Results for estimators using only N_1 observations, given N=200 and 50% degree of censoring for the three distributions.

		Normal		Student's-t		Chi-Square	
		β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
True values		1.000	1.000	1.000	1.000	1.000	1.000
OLSP	EM*	0.570	0.609	0.603	0.656	0.416	0.520
	SE	0.083	0.145	0.128	0.177	0.110	0.188
	BIAS	-0.430	-0.391	-0.397	-0.344	-0.584	-0.480
	RMSE	0.438	0.417	0.416	0.386	0.594	0.516
H2S	EM	0.991	0.992	1.153	1.118	1.072	1.071
	SE	0.298	0.312	0.289	0.292	0.320	0.325
	BIAS	-0.009	-0.008	0.153	0.118	0.072	0.071
	RMSE	0.298	0.312	0.327	0.315	0.328	0.332
WH2S	EM	0.992	0.993	1.223	1.174	1.999	0.997
	SE	0.275	0.294	0.413	0.401	0.344	0.347
	BIAS	-0.008	-0.007	0.223	0.174	-0.001	-0.003
	RMSE	0.275	0.294	0.469	0.437	0.344	0.347
3SE	EM	0.993	0.996	0.973	0.967	0.862	0.897
	SE	0.114	0.175	0.138	0.191	0.130	0.207
	BIAS	-0.007	-0.004	-0.027	-0.033	-0.138	-0.103
	RMSE	0.114	0.175	0.141	0.194	0.190	0.232
W3SE	EM	0.996	0.999	0.911	0.890	0.858	0.872
	SE	0.107	0.169	0.202	0.286	0.138	0.231
	BIAS	-0.004	-0.001	-0.089	-0.110	-0.142	-0.128
	RMSE	0.107	0.169	0.221	0.306	0.198	0.264

* EM=Estimated Mean, SE=Standard Error, RMSE=Root Mean Square Error.

Table A.4: Results for estimators using only N_1 observations, given N=400 and 50% degree of censoring for the three distributions.

		Normal		Student's-t		Chi-Square	
		β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
True values		1.000	1.000	1.000	1.000	1.000	1.000
OLSP	EM*	0.561	0.622	0.576	0.668	0.423	0.548
	SE	0.058	0.107	0.095	0.120	0.076	0.127
	BIAS	-0.439	-0.378	-0.424	-0.332	-0.577	-0.452
	RMSE	0.443	0.393	0.435	0.354	0.582	0.469
H2S	EM	0.993	0.992	1.155	1.130	1.074	1.081
	SE	0.207	0.213	0.226	0.209	0.216	0.215
	BIAS	-0.007	-0.008	0.155	0.130	0.074	0.081
	RMSE	0.207	0.212	0.274	0.247	0.229	0.230
WH2S	EM	0.990	0.989	1.239	1.197	0.991	1.001
	SE	0.191	0.200	0.390	0.332	0.242	0.236
	BIAS	-0.010	-0.011	0.239	0.197	-0.009	0.001
	RMSE	0.192	0.201	0.457	0.386	0.242	0.236
3SE	EM	0.995	0.995	0.966	0.976	0.867	0.913
	SE	0.078	0.131	0.102	0.129	0.091	0.142
	BIAS	-0.005	-0.005	-0.034	-0.024	-0.133	-0.097
	RMSE	0.079	0.131	0.108	0.131	0.161	0.167
W3SE	EM	0.997	0.997	0.900	0.906	0.864	0.889
	SE	0.073	0.128	0.175	0.228	0.094	0.160
	BIAS	-0.003	-0.003	-0.100	-0.094	-0.136	-0.111
	RMSE	0.073	0.128	0.202	0.247	0.165	0.195

* EM=Estimated Mean, SE=Standard Error, RMSE=Root Mean Square Error.

Table A.5: Results for estimators using only N_1 observations, given N=400 and 75% degree of censoring for the three distributions.

		Normal		Student's-t		Chi-Square	
		β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
True values		1.000	1.000	1.000	1.000	1.000	1.000
OLSP	EM*	0.361	0.398	0.163	0.267	0.150	0.206
	SE	0.091	0.127	0.232	0.232	0.113	0.178
	BIAS	-0.639	-0.602	-0.837	-0.733	-0.850	-0.794
	RMSE	0.646	0.616	0.869	0.769	0.857	0.814
H2S	EM	0.993	0.989	1.548	1.618	0.794	0.842
	SE	0.669	0.635	0.860	0.856	0.723	0.731
	BIAS	-0.007	-0.011	0.548	0.618	-0.206	-0.158
	RMSE	0.669	0.635	1.019	1.056	0.751	0.748
WH2S	EM	0.997	0.993	1.563	1.636	0.681	0.728
	SE	0.599	0.574	1.356	1.318	0.783	0.794
	BIAS	-0.003	-0.007	0.563	0.636	-0.319	-0.272
	RMSE	0.599	0.574	1.468	1.463	0.845	0.840
3SE	EM	1.001	0.997	0.771	0.863	0.788	0.839
	SE	0.139	0.179	0.241	0.356	0.156	0.224
	BIAS	0.001	-0.003	-0.229	-0.137	-0.202	-0.161
	RMSE	0.139	0.179	0.332	0.291	0.263	0.275
W3SE	EM	1.004	1.001	0.723	0.817	0.850	0.899
	SE	0.126	0.170	0.308	0.361	0.154	0.239
	BIAS	0.004	0.001	-0.277	-0.183	-0.150	-0.101
	RMSE	0.126	0.170	0.414	0.405	0.215	0.258

* EM=Estimated Mean, SE=Standard Error, RMSE=Root Mean Square Error.

Table A.6: Estimated Results for the MLE estimators for all Distributions and degrees of Censoring, Given a Sample size of 100.

	25%		50%		75%	
	β_1	β_2	β_1	β_2	β_1	β_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)
True values	1.000	1.000	1.000	1.000	1.000	1.000
Normal						
EM*	1.002	1.002	1.000	1.004	1.033	1.032
SE	0.099	0.177	0.121	0.239	0.221	0.341
BIAS	0.002	0.002	0.000	0.004	0.033	0.032
RMSE	0.099	0.177	0.121	0.239	0.223	0.342
Students'-t						
EM	1.023	1.025	1.045	1.040	1.140	1.111
SE	0.099	0.174	0.173	0.236	0.434	0.529
BIAS	0.023	0.025	0.045	0.040	0.140	0.111
RMSE	0.102	0.176	0.179	0.239	0.456	0.540
Chi-Square						
EM	1.043	1.028	1.050	1.051	1.049	1.071
SE	0.109	0.196	0.173	0.283	0.268	0.409
BIAS	0.043	0.028	0.050	0.051	0.049	0.071
RMSE	0.117	0.198	0.180	0.287	0.273	0.416

* EM=Estimated Mean, SE=Standard Error,
RMSE=Root Mean Square Error.

Table A.7: Comparison of Estimators under Various levels of Correlation, Given N=100 and 50% Degree of Censoring.

Correlation ($\hat{\rho}_{\hat{\varepsilon}\hat{\lambda}}$)	Estimator		True Value	Estimated Mean	Standard Error	Bias	RMSE
(1)	(2)		(3)	(4)	(5)	(6)	(7)
-0.60	H2S	β_0	-8.000	-7.834	0.940	0.166	0.955
		β_1	4.000	3.952	0.292	-0.048	0.296
		β_2	0.500	0.495	0.262	-0.005	0.262
	3SE	β_0	-8.000	-7.798	0.755	0.202	0.783
		β_1	4.000	4.941	0.241	-0.059	0.248
		β_2	0.500	0.494	0.258	-0.006	0.258
	OLSP	β_0	-8.000	-6.976	0.649	1.024	1.212
		β_1	4.000	3.700	0.214	-0.300	0.369
		β_2	0.500	0.460	0.254	-0.040	0.257
	MLE	β_0	-8.000	-8.017	0.597	-0.017	0.597
		β_1	4.000	4.006	0.199	0.006	0.199
		β_2	0.500	0.503	0.249	0.003	0.249
-0.85	H2S	β_0	-4.000	-3.857	1.273	0.143	1.281
		β_1	2.000	1.959	0.381	-0.041	0.383
		β_2	0.500	0.505	0.264	0.005	0.262
	3SE	β_0	-4.000	-3.862	0.705	0.138	0.718
		β_1	2.000	1.960	0.228	-0.040	0.231
		β_2	0.500	0.505	0.257	0.005	0.257
	OLSP	β_0	-4.000	-2.252	0.516	1.748	1.823
		β_1	2.000	1.496	0.180	-0.504	0.536
		β_2	0.500	0.463	0.245	-0.037	0.248
	MLE	β_0	-4.000	-4.037	0.489	-0.037	0.491
		β_1	2.000	2.013	0.168	0.013	0.169
		β_2	0.500	0.504	0.243	0.004	0.243
-0.95	H2S	β_0	-2.000	-1.910	1.714	0.090	1.716
		β_1	1.000	0.974	0.456	-0.026	0.456
		β_2	1.000	0.960	0.436	-0.040	0.438
	3SE	β_0	-2.000	-1.947	0.512	0.053	0.514
		β_1	1.000	0.985	0.169	-0.015	0.169
		β_2	1.000	0.976	0.244	-0.024	0.245
	OLSP	β_0	-2.000	-0.303	0.339	1.697	1.730
		β_1	1.000	0.561	0.128	-0.439	0.458
		β_2	1.000	0.616	0.206	-0.384	0.436
	MLE	β_0	-2.000	-2.016	0.376	-0.016	0.376
		β_1	1.000	1.005	0.134	0.005	0.135
		β_2	1.000	0.997	0.215	-0.003	0.215

Table A.8: Comparison of Estimators under Various levels of Correlation, Given N=400 and 50% Degree of Censoring.

Correlation ($\hat{\rho}_{\hat{z}\hat{\lambda}}$)	Estimator		True Value	Estimated Mean	Standard Error	Bias	RMSE
(1)	(2)		(3)	(4)	(5)	(6)	(7)
-0.60	H2S	β_0	-8.000	-7.954	0.471	0.046	0.473
		β_1	4.000	3.896	0.148	0.104	0.149
		β_2	0.500	0.498	0.114	-0.002	0.114
	3SE	β_0	-8.000	-7.943	0.389	0.057	0.394
		β_1	4.000	3.983	0.126	-0.017	0.127
		β_2	0.500	0.497	0.114	-0.003	0.114
	OLSP	β_0	-8.000	-6.877	0.325	1.123	1.169
		β_1	4.000	3.665	0.109	-0.335	0.352
		β_2	0.500	0.453	0.111	0.047	0.121
	MLE	β_0	-8.000	-8.004	0.308	-0.004	0.308
		β_1	4.000	4.001	0.103	0.001	0.103
		β_2	0.500	0.500	0.112	0.000	0.112
-0.85	H2S	β_0	-4.000	-3.953	0.617	0.047	0.619
		β_1	2.000	1.986	0.188	-0.014	0.188
		β_2	0.500	0.500	0.117	0.000	0.117
	3SE	β_0	-4.000	-3.963	0.342	0.037	0.349
		β_1	2.000	1.989	0.113	-0.011	0.113
		β_2	0.500	0.500	0.112	0.000	0.112
	OLSP	β_0	-4.000	-2.234	0.252	1.766	1.783
		β_1	2.000	1.485	0.088	0.515	0.522
		β_2	0.500	0.409	0.106	-0.091	0.139
	MLE	β_0	-4.000	-4.006	0.244	-0.006	0.244
		β_1	2.000	2.002	0.085	0.002	0.085
		β_2	0.500	0.503	0.107	0.003	0.107
-0.95	H2S	β_0	-2.000	-1.945	0.906	0.055	0.907
		β_1	1.000	0.984	0.245	-0.016	0.246
		β_2	1.000	0.983	0.249	-0.017	0.250
	3SE	β_0	-2.000	-1.981	0.245	0.019	0.245
		β_1	1.000	0.994	0.081	-0.006	0.082
		β_2	1.000	0.994	0.129	-0.006	0.129
	OLSP	β_0	-2.000	-0.217	0.157	1,783	1.790
		β_1	1.000	0.529	0.060	-0.471	0.475
		β_2	1.000	0.571	0.107	-0.429	0.442
	MLE	β_0	-2.000	-2.004	0.176	-0.004	0.176
		β_1	1.000	1.001	0.064	0.001	0.064
		β_2	1.000	1.001	0.114	0.001	0.114

References

Adesina, A.A. and Zinnah, M.M. (1993), 'Technology Characteristics, Farmers' Perceptions and Adoption Decisions: A Tobit Model Application in Sierra Leone', **Agricultural Economics**, 9, 297-311.

Ahrens, J.H. and Dieter, U. (1972), 'Computer Methods for Sampling from the Exponential and Normal Distributions', **Communications of the ACM**, 15, 873-882.

Ahrens, J.H. and Dieter, U. (1973), 'Extensions of Forsythe's Method for Random Sampling from the Normal Distribution', **Mathematics of Computation**, 27, 927-937.

Aitkin, M. (1981), 'A Note on the Analysis of Censored Data', **Technometrics**, 23, 161-163.

Amemiya, T. (1973), 'Regression Analysis when the Dependent Variable is Truncated Normal ', **Econometrica**, 41, 997-1016.

Amemiya, T. (1974), 'Multivariate Regression and Simultaneous Equation Models when the Dependent Variables are Truncated Normal', **Econometrica**, 42,

999-1012.

Amemiya, T. (1975), 'Qualitative Response Models', **Annals of Economic and Social Measurement**, 4, 363-372.

Amemiya, T. (1976), 'The Maximum Likelihood, the Minimum Chi-square and the Nonlinear Weighted Least-Squares in the General Qualitative Response Model', **Journal of the American Statistical Association**, 71, 347-351.

Amemiya, T. (1977), 'The Modified Second-Round Estimator in the General Qualitative Response Models', **Journal of Econometrics**, 5, 295-299.

Amemiya, T. (1978), ' The Estimation of a Simultaneous Equation Generalized Probit Model', **Econometrica**, 46, 1193-1205.

Amemiya, T. (1979), 'The Estimation of a Simultaneous-Equation Tobit Model', **International Economic Review**, 20, 169-181.

Amemiya, T. (1981), ' Qualitative Response Models: A Survey ', **Journal of Economic Literature**, 19, 1483-1536.

Amemiya, T. (1983a), 'Non-Linear Regression Models', **In Handbook of Econometrics, Edited by Griliches, Z. and Intriligator, M.D.**, Volume I, 334-389.

Amemiya, T. (1983b), 'A Comparison of the Amemiya GLS and the Lee-Maddala-Trost G2SLS in a Simultaneous-Equations Tobit Model', **Journal of Econometrics**, 23, 295-300.

Amemiya, T. (1984),' Tobit Models: A Survey', **Journal of Econometrics**, 24, 3-61.

Amemiya, T. (1985), **Advanced Econometrics**, Basil Blackwell, Oxford.

Amemiya, T. and Boskin, M. (1974), 'Regression Analysis when the Dependent Variable is Truncated Lognormal, with an Application to the Determinants of the Duration of Welfare Dependancy', **International Economic Review**, 15, 485-496.

Arabmazar, A. and Schmidt, P. (1981), 'Further Evidence on the Robustness of the Tobit Estimator to Heteroscedasticity', **Journal of Econometrics**, 17, 253-258.

Arabmazar, A. and Schmidt, P. (1982), 'An Investigation of the Robustness of the Tobit Estimator to Non-normality', **Econometrica**, 50, 1055-1063.

Ashford, J.R. and Sowden, R.R. (1977), 'Multivariate Probit Analysis', **Biometrics**, 26, 535-546.

Buckley, J. and James, J. (1979), 'Linear Regression with Censored Data', **Biometrica**, 66, 429-436.

Berndt, E.R., Hall, B.H., Hall, R.E. and Hausman, J.A. (1974), 'Estimation and Inference in Non-linear Structural Models', **Annals of Economic and Social Measurement**, 3, 653-665.

Bera, A.K., Jarque, C.M. and Lee, L-F. (1984), 'Testing the Normality Assumption in Limited Dependent Variable Models', **International Economic Review**, 25, 563-578.

Blundell, R. and Smith, R.J. (1994), 'Coherency and Estimation in Simultaneous Models with Censored or Qualitative Dependent variables', **Journal of Econometrics**, 64, 355-374.

Borjas, G.J. and Rosen, S. (1980), 'Income Prospects and Job Mobility of Young Men', **Research in Labor Economics**, 3, 159-181.

Borjas, G.J. and Sueyoshi, G.T. (1994), 'A Two-Stage Estimator for Probit Models with Structural Group Effects', **Journal of Econometrics**, 64, 165-182.

Box, G.E.P. and Muller, M.E. (1958), 'A Note on the Generation of Random Normal Deviates', **Annals of Mathematics and Statistics**, 29, 610-611.

Brent, R.P. (1974), ' A Gaussian Pseudo-Random Number Generator', **Communications of the ACM**, 17, 704-706.

Breush, T.S. (1980), 'Useful Invariance Results for Generalized Regression Models', **Journal of Econometrics**, 13, 327-340.

Brieman, L., Tsur, Y. and Zemel, A. (1993), ' On a Simple Estimation Procedure for Censored Regression Models with Known Error Distributions', **The Annals of Statistics**, 21, 1711-1720.

Buckley, J. and James, I. (1979), 'Linear Regression with Censored Data', **Biemetrica**, 66, 429-436.

Calzolari, G. and Fiorentini, G. (1990), 'Alternative Covariance Estimators of the Standard Tobit Model', **Paper Presented at the 6th World Congress of the Econometric Society**, Barsolona.

Calzolari, G. and Panattoni, L. (1988a), 'Alternative Estimators of FIML Covariance Matrix: A Monte Carlo Study', **Econometrica**, 56, 701-714.

Calzolari, G. and Panattoni, L. (1988b), 'Finite Sample Performance of the Robust Wald Test in Simultaneous Equation Systems', **In Advances in Econometrics, Edited by Rhodes Jr, G.F. and Fomby, T.B., Vol. 7, 163-191.**

Carriquiry, A.L., Gianola D. and Fernando, R.L. (1987), 'Mixed-Model Analysis of a Censored Normal Distribution with Reference to Animal Breeding', **Biometrics**, 43, 929-939.

Chang, C-F. and Goldberger, A. (1984), ' Notes and Comments: Proportional Projections in Limited Dependent Variable Models', **Econometrica**, 52, 531-534.

Chesher, A. and Jewitt, I. (1987), 'The Bias of Heteroskedasticity Consistent Covariance Matrix Estimator', **Econometrica**, 55, 1217-1222.

Chib, S. (1992), 'Bayes Inference in the Tobit Censored Regression Model', **Journal of Econometrics**, 51, 79-99.

Cohen, A.C. (1950), 'Estimating the Mean and Variance of Normal Population from Singly Truncated and Doubly Truncated Samples', **Annals of Mathematical Statistics**, 21, 557-569.

Cosslett, S.R. (1983), 'Distribution-Free Maximum Likelihood Estimator of the Binary Choice Model', **Econometrica**, 51, 765-782.

Cosslett, S.R. (1987), 'Efficiency Bounds for Distribution-Free Estimators of the Binary Choice and Censored Regression Models', **Econometrica**, 55, 559-585.

Cragg, J.G. (1971), 'Some Statistical Models for Limited Dependent Variables with Applications to the Demand for Durable Goods', **Econometrica**, 39, 829-844.

Davidson, R. and MacKinnon, J.G. (1993), **Estimation and Inference in Econometrics**, Oxford University Press, Oxford.

Deagan, Jr, J. and White, K.J. (1976), 'An Analysis of Nonpartisan Election Media Expenditure Decisions Using Limited Dependent Variable Methods', **Social Science Research**, 5, 127-135.

Deaton, A.S. and Irish, M. (1975), 'Statistical Models for Zero Expenditures in Household Budgets', **Journal of Public Economics**, 23, 59-80.

Dhrymes, P. (1970), **Econometrics: Statistical Foundations and Applications**, Harper and Row, Publishers, New York.

Dhrymes, P. (1984), 'Limited Dependent Variables', **In Handbook of Econometrics, Edited by Griliches, Z. and Intriligator, M.D.**, Vol. III, 1567-1631.

Duncan, G.M. (1986), ' A Semi-Parametric Censored Regression Estimator', **Journal of Econometrics**, 32, 5-34.

Effron, B. and Hinkley, D.V. (1978), 'Assessing the Accuracy of the Maximum Likelihood Estimator: Observed versus Expected Fisher Information', **Biometrica**, 65, 457-487.

Fair, R. C. (1977), 'A Note on the Computation of the Tobit Estimator', **Econometrica**, 45, 1723-1727.

Flood, L. (1985), 'A Monte Carlo Comparison of the Maximum Likelihood and the Corrected OLS Estimators for Tobit Models', **Economics Letters**, 19, 155-163.

Foot, D.K. and Poirier, D.J. (1980), 'Public Decision Making in Canada: The Case of Anti-Inflation Board', **International Economic Review**, 21, 489-504.

Forsythe, G.E. (1972), 'von Neumann's Comparison Method for Random Sampling from the Normal and Other Distributions', **Mathematics of Computation**, 26, 817-826.

Giles, J.A. and Giles, D.E.A. (1992), 'Pre-Test Estimation and Testing in Econometrics: Recent Developments', **Discussion Paper**, Department of Economics, University of Canterbury, Christchurch, New Zealand.

Goldberger, A.S. (1964), **Econometric Theory**, Wiley, New York.

Goldberger, A.S. (1980), 'Abnormal Selection Bias', **SSRI Discussion Paper 8006**, University of Wisconsin, Madison, MI.

Goldberger, A.S. (1981), 'Linear Regression After Selection', **Journal of Econometrics**, 15, 357-366.

Goldfeld, S.M. and Quandt, R.E. (1972), **Nonlinear Methods in Econometrics**, Amsterdam, North-Holand.

Gourieroux, C., Monfont, A. and Trognon, A. (1984), 'Pseudo Maximum Likelihood Methods: Theory', **Econometrica**, 52, 681-700.

Greene, W.H. (1981a), 'On the Asymptotic Bias of the Ordinary Least Squares Estimator of the Tobit Model', **Econometrica**, 49, 505-513.

Greene, W. H. (1981b), 'Sample Selection Bias as a Specification Error', **Econometrica**, 49, 795-798.

Greene, W. H. (1983), 'Estimation of Limited Dependent Variable Models by Ordinary Least Squares Models and the Method of Moments', **Journal of Econometrics**, 21, 195-212.

Greene, W. H. (1990), 'Multiple Roots of the Tobit Log-Likelihood', **Journal of Econometrics**, 46, 365-380.

Greene, W. H. (1990), **LIMDEP Version 5.1**, Econometrics Software, Inc., New York.

Greene, W. H. (1991), **Econometric Analysis**, Macmillan Publishing Company, New York.

Griffiths, W.E., Hill, R.C. and Pope, P.J. (1987), 'Small Sample Properties of Probit Model Estimators', **Journal of the American Statistical Association**, 82, 929-937.

Gronau, R. (1974), 'Wage Comparisons: A Selectivity Bias', **Journal of Political Economy**, 82, 1119-1143.

Gross, A.M. (1973), 'A Monte Carlo Swindle for Estimators of Location', **Journal of the Royal Statistical Society**, C, 22, 347-353.

Hall, B. (1984), 'Software for the Computation of Tobit Model Estimates', **Journal of Econometrics**, 24, 215-222.

Hammersley, J.M., and Handscomb, D.C. (1964), **Monte Carlo Methods**, Matheun, London.

Hampel, F.R. (1971), 'A General Qualitative Definition of Robustness', **Annals of Mathematical Statistics**, 42, 1887-1896.

Hampel, F.R. (1974), 'The Influence Curve and its Role in Robust Estimation', **Journal of the American Statistical Association**, 69, 383-393.

Hampel, F.R. (1978), 'Optimally Bounding the Gross-Error-Sensitivity and the Influence of Position in Factor Space', **Proceedings of the ASA Statistical Computing Section**, pp. 59-64.

Hartley, H.O. (1976), 'Estimation of the Tobit Model by Nonlinear Least Squares Methods', **Discussion Paper No. 373**, SUNY, Buffalo.

Hartman, R.S. (1991), 'A Monte Carlo Analysis of Alternative Estimators in Models Involving Selectivity', **Journal of Business and Economic Statistics**, 9, 41-50.

Hausman, J.A. (1978), 'Specification Tests in Econometrics', **Econometrica**, 46, 1251-1272.

Hausman, J.J. and Wise, D.A. (1976), 'The Evaluation of Results from Truncated Samples: The New Jersey Income Maintenance Experiment', **Annals of Social and Economic Measurement**, 5, 421-445.

Hay, J.W., Leu, R. and Rohrer, R. (1987), 'Ordinary Least Squares and Sample Selection Models of Health-Care Demand', **Journal of Business and Economic Statistics**, 5, 499-506.

Heckman, J. (1974), 'Shadow Prices, Market Wages, and Labor Supply', **Econometrica**, 42, 679-694.

Heckman, J.J. (1976), 'The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for such Models', **Annals of Economic and Social Measurement**, 5, 475-492.

Heckman, J.J. (1978), 'Dummy Exogenous Variables in a Simultaneous Equation System', **Econometrica**, 46, 931-959.

Heckman, J.J. (1979), 'Sample Selection Bias as a Specification Error', **Econometrica**, 47, 153-161.

Hendry, D.F. (1973), 'On Asymptotic Theory and Finite Sample Experiments', **Economica**, 160, 210-217.

Hendry, D.F. (1984), 'Monte Carlo Experimentation in Econometrics', **In Handbook of Econometrics, Edited by Griliches, Z. and Intriligator, M.D.**,

Volume II, 937-976.

Hendry, D.F. and Harrison, R.W. (1974), ' Monte Carlo Methodology and the finite Sample Behaviour of Ordinary and Two-Stage Least Squares', **Journal of Econometrics**, 2, 151-174.

Honore, B.E. and Powell, J.L. (1994), 'Pairwise Difference Estimators of Censored and Truncated Regression Models', **Journal of Econometrics**, 64, 241-278.

Horowitz, J.L. (1986), 'A Distribution-Free Least Squares Estimator for Censored Linear Regression Models', **Journal of Econometrics**, 32, 59-84.

Horowitz, J.L. (1988), 'The Asymptotic Efficiency of Semi-Parametric Estimators for Censored Linear Regression Models', **Empirical Economics**, 13, 123-140.

Hurd, M. (1979), 'Estimation in Truncated Samples When There is Heteroskedasticity', **Journal of Econometrics**, 11, 247-258.

Hussien, S.S., Byerle, D. and Heisey, P.W. (1994), 'Impacts of the Training and Visit Extension System on Farmers' Knowledge and Adoption of Technology: Evidence From Pakistan', **Agricultural Economics**, 10, 39-47.

Jarque, C.M. (1981), 'A Test for Heteroscedasticity in a Limited Dependent Variable Model', **Australian Journal of Statistics**, 23, 159-163.

Jarque, C. M. (1987), 'An Application of LDV Models to Household Expenditure Analysis in Mexico', **Journal of Econometrics**, 36, 31-53.

Jarque, C.M. and Bera, A.K. (1982), 'Efficient Specification Tests for Limited Dependent Variable Models', **Economics Letters**, 9, 153-160.

Jennrich, R. (1969), 'Asymptotic Properties of Nonlinear Least Squares Estimators', **The Annals of Mathematical Statistics**, 40, 633-643.

Johnson, N. and Kotz, S. (1970), **Continuous Univariate Distributions-1; Distributions in Statistics**, John Wiley and Sons, New York.

Johnson, N. and Kotz, S. (1970), **Continuous Univariate Distributions-2; Distributions in Statistics**, John Wiley and Sons, New York.

Johnson, N. and Kotz, S. (1972), **Continuous Multivariate Distributions**, John Wiley and Sons, New York.

Judge, N.L., Griffiths, W.E., Hill, R.C., Lutkepohl, H. and Lee, T.C. (1985), **The Theory and Practice of Econometrics**, 2nd edition, John Wiley and Sons, New York.

Judge, N.L., Griffiths, W.E., Hill, R.C., Lutkepohl, H. and Lee, T.C. (1988), **Introduction to the Theory and Practice of Econometrics**, 2nd edition, John Wiley and Sons, New York.

Kalos, M.H. and Whitlok, P.A. (1986), **Monte Carlo Methods, Volume I: Basics**, John Wiley and Sons, New York.

Keely, M.C., Robins, P.K., Spiegelman, R.G. and West, R.W. (1978), 'The Estimation of Labor Supply Models Using Experimental Data', **American Economic Review**, 68, 837-887.

Kendall, M.G. and Stuart, A. (1967), **The Advanced Theory of Statistics**, Vol. 2, 2nd edition, Charles Griffin, London.

Kendall, M.G. and Stuart, A. (1973), **The Advanced Theory of Statistics**, Vol. 2, 3nd edition, Charles Griffin, London.

Kenny, L.W., Lee, L-F., Maddala, G.S. and Trost, R.P. (1979), 'Returns to College Education: An Investigation of Self-Selection Bias Based on the Project Talent Data', **International Economic Review**, 20, 775-789.

Kinderman, A.J. and Ramage, J.G. (1976), 'Computer Generation of Normal Random Numbers', **Journal of the American Statistical Association**, 71, 893-896.

Kmenta, J. and Gilbert, R.F. (1968), 'Small Sample Properties of Alternative Estimators of Seemingly Unrelated Regressions', **Journal of the American Statistical Association**, 65, 186-197.

Knuth, D.E. (1981), **Semi-Numerical Algorithms**, Second Edition, Vol. 2 of The Art of Computer Programming, Addison Wesley, Reading.

Koop, G. (1994), 'Recent Progress in Applied Bayesian Econometrics', **Journal of Economic Surveys**, 8, 1-34.

Krasker, W.S. (1980), 'Estimation in Linear Regression Models with Disparate Data Points', **Econometrica**, 48, 1333-1346.

Krasker, W.S. and Welsh, R.E. (1982), 'Efficient Bounded-Influence Regression

Estimation', **Journal of the American Statistical Association**, 77, 595-604.

Lee, L-F. (1979), 'Identification and Estimation in Binary Choice Models with Limited (Censored) Dependent Variables', **Econometrica**, 47, 977-996.

Lee, L-F. (1983), 'Generalized Econometric Models with Selectivity', **Econometrica**, 51, 507-512.

Lee, L-F. and Trost, R.P. (1978), 'Estimation of Some Limited Dependent Variable Models with Applications to Housing Demand', **Journal of Econometrics**, 8, 357-382.

Leemis, L.M. (1986), 'Relationships Among Common Univariate Distributions', **The American Statistician**, 40, 143-146.

Leung, S.F. and Yu, S. (1994), 'On the Choice Between Sample Selection and Two-Part Models', **Journal of Econometrics**, to appear.

Lewis, H. (1974), 'Comments on Selectivity Biases in Wage Comparisons', **Journal of Political Economy**, 82, 1145-1155.

Lewis, P.A.W. and Orav, E.J. (1989), **Simulation Methodology for Statisticians, Operations Analysts and Engineers**, Wadsworth and Brooks/Cole, Pacific Grove.

Lin, T.-F. and Schmidt, P. (1984), 'A Test of the Tobit Specification Against an Alternative Suggested by Cragg', **Review of Economics and Statistics**, 66, 174-177.

Maddala, G.S. (1983), **Limited-Dependent and Qualitative Variables in Econometrics**, Cambridge University Press, Cambridge.

Maddala, G.S. and Nelson, F.D. (1975), 'Specification Errors in Limited Dependent Variable Models', **National Bureau of Economic Research**, Working Paper No. 96.

Little, R.J.A. (1985), 'A Note About Models for Selectivity Bias', **Econometrica**, 53, 1469-1474.

MacKinnon, J.G. and White, H. (1985), 'Some Heteroskedasticity-Consistent Covariance Matrix Estimators with Improved Finite Sample Properties', **Journal of Econometrics**, 29, 305-325.

Manning, W.G., Duan, N. and Rogers, W.H. (1987), 'Monte Carlo Evidence on the Choice Between Sample Selection and Two-Part Models', **Journal of Econometrics**, 35, 59-82.

Manski, C.F. (1975), ' Maximum Score Estimation of the Stochastic Utility Model of Choice', **Journal of Econometrics**, 3, 205-228.

Manski, C.F. (1985), 'Semiparametric Analysis of Descrete Response: Asymptotic Properties of the Maximum Score Estimator', **Journal of Econometrics**, 27, 313-333.

Manski, C.F. and McFadden, D. (1981), **Structural Analysis of Descrete Data with Econometric Applications**, The MIT Press, Massachusetts.

Mariano, R.S. (1982), 'Analytical Small-Sample Distribution Theory in Econometrics: The Simultaneous Equations Case', **International Economic Review**, 23, 503-533.

McDonald, J.B. and Xu, Y.J. (1992), 'A Comparison of Some Alternative Estimators for the Censored Regression Model', **Discussion Paper**, Bringham Young University.

McDonald, G.S. and Moffitt, R.A. (1980), 'The Use of Tobit Models', **Review of Economics and Statistics**, 62, 318-321.

Melino, A. (1982), 'Testing For Sample Selection Bias', **Review of Economic Studies**, 49, 151-153.

Metropolis, N. and Ulam, S. (1949), 'The Monte Carlo Method', **Journal of the American Statistical Association**, 44, 335-341.

Mikhail, W.M. (1975), 'A Comparative Monte Carlo Study of the Properties of Econometric Estimators', **Journal of the American Statistical Association**, 70, 91-104.

Moon, C-G. (1989), 'A Monte Carlo Comparison of Semiparametric Tobit Estimators', **Journal of Applied Econometrics**, 4, 361-382.

Moon, C-G. (1990), 'Small Sample Performance of Large Sample Tests for Tobit Versus p-Tobit', **Journal of Statistical Computation and Simulations**, 37, 89-97.

Nawata, K. (1990), 'Robust Estimation Based on Grouped-Adjusted Data in Censored Regression models', **Journal of Econometrics**, 43, 337-362.

Nawata, K. (1992), 'Calculation of Powell's Least Absolute Deviations Estimator by the Linear Random Search Method', **Discussion Paper**, Department of Economics, University of Western Australia, Nedlands.

Nawata, K. (1993), 'A Note on the Estimation of Models with Sample Selection Biases', **Economics Letters**, 42, 15-24.

Nawata, K. (1994), 'Estimation of Sample Selection Bias Models by the Maximum Likelihood and Heckman's 2-Step Estimator', **Economics Letters**, 45, 33-40.

Nawata, K. and McAleer, M. (1994), 'Finite Sample Properties of Tests for Models with Sample Selection Biases', **Discussion Paper**, Department Of Economics, University of western Australia, Nedlands.

Nelson, F.D. (1976), 'On a General Computer Algorithm for the Analysis of Models with Limited Dependent Variables', **Annals of Economic and Social Measurement**, 5, 493-509.

Nelson, F.D. (1981), 'A Test for Misspecification in the Censored-Normal Model', **Econometrica**, 49, 1317-1330.

Nelson, F.D. (1984), 'Efficiency of the Two-Step Estimator for Models with Endogenous Sample Selection', **Journal of Econometrics**, 24, 181-196.

Nelson, F.D. and Olson, L. (1978), 'Specification and Estimation of Simultaneous Equation Model with Limited Dependent Variables', **International Economic Review**, 19, 695-708.

Newey, W. (1987), 'Specification Tests for Distributional Assumptions in the Tobit Model', **Journal of Econometrics**, 34, 125-145.

Olsen, R.J. (1978), 'Note on the Uniqueness of the Maximum Likelihood Estimator for the Tobit Model', **Econometrica**, 46, 1211-1215.

Olsen, R.J. (1980a), 'Approximating a Truncated Normal Regression with the Method of Moments', **Econometrica**, 48, 1099-1105.

Olsen, R.J. (1980b), 'A Least Squares Correlation for Selectivity', **Econometrica**, 48, 1815-1820.

Olsen, R.J. (1982), 'Distributional Tests for Selectivity Bias and a More Robust Likelihood Estimator', **International Economic Review**, 23, 223-240.

Orme, C. (1990), 'On the Uniqueness of the Maximum Likelihood Estimator in Truncated Regression Models', **Econometric Reviews**, 8, 217-222.

Paarsch, H. J. (1984), 'A Monte Carlo Comparison of Estimators for Censored Regression Models', **Journal of Econometrics**, 24, 197-213.

Peracchi, F. (1990), 'Bounded-Influence Estimators for the Tobit Model', **Journal of Econometrics**, 44, 107-126.

Peters, S. and Smith, R. J. (1991), 'Distributional Specification Tests Against Semiparametric Alternatives', **Journal of Econometrics**, 47, 175-194.

Poirier, D.J. (1978), 'The Use of the Box-Cox Transformation in Limited Dependent Variable Models', **Journal of the American Statistical Association**, 73, 284-287.

Powell, J. L. (1984), 'Least Absolute Deviations Estimation for the Censored Regression Model', **Journal of Econometrics**, 25, 303-325.

Powell, J.L. (1986a), 'Censored Regression Quantiles', **Journal of Econometrics**, 32, 143-155.

Powell, J. L. (1986b), 'Symmetrically Trimmed Least Squares Estimation for Tobit Models', **Econometrica**, 54, 1435-1460.

Robinson, P. (1982), 'On the Asymptotic Properties of Estimators of Models Containing Limited Dependent Variables', **Econometrica**, 50, 27-41.

Rosett, R. and Nelson, F. (1975), 'Estimation of the Two-Limit Probit Model', **Econometrica**, 43, 141-146.

Rubinstein, R.Y. (1981), **Simulation and the Monte Carlo Method**, John Wiley and Sons, New York.

Ruud, P.A. (1986), 'Consistent Estimation of Limited Dependent Variable Models Despite Misspecification of Distribution', **Journal of Econometrics**, 32, 157-187.

Sargan, D. (1988), **Lectures on Advanced Economic Theory**, Basil Blackwell Ltd., Oxford.

Schmee, J. and Hahn, G. (1979), 'A Simple Method for Regression Analysis with Censored Data', **Technometrics**, 21, 417-432.

Schmertmann, C.P. (1994), 'Selectivity Bias Correction Methods in Polychotomous Sample Selection Models', **Journal of Econometrics**, 60, 101-132.

Schmidt, P. (1978), 'Estimation of a Simultaneous Equations Model with Jointly Dependent Continuous and Qualitative Variables: The Union-Earnings Question Revisited', **International Economic Review**, 19, 453-465.

Small, K. A. and Rosen, H.S. (1984), ' Applied Welfare Economics with Descrete Choice Models', **Econometrica**, 49, 105-130.

Smith, V.K. (1973), **Monte Carlo Methods: Their Role for Econometrics**, D. C. Heath and Company, London.

Sowey, E.R. (1972), 'A Chronological and Classified Bibliography on Random Number Generation and Testing', **International Statistical Review**, 40, 355-371.

Sowey, E.R. (1973), 'A Classified Bibliography on Monte Carlo Studies in Econometrics', **Journal of Econometrics**, 1, 377-395.

Stapleton, D.C. and Young, D.J. (1984), 'Censored Normal Regression with Measurement Error on the Dependent variable', **Econometrica**, 52, 737-760.

Stefanski, L.A., Carroll, R.J and Ruppert, D. (1986), 'Optimally Bounded Score Function for Generalized Linear Models with Applications to Logistic Regression', **Biometrica**, 73, 413-424.

Stewart, J. (1991), **Econometrics**, Cambridge University Press, Cambridge.

Summers, R. (1965), 'A Capital Intensive Approach to the Small Sample Properties of Various Simultaneous Equations Estimators', **Econometrica**, 33, 1-41.

Sweeting, T. (1987), 'Approximate Bayesian Analysis of Censored Survival Data', **Biometrica**, 74, 809-916.

Tessema, G.A. (1994), 'A Monte Carlo Analysis of Alternative Estimators of the Tobit Models', **Working Papers in Econometrics and Applied Statistics, No. 73**, University of New England, Armidale.

Tessema, G.A., Doran H. and Griffiths, W. (1994), 'An Improved Heckman Estimator For the Tobit Model', **Working Papers in Econometrics and Applied Statistics**, University of New England, Armidale.

Theil, H. (1971), **Principles of Econometrics**, John Wiley and Sons, New York.

Tobin, J. (1958), 'Estimation of Relationships for Limited Dependent Variables', **Econometrica**, 26, 24-36.

Tomes, N. (1981), 'The Family Inheritance, and the Intergenerational Transmission of Inequality', **Journal of Political Economy**, 89, 928-958.

von Newmann, J (1951), 'Various Techniques used in Connection with Random Digits, Monte Carlo Methods', **Nat. Bureau Standards, AMS**, 12, 36-38.

Wald, A. (1958), 'Note on the Consistency of the Maximum Likelihood Estimate', **Annals of Mathematical Statistics'**, 20, 595-601.

Wales, T.J. and Woodland, A.D. (1980), 'Sample Selectivity and the Estimation of Labor Supply', **International Economic Review**, 21, 437-468.

White, H. (1980a), 'Using Least Squares to Approximate Unknown Regression Functions', **International Economic Review**, 21, 149-170.

White, H. (1980b), 'A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity', **Econometrica**, 48, 817-838.

White, H. (1980c), 'Nonlinear Regression on Cross-Section Data', **Econometrica**, 48, 721-746.

White, H. (1982), 'Maximum Likelihood Estimation of Misspecified Models', **Econometrica**, 48, 817-838.

White, H. (1983), 'Corrigendum', **Econometrica**, 51, 513.

White, H. (1984), **Asymptotic Theory in Econometrics**, Acadamic Press, Orlando.

White, K.J. (1993), **SHAZAM Econometrics Computer Program: Users Reference Manual**, Version 7.0, McGraw-Hill, New York.

Witte, A.D. (1980), 'Estimating the Economic Model of Crime', **Journal of Economics**, 94, 57-84.

Wu, X. L. (1992), 'A Comparison of Tobit and OLS Estimates of Japanese Peanut Import Demand', **Journal of Agricultural Economics**, 43, 38-42.

Zellner, A. and Rossi, P.E. (1984), 'Bayesian Analysis of Dichotomous Quantal Response Models', **Journal of Econometrics**, 25, 365-393.

Zuehlke, T.W. and Zeman, A.R. (1991), 'A Comparison of Two-Stage Estimators of Censored Regression Models', **Review of Economics and Statistics**, 73, 185-188.