



APPENDIX

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Original Results

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--> RESET
Initializing LIMDEP Version 9.0.1 (January 1, 2007).
--> READ;FILE="F:\San1\DATA01.xls";format=xls;names$
--> LOGIT;Lhs=Y;Rhs=SEX,AGE1,MST1,FNO2,WAGE2,S6,NWK2,DEP2,OCS1,OCB6,HOCS1
      ,HOCNG5,BONE6,BTWO2,INC2,EXP2,PRI,YR3,BT1,LMT1,DIST,WARD,OWNH,GPRE,RSO1
      ,UAMT,GSPR,U100,AGGR,RECN,OLOAN;Margin$
Normal exit from iterations. Exit status=0.
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+-----+
| Binary Logit Model for Binary Choice |
| Maximum Likelihood Estimates         |
| Model estimated: Jun 04, 2010 at 09:05:04AM. |
| Dependent variable                   | Y |
| Weighting variable                   | None |
| Number of observations                | 400 |
| Iterations completed                 | 13 |
| Log likelihood function               | -130.9989 |
| Number of parameters                 | 31 |
| Info. Criterion: AIC =                | .80999 |
|   Finite Sample: AIC =                | .82347 |
| Info. Criterion: BIC =                | 1.11933 |
| Info. Criterion: HQIC =              | .93250 |
| Restricted log likelihood             | -246.8343 |
| McFadden Pseudo R-squared           | .4692841 |
| Chi squared                          | 231.6708 |
| Degrees of freedom                   | 30 |
| Prob[ChiSq > value] =                 | .0000000 |
| Hosmer-Lemeshow chi-squared =        | 13.56740 |
| P-value= .05943 with deg.fr. =       | 7 |
+-----+
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+-----+-----+-----+-----+-----+
| Variable | Coefficient | Standard Error | b/St.Er. | P[|Z|>z] | Mean of X |
+-----+-----+-----+-----+-----+
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-----+Characteristics in numerator of Prob[Y = 1]

Variable	Coefficient	Standard Error	b/St.Er.	P[Z >z]	Mean of X
SEX	2.22756819	.88602067	2.514	.0119	1.0000000
AGE1	.90169507	.34799517	2.591	.0096	.50750000
MST1	.66522186	.43644066	1.524	.1275	.75000000
FNO2	-.22984800	.36245334	-.634	.5260	.52000000
WAGE2	.00096542	.66122888	.001	.9988	.11750000
S6	.00772128	.11461125	.067	.9463	-2.48750000
NWK2	-.00491363	1.03133334	-.005	.9962	.02250000
DEP2	.25711926	.61513843	.418	.6760	.10000000
OCS1	.64402464	.36441104	1.767	.0772	.53500000
OCB6	-1.17278814	4.61627900	-.254	.7995	.01250000
HOCS1	-.34668646	.41611755	-.833	.4048	.18750000
HOCNG5	-1.27570461	.76755322	-1.662	.0965	.09000000
BONE6	.00426326	.03646104	.117	.9069	-2.48500000
BTWO2	-.94277053	.68861088	-1.369	.1710	.09750000
INC2	.40237068	.39674811	1.014	.3105	.60750000
EXP2	-.62324688	.41330340	-1.508	.1316	.67750000
PRI	1.00494174	.35555085	2.826	.0047	.32750000
YR3	.27835018	.39019374	.713	.4756	.20750000
BT1	-1.24486528	.38111252	-3.266	.0011	.34750000
LMT1	-.22428903	.45671866	-.491	.6234	.61250000
DIST	.64579428	.40103066	1.610	.1073	.24000000
WARD	-.85762597	.82910283	-1.034	.3009	.95000000

OWNH		-.21371993	.38884691	-.550	.5826	.77500000
GPRE		1.53983429	.53842839	2.860	.0042	.79250000
RSO1		6.09286945	1.11363119	5.471	.0000	.12500000
UAMT		-.907023D-05	.381997D-05	-2.374	.0176	82976.8750
GSPR		-.45177526	.44101501	-1.024	.3056	.84000000
U100		-.00990862	.02638763	-.376	.7073	-4.19750000
AGGR		-3.95792398	1.69267283	-2.338	.0194	.99250000
RECN		-.70691060	1.30263280	-.543	.5874	.98500000
OLOAN		1.92971678	.34851213	5.537	.0000	.34500000

Information Statistics for Discrete Choice Model.								
	M=Model MC=Constants Only			MO=No Model				
Criterion F (log L)		-130.99889		-246.83429		-277.25887		
LR Statistic vs. MC		231.67081		.00000		.00000		
Degrees of Freedom		30.00000		.00000		.00000		
Prob. Value for LR		.00000		.00000		.00000		
Entropy for probs.		130.99889		246.83429		277.25887		
Normalized Entropy		.47248		.89027		1.00000		
Entropy Ratio Stat.		292.51996		60.84916		.00000		
Bayes Info Criterion		1.10435		1.68353		1.83565		
BIC(no model) - BIC		.73130		.15212		.00000		
Pseudo R-squared		.46928		.00000		.00000		
Pct. Correct Pred.		86.50000		.00000		50.00000		
Means:	y=0	y=1	y=2	y=3	y=4	y=5	y=6	y>=7
Outcome	.6925	.3075	.0000	.0000	.0000	.0000	.0000	.0000
Pred.Pr	.6910	.3090	.0000	.0000	.0000	.0000	.0000	.0000
Notes: Entropy computed as Sum(i)Sum(j)Pfit(i,j)*logPfit(i,j).								
Normalized entropy is computed against M0.								
Entropy ratio statistic is computed against M0.								
BIC = 2*criterion - log(N)*degrees of freedom.								
If the model has only constants or if it has no constants,								
the statistics reported here are not useable.								

Partial derivatives of probabilities with respect to the vector of characteristics. They are computed at the means of the Xs. Observations used are All Obs.

Variable	Coefficient	Standard Error	b/St.Er.	P[Z >z]	Elasticity
-----+Marginal effect for variable in probability					
SEX	.41003122	.17894235	2.291	.0219	1.68574781
-----+Marginal effect for dummy variable is P 1 - P 0.					
AGE1	.16481009	.06884824	2.394	.0167	.34387097
-----+Marginal effect for dummy variable is P 1 - P 0.					
MST1	.11184434	.06973888	1.604	.1088	.34486645
-----+Marginal effect for dummy variable is P 1 - P 0.					
FNO2	-.04239821	.06732077	-.630	.5288	-.09064140
-----+Marginal effect for dummy variable is P 1 - P 0.					
WAGE2	.00017774	.12175969	.001	.9988	.858619D-04
S6	.00142127	.02088859	.068	.9458	-.01453496
-----+Marginal effect for dummy variable is P 1 - P 0.					
NWK2	-.00090337	.18938383	-.005	.9962	-.835646D-04
-----+Marginal effect for dummy variable is P 1 - P 0.					
DEP2	.04977411	.12509786	.398	.6907	.02046346
-----+Marginal effect for dummy variable is P 1 - P 0.					
OCS1	.11698064	.06728163	1.739	.0821	.25730218
-----+Marginal effect for dummy variable is P 1 - P 0.					
OCB6	-.15425145	.38848405	-.397	.6913	-.00792711

-----+Marginal effect for dummy variable is P 1 - P 0.						
HOC51		-.06022065	.06886670	-.874	.3819	-.04642184
-----+Marginal effect for dummy variable is P 1 - P 0.						
HOCNG5		-.17352388	.08166459	-2.125	.0336	-.06420627
BONE6		.00078474	.00667723	.118	.9064	-.00801733
-----+Marginal effect for dummy variable is P 1 - P 0.						
BTWO2		-.13985701	.08213899	-1.703	.0886	-.05606148
-----+Marginal effect for dummy variable is P 1 - P 0.						
INC2		.07237358	.07119101	1.017	.3093	.18075987
-----+Marginal effect for dummy variable is P 1 - P 0.						
EXP2		-.12082064	.08524584	-1.417	.1564	-.33653181
-----+Marginal effect for dummy variable is P 1 - P 0.						
PRI		.19934038	.07980254	2.498	.0125	.26839985
-----+Marginal effect for dummy variable is P 1 - P 0.						
YR3		.05333191	.07772163	.686	.4926	.04549681
-----+Marginal effect for dummy variable is P 1 - P 0.						
BT1		-.20642406	.06831328	-3.022	.0025	-.29491088
-----+Marginal effect for dummy variable is P 1 - P 0.						
LMT1		-.04180825	.08608355	-.486	.6272	-.10527949
-----+Marginal effect for dummy variable is P 1 - P 0.						
DIST		.12844247	.08744167	1.469	.1419	.12673471
-----+Marginal effect for dummy variable is P 1 - P 0.						
WARD		-.18517825	.20079898	-.922	.3564	-.72325137
-----+Marginal effect for dummy variable is P 1 - P 0.						
OWNH		-.04050848	.07614906	-.532	.5948	-.12906942
-----+Marginal effect for dummy variable is P 1 - P 0.						
GPRE		.22007509	.07329447	3.003	.0027	.71704404
-----+Marginal effect for dummy variable is P 1 - P 0.						
RSO1		.85468162	.04449171	19.210	.0000	.43922804
UAMT		-.166957D-05	.738203D-06	-2.262	.0237	-.56955651
GSPR		-.08315883	.08225871	-1.011	.3120	-.28718604
U100		-.00182389	.00499112	-.365	.7148	.03147498
-----+Marginal effect for dummy variable is P 1 - P 0.						
AGGR		-.70449607	.10886195	-6.471	.0000	-2.87464864
-----+Marginal effect for dummy variable is P 1 - P 0.						
RECN		-.15075776	.30942674	-.487	.6261	-.61050832
-----+Marginal effect for dummy variable is P 1 - P 0.						
OLOAN		.39043318	.08073793	4.836	.0000	.55378538

+-----+-----+	
Marginal Effects for	
+-----+-----+	
Variable	All Obs.
+-----+-----+	
SEX	.41003
AGE1	.16481
MST1	.11184
FNO2	-.04240
WAGE2	.00018
S6	.00142
NWK2	-.00090
DEP2	.04977
OCS1	.11698
OCB6	-.15425
HOC51	-.06022
HOCNG5	-.17352
BONE6	.00078
BTWO2	-.13986
INC2	.07237
EXP2	-.12082
PRI	.19934
YR3	.05333
BT1	-.20642
+-----+-----+	

Marginal Effects for	
Variable	All Obs.
LMT1	-.04181
DIST	.12844
WARD	-.18518
OWNH	-.04051
GPRES	.22008
RSOL	.85468
UAMT	.00000
GSPR	-.08316
U100	-.00182
AGGR	-.70450
RECN	-.15076
OLOAN	.39043

Fit Measures for Binomial Choice Model	
Logit model for variable Y	
Proportions P0=	.692500 P1= .307500
N =	400 NO= 277 N1= 123
LogL=	-130.999 LogL0= -246.834
Estrella = $1 - (L/L0)^{-2L0/n} = .54246$	
Efron	McFadden Ben./Lerman
.53046	.46928 .79749
Cramer	Veall/Zim. Rsqrd ML
.52584	.66393 .43964
Information Criteria	Akaike I.C. Schwarz I.C.
	.80999 1.11933

Predictions for Binary Choice Model. Predicted value is 1 when probability is greater than .500000, 0 otherwise.
 Note, column or row total percentages may not sum to 100% because of rounding. Percentages are of full sample.

Actual Value	Predicted Value		Total Actual
	0	1	
0	262 (65.5%)	15 (3.8%)	277 (69.3%)
1	39 (9.8%)	84 (21.0%)	123 (30.8%)
Total	301 (75.3%)	99 (24.8%)	400 (100.0%)

Analysis of Binary Choice Model Predictions Based on Threshold = .5000

Prediction Success

Sensitivity = actual 1s correctly predicted	68.293%
Specificity = actual 0s correctly predicted	94.585%
Positive predictive value = predicted 1s that were actual 1s	84.848%
Negative predictive value = predicted 0s that were actual 0s	87.043%
Correct prediction = actual 1s and 0s correctly predicted	86.500%

Prediction Failure

False pos. for true neg. = actual 0s predicted as 1s	5.415%
False neg. for true pos. = actual 1s predicted as 0s	31.707%
False pos. for predicted pos. = predicted 1s actual 0s	15.152%
False neg. for predicted neg. = predicted 0s actual 1s	12.957%
False predictions = actual 1s and 0s incorrectly predicted	13.500%



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Curriculum Vitae

Name	Ms. Tun Min Sandar
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