



**APPENDICES**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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## APPENDIX A

### Results of Factor analysis (First method) using SPSS version 16

#### Descriptive Statistics

	Mean	Std. Deviation	Analysis N
FARMINCOME	2.4640E6	2.56672E6	165
FAMILYINCOME	2.6454E6	2.65265E6	165
EXTVISIT	.0364	.18776	165
TOTLANT	.7067	.49889	165
TRAINEXP	.6061	.49011	165
TIMES	1.4727	1.84973	165
INFORACCESS	.1576	.36545	165
LOAN	.8606	.34741	165
GROWEXP	17.1636	10.77785	165
YEARS	12.0424	8.13255	165
PRODUCTION	.5273	.50078	165
SHARING	.7697	.42231	165
NONFINCOME	1.8142E5	4.19855E5	165
EDU	7.2606	3.06613	165

Correlation Matrix<sup>a</sup>

Correlation	FARM INCOME	FAMILY INCOME	EXT VISIT	TOT LANT	TRAIN EXP	TIMES	INFOR ACCESS	LOAN	GROW EXP	YEARS	PRODUCTION	SHARING	NONF INCOME	EDU
FARMINCOME	1.000	.988	.451	.434	.209	.389	-.012	.113	-.071	.062	-.134	.112	.126	.196
FAMILYINCOME	.988	1.000	.441	.434	.221	.381	-.010	.125	-.081	.069	-.113	.123	.280	.218
EXTVISIT	.451	.441	1.000	.144	.024	.073	-.084	.078	.024	.019	.054	.106	.032	.132
TOTLANT	.434	.434	.144	1.000	.180	.301	.090	-.021	.016	.169	-.291	.116	.090	.127
TRAINEXP	.209	.221	.024	.180	1.000	.644	.213	.320	-.115	-.002	.106	.295	.118	.243
TIMES	.389	.381	.073	.301	.644	1.000	.196	.208	-.064	.083	-.119	.164	.031	.246
INFORACCESS	-.012	-.010	-.084	.090	.213	.196	1.000	.126	-.086	-.082	.043	.000	.007	.088
LOAN	.113	.125	.078	.021	.320	.208	.126	1.000	.123	.106	.004	.195	.097	.126
GROWEXP	-.071	-.081	.024	-.016	-.115	-.064	-.086	.123	1.000	.751	-.126	-.092	-.079	-.131
YEARS	.062	.069	.019	.169	-.002	.083	-.082	.106	.751	1.000	-.118	.014	.055	-.024
PRODUCTION	-.134	-.113	.054	-.291	.106	-.119	.043	.004	-.126	-.118	1.000	.145	.106	-.058
SHARING	.112	.123	.106	.116	.295	.164	.000	.195	-.092	.014	.145	1.000	.088	.065
NONFINCOME	.126	.280	.032	.090	.118	.031	.007	.097	-.079	.055	.106	.088	1.000	.179
EDU	.196	.218	.132	.127	.243	.246	.088	.126	-.131	-.024	-.058	.065	.179	1.000

a. This matrix is not positive definite.

**Total Variance Explained**

Component	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Total	% of Variance	Total	% of Variance
1	3.247	23.189	3.247	23.189	2.585	18.461
2	1.916	13.687	1.916	13.687	2.121	15.146
3	1.641	11.723	1.641	11.723	1.824	13.027
4	1.298	9.272	1.298	9.272	1.378	9.845
5	1.027	7.334	1.027	7.334	1.222	8.726
6	.923	6.592				
7	.884	6.313				
8	.791	5.651				
9	.762	5.444				
10	.522	3.728				
11	.494	3.531				
12	.287	2.052				
13	.207	1.481				
14	-1.539E-16	-1.099E-15				
		Cumulative %		Cumulative %		Cumulative %
		23.189		23.189		18.461
		36.877		36.877		33.608
		48.600		48.600		46.635
		57.873		57.873		56.481
		65.207		65.207		65.207

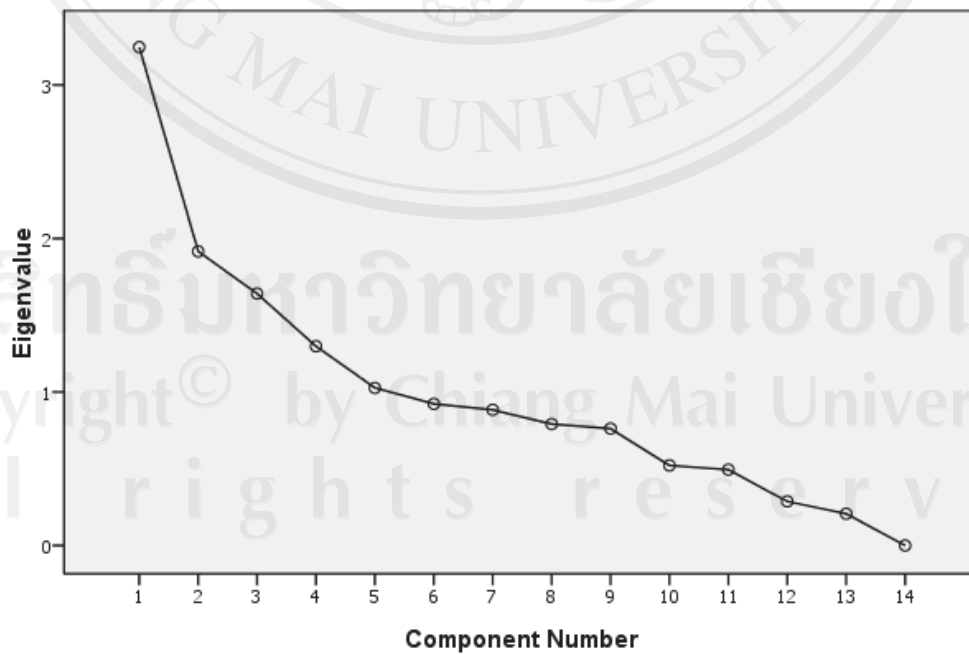
Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
FARMINCOME	1.000	.889
FAMILYINCOME	1.000	.902
EXTVISIT	1.000	.578
TOTLANT	1.000	.529
TRAINEXP	1.000	.739
TIMES	1.000	.707
INFORACCESS	1.000	.351
LOAN	1.000	.426
GROWEXP	1.000	.867
YEARS	1.000	.852
PRODUCTION	1.000	.604
SHARING	1.000	.455
NONFINCOME	1.000	.803
EDU	1.000	.427

Extraction Method: Principal Component Analysis.

Scree Plot



**Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
FARMINCOME	.844	.146	-.380	.039	-.102
FAMILYINCOME	.861	.127	-.369	.095	.022
EXTVISIT	.448	.134	-.371	.395	-.256
TOTLANT	.572	.235	-.109	-.366	.021
TRAINEXP	.562	-.341	.542	-.044	-.110
TIMES	.671	-.133	.364	-.293	-.145
INFORACCESS	.140	-.291	.353	-.337	.091
LOAN	.313	-.027	.513	.251	-.044
GROWEXP	-.085	.832	.385	.141	-.002
YEARS	.114	.806	.401	.137	.102
PRODUCTION	-.141	-.390	.114	.645	-.061
SHARING	.308	-.216	.266	.383	-.310
NONFINCOME	.281	-.094	-.008	.360	.765
EDU	.412	-.194	.076	-.056	.459

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
FARMINCOME	.911	.167	-.023	-.130	.117
FAMILYINCOME	.897	.154	-.014	-.103	.252
EXTVISIT	.704	-.132	.025	.249	-.054
TOTLANT	.472	.281	-.090	-.465	.061
TRAINEXP	.114	.822	-.030	.198	.097
TIMES	.290	.778	.011	-.130	.009
INFORACCESS	-.217	.503	-.144	-.144	.096
LOAN	.044	.463	.283	.343	.111
GROWEXP	-.056	-.089	.917	-.061	-.104
YEARS	.061	.027	.915	-.089	.049
PRODUCTION	-.104	-.069	-.146	.747	.102
SHARING	.213	.349	.019	.529	-.085
NONFINCOME	.095	-.046	.049	.142	.877
EDU	.124	.291	-.100	-.102	.554

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

**Component Transformation Matrix**

Component	1	2	3	4	5
1	.781	.558	.035	-.059	.272
2	.210	-.315	.851	-.337	-.139
3	-.499	.686	.473	.237	.016
4	.202	-.311	.218	.876	.218
5	-.237	-.150	.058	-.244	.927

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Component Score Coefficient Matrix**

	Component				
	1	2	3	4	5
FARMINCOME	.364	-.032	-.035	-.045	-.029
FAMILYINCOME	.343	-.053	-.024	-.032	.095
EXTVISIT	.356	-.157	.009	.242	-.141
TOTLANT	.135	.099	.019	-.320	-.013
TRAINEXP	-.048	.406	-.003	.124	-.030
TIMES	.024	.381	-.004	-.099	-.110
INFORACCESS	-.179	.287	-.078	-.150	.062
LOAN	-.034	.219	.179	.253	.036
GROWEXP	-.024	-.024	.503	.006	-.042
YEARS	-.009	.007	.503	-.018	.070
PRODUCTION	.003	-.058	-.037	.537	.071
SHARING	.101	.153	.031	.403	-.171
NONFINCOME	-.061	-.138	.063	.072	.781
EDU	-.060	.080	-.043	-.109	.454

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

## APPENSIX B

### The results of Factor analysis (second method)

#### Descriptive Statistics

	Mean	Std. Deviation	Analysis N
FARMINCOME	2.4640E6	2.56672E6	165
FAMILYINCOME	2.6454E6	2.65265E6	165
EXTVISIT	.0364	.18776	165
TOTLANT	.7067	.49889	165
TRAINEXP	.6061	.49011	165
TIMES	1.4727	1.84973	165
INFORACCESS	.1576	.36545	165
LOAN	.8606	.34741	165
GROWEXP	17.1636	10.77785	165
YEARS	12.0424	8.13255	165
PRODUCTION	.5273	.50078	165
SHARING	.7697	.42231	165
NONFINCOME	1.8142E5	4.19855E5	165
EDU	7.2606	3.06613	165
AI	.5798	.09920	165



Correlation Matrix<sup>a</sup>

Correlation	FARM INCOME	FAMILY INCOME	EXT VISIT	TOT LANT	TRAIN EXP	TRAIN TIMES	INFOR ACCES S	LOAN	GRO W EXP	YEAR S	PRODU CTION	SHAR ING	NONF INCOME	EDU	AI
FARMINCOME	1.000	.988	.451	.434	.209	.389	-.012	.113	-.071	.062	-.134	.112	.126	.196	.170
FAMILYINCOME	.988	1.000	.441	.434	.221	.381	-.010	.125	-.081	.069	-.113	.123	.280	.218	.195
EXTVISIT	.451	.441	1.000	.144	.024	.073	-.084	.078	.024	.019	.054	.106	.032	.132	.045
TOTLANT	.434	.434	.144	1.000	.180	.301	.090	-.021	.016	.169	-.291	.116	.090	.127	.054
TRAINEXP	.209	.221	.024	.180	1.000	.644	.213	.320	-.115	-.002	.106	.295	.118	.243	.220
TIMES	.389	.381	.073	.301	.644	1.000	.196	.208	-.064	.083	-.119	.164	.031	.246	.166
INFORACCES S	-.012	-.010	-.084	.090	.213	.196	1.000	.126	-.086	-.082	.043	.000	.007	.088	-.021
LOAN	.113	.125	.078	-.021	.320	.208	.126	1.000	.123	.106	.004	.195	.097	.126	.104
GROWEXP	-.071	-.081	-.084	.090	-.115	-.064	-.086	.123	1.000	.751	-.126	-.092	-.079	-.131	-.014
YEARS	.062	.069	.019	.169	-.002	.083	-.082	.106	.751	1.000	-.118	.014	.055	-.024	.137
PRODUCTION	-.134	-.113	.054	-.291	.106	-.119	.043	.004	-.126	-.118	1.000	.145	.106	-.058	.177
SHARING	.112	.123	.106	.116	.295	.164	.000	.195	-.092	.014	.145	1.000	.088	.065	.085
NONFINCOME	.126	.280	.032	.090	.118	.031	.007	.097	.088	.055	.106	.088	1.000	.179	.189
EDU	.196	.218	.132	.127	.243	.246	.088	.126	-.131	-.024	-.058	.065	.179	1.000	.179
AI	.170	.195	.045	.054	.220	.166	-.021	.104	-.014	.137	.177	.085	.189	.179	1.000

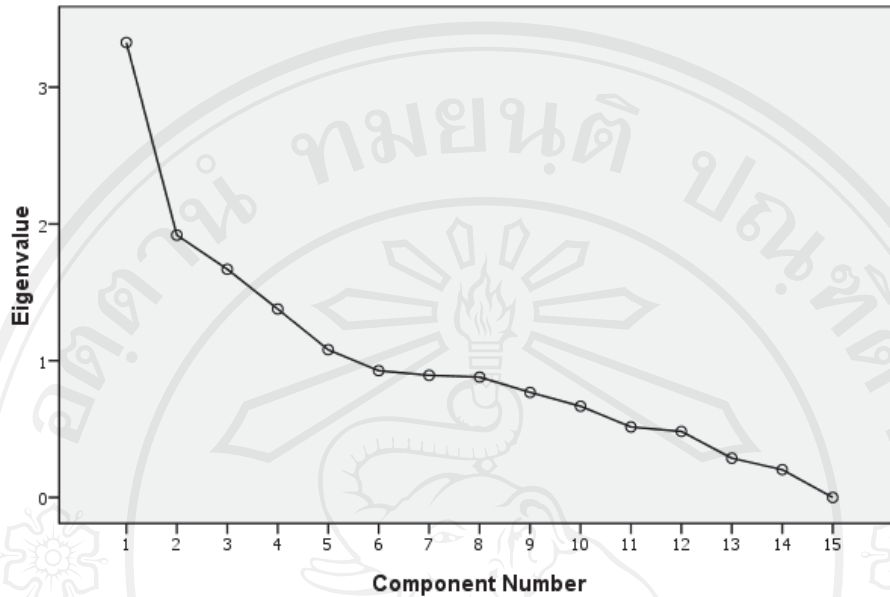
a. This matrix is not positive definite.

## Total Variance Explained

Component	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings			
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.327	22.180	22.180	3.327	22.180	22.180	2.641	17.607	17.607
2	1.919	12.792	34.973	1.919	12.792	34.973	2.054	13.693	31.300
3	1.669	11.126	46.099	1.669	11.126	46.099	1.847	12.312	43.612
4	1.378	9.187	55.286	1.378	9.187	55.286	1.456	9.704	53.316
5	1.081	7.204	62.490	1.081	7.204	62.490	1.376	9.174	62.490
6	.927	6.181	68.672						
7	.894	5.957	74.629						
8	.880	5.869	80.497						
9	.769	5.124	85.621						
10	.667	4.450	90.070						
11	.516	3.438	93.508						
12	.483	3.221	96.729						
13	.287	1.915	98.644						
14	.203	1.356	100.000						
15	-3.903E-16	-2.602E-15	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



Communalities

	Initial	Extraction
FARMINCOME	1.000	.887
FAMILYINCOME	1.000	.901
EXTVISIT	1.000	.597
TOTLANT	1.000	.528
TRAINEXP	1.000	.733
TIMES	1.000	.686
INFORACCESS	1.000	.354
LOAN	1.000	.425
GROWEXP	1.000	.864
YEARS	1.000	.862
PRODUCTION	1.000	.625
SHARING	1.000	.465
NONFINCOME	1.000	.547
EDU	1.000	.381
AI	1.000	.522

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
FARMINCOME	.831	.167	-.395	.054	-.092
FAMILYINCOME	.852	.145	-.374	.117	-.007
EXTVISIT	.436	.148	-.356	.333	-.384
TOTLANT	.554	.253	-.164	-.342	.113
TRAINEXP	.575	-.348	.497	-.161	-.094
TIMES	.670	-.129	.295	-.364	-.037
INFORACCESS	.134	-.289	.278	-.412	.071
LOAN	.320	-.038	.495	.064	-.269
GROWEXP	-.083	.817	.423	.083	-.061
YEARS	.128	.788	.452	.120	.078
PRODUCTION	-.107	-.412	.199	.615	-.158
SHARING	.312	-.220	.257	.204	-.459
NONFINCOME	.300	-.103	.051	.412	.523
EDU	.422	-.195	.072	-.012	.399
AI	.337	-.074	.260	.435	.381

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component				
	1	2	3	4	5
FARMINCOME	.918	.142	-.017	.147	-.050
FAMILYINCOME	.902	.131	-.019	.258	-.045
EXTVISIT	.687	-.185	.008	-.058	.295
TOTLANT	.514	.315	.114	.034	-.387
TRAINEXP	.110	.778	-.023	.183	.287
TIMES	.307	.763	.038	.087	-.014
INFORACCESS	-.171	.543	-.141	-.015	-.099
LOAN	.057	.429	.257	.026	.414
GROWEXP	-.052	-.098	.917	-.093	-.034
YEARS	.058	.010	.918	.113	-.059
PRODUCTION	-.187	-.166	-.177	.254	.683
SHARING	.190	.276	.000	-.060	.591
NONFINCOME	.092	-.041	-.018	.732	.019
EDU	.141	.309	-.121	.484	-.128
AI	.058	.079	.125	.679	.187

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 25 iterations.

**Component Transformation Matrix**

Component	1	2	3	4	5
1	.775	.526	.047	.341	.069
2	.251	-.299	.845	-.161	-.329
3	-.514	.555	.521	.168	.359
4	.102	-.570	.109	.504	.632
5	-.249	-.044	-.031	.759	-.600

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

**Component Score Coefficient Matrix**

	Component				
	1	2	3	4	5
FARMINCOME	.362	-.044	-.031	-.014	-.020
FAMILYINCOME	.343	-.060	-.031	.076	-.030
EXTVISIT	.343	-.195	-.002	-.151	.273
TOTLANT	.161	.130	.038	-.026	-.287
TRAINEXP	-.055	.381	.000	.013	.157
TIMES	.030	.376	.017	-.050	-.047
INFORACCESS	-.139	.326	-.074	-.035	-.116
LOAN	-.016	.206	.155	-.080	.298
GROWEXP	-.022	-.032	.499	-.047	.021
YEARS	-.015	-.005	.497	.092	-.023
PRODUCTION	-.059	-.134	-.067	.158	.481
SHARING	.086	.103	.017	-.171	.448
NONFINCOME	-.049	-.111	-.008	.563	-.067
EDU	-.042	.110	-.070	.343	-.170
AI	-.067	-.044	.077	.494	.063

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

## APPENDIX C

### Result of Tobit regression (first method) using Limdep software (2003)

--> TOBIT;Lhs=AI;Rhs=ONE,F19,F29,F39,F49,F59;Margin\$  
Normal exit from iterations. Exit status=0.

```

+-----+
| Limited Dependent Variable Model - CENSORED |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 02, 2011 at 11:58:30AM. |
| Dependent variable                          | AI |
| Weighting variable                          | None |
| Number of observations                       | 165 |
| Iterations completed                         | 3 |
| Log likelihood function                      | 157.4204 |
| Number of parameters                         | 7 |
| Akaike IC= -300.841 Bayes IC= -279.099 |
| Finite sample corrected AIC = -300.127 |
| Threshold values for the model:            |
| Lower= .0000 Upper=+infinity |
| ANOVA based fit measure = .111865 |
| DECOMP based fit measure = .111865 |
+-----+
+-----+-----+-----+-----+-----+-----+
| Variable | Coefficient | Standard Error | b/St.Er. | P[|Z|>z] | Mean of X |
+-----+-----+-----+-----+-----+-----+
| Primary Index Equation for Model |
| Constant | .57979798 | .00725565 | 79.910 | .0000 | |
| F1 | .01306497 | .00727774 | 1.795 | .0726 | -.382522D-15 |
| F2 | .01429567 | .00727774 | 1.964 | .0495 | -.365364D-15 |
| F3 | .00713440 | .00727774 | .980 | .3269 | -.121115D-16 |
| F4 | .01390196 | .00727774 | 1.910 | .0561 | .619033D-15 |
| F5 | .02194390 | .00727774 | 3.015 | .0026 | -.131208D-15 |
| Disturbance standard deviation |
| Sigma | .09320056 | .00513052 | 18.166 | .0000 | |
+-----+-----+-----+-----+-----+-----+
| Partial derivatives of expected val. with |
| respect to the vector of characteristics. |
| They are computed at the means of the Xs. |
| Observations used for means are All Obs. |
| Conditional Mean at Sample Point .5798 |
| Scale Factor for Marginal Effects 1.0000 |
+-----+-----+-----+-----+-----+-----+
| Variable | Coefficient | Standard Error | b/St.Er. | P[|Z|>z] | Mean of X |
+-----+-----+-----+-----+-----+-----+
| Constant | .57979798 | .00725565 | 79.910 | .0000 | |
| F1 | .01306497 | .00727774 | 1.795 | .0726 | -.382522D-15 |
| F2 | .01429567 | .00727774 | 1.964 | .0495 | -.365364D-15 |
| F3 | .00713440 | .00727774 | .980 | .3269 | -.121115D-16 |
| F4 | .01390196 | .00727774 | 1.910 | .0561 | .619033D-15 |
| F5 | .02194390 | .00727774 | 3.015 | .0026 | -.131208D-15 |
| Sigma | -.00359419 | ..... (Fixed Parameter) ..... |

```

**Result of Tobit regression (second method) using Limdep software (2003)**

--> TOBIT;Lhs=BI;Rhs=ONE,F110,F210,F310,F410,F510;Margin\$  
 Normal exit from iterations. Exit status=0.

```

+-----+
| Limited Dependent Variable Model - CENSORED |
| Maximum Likelihood Estimates                |
| Model estimated: Jan 02, 2011 at 11:58:56AM. |
| Dependent variable                         BI |
| Weighting variable                         None |
| Number of observations                      165 |
| Iterations completed                       3   |
| Log likelihood function                     82.73819 |
| Number of parameters                       7   |
| Akaike IC= -151.476 Bayes IC= -129.735      |
| Finite sample corrected AIC = -150.763     |
| Threshold values for the model:            |
| Lower= .0000 Upper=+infinity               |
| ANOVA based fit measure = .119923          |
| DECOMP based fit measure = .119923        |
+-----+
    
```

Variable	Coefficient	Standard Error	b/St.Er.	P[ Z >z]	Mean of X
Primary Index Equation for Model					
Constant	.64327273	.01140898	56.383	.0000	
F1	.00881506	.01144371	.770	.4411	-.333740D-15
F2	-.00431648	.01144371	-.377	.7060	-.410446D-15
F3	.02455102	.01144371	2.145	.0319	-.343160D-16
F4	.03222196	.01144371	2.816	.0049	.426595D-15
F5	.03474409	.01144371	3.036	.0024	.569242D-15
Disturbance standard deviation					
Sigma	.14655096	.00806736	18.166	.0000	

```

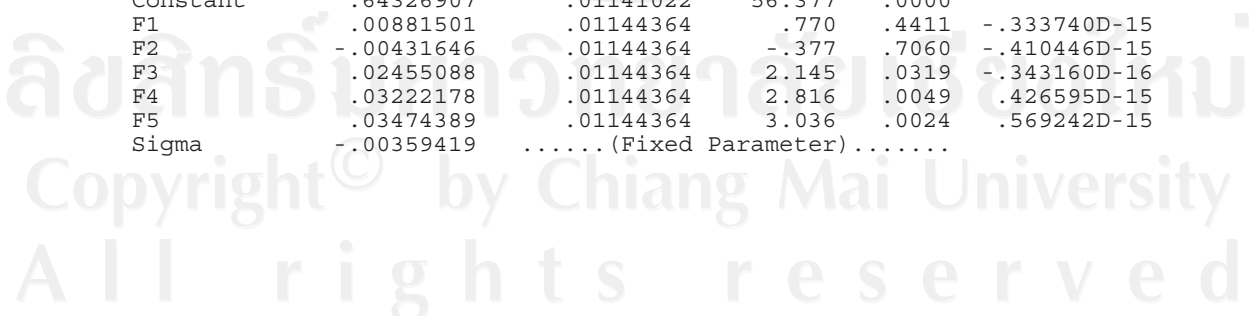
+-----+
| Partial derivatives of expected val. with  |
| respect to the vector of characteristics. |
| They are computed at the means of the Xs. |
| Observations used for means are All Obs.  |
| Conditional Mean at Sample Point          .6433 |
| Scale Factor for Marginal Effects         1.0000 |
+-----+
    
```

Variable	Coefficient	Standard Error	b/St.Er.	P[ Z >z]	Mean of X
Constant	.64326907	.01141022	56.377	.0000	
F1	.00881501	.01144364	.770	.4411	-.333740D-15
F2	-.00431646	.01144364	-.377	.7060	-.410446D-15
F3	.02455088	.01144364	2.145	.0319	-.343160D-16
F4	.03222178	.01144364	2.816	.0049	.426595D-15
F5	.03474389	.01144364	3.036	.0024	.569242D-15
Sigma	-.00359419	.....(Fixed Parameter).....			

**Result of Tobit regression between AI and BI using Limdep software (2003)**

--> TOBIT;Lhs=BI;Rhs=ONE,AI;Margin\$  
 Normal exit from iterations. Exit status=0.

+-----+



```

Limited Dependent Variable Model - CENSORED
Maximum Likelihood Estimates
Model estimated: Apr 25, 2011 at 02:46:01PM.
Dependent variable          BI
Weighting variable          None
Number of observations       165
Iterations completed        3
Log likelihood function      74.53655
Number of parameters        3
Akaike IC= -143.073  Bayes IC= -133.755
Finite sample corrected AIC = -142.924
Threshold values for the model:
Lower= .0000      Upper=+infinity
ANOVA based fit measure = .027937
DECOMP based fit measure = .027937

```

Variable	Coefficient	Standard Error	b/St.Er.	P[ Z >z]	Mean of X
Primary Index Equation for Model					
Constant	.49019162	.07131147	6.874	.0000	
AI	.26402491	.12124257	2.178	.0294	.57979798
Disturbance standard deviation					
Sigma	.15401964	.00847850	18.166	.0000	

```

Partial derivatives of expected val. with
respect to the vector of characteristics.
They are computed at the means of the Xs.
Observations used for means are All Obs.
Conditional Mean at Sample Point .6433
Scale Factor for Marginal Effects 1.0000

```

Variable	Coefficient	Standard Error	b/St.Er.	P[ Z >z]	Mean of X
Constant	.49018436	.07131083	6.874	.0000	
AI	.26402100	.12124078	2.178	.0294	.57979798
Sigma	.000000	.....(Fixed Parameter).....			



### Curriculum Vitae

<b>Name</b>	Miss Theint Theint Aung
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<b>Educational Background</b>	
1995 - 2001	Bachelor of Agricultural Science (B. Agr. Sc), Yezin Agricultural University, Nay Pyi Taw, Myanmar
2009 - 2011	M. Sc. Agriculture (Agricultural Systems), Multiple Cropping Center (MCC), Chiang Mai University, Thailand
<b>Scholarship</b>	Thailand International Development Cooperation Agency (TICA), Thailand
<b>Working Experience</b>	
2001 - 2005	Deputy Assistant Supervisor, Doekwin farm, Myanma Agriculture Service, Pyin Oo Lwin towship, Mandalay Division, Myanmar
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