References

A.(1996). *Determinants of Successful Group Loan Repayment: An Application To Burkina Faso*.

Abafita, J. (2003, June). Microfinance and Loan Repayment Performance: A Case Study of the Oromia Credit and Saving Share Company (OCSSCO) in Kuyu. *Faculty of Business and Economic Department, Master of Science,* 95.

Al-Azzama, M. D. (2006). Essays On Group Lending: Evidence From Jordan (pp. 35): Department of Economics, Louisiana State University, Baton Rouge LA, 70803.

A Draft Report on Evaluation of YWCA Holistic Development Project in Selected Townships of Yangon Division. (2008). Yangon: Women Christian Association, Yangon.

Amonoo, E., Acquah, P. K., & Asman, E. E. (2003). The Impact of Interest Rates on Demand for Credit and Loan Repayment by the Poor and SMEs in Ghana. (London).

Asia Development and Myanmar Report (2008).

Asia Development Bank Report (2009). Asian Development Bank & Myanmar, www.adb.org

Asia Development Bank Report, 2010: Macroeconomic Management beyond the Crisis.

Begoña Gutiérrez-Nietoa, Carlos Serrano-Cincaa, Molinerob, C. M., & (2005), Microfinance Institutions and Efficiency. *Science Direct, 131-142*(University of Kent,UK), 12.

Besley, T. C., S. 'Group Lending, Repayment Incentives and Social Collateral' Journal of Development Economics*., v46: 1:18*.

Conning, J. (1996). 'Group lending, moral hazard and the creation of social collateral'. *Working Paper No. 195 at the Centre for Institutional reform and the informal sector*.

Convencit), S. T. S. L. O. R. C (1990). The Myanmar Agricultural and Rural Development law. (Yangon:SLORC).

Crabb, P. (2004). A Test of Portfolio Risk in Microfinance Institute. Dapice, D. (2003). Current Economic Conditions in Myanmar and Options for Sustainable Growth.

Derban, W. K., Binner, J. M., & Mullineux, A. (2005). Loan Repayment Performance in Community Development Finance Institutions in the UK.
 (1Department of Agricultural Economics, Obafemi Awolowo University,Ile-Ife,Nigeria2 Department of Agricultural Economics, University of Agriculture, Abeokuta, Nigeria),

Epstein, M. J., & Crane, C. A. (2005). Alleviating Global Poverty through Microfinance: Factors and Measures of Financial, Economic, and Social Performance.

Everett, C. R. (2010). Group membership, Relationship Banking and Loan Default Risk: The Case of Online Social Lending.

Field, E., & Pande, R. Repayment Frequency and Default in Microfinance: Evidence from India.

Ghatak, M., & Guinnane, T. W. (1999). The economics of lending with joint liability: Theory and Practice, *Development Economics* (Vol. Vol. 60.1999.195–228,)

Gutiérrez-Nietoa, B., Carlos SerZrano-Cincaa, & Molinerob, C. M. (2005). Microfinance institutions and efficiency

Htay, S. (2005-2006). Burma Economic Review.

John Weiss, H. M., & Kurmanalieva, E. (2003). Micro Finance and Poverty Reduction: What is the Evidence in Asia?

Johnston, A. T. S. a. H. B. (2009). The Group-lending Model and Social Closure: Microcredit, Exclusion, and Health in Bangladesh.

Julia Anne Paxton, M. L. S., M.A. (1996). *Determinants Of Successful Group Loan Repayment: An Application To Burkina Faso* School of The Ohio State University, Ohio State.

Kaino, T. *Rural Credit Markets in Myanmar: A Study of Formal and Non-Formal Lenders*.

Kane, S., Nair, D., Orozco, V., & Sinha, S. (2005). Peru: Microfinance Investment Environment Profile.

Kohansal, M. R., & Mansoori, H. (2009). Factors Affecting on Loan Repayment Performance of Farmers in Khorasan-Razavi Province of Iran, *International Research and Food Security, Natural Resource*. University of Hamburg.

Kudo, T., & Mieno, F. (2007). Trade, Foreign Investment and Myanmar's Economic Development during the Transition to an Open Economy.

Linn, S. N. (2009). *Impact of Microfinance on Household Welfare in Northern Chin*

State of Myanmar. Unpublished Proposal, Chiang Mai, Chiang Ma.

Li, S. (2009). How Important are Peer Effects in Group Lending? IFPRI Discussion Paper Estimating a Static Game of Incomplete Information. *IFPRI Discussion Paper*.

Llanto, R. F. a. G. M. (2003). Rural Finance and Microfinance Development in Transition Countries in Southeast and East Asia.

Morduch, J. (1998). Does Microfinance Really Help the Poor? New Evidence from Flagship Programs in Bangladesh. 44.

Niels Hermes, Lensink, R., & Tek, H. Peer Monitoring, Social Ties and Moral hazard in Group Lending Programma: Evidence From Eriteria.

Pande, E. F. a. R. Repayment Frequency and Default in Micro-Finance: Evidence from India.

Post Nargis Joint Assessment. (2008). The Tripartite Core Group of South East Asia Nations and the United Nations with the Support of the Humanitarian and Development Community.

Schurmann, A. T., & Johnston, H. B. (2009). The Group-lending Model and Social Closure: Microcredit, Exclusion, and Health in Bangladesh.

Schreiner, M. (2001). A Cost-Effectiveness Analysis of the Grameen Bank of Bangladesh (pp. 48). St. Louis.

Sharama, Monohar, & Zeller, M. (1997). Repayment Performance in Group Based Credit Program in Bangladesh: An Empirical Analysis.

Shee, P. K. (2002). The Political Economy of China-Myanmar Relations: Strategic and Economic Dimensions. *, 33-53*.

Silwal, A. R. (2003). *Repayment Performance of Nepali Village Banks.* Unpublished

Public Policy Thesis, Swarthmore College.

Sriwichailamphan, T. (2007). *Global Food Chains and Environment: Agro-Food Production and Processing in Thailand.* Wageningen ,University.

Stiglitz, &, E., & Weiss, A. (1981). 'Credit Rationing in Markets with Imperfect Information' The American Economic Review. *71:393-410*.

Stiglitz, J. E. (2008). Peer Monitoring and Credit Markets. In *The World Bank Economic Review: A Symposium Issue on Imperfect Information and Rural Credit Markets* (Vol. 4, pp. 15). Oxford University Press.

Swain, R. B. (2007). Can Microfinance Empower Women? Self-Help Groups in India.

SLORC (The State Law and Order Restoration Council): The Myanmar Agricultural and Rural Development Bank Law. (1990). (Yangon, SLORC).

Than, M., & Thein, M. (2007). Transitional Economy of Myanmar Present Status, Development Divide and Future Prospects.

.T.O.Oke, R. A., & Agbonlahor, M. U. (2007). An Empirical Analysis of Microcredit Repayment in Southwestern Nigeria. *An Empirical Analysis of Microcredit Repayment in Southwestern Nigeria.*

Turnell, S. (2006). Assessing The Economic Situation After The 2001-2002 Banking Crisis. 24.

Wbipr), S. K., (PRMGE), G. K., & (PRMGE), N. S. (2008). Benefits of Improving Natarajan, K. (2004). Can Group Lending Overcome Adverse Selection Problems? , 17.

Country Brief Myanmar (Executive Summary), 400 Madison Avenue 18th Floor, New York, NY, 10017.www.estandardsforum.org, e. F. (2010).

Viktor Berglind, A. K. (2007). Repayment performance in Microfinance: a theoretical analysis.www.estandardsforum.org, e. F. (2010). *Country Brief Myanmar Executive Summary)*, 400 Madison Avenue 18th Floor, New York, NY, 10017.

Young Women's Labor Market Opportunities: Evidence from Group-based Credit Programs in Rural Bangladesh1. 23.

Zeller, M. (1996). *Determinants of Repayment Performance in Credit Groups: the Role of Program Design, Intra-group Risk Pooling, and Social Cohesion in Madagascar* (International Food Policy Research No. 13). Washington, D.C: International Food Policy Research Institute.

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APPENDIX

Original Results

```
--> 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.
```

```
+--------------------------------------------+
| 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[ChiSqd > value] =         .0000000    |
| Hosmer-Lemeshow chi-squared =  13.56740    |
| P-value=  .05943 with deg.fr. =      7     |
+--------------------------------------------+
```

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|>z]	Mean of X
Characteristics in numerator of Prob[Y = 1]					
SEX	2.22756819	.88602067	2.514	.0119	1.00000000
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   M0=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.
 HOCS1    |    -.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 |
|  HOCS1   |   -.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 |
| GPRE        |   .22008 |
| RSO1        |   .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 N0=      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  Akaike I.C. Schwarz I.C.  |
| Criteria         .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|           Predicted Value        |                |
|Value |       0                 1         | Total Actual   |
+------+------------------+---------------+----------------+
|   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%
========================================================================
```

Curriculum Vitae

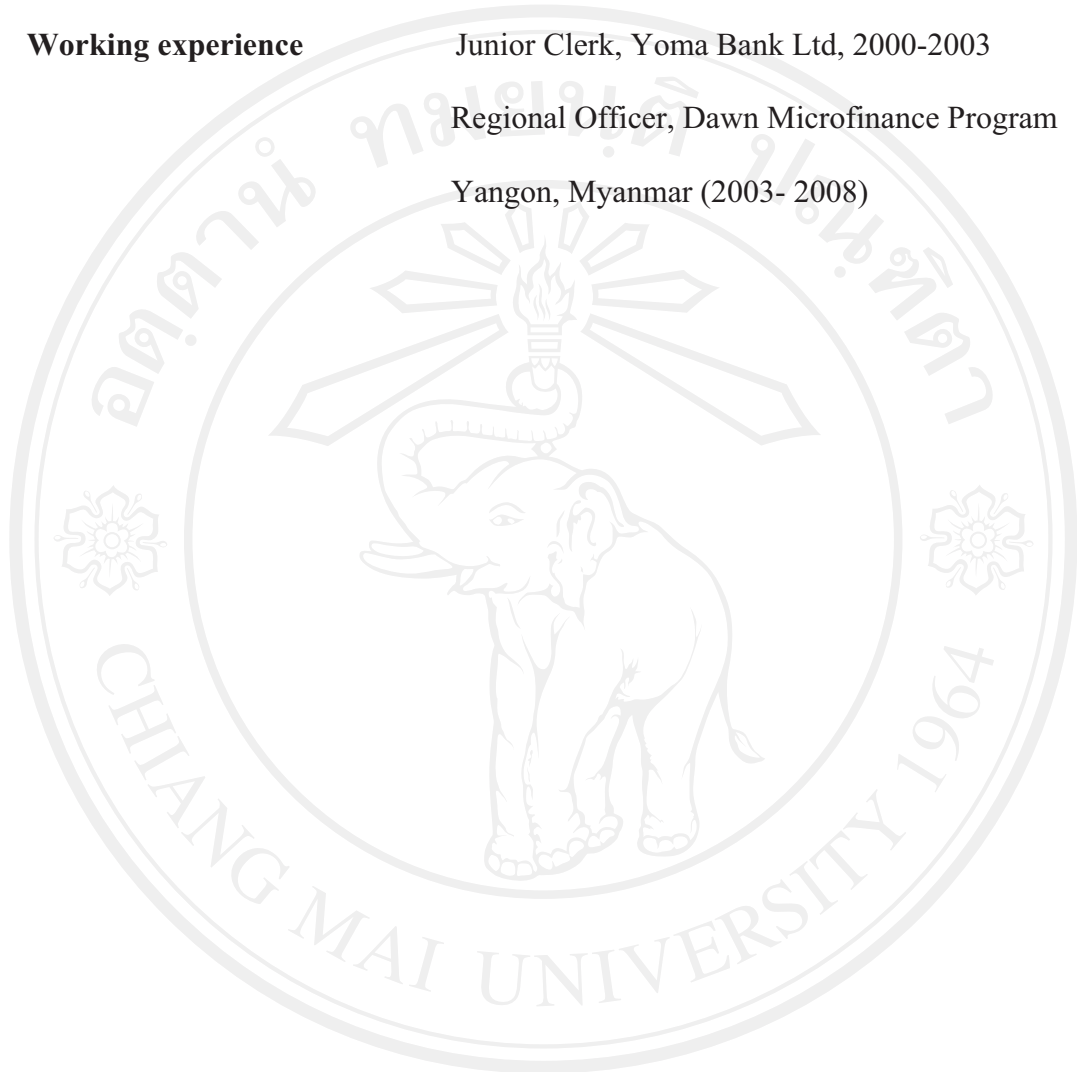**Name**   Ms. Tun Min Sandar

Date of birth   19th September 1979

Educational Background   Bachelor of Economic (2003), Yangon Institute of

Economic

Working experience   Junior Clerk, Yoma Bank Ltd, 2000-2003

Regional Officer, Dawn Microfinance Program

Yangon, Myanmar (2003- 2008)