

**Effects of Credit, Income Diversification and Other
Factors on Child Nutrition in Malawi**

Kenneth D. Spear

Masters Thesis

**Department of Agricultural & Applied Economics
Virginia Polytechnic Institute & State University
September 20, 2001**

Graduate Committee:

Jeffrey Alwang (Chair)

Gautam Hazarika

Bradford Mills

Manfred Zeller

Key words: Malawi, Credit, Gender, Child Malnutrition

Effects of Credit, Income Diversification and Other Factors on Child Nutrition in Malawi

by

Kenneth D. Spear

Jeffrey R. Alwang (Chairperson)

Department of Agricultural & Applied Economics

Abstract

In this study, six regression equations are used to determine the effects of credit and other factors on the nutritional status of boys and girls in Malawi. No significant effects of access to credit on child nutritional status were found. Same-sex parental preference for child nutrition was found. Infrastructural variables are determined to have the most significant influence in reducing child malnutrition levels. Access to credit is a new measure and its limitations are brought out in the study.

Dedication

This thesis is dedicated to my mom, Delsie and my sister, Diana. Their hard work and support has allowed me to pursue my own dreams and aspirations. I thank both of them very much for all they have done.

Acknowledgments

I would like to thank Jeff Alwang for his mentorship. He took me over a long bridge over the past couple of years and not only forced me to look deep into the environment below me as I crossed, but taught me about the construction of the bridge so that I can build my own platforms to cross new situations in varied environments. His efforts are greatly appreciated. I would like to thank Gautam Hazarika, Brad Mills and Manfred Zeller for their comments and suggestions, which added to my current thesis and gave me many new areas to pursue in the future. Irma Silva-Barbeau's input and motivation helped in the process of this study and in my future career direction. Lawrence Grossman opened my eyes to the many different perspectives of development. Dan Taylor was not only a great professor, but also his and Barbara's generosity in extending their home to me in the last month was crucial to finishing this study. George Norton's availability to discuss different issues and his strong character and dedication to development continues to be a motivation for myself. I'd like to thank Anya McGuirk for being herself. She is an amazing lady who has made a large impact on my wife and myself. Lastly, I thank Aliou Diagne for his communications and direction at the data analysis level.

Finally, I'd like to thank my wife, Widad. Her support and care has given me the best of all worlds. Her rigorous eye for detail and organization has proven to be the missing links to my own research and my life. I truly have much to learn from her on both personal and professional levels.

All of these researchers have contributed greatly to my personal and professional growth. Their drive to progress knowledge, science and development has gained my respect and admiration.

Table of Contents	
	Page
Chapter 1 - Problem	1
1.1 Background	1
1.1.1 Malnutrition and Poverty	1
1.1.2 Agriculture and Rural Poverty	3
1.1.3 Groundnut Production	4
1.1.4 Credit	5
1.1.5 Gender Issues	7
1.2 Problem Statement	11
1.3 Objectives	12
1.4 Methods	12
1.5 Organization of Thesis	14
Chapter Two – An Overview of Factors Affecting Child	15
Nutrition in <i>Smallholder</i> Families	
2.1 Background	15
2.2 Smallholder Population	16
2.3 Malnutrition in Malawi	17
2.4 Previous Government Policies	19
2.5 Maize Policy	22
2.6 Economic Decline	23
2.7 Restructuring	24
2.8 Groundnut Sector	25
2.9 Credit System	26
2.9.1 Extending Rural Credit	33
2.9.2 Smallholder Benefits from Credit	35
2.9.3 Access to credit	36
2.10 Summary and Forward	37

Chapter 3 – Conceptual Framework	39
3.1 Introduction	39
3.2 Conceptual Framework	39
3.3 Theoretical Model	43
3.4 Specification of Empirical Model	46
3.4.1 Nutritional measures	46
3.4.2 Independent Factors	47
3.4.3 Relative Access to Credit of Men and Women	47
3.5 Data	48
3.5.1 Credit Programs	48
3.5.2 Choice-Based Sampling	50
3.5.3 Simultaneity Issues	51
3.5.4 Program Membership Vs Access to Credit	52
3.6 Long-term Models	52
3.7 Summary of Chapter	54
Chapter 4 – Results	55
4.1 Descriptive Statistics	55
4.1.1 Child Nutritional Status	56
4.1.2 Infrastructure	59
4.1.3 Female Access to Credit is Greater	60
in Female-Headed Households	
4.2 Non-Parametric View of Situation	62
4.3 Model Estimation	67
4.4 Parameter Estimates	70
4.4.1 Short-term Models	71
4.4.1a Village-level Variables	71
4.4.1b Household-level Variables	72

4.4.2 Long-term Models	75
4.4.2a Girl Height-for-Age	75
4.4.2b Boy Height-for-Age	76
4.4.3 Contrast of Aggregate Models	76
4.5 Chapter Summary	79
Chapter 5 Conclusions and Policy Recommendations	81
5.1 Conclusions from Results	81
5.1.1 Access to Credit Does not Appear to Have a Major Influence on Child Nutritional Status	81
5.1.2 Women’s Relative Access to Credit and the Sex of the Household Head Show Parental Same-Sex Bias	83
5.1.3 Income Diversification is not Effective During Droughts	84
5.2 Contributions of Study	84
5.3 Policy Implications	85
5.4 Limitations of Study	86
5.5 Future Research	88
5.6 Final Conclusions	89
Bibliography	91
Appendix 1 – Variable Construction	98
A1.1 Measures of Access to Credit	98
A1.2 Measures of Relative Access to Credit	99
A1.3 Measurement of Income	99
A1.4 Income Diversification Measure	101
A1.5 Other Variables	103
Appendix 2 – Model Estimation	107

Tables & Figures	
Tables	
Table 1 – Groundnut Area and Production in Malawi, 1982-98	26
Table 2 – Domestic Resources in Formal Financial System	29
Table 3 – Summary statistics of Survey Households	
56	
Table 4 – Nutritional Status of Girls/Boys by Sex of Household-Head	57
Table 5 – Nutritional Status of Children by Age-Group and Gender	58
Table 6 – Income/female Access to Credit by Gender of Household-Head	62
Table 7 – Combined Parameter Estimates	68
Table 8 – Short-Term Model Parameter Estimates	71
Table 9 – Long-Term Model Parameter Estimates	74
Table A1.a – Malawi: Smallholder Land Cultivation, by Crop, 1986/87	102
Table A1.b – Generation of Income Variable	104
Table A1.c – GDP Deflator	105
Figures	
Figure 1 – Formal Financial System in Malawi	28
Figure 2 – Conceptual Framework	41
Figure 3 – WFAGEZ Densities by Round	64
Figure 4 – WFAGEZ Difference Round 2-1	64
Figure 5 – WFAGEZ Difference Round 3-2	65
Figure 6 - WFHEIZ Densities by Round	65
Figure 7 – WFHEIZ Difference Round 2-1	66
Figure 8 – WFHEIZ Difference Round 3-2	66