Applied Economics Journal Vol. 22 No. 1 (June 2015): 110-116

ISSN 0858-9291

Book Review: Food Security, Poverty and Nutrition Policy Analysis: Statistical Methods and Application

Babu, S.C., Gajanan, S.N., & Sanyal, P. (2014). *Food Security, Poverty and Nutrition Policy Analysis: Statistical Methods and Applications.* 2nd Edition. London, UK, Waltham, USA and San Diego, USA: Elsevier. 615 pages. ISBN: 978-0-12-405864-4.

This book is meant to bridge the gap between policy research and policy action. It is written as a practical textbook at the M.Sc level or final year B.Sc level to train agricultural economists, sociologists, and nutritionists in policy analysis related to food security, nutrition policies and poverty. This book could be used as stepping stone for those moving on to a Ph.D study.

The formulation and analysis of food security, poverty and nutritional policies are again at the forefront of attention of academics, scientists, development practitioners and policy makers. This has been largely driven by the world food price hike of 2008 and the food riots that raged in a number of countries in Africa and South Asia, where more than half of the world`s population and two-thirds of the world's poor live, many going to bed hungry. The price hike also stoked unrest in developed countries such as the U.S. In 2014, 14.3% of American households were food insecure. It means they were unable, at sometime during the year, to adequately feed one or more household members due to lack of resources (ERS, 2015).

There are many initiatives to address food and nutritional insecurity problems in the developing world. For instance, among the International Agricultural Research Centers (IARCs) of the CGIAR, Harvest-Plus is a global initiative to address micro-nutrient deficiency, mainly of vitamin A, Zinc and Iron, through the development and dissemination of fortified food crops in the African and South Asian countries. This is part of the CGIAR program on Agriculture for Nutrition and Health. Among the national academic and research institutes, Leveraging Agriculture and Nutrition in South Asian (LANSA) focuses on India, Bangladesh, Pakistan Afghanistan, with programmes that blend agriculture, food

systems, nutrition and health. The TCi (Tata-Cornell Initiative) focuses on improving agriculture, changing food systems and improving nutrition, mainly in India; the Golden Rice project of IRRI developed β-carotene-enriched rice (sometimes referred to as nutrient-dense rice) to address Vitamin A Deficiency (VAD) in India, Bangladesh and the Philippines. The major donors include the USAID, DFID, EU, Bill & Melinda Gates Foundation, UKAid, CIDA, DANIDA, John Templeton Foundation, and GIZ. At the donor level, the thrust, among others, is to banish food and nutritional insecurity. This book provides real world examples and programs delivered to address food and nutritional insecurities and poverty in developing countries, although it tends to cite more examples from China, India and the U.S. Readers can blend and understand food security, poverty and nutrition policies and learn not only about food and nutrition policies but also the work portfolios of different organizations.

The book helps in the understanding of food and nutritional policies using different statistical methods and step-by-step procedures to analyze food security and nutrition policies across the globe both in developing and developed country contexts. It is structured and written in such a way that graduate students, academics and scientists of different disciplines such as in international development, nutrition, sociologists, economics, agricultural economics, applied economics, agribusiness, development studies and public policy can easily follow and understand policy dynamics, are able to analyze the dynamics and problems of food and nutritional insecurity in systematic ways, and can formulate evidence-based recommendations for policy makers, donors, multilateral organizations, and national and international NGOs.

It begins with a brief overview of the nature and scope of food security, poverty and nutrition policy analysis. The rationale for the statistical methods used in the book and examples of different statistical tests are clearly explained. There are different sets of learning objectives: on thematic policy issues, appropriate empirical techniques, a technical appendix along with software exercises, and finally on translating analytical results into implications for different policies and program development. It is developed in a way that the reader can get into the flow of understanding the issue, going through the statistical analysis of it, and then drawing policy implications from the analysis.

The book has three sections. The first has six chapters. Chapter 1 defines the concept and measurement issues, provides a general conceptual framework by which the basic and underlying causes are described systematically and explained clearly. Food security concerns in the U.S. and other nations are explained. Definitions of food security and its determinants are extended. The nutritional dimension of the food security is included in a broader definition. This dimension was included in the original determinants of food security such as food availability, food access and food utilization. Readers of this chapter will understand the determinants of the food security both in the developed and developing countries. Technological changes are in the forefront. Many of the African and South Asian countries have witnessed and enjoyed the successes of the Green revolution, which raised yields and productivity levels and farm incomes. However, it also created adverse impacts on soil fertility, groundwater supply, surface water quality and supply, and fostered dependence on chemical fertilizers which had negative consequences on human health as well as that of the environment. To feed a world population that will reach 9 billion by 2050, scientists, policymakers and international organizations are putting their efforts on the development of new technologies. While technological change is a necessary condition for accelerating food production growth, the adoption of technology needs to be balanced by concerns for social equity and inclusiveness. First of all, not all countries, not all agro-ecological contexts, and not all farmers in a country, have the same capability to use and benefit from new technology. Some will adopt an innovation much faster than others. Others may not even be able to adopt them at all, unless conditions are changed and capacities are improved through policy, capacity building and structural changes and other measures.

Chapter 2 reviews the evolution of technological change in agriculture, and food security impacts of adopters and non-adopters in different countries. In this chapter, univariate statistical approaches are introduced. Data, descriptive analysis, different statistical tests and policy implications based on the analyses are presented. One of the important features introduced in this chapter is presenting computational software STATA and SPSS outputs (supplementary STATA and SPSS tutorials are also available in Appendix 6). Users of this book can apply the same data set to replicate the results.

This feature enables beginners such as graduate students, early careers academics and scientists to better understand the nature of data and analytical methods.

For several decades, agriculture was not considered as a 'business entity' especially in developing countries where agriculture was mostly subsistence. However, over the last few decades the transformation of agriculture has been taking place from traditional subsistence to semi-modern/modern commercial agriculture, shifting from traditional to cash crops. The process of commercialization raises income (Von *et al.,* 1994) which tends to improve food and nutrition security at individual, household, regional, national and global levels. Chapter 3 defines commercialization and its effects on food security. Similar to Chapter 2, the authors provide context, data and data analysis, policy implications, and STATA codes are helpfully provided.

There is plenty of evidence that women could better manage the family resources, adopt technology and improve food and nutrition security. Women produce more than half of food grown in the developing countries (Stringer, 2000; Saenz, 2013). In Chapter 4, effects of technology adoption by gender are presented. Although there have been many cultural barriers for women to engage in agriculture, this chapter shows how they can adopt new technology quicker than men to better improve food and nutritional security especially in African, Asian and Latin American countries. The rising incomes of the middle income groups in China and India have also raised average food consumption. Dietary patterns are also changing at a very fast rate. The share of meat and vegetables has increased. Eating away from home has been on the increase because of work pressure and changing life styles and in some cases `Westernization`. People now tend to prefer processed and ready-to-eat food over fresh foods that have to be prepared at home. There are many factors behind these changes, which bring impact on food security. Chapter 5 explains food consumption patterns in developing countries and in the U.S., and highlights China and India, together home of more than half of the world`s population. At the beginning of the 1990s, many developing countries liberalized their markets under the 'structural adjustment program' prescribed by the IMF and World Bank. Domestic markets were liberalized. A major objective of this liberalization was to improve market access. In chapter 6, the authors describe the link between agricultural market reforms and

market outcomes. It is presented in such a way that one can understand market reforms and impacts on the food security and poverty in the reformed countries. However, in reality there is also evidence that market reforms would have brought negative impacts at the industry and country levels.

Section II addresses issues related to child malnutrition and its determinants in developed and developing countries. It starts with an extended conceptual framework of nutrition security. The nutritional status of children in various societies, how nutritional indicators and determinants are associated and the role of causal factors in explaining child nutritional status are systematically discussed and illustrated with real world examples. Although the causes of malnutrition include inadequate food, health, lack of sanitation facilities, ignorance about child-care practices, lack of access to health services, the education of mothers and care givers is also important. Chapter 7 draws a conceptual framework of linkages between maternal education, child care and nutritional status of children and different measurements issues. This chapter makes one better appreciate the importance of education of care-givers and its significant implications for child nutritional status, especially for children aged less than 60 months. Chapter 8 and 9 discuss the indicators and causal factors of nutrition and effects of individual, household and community indicators on a child`s nutritional status, with the aid of correlation and simple regression model. Chapter 9 lists and describes different anthropometric indicators. This is extended to multivariate regression analysis in Chapter 10.

Section III describes different tools for food security, poverty and nutrition policy analysis. In different chapters of this section, the authors discuss discriminant function analysis, logistic regression models, cluster analysis, and instrumental variables. These section deals mostly with the set of robust explanatory variables for explaining food and nutrition security. In doing so, the authors delve deeper into the issues and their determinants. In chapter 12, for the first time, the book deals with the measurement issues and the determinants of poverty. Understanding poverty lines and different determinants are presented. Although food security, poverty and nutrition are interlinked, the book focuses less on poverty. Finally, in Chapter 15, modeling with linear programming is introduced.

The attractive features of this book are:

1. It is written in a way that the beginners can follow step-by-step, and can easily understand the material as the book starts with the basic rather than more advanced analytical tools.

2. It is useful for understanding highly related, but distinct issues such as food security, nutrition and poverty separately.

3. It is written to appeal to academics and scientists of different disciplines.

4. Each chapter is presented systematically; every chapter sets the context, has a review of literatures, policies and programs, data and data analysis and finally policy implications based on the empirical analyses. In many cases, the chapters provide STATA codes for users to apply.

5. It is aimed to bridge the gap between policy research and policy action. The policy analysis is needed to translate information into a context specific policy that could be implemented after simple verification with local data and with simple statistical techniques.

The authors however could have put more focus on poverty issues and obtained more examples and cases from a wider range of countries than India, China and the U.S. Many researchers use quasi-(experimental) economics approaches, especially in program evaluation. Although the book touches on the approaches, the book could have usefully added chapters on program evaluation techniques such as propensity score matching, DiD, regression and discontinuity.

This is also written as a text book at the M.Sc level or final year B.Sc level to train agricultural economists, sociologists, nutritionists and others in policy analysis related to food security, nutrition and poverty. It could be used as stepping stone for one who is moving on to a Ph.D study. And teachers will be able to teach the content with more confidence in a research methods course or in a food security course. This book would be highly useful for the readers of Applied Economics Journal. I recommend it to my graduate students and collaborators at home and abroad.

Mohammad Alam
Faculty of Agricultural Economics and Rural Sociology
Bangladesh Agricultural University
Email: alambau2003@yahoo.com

Fulbright Visiting Associate Professor
Dyson School of Applied Economics and Management
Cornell University
E-mail: mja258@cornell.edu

References

ERS (2015). *U.S. Food Security: Before and After the Great Recession*. Economic Research Service, United States Department of Agriculture. Retrieved from http://www.ers.usda.gov/data-products/food-security-in-the-united-states/interactive-chart-food-security-trends.aspx

Saenz, M. (2013, August). *Gender and policy effects on technology adoption in Zambia.* Paper presented at the annual meetings of the American Agricultural and Applied Economics Association, Washington D.C.

Stringer, R. (2000). Food security in developing countries. *Center for International Economics Studies Policy Discussion Paper No .0011.* University of Adelaide, Australia.

Von Braun, J., Johm, K.B., & Puetz, D., (1994). Nutritional effects of commercialization of a woman's crop: Irrigated rice in the Gambia. In J. von Braun & E.T. Kennedy (Eds.). *Agricultural commercialization, economic development and nutrition.* Baltimore, Maryland: John Hopkins University Press and IFPRI.