



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## NAREA Awards

### *Outstanding Master's Thesis Award*

## Efficiency of New York Dairy Farms: Exploring the Role of Managerial Ability

Justin Paul Byma

Cornell University

Advisor: Loren Tauer

This paper explores the role of management ability in explaining efficiency on New York dairy farms using both Data Envelopment Analysis (DEA) and stochastic frontier estimation. First, we test whether computed technical, cost, and revenue efficiencies under DEA are due to a missing input, which we argue may be the management input. Using an unbalanced panel of individual farm data from Cornell University's *Dairy Farm Business Summary* (DFBS) from 1993 to 2004, we define 6 inputs—operator labor, hired labor, purchased feed, livestock, capital, and crop inputs—and two outputs—milk output and all other outputs. We define the management input in two ways. First, the DFBS asks farmers to estimate their own values of labor and management. Second, the panel nature of the data set allows us to use the previous year's net farm income as a measure of farmer management ability. Using the lagged data prevents any contemporaneous bias in efficiency measurement and is consistent with Stigler's conjecture that differences in management ability should be captured in profits. To test for the effects of the missing management input, we first calculate DEA efficiency scores using the original six inputs and two outputs. These efficiencies are recalculated first using operators' values of labor and management, and then using lagged net farm income, in place of the operator labor input. The resulting efficiency scores are compared. We find weak evidence of the missing management input using our two measures, and find that change in computed efficiencies resulting from including the management input depends on whether one uses an input or output orientation. The change in efficiencies using operators' values of labor and management is small, often less than 1 percent.

Using lagged net farm income as the management input increases computed input-oriented technical efficiency by an average of 1 percent and cost efficiency by 1.2 percent. Output-oriented technical efficiency increases by 1.7 percent and revenue efficiency increases by nearly 2 percent. The impact of this measure of the management input on the allocative components of cost and revenue efficiencies was negligible, indicating that this measure of management ability serves more to explain differences in technology choice than allocative abilities.

We also estimate input- and output-oriented technical efficiencies, cost efficiencies, and revenue efficiencies using stochastic frontier functions. The technical efficiencies are estimated using distance function methodologies. We transform our management input variables to a per cow basis and include them as efficiency effect variables along with operator age, education, farm size, and years of participation in the DFBS. This allows us to measure the impacts of management ability on farm efficiency while controlling for other factors that may also affect efficiency. We estimate conditional mean and heteroskedastic efficiency term specifications for each frontier model. We again find that using lagged net farm income per cow may be a preferred measure of management ability compared to farmers' own estimates of the value of their labor and management per cow. We find that, at the margin, this measure of management ability increases input-oriented technical efficiency by 1.4–1.5 percent and cost efficiency by between 1.7–2.9 percent, depending on specification. Output-oriented technical efficiency and revenue efficiency increase at the margin by 1.8–3.0 percent and by 2.4–4.2 percent, respectively. We

also find increasing efficiency with operator education, farm size, and extended DFBS participation, and decreasing efficiency with operator age.

Finally, we present a discussion of whether an input or output orientation is more appropriate for the farms in our sample and compare the dairy

farm efficiencies predicted by DEA and the stochastic frontiers. We find that, for our data set, the distributions of farm efficiencies are very similar under DEA and stochastic frontier estimations, but that individual farm rankings are quite different between the two.

### ***Master's Thesis Award of Merit***

## **Stated Respondent Uncertainty and Mitigation of Hypothetical Bias: A Choice Experiment**

**Jennifer Lawton**

**Pennsylvania State University**

**Advisor: Richard Ready**

This study examined hypothetical bias in an attribute-based stated choice survey designed to elicit willingness to donate for a public good: wildlife rehabilitation. Survey respondents were given a series of four choice questions, each with three options: two animal donation options and one "no donation" option. Respondents were asked about two types of certainty that they had for their decisions: donation and animal certainty. These measures of stated respondent uncertainty were used in two calibration methods to improve the validity of the estimated values. Hypothetical

bias and validity were assessed by comparing hypothetical donations elicited in the survey from one treatment group to actual donations from the same group, as well as actual donations from a second treatment group. Bias was found in the hypothetical measures of willingness-to-donate and was corrected using the two calibration methods. The calibration method which incorporated the possibility of switching between donation options, especially when there was a price difference in the required donation, performed better statistically.

### ***Distinguished Member Award***

*This award recognizes members who have made continuous and outstanding contributions to the Association, the region, and the profession. The award recognizes members for significant recent professional achievement in the context of an overall meritorious record. Recipients must be members in good standing and be nominated by three other members. A recipient can receive the award more than once, based on recent achievements.*

**Daniel A. Lass**

Daniel A. Lass is a professor of resource economics at the University of Massachusetts Amherst. Dr. Lass has provided outstanding leadership to the Northeastern Agricultural and Resource Economics Association, including serving as a member of the Editorial Board (1994–96), the Board of Directors (1996–98), and the Finance Committee (2001–03), and as President-

Elect, President, and Past President (2003–06). He has been a key contributor to the success of the Association. Dr. Lass received his Ph.D. from Pennsylvania State University.

In teaching, Dr. Lass is a leading innovator in using technology (e.g., online pre-lectures, pre- and post-lecture quizzes, and personal response systems in class) to enhance student learning. His

students remember his classes as both the hardest and the best they ever took. He was recognized with the Outstanding Teaching Award in 2003 from the College of Natural Resources and Environment at the University of Massachusetts Amherst. Dr. Lass and his colleagues have shared their insights on active learning across the University of Massachusetts Amherst campus, through numerous national presentations, and in journal articles.

In his research program, Dr. Lass focuses on the interface between agricultural production, the welfare of rural families, agricultural and food marketing, and consumer welfare. Recently this work has focused on pricing in milk markets in the Northeast, the economics of community-supported agriculture, and the labor force supply decisions of rural low-income mothers. His work was recognized with the Outstanding Achievement in Agricultural Research Award from The New York Farmers in 2002.

### **Wesley N. Musser**

Dr. Wesley Musser has made a lifetime of contributions to the land grant mission. He has a formidable research record, with more than 180 publications, including 80 refereed journal articles, in the areas of financial and risk management, non-market valuation, and farm management and the environment. He has provided excellent mentorship to graduate students, publishing with 46 of his students—and still counting. Dr. Musser received his Ph.D. from the University of California, Berkeley.

With his strong research background, Dr. Musser has expanded the traditional scope of Extension and grounded it firmly in economic prin-

ciples. He has an impressive record of getting research findings packaged and delivered to lay audiences in ways that are most intelligible and useful to them.

Dr. Musser has given outstanding service to the Northeastern Agricultural and Resource Economics Association since moving to the Northeast in the late 1980s. His leadership on several committees, the Executive Board, and in the presidency was recognized by a Distinguished Member Award in 1995. Dr. Musser has continued to lead, most recently joining with Dr. Lori Lynch to edit the *Agricultural and Resource Economics Review* from 2005 to 2007.

## ***NAREA Award for Outstanding Public Service Through Economics***

*This award was created to recognize and encourage contributions to the general public welfare. The intent is to recognize that agricultural, environmental, consumer, resource, or community development economics can be applied to solve important problems affecting the quality of life of the general public, and that such contributions may come outside the traditional, sometimes narrowly defined, contributions to research, teaching, or extension. The award may be given to anyone, including noneconomists and nonmembers of NAREA.*

### **Nelson Bills**

Professor Nelson Bills has in effect had two back-to-back careers, the first as a resource economist with the USDA's Economic Research Service spanning 1967 to 1984, and subsequently as a faculty member in the Department of Applied Economics and Management at Cornell University. He had conducted a comprehensive and in-

tegrated research and Extension program in land use in New York State, the Northeast, and nationally.

Professor Bill's career has spanned several distinct periods in the agriculture sector, from the "fencepost-to-fencepost" era of the 1970s through the downturns in the 1980s, to the recognitions of

the reduced national stature of agriculture in the 1990s and beyond. As a resource economist, Professor Bills was heavily involved in research on such conservation policies and nutrient management programs to preserve water quality. He has been involved in these critical changes at several levels. At the individual farm level, he has worked with animal scientists and agricultural engineers to understand better the economic consequences of improved nutrient management. One of the legacies of that work is the ongoing methane generation project in the Department of Agricultural and Biological Engineering at Cornell. In most instances, the economic justification of the costly digesters is less a simple accounting of the value of the products and more a consideration of labor cost savings and neighbor relations, just the kind of careful, human-oriented analysis Professor Bills has contributed over his many years as an agricultural economist.

Professor Bills has had a yet more significant visual impact on state and regional land use through his innovative and ongoing work on acquiring development rights. The issue became critical in the 1980s on Long Island as residential development further marginalized the remaining agricultural activities. One response—many are obviously needed—has been to purchase development rights. Professor Bills has written numerous publications for state and local agencies on the topic, but more importantly advised municipalities on structuring these programs, and partly as a consequence New York State now has a state-wide grant program for purchasing devel-

opment rights, often from farmers. Many of those funds are appropriately directed to Long Island and other down-state counties where the contentions over land use are the most acute, but funds are not limited to there. In that capacity, Professor Bills has served continuously as an *ex officio* member of the Agricultural Advisory Council of the New York State Department of Agriculture and Markets for 15 years and counting.

Professor Bills has also conducted research internationally, particularly in Japan, where, as one can imagine, the importance of land use is even more fraught due to the overall scarcity of land. He has worked extensively with Japanese policymakers and academics since 1990, including under a Fulbright Award to Kyoto University (1992–93).

Professor Bills has received a total of six Extension awards, including the 1997 AAEEA Distinguished Extension Program Award. He has published numerous times in the *Agricultural and Resource Economics Review*, and served as head of the Department of Applied Economics and Management's Extension programs for six years (1993–99). While focused on policy implementation, he has contributed to the full range of activities, from program conceptualization to implementation to evaluation of effects. His analysis is detailed and location-specific at a time when many agricultural economists work at levels of significant abstraction. He has in his quiet, unassuming way left an indelible effect on land use policy. And nowhere has his attention been greater than on the Northeast.

## ***Honorary Life Member Award***

*This award recognizes members who have actively participated in the affairs of the Association and, while maintaining an active interest in their professions, have recently retired from the formal professional position that comprised the major reason for their involvement in the Association.*

## **Conrado “Bobby” Gempesaw II**

During his career as a faculty member at the University of Delaware, Dr. Conrado “Bobby” Gempesaw was an outstanding contributor to the Northeastern Agricultural and Resource Economics Association. He published in the journal,

served on numerous committees, was an excellent editor of the journal, and served in the presidency. His enthusiasm and leadership were very important to the continued success of the Association. This was recognized by Dr. Gempesaw

receiving the Distinguished Member Award twice, in 1996 and again in 2000.

Dr. Gempesaw's excellent research and teaching record has been accompanied by energetic and successful administrative leadership. He served as chair of the Department of Food and Resource Economics at the University of Delaware from 1993 to 1999. He then moved to several upper administration leadership positions, currently serv-

ing as dean of the Alfred Lerner College of Business and Economics.

Dr. Gempesaw's record is admired by his colleagues at the University of Delaware, his friends in the profession, and the faculty who work with him in his new position as Dean. The Association is grateful for his contributions to NAREA over the earlier part of his career and looks forward to his continued success in administration.

### **Cleve E. Willis**

Dr. Cleve Willis has a stellar record of service to the agricultural and resource economics profession in the Northeast as a teacher and researcher, as a leader of the Northeastern Agricultural and Resource Economics Association, and as a department chair and dean. Dr. Willis was a very active participant in the Association throughout his career, including serving as Executive Committee Member (1984–86), Editor of the *Agricultural and Resource Economics Review* (1984–86), and President-Elect, President, and Past President (1988–91). He was recognized as a Distinguished Member of NAREA in 1985.

Dr. Willis's continued active engagement with the agricultural and resource economics profession in the Northeast spans his years as a re-

searcher and teacher, department chair, and dean at the University of Massachusetts Amherst. He published very widely and was recognized with the Outstanding Teaching Award from the College of Food and Natural Resources in 1993. Since 2000, he has led the College of Natural Resources and the Environment at the University of Massachusetts Amherst to new highs in students taught, external grant funding, and development support. In all these key roles, he has been an architect of the evolution of our profession in continuing to address issues that are important in the Northeast, nationally, and internationally. This summer Dr. Willis will be retiring after 35 years of service at the University of Massachusetts Amherst.

## ***Journal Article of the Year for 2006***

### **Prevention or Control: Optimal Government Policies for Invasive Species Management**

(*ARER* Vol. 35, No. 1, April 2006: 29–40)

**C.S. Kim, Ruben N. Lubowski, Jan Lewandrowski, and Mark E. Eiswerth**

We present a conceptual, but empirically applicable, model for determining the optimal allocation of resources between exclusion and control activities for managing an invasive species with an uncertain discovery time. This model is used to investigate how to allocate limited resources between activities before and after the first discovery of an invasive species and the effects of the

characteristics of an invasive species on limited resource allocation. The optimality conditions show that it is economically efficient to spend a larger share of outlays for exclusion activities before, rather than after, a species is first discovered, up to a threshold point. We also find that, after discovery, more exclusionary measures and fewer control measures are optimal, when the pest

population is less than a threshold. As the pest population increases beyond this threshold, the exclusionary measures are no longer optimal. Finally, a comparative dynamic analysis indicates that the efficient level of total expenditures on

preventive and control measures decreases with the level of the invasive species stock and increases with the intrinsic population growth rate, the rate of additional discoveries avoided, and the maximum possible pest population.