GAMS TRAINING COURSE

Mathematical Models for Agricultural Policy Analysis

June 30 – July 4, 2008, Madrid (Spain)

Introductory GAMS course intended for those who are involved in quantitative impact analysis of agricultural and environmental policies (postgraduate students, researchers, consultants and staff of government departments). Some familiarity with applied optimization is desirable. Knowledge of modeling languages is not required.

Objectives

Because of its great flexibility and its potential for solving complex problems, GAMS has become a modeling language widely used in the area of agricultural economics. The utility of GAMS for developing economic models and conducting impact analysis is corroborated by the rising number of empirical applications.

This training course is designed to provide an introduction into optimization models for the analysis of agricultural and environmental policies. The thematic focus will be on key policy issues, such as agricultural support schemes and agri-environmental measures.

We propose an intensive course (previous knowledge of GAMS language is not required) where, beginning with the basic rules of model design, we gradually incorporate more advanced area-specific modeling techniques and GAMS language tips. The 30 hours course will provide the participants with the basic skills needed to conduct quantitative impact analysis of agricultural and agri-environmental policies.

Course presentation method

GAMS is a language and, like any other language, it is best learnt through practice. Hence, the course will consist on a mix of lectures and computer lab sessions. By linking lectures and computer exercises we will develop step-by-step economic models that can be used for agricultural policy analysis. Concrete applications will be based on farm, regional and sector models.

All sessions will be held in a computer room and there will be one PC available per participant. Participants will receive a course CD with all the course materials and GAMS files of the models covered during the course.
Instructor

María Blanco is Associate Professor at the Department of Agricultural Economics, Technical University of Madrid. Currently, her research activities focus on the quantitative assessment of agricultural and related environmental policies (farm and sector level mainly). She has been working with GAMS for more than fifteen years. Since 1996, she has been regularly conducting courses on Agricultural Economics Modeling using the GAMS system.

Course outline

Monday, June 30: Section 1 – Introduction

09:00 – 10:00 Quantitative economic modelling: Mathematical programming approach
10:00 – 11:00 Introduction to the GAMS modeling language
11:00 – 11:30 Coffee break
11:30 – 13:30 Hands-on session: Writing a first model in GAMS language
   Basic structure of a GAMS model: Sets, parameters, variables and equations
13:30 – 15:00 Lunch break
15:00 – 17:00 Hands-on session: Modelling exercises based on the first GAMS model
   GAMS features: Data handling, marginal values of variables and equations

Tuesday, July 1: Section 2 – Farm models

09:00 – 10:00 Building economic farm models using GAMS. Modeling the agricultural firm
10:00 – 11:00 Hands-on session: Farm level modeling (main resource constraints)
11:00 – 11:30 Coffee break
11:30 – 12:30 Hands-on session: Farm level modeling (production activities, buying and selling activities, institutional framework)
   GAMS language: Conditional operators, LOOP statement, result parameters
13:30 – 15:00 Lunch break
15:00 – 17:00 Farm level analysis (modeling of agricultural support schemes, set-aside obligations, quotas, agri-environmental measures, etc.)
Wednesday, July 2: Section 3 – Risk modelling

09:00 – 10:00 Risk modeling: Decision theory outline
10:00 – 11:00 Incorporating risk in agricultural economic models
11:00 – 11:30 Coffee break
11:30 – 12:30 Hands-on session: Risk in the farm model (mean-variance approach, safety first approaches, discrete stochastic programming)
13:30 – 15:00 Lunch break
15:00 – 17:00 Hands-on session: Applications to agricultural policy assessment (agricultural water demand analysis)
GAMS features: GDX utility for linking GAMS with other programs

Thursday, July 3: Section 4 – Sector models

09:00 – 10:00 Partial equilibrium analysis: multi-market models
10:00 – 11:00 Hands-on session: Aggregate models (spatial equilibrium)
11:00 – 11:30 Coffee break
11:30 – 12:30 Modeling the agricultural sector (multi-market models, external trade activities)
13:30 – 15:00 Lunch break
15:00 – 17:00 Hands-on session: Sector level analysis (market effects of support measures, trade policy instruments)

Friday, July 4: Section 5 – Impact analysis and data handling

09:00 – 10:00 MP models relevance for agricultural policy assessment
10:00 – 11:00 Model calibration and validation (with special focus on positive mathematical programming)
11:00 – 11:30 Coffee break
11:30 – 12:30 Hands-on session: Agricultural policy simulations (model calibration and validation)
13:30 – 15:00 Lunch break
15:00 – 17:00 Agricultural policy simulations (socioeconomic impacts of agricultural policy changes)
GAMS advanced features (using conditionals, improving output reports, linking GAMS with other programs)
Course venue

The course will take place at the Technical University of Madrid, Escuela Técnica Superior de Ingenieros Agrónomos (ETSIA), Avda. Complutense s/n – 28040 Madrid.

See location plan

Registration

Enrolment is limited to 15 participants to ensure one-on-one attention and interaction with the instructor. Course admission will be done in a first-paid, first-served basis.

The course fee is:

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<th>Course fee*</th>
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<tr>
<td>Payment before May 30th 2008</td>
<td>800 €</td>
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<tr>
<td>Payment after May 30th 2008</td>
<td>1000 €</td>
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(*) A 20% discount is offered for group registration (two or more participants from the same institution).

Participants attending to all sessions will receive a Course Certificate.

Payment for the GAMS Training Course will be made in Euro by Bank transfer (all bank fees must be covered by the sender). To register, please complete the registration form and fax/email it to:

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Avda. Complutense s/n - 28040 Madrid (Spain)  
Fax: +34 913 365 797  
E-mail: maria.blanco@upm.es

The course fee covers tuition, course materials and lunches from Monday to Friday at the ETSIA´s cafeteria. Participants will be responsible for any other meals, as well as accommodation and travel.

On-campus accommodation may be booked upon request. The Hall of Residence C.M.U Isabel de España combines a strategic location (University City, within easy reach of the city center by metro and bus) and excellent services and facilities (free internet access, swimming pool and other sport facilities). Single room €45 per night, breakfast included.
Further information

Course content:

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Accommodation and venue:

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