

## Introduction

The purpose of this chapter is to give a brief outline of respectively the AGMEMOD model, the purpose of this book, the structure of the book and its usefulness to the reader.

### *What is AGMEMOD?*

AGMEMOD stands for **A**gricultural **M**ember State **M**odelling and was established in 2001. Originally coordinated by Brendan Riordan of Teagasc Ireland, the AGMEMOD Partnership comprised universities, research institutes and government agencies from EU15 Member States. In 2002 the Partnership was extended to include partners from the countries that acceded to the European Union (EU) in May 2004 and in January 2007. Since 2007, partners from EU Candidate Countries (Macedonia, Croatia and Turkey) and other European countries (Russia, Ukraine, and Kazakhstan) have joined the AGMEMOD Partnership. All groups that become members of the AGMEMOD Partnership sign an agreement concerning the common ownership of the models developed and the analytic results.

AGMEMOD was funded under the European Commission 5th and 6th Framework Programmes (respectively QLRT-2001-02853 and SSPE-CT-2005-021543) and by contributions from the partners' institutes throughout the EU. The development of the AGMEMOD model's analytic capacity was also supported by projects funded by the Institute for Prospective Technological Studies (IPTS), part of the European Commission's Joint Research Centre (JRC). While the coordination for the FP6 project was being provided by INRA, France, the task of managing short to medium-term projects within the AGMEMOD partnership became the responsibility of LEI, the Netherlands.

AGMEMOD is an econometric, dynamic, multi-product partial equilibrium model wherein a bottom-up approach is used. Based on a set of commodity specific model

templates, country specific models were developed to reflect the detail of agriculture at Member State level and at the same time to allow for their combination in an EU model. This approach allows the inherent heterogeneity of the agricultural systems existing across the EU to be captured within the model's parameterisation, while the analytical consistency across the country models is ensured through the adherence to agreed commodity model templates. The maintenance of analytical consistency across the country models is essential for the successful aggregation of country models to the EU level. It also facilitates the meaningful comparison of the impact of a policy change across different Member States.

### ***Why AGMEMOD?***

The primary objective of the AMEMOD Partnership is to develop and maintain a partial equilibrium modelling system with the capacity to undertake model-based economic analysis of the impact of policy or other changes on the agri-food sector of each EU Member State and the EU as a whole.

The development, ongoing maintenance and improvement of the AGMEMOD model mark an advance in agricultural sector model building research as up until now the building and use of multi-country models for Europe's agri-food sector has been done in one institution rather than in each of the modelled countries as in the AGMEMOD project. The AGMEMOD Partnership's approach, wherein a bottom-up approach is used, is based on the development of country level models to a common country model template and their subsequent combination in a composite EU model. This approach seeks to better capture the inherent heterogeneity of the agricultural systems existing across the EU, while still maintaining analytical consistency across the country models.

The AGMEMOD Partnership and its members aim to establish not only a coalition of economists working together across the EU, Accession States and EU neighbours, but also advisory circles of experts in commodity markets and agricultural sectors in each country, to review the models and projections. This process has led to the development of a core competency in the economic modelling of agricultural commodity markets and agricultural policy analysis, enhancing the quality of information available for policy and decision making at all levels.

### ***High Level Motivation for Project***

While policy reform remains a political process, policy makers increasingly use evidence based decision making in policy negotiations. Within the EU, Member States are free to adopt differing positions in respect of policy proposals, based on their assessment of the merits of the policy for their agriculture sector and wider economic and social interests. Those charged with developing policy proposals at

EU level, need to have an appreciation for the likely impact of a particular policy in order to identify, at an early stage, any issues that would prevent a policy proposal's acceptance by the Member States. In this context, a model such as the AGMEMOD model, which can provide Member State level detail, will be highly useful for EU and Member State based policy makers.

### *Motivation for Book*

The motivation for writing this book is to provide fellow economists, policy analysts and other academics with a guide on how to build and operate a policy model of this kind and to help explain to policy makers the strengths and weaknesses of such models and the challenges which practitioners face in assessing the impact of policy change using this or similar models. A further objective of the book is to educate policy makers in how they should interpret the results of policy models.

### *How to Read this Book*

The book is structured so that it can be read either in its entirety or by selected chapters. Academics and students may be interested in reading all chapters of the books, while policy makers may prefer to skip the more technical material on modelling (Chaps. 2 and 3).

### *Overview of Book*

**Chapter 1 provides a background to the model's development.** It sets out the objective of the Common Agricultural Policy (CAP) and provides a brief history of the reforms of the CAP which have taken place over time, with a specific focus on the more recent reforms of the last 20 years. The heterogeneity of agriculture and agricultural policy across the EU Member States and the political implications which result in CAP negotiations are then discussed. Other modelling frameworks that have been developed in the past are then described. The justification for the modelling choices made in the design of the AGMEMOD model is then provided. Initially, some important issues associated with the interpretation of the model's results are discussed, including the definition of a baseline and the important distinction between projections and predictions/forecasts.

**Chapter 2 describes the AGMEMOD model's structure.** It provides a general description of the AGMEMOD model's structure including its country and commodity coverage. We present the general form of the model with specific examples of crops, livestock and dairy. Important features associated with the treatment of

policy within the model are highlighted, in particular, market price support, direct payments and supply control. We describe how policy harmonisation addresses the incorporation of the diverse range of direct income supports. We discuss the concept of key price and key price equations that are used to link country models within the AGMEMOD model together and to close the AGMEMOD model at the EU27 level. We also explain how border protection and export competition measures are introduced in the model.

**Chapter 3 describes the process of building, maintaining and using the AGMEMOD model.** It describes the data collection, the database building, the conditions that data have to satisfy and how to adjust the data to ensure that commodity markets are balanced. The various types of policy data used in the model are described. Exogenous data such as macroeconomic indicators and world commodity prices are detailed and their sources are identified. Moreover, the chapter describes both the software used for data management, model estimation and the presentation of results as well as providing key information concerning the AGMEMOD software and user interfaces.

**Chapter 4 presents the EU baseline outlook as generated by the AGMEMOD model.** This baseline provides an example of the type of output produced by the model. The dissemination of analytic results is crucial to the wide acceptance of the quality of the results and their use in policy discussions. It is suggested that the format used in this chapter is a useful template in this regard. Results are provided for crops, livestock and dairy.

**Chapter 5 analyses the impact of possible CAP policy changes using the AGMEMOD model.** The main purpose of the chapter is to demonstrate a policy analysis application of the AGMEMOD model and to outline the types of policy options that can be explored using the AGMEMOD model. Specific results are provided for a scenario which examines the impact of equalising the level of decoupled direct payments per hectare across the EU.

**Chapter 6 is the concluding chapter of the book.** It draws together the key messages from the earlier chapters and explores the future capacity of the model in terms of possible commodity, country or other extensions to the AGMEMOD modelling framework. The potential usefulness for the modelling approach beyond the EU is also considered.

## *Websites*

It is difficult to have a self-contained manuscript given the large number of commodities and national country markets considered. The reader is thus invited to visit the AGMEMOD website (<http://www.agmemod.eu/>) as well as the IPTS website (<http://ipts.jrc.ec.europa.eu/publications/>) to have access to the different studies conducted by the AGMEMOD Partnership. Furthermore, in order to obtain more

completed information sets, the reader is invited to visit Springer's Extra Materials website (<http://extras.springer.com/>). The specific space dedicated to this book contains a demo version of the AGMEMOD model that will be as described in the next chapters

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