Foreword

The *Eurostat-OECD compilation guide on land estimation* represents the first comprehensive overview of conceptual and practical issues related to the compilation of the balance sheet item 'land' in the national accounts.

The aim of the compilation guide is to provide conceptual and practical guidance to statisticians concerning the estimation and valuation of land and to increase international comparability. The guide clarifies theoretical concepts and proposes a breakdown of land into categories so that international comparisons can be more easily made. It also discusses possible data sources, elaborates direct and indirect estimation methods and addresses several special estimation cases. The guide presents the information that is available on this topic in the System of National Accounts 2008 and in the European System of Accounts 2010 in a systematic and accessible way. It draws on a wide range of experience and expertise by reviewing the methods used in estimating land in an attempt to describe practical and suitable measurement methods.

The primary purpose of the compilation guide is to help producers of national accounts data on land. As such, the manual is designed to help them prepare reliable estimates that are comparable between countries. This particularly applies to countries that are in the process of developing estimates for land. The guide therefore includes country examples that illustrate the practical application of the guidelines.

However, the compilation guide is also useful to users of the data. For them the guide not only provides background information about how data on land can be compiled, but also about the limitations of the data. In addition, the final chapter discusses more specifically the use of the data especially in assessing the wealth of households.

Since data for land are often not available it is hoped that this compilation guide will help countries to fill in the information gaps exposed by the 2007–2008 financial crisis. This is of particular importance in view of the housing market's role in the financial crisis in several countries. Compiling estimates of land will move countries one step closer to providing a complete set of information on a nation's balance sheet.

The electronic version of the *Eurostat-OECD compilation guide on land estimation* is available on the websites of Eurostat and the OECD.

We trust that this guide will be a useful resource to both compilers and users of data on land, and wish to express our sincere thanks to all those involved in its production.

Martine Durand
OECD Chief Statistician and Director of Statistics

Walter Radermacher
Director-General of Eurostat

Preface and acknowledgements

The *Eurostat-OECD compilation guide on land estimation* was prepared by the Task Force on Land and other non-financial assets. Both Eurostat and the Organisation for Economic Co-operation and Development (OECD) consider the compilation of non-financial assets, and in particular land, as a high priority and therefore it was decided to bundle the resources and to create a joint Eurostat-OECD Task Force.

Apart from the growing importance of balance sheet data in general, there were two more specific reasons for the establishment of this Task Force. First, in 2011 at a conference organised by the OECD and the International Monetary Fund (IMF) on strengthening the sectoral balance sheets there were repeated calls for better estimates of land on the balance sheet. Thus, the OECD considered that this issue needed further study considering the lack of information on land currently available at the time. Second, in the discussions on the European System of Accounts 2010 transmission programme, the Council Working Party on Statistics agreed with a (partially) mandatory transmission of the balance sheet item land, but also requested more guidance regarding its compilation. As a follow-up, Eurostat's National Accounts Working Group decided in its April 2012 meeting to establish the Task Force on Land and other non-financial assets; this decision was supported by the OECD's Working Party on National Accounts. The joint Eurostat-OECD Task Force started its work in June 2012.

Representatives from various European Union (EU) and non-EU OECD countries were represented in the Task Force and the European Central Bank participated as well. The Task Force was chaired by Silke Stapel-Weber/Hans Wouters (Eurostat) and Peter van de Ven/Jennifer Ribarsky (OECD). Other members of the Task Force were, in alphabetical order: Taehyoung Cho (Korea), Florian Gruber/Elisa Huber (Austria), Christian Gysting (Denmark), Ville Haltia/Martti Pykari (Finland), Wesley Harris (United Kingdom), Ruben van der Helm/Zlatina Balabanova (ECB), Marllena Ifrim/Brenda Bugge (Canada), Bob Kornfeld (US), Gang Liu (Norway), Martina Nemeckova (Czech Republic), Paolo Passerini (Eurostat), Ghislain Poullet (Belgium), Paola Santoro (Italy), Oda Schmalwasser/Sascha Brede (Germany), Tatjana Smokova (Eurostat), Nina Strazisar (Slovenia), Martha Tovar (Mexico), Erik Veldhuizen/Joy Sie Cheung (The Netherlands).

The Task Force on Land and other non-financial assets met six times:

— 9–10 July 2012	Eurostat, Luxembourg
— 10–11 December 2012	OECD, Paris
— 24–25 June 2013	Statistics Austria, Vienna
— 2–3 December 2013	Destatis, Wiesbaden
— 26–27 June 2014	Statistics Canada, Ottawa
— 8–9 December 2014	Czech statistical office, Prague

All Task Force members actively contributed to the work and drafted chapters or sections of the compilation guide. The work on the compilation guide was coordinated by Hans Wouters (Eurostat). The editing was performed by Jennifer Ribarsky (OECD).The draft chapters and preliminary versions of the compilation guide were available for comments on Eurostat's website.

The *Eurostat-OECD compilation guide on land estimation* benefitted from contributions of many countries that replied to the questionnaire on depreciation and service lives and the questionnaire on classification of land. The manual also benefitted from the comments that have been received from Eurostat's National Accounts Working Group, OECD's Working Party on National Accounts, the Advisory Expert Group, Eurostat's units Agriculture and fisheries, Environmental statistics and accounts and Regional statistics and geographical information.

Eurostat and OECD would like to thank all those who contributed to the *Eurostat-OECD compilation guide on land estimation*.

Contents

Foreword 3
Preface and acknowledgements 4

1. Why do we need this compilation guide? 11
Introduction 12
Assets and the importance of land 13
Purpose and structure of this compilation guide 14
Annex: Balance sheet for non-financial assets 16

2. Concepts and definitions 17
Introduction 18
Position of land on the balance sheet and definitions of land and related assets 18
Position of land on the balance sheet 18
Definitions 19
Clarifications definitions and borderline cases 19
Disaggregation of land and definition of components 20
Conceptual issues 20
Ownership and economic benefits from land 20
Ownership related to the lease of land and public-private partnerships 21
Land in the system of national accounts 21
Valuation 25
Time of recording 26
Netting and consolidation 27
Data issues in the measurement of flows of land 27
Annex: Distinguishing other changes in volume from holding gains and losses 28
Introduction 28
Description of the issue 28
Conceptual issues in identifying quality changes 28
Practical advice 31

3. Classification of land 33
Introduction 34
Why do we need a new classification? 34
Existing approaches for classifying land 35
Proposed classification of land 36
Definitions 37
Borderline cases 38
Case studies 39
Case study classification: Korea 39
Case study classification: Germany 40

4. Data sources **43**
Introduction 44
Description of issue 44
Types of data available 44
Administrative source 44
Case study sources: Australian cadastral system 45
Collection sources 45
Prices 46
Other types of information 47
Summary 47
Case study proxy data: European Central Bank 47
Annex: Results from 2011 OECD survey on land valuation in the national accounts 49

5. Direct estimations of land **53**
Introduction 54
Description of the method 54
a) Estimation of land area by land types in a single year or over a couple of years 54
b) Estimation of changes in the land types annually to produce time series 55
c) Estimation of representative unit prices for each relevant land type for a single year or a couple of years 56
d) Modelling the price changes for each land type over time (specifying price indices) in order to produce unit price time series 57
e) Bringing together the area and price information to produce time series on land value (for all relevant years) 57
f) Specifying volume changes and price changes per year 57
Case study: alternative way for estimating holding gains and losses 59
Strengths and weaknesses 59
Case study direct method: Korea 60
Estimating the land area 60
Estimating the market price of land 61
Estimating the total value of land 61

6. Indirect estimations of land **65**
6.1 Methods for estimating the combined value of land and structures 66
Introduction 66
Definition and characteristics 66
Description of the methods 67
Appraisals 67
'Quantity times price' approach 72
Case study estimating the combined value of land and structures: The Netherlands 75
Data sources 75
Methods 75
Case study estimating the combined value of land and structures: Australia 76
Data sources 76
Methods 77
Output 78

6.2 The residual approach 78
Introduction 78
Description of the method 78
Numerical example 79
Applicability of the residual approach 80
Strengths of the residual approach 81
Weaknesses of the residual approach 81
Applicability of the residual approach 81
The value of land as a by-product of other estimates 81
Other issues related to the residual approach 82
Case studies 82
Case study residual approach: Italy 82
Case study residual approach: Denmark 84
Case study comparison direct and residual method: Finland 85
6.3 The land-to-structure ratio approach 88
Introduction 88
Description of the method 88
Estimation of structures value 88
Estimation of land-to-structure ratio 88
Data requirements 89
Data requirements for the estimation of the value of dwellings and other buildings and structures 89
Data requirements for the estimation of land-to-structure ratios 89
Sectoral dimension 90
Strengths and weaknesses 90
Case study land-to-structure-ratio approach: Canada 91
Residential land 91
Non-residential land 93
6.4 The hedonic approach 94
Introduction 94
Description of method 94
Distinguishing the representative property price from price indices 94
A simple hedonic regression model 94
Expanding the model 94
An example 95
Dealing with multicollinearity 95
Data requirements 96
Strengths and weaknesses 96
Case study hedonic approach: Denmark 96
Problematic alternative 96
6.5 The importance of service lives and depreciation for indirect land estimates 97
Overview of the survey 97
Respondents and the use of the PIM 97
Overview of capital measurement and the PIM 98
Linear depreciation, with and without additional retirement distributions 99

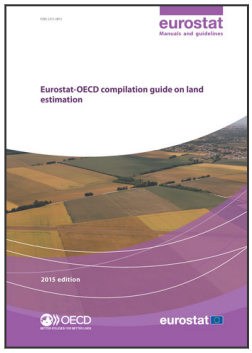
Geometric depreciation 100
Other patterns of depreciation and retirement 101
Comparing depreciation patterns across countries 102
Sources of information for the assumptions of the PIM 107
Transfer of ownership costs and improvements to structures 107
Net stocks of structures relative to GDP 108
Government owned land 109
Major concerns and plans for the future 109
Conclusions 110
Case study depreciation estimates: United States 110

7. Sectorisation and cross-classification 113
Introduction 114
Definitions 114
Why are sectorisation and cross-classification important? 115
Methods of estimating the value of land by sector or cross-classification 115
Direct method 116
Indirect methods — the residual approach 117
Indirect methods — the land-to-structure ratio approach 118
Hedonic approach 119
Summary of approaches 120
Challenges 120
Data sources 120
Shared land 120
Shared ownership 120
Households as producers/unincorporated enterprises 120
Changes in classification or sector allocation 121
Case study sectorisation and cross-classification of land: The Netherlands 121
Introduction 121
Land underlying dwellings (estimated using indirect method) 121
Land under cultivation (estimated using direct method) 122

8. Some special estimation cases 125
8.1 Agricultural land and wooded land available for wood supply 126
Agricultural land 126
Introduction 126
Classification of agricultural land 126
Sources 127
Area 127
Prices 127
Methodology on agricultural land prices 127
Valuation of agricultural land 128
Wooded land available for wood supply 128
Classification and registration of wooded land available for wood supply 128

Case study estimating the value of land underlying timber: Finland 130
Introduction 130
The residual approach for forestry land 130
The direct method 131
8.2 Land improvements 132
Introduction 132
Definition, characteristics and data sources 132
Separation of land improvements from land 133
Borderline between land improvements and dwellings and other buildings and structures 134
Accounting examples 134
Example 1: land entering the asset boundary as a consequence of activity in the vicinity 134
Example 2: land value change as a consequence of activity in the vicinity 135
Example 3: land entering the asset boundary as a consequence of activities on the piece of land 135
Example 4: land improvements as a consequence of activities on the piece of land 136
Case study estimating land improvements: Finland 136
8.3 Treatment of government owned land 138
Introduction 138
Scope of balance sheets for government owned land 138
Licences and permits to use government owned land 139
Valuation of government owned land 139
Overview of country practices 140
Case study government owned land: Germany 141
Source 1: information from budget funds data 141
Source 2: information from transactions data 141

9. The value of land and its contribution to wealth 143
9.1 Dwellings and land underlying dwellings as a storage of wealth 144
Introduction 144
The concept of dwellings and wealth analysis 144
Dwellings as a storage of wealth for households and non-profit institutions serving households 145
Dwellings as a storage of wealth at the national level 145
9.2 Households' real estate wealth data as an indicator in macroeconomic and financial analysis 147
List of abbreviations and acronyms 152
Glossary 153
Bibliography 165



From:

Eurostat-OECD Compilation guide on land estimations

Access the complete publication at:
https://doi.org/10.1787/9789264235175-en

Please cite this chapter as:

OECD/Eurostat (2015), "Foreword", in *Eurostat-OECD Compilation guide on land estimations*, Eurostat, Luxembourg.

DOI: https://doi.org/10.1787/9789264235175-1-en

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.