

Measuring the Effectiveness of Social Protection

CONCEPTS AND APPLICATIONS

Ruslan Yemtsov
Maddalena Honorati
Brooks Evans
Zurab Sajaia
Michael Lokshin



Measuring the Effectiveness of Social Protection

OTHER TITLES IN THE ADePT SERIES



Measuring Gender Equality: Streamlined Analysis with ADePT Software (2017) by Josefina Posadas, Pierella Paci, Zurab Sajaia, and Michael Lokshin

Key Labor Market Indicators—Analysis with Household Survey Data: Streamlined Analysis with ADePT Software (2016) by Ina Pietschmann, Steven Kapsos, Evangelia Bourmpoula, Zurab Sajaia, and Michael Lokshin

Simulating Distributional Impacts of Macro-dynamics—Theory and Practical Applications: Streamlined Analysis with ADePT Software (2014) by Sergio Olivieri, Sergiy Radyakin, Stainslav Kolenikov, Michael Lokshin, Ambar Narayan, and Carolina Sánchez-Páramo

Analyzing Food Security Using Household Survey Data: Streamlined Analysis with ADePT Software (2014) by Ana Moltedo, Nathalie Troubat, Michael Lokshin, and Zurab Sajaia

A Unified Approach to Measuring Poverty and Inequality—Theory and Practice: Streamlined Analysis with ADePT Software (2013) by James Foster, Suman Seth, Michael Lokshin, and Zurab Sajaia

Health Equity and Financial Protection: Streamlined Analysis with ADePT Software (2011) by Adam Wagstaff, Marcel Bilger, Zurab Sajaia, and Michael Lokshin

Assessing Sector Performance and Inequality in Education: Streamlined Analysis with ADePT Software (2011) by Emilio Porta, Gustavo Arcia, Kevin Macdonald, Sergiy Radyakin, and Michael Lokshin

For more information about Streamlined Analysis with ADePT software and publications, visit www.worldbankgroup.org/adept.

STREAMLINED ANALYSIS WITH ADePT SOFTWARE

Measuring the Effectiveness of Social Protection

Concepts and Applications

Ruslan Yemtsov
Maddalena Honorati
Brooks Evans
Zurab Sajaia
Michael Lokshin

© 2018 International Bank for Reconstruction and Development / The World Bank
1818 H Street NW, Washington, DC 20433
Telephone: 202-473-1000; Internet: www.worldbank.org

Some rights reserved

1 2 3 4 21 20 19 18

This work is a product of the staff of The World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Nothing herein shall constitute or be considered to be a limitation upon or waiver of the privileges and immunities of The World Bank, all of which are specifically reserved.

Rights and Permissions



This work is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <http://creativecommons.org/licenses/by/3.0/igo>. Under the Creative Commons Attribution license, you are free to copy, distribute, transmit, and adapt this work, including for commercial purposes, under the following conditions:

Attribution—Please cite the work as follows: Yemtsov, Ruslan, Maddalena Honorati, Brooks Evans, Zurab Sajaia, and Michael Lokshin. 2018. *Measuring the Effectiveness of Social Protection: Concepts and Applications*. Streamlined Analysis with ADePT Software series. Washington, DC: World Bank. doi:10.1596/978-1-4648-1090-9. License: Creative Commons Attribution CC BY 3.0 IGO

Translations—If you create a translation of this work, please add the following disclaimer along with the attribution: *This translation was not created by The World Bank and should not be considered an official World Bank translation. The World Bank shall not be liable for any content or error in this translation.*

Adaptations—If you create an adaptation of this work, please add the following disclaimer along with the attribution: *This is an adaptation of an original work by The World Bank. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by The World Bank.*

Third-party content—The World Bank does not necessarily own each component of the content contained within the work. The World Bank therefore does not warrant that the use of any third-party-owned individual component or part contained in the work will not infringe on the rights of those third parties. The risk of claims resulting from such infringement rests solely with you. If you wish to reuse a component of the work, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright owner. Examples of components can include, but are not limited to, tables, figures, or images.

All queries on rights and licenses should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; e-mail: pubrights@worldbank.org.

ISBN (paper): 978-1-4648-1090-9

ISBN (electronic): 978-1-4648-1116-6

DOI: 10.1596/978-1-4648-1090-9

SKU: 211090

Cover photo: Photo © Dominic Chavez/World Bank. Used with permission. Further permission required for reuse. Mary Thullah, a 20-year-old mother, comforts her daughter Fatmata Turay after she received vaccinations at the Princess Christian Maternity Hospital on March 10, 2015, in Freetown, Sierra Leone.

Cover design: Kim Vilov

Library of Congress Cataloging-in-Publication Data has been requested.

Contents

Foreword	xi
Acknowledgments	xv
About the Authors	xvii
Abbreviations	xxi
Chapter 1	
Introduction	1
Measuring How Social Protection Works: Focusing on Core Indicators	2
Measuring Social Protection Results	4
Finding Examples of Analysis, Data, and Indicators and Determining When ADePT SP Is Useful	9
What ADePT SP Cannot Do	11
Overview and Structure of the Manual	13
Notes	14
References	15
Chapter 2	
Concepts, Definitions, and Indicators for Social Protection Analysis ..	19
Social Protection Definitions	19
Economic Welfare, Poverty, and Inequality Indicators	27

Social Protection Programs' Effect on Poverty and Inequality	36
Social Protection System Diagnostics Using Performance Indicators:	
Illustrations with Data from Romania.....	52
Annex 2A: Social Protection Benefit Categories and	
Subcategories Definitions	73
Notes.....	76
References.....	78
Chapter 3	
Data Requirements for Social Protection Analysis.....	81
Understanding Social Protection Data Sources	81
Household Survey Data Quality Effects on SP Analysis.....	84
Using Social Protection Administrative Data to	
Address Survey Data Limitations	93
What Social Protection Information Is Typically Found	
in Household Surveys?.....	94
Working with Data and Variable Details.....	96
Summary.....	101
Notes.....	101
References.....	103
Chapter 4	
How to Use ADePT SP.....	105
What Is ADePT SP?	105
What Information Is Needed to Use ADePT SP?	106
What Indicators Does ADePT SP Generate?.....	106
Getting Started: Installing and Running Adept SP.....	108
Steps to Use ADePT SP	110
Common Mistakes and How to Avoid Them	138
Summary.....	143
Notes.....	144
References.....	144
Chapter 5	
How to Interpret ADePT SP Results.....	147
Initial Tables.....	148
Performance Tables	157
Average Transfer Value, per Capita	159
Profile Tables	187

Figures.....	197
Advanced Topics in Using ADePT SP.....	202
Notes.....	209
References.....	209
APPENDIXES.....	211
Appendix A	
ASPIRE Administrative Data Classification	213
Appendix B	
Formulas.....	217
Notation	217
Poverty Measures.....	218
Inequality Measures.....	218
SP Performance Indices.....	219
Note	226
Appendix C	
Assessing Whether Social Assistance Programs Could	
Have Work Disincentives	227
Index	231
Boxes	
2.1: Poverty Measure Definitions and Interpretation	33
3.1: Household Survey Sampling.....	86
3.2: Data Quality Checklist.....	91
4.1: Ways to Measure Social Protection Coverage from	
Household Surveys	119
5.1: Comparing Survey and Administrative Data Is Not Always	
Simple or Straightforward	153
Figures	
2.1: Social Protection Programs and Benefits Classification by Legal	
Status, Contributory Nature, and Benefit Modality.....	21
B2.1.1: Poverty Measures	33
2.2: Lorenz Curve Example.....	35
2.3: Simulated Effect of SP Transfers on Poverty Measures.....	43

Contents

2.4: Lorenz Curves for Pretransfer and Posttransfer Incomes and Concentration Curves for Transfers.....	45
2.5: Program Impact on Inequality Measures, Simulating Absence of the Program	46
2.6: Distributional Characteristic Index and Its Decomposition, $\epsilon = 1.0$	50
2.7: Units of Social Welfare Impact.....	51
2.8: Example from Romania: Average Transfer Value per Capita, LCU.....	53
2.9: Example from Romania: Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only.....	54
2.10: Example from Romania: Coverage.....	56
2.11: Distribution of Beneficiaries.....	57
2.12: Distribution of Benefits across Quintiles.....	58
2.13: Benefit Incidence of Old Age Pensions and Family Allowances, Based on Different Welfare Distribution Assumptions Distribution ...	59
2.14: Relative Incidence	60
2.15: Coady-Grosh-Hoddinott Indicators, Beneficiaries	62
2.16: Coady-Grosh-Hoddinott Indicator, Benefits	63
2.17: Adequacy, Direct and Indirect Beneficiaries.....	64
2.18: Undercoverage and Leakage.....	68
2.19: Transfer Frequency.....	69
2.20: Program Overlap by Recipient Group.....	70
2.21: Social Program Overlap.....	71
2.22: Benefit-Cost Ratio	72
3.1: Household Budget Survey Questionnaire Cover Example, Romania ABF, 2012	96
3.2: Social Protection Module, Romania Household Budget Survey.....	97
3.3: Data from Social Protection Module, Romania Household Budget Survey, 2012	99
5.1: ADePT SP Figure 1, Concentration Curve	198
5.2: ADePT SP Figure 2, Venn Diagrams	200
5.3: ADePT SP Figure 3, Benefit-Cost Ratios	201
C.1: Factors That Determine the Extent to Which Social Assistance Transfers Cause Work Disincentives and Dependency	228

Screenshots

4.1: Importing User Input (Data) File into ADePT SP.....	122
4.2: Labeling Variables Snapshot.....	123
4.3: Main Variables Specification Snapshot	124

4.4: Program Specification Snapshot	125
4.5: Consumption Variables Specification Snapshot	129
4.6: Social Protection Tables and Graphs Snapshot	135
4.7: Dialog Box for ADePT SP Options	138
5.1: The Messages Tab and the Errors, Warnings, and Notifications Outputs Table.....	149
5.2: Original Data Report	152
5.3: Simulating Benefit Increase.....	207

Tables

1.1: Key Resources for ADePT Social Protection.....	6
2.1: Key ASPIRE Categories and Subcategories of Social Protection Programs	23
2.2: Example of Economies of Scale.....	29
2.3: Example of Economies of Composition	30
2.4: Commonly Used Equivalence Scales	31
2.5: Example of the Distribution of Income and Lorenz Curve	35
2.6: Example of Pretransfer and Posttransfer Poverty Profile, LCU.....	40
2.7: Distribution of Transfers and Effects on Inequality	44
2.8: Distribution of Transfers and Distributional Characteristic Index	49
2.9: Distribution of Transfers and Coady-Grosh-Hoddinott Index	62
2.10: Leakage and Undercoverage Calculation	65
2.11: Leakage of Benefits versus Leakage of Beneficiaries.....	65
2.12: Benefit-Cost Ratio Calculations	72
4.1: Information Required to Estimate the Welfare Aggregate in ADePT SP	116
4.2: Organization of Data for Individual-Level File.....	120
4.3: Organization of Data for a Household-Level File	120
5.1: ADePT SP Table 1, Sample and Population Sizes	154
5.2a: ADePT SP Table 2a, Population Demographics, V0	156
5.2b: ADePT SP Table 2b Population Demographics, V2	158
5.3: ADePT SP Table 3, Average Transfer Value, per Capita	160
5.4: ADePT SP Table 4, Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only.....	161
5.5: ADePT SP Table 5, Coverage.....	164
5.6: ADePT SP Table 6, Distribution of Beneficiaries	166
5.7: ADePT SP Table 7, Distribution of Benefits (Targeting Accuracy)	169
5.8: ADePT SP Table 8, Relative Incidence.....	170

Contents

5.9: ADePT SP Table 9, Adequacy	171
5.10: ADePT SP Table 10, Undercoverage and Leakage	172
5.11: ADePT SP Table 11, Impact of Programs on Poverty and Inequality Measures—Simulating the Absence of the Program	175
5.12: ADePT SP Table 12, Coady-Grosh-Hoddinott Indicator	177
5.13: ADePT SP Table 13, Coady-Grosh-Hoddinott Indicator, Benefits' Incidence	178
5.14: ADePT SP Table 14, Distributional Characteristic Index and Its Decomposition.....	179
5.15: ADePT SP Table 15, Units of Social Welfare Impact.....	182
5.16: ADePT SP Table 16, Transfer Frequency in Each Population Group	183
5.17: ADePT SP Table 17, Social Program Overlap	184
5.18: ADePT SP Table 18, Social Program Overlap [2]	185
5.19: ADePT SP Table 19, Benefit-Cost Ratio.....	186
5.20: ADePT SP Table P1, Profile by Age and Gender	188
5.21: ADePT SP Table P2, Profile by Household Head's Age and Gender.....	189
5.22: ADePT SP Table P3, Profile by Education.....	190
5.23: ADePT SP Table P4, Profile by Household Head's Education.....	192
5.24: ADePT SP Table P5, Profile by Economic Status	193
5.25: ADePT SP Table P6, Profile by Household Head's Economic Status.....	193
5.26: ADePT SP Table P7, Profile by Custom Individual Characteristic	195
5.27: ADePT SP Table P8, Profile by Custom Individual Characteristic of Household Head.....	196
5.28: ADePT SP Table P9, Profile by Custom Household Characteristic.....	197
5.29: Custom Table	197
5.30: Sensitivity Analysis, Guaranteed Minimum Income.....	204
5.31: Profile by Custom Household Characteristic.....	206
5.32: Simulating Benefit Increase.....	208
5.33: Simulating Program Reform	208
A.1: Classifications of Administrative Data in ASPIRE	213

Foreword

Data, once collected, must be managed, analyzed, and applied to inform the policies and programs that affect people's lives. The expertise to do so is often scarce, which is why the World Bank's Software Platform for Automated Economic Analysis (ADePT) family of tools are so valuable. This book provides the conceptual and analytical framework for assessing social protection and labor programs and guides users in conducting analysis, particularly using ADePT. The ADePT program, available free for download, includes a module dedicated to social protection, ADePT SP.

Books do exist that focus on social policy theory, concepts, or analytical techniques. This book, *Measuring the Effectiveness of Social Protection: Concepts and Applications*, is unique because it is the first resource to tie together all of these components, simplifying most complex concepts and featuring immediate data applications and detailed explanations.

The world development community and the United Nations Sustainable Development Goals (SDGs) have reiterated the importance of social protection for ameliorating global poverty and vulnerability. The SDGs present a development framework for the next 15 years. SDG Goal 1 lists as a global target to "By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions" and target 1.3 to "Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable."

The World Bank maintains a dataset to monitor this objective that builds on the large set of household surveys processed using ADePT SP. That Atlas of Social Protection: Indicators of Resilience and Equity (ASPIRE) database provides performance indicators for most countries in the developing world.

To help users around the world better understand SDG target 1.3 and related indicators of results in social protection, the World Bank's Social Protection and Labor Global Practice has updated the previous version of the ADePT SP user manual, which contributed to the already large set of manuals for ADePT modules and resources covering poverty, inequality, health, education, gender, food security, and more. This new book is a valuable resource for users to understand social protection programs and concepts and to quantify the performance of social protection programs and systems. It introduces them to ADePT SP and guides them in interpreting results.

By combining the conceptual understanding and the analytical tool, the new book allows better and provides more accurate social protection analysis and informs evidence-based decision making, which all translate to improved results and efficiency. Technical experts who prepare quantitative social protection analysis for their ministries, national statistics offices, think tanks, academic institutions, or development organizations will gain from advanced methods and new and more rapid analysis. For senior officials, the content is beneficial for important decisions, with sections focused on how to use evidence-based social protection analysis for more effective reforms or new policies.

Much of the material covered in this manual and much of the ADePT SP software has been taught and refined over many years to senior policy makers and practitioners worldwide who are seeking to improve the outcomes of their social protection policies. Examples in the past decade include the annual Core Courses on Social Safety Nets, Pensions, and Labor at World Bank headquarters, regional training events, and country trainings and reports around the world.

This book will equip users with different statistical backgrounds and social protection knowledge to independently conduct social protection analysis and prepare standardized tables and graphs with performance indicators for the social protection system and for individual programs. The ADePT SP book targets government staff in relevant social protection ministries, finance, other government entities, and national statistics offices, as well as development practitioners and academics.

The book first provides a detailed conceptual and analytical understanding of social protection systems and then guides users to apply ADePT SP to analyze those systems using household survey data. Chapters 1 and 2 present a typology and measurement approach for social protection, including (a) pensions and social insurance to reduce risk and achieve redistribution goals, (b) labor market programs to ensure against job loss and increase employability, and (c) social assistance to reduce poverty and improve livelihoods. Performance measurement metrics include the SP programs' simulated poverty and inequality effects, incidence of SP benefits across the welfare distribution, coverage, and the adequacy of benefits. Chapter 3 describes the household survey data requirements for producing the complete set of standardized tables and graphs in ADePT SP and discusses the complementarities with SP program administrative data to enhance the analysis. Chapter 4 provides basic information on how to install and use ADePT SP, as well as the steps needed to conduct the analysis. Chapter 5 provides detailed guidance for all audiences on how to interpret the findings using concrete country examples.

The software's strength is its ability to quickly provide, with relatively limited resources, a large volume of quantitative information to conduct SP performance analysis. The software also provides results in minutes once data are prepared, compared with having to spend weeks or months to conduct analysis. Additionally, errors are minimized through automated checks, which may be missed in other programs. The completeness and accuracy of the analysis will nonetheless depend on the quality of the underlying household survey data.

I am pleased to recommend this guide, which connects theory to practice and offers tools that help put data to use for development.

Haishan Fu
Director, Development Data Group
The World Bank Group

Acknowledgments

Financial support was provided by the World Bank and the Multi-Donor Rapid Social Response Trust Fund.

The ADePT SP software was created by a World Bank team—including Emil D. Tesliuc, Stephen Younger, Phillippe Leite, Michael Lokshin, Zurab Sajaia, and Sergiy Radyakin—under the guidance of Margaret Grosh and Martin Ravallion. The most recent versions of the software have been refined by Ruslan Yemtsov, Maddalena Honarati, Claudia P. Rodriguez Alas, and Brooks Evans.

Substantial contributions to previous versions of the book were provided by Emil Tesliuc, Philippe Leite, and Stephen Younger.¹ Frieda Vandeninden, Vlad Alexandru Grigoras, and Chris de Neubourg provided valuable inputs, comments, and suggestions. The report benefited greatly from its peer reviewers, Natalia Millan and Diego Angel-Urdinola from the World Bank and Jorg Neugschwender, research associate at the Luxembourg Income Studies.

The authors are indebted to numerous other colleagues who contributed comments, suggestions, and examples of tables and graphs. Many colleagues generously offered constructive suggestions on previous versions of

1. See 2010. “User Manual for ADePT Social Protection.” World Bank, Washington, DC.

Acknowledgments

this software, in particular Aylin Isik-Dikmelik, Vlad Alexandru Grigoras, Luis Eduardo Madeiro Guedes, Trang Van Nguyen, and Ramya Sundaram.



About the Authors

Ruslan Yemtsov is a lead economist and global leader for social safety nets in the World Bank Social Protection and Labor Global Practice. Before his current position, he worked as a lead poverty economist in the Middle East and North Africa region and in the Europe and Central Asia region. His experience includes preparing poverty assessments (Bosnia, Croatia, the Arab Republic of Egypt, Georgia, FYR Macedonia, Serbia, and more than a dozen other countries and economies), working on targeting and social assistance projects (Croatia, Morocco, and the Russian Federation), working on fuel subsidy reform dialogue (Egypt, Morocco, and Tunisia,) and leading regional flagship reports on poverty, subsidy reforms, and statistical capacity. He has also worked on food crisis response (Djibouti), structural adjustment credits (Georgia), energy sector reform, social funds, and social welfare development projects. He is the author and coauthor of more than 20 research papers, articles, and book chapters. He holds a PhD in micro-economics from Moscow State University.

Maddalena Honorati is a senior economist in the Social Protection and Labor Department of the World Bank, which she joined in 2005. She holds a PhD in economics from Bocconi University in Milan, Italy, and an MSc from Pompeu Fabra University in Barcelona, Spain. Before joining the

social protection team in 2009, she worked for the Development Research Group at the World Bank on firm productivity, determinants of informality, and the effect of investment climate regulations on firm performance. Her recent research interest has been on the design and evaluation of social safety nets and active labor market programs in low- and middle-income countries, as well as the measurement of social protection system performance. She has written global, regional, and country reports on social safety nets and jobs diagnostics; has written research papers on labor market issues, including policies to foster skills and employability and promote entrepreneurship; and has supported implementation of such programs and policies, notably in Ecuador, Ghana, Kenya, and the Philippines.

Brooks Evans is an economist with the International Monetary Fund. He focuses on both macro- and microeconomic analysis and policy advice in advanced and developing countries. He works on assessing the distributional effects of fiscal policy—both taxes and expenditure. His areas of focus include social assistance, labor market programs, pensions, subsidies, and the public sector wage bill. He previously worked at the World Bank, where he trained officials and experts worldwide using ADePT for social protection, labor, and poverty analysis. He conducts research on these topics as well, which have been highlighted in publications such as the World Bank's *World Development Report*. The views expressed in this book are those of the authors and do not necessarily represent the views of the International Monetary Fund (IMF), its Executive Board, or IMF management.

Zurab Sajaia is a senior computational economist in the World Bank's Development Data Group. His areas of expertise are in poverty and inequality measurement, applied econometrics, and social protection. More recently, he has been developing software tools for Automated Economic Analysis (ADePT platform), as well as on systems for electronic data collection and management (Survey Solutions).

Michael Lokshin is a manager of the survey unit in the Development Economics Vice Presidency of the World Bank. The survey unit offers technical assistance to client countries on all aspects of data collection, analysis, and data dissemination. During his 18 years at the World Bank, he has led numerous large-scale projects on developing tools for data collection and data analysis. Among these are ADePT—an automated platform for

applied economic analysis—and the Survey Solutions CAPI (computer-assisted personal interviewing) data collection system in use by 70 countries. He also spearheaded the creation of the Economic Research Computer Center at the World Bank. Michael has coauthored seven books and published more than 50 papers on applied econometrics, labor, and poverty economics in international peer-reviewed economic journals. He received his PhD in economics from the University of North Carolina at Chapel Hill, North Carolina, United States.

Abbreviations

ASPIRE	Atlas of Social Protection Indicators of Resilience and Equity
BCR	benefit-cost ratio
CGH	Coady-Grosh-Hoddinott
D1	decile 1
DCI	distributional characteristics index
EU	European Union
FGT	Foster-Greer-Thorbecke
GE	generalized entropy
GMI	guaranteed minimum income
ILO	International Labour Organization
LCU	local currency units
LIS	Luxembourg Income Study
LRIS	last-resort income support
MP	moderate poor
MTR	marginal tax rate
NEETD	not in employment, education, training, or disabled
OECD	Organisation for Economic Co-operation and Development
OLF	out-of-labor force
PETI	Programa de Erradicação do Trabalho Infantil
PMT	proxy means test

Abbreviations

PSU	primary sampling units
Q1	Quintile 1
SDGs	Sustainable Development Goals
SP	social protection
SPSS	Statistical Package for the Social Sciences (software package for statistical analysis)
TD	targeting differential
UN	United Nations

Introduction

This book provides users an understanding of key social protection concepts and measurement metrics and introduces them to the ADePT SP software, which is used to conduct social protection performance analysis. It presents the main concepts of social protection, including the typology of programs and their objectives. Because these objectives often include poverty and inequality, the concepts of poverty and inequality are also discussed in relation to social protection with the appropriate reference to the ADePT Poverty and Inequality software and book (Foster and others 2013). This manual describes methodologies for assessing social protection and discusses how measurement metrics, such as the poverty impact, require understanding the underlying mechanisms and often use multiple indicators.¹ Attention is therefore given to a holistic approach of analysis so that the relationship between indicators can be better understood, as well as ways to use this analysis to improve policies and programs to maximize outcomes.

The objectives of the book are (a) to help users understand the methodological framework to assess and measure social protection programs' performance and (b) to guide them as they use the ADePT SP software as a practical tool for analyzing data and interpreting results. The objectives of this version of the book are broader than the previous manual's (Tesliuc and Leite 2010). In addition to providing guidance on using the most recent version of the ADePT SP software (available free for download²) and interpreting results, this updated book is a user manual and also introduces readers to key concepts in social protection, including the comparative advantage of different data sources to measure the effects of social protection programs

and the alternative ways to classify social protection benefits. Since the previous version of the manual was made available, the targeted audience (government officials, social protection practitioners, researchers in multilateral organizations, and academics) has expanded; more and better social protection data are now available; and a global international mandate has been set to monitor the coverage of social protection as part of the Sustainable Development Goals (SDGs) framework. All these factors indicated a need to update the specifications of the software and book and to broaden the book's scope by discussing the conceptual and analytical framework for assessing social protection, poverty, and inequality.

This introduction explains the manual's usefulness and unique qualities, describes the way it complements other publications, and provides a snapshot of situations where it is useful to understand and advance the analysis of social protection. First, a brief discussion of the scope and measurement of social protection and its objectives is presented. Then, the ADePT SP core features are described, along with ADePT SP's strengths, structure, and requirements. Examples of more developed analysis, data, and results undertaken using ADePT SP are provided. The chapter also warns readers about what ADePT SP cannot do, and it concludes by presenting the overview and structure of the book.

Measuring How Social Protection Works: Focusing on Core Indicators

Social protection can be defined as policies and programs designed to reduce poverty, increase resilience to shocks, improve human capital, and raise productivity (World Bank 2012a).

Across various definitions of social protection used in the literature,³ most researchers agree that it comprises the set of public policies that aim to support individuals over their lifetimes as they encounter adverse events, including events that are idiosyncratic (such as ill health, loss of employment, and old age) or covariate (communitywide economic shocks or extreme weather). Social protection aims to prevent or protect against poverty, vulnerability, and social exclusion and promotes equality of opportunity, with particular attention given to vulnerable and disadvantaged groups. Social protection can be provided in cash or in kind (through goods or services). It can be provided through subsidies or fee waivers, be made

conditional on certain actions of beneficiaries or on their refraining from certain actions, be made conditional on their past contributions to public insurance schemes, or be provided as noncontributory social assistance schemes. Finally, social protection can provide universal, categorical, or poverty-targeted benefits. Various types of social protection policies and programs are typically grouped into social insurance, labor market and social assistance programs—that is, the areas of social protection. Chapter 2 details the composition of each of these social protection areas.

In most instances, social protection is meant to alter the distribution of income or well-being in an individual's life cycle by redistributing resources among the population. For example, pension programs transfer income (a) from periods of active work and employment to periods of old age and retirement from the workforce or (b) from working-age adults to the elderly. Unemployment insurance transfers income from the employed to the unemployed. Needs-based social assistance programs transfer income from the nonpoor to the poor. Even programs that do not transfer income directly, such as those that provide job search assistance, are intended to alter the income distribution in the future by helping individuals who are currently unemployed to find employment or increase their productivity.

Why is social protection a necessary public policy? As discussed in the literature, public policies can pursue specific objectives. The most basic function is to protect against negative consequences of risks and negative shocks to well-being. In extreme cases, such policies protect a person's very existence. For example:

- *Poverty and vulnerability.* Being poor or at risk of poverty can lead to several undesirable outcomes, including inability to pay for essentials such as food, which can lead to death or permanent lifetime impairment, such as stunting in malnourished children. Individuals—particularly those who have fewer resources and who are more exposed to risks, such as droughts—are less likely to escape poverty without external support. Social assistance to these groups can reduce poverty risk and is shown to lead to several other positive outcomes, such as better education and health for children (Bastagli and others 2016).
- *Unemployment and income loss.* When people lose a job, their income drops (as does their family's income), and they risk not finding new work. Unemployment insurance provides some income protection

after job loss, and training and other active labor market programs can shorten periods of unemployment.

- *Retirement, death, and disability.* Leaving the workforce because of age or disability results in a loss of income and a risk of poverty, as does the death of a family breadwinner. Old-age income insurance, mainly pensions, can replace income and provide poverty protection for elderly people, people with disabilities, and widows.
- *Disaster.* Natural disasters destroy assets and livelihoods. Waterborne diseases become more prevalent during heat waves, floods, or droughts. Reduced rainfall results in crop failures, which can cause food prices to spike. Household surveys, globally, tell us that natural disasters—whether floods, storms, droughts, earthquakes, or landslides—are one of the many reasons people become and stay poor.⁴ Indeed, a recent meta-analysis of 38 such studies finds that natural disasters consistently reduce incomes (Kazim and Noy 2014).

Measuring Social Protection Results

From the description of reasons for social protection, it is clear that among the many objectives, redistribution in favor of people who are less well-off is the main immediate goal and the instrument for achieving other objectives.⁵ This focus helps narrow down multiple possible indicators of outcome to a well-defined set of measures that capture the effects of social protection on the distribution. Measuring such effects is the main idea behind the ADePT SP approach to performance measurement.

Starting with a broad idea of the objective of social protection and labor systems, ADePT SP further narrows the focus to more detailed questions about specific aspects of a program or system that can also improve our understanding of the effects of that program or system on poverty and the income distribution. Is a specific program well targeted to its intended beneficiaries? Are the recipients in fact poor? Is the program or system sufficiently generous to provide adequate levels of support? Is it more generous to those with greater needs? How are its benefits distributed across subgroups of the population? To what extent does one program overlap with other social protection programs? And how does it compare to other social protection programs on those criteria?

These questions provide a foundation for developing specific indicators of performance, which are described in detail in chapter 2. Coverage is the

main indicator of the ability of social protection to protect a population against actual and potential risks. Coverage should be measured for each program—and then for all programs combined in the social protection system—by pillars (social insurance, labor market, and social assistance) and by overall social protection.

Knowing how much assistance is provided by each program and by all programs combined gives an indicator of adequacy or level of support. Typically, adequacy is assessed by comparing the amount of transfer to the pretransfer level of income or consumption.

The amount of resources accruing to households in different parts of the distribution, poor and nonpoor, indicates distribution or incidence. For targeted transfers that aim to redirect resources to households at the bottom of distribution, several targeting indicators are conveniently estimated (leakage, inclusion and exclusion error, targeting differential, distributional characteristic index). Such indicators help researchers understand whether the targeting achieves its intended result—to redistribute in favor of the less well-off—and how far the actual program and the system as a whole are from the ideal. Importantly, when considering the targeting of one program, one must look at it in the context of other programs.

Comparing the amount of resources transferred to the income or consumption of households allows estimation (a) of the effect of such transfers on the households' welfare and (b) of the reduction of the aggregate index of poverty and inequality, assuming some behavioral responses (or no response) to the receipt of transfer. It also allows estimation of the effect of transfers on the aggregate welfare function and estimation of the relationship between the outcome and inputs (benefit-cost ratio [BCR]). Finally, all these indicators can be estimated by population subgroups (urban or rural), and standard error or precision intervals for key estimates can be calculated to judge the statistical robustness of comparisons across programs and population groups.

These indicators are widely used in the literature. Table 1.1 reviews resources and references. Two books are of particular interest to both the beginner and the expert user. The first, Armando Barrientos's (2013) *Social Assistance in Developing Countries*, is a theoretical summary of social protection performance measurement with links to welfare theory and main approaches to measuring poverty and inequality. While focusing on the noncontributory part of the social protection, the book looks at much broader issues of redistribution pertinent to the

Measuring the Effectiveness of Social Protection

Table 1.1: Key Resources for ADePT Social Protection

Reference	Contribution
Global resources	
United Nations Sustainable Development Goals (SDGs) (United Nations 2017) (https://sustainabledevelopment.un.org/sdg1)	<i>SDG 1</i> : End poverty in all its forms everywhere. <i>Target 1.3</i> : Implement nationally appropriate social protection systems and measures for all, and by 2030 achieve substantial coverage of the poor and the vulnerable.
<i>Resilience, Equity, and Opportunity: The World Bank's 2012–2022 Social Protection and Labor Strategy</i> (World Bank 2012a)	The strategy notes that the first gap that needs to be addressed is “knowledge on existing programs” and that “this gap can be filled by strengthening and expanding the country coverage of social protection and labor (SPL) assessment and benchmarking tools, using labor force data, household data, and program-level administrative data. Strengthening national statistical systems, ongoing surveys, and program-level administrative data are needed. Building on efforts to ensure the quality, coverage, and comparability of data within and where needed across countries, analytical tools can be applied (including the World Bank’s ADePT SP software) to develop comparable and systematic SPL indicators that will allow benchmarking over time and across countries.”
ASPIRE (Atlas of Social Protection Indicators of Resilience and Equity) (http://datatopics.worldbank.org/aspire/)	The ASPIRE database provides harmonized indicators to describe the country context in which social protection and labor programs operate and to analyze performance of social assistance, social insurance, and labor market programs on the basis of nationally representative household survey data from 122 developing countries (as per June 2017). Although reasonable efforts are made to ensure cross-country comparability, the user should be aware of caveats regarding ASPIRE indicators. All indicators are regularly updated, and more countries will be added as data become available.
“The State of Social Safety Nets 2015” (Honorati, Gentilini, and Yemtsov 2015) (http://documents.worldbank.org/curated/en/415491467994645020/The-state-of-social-safety-nets-2015)	The 2015 edition of the periodic series brings together a large body of data that was not previously available, drawing on the World Bank’s ASPIRE database and other sources. This excellent report provides reference values for many indicators produced by ADePT SP.
“Indicators to Measure Social Protection Performance: Implications for EC Programming” (European Commission 2017) (http://capacity4dev.ec.europa.eu/t-and-m-series/document/indicators-measure-social-protection-performance#sthash.Rk69SftN.dpuf)	This paper describes the European Union (EU) approach to measuring social protection performance. It links to the SDG agenda and definitions and links to resources and data for EU member states. It provides a critical overview of social protection indicators in the SDGs context to support the European Commission’s decision making on social protection indicators and to support decisions on how the commission can contribute to the global indicator discourse within its own institutional mandate and institutional priorities.
<i>For Protection and Promotion: The Design and Implementation of Effective Safety Nets</i> (Grosh and others 2008)	Drawing on research, policy, and operational documents from the World Bank’s work with over 100 countries, authors Grosh and others provide comprehensive guidance on the design and implementation of cost-effective safety nets, including how to define eligibility and select beneficiaries, how to set and pay benefits, and how to monitor and evaluate programs and systems. Country experiences are provided throughout.
<i>Social Assistance in Developing Countries</i> (Barrientos 2013)	The book presents a very detailed theoretical summary of social protection performance measurement with links to welfare theory and issues of redistribution pertinent to the social protection system overall. All concepts are illustrated by examples using household survey data from developing countries.

(continued)

Table 1.1: Key Resources for ADePT Social Protection (*continued*)

Reference	Contribution
"The World Bank Group and ILO Universal Social Protection Initiative" (International Labour Organization and World Bank n.d.) (http://www.ilo.org/global/topics/social-security/WCMS_378991/lang-en/index.htm .)	The World Bank and the International Labour Organization (ILO) share a vision of a world where anyone who needs social protection can access it at any time. Both institutions recognize that universal social protection is a goal that they strive to help countries deliver. Achieving universality would facilitate the delivery of (a) the World Bank's corporate goals of reducing poverty and increasing shared prosperity and (b) the ILO's mandate of promoting decent work and social protection for all. This shared mission would drive the development agenda to ensure lasting peace, prosperity, and progress.
<i>Regional resources using ADePT SP indicators</i> <i>Reducing Poverty and Investing in People: The New Role of Safety Nets in Africa</i> (Monchuk 2014) (https://openknowledge.worldbank.org/handle/10986/16256)	This timely analysis of safety nets in Africa provides a solid foundation for evidence-based policy dialogue and programming. Because of the growing body of evidence that safety nets contribute to inclusive growth, African decision makers are now putting safety nets high on their development agendas.
<i>Live Long and Prosper: Aging in East Asia and Pacific</i> (World Bank 2016) (https://openknowledge.worldbank.org/bitstream/handle/10986/23133/9781464804694.pdf)	This report is a comprehensive analysis of aging in East Asia and Pacific. It examines how aging affects households, economies, and societies and considers how they can manage the risks and realize the opportunities amid such fundamental social change. According to the report, rapid aging is partly a result of the region's economic development, higher life expectancy, and sharp declines in fertility rates, with a growing number of countries now well below replacement levels.
<i>Income Support for the Poorest: A Review of Experience in Eastern Europe and Central Asia</i> (Tesliuc and others 2014) (http://documents.worldbank.org/curated/en/527851468029956890/pdf/890680PUB0Inco00Box385269B00PUBLIC0.pdf)	This study examines the experience of last-resort income support (LRIS) programs in Eastern Europe and Central Asia. Authors Tesliuc and others (2014) document the outcomes of such programs throughout the region in terms of expenditure, coverage, targeting, and simulated effects on poverty and inequality. Chapters 1 and 2 provide an overview of the role of LRIS in the wider social assistance policies of Eastern Europe and Central Asia using performance indicators generated by ADePT.
"Social Assistance and Labor Market Programs in Latin America: Methodology and Key Findings from the Social Protection Database" (Cerutti and others 2014) (http://documents.worldbank.org/curated/en/498461468326377129/Social-assistance-and-labor-market-programs-in-Latin-America-methodology-and-key-findings-from-the-social-protection-database)	The World Bank's Latin American and Caribbean Social Protection Database attempts to fill knowledge gaps by collecting and systematizing data on social protection programs from both administrative sources and household surveys. The data assembled provide a powerful tool to study trends and analyze program performance as well as to benchmark countries' social protection systems. Authors Cerutti and others found both expected and unexpected trends in spending on social protection and coverage of social protection programs across countries. Between 2000 and 2010, expenditure on social assistance nearly tripled. At the program level, conditional cash-transfer programs ceased to dominate social assistance spending, except in Mexico, and have come second to social pension spending in Brazil, Chile, and Uruguay. Labor market programs remain small and fragmented but show much more countercyclical patterns.
"Inclusion and Resilience: The Way Forward for Social Safety Nets in the Middle East and North Africa" (Levin, Morgandi, and Silva 2012) (http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9771-8)	This report by Levin, Morgandi, and Silva aims to meet two broad objectives. First, the report enhances knowledge about the current state of existing social assistance and assesses its effectiveness in responding to new and emerging challenges to the poor and vulnerable in the region by bringing together new evidence, data, and country-specific analysis. Second, the report opens and informs a debate on feasible policy options to make social assistance in the Middle East and North Africa more effective and innovative.

(continued)

Measuring the Effectiveness of Social Protection

Table 1.1: Key Resources for ADePT Social Protection (*continued*)

Reference	Contribution
<i>More and Better Jobs in South Asia</i> (Nayar and others 2011) (http://documents.worldbank.org/curated/en/127581468104051563/More-and-better-jobs-in-South-Asia)	This report reviews South Asia's recent track record on the quantity and quality of job creation. Authors Nayar and others trace the relationship of such job creation mostly to overall economic growth and attempt to answer what needs to be done to meet South Asia's employment challenge. Chapter 6 of Nayar and others (2011) looks at the links between jobs, informality, and social protection coverage.
Country reports using ADePT SP indicators	
"Social Snapshot and Poverty in Armenia, 2016" (National Statistical Service of the Republic of Armenia, 2016), http://www.armstat.am/en/?nid=80&id=1819	Chapter 9 of the annual report analyzes the system of social transfers in Armenia, their impact on poverty reduction, their effectiveness in terms of coverage of the poor, and their distribution across quintile groups. Tables were generated using ADePT SP, multiple rounds of the national household survey data comparing different assumptions on the consumption aggregate (pre- and post-transfer).
"Belarus Social Assistance Policy Note: Improving Targeting Accuracy of Social Assistance Programs" (World Bank 2011a)	The note provides a very detailed set of tables based on recent official household survey for the country. Tables were generated using ADePT SP.
"Continuous Improvement: Strengthening Georgia's Targeted Social Assistance Program" (Bam and others 2016)	The report focuses on the assessment of targeting performance. It contains a very detailed analysis of the existing system, its gaps, and interesting examples of simulations for introducing new programs that could close such gaps.
"Social Protection for a Changing India" (World Bank 2011b)	The report uses the National Sample Survey for India to assess coverage of key social safety net schemes. This report is one of the key references for those interested in social protection in South Asia.
"Protecting Poor and Vulnerable Households in Indonesia" (World Bank 2012b)	The report provides excellent documentation using the most recent National Socioeconomic Survey of the performance of key cash and in-kind social safety nets in the country. Of particular interest is the analysis of what is behind the observed targeting performance. This book is an excellent source for those who want to move a step beyond simple data description in understanding what drives the performance of social assistance programs.
"Promoting Equitable Growth in the Russian Federation: A Living Standards Assessment" (World Bank 2008)	Chapter 6 of the report is devoted to a detailed analysis of social safety nets. It was written when the World Bank started documenting standard indices targeting performance, and it contains many tables and interpretations of each index. The analysis is based on the pioneering National Survey of Household Welfare and Program Participation that captured information on social assistance programs in the Russian Federation.
"Turkey Social Assistance Review" (World Bank 2017, forthcoming)	In addition to using multiple years of comparable survey data presenting changes in performance of social assistance, the report is also very valuable for comparisons. It benchmarks Turkey's performance versus indices from other countries at a similar level of development. Such comparisons help to better identify system gaps and strengths.

system overall. The second book, by Margaret Grosh and others (2008), is titled *For Protection and Promotion: The Design and Implementation of Effective Safety Nets*. This book systematically discusses each indicator and gives examples of usage to assess how well the actual programs work globally.

Interpreting and using social protection indicators requires solid conceptual and methodological understanding. Chapters 2 and 3 guide the reader to a deeper comprehension of the main concepts and the methods for measurement. Chapters 4 and 5 then explain how to generate and interpret the indicators and extrapolate the possible implications for social protection policy and particular programs.

Finding Examples of Analysis, Data, and Indicators and Determining When ADePT SP Is Useful

ADePT SP indicators include characteristics of the overall population and of key subgroups and performance indicators for social protection programs. Most analysis is focused on the effectiveness and efficiency of social protection. The data are analyzed collectively, by social protection area, and by individual programs. The main indicator categories include (a) measures of coverage (who is and who is not receiving benefits); (b) adequacy (the relative size of social protection transfers compared to household income or consumption); (c) distribution of the transfer amounts (benefits) and recipients (beneficiaries); (d) the poverty and inequality effect; and (e) measures of efficiency, such as whether the poor are receiving benefits (targeting performance) and the share of benefits that are reducing poverty (BCR).

These questions are dominant in the literature, and many publications provide examples and detailed discussions of them and their application to various contexts (see table 1.1 for selected studies). None of these sources, however, describes in detail the ways indicators are constructed and their possible misinterpretations. Moreover, none address common mistakes in using indicators or provide guidance on how to obtain similar indicators with new data. This manual provides such additions.

As with other modules of ADePT, ADePT SP shares the motive to provide users an easy-to-use, well-explained, intuitive, and freely available tool. It contains both very basic and advanced ways to approach the measurement. It provides significant flexibility to tailor the indicators to the specific question, it can work with a variety of data types, and it helps to avoid human error by providing prepackaged computational routines that have been tested thousands of times on a variety of data.

Demand for comprehensive analysis of programs most often arises in assessing social protection spending—typically as part of the social protection

sector review; public expenditure analysis; or the assessment of poverty, welfare, and living standards. The output of ADePT SP, especially in its core form, is primarily designed to provide standard tables for such analysis. Coverage indicators give a good sense of the scope of the system and its components, whereas incidence gives key indication of how social protection expenditures help to achieve desired distributional changes. The degree of fragmentation can also be gauged by looking at the overlap across programs. In the list of references in table 1.1, most of the country reports indicated represent such analysis. Many equally good reports are not listed, but the references can be found in the “State of Social Safety Nets 2014” (Gentilini, Honorati, and Yemtsov 2014) bibliography of the World Bank’s country studies.

There is often a need to assess whether social protection reforms work and whether performance is improving. In such cases, ADePT SP helps to use subsequent waves of survey data. The ability of ADePT SP to save programs and definitions used in the initial analysis provides a useful reference to update with new data. ADePT SP can simultaneously analyze multiple datasets from different (subsequent) surveys and present changes—a feature that is valuable for such analysis. Table 1.1 presents examples of such dynamic analysis in reports from Georgia and Turkey.

Another assessment need arises when policy makers are deciding whether to rebalance or reform a program. How well the program achieves its objective in the system as a whole is invaluable information. Benchmarking performance of such programs by comparing them to other, better-performing programs helps to build a case for reform. Table 1.1 presents such an example in the Indonesia country report, where food distribution in kind rather than through cash transfers is shown to be substantially less cost-effective. That country report argued for gradual reform of the program and expansion of cash transfers, and an actual policy decision followed. Now, increasingly, reports try to benchmark the performance of a program or system with other comparator countries. Table 1.1 presents the example of a regional report in Eastern Europe and Central Asia on last-resort income support (LRIS) programs. The publicly available ASPIRE database now contains standard ADePT SP performance indicators for the main pillars of social protection, as well as indicators by type of program, for hundreds of surveys from more than 120 countries, and it is increasingly used to conduct such comparisons.

Alternatively, ADePT SP can help researchers understand system gaps as a whole or in specific programs. Such analysis is especially straightforward for programs targeting the poor. Incomplete coverage of the poor suggests more needs to be done to include them in the system. The example of such analysis in the Georgia country report leads to detailed recommendations. The Bangladesh and India reports provide less detailed analyses, but the focus is on the system rather than an individual program. Chapter 2 conceptually underpins such gap analysis and provides examples from Romania.

Sometimes it is useful to simulate multiple scenarios of changes and to compare reform alternatives. ADePT SP cannot be used as a scenarios builder, but it can facilitate and speed up the comparisons. Such analysis is often done in energy subsidy reforms, when alternative compensation mechanisms need to be assessed relative to the shock of subsidy removal. Chapter 5 contains an example for using the simulation for expanding the guaranteed minimum income program in Romania.

Communication with the public for public finance reforms requires understanding households in different parts of the income distribution. Frequently, empirical results, which are summarized in concise and easy-to-read tables produced by ADePT SP, strongly affect perceptions and can debunk myths. Table 1.1 presents a Belarus study in which a fairly complex system with seemingly comprehensive coverage was shown to miss the poorest and to transfer to them an inadequate share of the overall budget for social assistance.

Finally, ADePT SP can be useful in assessing the quality and relevance of survey data. Chapter 3 contains a description of comparisons across survey and administrative data. Chapter 5 has examples of how such comparisons can be carried out either to validate the use of survey data for social protection policy analysis or to prevent major interpretation mistakes.

What ADePT SP Cannot Do

ADePT SP is a survey data analysis tool. It must use available household surveys that contain relevant questions about social protection participation and transfers at the household or individual level. Such surveys need to contain a variable (consumption, income, or other indicator of well-being)

reflecting the welfare of each household. In principle, databases of recipients of social assistance programs, as long as they contain relevant information, can be used as an input to ADePT SP, but the authors are unaware of any cases where such databases have been used.

ADePT SP by itself cannot be used to prepare data. Although it has some minimum data manipulation capacity—such as adding a variable or dropping some observations (see chapter 5 and the ADePT User Guide)—these functions are clearly not enough to ensure that the dataset can be used for the analysis. Moreover, program classification into pillars (see chapter 2) cannot be done automatically; it needs to be done by a user with knowledge of the social protection programs in a given country. If data gaps require imputations or estimations that are based on program design parameters (for example, imputing values received in cases where only participation information is collected in the survey and where amounts are known and fixed), ADePT SP is not the best tool, especially if complex rules or extensive checks are required.

ADePT SP cannot be used for regression analysis of program participation, estimation of proxy-means scores, or impact evaluations. Tools and approaches needed for such analysis are beyond the scope of ADePT SP, which focuses on producing descriptive data statistics and standardized tables of key performance indicators. Importantly, ADePT SP also cannot be used for full-fledged fiscal analysis and incidence of net transfers or for analysis of the combined effects of taxes, contributions, and received benefits, in simple static or—even less so—in an intergenerational framework. The static analysis does not consider general equilibrium effects. ADePT SP cannot work with negative variables, which are typically used to depict taxes, nor will it produce meaningful results when such variables are imputed.

Finally, ADePT SP can be used for simple assessment of possible changes to the existing programs (as described in chapter 5), especially when used with the statistical software, which can do simple imputations more flexibly. To conduct full-fledged simulations of expansion of key social protection programs or reallocation of funds across programs, one needs to perform multistage analysis across multiple scenarios. Such simulations require a more flexible data manipulation software. But once such scenarios are built and final structures of benefits are estimated, one can use ADePT SP to compare different scenarios and their costs, which can save time and provide feedback to refine the scenarios.

Overview and Structure of the Manual

The rest of the manual is organized as follows. Chapter 2 assesses how redistribution can be measured and presents concepts of economic well-being, poverty, and inequality. *Economic well-being* refers to an individual's consumption or income, often measured by what is denoted as a *welfare aggregate*. By examining indicators on the basis of level of welfare, such as which welfare quintiles receive particular programs, the manual provides insight into performance. For social assistance, poverty reduction is a central objective; thus, estimating the poverty effect is critical. Other programs, such as pension programs, may have redistribution objectives that are best measured by changes in inequality indicators. Such measures show how income is distributed, and social protection analysis can estimate how social protection programs change the income distribution. Readers will refresh their knowledge or will gain new insight into the main social protection concepts and different ways to classify social protection benefits and performance indicators. Chapter 2 presents definitions before detailing the methodologies for measurement. The text guides the interpretation of indicators to give readers fluency in understanding the underpinnings of social protection analysis and the implications of the results for social protection policies overall and for particular programs. The chapter concludes by simultaneously interpreting multiple indicators, a critical skill to assess the trade-offs inherent in social protection programs.

Chapter 3 examines the data needs of social protection analysis, including the benefits and trade-offs of administrative and household data. An overview presents the iterative process, from deciding what data are needed, to determining how to design survey questionnaires, to processing responses into data, and finally to conducting the analysis.

Chapter 4 looks at how to use ADePT SP to analyze the indicators. It initially reviews the ADePT tool, including its capabilities and limitations, and then explains in detail the steps for using ADePT SP.

The fifth chapter focuses on interpretation of social protection analysis and ADePT SP outputs. The text builds on the concepts and indicators, and it presents actual data tables generated by ADePT SP. Guidance in interpreting the tables is provided. The chapter also covers topics for individuals interested in the more advanced features of ADePT SP.

Examples include analysis by a custom user-defined characteristic, such as how performance varies by individual (for example, depending on marital status) and household characteristics (for example, the number of household members). Other sections include specifying the eligibility criteria of a particular program and assessing the performance for the target group. Next, details are provided on how to conduct sensitivity analysis of performance on the basis of different welfare measures and poverty lines. Finally, the costs and benefits of introducing a new program are simulated using ADePT SP.

The manual aims for usefulness among a range of people, starting with basic to advanced conceptual and statistical knowledge. The chapters are modular and self-contained, whereby individuals who are well versed in the concepts and methods may skip to the sections on how to run and interpret ADePT SP. It is hoped that the manual will provide senior decision makers information on how to derive policy insights from indicators and comparisons and will give data producers detailed information on how to ensure the relevance of their analysis and accuracy of their results. The manual's orientation on the main producers of social protection analysis and on decision makers should help improve social protection policies and programs.

Notes

1. For example, the combined effect of the size (adequacy) and coverage of transfers together help account for poverty and inequality effects of social protection transfers.
2. See the web page for the ADePT software platform at <http://worldbank.org/adept>.
3. Inter-Agency Social Protection Assessment tool. Core Diagnostic Instrument. See www.ispatools.org.
4. Large losses in some households may have long-term consequences. After Ethiopia's 1984–85 famine, it took a decade, on average, for asset-poor households to bring livestock holdings back to prefamine levels (Dercon 2004). One explanation—proposed by Carter and Barrett (2006)—is that if household assets go below a certain critical value, known as the *Micawber threshold*, it becomes difficult or almost impossible to rebuild the asset stock, and people may end up locked in poverty traps. If a

drought or a flood drives households below this minimum asset threshold, the impacts could become permanent.

5. Redistribution can be interpersonal or intertemporal; the latter refers to the life cycle of an individual through instruments like social insurance.

References

- Bam, Tinatin, Anastasia Mshvidobadze, and Josefina Posadas. 2016. *Continuous Improvement: Strengthening Georgia's Targeted Social Assistance Program*. Washington, DC: World Bank.
- Barrientos, Armando. 2013. *Social Assistance in Developing Countries*. Cambridge, UK: Cambridge University Press.
- Bastagli, Francesca, Jessica Hagen-Zanker, Luke Harman, Georgina Sturge, Valentina Barca, Tanja Schmidt, and Luca Pellerano. 2016. *Cash Transfers: What Does the Evidence Say? A Rigorous Review of Programme Impact and the Role of Design and Implementation Features*. London: Overseas Development Institute.
- Carter, Michael R., and Christopher B. Barrett. 2006. "The Economics of Poverty Traps and Persistent Poverty: An Asset-Based Approach." *Journal of Development Studies* 42 (2): 178–99. doi:10.1080/00220380500405261.
- Cerutti, Paula, Anna Fruttero, Margaret Grosh, Silvana Kostenbaum, Maria Laura Oliveri, Claudia P. Rodriguez-Alas, and Victoria Strokova. 2014. "Social Assistance and Labor Market Programs in Latin America: Methodology and Key Findings from the Social Protection Database." Social Protection and Labor Discussion Paper No. 1401, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/498461468326377129/Social-assistance-and-labor-market-programs-in-Latin-America-methodology-and-key-findings-from-the-social-protection-database>.
- Dercon, Stefan. 2004. "Growth and Shocks: Evidence from Rural Ethiopia." *Journal of Development Economics* 74 (2): 309–29.
- European Commission. 2017. "Indicators to Measure Social Protection Performance: Implications for EC Programming." Tools and Methods Series Concept Paper No. 5, European Commission, Brussels. <http://capacity4dev.ec.europa.eu/t-and-m-series/document/indicators-measure-social-protection-performance#sthash.Rk69SftN.dpuf>.

- Foster, James, Suman Seth, Michael Lokshin, and Zurab Sajaia. 2013. *A Unified Approach to Measuring Poverty and Inequality: Theory and Practice*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/13731/9780821384619.pdf>.
- Gentilini, Ugo, Maddalena Honorati, and Rusian Yemtsov. 2014. "The State of Social Safety Nets 2014." Working Paper 87984, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/302571468320707386/The-state-of-social-safety-nets-2014>.
- Grosh, Margaret, Carlo del Ninno, Emil Tesliuc, and Azedine Ouerghi. 2008. *For Protection and Promotion: The Design and Implementation of Effective Safety Nets*. Washington, DC: World Bank.
- Honorati, Maddalena, Ugo Gentilini, and Rusian Yemtsov. 2015. "The State of Social Safety Nets 2015." Report No. 97882, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/415491467994645020/The-state-of-social-safety-nets-2015>.
- International Labour Organization (ILO) and World Bank. n.d. "The World Bank Group and ILO Universal Social Protection Initiative." Concept note, ILO, Geneva; World Bank, Washington, DC. http://www.ilo.org/global/topics/social-security/WCMS_378991/lang--en/index.htm.
- Kazim, Azreen, and Ilan Noy. 2014. "Poverty and Natural Disasters: A Meta-Analysis." Working paper series 3234, School of Economics and Finance, Victoria University of Wellington, New Zealand. <http://researcharchive.vuw.ac.nz/handle/10063/3234>.
- Levin, Victoria, Matteo Morgandi, and Joana C. G. Silva. 2012. "Inclusion and Resilience: The Way Forward for Social Safety Nets in the Middle East and North Africa." Other Social Protection Study no. 72975. World Bank, Washington, DC. <http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9771-8>.
- Monchuk, Victoria. 2014. *Reducing Poverty and Investing in People: The New Role of Safety Nets in Africa*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/16256>.
- National Statistical Service of the Republic of Armenia. 2016. "Social Snapshot and Poverty in Armenia, 2016." <http://www.armstat.am/en/?nid=80&id=1819>.
- Nayar, Reema, Pablo Gottret, Pradeep Mitra, Gordon Betcherman, Yue Man Lee, Indhira Santos, Mahesh Dahal, and Maheshwor Shrestha. 2011. *More and Better Jobs in South Asia*. Washington DC: World Bank.

- <http://documents.worldbank.org/curated/en/127581468104051563/More-and-better-jobs-in-South-Asia>.
- Tesliuc, Emil D., and Phillippe G. Leite. 2010. "User Manual for ADePT Social Protection." World Bank, Washington, DC. http://siteresources.worldbank.org/SAFETYNETSANDTRANSFERS/Resources/SPADePTUserManualV1Mar01_2010.pdf.
- Tesliuc, Emil, Lucian Pop, Margaret Grosh, and Ruslan Yemtsov. 2014. *Income Support for the Poorest: A Review of Experience in Eastern Europe and Central Asia*. Washington, DC: World Bank.
- United Nations. 2017. Sustainable Development Goals 1. <https://sustainabledevelopment.un.org/sdg1>.
- World Bank. 2008. "Promoting Equitable Growth in the Russian Federation: A Living Standards Assessment." World Bank, Washington, DC.
- . 2011a. "Belarus Social Assistance Policy Note: Improving Targeting Accuracy of Social Assistance Programs." World Bank, Washington, DC.
- . 2011b. "Social Protection for a Changing India." World Bank, Washington, DC.
- . 2012a. "The World Bank's 2012–2022 Social Protection and Labor Strategy: Resilience, Equity, and Opportunity." World Bank, Washington, DC.
- . 2012b. "Protecting Poor and Vulnerable Households in Indonesia." World Bank, Washington, DC.
- . 2016. *Live Long and Prosper: Aging in East Asia and Pacific*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/23133/9781464804694.pdf>.
- . Forthcoming. "Turkey Social Assistance Review." World Bank, Washington, DC.

Concepts, Definitions, and Indicators for Social Protection Analysis

This chapter details the concepts, definitions, and indicators for assessing social protection (SP) policies and programs. The first section comprehensively describes the framework for categorizing SP benefits and services and defines program types. The second section reviews the main concepts of welfare economics, including how welfare is measured, as well as the most common poverty and inequality measures for social protection analysis. The third section looks at SP's impact on poverty and inequality. The final section of the chapter discusses the main indicators to assess social protection performance, including coverage, adequacy, benefit incidence, and the simulated impact on poverty and inequality. The discussion provides examples from the ADePT SP output tables to directly link social protection concepts and indicators using a concrete dataset from a survey (National Institute of Statistics [Romania] 2012).

Social Protection Definitions

No universally accepted definition describes the scope of social protection, particularly regarding which benefits and schemes are considered part of social protection and which are not. Countries' social protection frameworks vary substantially across the developed and developing world.

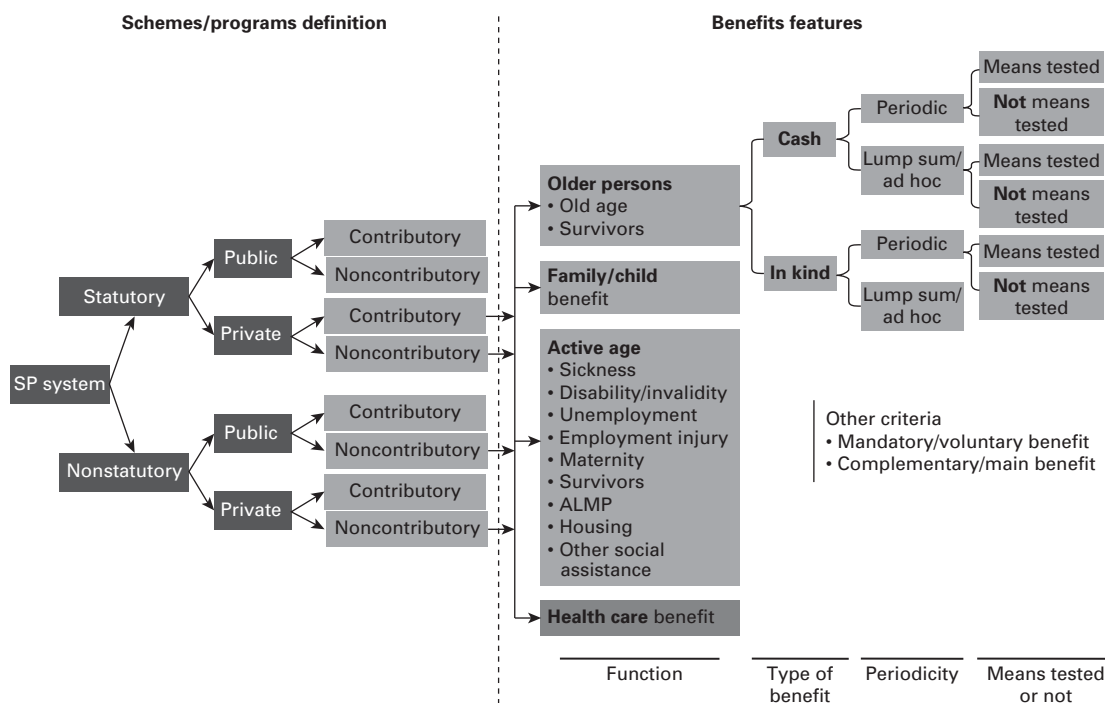
Although some international organizations have established criteria to classify social protection benefits and services, those are not used by all national statistics offices and researchers that collect and publish data on social protection. Nor does an internationally accepted methodology exist to classify and aggregate social protection benefits, thus making the comparisons of social protection data collected through different data sources and compiled in different databases less than straightforward.

For example, Eurostat, the Organisation for Economic Co-operation and Development (OECD), and the International Labour Organization (ILO) classify social protection benefits on the basis of different criteria. The criteria differentiate the benefits (a) by their legal status (statutory or nonstatutory); (b) by the nature of the agency implementing the scheme (private or public); (c) by whether a scheme or benefit is contributory, partially contributory, or noncontributory; (d) by whether it is mandatory or voluntary; and (e) by which social protection area it covers: medical care, sickness, unemployment, old age, employment injury, responsibility for the maintenance of children, maternity, disability, survivors, or other protection against poverty and social exclusion (ILO 2013). Further criteria include the benefit type (in cash versus in kind), the benefit's periodicity, and whether benefits are means tested (figure 2.1).

The World Bank defines social protection policies and labor programs as those that aim to help individuals and societies manage risk and vulnerability and protect individuals from poverty and destitution through instruments that improve resilience, equity, and opportunity (World Bank 2012).

In the World Bank classification, social protection benefits and services are grouped in the following three broad social protection areas, or pillars: social insurance, labor market policies, and social assistance. The Asian Development Bank (ADB) categorizes social protection in the same three subcomponents (ADB 2011, 2013):

- *Social insurance.* These contributory programs are designed to help households insure themselves against sudden reductions in income caused by old age, ill health, disability, and loss of the breadwinner. Social insurance programs and schemes include publicly provided or mandated insurance against insufficient income in old age (pensions), death of the main provider (survivorship), sickness, or temporary inability to work (various benefits, including maternity), and disability (pension or allowances). Beneficiaries receive benefits or

Figure 2.1: Social Protection Programs and Benefits Classification by Legal Status, Contributory Nature, and Benefit Modality

Source: ILO 2013.

Note: ALMP = Active labor market program; SP = social protection.

services in recognition of contributions to an insurance scheme via payroll tax or other forms of contributions. There is a link between contributions and transfers received, but most frequently, it is not a mechanical one: There is redistribution within such schemes on the basis of solidarity among members.

- **Labor market.** Labor market measures comprise passive and active approaches. Passive labor market programs include contributory unemployment insurance and noncontributory unemployment assistance. Active labor market programs promote opportunity by connecting men and women to more productive employment. They empower beneficiaries by teaching them new skills; helping them search for employment; and increasing their earning potential

through training, apprenticeships, job-search assistance, subsidized job placements, cash and in-kind grants, microcredit, and the like. Public works programs provide cash payments to the poor while increasing investments in local infrastructure.

- *Social assistance.* The pillar has the main objective of poverty reduction, and it includes noncontributory transfer programs that are often targeted to the poor or to those vulnerable to poverty and shocks. These programs are also commonly referred to as social welfare programs or social safety nets. Social assistance programs are generally designed to help individuals or households cope with chronic poverty or transient declines in income that would otherwise cause them to sink into poverty or more severe poverty. As such, they help alleviate poverty and reduce nonpoor households' vulnerability to becoming poor. A wide variety of social assistance programs exists.

Many countries follow the same approach to define social protection and such programs' main categories, especially in low- and middle-income countries. Common practice is to consistently classify social protection programs and distinguish them from other areas of social policy. However, gray areas remain in the definition of social protection in relation to certain policy instruments, such as microfinance, subsidized access to health care and education, agriculture inputs, water, energy, or price subsidies. Health insurance, or financial protection against the risks of ill health, might sometimes be included in social protection (hence, it may be called social security) alongside pensions and disability insurance.

Universal price subsidies traditionally were included in social protection because of the claim that they protect against price fluctuations. Such subsidies, however, are market-level interventions rather than household supports, which suggests that they should be treated differently. The relative difficulty of accurately assessing price subsidies versus social protection programs in household-level data makes the boundaries less pertinent. Surveys capture participation in a specific program more easily, especially a program with established eligibility rules, entitlements, and clear transfer mechanisms (in cash or in kind), and can be used to estimate subsidies.

Following the categorization of social protection into three pillars—social insurance, labor market, and social assistance—the World Bank Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database

uses a methodology to categorize and aggregate social protection benefits and programs.¹ The database draws data from the inventory of social protection programs that have been collected—about 600 programs in 145 low- and middle-income countries, more than 95 percent of these countries (Gentilini, Honorati, and Yemtsov 2014; Honorati, Gentilini, and Yemtsov 2015). The World Bank is actively assisting in cross-country comparisons across six regions² while keeping a manageable number (12) of standard social protection categories. All but one indicator in ASPIRE are created by analyzing household surveys using the ADePT SP software, the exception being spending as a share of gross domestic product (GDP).³

Table 2.1 presents the standard classification of public social protection benefits and services used to identify and to map social protection data collected from household surveys and processed by ADePT SP to create the ASPIRE database. Private transfers are also harmonized in the ASPIRE database. In the ASPIRE classification, noncontributory benefits

Table 2.1: Key ASPIRE Categories and Subcategories of Social Protection Programs

<i>Social protection area</i>	<i>Program category</i>	<i>Program subcategory</i>
Social insurance	Contributory pensions	Old-age pension (all schemes, national, civil servants, veterans, other special) Survivors pension (all schemes, national, civil servants, veterans, other special) Disability pension (all schemes, national, civil servants, veterans, other special)
	Other social insurance	Occupational injuries benefits Paid sickness leave benefits Health Maternity/paternity benefits Training (vocational, life skills, cash for training)
Labor market	Labor market policy measures (active labor market programs)	Employment incentives/wage subsidies Employment measures for disabled Entrepreneurship support/start-up incentives (cash and in-kind grant, microcredit) Labor market services and intermediation through public employment services Other active labor market programs
	Labor market policy supports (passive labor market programs)	Out-of-work income maintenance (unemployment benefits, contributory)

(continued)

Measuring the Effectiveness of Social Protection

Table 2.1: Key ASPIRE Categories and Subcategories of Social Protection Programs (*continued*)

<i>Social protection area</i>	<i>Program category</i>	<i>Program subcategory</i>
Social assistance	Unconditional cash transfers	Out-of-work income maintenance (unemployment benefits, noncontributory)
		Poverty-targeted cash transfers and last resort programs
		Family/children/orphan allowance (including orphan and vulnerable children benefits)
		Noncontributory funeral grants, burial allowances
		Emergency cash support (including support to refugees/returning migrants)
	Conditional cash transfers	Public charity, including zakat
		Conditional cash transfers
		Old-age social pensions
	Social pensions (noncontributory)	Disability benefits/war victims (noncontributory related benefits)
		Survivorship
		Food stamps, rations, and vouchers
		Food distribution programs
		Nutritional programs (therapeutic, supplementary feeding, and PLHIV)
Private transfers	Food and in-kind transfers	In-kind/nonfood support (education supplies, free texts, and uniforms)
		School feeding
		Cash for work
		Food for work (including food for training, food for assets, and so on)
		Health insurance exemptions and reduced medical fees
	School feeding	Education fee waivers
		Food subsidies
		Housing subsidies and allowances
		Utility and electricity subsidies and allowances
		Agricultural inputs subsidies
Private transfers	Public works, workfare, and direct job creation	Scholarships/education benefits
		Social care services, transfers for caregivers
		What is left out from above categories
		Domestic transfers, interfamily in-kind gifts and monetary transfers
		Alimony (divorce and food)
	Fee waivers and targeted subsidies	Income and support from charity/private zakat, support for churches and NGOs ^a
		Remittances from abroad
	Other social assistance	
	Domestic private transfers	
	International private transfers	

Source: World Bank ASPIRE database, "Data sources and methodology," <http://pubdocs.worldbank.org/en/340871485449612510/ASPIRE-program-classification.pdf>.

Note: ASPIRE = World Bank Atlas of Social Protection Indicators of Resilience and Equity; NGO = nongovernmental organization; PLHIV = people living with human immunodeficiency virus.

a. Depending on country contexts and on how NGOs are financed, transfers from NGOs may be classified as social assistance.

are classified under social assistance, and benefits that require previous contributions are under social insurance (annex 2A). The nature of benefits—contributory or noncontributory—is not clearly defined in other international classifications, such as the ones used by Eurostat, OECD, and the ILO. Social assistance is generally financed by tax revenues, hence by citizens' contributions. The line between contributory and noncontributory modes of financing is and will be increasingly blurred, which means that over time the distinction between contributory and noncontributory social protection will become less and less clear. The ASPIRE classification is a simplified version of the more detailed classification used to map the universe of programs based on administrative data (appendix A). ASPIRE administrative database includes (a) basic program information such as program objectives, (b) whether benefits are one time only or regular, (c) benefit modalities (cash, discounts, in kind), (d) whether conditions are attached to benefits, (e) the nature of the implementing agency, (f) the type of financing, and (g) other information that enables data processors to categorize benefits more precisely. Such program details cannot be easily inferred in household surveys unless the program name is specified in the questionnaire (see chapter 3).

In addition to households' receipt of public or social protection transfers, the income of certain households is supplemented by private transfers. Depending on their size, private transfers can be significant to household welfare and protect against shocks. Caceres and Saca (2006), for example, show that international remittances to households in El Salvador reached US\$2.5 billion in 2004 (16.6 percent of gross domestic product). The authors found that remittances were spent mainly on consumption (80 percent in urban areas and 90 percent in rural areas) and the residual spent on education and health (15 percent in urban areas and 7 percent in rural areas). Remittances to households may therefore directly affect consumption levels, vulnerability to food insecurity, and human capital accumulation.

ADePT treats private transfers as a fourth category of protection, recognizing their role in income support in conjunction with public social protection transfers; in countries with nascent social assistance systems, private transfers represent the main form of informal safety nets. Private transfers include transfers from a family member, charities, nongovernmental organizations (NGOs), and remittances from abroad. The categorization

of NGO and charity transfers are in some cases considered social assistance, so classification should follow the norms used in the country. In the United States, for example, a strong NGO community is involved in charity or philanthropic work. Charitable giving as a religious act or duty is referred to as almsgiving or alms and is also known as charity in the Christian faith (from the Latin *caritas*) or in Islam as sharing the wealth (*zakat*).

Every program classification, including ASPIRE, has advantages and disadvantages. Household survey data aggregation in the ASPIRE database is presented for the 14 categories and for the four policy areas (columns 1 and 2 in table 2.1). Comparing the three ASPIRE aggregate indicators relative to the social protection areas (social insurance, labor market, and social assistance) with other international and country databases may be challenging. For example, social pensions are included in the social assistance aggregate in ASPIRE (and at the Asian Development Bank), but social pensions are under the old-age, disability, and survivorship functions in the ILO Social Security Inquiry Database. Similarly, public works are considered more a safety net than an employment program in ASPIRE, but they are included in the active labor market program in the OECD, Asian Development Bank, and ILO classifications. ASPIRE aggregates allow clear differentiation of cash versus food and in-kind support, for example, but do not allow the same for poverty-targeted social assistance programs versus categorical and universal schemes.

Despite these challenges, the ASPIRE classification, which is based on benefit types more than on social protection functions or risks, provides a sound methodological framework to map, aggregate, and analyze social protection data in household surveys. In addition, given that the ADePT software design requires the user to map one variable per program or benefit (or group of benefits) to one of the three pillars or areas of public social protection—that is, social insurance, labor market, and social assistance (plus the fourth area used by ADePT, private transfers)—the ASPIRE classification provides a practical tool to define the boundaries of social protection and its parts. The country-specific programs included in the standard social protection program categories are documented in detail on the ASPIRE website⁴ and validated by World Bank country task teams in close coordination with national counterparts.

However, in some cases, individual benefits cannot be mapped to the four pillars used by ADePT SP, often because several individual benefits in the data are lumped together. For example, in the European Union's

Statistics on Income and Living Conditions micro data—available for 28 European countries—social protection benefits are categorized and lumped by function (old-age benefits, sickness benefits, disability benefits, survivor benefits, unemployment benefits, housing allowance, family and child benefits, education allowance, and social exclusion not elsewhere classified). These benefits are also classified into social insurance (which includes old-age benefits, sickness benefits, disability benefits, and survivor benefits), social assistance (housing allowance, family and child benefits, education allowance, and social exclusion not elsewhere classified), and labor markets (unemployment benefits). The researcher and ADePT user may classify categorized social benefits differently, however. For example, family benefits that include both contributory maternity benefits and non-contributory universal child allowance may be mapped to social insurance if the largest part of the function is represented by insurance benefits (on the basis of country knowledge and administrative data).

Similarly, some hybrid health insurance schemes provide premium exemptions for the poorest and certain population categories (the insurance scheme subsidized premium payments), such as PhilHealth in the Philippines and the Ghana National Health Insurance Scheme. The Ghana Living Standard survey makes possible the distinction between exempted and nonexempted beneficiaries, whereas the Philippines Annual Poverty Indicators Survey does not. In such cases, the user needs to judge how to map the health insurance scheme, whether to social insurance or to social assistance, based on some principles (for example, the health insurance variable could be mapped to social insurance if the exemption component is smaller in terms of number of beneficiaries, according to administrative data).

Economic Welfare, Poverty, and Inequality Indicators

Because much of social protection focuses on protecting or improving well-being, which is achieved through redistribution (chapter 1), having a solid grasp of the main concepts of economic welfare, poverty, and inequality is central to social protection analysis. Welfare is synonymous with well-being, which in economics is derived from a social welfare function. This section presents the main concepts, definitions, and formulas for generating related indicators.

Economic Welfare

Measuring the well-being of individuals and households is central to social protection analysis. It allows researchers to determine which groups are most and least in need of assistance, where program resources are or should be allocated, and how social protection programs affect well-being. To assess social protection outcomes, this book uses terms interchangeably to refer to levels of household—and less frequently individual—monetary resources—economic well-being, economic welfare, income, expenditure, and consumption. Broader definitions of well-being, such as that posed by Amartya Sen (1985), focused on functional capabilities and a multidimensional definition of welfare that may include material and nonmaterial aspects, the latter of which often span health status and education achievements. ADePT SP uses a sufficiently flexible definition of welfare to accommodate such approaches.⁵

Welfare Aggregate

Most social protection analysis uses household surveys, and so understanding how an economic welfare aggregate is constructed is an essential first step. Household surveys generally collect information on the total income or expenditure of a household, not that of each individual, yet policy makers and researchers are often interested in individual, not household welfare. Therefore, a common approach to estimate the household per capita welfare is to divide total household expenditure or income by the number of people in the household; servants and temporary members are generally not included, as the number of people in the household generally refers to more permanent household members.

Although seen as a crude measure, most per capita welfare aggregates are calculated by assuming that every household member has the same income or expenditure. Household expenditure (Y) is therefore divided by the household size (N) to arrive at per capita household welfare (y):

$$\text{Per capita welfare: } y = \frac{Y}{N} \text{ or } y = \frac{\text{household income}(Y)}{\text{household size}(N)} \quad (1)$$

Economies of Scale

The literature has found inaccuracies in that calculation, however, in that the per capita welfare measure for larger households may be understated.

Because these households tend to benefit from economies of scale, the effective household size should be smaller.⁶ Examples of economies of scale include sharing rent and common purchases such as durable goods. Bulk purchase discounts are another reason adjustments for economies of scale should be considered when calculating the welfare aggregate (y^*), which is indicated by the parameter θ in equation (2):

$$\text{Adjusted welfare : } y^* = \frac{Y}{N^\theta} \quad (2)$$

For example, as seen in table 2.2, if we have two households with US\$1,000 income each—although household A has one member and household B has four—and we assume that 50 percent of income is shared (that is, economies of scale are 0.5), we see that the per capita income for household A remains the same as household income, whereas that of household B increases by 100 percent. In any given economy, determining the parameter for scale economies depends on factors such as the provision of public and private goods, where a lower relative share of the public sector provision increases the relative importance of household scale economies.

Economies of Composition

A second assumption made for household per capita welfare is that households have no economies of composition. Each household member is assumed to have equal income or consumption needs. The needs of a healthy 3-year-old child are therefore assumed to be the same as those of a 35-year-old adult working in labor-intensive agriculture and a healthy 70-year-old sedentary elderly person. It is also assumed that equal sharing occurs within the household. However, men may command more resources than women, adults more than children. By accounting for the composition, which attempts to address differences in resource use, the analysis can

Table 2.2: Example of Economies of Scale

	<i>Household A</i>	<i>Household B</i>
Household income	US\$1,000	US\$1,000
Household size	1	4
(1) Income per capita	US\$1,000 (US\$1,000/1)	US\$250 (US\$1,000/4)
Scale economy	0.5	0.5
(2) Income per capita ^(b)	US\$1,000 (US\$1,000/1 ^{^(0.5)})	US\$500 (US\$1,000/4 ^{^(0.5)})
% change (1) to (2)	0	100

make adjustments to improve accuracy. Thus, equation 2 can be rewritten as follows:

$$y^* = \frac{Y}{(Adults(A) + Children(C) + Elderly(E))^{\theta}} \quad (3)$$

And assuming differing consumption by adults, children, and elderly, the analysis introduces parameters to discount consumption by children and elderly household members in relation to adults, using the parameters b and d . A b value of 0.7 would indicate that each child in the household has 70 percent of adult income needs. The equation can be simplified to

$$Welfare\ per\ equivalent\ adult\ y^* = \frac{Y}{(A + bC + dE)^{\theta}} \quad (4)$$

The y^* in equations (3) and (4) accounts for both economies of scale (θ) and of composition ($A + bC + dE$), or

$$\frac{Y}{N^{\theta}} = \frac{Y}{(Adults(A) + Children(C) + Elderly(E))^{\theta}} = \frac{Y}{(A + bC + dE)^{\theta}} \quad (5)$$

To illustrate economies of composition, table 2.3 assumes that children and the elderly have 50 percent of the income needs of adults. Therefore, the welfare aggregate for the household with a child and an elderly person increases relative to an all-adult household.

When conducting poverty and inequality analysis pertaining to social protection, the analyst is responsible for setting the scale and composition parameters. However, as noted earlier, the most common approach is to

Table 2.3: Example of Economies of Composition

	<i>Household A</i>	<i>Household B</i>
Household income	US\$1,000	US\$1,000
Household size	4	4
Composition	4 adults	2 adults, 1 child, 1 elderly
Income per capita	US\$250 (US\$1,000/4)	US\$250 (US\$1,000/4)
Equivalent household size	4	3 (2 adults + 0.5 child + 0.5 elderly)
Income per capita (α)	US\$250 (US\$1,000/4)	US\$333.33 (US\$1,000/3)

Table 2.4: Commonly Used Equivalence Scales

Household size	Equivalence scale				
	Per capita income	"Oxford" scale ("Old OECD scale")	"OECD-modified" scale	Square root scale	Household income
1 adult	1	1.0	1.0	1.0	1
2 adults	2	1.7	1.5	1.4	1
2 adults, 1 child	3	2.2	1.8	1.7	1
2 adults, 2 children	4	2.7	2.1	2.0	1
2 adults, 3 children	5	3.2	2.4	2.2	1
Elasticity ^a	1	0.73	0.53	0.50	0

Source: OECD, "What Are Equivalence Scales?" <http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf>.

Note: OECD = Organisation for Economic Co-operation and Development.

a Using household size as the determinant, equivalence scales can be expressed through an "equivalence elasticity"—that is, the power by which economic needs change with household size. The equivalence elasticity can range from 0 (when unadjusted household disposable income is taken as the income measure) to 1 (when per capita household income is used). The smaller the value for this elasticity, the higher the economies of scale in consumption.

use per capita household welfare, which assumes no economies of size or composition, because of the lack of consensus on a more accurate alternative method.

Standard assumptions about economies of scale and composition exist and are used as the statistical convention in many countries that are not using explicit parameters of size and composition. Two typical nonparametric scales are the OECD and modified OECD scale, shown in table 2.4, and are defined as follows:

$$\text{Old OECD scale: } y^* = 1 + (0.7 * A) + (0.5 * C) \quad (6)$$

and

$$\text{Modified OECD scale: } 1 + (0.5 * A) + (0.3 * C) \quad (7)$$

In the old OECD scale, the first adult (or elderly household member) is counted as 1 member, the second adult is counted as 0.7 of 1 adult, and each child is 0.5 of an adult.⁷ The modified OECD scale is even steeper, raising the extent to which there are economies of scale and lowering the child-adult equivalence factor to 0.3. The U.S. National Research Council has recommended a parametric scale that sets both parameters to 0.75 for the United States (National Research Council 1995), and others have noted that the official U.S. poverty lines are quite well approximated by setting b value to be 0.5 and θ to be unity.⁸ There is no agreement in the literature for how

to set scale and composition parameters. Approaches across countries and organizations also differ, and these differing parameters can affect the poverty profile and the target groups for social protection programs (table 2.4).

Defining Poverty

Most analysts accept that poverty is multidimensional, largely owing to the work of Amartya Sen (1985). In practice, however, most also define poverty as insufficient welfare, as measured by income or consumption. The following sections use the term *welfare* to refer to both of these.

Identifying Who Is Poor—Poverty Lines

Poverty can be understood as material deprivation that leads to a quality of life below certain thresholds. Poverty lines are income or expenditure levels, below which individuals are deemed to have insufficient well-being. Poverty measurement focuses on a subset of the distribution—the poor—while inequality measures include the entire distribution.⁹

Two main types of poverty lines exist: absolute and relative. Absolute poverty lines focus on the necessary set of commodities for a basic level of functioning. Extreme or “lower” poverty lines are determined on the basis of the amount of money needed to purchase enough calories to live (with or without minimal adjustment for nonfood spending); moderate or upper poverty lines include both minimum cost of adequate food intake and actual spending on nonfood items by the poor, such as clothing.¹⁰

Relative poverty lines, by contrast, are not fixed in the welfare space. For example, 60 percent of median income is often used as a relative poverty line in higher-income countries, and organizations such as the World Bank use both absolute and relative poverty lines, with relative poverty increasingly set at the 40th percentile of the distribution. Eurostat sets poverty lines relative to median income and has extended its definition to include the risk of social exclusion.

Those who fall below the poverty line are considered poor, while those above it are the nonpoor. Among the poor, those below the lower poverty line are the extreme poor, and those who are below the upper line and above the lower poverty line are the moderate poor.

Note that poverty lines and the welfare aggregate have to be measured in the same way—if one is per capita or per equivalent adult, the other has to

use the same convention and units of measurement (for example, currency and time period).

Poverty Measurement

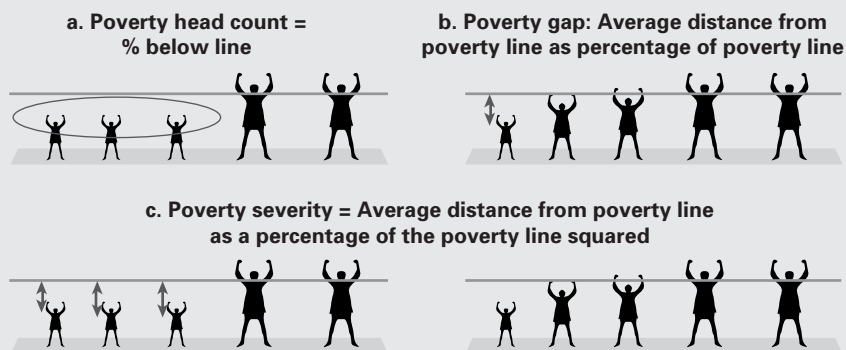
The most commonly used poverty measurement methodology focuses on the poverty head count, gap, and severity. The methodology is the Foster-Greer-Thorbecke (FGT) class of poverty measures (Foster, Greer, and Thorbecke 1984), which provide useful metrics for poverty profiles and assessing the poverty impact of social protection programs¹¹ (see box 2.1 for a visualization).

Box 2.1: Poverty Measure Definitions and Interpretation

This text box provides visual depictions to help readers better understand the main poverty measures (see figure B2.2.1). The gray line represents the poverty line; individuals that are completely under the line are considered poor, and those not completely under the line are nonpoor.

- **Poverty head count (FGT 0):** Percentage of people below the poverty line
- **Poverty gap (FGT 1):** The average average distance of poor from the poverty line expressed as a percentage of the poverty line
- **Poverty severity (FGT 2):** The squared average distance of the poor from the poverty line expressed as a percentage of the poverty line

Figure B2.1.1: Poverty Measures



Source: World Bank staff.

The FGT poverty measure is described by Foster and others (2013) and in appendix B. ADePT reports all three measures with FGT 0, 1 and 2. In general, FGT 2 puts more weight on the poor furthest from the poverty line.

Defining Inequality

Social protection can also affect the distribution of income, as measured by changes to inequality. The most common metric of inequality is the Gini coefficient. Additional measures of the SP distribution effect include the impact of general entropy indexes of inequality, distributional characteristic index (DCI), units of social welfare impact, and other indicators mentioned subsequently. Generally speaking, inequality refers to the level of variation of income, expenditure, or wealth. The analysis focuses on the former two, as most household surveys lack data on wealth, more specifically how SP transfers affect the distribution of assets or wealth, but they allow a satisfactorily accurate representation of the income distribution (Atkinson 2003).

Gini Index

The Gini index is the most commonly known index of inequality, and it can provide a range of coefficients from perfect equality (Gini = 0) to perfect inequality (Gini = 1). In the first case, every individual has the same income, whereas in the latter, one person has all the income in an economy. The metric is therefore one of dispersion of welfare. It is a useful metric, both for pretransfer incomes, to understand the welfare distribution, and for posttransfer incomes, to see the inequality effect of social protection transfers.

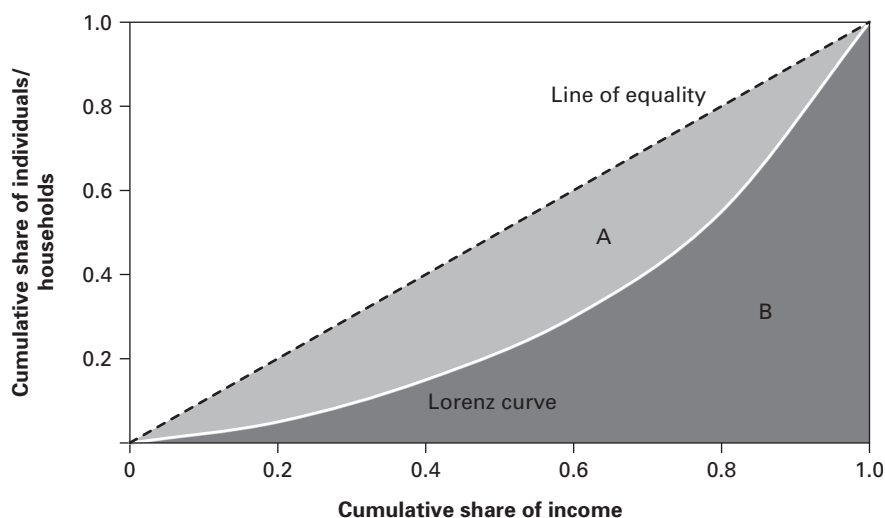
Table 2.5 considers the income distribution for five people.

The Lorenz curve is a visual depiction of the income distribution, thereby ordering the population from poorest to richest. It then graphs the cumulative population share (the last row of the table) on the *x* axis against the cumulative share of total income (second-to-the-last row) on the *y* axis (shown in figure 2.2).

This curve gives a very general picture of inequality. In a perfectly equal society, where everyone has exactly the same income, the Lorenz curve is equal to the 45-degree line: each person's share of income is exactly equal to

Table 2.5: Example of the Distribution of Income and Lorenz Curve

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income	5	10	15	25	45	100
Share of total income (%)	5	10	15	25	45	100
Cumulative share of income (%)	5	15	30	55	100	
Cumulative share of population (%)	20	40	60	80	100	

Figure 2.2: Lorenz Curve Example

Source: Calculations based on the example in table 2.5.

her or his share of the population. In a perfectly unequal society where one person gets all of the income, the Lorenz curve is a rotated L, running left to right along the horizontal axis (because the first x percent of the population has zero cumulated income) and then jumping vertically at 1.0. In general, Lorenz curves that are more convex (down and to the right from the dashed line) reflect greater inequality, and those that are more concave show lower inequality.

To get from the curve to a single numerical value, we calculate the Gini coefficient, which is the area between the 45-degree line and the Lorenz curve (A in figure 2.2), multiplied by two (the area of triangle below the line of perfect inequality is $\frac{1}{2}$, and this value is in the denominator, which is equivalent to multiplying by 2).¹² This index is bounded by 0 (for perfect equality) and 1 (for perfect inequality).

Generalized Entropy Index of Inequality

A family of inequality measures that is subgroup decomposable, unlike the Gini coefficient, is the generalized entropy (GE) measures. The class of measures allows one to see how inequality varies among different groups. For example, groups may include gender, regions, ethnicity, and education level, among others. Special cases of general entropy indexes are the Theil's L index and Theil's T index (Shorrocks 1980). These indexes are reported in ADePT SP output tables.¹³

Summary: Poverty and Inequality Analysis

Reducing poverty and making the income distribution more even are among the main aims of social protection programs. Although poverty can be measured in many ways, a monetary approach is most common, focusing on the poverty incidence (head count), gap, and severity. Distributional analysis is also crucial to social protection assessment, and understanding how equally or unequally incomes are spread in a country helps to measure performance of social protection in achieving greater equity. Finally, the selection of the welfare adjustment, if any, will have a considerable impact on the ADePT SP results. Now that these concepts have been defined and their methodologies explained, the next sections apply these poverty and inequality concepts to social protection policies and programs.

Social Protection Programs' Effect on Poverty and Inequality

Social protection programs directly affect the distribution of resources and hence affect poverty and inequality. ADePT SP provides useful estimates of the simulated poverty and inequality impact of programs. The simulations are made by comparing the income or consumption of an individual or household that has social protection transfers (observed in survey data) with the income or consumption in the absence of transfers (simulated under certain assumptions as discussed below).

The overall effect will depend on the scale of resources that are distributed (that is, the program size) and how they are distributed (progressivity).

To transfer resources, the state budget needs to raise the revenue somewhere, typically by taxing some part of the economy. Obviously, taxation will affect the distribution too. Unfortunately, ADePT SP cannot handle negative values; hence it can only look on one side of the effect—that is, the effect of transfers on receiving households—and does not consider taxes.¹⁴ The user could estimate the effect of taxes, however, by comparing the results using welfare aggregates net and gross of taxes (removing or setting negative values of any to zero). Additionally, only the direct effect is considered by ADePT; the direct effect is not equivalent to the full effect, including indirect effects captured in general equilibrium models such as the new equilibrium for factor and product markets as well as government finances after transfers and taxes (Coady and Skoufias 2004; Drèze and Stern 1987; Guesnerie 1979).

Defining the Counterfactual (Household's Welfare in the Absence of a Social Program)

Analysts often want to know the extent to which a social protection program reaches the poor or affects the distribution of social welfare. The existence of the program will presumably change who is considered to be poor, the extent of their poverty, and inequality. Thus, when asking if a program benefits the poor or affects the welfare distribution, we have to consider the welfare distribution without the transfer (counterfactual) and with the transfer (observed distribution). This counterfactual comparison is given by the basic impact evaluation formula:

$$\Delta = (Y \mid P = 1) - (Y \mid P = 0) \quad (8)$$

The formula in equation (8) states that the causal impact (Δ) of a program (P) on an outcome (Y) is the difference between the outcome (Y) with the program (in other words, when $P = 1$) and the same outcome (Y) without the program (that is, when $P = 0$).

For example, if P denotes participation in the cash transfer program and Y denotes income, then the way to estimate the causal impact of the participation in a transfer program (Δ) is to compute the difference between a person's income (Y) after participation in the program (in other words, when $P = 1$) and the same person's income (Y) at the same point in time if he or she had not participated in the program (in other words, when $P = 0$). If doing this were possible, we would be observing how much income the

same individual would have had at the same time with and without the program. Thus, the only possible explanation for any difference in that person's income would be the program, because we would have eliminated any other factors that might also have influenced incomes. However, in reality, the same individual cannot participate and not participate in a program at the same time, and so sometimes the comparison is done with different individuals, one who participated and one who did not. But program participants—even when the study controls for many observable characteristics—may be very different from those who are not participating. Hence, comparing these two population subgroups can be misleading. Only rigorous impact evaluation studies that rely on experimental and quasi-experimental design to properly identify the counterfactual (outcome in the absence of a program or transfer) can estimate the true impact of a program (Gertler and others 2016).

For the practice of evaluating poverty and distributional effects of a program using national household surveys, researchers use the pretransfer income or consumption to approximate the counterfactual (the household's welfare in the absence of a program), that is, an observed income of program participants minus what they have received from the program. Such a counterfactual may not be an accurate description of what the same person would be doing in the absence of the program, because it ignores possible behavioral responses to a program or its absence. For example, transfer recipients can try to mobilize other sources of support (for example, family networks) or accept any work when the program stops providing a transfer just to increase their incomes. That would mean that the net income gain for a program's participants might actually be smaller than the entire amount of the transfer received.

To most accurately estimate the counterfactual (household's welfare in the absence of a program), the analyst must model changes in the household's labor supply, remittances, savings, and credit; or alternatively, the analyst must obtain this information from a comparable counterfactual group. Such comparisons of welfare provide an estimate of a household's welfare in the absence of a transfer and allow the calculation of more accurate welfare rankings.

Conducting such modeling is complicated, and the limited evidence available suggests that for most safety net programs, the net increase in income or consumption after inclusion in the program is very close to the value of transfer. For example, in the case of five of the six conditional

cash transfer programs reviewed in Fiszbein and Schady (2009), household consumption increased by almost the whole value of the transfer. More generous programs with an income-replacement role—such as workfare, unemployment benefits, or pensions—likely increase household consumption substantially less than 100 percent of the transfer amount. This difference is because, in the absence of the program, households have to earn some income in other ways to survive. For example, in the case of Argentina’s Trabajar workfare program, the average direct gain for participants was about half the gross wage provided in public works (Jalan and Ravallion 2003). At the same time, some social safety net programs actually aim at employing participants so that they are economically active in the labor force and connected to employment opportunities, meaning that participants gain more from the program than just the value of the transfers. Thus the counterfactual will subtract more than 100 percent of the program transfer value to arrive at pretransfer welfare (see, for example, Hoynes and Patel 2015).

No single rule exists for estimating the counterfactual, and the simplest and most transparent approach is to simply deduct the transfers from the welfare (consumption or income) of recipients to estimate the pre-transfer welfare distribution. This calculation can be done for all transfers received combined, or it can be done separately for each transfer. ADePT calculates poverty and inequality indexes using the welfare aggregate with and without the transfer amount from a specific social program to estimate the poverty and inequality impact of that specific program (that is, without the sum of transfers received by the household), as well as from a group of programs—social insurance, labor market, social assistance, and all social protection transfer together—to estimate the impact on poverty and inequality (ADePT SP Table 11: Impact of Programs on Poverty Measures—Simulating the Absence of the Program in ADePT output; see chapters 4 and 5).

ADePT SP gives users four options to select the welfare to be used to rank households and define poor households. The options are based on different assumptions about households’ behavior:

- The first type subtracts a fraction of social protection transfers from welfare aggregate, thereby mimicking behavioral responses (V1).¹⁵
- The second type subtracts each transfer separately, thus isolating each transfer effect (V2).

- The third type subtracts only social assistance transfers, but it does that for all social assistance at the same time (V3).
- The fourth option uses the unadjusted or posttransfer welfare to rank the households (V0).

Users of ADePT are advised to be very careful with the choice of counterfactual (see chapter 4).

Table 2.6 gives a numerical example to illustrate how the use of a pretransfer counterfactual is changing the assessment of how well a program targets the poor. In the example, an existing program transfers 5, 10, and 3 local currency units (LCUs) to persons A, B, and C; the poverty line is 18 LCU; and there is no households' behavioral response to the transfer, which would alter other forms of income (labor, private transfers, and so forth).

The observed income, which includes the transfer (posttransfer), shows that only one person, A, is poor, so a significant share of the transfers *appears* to go to nonpoor recipients (persons B and C). However, the last row (pretransfer income) shows that each recipient was poor before receiving the transfer, so given that distribution, *all* the benefits go to the poor. In most instances, the pretransfer distribution is the most accurate way to assess the program incidence. We would not want to criticize a program for benefiting the nonpoor when, in fact, the program itself is what has pulled the recipients out of poverty. However, the counterfactual, the pretransfer welfare distribution, is not directly observed (data are collected from households after they have received a transfer). However, it can be estimated on the basis of different assumptions about people's income earning and saving behavior. If, for example, the assumption is that all a social assistance transfer is consumed (and nothing is saved), the pretransfer consumption is equal to the observed consumption (unadjusted) minus the transfer amount. If the assumption is that the household consumes half of the transfer and saves half of the transfer, the pretransfer consumption is equal to the observed consumption minus 50 percent of the value of the transfer amount.

Table 2.6: Example of Pretransfer and Posttransfer Poverty Profile, LCU

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
Posttransfer (observed) incomes	10	20	18	30	50
Transfer received	5	10	3	0	0
Pretransfer (counterfactual) incomes	5	10	15	30	50

Note: LCU = local currency unit.

Importantly, the choice of the counterfactual affects the ranking of people: person B is poorer than person C before the transfer but is richer after receiving the transfer (because the transfer received by B is larger). This reranking can be important for comparing poverty measures and inequality measures—but most important—incidence statistics.

A similar issue arises whenever we want to correlate some variable with poverty status, known as a *poverty profile*. For example, are rural areas poorer than urban? Are female-headed households poorer than male-headed households? Whether we use the distribution of income with or without any one transfer or after all transfers are combined can make a considerable difference to these conclusions.

Measurement of Social Protection's Impact on Poverty

Targeting and Program Size

Two main features of social protection programs determine the poverty impact: the program's targeting and its budget size. *Targeting* refers to how well a program distributes its benefits to the intended recipients. These may not be the poor, but in this discussion, we assume that the intended beneficiaries are, indeed, the poor. Hence, we assume here that a social welfare function is an inverse of poverty—the less poverty there is in a society, the higher its well-being. Later, we use a more general approach to measure social welfare and look at the overall effect on the entire distribution.

It is intuitive that a program will have a greater effect on poverty if its benefits are, in fact, received mostly by the poor. However, good targeting alone is not sufficient to reduce poverty. A transfer scheme that gives one dollar to the poorest person in a society is extremely well targeted, but it will not have much influence on poverty because it is a small amount of money. Thus, a program's monetary size or adequacy also matters for poverty reduction.

Once the counterfactual is chosen, one can model what would happen to poverty (and inequality, as discussed subsequently) as a result of transfers. For that, one needs to estimate the total poverty gap before transfer, that is, the amount of money it would take to bring the incomes of everyone who is poor up to the poverty line, thus eliminating poverty. In other words, the difference in the poverty gap with and without a social transfer reflects the sum of all the transfers received by poor people, unless a transfer puts a pretransfer poor person over the poverty line. In that case, we count only

the amount of the transfer that got that person to the poverty line, not the excess. If the goal of the transfer payment is to fill the poverty gap, then any transfer greater than poverty gap for a recipient is too large in that any amount that is greater than poverty gap is wasted because it no longer reduces poverty.

An ideal transfer payment for an antipoverty program, then, is one that just eliminates the poverty gap and has all of its benefits targeted at reducing the income gap. Such an ideal program is not feasible in practice, given the operational difficulties of multiple differing transfer amounts, perfect targeting, and take-up.

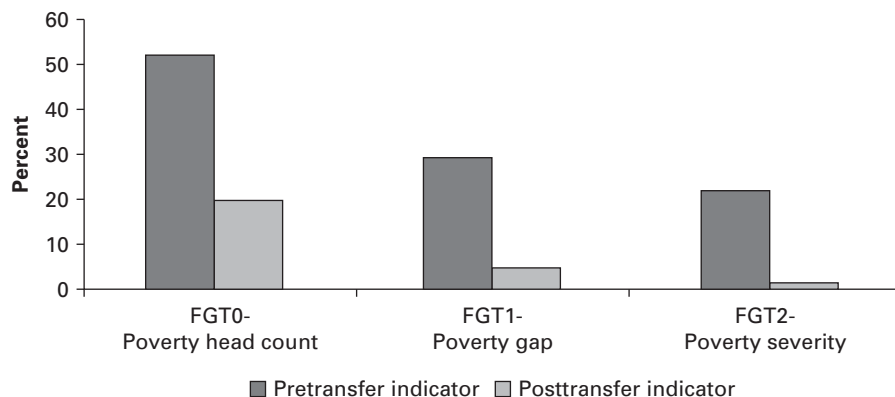
Three intuitive questions can be asked about the poverty reduction performance of the transfer payment:

- Do the transfers contribute to the reduction of the poverty gap (and only the poverty gap)?
- Is the total transfer budget sufficiently large to eliminate the entire poverty gap?
- Do the transfers reach an adequate number of poor beneficiaries?

Let's look at these effects using the same example as in table 2.6 of a simple society composed of five individuals.

As we said earlier, the poverty line is 18 LCU. The effect of the social transfer on the poverty head count will be reduction of poverty head count from three persons in five, 60 percent, to one person in five, 20 percent (before, transfers A, B, and C are poor; after, only A). The poverty gap before transfer was $13 + 8 + 3 = 24$. After transfer, it has been reduced to 8. The total transfer budget was $5 + 10 + 3 = 18$. The program is hence not ideal: even though transfers in this example covered all poor, the budget was not sufficient to bridge the poverty gap. In addition, the poorest person (A) received a smaller transfer than a median poor (B)—5 compared to 10—so the targeting was not perfect. The poverty impact of a transfer program is estimated based on comparing the poverty measures before and after the social protection transfers.

Figure 2.3 presents estimates of the poverty impact of all social protection transfers using data from Romania. The figure is based on the pre- and posttransfer change in welfare, so the results can be seen as an estimate of how poverty measures change if all SP transfers are subtracted from the welfare aggregate.

Figure 2.3: Simulated Effect of SP Transfers on Poverty Measures

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

The poverty head count (FGT0, $\alpha = 0$) after all transfers are received is set at 20 percent for the population, thus setting a relative poverty line at the poorest quintile of the welfare distribution. Subtracting all SP transfers and keeping the same poverty line, the poverty head count would increase to approximately 50 percent. Similarly, with SP transfers, the poverty gap (FGT1, $\alpha = 1$) is just under 5; although subtracting all SP transfers results in the poverty gap increasing to close to 30, as the poor fall farther below the poverty line. Finally, the poverty severity (FGT2, $\alpha = 2$), which is the squared poverty gap and therefore places more weight on the poor further from the poverty line, increases from around 2 percent to 20 percent. Although the results are arithmetic, the magnitude of change is useful to ascertain how all social protection transfers together affect various poverty measures.

Measurement of Social Protection's Impact on Inequality

Conceptual Overview

Both poverty and inequality measures depend on the distribution of income, so all the issues discussed in the previous section apply to evaluations of social protection's impact on inequality. ADePT calculates main inequality measures (that is, the generalized entropy and Gini indexes and others, such as the distributional characteristic) for the observed income distribution and the counterfactual distribution that assume no transfers, thus allowing

Table 2.7: Distribution of Transfers and Effects on Inequality

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income pretransfer	5	10	15	25	45	100
Beneficiary of transfer 1 (yes/no)	1	1	0	1	1	4
Value of benefit 1 received (LCU)	9	9	0	1	1	20
Share of total benefit 1 received (%)	45	45	0	5	5	100
Beneficiary of transfer 2 (yes/no)	0	1	1	1	1	4
Value of benefit 2 received (LCU)	0	1	2	2	10	15
Share of total benefit 2 received (%)	0	7	13	13	67	100
Income posttransfer (LCU)	14	20	17	28	56	135

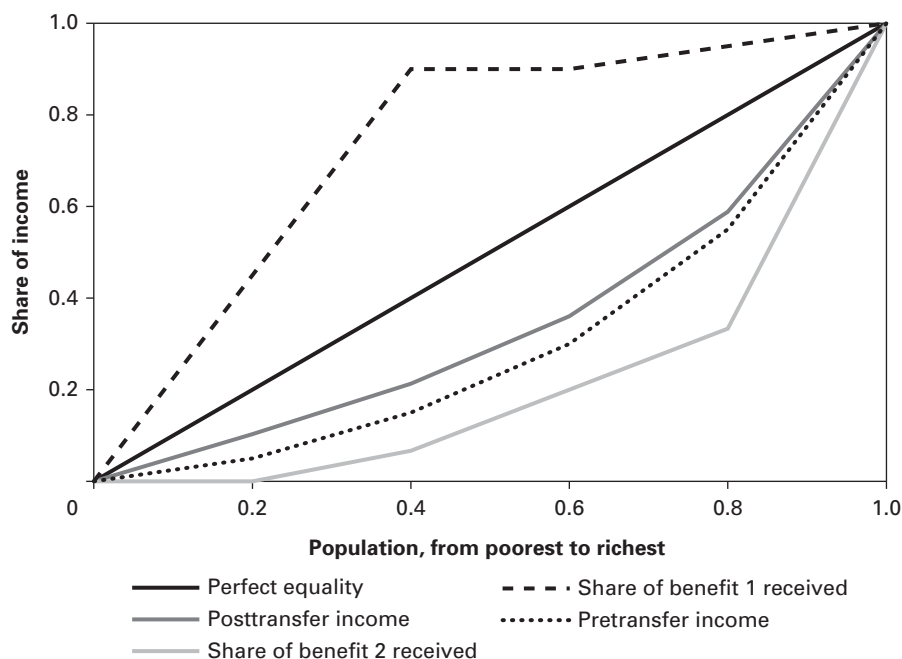
Note: LCU = local currency unit.

comparison between the two to evaluate the program's effect on inequality. Even more important, it reveals how a transfer is distributed along the income distribution and what share of it is going to different income groups (deciles or quintiles) to assess the progressivity (or regressivity) of a transfer.

To illustrate this, we use a hypothetical example from table 2.7 and figure 2.4 and expand them by introducing two transfers: benefit 1 and benefit 2. The same five individuals, A–E, are now moving from their initial (pretransfer) distribution with the additions of benefit 1 and now new benefit 2. Accounting for these two benefits, table 2.7 depicts the new, post-transfer distribution, and figure 2.4 plots cumulative shares of pretransfer and posttransfer incomes and both benefits.

By simply inspecting table 2.7, one can see that the distribution of benefits 1 and 2 are quite different. The biggest share of benefit 1 goes to the bottom of the distribution—90 percent to individuals A and B—and the biggest share of benefit 2 goes to the top (richest) quintiles of the distribution—80 percent to individuals D and E. As a result, benefit 1 is called *progressive*—that is, its distribution is less unequal than the distribution of the pretransfer income. Benefit 2 mostly accrues to the top of the distribution, and shares of it across individuals are more unequal than the shares of pretransfer income—67 percent of the overall amount of it goes to the richest individual E, whose share in the pretransfer total income is 45 percent. Such transfers are called *regressive* or *inequality increasing*.

To illustrate the difference in progressivity and overall effect of both transfers on inequality, figure 2.4 plots the distribution of shares in total income across individuals A, B, C, D, and E. If they all had the same income, their shares would be equal, and their cumulative share would look like the line plotting perfect equality. Actual shares pretransfer are represented by the dotted line. Benefit 1 is sharply progressive: its

Figure 2.4: Lorenz Curves for Pretransfer and Posttransfer Incomes and Concentration Curves for Transfers

Source: Based on table 2.7 of this chapter.

concentration curve or cumulative shares are above the perfect equality line. Benefit 2 is regressive: its concentration curve—plotting shares accruing to each individual, from poorest to richest—is below the pretransfer Lorenz curve. Hence, benefit 2 is increasing inequality as measured by Gini. The combined effects of two transfers is represented by the dark gray line. It is slightly to the left of the pretransfer Lorenz curve, indicating a progressive shift in distribution and lower inequality, as measured by Gini, because of the transfers.

The graphic illustration of the distributional effect of transfers can also be represented algebraically, with the concentration coefficients depicting how much the transfers are reducing (minus sign of coefficient) or increasing (positive value of the coefficient) inequality. The ADePT SP representation of these results is presented later in this section and in chapter 5 using concrete examples based on output tables.

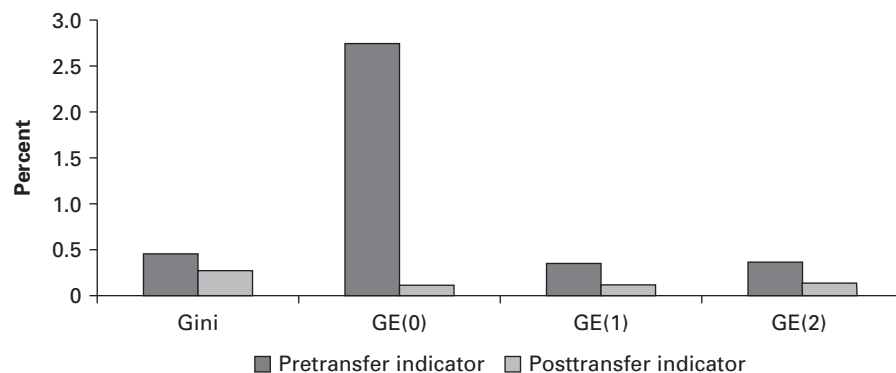
Impact on Gini Index and Generalized Entropy Measures of Inequality: Illustration with Data from Romania

As can be seen in figure 2.5, the pre-SP Gini nearly doubles when all SP transfers are removed, indicating that the SP transfers in Romania have a substantial impact on the distribution of welfare—decreasing inequality. GE(0), the mean log deviation, increases more than 200 percent, indicating greater dispersion in welfare without transfers (a value of 0 would mean that everyone has the same welfare). GE(1), the Theil index, triples, and because higher values indicate greater inequality, so does GE(2). GE(0) is more sensitive to the bottom of the distribution than GE(1), which places equal sensitivity across the distribution, or GE(2), which places greater weight on the top of the distribution. Hence, the greater increase in GE(0) indicates that the regressive shift is happening among the poorest.

Distributional Characteristic Index: Concept and Illustrations with Data from Romania

An alternative approach to assessing the distributional effect of social protection is to use the distributional characteristic index, also referred to as the DCI (represented as λ), which estimates the marginal change

Figure 2.5: Program Impact on Inequality Measures, Simulating Absence of the Program



Source: National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."
 Note: GE = generalized entropy.

in social welfare from SP transfers. This index uses an explicit social welfare function in which each person's contribution to society's welfare depends on his or her place in the income distribution. The extent to which an SP program increases this social welfare function depends on the weight assigned to each person's income. If poorer people receive greater weight, then a transfer of a fixed amount of money through the program will increase social welfare by more if the transfer goes to poorer people. Thus, to measure that program's targeting or its degree of progressivity, we can combine information about how much income an SP program transfers to each person with the information on that person's welfare weight.

The distributional characteristic index offers several advantages over other SP indicators of the effect of transfers, including that it (a) covers a full spectrum of households (and not a censored distribution of just those below the poverty line);¹⁶ (b) allows one to assess the distributional power of a program compared with another; (c) makes value judgments explicit; (d) allows for decomposition into targeting and budgets sizes, as discussed previously; and (e) allows many welfare indicators to be presented as special cases.¹⁷ The effect of SP transfers on the welfare distribution is the DCI multiplied by the budget, resulting in the change of the social welfare function of SP transfer(s).¹⁸

The DCI overcomes one of the main shortcomings of simpler targeting measures (such as Coady-Grosh-Hoddinott [CGH], undercoverage, or leakage as discussed subsequently) that assign zero welfare to marginal income of households above a poverty line. Undercoverage and leakage, for example, allow analysts to judge if a poor or nonpoor household is covered by the program, without considering the fact that the nonpoor household participating in the program may actually be just above the poverty line and not from the top of the income distribution. Unlike other targeting indexes, as noted, DCI considers all households in the economy by assigning specific welfare weights to every household.

The distributional characteristic allows the analyst to determine the comparative effect on the distribution of various programs, regardless of the size of the programs' budget. Of all SP programs, old-age pensions often have the largest inequality effect, although this program type also tends to have the largest budget. The DCI provides information, however, on redistributive power that does not depend on the budget, thus facilitating the comparison of programs.

The distributional characteristic makes value judgments transparent and flexible, in particular, regarding concern for the poor relative to concern for the rich.¹⁹ This welfare function has a single distribution parameter, ϵ (epsilon), which indicates how society values greater equality or is averse to inequality, where a lower value indicates lower aversion to inequality.

The DCI can be decomposed into (a) the targeting efficiency, or the welfare effect, achieved through the selection of beneficiary households that belong to preferred low-income groups and (b) the redistributive efficiency, or the effect of varying the size of transfers across beneficiary households (whether the poorest and most needy are receiving larger transfers than the less needy).

The mathematical representation of this equation is very simple:

$$\lambda = \sum_h \beta^h \theta^h, \quad (9)$$

$\lambda = \sum(\text{welfare weight}, \beta^h)$ (share of transfers going to household, θ^h), where

$$\beta^h = \left(\frac{y^k}{y^h} \right)^\epsilon \quad (10)$$

β^h is the welfare weight, or the social value of extra income to household h , and θ^h is the share of transfers going to household h . β^h is the ratio between the household welfare y for the reference household k and the household recipient of transfer h . If y^k is chosen at the poverty line so that all poor have y below y^k , then poor are going to have “weight” β^h above 1, and all nonpoor will have weight below 1. The wealthier the household, the less weight is given to them.

The expression includes ϵ , the parameter for the level of aversion to inequality. A higher value of ϵ implies greater inequality aversion. If $\epsilon = 1$, the weight is simply an inverse ratio between individual welfare and poverty line (greater than 1 for the poor, less than 1 for all nonpoor). Values of $\epsilon > 1$ would imply giving greater weight to the poor far below the poverty line and very little weight to the rich. Values $\epsilon < 1$ would mean attenuation of this weighting. If $\epsilon = 0$, then (a) there is no concern for equity, (b) $\beta^h = 1$ for all households regardless of welfare level, and (c) change in social welfare because of transfers is simply a sum of individuals’ transfers, θ^h .

Thus, the distributional characteristic becomes a product of the social welfare function W and ϵ , or it represents the marginal benefit of distributing

Table 2.8: Distribution of Transfers and Distributional Characteristic Index

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income pretransfer	5	10	15	25	45	100
β^h (welfare weight)	3	1.5	1	0.6	0.33	
Value of benefit 1 received (LCU)	9	9	0	1	1	20
Share of total benefit 1 received (%), θ^h	45	45	0	5	5	100
For benefit 1: DCI(λ)	1.35	0.675	0	0.03	0.0165	2.0715
Value of benefit 2 received (LCU)	0	1	2	2	10	15
Share of total benefit 2 received (%), θ^h	0	7	13	13	67	100
For benefit 2: DCI(λ)	0	0.105	0.13	0.078	0.211	0.5341
Income posttransfer (LCU)	14	20	17	28	56	135

Note: DCI = distributional characteristic index; LCU = local currency unit.

a unit of income (for example, US\$1) through a transfer program relative to the marginal cost (that is, the budget). It is sensitive to ϵ , the inequality aversion parameter.

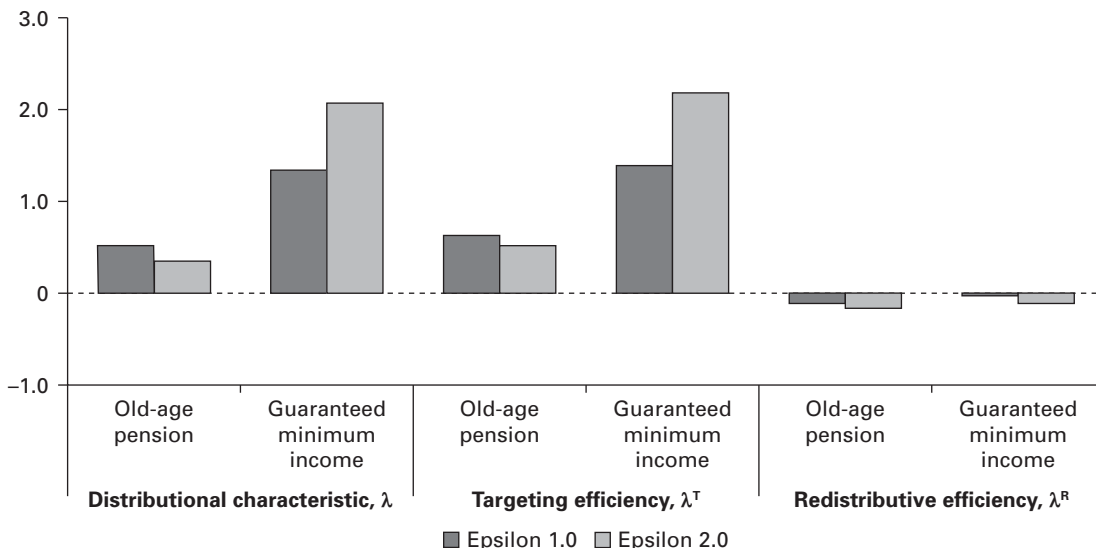
We will use the example of two transfers to illustrate the DCI calculation (table 2.8).

We assume that the reference household is C (close to poverty line) and that $\epsilon = 1$. Then we compute for each household the value β^h . For the poorest A, it will be $(15/5)^1 = 3$ and so forth: the values are given in the second row. As we see, this society assigns 10 times greater weight to the welfare of the poorest individual as compared to the richest. Multiplying β^h by the share of transfers received by each group we obtain λ (DCI), and summing across all individuals, we obtain overall distributional characteristic of both transfers. For example, using table 2.8, for person A, this is $\beta^h = 3$ times $\theta^h = 45\% = \lambda = 1.35$. As we see, benefit 1 has almost 4 times greater effect— λ of 2.07 versus 0.53 on social welfare (independent of the size of its budget)—than benefit 2, primarily because it goes mostly to the poor.

ADePT provides values of λ under different degrees of inequality aversion ϵ , as well as useful decomposition of the λ into the targeting efficiency and budget size, which sum to equal the λ . This allows the analyst to determine if distributional changes are being driven by the size of the budget or its allocation.

Targeting efficiency is similar to beneficiary incidence, where higher incidence in lower deciles increases the distributional effect. The redistribution efficiency is similar to the benefit incidence if poorer groups receive more than groups with a higher level of welfare. The combination of a high share of beneficiaries and benefits in lower welfare groups leads to a higher λ value, whereas negative values indicate regressivity.

Figure 2.6: Distributional Characteristic Index and Its Decomposition, $\varepsilon = 1.0$



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

As an empirical example, figure 2.6 shows that the distributional characteristics index in Romania's guaranteed minimum income (GMI) is much higher than the old-age pension. For ε equal to 1, the λ value in old-age pensions is almost one-third that in the GMI. Changing the preferences toward giving greater weight to incomes of the poorest (ε now equal to 2), we see a sharp increase in the λ of the GMI, suggesting that the GMI is indeed pro-poor. In a society that is more concerned about the poor, it will contribute to the overall well-being even more. Old-age pensions decline slightly with the changes in ε , suggesting that the program is less pro-poor.

For the GMI, we can see that most of the large distributional effect is a result of more beneficiaries being poorer (indicating targeting efficiency) rather than the bottom of the distribution receiving more benefits (redistributive efficiency). For old-age pensions, a similar pattern exists in which the distributional characteristic is being driven by the targeting efficiency, not by redistributive efficiency, which is actually negative.

Units of Social Welfare Impact

The units of social welfare impact are closely linked to the distributional characteristic. Essentially, the social welfare impact is the product of the

distributional characteristic, the average transfer amount, and the population size (that is, the overall budget size of the program). Therefore, it provides a monetary value for the change in the distribution because of a program.

$$\text{Units of social welfare impact } (dW) = \lambda dm^h \Sigma w^h = \lambda \beta \quad (11)$$

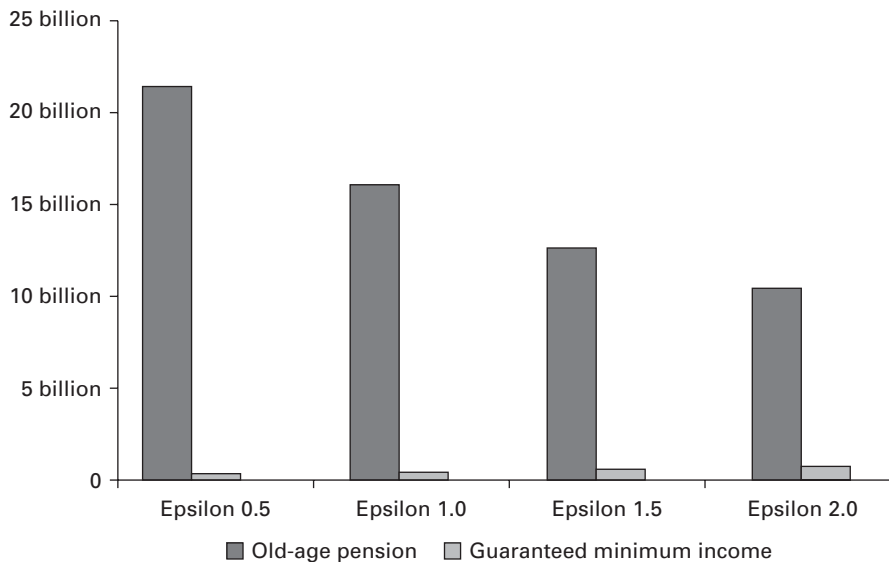
Units of social welfare impact = (DCI)(average transfer amount per capita)(population size)

Units of social welfare impact = (DCI)(total transfer budget of a program)

Using our simple example in table 2.8, we can calculate units of welfare impact. For benefit 1, the units of welfare will be 2.0715×20 ; for benefit 2, the units will be 0.5341×15 . Obviously, the first program has better distributional characteristics and a larger budget; hence, it has a greater impact of social welfare. The first program increases social welfare by 41.43 by transferring just 20 units, while the second program increases welfare by just 8.0115 by transferring 15 units.

The units of social welfare impact are measures of the magnitude of change that SP programs have on the distribution. Figure 2.7 shows

Figure 2.7: Units of Social Welfare Impact



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

the social welfare impact for old-age pensions and the GMI in Romania. Whereas we previously saw that the GMI had a higher distributional characteristic value, its social welfare impact is dwarfed by the old-age pension. This influence is because although the λ is higher for the GMI, the average transfer value of pensions is nearly 80 times greater. As a result, the social welfare impact of old-age pensions far exceeds the GMI. Pensions often have the largest social welfare effect given their large budget shares.

Social Protection System Diagnostics Using Performance Indicators: Illustrations with Data from Romania

The previous sections of this chapter focused on economic welfare, poverty, and inequality, three central concepts to social protection analysis. They also gave insights into how social protection transfers affect these welfare outcomes. The final and main section presents other methods for measuring how social protection programs perform, including their level of efficiency.

The performance of social protection policies can be measured from the perspectives of achieving program impact (effectiveness) or of optimizing the use of resources (efficiency). Effectiveness measures are broadly a function of who is covered by social protection programs and the size of social transfers, which result in the program impact as measured by changes in poverty and inequality. An individual has to be covered by a transfer, generally measured by receipt, and the size of the transfer has to be large enough to affect the person's economic welfare. In addition, examining the efficiency is essential because governments face fiscal constraints, and so efficiency measures emphasize the achievement of impact with the lowest use of resources or impact per each unit of resources (benefit-cost ratios).

This section reviews each of the main effectiveness measures, starting at the broadest conceptual level for social protection overall. For each effectiveness concept, the methodology for constructing indicators is presented. We conclude by describing an indicator of efficiency and its construction. The examples provided in the figures all come from a dataset of the Romania Household Income and Expenditure Survey, an official survey conducted by Romania's National Institute of Statistics (2012), which has a very detailed and accurate module on social protection transfers (chapter 3 discusses data requirements). Throughout this section, the unadjusted or observed welfare (posttransfer) is used to rank households across quintiles and to define the

poor. It is assumed that the counterfactual choice used is V0 (no adjustment to pretransfer welfare), and the welfare aggregate is per capita welfare. Formulas for the indicators are presented in appendix B.

Average Transfer Value

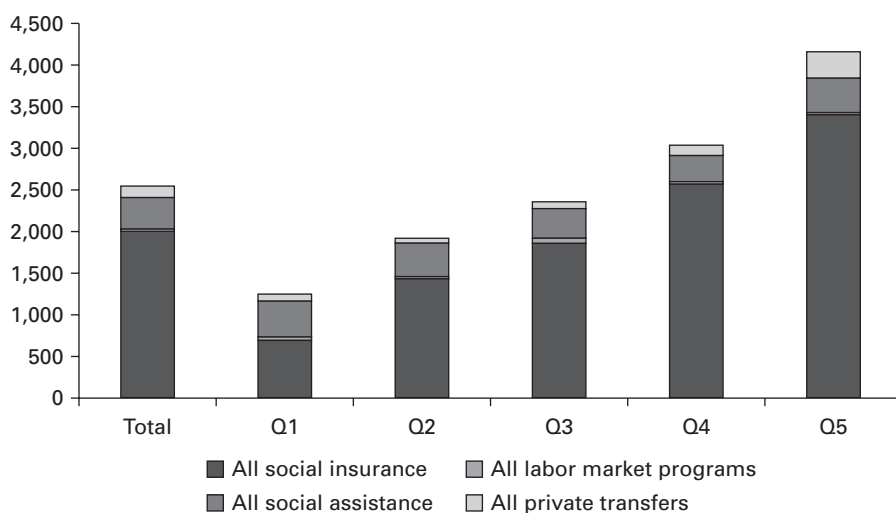
The average transfer value is the average monetary amount of a transfer received per capita. It has two submetrics: the average amount received for the total population and the average amount for only the subpopulation that received the transfer.

Average Transfer Value, per Capita

The overall population average is a weighted average of the amount across the whole population, including beneficiaries and nonbeneficiaries. Averages are calculated with the household expansion factor multiplied by the household size (to obtain average across people, not across households).

Figure 2.8 provides a sense of the magnitude of transfers for an entire population (Romania), regardless of whether a household received a transfer. For the total population, social insurance has the largest overall

Figure 2.8: Example from Romania: Average Transfer Value per Capita, LCU



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: LCU = local currency unit; Q = quintile.

size, and labor market programs have the smallest. Social assistance is the most progressive, as the transfer size is highest for the bottom quintiles, and the values fall in richer quintiles. Social insurance is the most regressive, with the average transfer for the poorest quintile (Q1) being much lower than Q5.

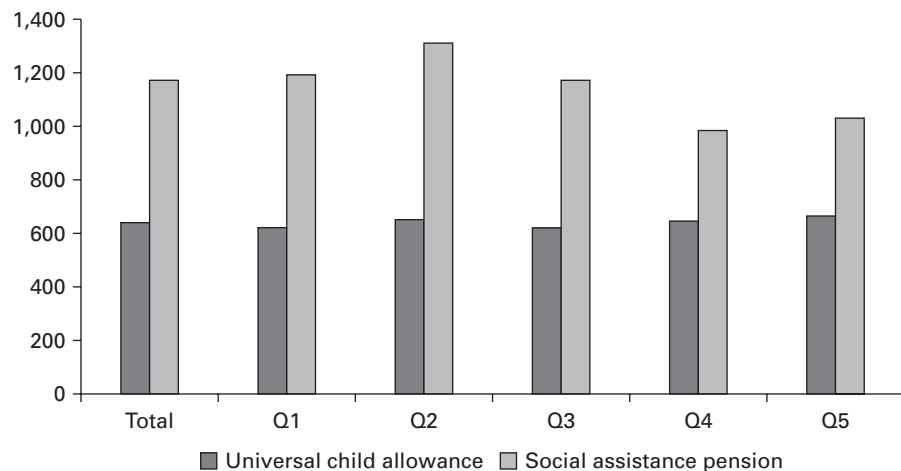
Average Transfer Value, Beneficiaries

The average transfer value for only those receiving a benefit will be higher, unless program coverage is universal. The indicator measures the size of transfers in absolute terms, which can be compared across subgroups and programs to understand where the largest monetary amounts are received. The indicator is calculated as follows:

$$\text{Average transfer value, beneficiaries} = \frac{\text{Total transfer value}}{\text{Total number beneficiaries}} \quad (12)$$

Figure 2.9 presents the average transfer values, though only for recipient households. Since nonrecipient households are excluded, the values are

Figure 2.9: Example from Romania: Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012," and on unadjusted (posttransfer) per capita welfare.

greater than those in table 2.4. The values for the universal child allowance remain approximately the same regardless of quintile, whereas the social assistance pension value declines for the richer quintiles.

Coverage

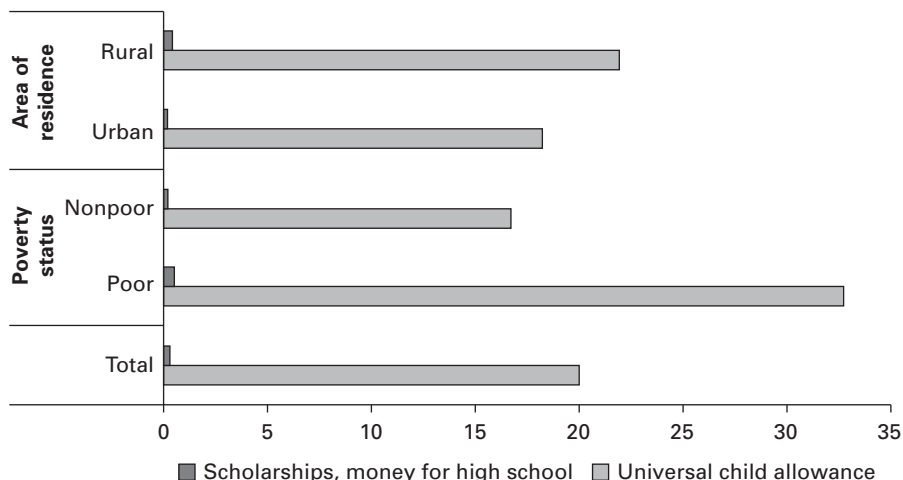
A main grouping for SP performance indexes pertains to coverage, which examines who is entitled to or receives a benefit. Coverage in different areas of social protection takes different meanings. When *coverage* is related to social insurance, it usually refers to coverage of specific losses because of realization of risks (for example, coverage of risk of income loss due to disability or of damaged housing due to floods). The concept of coverage used in ADePT reflects a population concept of coverage: the share of a population or subpopulation that receives or contributes (as in the case of social insurance) to social protection. Definitions of coverage also vary along the life cycle and by area of social protection. For economically active individuals, coverage tends to be defined as entitlement to social protection transfers, and for inactive members, coverage is defined as actually receiving social protection transfers.

Differences exist in defining what population groups are considered in the denominator; that is, subject to the specific coverage, social assistance generally covers all members of society regardless of employment or age and hence often is expressed as population coverage. Some social assistance transfers target poor populations, and coverage for social assistance is then defined as the percentage of a group (for example, poor/nonpoor or quintile) receiving a social assistance transfer.

Labor market and social insurance programs define coverage for the active population as the share of a group contributing to social protection schemes, such as through payroll taxes, or, in the absence of contributions, based on entitlement to future receipt. For members who are no longer contributing to the economy, unemployed in the case of labor market programs, and retired, disabled, or a widow for social insurance, *coverage* refers to receipt of a transfer for a specific population group (all unemployed, all disabled, all widows, and so on).

Figure 2.10 shows how population coverage varies for two programs in Romania. Universal child allowance has much higher overall coverage, at close to 20 percent of the population, than the under 1 percent for “scholarships, money for high school.” We can see that a much higher share of the

Figure 2.10: Example from Romania: Coverage



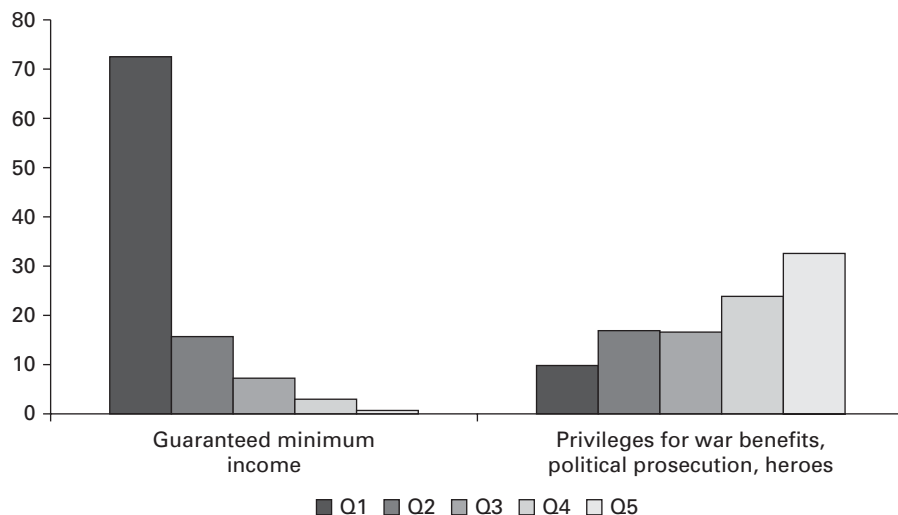
Source: Based on National Institute of Statistics (Romania) 2012, “Household Budget Survey 2012.”

poor, nearly one-third, is covered by “universal child allowance” versus less than 1 percent for the “scholarships, money for high school.” Such results are not surprising, because the child allowance is universal, and all families with children are entitled to receive it.

Beneficiary Incidence

Beneficiary incidence looks at the beneficiaries in a group as a share of all beneficiaries, unlike coverage, which looks at the contributors or beneficiaries as a share of the total population. A common grouping of beneficiaries is by quintile or decile, which shows the share of beneficiaries by level of economic welfare. Programs that are progressive will have a larger share of beneficiaries that are poorer, while regressive programs will tend to have greater representation among the wealthy.

A range of other characteristics can be used to assess the distribution of beneficiaries. A nonexhaustive list includes distribution by age, gender, education, economic status, and characteristics of the head of household. Depending on the aims of a program, a user may want to customize analysis. Examples include seeing how old-age pensions are distributed among different age groups or creating a variable, such as proxy means testing,

Figure 2.11: Distribution of Beneficiaries

Source: Based on National Institute of Statistics (Romania) 2012, “Household Budget Survey 2012,” and on unadjusted (posttransfer) per capita welfare.

Note: Q = quintile.

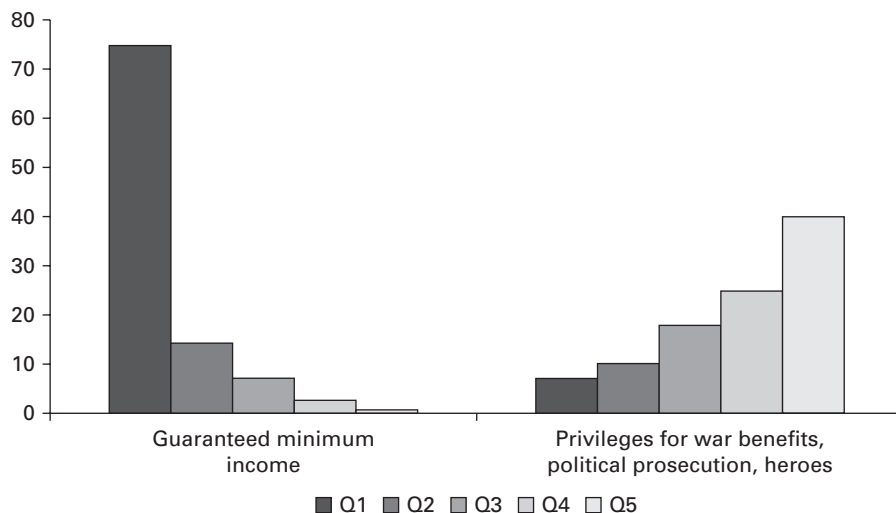
that shows the distribution of beneficiaries that meet and do not meet the eligibility criteria.

Figure 2.11 presents the distribution of beneficiaries for two programs, and it is clear there are very different welfare levels of program recipients. First, the columns sum to 100 percent, so by comparing the height of the columns, the analyst can see if a certain group is receiving a greater or smaller share than other groups. The beneficiaries of the GMI are much more likely to be poor, with more than 70 percent of all recipients in quintile 1. Adding Q2, almost 90 percent of beneficiaries are in the poorest two quintiles. By contrast, beneficiaries of the category “privileges for war benefits, political prosecution, heroes” have a weak welfare link, with Q4 and Q5 each having more than 20 percent of the total beneficiaries. This figure is useful for assessing the accuracy of program delivery.

Benefit Incidence

Figure 2.12 provides information on how benefits are distributed among the population. It shows how money is distributed, rather than people. Instead of using quintiles, such a table can be produced for the population groups of

Figure 2.12: Distribution of Benefits across Quintiles

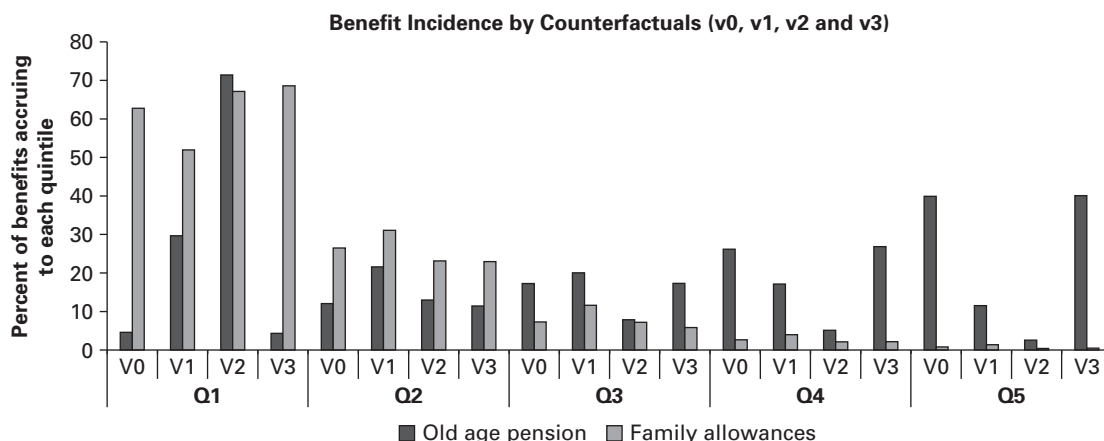


Source: Based on National Institute of Statistics (Romania) 2012, “Household Budget Survey 2012,” and on unadjusted (posttransfer) per capita welfare.

interest. This usefully gives policy makers a better understanding of where fiscal resources are being allocated.

$$\text{Benefit incidence} = \frac{\text{Transfers received by group}}{\text{Total transfer value}} \quad (13)$$

Obviously, the benefit and beneficiary incidence depends closely on the counterfactual choice, hence the welfare adjustment used to rank households into quintiles. So far we have ignored this choice and presented benefit and beneficiary incidence indicators for the quintiles of the unadjusted welfare (as it is observed in the data). Yet, different counterfactual assumptions might have serious implications on the level of progressivity (or regressivity) of social transfers. Examples from Romania illustrate these counterfactual assumptions well (figure 2.13). Benefit incidence for old age pensions is the most sensitive to the choice of counterfactual for the obvious reason that these payments are large and that complete or partial removal of their amounts from welfare results in considerable re-ranking of individuals or households when subtracting out large transfer values because the welfare of many will decline relative to those who did not receive a transfer. The benefit incidence of the family allowance in the first quintile is 63 percent

Figure 2.13: Benefit Incidence of Old Age Pensions and Family Allowances, Based on Different Welfare Distribution Assumptions Distribution

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: V refers to different welfare distribution assumptions used to rank households into quintiles: V0 = posttransfer welfare (no adjustment); V1 = net of 50% of SI and LM transfers and net of 100% SA transfers; V2 = net of each SP transfer; V3 = net of all SA transfers.

if the poorest quintile is defined based on the unadjusted welfare; it is 67 percent if instead the quintiles are defined based on the pretransfer welfare distribution only removing the family allowance benefit amount from the welfare aggregate, (V2 option in ADePT). If all social assistance benefits are removed from the welfare aggregate (V3 option), the benefit incidence of the family allowances is 69 percent.

Relative Incidence

To understand the relative importance of a transfer to a particular group, ADePT measures the transfer amount as a share of its welfare. This indicator is relatively underused by the analysts and users of ADePT SP, so this section explains this process in detail.

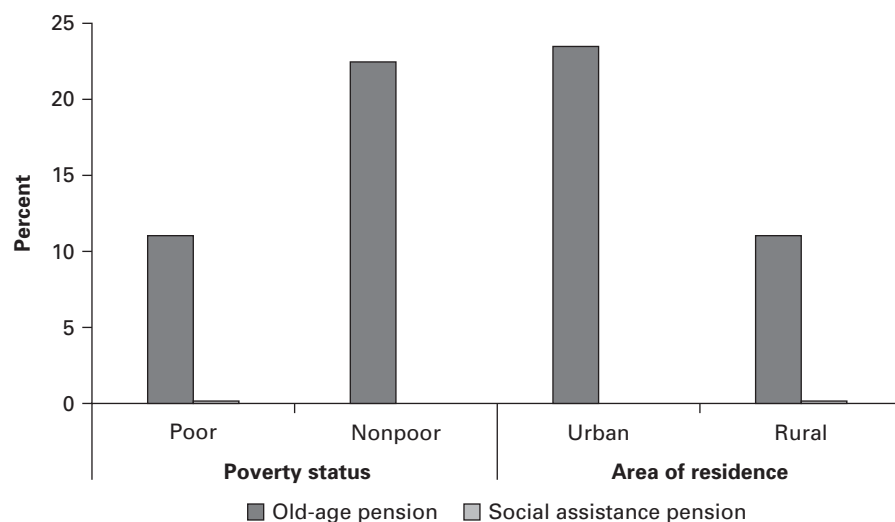
Relative incidence is the transfer amount received by a group as a share of the total welfare of the group. If a group has a mean income of US\$100, and a given transfer for the group averages US\$25, then the relative incidence would be 25 percent. The indicator therefore provides a useful metric for the relative importance of a transfer for a group. Such knowledge may be helpful for understanding the extent of the poverty reduction

effect, possible labor or savings behaviors, and the possible implications of changing or eliminating the transfer. Relative incidence examines all individuals in the population or subgroup, regardless of whether they are beneficiaries of a transfer (and, in this sense, it is different from adequacy or relative transfer size).

$$\text{Relative incidence} = \frac{\text{Transfers received by group}}{\text{Total welfare of population (or group)}} \quad (14)$$

Figure 2.14 shows the considerable difference in the relative importance of two programs. It shows that (a) in the old-age pension average over one-fifth of per capita welfare, the relative incidence is much lower for the poor, at around 10 percent of welfare, compared with approximately more than 20 percent for the nonpoor and that (b) the old-age pension has a greater share of welfare in urban areas than in rural areas. The social assistance pension has a much lower relative incidence, close to zero (almost invisible on the chart), although it is higher among the poor than nonpoor and those residing in rural areas. The low percentage values for social pensions show that they constitute a small share of incomes, although they are slightly higher for the poor and those in rural areas.

Figure 2.14: Relative Incidence



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012." Poor and nonpoor are defined based on the unadjusted welfare (posttransfer).

Coady-Grosh-Hoddinott Indicators

The Coady-Grosh-Hoddinott (CGH) (Coady, Grosh, and Hoddinott 2004) indicators, special cases of the distributional characteristic index, are useful measures of the progressivity (or regressivity) of a given transfer (to what extent it is reducing or increasing inequality), favoring those at the bottom of the distribution (or those at the top). The indicators measure what share of benefits are allocated to given quantiles of the distribution, generally the poorest 10 percent, 20 percent, 30 percent, or 40 percent of the population. Unlike the λ , however, CGH measures use a censored distribution instead of looking at the impact of SP on the entire distribution.

The CGH value of the bottom 20 percent, for example, shows the portion of the transfer budget received by the poorest 20 percent divided by 20 percent. A value of 1 would mean that the poorest 20 percent receive 20 percent of the benefits and that the transfer is distribution neutral. CGH indicators are useful for measuring the progressivity or regressivity of programs. A CGH value above 1 for a population quantile would mean that the group is receiving a larger share of benefits relative to its population size. If CGH indicators are below 1, this would mean that the bottom income groups, for which the indicator is calculated, are receiving a lower share of the benefits than their weight in the population. Thus, a greater share of the benefits is going to richer quantiles, and the program is regressive.

CGH Indicators, Beneficiaries

The CGH indicators for beneficiaries describe the share of a welfare group that are beneficiaries of a program divided by the share of the population of that welfare group. If, for example, for the bottom 10 percent, half of the beneficiaries of a particular transfer happen to be in that group, the CGH value for beneficiaries would be 50 percent/10 percent = 5.0.

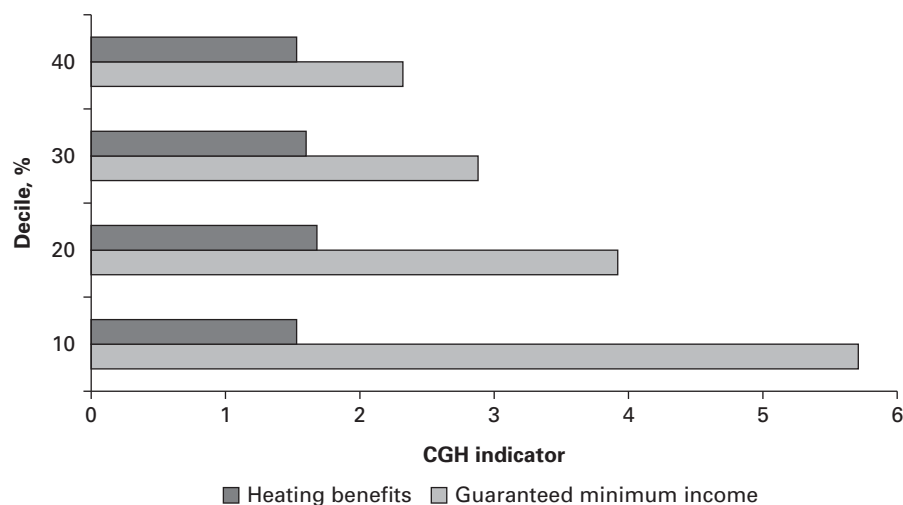
We now look at how to calculate such indicators in our hypothetical example of a five-person society with two transfers (table 2.9).

Figure 2.15 shows that the guaranteed minimum income in Romania performs well in reaching the lower welfare groups, with large shares in the poorest 10 percent and 20 percent of the population. Heating benefits do not perform as well, with near equal shares across the decile groups.

Table 2.9: Distribution of Transfers and Coady-Grosh-Hoddinott Index

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income pretransfer	5	10	15	25	45	100
Beneficiary of transfer 1 (yes/no)	1	1	0	1	1	4
Value of benefit 1 received (LCU)	9	9	0	1	1	20
CGH index, beneficiaries	1.25	1.25	0.83	0.94		
CGH index, benefits	2.25	2.25	1.5	1.19		
Beneficiary of transfer 2 (yes/no)	0	1	1	1	1	4
Value of benefit 2 received (LCU)	0	1	2	2	10	15
CGH index, beneficiaries	0	0.63	0.83	0.94		
CGH index, benefits	0	0.16	0.33	0.41		
Income posttransfer (LCU)	14	20	17	28	56	135

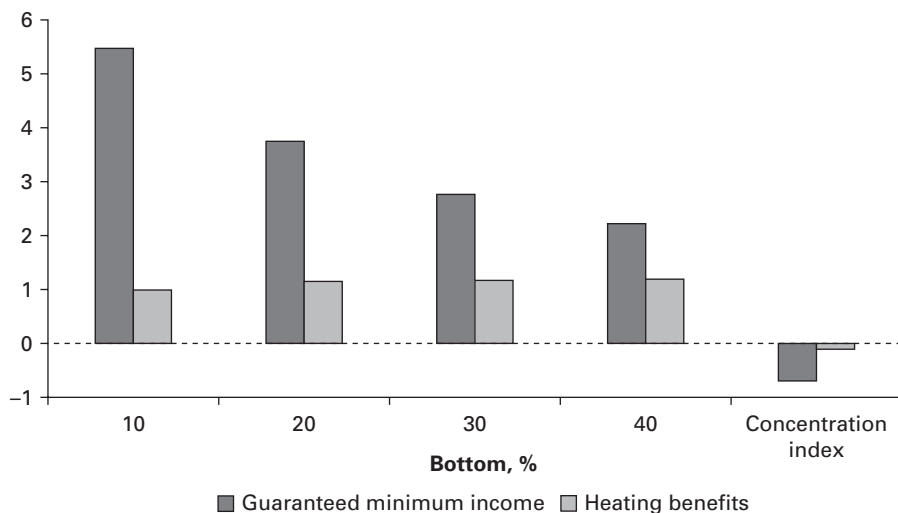
Note: CGH = Coady-Grosh-Hoddinott; LCU = local currency unit.

Figure 2.15: Coady-Grosh-Hoddinott Indicators, Beneficiaries


Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

CGH Indicator, Benefits

A second CGH measure is based on the share of benefits (money) that a particular welfare group receives and not the share of beneficiaries as just mentioned. If the target group receives all the benefits, then the value would be 100 percent/10 percent = 10.0. In figure 2.16, the GMI again performs well according to the CGH indicator for benefits, with the bottom 10 percent receiving a benefit amount around 5 times greater than what would be received for a uniform transfer. Heating benefits, by contrast, seem to be slightly regressive among the bottom deciles. The far

Figure 2.16: Coady-Grosh-Hoddinott Indicator, Benefits

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

right bar of figure 2.16 shows the concentration index, which shows the extent to which a given transfer reduces inequality (the more negative value means a greater share going to the poorest).

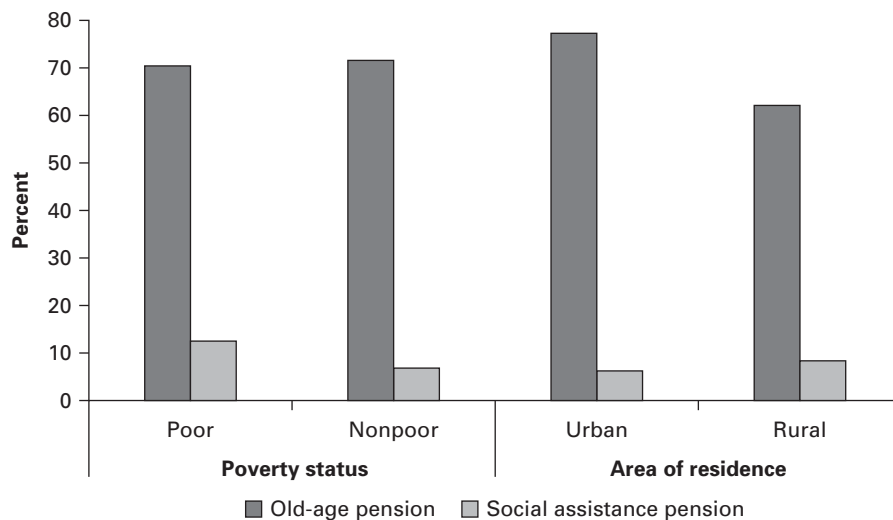
Adequacy, Relative Benefit Size, or Generosity

Adequacy—also called *generosity* or *relative benefit size*—measures the relative importance of transfers for beneficiaries only, unlike relative incidence, which includes beneficiaries and nonbeneficiaries. It also provides a more direct measure (for beneficiaries only) than relative incidence of the size of the transfer relative to economic welfare.

Adequacy is the mean value of the transfer amount received by all beneficiaries in a group as a share of total welfare aggregate of the beneficiaries in that group. Using a numeric example of two transfers, based on table 2.9 one can calculate and interpret this indicator. The adequacy using posttransfer for person A is $5/(5+9) = 5/14 = 35.7\%$, and so transfer 1 represents over one-third of their posttransfer welfare.

Figure 2.17 presents the Romania data; we see two very different program characteristics, as measured by adequacy. The old-age (contributory) pension on average represents roughly 70 percent of household welfare among

Figure 2.17: Adequacy, Direct and Indirect Beneficiaries



Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

beneficiaries, whereas the social assistance pension is around or below 10 percent. For the poor, old-age pensions represent 70 percent of welfare, compared with around 72 percent for the nonpoor. We also see that social assistance pensions are a smaller portion of welfare on average, and when looking by poverty status, they are around 12 percent of all income for the poor and approximately 7 percent for the nonpoor, which is an opposite trend compared with old-age pensions.

Undercoverage and Leakage

A straightforward measure of targeting accuracy is leakage: the share of benefits that go to someone other than the target group. Coady and Skoufias present undercoverage and leakage as special cases of the DCI. For a poverty-targeted program, leakage would be the share of benefits going to the nonpoor. Clearly, the lower the leakage, the better the targeting. This measure is sometimes calculated as the share of beneficiaries who are not poor. But by definition, this measure is less attractive because it is not linked to poverty status. Consider the example in table 2.9 and suppose that the poverty line is set at individuals with income less than 20 LCU. For a hypothetical program in the table, two out of five of the beneficiaries

are nonpoor, so the leakage rate measured by participation is 40 percent. However, the nonpoor receive much lower transfers on average, hence, only 10 percent of the value of the transfers. Thus, the leakage rate measured by share of benefits is much lower, at 10 percent.²⁰ The transfer that mostly accrues to the bottom of the distribution is called *progressive* or *inequality-reducing transfer*.

Programs with low leakage would seem to have good targeting, but Cornia and Stewart (1993) criticize it. They note that this measure of targeting is biased in favor of small programs because it is easier to ensure that no benefits go to the nonpoor in a small program than in a large one.²¹ To counteract that bias, Cornia and Stewart argue that analysts should also consider undercoverage: the share of the poor who are not beneficiaries. This measure clearly favors larger programs. Using the two together yields a more balanced perspective on a program's targeting.

Undercoverage is more difficult to calculate based on the share of benefits as opposed to beneficiaries. One could think about the share of the poverty gap that a program leaves unfilled, but that approach would be influenced by the program size, and so it would not allow a clean decomposition between targeting and adequacy. For this reason, undercoverage and leakage are usually calculated together on participation rather than shares of benefits. Table 2.10 shows undercoverage and leakage based on beneficiaries and leakage based on the share of benefits going to the nonpoor. Coverage of the poor is the share of the poor receiving benefits or one minus the undercoverage rate. Examining at the same time the leakage of benefits (money) and beneficiaries (people) provides a useful assessment of targeting (table 2.11).

Table 2.10: Leakage and Undercoverage Calculation

	<i>Poor</i>	<i>Nonpoor</i>
Beneficiaries	$n_{1,1}$	$n_{1,2}$
Nonbeneficiaries	$n_{2,1}$	$n_{2,2}$

Table 2.11: Leakage of Benefits versus Leakage of Beneficiaries

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income (LCU)	5	10	15	25	45	100
Beneficiary (1 = Yes)	1	1	0	1	1	4
Share of beneficiaries (%)	25	25	0	25	25	100
Value of benefits received (LCU)	9	9	0	1	1	20
Share of benefits received (%)	45	45	0	5	5	100

Note: LCU = local currency unit.

Table 2.10 shows that leakage and undercoverage are clearly related.

Leakage is $\frac{n_{1,2}}{n_{1,1} + n_{1,2}}$ and undercoverage is $\frac{n_{2,1}}{n_{1,1} + n_{2,1}}$.

$$\text{Leakage of beneficiaries} = \frac{\text{Number of nonpoor households receiving transfer}}{\text{Total number of beneficiary households}} \quad (15)$$

$$\text{Undercoverage} = \frac{\text{Number of poor households not receiving transfer}}{\text{Total number of poor households}} \quad (16)$$

Importantly, analyzing targeting does not require the use of only monetary measures of poverty. In fact, poverty can be defined, for example, as certain deprivation (such as lack of education) or as many dimensions (multidimensional poverty index). Thus, the analysis of leakage and coverage is generally applicable to any type of welfare measure.

Because many social protection programs, particularly social assistance, target the poor, metrics to show how effectively programs reach the poor are essential. Undercoverage, coverage of the poor, leakage, and the targeting differential collectively inform ADePT users of the extent to which programs meet this effectiveness objective.

Undercoverage refers to the share of the poor who do not benefit from a program, whereas coverage of the poor is the opposite, and so the two measures will sum to 100 percent.

$$\text{Coverage of poor} = \frac{\text{Number of poor households receiving transfer}}{\text{Total number of poor households}} \quad (17)$$

A most straightforward measure of accuracy in targeting is leakage—the share of benefits that go to individuals who are not in the target group. In the case of poverty, this would be the share of benefits going to the nonpoor. Clearly, the lower the leakage, the better the targeting.

This measure is sometimes calculated as the share of beneficiaries who are not poor.

$$\text{Leakage of beneficiaries} = \frac{\text{Number of nonpoor households receiving transfer}}{\text{Total number of beneficiary households}} \quad (18)$$

$$\text{Leakage of benefits} = \frac{\text{Benefits received by nonpoor households}}{\text{Total benefits}} \quad (19)$$

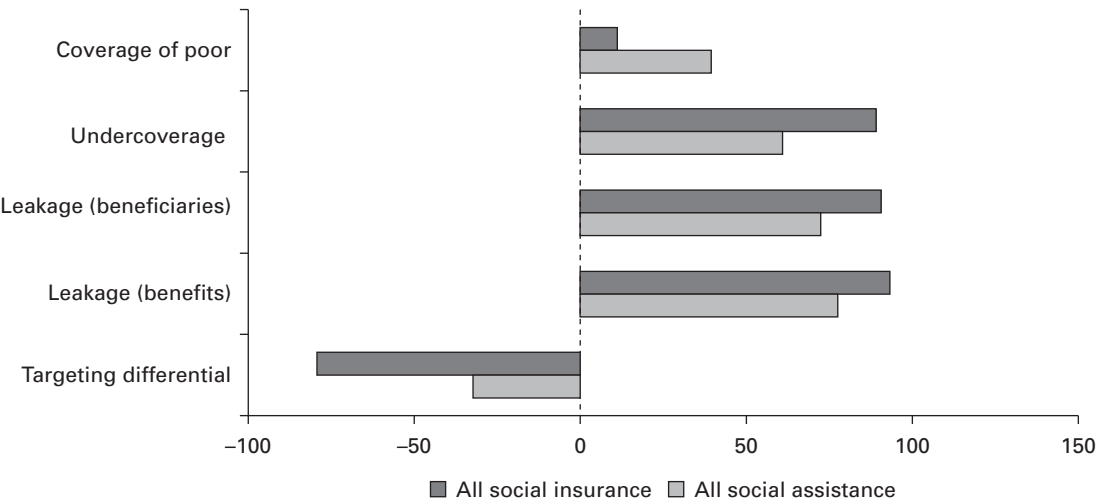
The confluence of coverage and leakage explains the targeting differential, the difference of the poor and the nonpoor who are covered, or the difference between the coverage of the poor and the coverage of the nonpoor. A positive targeting differential would mean that more poor than nonpoor are covered, whereas the converse would hold for a negative value.

$$\begin{aligned} \text{Targeting differential} = & \frac{\text{Number of poor households receiving transfer}}{\text{Total number of beneficiary households}} \\ & - \frac{\text{Number of nonpoor households receiving transfer}}{\text{Total number of beneficiary households}} \end{aligned} \quad (20)$$

In figure 2.18, we see that “all social insurance” covers approximately 10 percent of the poor and 90 percent of the nonpoor, resulting in a differential of around –80. By contrast, “all social assistance” has a less negative (better) targeting differential relative to “all social insurance” because coverage of the poor is higher and coverage of the nonpoor is lower. The results indicate that all social assistance is comparatively more pro-poor, whereas all social insurance accrues to relatively fewer poor compared with nonpoor.

Although leakage and undercoverage rates are used widely in targeting analysis, they suffer because the income distribution is divided into two discrete groups—poor and nonpoor—and the effect of each person in those groups counts the same for these measures.²² But it seems intuitive that leakage of benefits to a person whose income is just above the

Figure 2.18: Undercoverage and Leakage



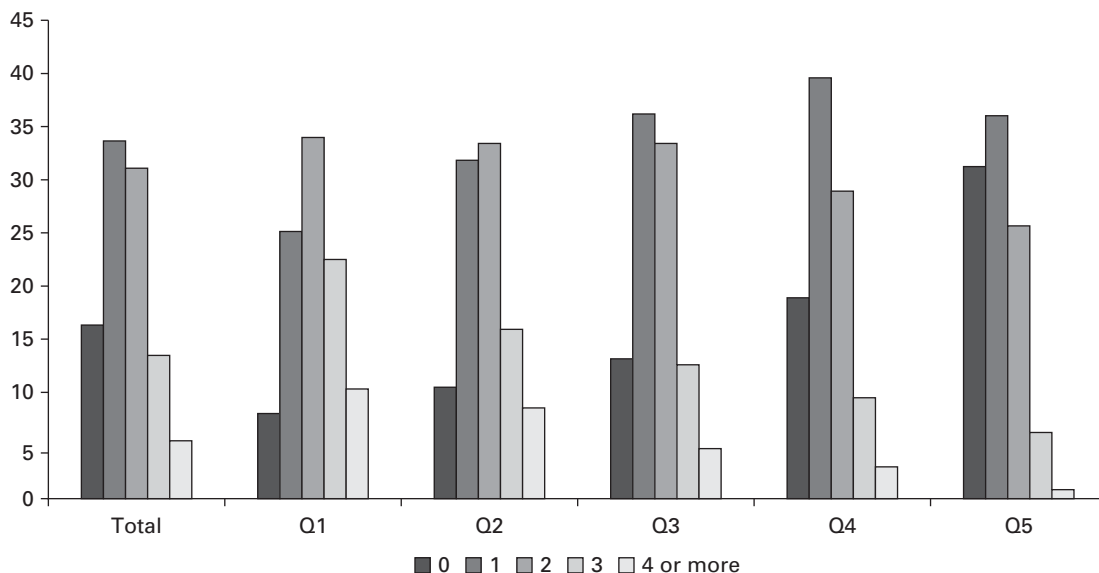
Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

poverty line is not as worrisome as leakage to a person whose income is far above it. Similarly, undercoverage of an extremely poor person seems more important than undercoverage of a person whose income is just below the poverty line.

Transfer Frequency in Each Population Group (%)

The metric of *number of programs received* simply refers to the number of social protection transfers received by a household or individual. The information is useful for showing if groups are covered by multiple social protection programs. The metric is presented by key population characteristics and can help highlight groups that receive a relatively low or high number of transfers. The metric is helpful to see broad patterns in frequency and may inform decisions to scale up programs where there are no or few programs, or to rationalize programs when the same group receives multiple transfers.

Figure 2.19 shows that for the total population, around 16 percent receive no transfer, 33 percent receive one transfer, 32 percent receive two transfers, 14 percent receive three transfers, and 5 percent receive four or more transfers. Each column sums to 100 percent, and, we can see in the case of Romania, it is most common to receive one transfer. The figure also

Figure 2.19: Transfer Frequency

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012," and on the unadjusted (posttransfer) welfare per capita.

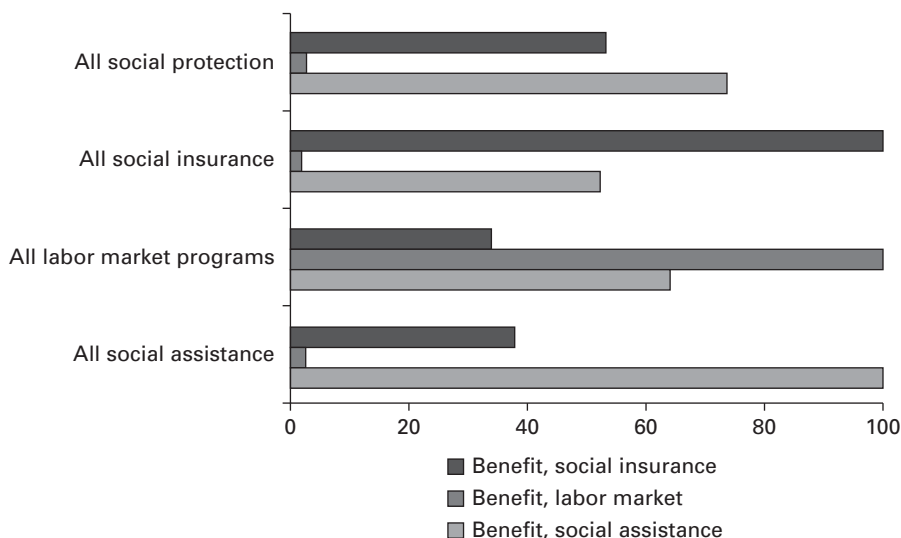
provides information on subgroups, in this case, welfare quintiles. The share of people receiving no transfers increases from 8 percent for Q1 to 30 percent for Q5, whereas it falls for those receiving four or more transfers as welfare improves.

Social Program Overlap (%)

Social program overlap provides more specific information about which of the three categories of social protection and specific programs have overlapping coverage. If the program overlaps for social assistance and if social insurance is 25 percent, this means that among the households that receive social assistance, only one of four receives social insurance.

Interpreting overlap statistics always requires knowledge about rules of the programs and their institutional links. For example, high overlap between contributory old-age pensions and a poverty-targeted social assistance program may indicate high leakage in either or both programs, as pensions tend to go to richer groups and safety nets aim at poorer groups. But overlap between social assistance and a labor program may indicate a

Figure 2.20: Program Overlap by Recipient Group



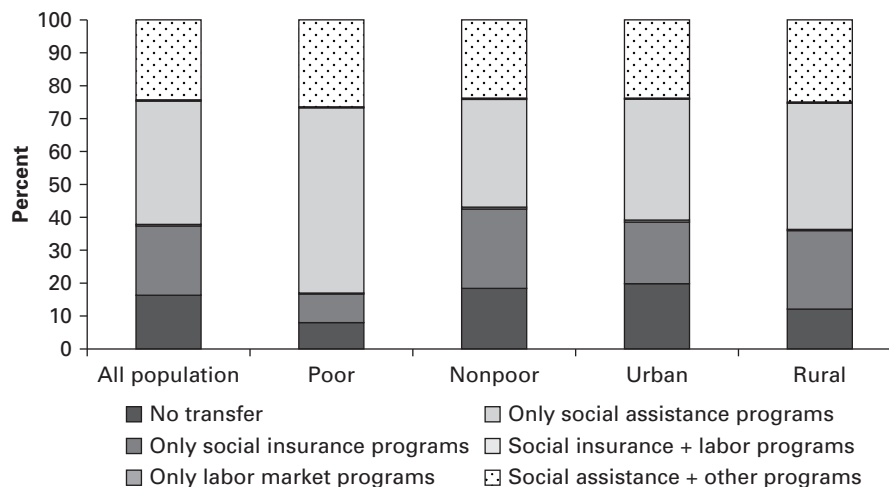
Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

coordinated effort to activate social assistance beneficiaries and link them to employment opportunities.

Figure 2.20 presents the overlap by different program types in Romania. Among those receiving social insurance, roughly 2 percent receive a labor market benefit and 50 percent receive social assistance. Among social assistance recipients, 40 percent receive social insurance, compared with roughly 3 percent receiving a labor market transfer.

Social Program Overlap [2] (%)

A separate figure (figure 2.21) provides information on the characteristics of recipients by the type of social protection transfer received. First, by focusing on the share of the population receiving no transfers, we see that the poor are relatively better covered in Romania: more than 20 percent of the population receive no transfer, but fewer than 10 percent of the poor receive no transfers. Still, it is not the 100 percent coverage that many countries are aspiring for. Approximately 20 percent of those residing in urban areas report no transfer, compared with more than 10 percent in rural areas. Labor programs are practically nonexistent in terms of coverage. We then see that the coverage of the poor is achieved by social assistance (56 percent of the poor receive social

Figure 2.21: Social Program Overlap

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

assistance, and a further 23 percent receive social assistance in combination with other programs). On the contrary, social insurance is much more important for the nonpoor.

Benefit-Cost Ratio

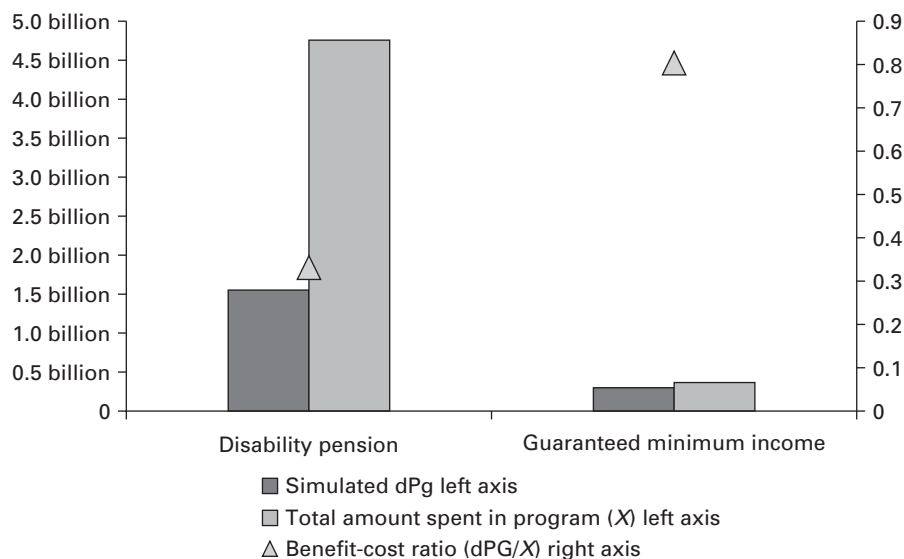
The benefit-cost ratio (BCR) is a useful metric for approximating the efficiency in poverty reduction programs. More specifically, the BCR examines the percentage of benefits that reduce the poverty gap. If 1 LCU is spent on a program, and 50 percent goes to reducing the poverty gap, the BCR would be 0.5. The minimum value is 0.0, meaning there is no effect on the poverty gap, and the maximum is 1.0, meaning 100 percent of the benefits would reduce the poverty gap.

Taking a numeric example from table 2.11, we illustrate how one can proceed with BCR calculations (table 2.12). We are setting the poverty line at 18 LCU. For person A, all transfer (9 LCU) is reducing the poverty gap. After the transfer, her income is $5 + 9 = 14$, which is still below the poverty line. Person B also receives 9 LCU, but only 8 goes to reduce the poverty gap and brings that person to the poverty line. The last unit of transfer is "excessive" and does not contribute to reducing the poverty gap, instead bringing B above the poverty line to income 19 after transfer. Finally, transfers to D

Table 2.12: Benefit-Cost Ratio Calculations

<i>Person</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>Total</i>
Income (LCU)	5	10	15	25	45	100
Beneficiary (1 = Yes)	1	1	0	1	1	4
Value of benefits received (LCU)	9	9	0	1	1	20
Benefits going to reduce poverty gap	9	8	0	0	0	17

Note: LCU = local currency unit.

Figure 2.22: Benefit-Cost Ratio

Source: Based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: dPg = Difference in the simulated poverty gap and actual poverty gap.

and E are going to the nonpoor and, hence, do not represent "benefit" from the society's point of view. Total cost is 20, which is the sum of all transfers. Of that, 17 goes to closing the poverty gap (which, after transfer, remains at $4(A) + 3(C) = 7$), 3 is "wasted," and BCR is $17/20 = 0.85$

ADePT SP simulates the poverty gap in the absence of social protection programs (or specific individual programs) and compares this to the actual poverty gap. The difference is, therefore, the simulated reduction in the poverty gap because of a program X. The BCR is the simulated change in the poverty gap due to transfer divided by the amount spent on benefits.

In the example in figure 2.22, we see that the BCR for the GMI in Romania far exceeds that of disability pensions; thus, the GMI more

effectively reduces the poverty gap. Starting with the disability pension, the simulated change in the poverty gap is approximately 1.6 billion, whereas total benefit spending is around US\$4.7 billion. Therefore, we obtain the BCR of $1.6/4.7 = 0.34$. The same approach is used for the GMI ($\sim 350,000/450,000 = 0.78$). The results show that for every 1 dollar spent on disability pension benefits, 34 percent of those benefits reduce the poverty gap, compared with close to 80 percent for the GMI.

Annex 2A: Social Protection Benefit Categories and Subcategories Definitions

The World Bank Atlas of Social Protection Indicators of Resilience and Equity's (ASPIRE) classification first separates benefits that are contributory (social insurance) from those that are noncontributory (social assistance). Labor market programs are a hybrid area that includes both contributory unemployment insurance and noncontributory unemployment assistance.

Next, ASPIRE classifies benefits in 12 standard social protection program categories and 2 private transfer categories on the basis of the combination of three different criteria: (a) the type of benefit modality (cash, in-kind/vouchers, and waivers); (b) whether benefit receipt is conditional on certain behaviors, such as fulfilling coresponsibilities in conditional cash transfer programs, attending school to benefit from school feeding programs, and complying with work requirements in workfare and public works programs; and (c) the risks the benefit is addressing (old age, disability, survivorship, cost of housing, lack of access to basic services, and unemployment).

The 14 standard ASPIRE categories are contributory pensions, other social insurance, active labor market programs, passive labor market programs, unconditional cash transfers, conditional cash transfers, noncontributory social pensions, food and in-kind transfers, school feeding, public works, fee waivers, other social assistance, domestic private transfers, and international private transfers.

Social Insurance

Contributory pensions and savings programs are designed to help households or individuals insure themselves against a reduction in income associated with old age or loss of working capacity. Old-age benefits usually represent the largest share of social security expenditures. It is also probably the area with the most varied provisions.

Survivors' programs are usually part of old-age pension programs. Survivors' benefits are paid to survivors when a member of the family dies.

Disability pension is a contribution-financed benefit paid to a person who is unable to work. Typically, old-age, disability, and survivor programs provide annuities (or periodic payments), except when the program is a provident fund, in which case a lump sum is paid (sometimes it is possible to convert the lump sum into an annuity).

Other social insurance includes compensation for work-connected injuries and occupational illnesses; it also includes maternity and paternity benefits (or insurance-based child allowances), health insurance, and contributory funeral grants. Such programs usually furnish short- and long-term benefits,

(continued)

Annex 2A: Social Protection Benefit Categories and Subcategories Definitions (*continued*)

depending on both the duration of the incapacity and the age of survivors. Work injury benefits nearly always include cash benefits and medical services. Most countries attempt to maintain separate work injury programs that are not linked directly with other social security measures. In some countries, however, work injury benefits are paid under special provisions of the general social security programs.

Labor Market Programs

Labor market policy measures (active labor market programs [ALMPs]) are designed to actively increase the skills, employment, and long-run earning potential of participants through training, apprenticeship, job-search assistance, and subsidized job placements, among others. ALMPs include services provided by the public employment service, including counseling, placement assistance, job matching, labor exchanges, and related services. ALMPs also include short-term professional training programs (not formal technical vocational educational and training courses), such as vocational, cash for training, workplace training, substitution, and employer recruitment. Substitution schemes may promote the full substitution of an employee by an unemployed person or a person from another target group for a fixed period. Other programs promote employment for people with disabilities, entrepreneurship through cash and in-kind grants, counseling, and payments for a limited period to help recruit persons who are unemployed and people in other target groups into jobs where the majority of the labor cost is covered by the employer. Such payments made to individuals may be conditional if they take a new job (back-to-work bonus, mobility and relocation allowance, or something similar).

Labor market policy supports (passive labor market programs) include out-of-work income maintenance supports such as contributory unemployment benefits, severance payment if subsidized by the government, and other benefits paid to members of an unemployment insurance scheme. These supports are often paid only for a limited period. Unemployment assistance benefits are paid to workers who either fail to satisfy criteria for membership in an unemployment insurance scheme or who have exceeded the period for entitlement to unemployment insurance benefits.

Social Assistance

Unconditional cash transfers include several types:

- Poverty-targeted cash transfers for poor people or households are based on their needs or a means test. The main objective of such a program is to lift the household to some level of locally defined minimum standard of living (minimum income or nationally defined poverty line). Usually, they provide regular and predictable transfers. Common variants include guaranteed minimum income programs, last-resort programs, targeted transfers for needy families, and so on.
- Cash transfers for families with children and for families taking care of orphans or vulnerable children aim to alleviate the cost of raising a child, rather than targeting poverty reduction. Family allowances can take various forms, such as universal transfers for all children under a fixed age, child benefits to specific groups of children, birth grants or demographically motivated incentives for multiple births, and so on.
- Public-private charity, such as zakat, uses private funds that are gathered by public institutions and distributed to the individuals or households in need. Emergency support is given in cash (one time

(*continued*)

Annex 2A: Social Protection Benefit Categories and Subcategories Definitions (*continued*)

or occasional) to individuals affected by emergencies or a shock caused by weather conditions, fire or flooding, food crisis, human-caused crisis, economic downturn, or other.

- The final example is noncontributory funeral grants and burial allowances where families may receive a transfer, for example, to cover losses of income or extra costs associated with the death of a family member

Conditional cash transfers are periodic monetary benefits given to poor households or other beneficiaries who comply with specific requirements. Program conditions are usually intended to encourage investments in human capital, such as school attendance, immunizations, health checkups, nutrition clinics, and so on. Education conditional cash transfers are different from stipends in that such transfers generally target families at high risk of dropout from schools (typically poor).

Social pensions (noncontributory) include (a) old-age social pensions or benefits paid to the elderly from tax-financed (rather than contribution-financed) sources; (b) disability social pensions or benefits paid to support either a person with disability or a household with such a member; (c) war veterans' benefits paid in cash to war veterans, disabled veterans, and so on. Veterans' benefits also include support for education and other social services for veterans' households as well as survivorship pensions for families.

Food and in-kind transfers include various systems, as in the following examples:

- In-kind general food rations, which provide access to predefined quantities of food, are given to vulnerable and food-insecure households through a food distribution system.
- Food stamps and vouchers are similar to cash transfers in that they can be cashed only against the purchase of food in designated stores.
- Nutritional programs provide food and micronutrient supplements for pregnant and lactating mothers and provide fortified food for children and the elderly, including people who are malnourished and people with diseases.
- Emergency in-kind support can include shelter, clothes, and medicine, in addition to food.

School feeding involves in-kind food transfers that provide meals or snacks for children at school to encourage enrollment and attendance. They are also provided as take-home rations.

Public works provide income support in cash wages or food, in exchange for work. These programs typically provide short-term employment at low wages for unskilled and semiskilled workers on labor-intensive projects such as road construction and maintenance, irrigation infrastructure, reforestation, and soil conservation. Public works programs are generally seen as a means of providing income support to the poor in critical times, rather than as a way to get the unemployed back into the labor market. In the latter case, they should be classified under active labor market programs.

Fee waivers and targeted subsidies include (a) housing and utility allowances and discounts to help households meet the costs of housing and utilities; (b) health waivers and reduced medical fees targeted to vulnerable groups to relieve them of the need to pay full or partial costs for health services, such as government-subsidized health insurance premiums; (c) education fee waivers meant to assist households in meeting the costs of schooling; (d) utility and electricity subsidies for those who cannot afford full payments, given as rebates to their bills or write-offs of debt to utilities; and (e) agricultural inputs subsidies.

(*continued*)

Annex 2A: Social Protection Benefit Categories and Subcategories Definitions (*continued*)

Other social assistance includes (a) scholarships and school stipends meant to help households meet the costs of schooling; (b) social care services, such as free or subsidized public care for the elderly or disabled, family counseling, and child protection services; (c) other cash programs, including merit-based benefits and benefits for families of prisoners.

Private Transfers

Domestic private transfers include interhousehold cash and in-kind transfers, gifts, alimony, income support from charities, churches, nongovernmental organizations, and private zakat.

International private transfers include remittances from abroad.

Notes

1. Access the World Bank's Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database at <http://datatopics.worldbank.org/aspire/>.
2. Latin America and the Caribbean, South Asia, East Asia and Pacific, Europe and Central Asia, Middle East and North Africa, and Sub-Saharan Africa.
3. Social assistance spending as a percentage of GDP is based on administrative data.
4. See the Data Sources and Methodology page of the ASPIRE database, <http://datatopics.worldbank.org/aspire/documentation>.
5. For nonmonetary welfare aggregates, such as multidimensional poverty, ADePT SP can create many tables that do not require monetary amounts. For example, beneficiary incidence will be generated, although not benefit incidence.
6. In part a result of this bias, in many poverty profiles, the incidence of poverty increases with household size.
7. For full discussion of different scales, see Lanjouw, Milanovic, and Paternostro (2002).
8. More details on the role and empirics of equivalence scales can be found in Foster and others (2013).
9. Poverty measures look at a censored welfare distribution by only focusing on those below the poverty line and not the nonpoor, even if the nonpoor are just above the poverty line.

10. For more details on setting the poverty lines, see Foster and others (2013).
11. For more comprehensive models of distribution, including possible use of negative values, see Foster and others (2013).
12. Refer to the ADePT Poverty and Inequality manual (Foster and others 2013) for a detailed discussion of the Gini coefficient concept and formula.
13. More details on the inequality indexes and their properties are provided in the ADePT Poverty and Inequality manual (Foster and others 2013).
14. For more comprehensive models of distribution, including possible use of negative values, see Foster and others (2013).
15. Counterfactual V1 subtracts 50 percent each of social insurance and labor market benefits and 100 percent of social assistance benefits.
16. For examples and derivation of λ , see Coady and Skoufias (2004), Skoufias and Coady (2007), and Skoufias, Lindert, and Shapiro (2009).
17. The latter property is useful for policy analysis. For programs with the same budget, a program with a larger distributional characteristic is one that has a greater effect on social welfare.
18. The DCI can be decomposed into each SP program, thereby allowing for the social welfare effect overall, or into each SP program, to be calculated. This is simply the DCI of a program * program budget = social welfare impact.
19. This finding uses the Bergson–Samuelson social welfare function formulation first introduced by Bergson (1938).
20. Note that if the value of the benefit is the same for every recipient, then these two leakage measures are the same.
21. This statement is about the implementation of programs, not the mathematics of the leakage statistic. Both leakage and coverage are measured as *shares* of benefits and so are independent of program size in a mathematical sense. That makes them valid measures of targeting (as opposed to program size). However, administratively, excluding the nonpoor may become more difficult as a program becomes larger.
22. There is a similarity to the limitations of the head count index of poverty, in which each poor person counts the same (1), as does each nonpoor person (0).

References

- ADB (Asian Development Bank). 2011. *The Revised Social Protection Index: Methodology and Handbook*. Mandaluyong City, Philippines: Asian Development Bank.
- . 2013. *The Social Protection Index: Assessing Results for Asia and the Pacific*. Mandaluyong City, Philippines: Asian Development Bank.
- Aitchison, J., and J. Brown. 1957. *The Lognormal Distribution*. Cambridge, U.K.: Cambridge University Press.
- Atkinson, A. 2003. “Income Inequality in OECD Countries: Data and Explanations.” Revised version of paper presented at the CESifo conference Globalization, Inequality and Well-Being, Munich, November 8–9, 2002.
- Bergson, A. 1938. “A Reformulation of Certain Aspects of Welfare Economics.” *Quarterly Journal of Economics* 52 (2): 310–34.
- Caceres, L., and N. Saca. 2006. “What Do Remittances Do? Analyzing the Private Remittance Transmission Mechanism in El Salvador.” Working Paper WP/06/250, International Monetary Fund, Washington, DC. <https://www.imf.org/external/pubs/cat/longres.aspx?sk=19219.0>.
- Coady, D., M. Grosh, and J. Hoddinott. 2004. *Targeting of Transfers in Developing Countries: Review of Lessons and Experience*. Washington, DC: International Food Policy Research Institute and World Bank. http://siteresources.worldbank.org/SAFETYNETSANDTRANSFERS/Resources/281945-1138140795625/Targeting_En.pdf.
- Coady, D., and E. Skoufias. 2004. “On the Targeting and Redistributive Efficiencies of Alternative Transfer Instruments.” *Review of Income and Wealth* 50 (1): 11–27.
- Cornia, Giovanni A., and Frances Stewart. 1993. “Two Errors of Targeting.” Innocenti Occasional Papers, Economic Policy Series, no. 36. United Nations Children’s Fund, Office of Research–Innocenti, Florence, Italy. <https://www.unicef-irc.org/publications/154/>.
- Drèze, J., and N. Stern. 1987. “The Theory of Cost-Benefit Analysis.” In *Handbook of Public Economics: Volume II*, edited by A. Auerbach and M. Feldstein, 909–89. Amsterdam: North Holland.
- Fiszbein, A., and N. Schady. 2009. “Conditional Cash Transfers: Reducing Present and Future Poverty.” World Bank, Washington, D.C. http://siteresources.worldbank.org/INTCCT/Resources/5757608-1234228266004/PRR-CCT_web_noembargo.pdf.

- Foster, J., J. Greer, and E. Thorbecke. 1984. "A Class of Decomposable Poverty Measures." *Econometrica* 52 (3): 761–66. <https://oied.ncsu.edu/selc/wp-content/uploads/2013/03/A-Class-of-Decomposable-Poverty-Measures.pdf>.
- Foster, J., S. Seth, M. Lokshin, and Z. Sajaia. 2013. *A Unified Approach to Measuring Poverty and Inequality—Theory and Practice: Streamlined Analysis with ADePT Software*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/13731>.
- Gentilini, Ugo, Maddalena Honorati, and Ruslan Yemtsov. 2014. "The State of Social Safety Nets 2014." Working Paper 87984, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/302571468320707386/The-state-of-social-safety-nets-2014>.
- Gertler, Paul J., Sebastian Martinez, Patrick Premand, Laura B. Rawlings, and Christel M. J. Vermeersch. 2016. *Impact Evaluation in Practice*. 2nd ed. Washington, DC: Inter-American Development Bank and World Bank. <https://openknowledge.worldbank.org/handle/10986/25030>.
- Guesnerie, R. 1979. "General Statements of Second-Best Pareto Optimality." *Journal of Mathematical Economics* 6: 169–94.
- Honorati, M., U. Gentilini, and R. Yemtsov. 2015. *The State of Social Safety Nets 2015*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/415491467994645020/The-state-of-social-safety-nets-2015>.
- Hoynes, Hilary, and Ankur J. Patel. 2015. "Effective Policy for Reducing Inequality? The Earned Income Tax Credit and the Distribution of Income." Working Paper 21340, National Bureau of Economic Research, Cambridge, MA.
- ILO (International Labour Organization). 2013. "Mapping International Social Protection Statistics and Indicators." "Report on the workshop 'Mapping Existing International Social Protection Statistics and Indicators That Would Contribute to the Monitoring of Social Protection Extension through Social Protection Floors,' held in Geneva, Switzerland, March 13, 14, and 15, 2013." ESS Working Paper No. 38, ILO, Geneva.
- Jalan, J., and R. Ravallion. 2003. "Estimating the Benefit Incidence of an Antipoverty Program by Propensity-Score Matching." *Journal of Business and Economic Statistics* 21 (1): 19–30. http://www1.worldbank.org/prem/poverty/ie/dime_papers/118.pdf.

- Lanjouw, Peter, Branko Milanovic, and Stefano Paternostro. 2002. "Poverty and Economic Transition: How Do Changes in Economies of Scale Affect Poverty Rates of Different Households?" Policy Research Working Paper 2009, World Bank, Washington, DC.
- National Institute of Statistics (Romania). 2012. "Household Budget Survey 2012." International Household Survey Network (IHSN) Survey Catalog. <http://catalog.ihsn.org/index.php/catalog/4694>.
- National Research Council. 1995. *Measuring Poverty: A New Approach*. Washington, DC: National Academy Press.
- Sen, A. 1985. *Commodities and Capabilities*. Amsterdam: North Holland. <https://scholar.harvard.edu/sen/publications/commodities-and-capabilities>.
- Shorrocks, A. F. 1980. "The Class of Additively Decomposable Inequality Measures." *Econometrica* 48 (3): 613–25. <http://www.jstor.org/stable/1913126>.
- Skoufias, E., and D. Coady. 2007. "Are the Welfare Losses from Imperfect Targeting Important?" FCND (Food Consumption and Nutrition Division) Discussion Paper 125, International Food Policy Research Institute, Washington, DC.
- Skoufias, E., K. Lindert, and J. Shapiro. 2009. "Globalization and the Role of Public Transfers in Redistributing Income in Latin America and the Caribbean." Working Paper 53983, World Bank, Washington, DC.
- Tesliuc, Emil D., and Phillippe G. Leite. 2010. *User Manual for ADePT Social Protection*. Washington, DC: World Bank.
- World Bank. ASPIRE: The Atlas of Social Protection Indicators of Resilience and Equity (database). World Bank, Washington, DC. <http://datatopics.worldbank.org/aspire/>.
- World Bank. 2012. *Resilience, Equity, and Opportunity: The World Bank's Social Protection and Labor Strategy 2012–2022*. Washington, DC: World Bank.

Data Requirements for Social Protection Analysis

This chapter clarifies the data requirements of quantitative social protection (SP) analysis. It begins with a comparison of the potential data sources and follows with a focus on explaining household surveys used for social protection analysis, from deciding what data are needed, transforming responses into data for analysis, to assessing data quality. Finally, the chapter provides guidance on what types of SP information are commonly found (and not found) in household surveys and on how to address survey bias using complementary survey data with reliable administrative records.

Chapter 4 then applies the data analysis foundation of this chapter to the ADePT SP software.

Understanding Social Protection Data Sources

Although both administrative and household data can be used for social protection analysis, household surveys are generally viewed as richer data sources that yield more useful and broader SP analysis.

Household surveys were first used in the late 18th century to inform social protection and labor policies. Benjamin Seebohm Rowntree, in his first book, a study of town life published in 1901, was one of the first to show that household surveys could, with reasonable accuracy, reproduce the population characteristics of a larger census. These surveys were increasingly used over the course of the 20th century, and in the late 20th century,

improvements in survey design and computational power made them commonplace for informing economic and social policies (Deaton 1997).

Among the unique advantages of household survey data is that they collect information on SP benefit receipts and on the socioeconomic characteristics of beneficiaries (and nonbeneficiaries). This information allows researchers to analyze an SP program's effects on the poor and nonpoor and allows them to identify the population in need but not covered by SP programs. It also allows simulation of the effects of changes to SP program design parameters, such as increasing the scale of current programs and introducing or removing certain benefits.

Household surveys are the only source of data providing information on the lack of social protection coverage. Thus they enable analysis of the social protection needs of different population groups (by poverty and other characteristics). Likewise, they are the only source of data to enable estimates of the effects of existing (or simulated) SP benefits on household poverty or inequality. But the opportunity for such rich analysis is missed if the survey questions are not designed to collect detailed program information. Household surveys also collect information on households' eligibility to receive certain SP benefits and on their actual receipt, allowing different measures of coverage.

Administrative data are collected by program administrators, whereas household survey data are collected by a national statistics office. Administrative data are most often collected by departments or ministries running a particular program, which, for social protection, may include the departments of labor and of social affairs or private providers. Unlike education or health data, information on SP programs is not often centralized in one ministry or government department but is administered by a multitude of agents. Information and data are therefore fragmented, and the availability and quality of the data vary across schemes, programs, and countries. In lower-income countries, the capacity of program administrators to collect and monitor basic data for program spending and the number of beneficiaries is weak, partly because of the need to coordinate with many different departments and government agencies. In only a very few cases is just one government agency given central authority to coordinate social protection efforts.

For these reasons, administrative data present limitations for SP analysis. Most important, program administrative data do not include information on eligible people who are not program beneficiaries. Further, the data are

subject to double counting for beneficiaries receiving various social protection and labor benefits.

In many developing countries, the fragmentation of sources (multiple schemes and programs) poses serious challenges. A country with multiple public pension schemes (such as old-age, survivors, disability, veterans, and social pensions), for example, may have data stored in separate ministries for each program. First, because a different ministry may administer each public scheme, there may not be a unique identifier for beneficiaries, thereby making it difficult to assess multiple public schemes at once. Second, even if information from some schemes can be merged, administrative data offer limited information on the characteristics of individuals and likely have no information on other social protection programs received. For example, if data for pension schemes are merged, it is unlikely the data will contain information on social assistance or labor market programs. Finally, the private sector may operate some schemes, which are not likely to or legally able to share proprietary information on participants. These limitations are likely to constrain a data analyst.

Administrative data sources also have some advantages. Administrative data are (or should be) regularly collected and published annually, at least, by the institutions administering SP programs. The data are also cheaper to collect than survey data because they are collected for the regular functioning of the scheme or program with little additional cost.

Although administrative data generally cover a portion of the population—the program participants—household surveys represent the entire population and collect more comprehensive information.¹ Surveys collect the demographic, social, economic, and labor market information of beneficiaries and nonbeneficiaries. They also record the receipt and often the value of public and private transfers, such as international remittances and domestic private transfers. That said, household surveys are less frequent (fielded only every 10 years in some African countries), static (except panel or longitudinal household surveys, which collect round after round of information from the same households, tracing their evolution over time), and more expensive. And they do not detect accurate coverage of smaller programs unless the survey questions and sampling design are adjusted to detect participation in such programs.² Therefore they provide only a partial picture of the overall social protection system.

Because data collection for administrative data and household surveys entails very different processes, which may rely on very different concepts

and definitions, the coverage rates of SP programs derived from either administrative data or household survey data may differ substantially. Nonetheless, both sources are important and complement each other.

Household Survey Data Quality Effects on SP Analysis

Many survey types are suitable for SP analysis, and they may vary in design, generalizability, and objectives. Suitable surveys are nationally representative and occur every year or every few years. These household surveys are designed using advanced statistical techniques to ensure sufficient representation such that even results from a relatively small number of people and households are accurate for the entire population and main subgroups.

For meaningful SP analysis, household surveys must collect, at a minimum, (a) information on existing major social protection programs and schemes and (b) information on household characteristics and welfare. Common survey types for SP analysis include household budget surveys, household income and expenditure surveys, and multitopic surveys, such as the Living Standards Measurement Study. Certain survey types are less suitable. For example, Multiple Indicator Cluster Surveys and Demographic and Health Surveys that are more health focused often do not collect information on SP benefits and collect only proxies (indirect information) on household wealth or income. Labor force surveys typically focus on working-age adults and do not contain detailed questions relevant to social protection beyond labor market programs.³

In addition to SP program content, another critical attribute of household surveys is information for assessing household welfare, which is generally measured directly by income, consumption, and expenditure (see chapters 2 and 4 for a discussion on different measures of households' welfare). Household welfare is ideally measured by consumption expenditure aggregates and is generated by summing up the value of food and nonfood items the household consumes or purchases. The information is collected in recall modules or consumption diaries. Alternative measures of welfare are income aggregates that total the earnings of all household members from labor markets, as well as income from capital, both public and private current transfers, and taxes and social contributions paid.^{4,5} Consumption and expenditure aggregates may not be comparable, and income aggregates may differ depending on whether different income items are collected before or after taxes (or both).

The three measures—income, consumption, and expenditure—differ and present advantages and disadvantages depending on the country context. When direct measurements of welfare are not available, the user can construct a welfare index using proxy variables. Welfare indexes based on proxies can be constructed in different ways. One is to use principal components analysis to construct a “wealth” index using information on asset and land ownership as well as household characteristics.⁶

The national representativeness of household surveys is another desirable attribute for comprehensive analysis. Although most multitopic surveys used for social protection and labor are nationally representative, exceptions exist, such as surveys that focus only on urban areas and others that do not include all age groups.⁷

Several steps are involved in the household survey process, which can generally be grouped into *ex ante*, implementation, and *ex post* categories. The *ex ante* stage includes all steps before survey implementation, which includes designing the survey instrument and determining the sampling strategy to ensure statistical validity of estimates and of pilot surveys. Implementation includes data collection, and the *ex post* stage includes data processing and cleaning.

All stages are critical to ensuring that data at the end of the process are of sufficient statistical quality for accurate analysis and are comprehensive enough to include the main SP benefits and programs of policy interest. The better executed the *ex ante* and implementation stages, the higher the quality of raw SP and labor data for *ex post* work and data analysis.

Ex Ante Design Considerations

To ensure the quality, accuracy, and comprehensiveness of SP and labor data, analysts’ *ex ante* considerations include the survey instrument design and sampling strategy. Identifying which major SP programs to include in household survey instruments requires understanding of the social protection program objective, intended beneficiaries, geographical coverage and budget, and policy relevance for SP and cross-sectoral analysis. The design also requires consideration of trade-offs in terms of survey length—for example, adding specific questions on detailed SP benefits—and the possible need to oversample specific areas to detect smaller programs, with the additional costs that step would imply. The ideal survey design would include

information on all current major social protection and labor programs with a reasonable survey administration budget.

Sampling for household surveys is driven by the overall objectives of such data collection, which often requires national representativeness of key estimates for main population groups and regions (box 3.1). It is very rare that a sampling strategy includes a stratum (part of the population for which the selection is conducted in a way that ensures representativeness for this domain) for social protection programs. When it does, it always produces more accurate results. But this inclusion risks making sampling very complex and at times difficult to implement.

The choice of the most appropriate survey module is also important in social protection. Given the broad scope and cross-sectoral nature of

Box 3.1: Household Survey Sampling

The typical household survey collects data from a sample of households randomly selected from a full list of all households in a country. This list is called the *survey frame*. The frame is usually the national population census records. However, some countries use administrative data (such as electoral or housing registries).

Often, the survey frame does not cover the total population. For instance, certain groups of the population are excluded from census-based sampling frames, such as homeless people, members of the armed forces, seasonal migrants, people in jail, workers who live in factories, college students, and refugees. The selection of households in the sample also often excludes remote, sparsely populated areas (to reduce survey costs of visiting such settlements). Also, as a census is collected generally every 10 years, the population characteristics may differ substantially as more time elapses, for example, if there is considerable migration.

The survey frame's use of only partial coverage results in differences between actual and estimated statistics. The survey frame limitations are particularly relevant for users interested in analyzing the social exclusion of, and the extent of social protection coverage of, marginalized populations such as groups living in remote areas, those living in urban slums, internally displaced people, refugees, and mobile vendors—that is, the people who are often the target populations of social protection benefits. Although household survey frames often do not cover the total population, survey data users simply need to bear in mind the population that the survey is representing (that is, the population covered by the frame) and interpret results accordingly.

The simplest household survey design would be one that results in a reliable, up-to-date list of all households in the population; that assigns an equal probability to

(continued)

Box 3.1: Household Survey Sampling (*continued*)

each household selected from the list to participate in the survey; and that successfully gets all households asked to participate to actually do so. Under such a design, each household has the same weight, because all of them represent the same number of households in the population. However, surveys tend to be more complex, as discussed by Deaton (1997). Most of the time, surveys rely on a two-stage sampling design: first, units or settlements or areas are randomly selected in the frame, and then households in those units are randomly selected. This approach ensures that the survey does not have to reach all population settlements in the country (which may be prohibitively costly), but results are still representative of the country as a whole, as well as of main groups or settlement types, such as urban and rural areas.

Hence, the most common design is done in two stages. In the first stage, *clusters*—groups of households determined by geographic location or another characteristic—are selected. In the second stage, households are selected within each cluster. This type of survey has many advantages in costing and visits. One advantage is that in two-stage sampling we can still have households that have the same probability of being selected if clusters are selected with a probability proportional to the number of households in each cluster.

Stratification converts a sample from one national population into a sample from many populations. This stage guarantees that the survey will contain enough observations to have estimates by group.

Whereas stratification typically enhances the precision of sampling estimates, the clustering of the sample will reduce it.

Source: Deaton 1997.

social protection benefits and programs, questions on specific benefits and programs may be included in some modules on social protection programs (when they exist) or in multiple modules.⁸

For example, a health module may include questions on nutritional programs, fee waivers for health services, medicine discounts, and assistance to people with a disability or with human immunodeficiency virus (HIV). An employment module may ask questions about participation in apprenticeships, professional training, and social insurance benefits (paid leave, maternity benefits, and workers compensation). An education module may have questions about scholarship, education benefits, school supplies, assistance, and school feeding programs. And an income module may ask questions about pensions and social assistance in cash.

The choices leading to the design of the survey instrument clearly reflect the country-specific vision and definition of social protection as well as government commitment to social protection policies and the priority they have in the public agenda.

Other *ex ante* considerations at the instrument-design stage include (a) the level of SP data to be reported (whether social protection data should be collected at the household or individual level), (b) a clearly specified recall period (monthly or annually), (c) the specified frequency of payment (one-time lump sum versus regular periodic payment), (d) the benefit modality (cash, in kind, vouchers, discounted fees, or subsidies), and (e) details on the monetary amount received. Monetary amounts, meanwhile, allow for much richer analysis, such as benefit adequacy, benefit incidence, poverty and inequality effects, and the cost-effectiveness of pro-poor programs. Specifying the name of the SP program in question, ideally, the 10 to 15 largest in fiscal terms, as well as flagship programs, and clearly formulating the questions and coding for multiple-choice questions are important. Although most social assistance benefits target households and not individuals, the survey should ask individuals about pensions, unemployment insurance, and social assistance targeted to individuals (as a unit of assistance) to allow profiling of direct beneficiaries by demographic characteristics, employment status, and other socioeconomic variables.

Finally, the clarity of social protection and labor questions is crucial to minimizing measurement error. Survey questions may be very broad or unclear and therefore not inform particular programs and policies, leading to inaccurate measurement. They can also be politically or culturally insensitive, leading to intentional nonresponse. A survey interview may also be too long, likewise leading to nonresponse or inaccuracy at the end of the survey because of fatigue or time constraints.

Construction of the World Bank Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database has allowed researchers to review a great volume of household surveys (about 260 household surveys as of February 2017) and to learn about the different methodologies applied in household surveys to collect SP data.⁹ The careful review and documentation of survey instruments has revealed that most household surveys in developing countries are not designed to purposely collect data for social protection and labor analysis. Many surveys capture only general information on multiple public transfers combined in one or two questions, without asking specific questions about individual transfers. In some cases, only large programs are included in the survey.

Several initiatives from international organizations have developed generic questions or social protection modules to be included in regular national household surveys or as part of independent surveys.¹⁰ Nonetheless, many national household survey instruments still do not include questions about the participation in and benefit amount received from the main flagship SP program in the country. Notably, the current practice and heterogeneity in the quality and availability of SP data in household surveys in the developing world limit cross-country comparison of results.

Data Quality During Implementation

Data quality issues in household survey data during implementation commonly include nonresponse and measurement errors. Survey nonresponse needs to be accounted for in the analysis: it could refer to households that either refuse to join the survey (unit nonresponse) or do not answer specific modules or questions (item nonresponse). If nonresponse is systematic and associated with certain observable or nonobservable characteristics, users need to take this into account when making inferences from survey estimates. If instead nonresponse arises randomly across the population, survey data would still lead to unbiased estimates of distributions.

Another measure of survey quality is measurement error, when information is reported inaccurately. For social protection, this measurement error typically takes the form of underreporting participation (because true program beneficiaries are recorded as nonbeneficiaries) or recall errors regarding the amounts received. Comparisons of administrative and household survey data for nine SP programs in the United States, for example, found that measurement error (specifically, underreporting of program participation), rather than unit nonresponse or item nonresponse, was the greatest source of household survey data (downward) bias in assessing coverage of programs (Meyer, Mok, and Sullivan 2015).

Systemic nonresponse and underreporting of benefit receipt may have important implications for the standard measures of SP program performance, such as coverage and adequacy of benefits. Such errors may also have implications for distributional incidence, especially among the poorest quintiles, and affect assessments of reductions in poverty and inequality. When SP benefits are underreported, it also translates into an underestimation of the welfare at the bottom of the distribution (for targeted social assistance) and an overestimation of total poverty.

Possible explanations for the low quality of household survey data as a result of implementation include (a) improperly trained enumerators who are not knowledgeable about SP benefits and programs and (b) the fielding of too many surveys at once, creating confusion and fatigue among enumerators or respondents. Other factors may be that individuals have less leisure time to accurately respond to a survey, or they have concerns about privacy or the stigmatizing effect of giving certain answers to questions.

Ex Post Data Quality Processes

Assuming the ex ante and implementation stages are successful, ex post processes to ensure data quality represent the final stage before surveys can be used for descriptive and explanatory analysis of social protection, labor, and other topics. Those processes include the following.

Social Protection Data Checks

Data checks and adjustments are needed on all variables to enhance data quality. Such checks include checking for missing values to see if the share for a particular variable is too large or looking for a systematic pattern that may bias the results. Analysts should also check for outliers, which can be done by setting bounds for feasible answers, such as a maximum of 100 years for age. For other numeric variables, the mean value can be set, and values that are 10 to 100 times above or below the mean, for example, can be reviewed. Some surveys will trim variables by either dropping such values or adjusting them to the lower and upper bounds. For example, negative values may be bottom-coded to 0, which allows for certain inequality analysis, such as the calculation of the Gini coefficient.

Time Comparability

A second check is to ensure that comparable time periods are used. The reference periods may differ for many survey questions, ranging from a day, to a week, month, or year. The user must verify the exact reference period for each question about income and expenditure. This check allows data to be modified as needed, such as changing certain variables to daily or monthly periods. Two critical components must be checked when using ADePT SP. First, the period of the welfare measure needs to match the

period of transfers—that is, all should be expressed in daily, monthly, or annual amounts. Second, the user must ensure that the program period is relevant and accurate. For example, a monthly heating allowance would more likely be recorded in a survey in the winter than in the summer, so the survey design should ensure that programs that have seasonal dimensions are reflected in the survey.

All Variables Should Be Labeled Clearly

The survey should specify with as much detail as possible what each variable measures. In many cases, surveys have no labels for variables or even mislabeled variables, which can confound accurate analysis. Finally, there is a need for thorough documentation, including questionnaires, codebooks, a survey implementation report, methodology, raw data, and any files that have been used to show how the data have been processed (box 3.2).

Welfare Measure

The welfare measure (consumption or income aggregate) should be harmonized to allow for comparability with other surveys of a similar type and should adjust

Box 3.2: Data Quality Checklist

The International Household Survey Network, whose management team includes the United Nations, the World Bank, the United Kingdom's Department for International Development, and the Partnership in Statistics for Development in the 21st Century, has compiled a checklist for ensuring data quality.

1. Completeness of information

- Name or ID code for fieldwork supervisors
- Name or ID code for enumerators, interviewers, and data collectors
- Name or ID code for data entry operators
- Dates when data collection took place
- Administrative and geographic units relevant to sampling design
- Unique ID for ultimate sampling units, for example, households
- Sampling weight for each sampling unit

(continued)

Box 3.2: Data Quality Checklist (*continued*)

- Variables corresponding to each item in the survey questionnaire or
 - Does the total number of records in the database correspond to the number of questionnaires and sampling units covered in the survey?
 - Does the total number of records in the database correspond to the total number of respondents in the planned sample size?
 - If there was a “no” response to the two questions above, have reasons for this been ascertained satisfactorily with the data manager?

2. Documentation

- Has the data processing team provided the data analysts with a data dictionary that describes each variable in the database, along with an explanation of codes used for categorical variables?
 - If “no,” will action be taken to ensure that the data dictionary is prepared and submitted to the data analysts?
- Has the data processing team provided the data analysts with a data validation report?
 - If “no,” does the data processing team expect to prepare a data validation report? (*This is highly recommended because it provides information about types of quality checks done on the data.*)

Source: International Household Survey Network 2009.

for outliers. Comparability is enhanced by spatially deflating (or inflating) prices, given that the prices of goods and services are likely to vary substantially within a country, especially if distances and transport costs are high. Temporal deflation (or inflation) should then be applied according to the month or quarter the survey was carried out, which accounts for any price changes during survey implementation. Outliers for aggregated consumption or income should also consider adjustments: bottom- or top-coding to the microdata themselves could be considered while preparing the data input file for ADePT. For example, according to the methodology of the Luxembourg Income Study, income data are bottom-coded at 1 percent of the equivalized mean income and top-coded at 10 times the median of nonequivalized income.¹¹

Sampling

The stratification and clustering of survey samples (to economize on data collection costs) require a very careful approach to analyzing results and

estimating the precision for key variables (box 3.2). ADePT SP contains an option to include survey design parameters among the variables to obtain the estimates, because it is important to know such parameters and variables (stratum and primary sampling unit) and include them in the dataset.¹²

Using Social Protection Administrative Data to Address Survey Data Limitations

One approach to measuring the degree of bias in household surveys is comparing survey results with administrative data, for example, when reliable administrative records exist on the number of program beneficiaries.

Program coverage rates based on administrative data would tell how many people are registered in the rolls according to program management (relative to the total population or specific target groups), and household survey data would tell how many people are actually reporting receiving benefits, how many of them are poor and nonpoor, how many are living in rural or urban areas, and so on. The two coverage rates may be different for several reasons, including leakage, poor administrative data quality, poor quality of household survey design, program delivery issues, and fraud and corruption. Administrative data can serve as a benchmark to measure survey bias and as a way to address potential bias.

Program administrative data can be used to impute monetary amounts when such questions are not asked in the household survey (when it is only asked whether the respondent participates in the program, or not). When the household is the beneficiary unit of the program, benefit amounts are imputed for different household types using the program-specific benefit formula, which accounts for household size, number and age of children, or presence of an elderly family member, for example.

Sometimes, even if the survey asks only about participation in the program and not the level of benefits received, it may be possible to impute SP benefit amounts on the basis of program eligibility rules and on variables collected in the household survey that enter the benefit determination formula. Other examples follow:

- Some surveys may deliberately omit collecting benefit information if the benefit formula is simple and there are no payment arrears. For example, if a child allowance program offers a flat benefit to all

children from birth to age 16 years, collecting information on program participation is enough. The analyst can impute the amount to each household with children of eligible age.

- Some surveys gather information about individual or household circumstances that determine the level of the benefit. For example, the value of a heating subsidy whose level depends only on the type of dwelling (apartment building versus individual house) and the location (municipality) can be obtained if the survey collects information on who received the program, the type of dwelling, and the municipality.
- To estimate the value of price subsidies (such as food and energy subsidies), the analyst could multiply the number of units of the subsidized good or service consumed as observed in the survey by an estimate of the unit value of the subsidy derived separately based on subsidy structure. Alternatively, the difference between the market price and actual price paid can be calculated.

In summary, subsidy estimation is the difference of the market and actual price per unit paid. Such assessment can be done by comparing the market (price times units) with the actual user price per unit.

On the contrary, when questions about participation in specific flagship programs are not asked, but questions are asked about the transfer amount received from social assistance programs in general, administrative data on the benefit amounts at the time of survey data collection could be used to impute households' participation in specific programs. For example, Brazil's Pesquisa Nacional por Amostra de Domicílios household survey does not specifically ask about participation in Bolsa Família, the flagship conditional cash transfer program. However, from one general question on the monetary value of social assistance transfers received, analysts can impute program participation for households that report transfer amounts that match administrative records on the Bolsa Família benefit amounts.

What Social Protection Information Is Typically Found in Household Surveys?

Household surveys typically cover only a subset of SP programs: those that offer cash, goods, or services to households. The information on program receipt can be recorded in two ways: in monetary terms (the amount of money received

during the recall period, or the benefit level) or as a binary participation variable (have you benefited or not from program X during the recall period?).

Typically, receipt of cash transfer programs is recorded in monetary form, and other programs are recorded as a program participation dummy. For cash, quasi-cash, and workfare programs, this information is straightforward to collect through a survey. Finding this information in a multitopic household survey, where each household (or individuals within the household) reports the sums of money received from the program during the reporting period, is quite common.

For other types of programs, notably fee waivers, subsidies, and in-kind programs, most surveys will collect information only on receipt of the program (a yes or no answer) but not on the value of the benefit, especially when respondents cannot estimate the monetary equivalent value of the goods or services received (McKay 2000). In some cases, respondents are asked to provide an estimate of the monetary value of in-kind and near-cash benefits, potentially adding noise to the data.

When only program participation information is available, ADePT SP will be able to produce fewer tables; indicators such as program generosity, average benefit level, benefit incidence, or simulated effects on poverty reduction cannot be computed. Hence, the depth of analysis depends on the quality of the household survey design and the extent to which the household survey collects monetary amounts for a broad set of SP benefits that exist in the country.

Certain types of social programs are typically not included in household surveys, such as the following:

- Services provided by social care institutions. Individuals living in institutions (from those in the armed forces, to those in nursing homes or institutions for orphans or disabled people) are outside the sampling frame of a household survey. Hence, these surveys do not cover social care services.
- The benefits of the infrastructure built or rehabilitated by social funds or public works programs (except cases in which a special module is designed to capture the outputs of the social funds). The objective of these programs is to build or rehabilitate basic infrastructure important for the livelihood of poor communities or for the poor within a community. Typical examples are construction of water and sanitation projects, feeder roads, schools, or health posts. Given that nearly all people within a community will benefit from such programs, most household surveys do not collect such information.

- Small social protection programs. Some programs are not included in the survey questionnaire because they are too small in monetary or beneficiary terms. They cover only a small share of the population, or they are rare events, and the survey will not generate a large enough sample to draw reliable conclusions about who participates in such programs.
- Other programs not accounted for when the questionnaire was designed. Some programs are not included simply because they were omitted when the questionnaire was designed.


Working with Data and Variable Details


Figure 3.1 is a typical cover page for a household survey—in this case, the Romania Household Budget Survey. Survey interviewers note critical

Figure 3.1: Household Budget Survey Questionnaire Cover Example, Romania ABF, 2012

ROMÂNIA

Institutul Național de Statistică





2012

ANCHETA BUGETELOR DE FAMILIE

(ABF)

INFORMATIILE DIN ACEST CHESTIONAR AU

CARACTER CONFIDENTIAL SI SE UTILIZEAZA

NUMAI IN SCOPURI STATISTICE

CHESTIONARUL

GOSPODĂRIEI (CG)

LUNA

NUMĂR FORMULAR

DATE DE IDENTIFICARE

Numele capului gospodăriei

Adresa:

Județul

Municipiul/orașul/comuna.....

Strada.....Nr.....

Sc.....Et.....Ap.....Sector.....

Cod centru CENTR

Cod locuință CODL

Numărul de gospodării din locuință ☐ NRG

Numărul de ordine al gospodăriei în cadrul locuinței ☐ NRG_L

Source: National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

information, such as the region of the interview and a unique number to designate the household.

Surveys often take hours to administer and contain a wide range of questions arranged in modules, although only a few subsections are relevant for SP data analysis. Those sections include socioeconomic information, as well as data on participation in any SP program, the monetary amount of the benefit received for cash and near-cash benefits, and the respondent's estimated monetary value of in-kind benefits.

Figure 3.2 provides an example of questions from the Romanian survey module that cover social protection. Compared with survey instruments used to collect SP information in countries in the developing world, the Romania case offers a good example of detailed questions on participation

Figure 3.2: Social Protection Module, Romania Household Budget Survey

Section 3 Recipients of pensions, allowances and other social security benefits



Note: Every household member shall be asked the question in column 2



1 Personal code	2 Are you a recipient of a social security benefit? (allowance, pension, unemployment benefit, support, etc.)	3 How many social security benefits do you receive?	4 Which are the social security benefits you receive?	5 Did you receive the amount due for the reference month?	6 Unemploy- ment benefit/ Vocational integration allowance/ income support	7 Redund- ancy payments	8 Child allowance	9 Scholar- ships for schoolchildr en and students
CPERS	BENEF	NRFORM	TIPPROT	PRIMSUM	AJSOM	PLCOMP	ALOCPC	BURSA
01								
02								
03								
04								
05								
06								
07								
08								
09								

(continued)

Figure 3.2: Social Protection Module, Romania Household Budget Survey (continued)

Section 3 Recipients of pensions, allowances and other social security benefits											
											
Pension benefits cashed in reference month - lei -						Allowance and assistance benefits cashed in reference month-lei-					
10 full-service social security	11 disability	12 survivor	13 social assistance (pension)	14 farmer social security	15 war veterans and their widows	16 special allowance for the handicapped	17 allowance for war veterans and their widows	18 allowance for subjects of political persecution	19 social assistance provided by mayor's offices ^{*)}	20 other social assistance ^{*)}	1 Personal code
PVEC	PMUN	PURM	AJSOC	PAGR	IOVR	AJH	INDEMV	INDEMP	AJSOCP	ALTAJ	CPERS
											01
											02
											03
											04
											05
											06
											07
											08
											09
											10
											..

Source: National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

in different programs and on the monetary value of benefits received. Surveys vary widely in the amount of SP information they collect with, at one extreme, no questions on SP programs. But ideally, questions are asked about all the main SP programs and the amount of money received by beneficiaries.

Figure 3.3 is an actual depiction of the household survey data (that is, the survey responses entered into a database). The examples have desirable features. The data table has unique numbers assigned for each household and key demographics, as well as for income information on social protection programs, in this instance on old-age pensions "oldage_pen." There are two file formats, individual and household. Individual-level files are generally preferred, as they provide detail on each household member, whereas household-level provide only aggregated information on all members and demographics on only the head.

Figure 3.3: Data from Social Protection Module, Romania Household Budget Survey, 2012**a. Individual level**

	hhid	pid	psu	region	urban	weight	hhsiz	relshd	age	gall	oldage_pe	child_allow
1	90100001000011	1	1	Center	urban	106.0871	1	head	43	8140.382	0	0
2	90100001000021	1	1	Center	urban	106.0871	1	head	51	10813.64	0	0
3	90100001000041	1	1	Center	urban	106.0871	2	head	52	5209.701	0	0
4	90100001000041	2	1	Center	urban	106.0871	2	spouse	43	5209.701	0	0
5	90100002000051	1	1	Center	urban	106.0871	1	head	61	5782.159	0	0
6	90100002000031	1	1	Center	urban	108.4451	2	head	42	5416.22	0	0
7	90100002000031	2	1	Center	urban	108.4451	2	spouse	40	5416.22	0	0
8	90100002000041	1	1	Center	urban	635.4884	5	head	44	3339.664	0	0
9	90100002000041	2	1	Center	urban	635.4884	5	spouse	40	3339.664	0	0
10	90100002000041	3	1	Center	urban	635.4884	5	parenta/parente-in-law	70	3339.664	0	0
11	90100002000041	4	1	Center	urban	635.4884	5	son/daughter	15	3339.664	0	480.0901
12	90100002000041	5	1	Center	urban	635.4884	5	son/daughter	12	3339.664	0	480.0901
13	90100003000071	1	1	Center	urban	222.172	3	head	52	4671.104	0	0
14	90100003000071	2	1	Center	urban	222.172	3	spouse	48	4671.104	0	0
15	90100003000071	3	1	Center	urban	222.172	3	son/daughter	13	4671.104	0	480.0901
16	90100003000091	1	1	Center	urban	645.5664	7	head	60	3372.085	11427.71	0
17	90100003000091	2	1	Center	urban	645.5664	7	parenta/parente-in-law	84	3372.085	0	0
18	90100003000091	3	1	Center	urban	645.5664	7	spouse	54	3372.085	2139.394	0
19	90100003000091	4	1	Center	urban	645.5664	7	son/daughter in law	34	3372.085	0	0
20	90100003000091	5	1	Center	urban	645.5664	7	son/daughter	32	3372.085	0	0
21	90100003000091	6	1	Center	urban	645.5664	7	grandson/granddaughter	5	3372.085	0	480.0901
22	90100003000091	7	1	Center	urban	645.5664	7	grandson/granddaughter	2	3372.085	0	480.0901
23	90100003000111	1	1	Center	urban	110.1649	3	head	45	2052.432	0	0
24	90100003000111	2	1	Center	urban	110.1649	3	son/daughter	18	2052.432	0	480.0901
25	90100003000111	3	1	Center	urban	110.1649	3	son/daughter	16	2052.432	0	480.0901

b. Household level

	hhid	pid	psu	region	urban	weight	hhsiz	age	gall	old_age_pe-h	child_allow
1	90100001000011	1	1	9	1	106.0871	1	43	8140.382	0	0
2	90100001000021	1	1	9	1	106.0871	1	51	10813.64	0	0
3	90100001000041	2	1	9	1	106.0871	2	52	5209.701	0	0
4	90100001000051	1	1	9	1	106.0871	1	61	5782.159	0	0
5	90100002000031	2	1	9	1	108.4451	2	42	5416.22	0	0
6	90100002000061	5	1	9	1	635.4884	5	70	3339.664	0	480.0901
7	90100003000071	3	1	9	1	222.172	3	52	4671.104	0	480.0901
8	90100003000091	7	1	9	1	645.5664	7	84	3372.085	11427.71	480.0901
9	90100003000111	3	1	9	1	110.1649	3	45	2052.432	0	480.0901

Source: National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Household Weights

Compared with census data, in which all the units of the population are interviewed, household surveys select a random sample of the population. Thus sample weights are necessary to make the estimates representative of the national population. Household weights represent the estimated expansion factor of each household in the country population and will automatically be used to produce results representative of the country's population.

Household weights are needed because the sampling design does not necessarily select households with equal probability. If all households were selected with equal probability, all of them would have the same weight.

However, for reasons of cost and accuracy, the probability of being selected tends to differ across households (Deaton 1997). When selection probabilities differ, each household in the survey stands proxy for or represents a certain number of households in the population. Consequently, when the sample is used to calculate estimates of the population, it is necessary to weight the sample data.

Household Size

A household is a person or group of people who usually live and eat together. The United Nations standard definition of a household is a group of people who live together, pool their money, and share at least one meal per day (UN 2005). However, more recent revisions of the UN definition have removed the condition of sharing a daily meal (UN 2008).¹³ Household members typically share a residential unit and have organized economic production and consumption. In many countries, the definition extends to inheritance and child rearing. Members might not be related. A household is not synonymous with family, which is a social institution that is characterized by common residence, economic cooperation, and reproduction.

Area of Residence

Two fields are used to create groups to examine differences by area of residence: urban and region. The urban field needs to be completed with a variable that takes a value of 1 when the household resides in an urban area. The urban variable is usually created by national statistics offices and is based on the number of people living in cities, towns, and villages according to national definitions. The region field needs to be completed with a categorical variable that codes the household's region of residence. This variable can be defined following the political division of the country or any other relevant division the user considers of interest, such as ethnographic division, level of development, climate, and so on.

Other Demographic Variables

Other variables (ethnicity, relation to household head, marital status, age, gender, and so on) are useful to produce detailed analysis of social protection

access and outcomes for different groups. They should be part of the dataset (see chapter 4 for more on this subject). For more detailed analysis of gender-related statistics using ADePT, see Posadas and others (2017).

Summary

This chapter has reviewed data sources for ADePT SP analysis. Survey data can be a powerful tool for policy design and reform by providing more relevant and timely questions than would be covered in a census and other survey types. The user needs to be aware of some limitations to meaningfully interpret results and inform social protection policy.

Notes

1. As discussed later in this chapter, in some instances household surveys cover the majority of the population, for example, by including urban areas but not rural areas.
2. Questions may be asked about participation in small programs, although if there are only a few respondents, the standard errors will be too large, thereby making the results not robust.
3. The global social protection knowledge-sharing platform of the International Labour Organization provides a good overview of instruments for social protection analysis: <http://www.social-protection.org/gimi/gess/ShowTheme.do?tid=10>.
4. Windfall income is generally excluded from income aggregates.
5. Tax and contribution information may not be collected in all surveys, although if available, it allows the analyst to determine net income.
6. See Staveteig and Mallick (2014) for a description of the construction of the wealth index, and Rutstein and Staveteig (2014).
7. Refer to the ASPIRE (Atlas of Social Protection Indicators of Resilience and Equity) collection of household surveys for social protection analysis (<http://datatopics.worldbank.org/aspire/documentation>), the program inventory file.
8. Guidance on designing social protection modules, with examples from different contexts, can be found at <http://www.social-protection.org/gimi/gess/RessourceDownload.action?ressource.ressourceId=13443>.

9. Access the World Bank's Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database at <http://datatopics.worldbank.org/aspire/>.
10. For further details and discussions of this topic, see the International Conference on Labour Statisticians at <http://www.ilo.org/global/statistics-and-databases/meetings-and-events/international-conference-oflabour-statisticians/lang--en/index.htm>, and the Canberra Group at <http://unstats.un.org/unsd/methods/citygroup/canberra.htm>.
11. The Luxembourg Income Study (LIS) methodology applies only when creating key figures. <http://www.lisdatacenter.org/data-access/key-figures/inequality-and-poverty/>.
12. More details on the sampling and statistical tools used to obtain correct estimates for complex samples are discussed in the ADePT Poverty and Equity manual (Foster and others 2013): <https://openknowledge.worldbank.org/bitstream/handle/10986/13731/9780821384619.pdfadept/documentation>.
13. The latest revision of United Nations (UN) recommendations for conducting surveys and censuses eliminated the condition of sharing one meal a day; instead it focuses on one-person and multiperson households. A household may be either of the following, according to the UN recommendations:
 - “(1) A one-person household, that is, a person who makes provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; or
 - (2) A multi-person household, that is, a group of two or more persons living together who make common provision for food or other essentials for living. The persons in the group may pool their resources and have a common budget; they may be related or unrelated persons or a combination of persons both related and unrelated. This arrangement exemplifies the ‘housekeeping’ concept. Some countries use a concept different from the housekeeping concept, namely, the ‘household-dwelling’ concept, which regards all persons living in a housing unit as belonging to the same household. According to this concept, there is one household per occupied housing unit. Therefore, the number of occupied housing units and the number of households occupying them are equal and the locations of the housing units and households are identical. Countries should specify in their census reports whether they used the ‘housekeeping’ or the ‘household-dwelling’ concept of a private household” (UN 2008, para. 2.108).

References

- Deaton, A. 1997. *The Analysis of Household Surveys*. Washington, DC: World Bank.
- Foster, James, Suman Seth, Michael Lokshin, and Zurab Sajaia. 2013. *A Unified Approach to Measuring Poverty and Inequality: Theory and Practice*. Washington, DC: World Bank.
- International Household Survey Network. 2009. "Survey Quality Assessment Framework SQAf." Statistical Services Centre of the University of Reading, United Kingdom. http://www.ihsn.org/sites/default/files/resources/SQAf_Draft.pdf.
- McKay, A. 2000. "Transfers and Other Non-Labor Income." In *Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Study*, edited by Margaret Grosh and Paul Glewwe. Washington, DC: World Bank. <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21556161~menuPK:4196884~pagePK:64168445~piPK:64168309~theSitePK:3358997,00.html>.
- Meyer, Bruce, Wallace Mok, and James Sullivan. 2015. "Household Surveys in Crisis." *Journal of Economic Perspectives* 29 (4): 199–226.
- National Institute of Statistics (Romania). 2012. "Household Budget Survey 2012." International Household Survey Network (IHSN) Survey Catalog. <http://catalog.ihsn.org/index.php/catalog/4694>.
- Posadas, Josefina, Pierella Paci, Zurab Sajaia, and Michael Lokshin. 2017. *Measuring Gender Equality: Streamlined Analysis with ADePT Software*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/26308>.
- Rowntree, S. 1901. *Poverty: A Study of Town Life*. London and New York: Macmillan. <https://archive.org/details/povertyastudyto00rowngoog>.
- Rutstein, Shea, and Sarah Staveteig. 2014. *Making the Demographic and Health Surveys Wealth Index Comparable*. DHS Methodological Reports No. 9. Rockville, Maryland: ICF International. <http://www.dhsprogram.com/pubs/pdf/MR9/MR9.pdf>.
- Staveteig, Sarah, and Lindsay Mallick. 2014. *Intertemporal Comparisons of Wealth with DHS Data: A Harmonized Asset Index Approach*. DHS Methodological Reports No. 15. Rockville, Maryland: ICF International.
- UN (United Nations). 2005. "Household Sample Surveys in Developing and Transition Countries." United Nations Department of Economic

and Social Affairs, Statistics Division, Studies in Methods Series F No. 9, United Nations, New York. https://unstats.un.org/unsd/hhsurveys/pdf/Household_surveys.pdf.

———. 2008. *Designing Household Survey Samples: Practical Guidelines*. New York: United Nations. http://www.un-ilibrary.org/economic-and-social-development/designing-household-survey-samples_f7348051-en.

How to Use ADePT SP

This section guides users in the installation and use of ADePT SP for analyzing social protection (SP) indicators. It first reviews the program and then presents step-by-step instructions for use.

What Is ADePT SP?

The ADePT SP software program generates standard performance indicators for social protection and labor programs, such as coverage, adequacy, benefit and beneficiary incidence across quintiles and deciles of the population, and their estimated effects on poverty and inequality in a country.

ADePT SP creates a maximum of 28 standardized tables, custom tables, and three standardized graphs. In addition to public transfers, ADePT SP analyzes and produces indicators for private transfers, including domestic, interfamily, in-kind, and monetary gifts, as well as transfers from charitable institutions and remittances from abroad.

The initial tables in ADePT describe the sample and population composition and demographics. The tables following then present SP performance indicators disaggregated by program (or benefit or service), by quintiles or deciles of the welfare distribution, by poor and nonpoor (defined based on a specific poverty line set by the user), by geographical area (urban or rural), and by user-defined categories.

ADePT SP performance indicators include program coverage, adequacy, the distribution of benefits and beneficiaries, their simulated impact on

poverty and inequality, distribution characteristics and the social welfare impact, the benefit-cost ratio, and the inclusion and exclusion errors of these programs separately and in combination. ADePT SP also quantifies the share of households receiving more than one SP benefit and SP program overlaps.

The last set of tables displays profiles of SP program beneficiaries by age and gender, economic status, household head characteristics,¹ and other custom individual and household characteristics as available in the data and defined by the user. The graphs show (a) concentration curves by social protection program overall and separately for the three main SP pillars (social insurance, labor market and social assistance programs), (b) Venn diagrams visualizing the share of households receiving multiple social protection benefits by the three main pillars, and (c) benefit-cost ratios by individual programs.

What Information Is Needed to Use ADePT SP?

To generate the tables and graphs, the user has to create an input file based on a household survey with a minimum of three types of information: (a) participation in SP programs (and/or private transfers), (b) the welfare level of the households or individuals, typically expressed as household total consumption or income, and (c) other (categorical) variables that define population groups of interest to the analyst (including the household weights). ADePT SP can process up to 20 different SP programs and private transfers. The user is asked to identify the type of SP program (social insurance, labor market, or social assistance) or private transfer for each variable that describes program participation or amounts received, and the program creates aggregate categories. (See chapter 2 for different classifications of social protection and cases where classification is not straightforward because benefits are bundled in one variable.)

What Indicators Does ADePT SP Generate?

The ADePT SP software generates the following indicators:

- Detailed population profile by socioeconomic and demographic status

- Coverage tables with the following:
 - Share of the population or population groups covered by a program or by a combination of programs
 - Estimates of the level of program overlap at the household level or the lack of coverage with such programs
- Targeting accuracy and benefit magnitude tables with the following:
 - Distribution of beneficiaries or benefits across quintiles or deciles and other, user-defined population groups
 - Generosity or adequacy of a program or a combination of programs, expressed by the ratio of the benefits and the welfare aggregate of beneficiary households
- Impact and efficiency indicators with the following:
 - Summary statistics for the progressiveness or regressiveness of SP transfers, such as concentration coefficients, targeting differential, Coady-Grosh-Hoddinott indicator, or distributional characteristic
 - Simulated impact of the transfers on reducing inequality and poverty (headcount, gap, and severity) and benefit-cost ratio (or share of the program benefits that fill the poverty gap).

The ADePT SP software includes the following capabilities:

Disaggregated indicators. By default, ADePT SP indicators are estimated for the total population and for different welfare groups (quintiles or deciles). In addition, the program breaks down the analysis for other, user-defined groups, such as the poor; regions; and areas of residence (urban and rural) by household or individual characteristics such as demographics, ethnicity, disability status, and other variables.

Flexible use of SP information. The program adapts to the different ways the information on the participation in SP programs is collected in practice. For example, it works with information expressed as “beneficiaries served” or as “benefits (cash transfers) received,” collected at either the individual or household level. The more specific the entry information, the more tables the program can generate.

Quick, but not dirty, calculations. ADePT SP performs sensitivity analysis with different consumption counterfactuals (see chapter 2), generates estimates with correct standard errors (considering survey sample design), and generates statistics that allow comparisons between survey and

administrative data. It can also simulate the distributional effect of proposed or reformed programs. It facilitates the benchmarking of SP performance indicators information across countries by producing a standard output and using a consistent set of methods and assumptions.

Getting Started: Installing and Running Adept SP

Installation

ADePT installation requires Microsoft Windows. It has been tested with Microsoft Windows XP, Windows Server, and Windows 10 and will work in 32- and 64-bit environments.

System requirements include the following:

- A PC running Microsoft Windows XP (SP1 or later), Windows Vista, Windows Server 2003 and later, or Windows 10
- .NET 2.0 or later (included with recent Windows installations), and all updates and patches
- 80 MB disk space to install, plus space for temporary dataset copies
- At least 512 MB RAM
- At least 1024 x 768 screen resolution
- At least one printer driver installed (even if no computer is connected)
- Microsoft Excel for Windows (XP or later), Microsoft Excel Viewer, or a compatible spreadsheet program for viewing reports generated by ADePT
- A Web browser and Internet access to download ADePT (Internet access is needed for program updates and to load Web-based datasets into ADePT. Otherwise, ADePT does not require Internet access to run.)

Install ADePT SP using the following steps:

1. Download the ADePT software from <http://www.worldbank.org/ADePT> by clicking the **ADePT Downloads** button.
2. ADePT includes a suite of modules beyond social protection, including education, food security, gender, health, International

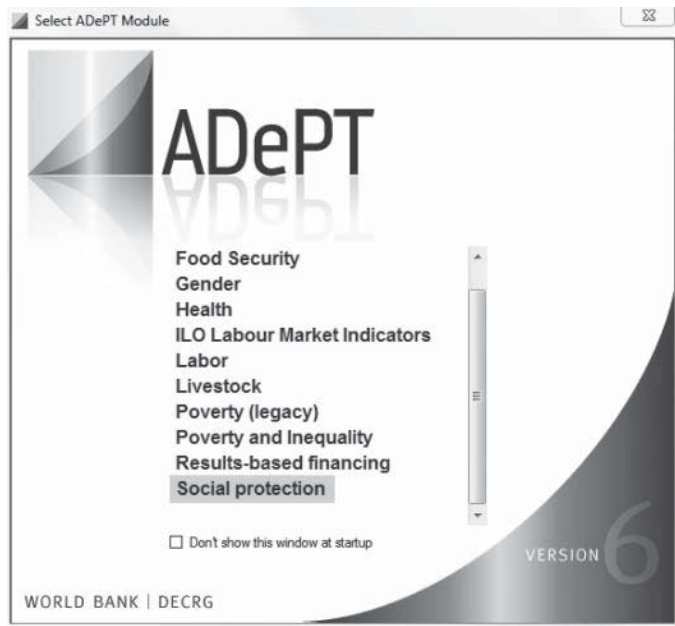
Labour Organization (ILO) labor market indicators, labor, livestock, poverty (legacy), poverty and inequality, and result-based financing.

3. Launch the installer and follow the on-screen instructions.
4. Allow ADePT software to launch automatically after installation.

Running ADePT SP

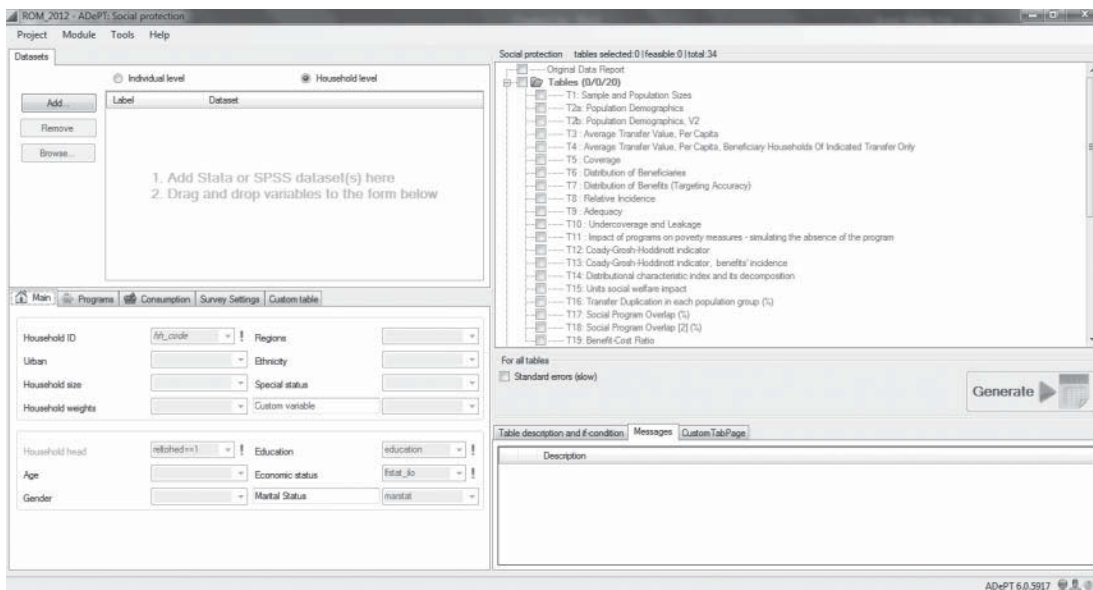
Users follow these simple steps to run the program:

1. Click the ADePT icon in the Windows **Start** menu.
2. In the **Select ADePT Module** window, double-click the name of the module you want to use (see arrow below). To open the social protection module, double-click **Social Protection**.



You now see the ADePT main window. (The example shows ADePT with the SP module. The lower-left and upper-right panels will be different when another module is loaded).

Measuring the Effectiveness of Social Protection



Steps to Use ADePT SP

You can get results in six steps:

1. Create an input file (in Stata or SPSS [Statistical Package for the Social Sciences]).
2. Import the data for ADePT SP.
3. Assign the variables from the input files to the relevant fields in ADePT SP.
4. Select the tables and graphs to be generated by ADePT SP.
5. Specify ADePT SP options.
6. Click on **Generate**

Step 1: Create an Input File

To use ADePT SP, the user must create a data file in Stata or SPSS from the microdata of a household survey. This user-created input file contains the data that underpin all analysis. Although a minimum set of information is required to run ADePT, additional variables would expand the richness of the analysis.

The first step to create the input file for ADePT is to prepare the data. Survey data are typically held in a number of files, often corresponding to different sections of a questionnaire. From these files, the user has to select the variables needed for ADePT SP and organize them into a simple rectangular file, where each line represents an observation (individual or household) and each column represents a variable (a characteristic of the household or individual).

Users can use any software they are familiar with to prepare the input file (for example, Statistical Analysis System [SAS]). However, ADePT SP reads only Stata or SPSS data files. Users working with other software have to convert their input file into Stata² or SPSS before running ADePT.

The input file can be organized at either the individual or the household level. In an individual-level file, the user records participation in an SP program for each recipient. For example, an old-age pension is assigned to the respective pensioner, an unemployment benefit is assigned to the unemployed household member. For all other members (not pensioners and not unemployed) this variable will be zero or missing.

For household- or family-level SP programs, such as a last-resort social assistance program, the value of the household-level benefit will be recorded (repeated) for each member of the household. Such a data structure is the typical outcome of merging an individual and a household-level file in Stata. If the household-level benefit is recorded in a household-level file, and the individual-level benefit is recorded in an individual-level file, merging the two files will automatically assign (repeat) the household level benefit to all the household members. In a household-level file, each type of SP benefit is summed up at the household level. For example, if a household has two old-age pensioners, the file will have one cell with the sum of the two pensions; if a household has three children receiving child allowances, the file will include one cell with the sum of the three child allowances received by that household.

Individual-level input data files allow for richer and more detailed analysis than household-level input data files. To account for the diversity of SP data collection practices in household surveys, ADePT SP distinguishes between *direct beneficiaries* (a survivorship pension assigned to the specific beneficiary within a household) and *indirect beneficiaries*, or all members of a beneficiary household (a cash transfer assigned to specific household types). ADePT SP can produce more tables (such as tables for direct beneficiaries only) if the input file is organized at the individual level.

However, household-level input files produce tables that refer to both direct and indirect beneficiaries, treating each transfer or combination of transfers as shared between the household members.

The distinction between direct and indirect beneficiaries is important, because alternative definitions of the beneficiary unit may significantly affect the results. Depending on the type of program and the target group, a safety net program may have as the direct beneficiary an individual, a family, or a household. In a broader sense, however, all household members benefit from the additional resources provided by the program; thus a strong economic rationale exists for assigning benefits to the whole household when using data to assess the incidence of a program.

For example, in the case of a child allowance program in a country where children account for 25 percent of the population and families with children account for 60 percent. If only direct beneficiaries are accounted for, the coverage of the program will be 25 percent of the population, but if all beneficiaries, direct and indirect, are counted, coverage will be 60 percent. Given the negative correlation between household size and welfare level, using households as beneficiary units for safety net programs where the assistance unit is an individual will produce higher values for both coverage indicators and statistics on targeting accuracy. Whenever possible, the analyst should report both results. If only one set of results is to be reported, the preferred choice is to base the analysis on indirect beneficiaries, as that is the only way to compare programs that serve different types of assistance units. ADePT SP produces both results if the input file is organized at individual level, and it generates two tables, one for direct beneficiary only and another one for direct and indirect beneficiaries. A well-prepared input file must contain the following variables:

1. Identification variables for the household and the individual
2. Total household welfare aggregate
3. Household size and adult equivalent size
4. Poverty lines (In the absence of absolute poverty lines, a relative poverty line is the option.)
5. Survey design parameters: weights, primary sampling units, and strata
6. Benefits or beneficiaries of social protection programs

Additional variables that define other population groups of interest—such as region of residence, ethnicity, and educational level—are not required,

but ADePT SP can also generate tables for each of these groups if they are available. Similarly, survey design parameters such as primary sampling units (PSUs) and strata can be added if available. A brief description is provided for each of the core variables listed above.

1. Identification Variables for the Household and Individual

An individual-level input file should include two variables that uniquely identify the household (such as hhid) and the individual within the household (such as pid). In Stata, to check whether the input file passes this test, users should receive no error message after they type this command:

```
. isid hhid pid
```

A household-level input file requires only the household identification variable (say, hhid). In Stata, to check whether the input file passes this test, users should receive no error message after they type this command:

```
. isid hhid
```

Often some data management is required to generate these two variables. Some databases have a unique variable named household identification ranging from 1 to n , where n represents the number of sampled households in the survey. Other databases have a variable named household identification, ranging from 1 to n_j , where n_j represents the number of sampled households in a given area j . In this case, users must combine the variable that identifies the area j and the household identification variable. Users can either create a new variable that combines them as the household identification record or enter the two variables in the household identification field of ADePT SP as the household identification record. It is recommended to eliminate households with no identifiable household head from the sample. As a rule of thumb, the eliminated observations should not be more than 5 percent of the total sample covered by the survey and ideally be randomly distributed.

2. Total Household Welfare Aggregate

ADePT SP describes the distribution of beneficiaries' SP program benefits across the welfare distribution, for the poor and nonpoor—an analysis typically referred to as *benefit incidence analysis* or *targeting assessment*—and optionally across other user-defined classification variables.

To perform a benefit incidence analysis, the user needs to include in the input file a variable used by ADePT SP to rank the households according to their standard of living—the welfare aggregate (see chapter 2 for a discussion on different welfare aggregates and the counterfactual hypothesis). ADePT SP works with a broad range of welfare aggregates, including the following:

- Monetary welfare indicators: total household consumption, expenditures or income
- Nonmonetary welfare indicators, such as an assets index, a basic needs index, or a welfare ratio (ratio of consumption to poverty line)

The household welfare aggregate must be expressed in totals (total welfare for the household) not in per capita or equivalized. The benefit incidence results will depend on the quality of the welfare aggregate. A robust monetary welfare aggregate must satisfy theoretical requirements: the welfare measure must be comprehensive and comparable across space, time, and different types of households.

To be comprehensive, a consumption indicator should capture all its components, such as food, nonfood, and services, as well as the value of goods produced and consumed by the household and the imputed value of durables or the rental value of an owner-occupied dwelling.

Similarly, a comprehensive income indicator will cover the incomes earned by all household members from formal and informal sources and the value of goods produced and consumed by the household.³ More specifically, the following considerations apply:

- To be comparable across space, the welfare aggregate should be expressed in the same purchasing power for all locations, such as across regions or in urban versus rural areas.
- To be comparable across time, monetary welfare aggregates, either in total consumption, expenditure, or income, should ideally be expressed in constant purchasing power (deflated by a spatial price index).
- To be comparable across household type, the household-level welfare aggregate—total consumption or total income—should be adjusted to an adult equivalent scheme. Expressing the

welfare aggregate in per capita terms is just one type of adult equivalent adjustment.

Alternatively, the user may use a nonmonetary welfare aggregate (continuous variable) in the dataset, such as a welfare ratio, an asset index, or a basic needs index. ADePT SP uses the nonmonetary welfare aggregate to generate deciles or quintiles but it won't estimate meaningful generosity and poverty impacts indicators for the different SP transfers.⁴ If available, we recommend including the total household consumption in the input file to ensure all performance indicators are generated.

The user should not include in the entry file a variable for deciles or quintiles. This variable will be generated internally by ADePT, from the welfare aggregate specified by the user.

3. Household Size and Adult Equivalent Size

Since ADePT SP allows users to select an adult equivalent scale for monetary welfare, users should include in the input file the variables household size and adult equivalent size, as described below. The choice between these two scales is problematic because there is no consensus about which adjustment is preferable. Some researchers prefer the adult equivalent adjustment because it takes into account the differences in family members' needs (of adults versus children). In other words, children may have lower consumption needs than adults and, consequently, children should not be counted as one person in the repartition of the welfare aggregate as the per capita adjustment does. Some adult equivalent scales also take into account the economies of scale that occur within large families.

ADePT SP internally generates per capita or per adult equivalent consumption or income aggregates or both. Beyond the welfare aggregate, the user has to provide the following information (table 4.1):

- For household-level entry files ONLY, the user must provide a variable with the household size. For individual-level files, this variable is calculated internally, as the total number of records under one household (all rows with the same hhid).
- To express per adult equivalent welfare, the user must provide separately a variable with the adult equivalent size of the household and the total welfare aggregate.

Table 4.1: Information Required to Estimate the Welfare Aggregate in ADePT SP

		<i>Type of monetary welfare aggregate</i>	
		<i>Per capita consumption or income</i>	<i>Per adult equivalent consumption or income</i>
Type of entry file	Household-level file	Total consumption or income	Total consumption or income
		Household size	Adult equivalent size
	Individual-level file	Total consumption or income	Total consumption or income
			Adult equivalent size

4. Poverty Lines

The calculations of the poverty impacts of SP programs require determination of a poverty line (refer to chapter 2 for a discussion on different poverty lines). ADePT SP allows for two approaches to set this poverty line: relative and absolute.

Relative poverty lines are set relative to the mean or median of the income distribution, or at a certain quintile of the income distribution (for example, the poorest quintile). The Organisation for Economic Co-operation and Development (OECD) typically uses a poverty line set at 60 percent of median income per adult equivalent.

Absolute poverty lines are defined by the minimal requirements necessary to provide minimal standards of food, clothing, shelter, and so on—that is, the minimum basic needs. The standard approach starts with the cost of acquiring adequate calories, a reasonably objective basic need, and then adjusts that cost upward for purchases of non-food items to establish a poverty line (Ravallion 1998). This approach sometimes yields two poverty lines, one for extreme poverty and one for moderate poverty.⁵ As the names suggest, relative poverty lines change when the distribution of income changes, while absolute poverty lines do not.

There are important disagreements in the literature about which is the most appropriate approach to setting poverty lines, with relative poverty lines being more common in Europe and absolute poverty lines more common in North and South America and among poorer countries. ADePT can calculate poverty based on either relative or absolute poverty lines. For an absolute poverty line, the user must include a variable in the input dataset that indicates the value of the poverty line. If a

relative poverty line is chosen, the user must specify the quintile of the welfare distribution.

5. *Survey Design Parameters: Weights, Primary Sampling Units, and Strata*

To generate unbiased average estimators based on household survey data, the input file should include a variable with the survey weights. Each household in a survey represents several households in the population. The weight variable is typically the inverse of the probability of selection of that household (or group of households, for clustered sampling). To make inferences about the total population, the user should supply the correct statistical household weights, also referred to as *expansion factors*.

To generate unbiased, correct standard errors, the user should include in the input file variables that describe the sampling design. These variables will depend on the number of stages involved in sampling. The most typical sampling design is a two-stage design, wherein the first-stage enumeration areas, or PSUs, are chosen, and in the second stage, a cluster of households are randomly selected in an enumeration area. PSU and strata variables are only necessary for calculating standard errors.

To increase the precision of the estimates, a survey may be stratified, that is, carried on separately for different groups of the total population, such as in rural versus urban areas. The user should identify the sample design variables—strata and PSU—and include them in the input file.

6. *Benefits or Beneficiaries of Social Protection Programs*

The identification of all the household survey information on participation in SP programs is not an easy task, as different surveys collect this information differently by SP variable type (monetary amounts or participation dummies), beneficiary assistance unit (individual versus household), and relevant survey sections or modules where SP information is captured.

As seen in chapter 3, social protection information could be recorded either as benefit amounts received during a reference period (continuous variable) or as a yes or no response to the question of benefit receipt (program participation dummies). Information about some programs is collected at the level of the individual recipient (direct beneficiary); sometimes this information is collected only in aggregate form, at the household level, for all beneficiaries in a household (without identifying the direct and indirect beneficiaries).

Finally, some surveys have specific and comprehensive modules for social programs and benefits, but not always. Often, information on different SP benefits is captured in different modules or sections. For example, information on unemployment benefits, workfare programs, or other active labor market programs is collected in the employment module; information about scholarships is collected in the education module; information about housing or utility subsidies or allowances is collected in the dwelling module.

Users must carefully review the full survey questionnaire before creating the input file to understand how the program information is recorded with respect to the recall period or assistance unit. Ideally, users need to inform themselves on the country's SP system based on available resources and country knowledge. Clearly mapping the existing SP benefits and their main attributes—such as whether they require previous contributions, the modality of transfers (cash, in-kind services, discounts, or subsidies), and the frequency of payments and whether conditions are attached to them—would greatly help the user identify questions on SP benefits and classify them according to the three broad SP areas (social insurance, labor market, and social assistance programs).

Once SP variables have been identified in the questionnaire and in the data, the next step is to generate clean variables for the input file, including dummy variables (0/1) indicating participation in certain schemes and programs or receipt of those benefits and a continuous variable for monetary amounts of benefits. Users should consider a few tips on this process:

First, ensure consistency of reporting time between benefit amounts and the welfare aggregate. If there is a difference between the recall period of the SP benefit and that of the monetary welfare aggregate, a new variable should be created expressing the benefit amount with the same recall period as the welfare aggregate (or vice versa). For example, if the survey asks about the value of child allowances received during the past month, but the welfare aggregate is per year, the user should create a new variable for the input file with the value of child allowances received over a year. The recall period should be carefully considered, because benefits can be expressed over different periods (such as weekly, monthly, quarterly, and annually) in the same survey. Understanding the benefit design is also critical when homogenizing the time scale. For example, if the question asks how much the respondent received from the state pension in the last month, and the state pension is paid as a lump sum only once year, it would not be correct to multiply the benefit amount by 12 to get the annual value.

Second, ensure that all monetary variables (welfare aggregate and benefit amounts) are expressed in the same currency and scale (thousands or millions). Participatory variables may be generated in different ways to reflect (a) eligibility for a certain benefit (participation in a certain scheme) or (b) actual receipt of the benefit. It is important to differentiate because the interpretation of the resulting performance indicators will change. If, for example, participation in old-age pensions is coded as equal to one for individuals (pensioners) receiving the benefit at the time survey data were collected, the resulting coverage indicator needs to be interpreted as just the passive coverage of old-age pensions. Alternatively, if participation in old-age pensions is coded as equal to one for individuals contributing to their old-age pensions, the resulting coverage indicator needs to be interpreted as the active coverage of the scheme (box 4.1).

As discussed in chapter 3, when the survey collects information on the monetary value of benefits, ADePT SP produces a richer set of tables, including benefit incidence, adequacy of benefits, and simulated impacts of those benefits on poverty and inequality, among others. If only participatory (0/1 dummy) variables are collected, a limited set of tables is produced, but they include at least coverage rates and beneficiaries' incidence.

ADePT SP automatically generates aggregate categories for the three main SP areas (social insurance, labor market programs, and social assistance), as described in step 2. However, SP variables in the raw data may

Box 4.1: Ways to Measure Social Protection Coverage from Household Surveys

A distinction is made between *legal* (or statutory) coverage, taking into account the provisions rooted in laws, and *effective* coverage, reflecting how legal provisions are implemented in practice, and the extent of coverage in the absence of legal provisions.

Effective coverage measures the direct and indirect beneficiaries in a target group who are *actually receiving* SP benefits at the time nationally representative household survey data are collected. A target group might be the total population, for different income quintiles, or total population in urban and rural areas.

Those protected by law, or those who have guaranteed benefits but are not necessarily receiving them at the time the survey is administered, includes people who actively contribute to old-age pensions and are entitled to the benefits on reaching retirement age.

Source: ILO 2014.

be grouped in one single variable in the input file. For example, the survey design may result in a dataset of one variable labeled “food transfers,” by summing up different types of food transfer programs. The resulting statistics in the ADePT output tables will need to be interpreted as referring to an “average” program, omitting the information about the individual programs that compose the group variable.

A problem may arise if the user groups the SP variables and benefits with different performance, for example, grouping a benefit with good targeting accuracy with one with modest accuracy. The resulting benefit incidence indicators that ADePT will generate, for example, will be an average of the grouped program benefit incidence, which will hide the fact that the country operates both the program with good targeting accuracy and poorly targeted programs, a performance measure that may be important for making policy.

Information about SP programs and private transfers can be organized into individual-level or household-level files. Tables 4.2 and 4.3 show the organization of the same data by individuals and household, based on Romania’s 2012 Household Budget Survey (National Institute of Statistics [Romania] 2012).

Table 4.2: Organization of Data for Individual-Level File

<i>hhid</i>	<i>pid</i>	<i>region</i>	<i>weight</i>	<i>hhsz</i>	<i>male</i>	<i>age</i>	<i>gall</i>	<i>oldage_pen</i>	<i>famallow</i>
90,100,043,001,251	1	S	168.2989	2	female	74	3,670.372	8,766.176	0
90,100,043,001,251	2	S	168.2989	2	male	68	3,670.372		0
90,100,043,001,271	1	S	168.2989	3	female	53	5,941.466		369.1288
90,100,043,001,271	2	S	168.2989	3	male	45	5,941.466		369.1288
90,100,043,001,271	3	S	168.2989	3	male	12	5,941.466		369.1288
90,100,044,001,301	1	S	216.6112	2	female	57	13,449.13		0
90,100,044,001,301	2	S	216.6112	2	male	53	13,449.13		0
90,100,044,001,321	1	S	785.4626	3	male	42	2,924.789		0
90,100,044,001,321	2	S	785.4626	3	male	21	2,924.789		0
90,100,044,001,321	3	S	785.4626	3	female	20	2,924.789		0

Note: gall = the welfare aggregate.

Table 4.3: Organization of Data for a Household-Level File

<i>hhid</i>	<i>region</i>	<i>weight</i>	<i>hhsz</i>	<i>male</i>	<i>age</i>	<i>gall</i>	<i>oldage_pension_hh</i>	<i>famallow</i>
90,100,043,001,251	S	168.2989	2	female	74	3,670.372	8,766.176	0
90,100,043,001,271	S	168.2989	3	female	53	5,941.466		369.1288
90,100,044,001,301	S	216.6112	2	female	57	13,449.13		0
90,100,044,001,321	S	785.4626	3	male	42	2,924.789		0

Note: gall = the welfare aggregate.

Table 4.2 presents a snapshot of the individual-level file, as described:

- The pension information is recorded in the original dataset at the individual level, expressed in local currency units (LCU) per pensioner per month (variable `oldage_pen`). The input file will record this information for each pensioner and will have zero or missing values for all other individuals. For example, in the first household only the individual age 74 receives a pension, and the 68-year-old does not. The amount received is 8,766 in Romanian lei.
- When the information about an SP program or private transfer is recorded at the level of the household, the total amount received by the household should be repeated for all members of the household. In the Romanian dataset, family allowances are recorded at the household level. In table 4.2, only the second household receives this benefit, and the monthly amount (lei 369) is recorded for each household member.
- The file includes a variable recording the household size (`hhsz`), but this information is redundant and can be dropped. ADePT SP will not use this variable. Instead, it will compute the household size by counting the individual records with the same household variable (`hhid`). We present this information here simply to compare this input file with the next one, organized at household level. Note that the automatically generated household variable is likely to include individuals such as servants, who are not typically considered members of the household. These individuals could be dropped in the data preparation stage to match other ADePT modules, such as ADePT Poverty and Inequality.

Table 4.3 presents the same information, this time organized as a household-level file as described here:

- There is no individual-level identifier (variable `pid` is dropped).
- The benefit information about individual programs is aggregated at household level using, for instance, a Stata command: `egen old_age_pension_hh=sum(old_age_pension), by (hhid)`. In the household-level file, the pension variable is the sum of the pensions received by all beneficiary household members. The user should include a variable indicating the household size (variable `hhsz`).

- The user should assign the information on household-level programs to each household, as is the case for remittances.
- Nonparticipation in any type of program will be coded as zero or missing.

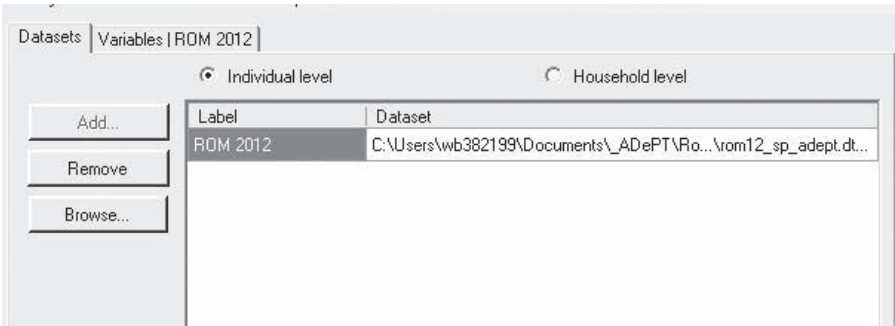
Step 2: Read the Data in ADePT SP

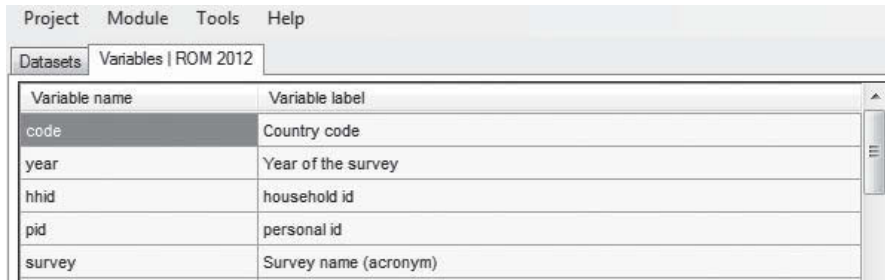
After users have prepared the input file, they are ready to use ADePT SP. Unlike the data preparation in step 1, the tasks now are fast and relatively simple. First, users must read their input file into ADePT SP:

- For this task, choose the type of input file (individual or household level) by clicking on the appropriate round button.
- Next, click on **Add...**, follow the path to the input file, and press **OK** to read the data into ADePT SP. In the case illustrated in screenshot 4.1, the input file called rom12_sp_adept.dta is a Stata file found at the following path C:\Users\wb382199\Documents\ADePT\Romania\.
- Finally, users may add a label to their dataset, which will be added to the Excel worksheet with the results to identify their project. This is done by adding labels on the variables tab.

By clicking the tab **Variables** next to **Datasets**, the user can see a list of variables in the input file and their labels. The first four variables from the Romanian dataset are on display (screenshot 4.2): country code (code), survey year (year), household id (hhid), personal id (pid), and survey

Screenshot 4.1: Importing User Input (Data) File into ADePT SP



Screenshot 4.2: Labeling Variables Snapshot


The screenshot shows the 'Variables' tab in the ADePT SP software. The window has a menu bar with 'Project', 'Module', 'Tools', and 'Help'. Below the menu bar, there are two tabs: 'Datasets' and 'Variables | ROM 2012'. The 'Variables' tab is active, displaying a table with two columns: 'Variable name' and 'Variable label'. The table contains the following data:

Variable name	Variable label
code	Country code
year	Year of the survey
hhid	household id
pid	personal id
survey	Survey name (acronym)

name (survey). Users can scroll up or down to see all the variables in the input file at any time.

It is a good idea for users to label their dataset clearly. This will serve two purposes: First, users will know what each variable represents when they assign different variables to the fields in ADePT SP; and second, users will use the variable labels as headings in the tables and graphs generated by ADePT SP. Having good labels for the variables will spare users later from editing the tables produced.

Step 3: Assign Variables from the Input File to the Relevant Fields in ADePT SP

The following step assigns the variables from the input files to the relevant fields in ADePT SP. This information can be entered in five tabs in ADePT:

Tab 1: Main variables

Screenshot 4.3 shows the first tab, **Main**, selected and open. The open tab is divided in two panels. In the upper panel, the variables required by ADePT SP are presented with an exclamation point (Household ID, Urban, Household size, and Household weights). The rest of the variables (region, ethnicity, special status, age, gender, education, economic status, or custom variables) are optional.

The bottom panel allows users to specify individual characteristics (household head, age, gender, education, economic status, and marital status). These variables are also optional and can be entered for either household-level or individual-level input files. In the case of the

Screenshot 4.3: Main Variables Specification Snapshot

The screenshot shows the 'Main' tab of the 'Main Variables Specification Snapshot' interface. The interface is organized into two main panels. The top panel contains the following variables and their corresponding dropdown menus: Household ID (hhid), Urban (urban), Household size (hhsiz), Household weights (weight), Regions, Ethnicity, Special status, and Household size (hhsiz). The bottom panel contains the following variables and their corresponding dropdown menus: Household head, Age, Gender, Education, Economic status, and Marital Status. Each variable has a dropdown menu and an exclamation mark icon.

household-level input file, for example, the individual characteristic variables refer to characteristics of the household head. The resulting tables will then profile beneficiary households by the head's characteristics.

Finally, if the variable is a dummy, users need to specify the code according to the survey design (for example, hhead=1 if the individual is the household head).

Tab 2: Programs

Classifying the information on SP programs in ADePT SP. Although attempts have been made to set clear boundaries for SP programs and subgroups of programs, different groups of countries use different classifications.⁶ In the examples, we adopt the classification and mapping of SP programs used for ASPIRE (Atlas of Social Protection Indicators of Resilience and Equity). (Refer to chapter 2 to read a more detailed definition and classification of social protection in program categories and subcategories and to read about challenges of classifying SP programs when multiple benefits are bundled in one variable in the data.)

Screenshot 4.4 show the **Programs tab**; the bottom panel of the page allows the user to tell ADePT what variables in the dataset contain information about SP programs. The user must drag Program variables in the upper window to the lines on the lower window and then indicate the type of program in the field **Type*** (* denotes required), by using the scroll-down list.

Screenshot 4.4: Program Specification Snapshot

ROM_2012* - ADePT: Social protection

Project Module Tools Help

Datasets Variables | ROM 2012

Variable name	Variable label
sp_mh_sickleave	Temporary sick leave -annual in LCU (HH)
sp_mh_maternity	Maternity and child care benefits -annual in LCU (HH)
sp_mh_oldage	Old age pension -annual in LCU (HH)
sp_mh_earlyretired	Early Retirement -annual in LCU (HH)
sp_mh_parearlyretired	Partial early retirement -annual in LCU (HH)
sp_mh_disability	Disability benefits -annual in LCU (ind)
sp_mh_successor	Successor pension -annual in LCU (ind)
sp_mh_agricult	Retirement pension for agriculturists -annual in LCU (ind)
sp_mh_war pensions	War invalid's, orphan's and widow's pension -annual in LCU (ind)
sp_mh_warben	War benefit and war widow's benefit -annual in LCU (ind)
sp_mh_politicben	Benefits for persons persecuted for political reasons -annual in LCU (ind)
sp_mh_martyr	Benefits for martyr heroes and their successors -annual in LCU (ind)
sp_mh_otherallow	Other allowances -annual in LCU (HH)
sp_mh_unemploy	Unemployment assistance/benefit, occupation integration -annual in LCU (ind)
sp_mh_compens	Compensation payments -annual in LCU (ind)
sp_mh_childallow	Child allowance -annual in LCU (ind)
sp_mh_scholarship	Scholarships, school and university students -annual in LCU (ind)
sp_mh_disableben	Special benefits for disabled persons -annual in LCU (ind)
sp_mh_townhall	Social benefits granted by municipalities -annual in LCU (ind)
sp_mh_otherwelfare	Other social benefits -annual in LCU (ind)
pt_mh_private	Transfers from persons outside the household -annual in LCU (HH)
sp_mh_subsidies	Subsidies for covering expenditure for public utilities -annual in LCU (HH)
sp_mh_ngotransf	Monthly amounts from non-profit -annual in LCU (HH)
SOCINSURANCE	

Search

Main Programs Consumption Survey Settings Custom table

Type*	Variable*	Label
IND : Social insurance	oldage_pen	Old age pension
IND : Social insurance	antic_pen	Anticipated pension
IND : Social insurance	disab_pen	Disability pension
IND : Social insurance	surv_pen	Survivor pension
IND : Social insurance	farm_pen	Farmer pension
IND : Labor market	unemp_ben	Unemployment benefits
IND : Labor market	redundancy_pay	Redundancy payments
HHD : Social assistance	famallow	Family allowances
IND : Social assistance	gmi	Guaranteed Minimum Income
IND : Social assistance	heating	Heating benefits
IND : Social assistance	child_ben	Child care benefit
IND : Social assistance	child_allow	Universal child allowance
IND : Social assistance	school_scholar	Scholarships, money for high sch...
IND : Social assistance	disab_allow	Disabled allowances

Label for the program to be displayed in the table (by default uses the label for the participation/amount variable)

Social protection

For all tables
☐ Standard

Table description

	De
2	wh
3	son
4	svy:
5	Sus
6	svy

ADePT SP classifies individual SP programs and private transfers into four program “types”: social insurance programs, labor market programs, social assistance programs, and private transfers. The user will indicate whether the information is collected at the household or individual level by selecting the option with the suffix HHD or IND.

ADePT SP uses this information to create indicators for four preset aggregate categories by summing up the information on all programs in a category, as follows:

- Social insurance: sum of all social insurance programs
- Labor market: sum of all labor market programs
- Social assistance: sum of all social assistance programs
- Private transfers: sum of all private transfers

The ADePT output tables also present a fifth aggregate: the “social protection” aggregate, which provides indicators for the sum of social insurance, labor market, and social assistance programs at the household level. Clearly the coverage of all social protection benefits does not correspond to (and is less than) the sum of the aggregate coverage of social insurance, labor market, and social assistance aggregates as benefits are counted only once in the household. The user can process up to 20 individual SP programs and private transfers with ADePT SP.

Chapter 2 and appendix A provide a more detailed guidance on how to classify different SP programs and private transfers into these categories:

Social insurance consists of contributory programs designed to help households insure themselves against sudden reductions in income caused by risk factors other than loss of employment. They include publicly provided or mandated insurance against old age (pensions), death of the main provider, sickness, and disability. Beneficiaries receive benefits or services in recognition of contributions to an insurance scheme.

Labor market programs are typically contributory and are designed to help households insure themselves against sudden reductions in income resulting from unemployment. Beneficiaries receive benefits or services in recognition of contributions to an insurance scheme. The literature distinguishes between different forms of cash compensation (unemployment

benefits or severance pay) or passive measures along with active labor market programs that typically provide services for beneficiaries.

Social assistance is noncontributory transfer programs targeted in some manner to the poor or those vulnerable to poverty and shocks. These programs are often referred to as social assistance or social welfare programs. Social assistance programs are generally designed to help individuals or households cope with chronic poverty or transient declines in income that would otherwise cause them to sink into poverty or worsen existing poverty. As such, they help alleviate poverty and reduce nonpoor households' vulnerability to becoming poor. There is a wide variation of social assistance programs. We grouped these programs into six categories: cash and near cash transfers, conditional cash transfers, in-kind food transfers, fee waivers and scholarships, general subsidies, and public works.

Private transfers are nonpublic transfers and generally include domestic or international remittances. The category is therefore not a public program, although it is included in ADePT because private transfers can play a role in the social protection of individuals and households.

The user needs to identify the type of program each individual country program is and decide what aggregate category it belongs in. For example, the Brazilian government operates a large cash transfer program called Bolsa Familia. Using either the survey interviewer guide or social protection reports, the user should be able to learn the characteristics of that program and identify it as a conditional cash transfer program (narrow program group), which is part of the social assistance programs (broader program group). Table 2.1 in chapter 2 summarizes the key design characteristics of ASPIRE categories and subcategories.

Classifying programs that are difficult to classify. Not all programs will fall easily within the categories we developed for ADePT SP. The user should exercise judgment in classifying the SP information into categories. For example, disability programs are sometimes social insurance programs (when eligibility is restricted to those who contribute to a social insurance or pension fund), sometime social assistance (when all people with certain disabilities qualify). The user should go beyond the name of a program, which can often be misleading. These programs may be called disability pensions but are non-contributory (hence, should be classified under social assistance programs)

or may be called disability allowances but are restricted for contributors (hence, should be classified under social insurance programs).

The identification and inclusion of programs also depend on the policy issue of interest. For example, the Serbian household survey collects information on foreign pensions, such as pensions earned by Serbians working abroad who returned to Serbia during old age. If the analyst is interested in the distributional effect of the national SP programs, foreign pensions should not be included in the list of SP programs. However, if the policy question is on adequacy of pension incomes, the program should be included.

Entering programs that are renamed in the survey. In a few surveys, social protection programs are renamed or merged into a single category to speed data collection in the field. For example, in 2003 Brazil had two national social assistance programs conditional on education: the Bolsa Escola and the Programa de Erradicação do Trabalho Infantil (PETI). There were two differences between these programs: target populations and benefit amounts. The Bolsa Escola was a conditional cash transfer targeted to all children who were already studying to increase their likelihood of remaining in school and to children who were out of school because of monetary constraints. The PETI was a conditional cash transfer targeted to all children working in dangerous activities such as the charcoal industry and sugarcane fields.

Regarding benefit amount, the Bolsa Escola had a fixed transfer per child of R\$15 (about US\$5 at that time), and PETI would transfer R\$25 (about US\$8.30) in rural areas and R\$40 (about US\$13.30) in urban areas. Despite such differences in target population and benefit amounts, the statistical office had used a single question—Do users participate in a social program toward education?—to identify beneficiaries of these two programs.

In this case, the classification of this merged program is easy—conditional cash transfer—but to give the actual name of the program goes beyond that. Analyzing administrative records of the programs shows that the Bolsa Escola was reaching 8.5 million children, and PETI reached fewer than 500,000. In this case, analysts would use the question of participation in social programs toward education as an indicator of participation in the Bolsa Escola, given its much higher coverage of the population.

Using the “other programs” category. In many countries, the number of SP programs is large, and household surveys collect information from only a few of them.

However, in Romania, where the number of SP programs is quite large, the Household Budget Survey explicitly asked for the benefits received from all key cash transfer programs (contributory and noncontributory, such as retirement pension, guaranteed minimum income, disability pension, survivors pension, unemployment compensation, child allowances, scholarships, heating allowances, and others). Only a small fraction of benefits received does not fit into provided groups and would be labeled “other.” In countries whose household surveys do not collect data on many SP programs, the category may be much larger and so the results tend to be less useful.

Tab 3: Consumption

Specifying the welfare aggregate. As screenshot 4.5 shows, the user can rank households into quintile or decile groups using either a monetary or non-monetary welfare aggregate. When the option of “monetary value” is chosen, the user can specify two variables: total household consumption (required) and adult equivalent adjustment (optional):

- In the **Total consumption** field, users can assign a variable containing total consumption, total expenditures, or total income (the total consumption or income aggregate should never be equivalized beforehand).

Screenshot 4.5: Consumption Variables Specification Snapshot

The screenshot displays the 'Consumption' tab in the ADePT SP software. The interface is organized into several sections:

- Welfare aggregate:**
 - ☒ Monetary value
 - ☐ Non-monetary value
 - Total consumption:
 - Adult equiv. adjustment:
 - Other WA:
- Pre-transfer adjustment of welfare:**
 - ☒ No adjustments (V0)
 - ☐ Net of all SP transfers (V1)
 - ☐ Net of each SP transfer (V2)
 - ☐ Net of all SA transfers (V3)
- Number of quantiles:**
 - ☒ 5 (quintiles)
 - ☐ 10 (deciles)
 - ☐ Use welfare ratio for quantiles
- Poverty line(s):**
 - ☒ Absolute:
 - ☐ Relative: Reference Percent

- If the optional field **Adult equiv. adjustment** is left blank, ADePT SP will rank households using a per capita adjustment.
- If users assign a variable to the **Adult equiv. adjustment** field, ADePT SP will rank households using the per adult equivalent scale. The variable from the adult equivalent adjustment field should specify the number of equivalent adults for each household. Typically, this is a function of the household size and demographic composition of the household. This variable is continuous.

When the option of **Nonmonetary value** is chosen, the user can specify two variables: **Total consumption** (optional) and **Other WA** (required); WA stands for welfare aggregate.

- In the **Other WA** field, users can assign a variable containing the nonmonetary welfare aggregate: welfare ratio, asset index, index of basic needs. This variable is continuous.
- If users assign a variable to the **Total consumption** optional field, ADePT SP will use it to generate some of the indicators in the tables, such as program generosity.
- If the optional field total consumption is left blank, ADePT SP will generate fewer tables. For example, it won't generate the adequacy and the simulated impacts on poverty and inequality reduction tables. Choosing a nonmonetary welfare aggregate affects the number of tables available, because ADePT SP needs to have information about the total consumption or income to run some tables, such as generosity. In addition, this option does not allow users to use the pretransfer adjustment option, that is, users cannot have a pretransfer adjustment for nonmonetary welfare.

Specifying the type of adjustment to the welfare aggregate (counterfactual welfare indicator). These options apply only if the user selects monetary value for the welfare aggregate, which allows the user to adjust the welfare (hence the quintiles or deciles distribution) in the most appropriate way for the analysis.

The user can rank households into quintile or decile groups that account, in a crude manner, for the behavioral response of the recipients. Ideally, a targeting assessment should rank households (and define their poverty status) by their welfare level of income or consumption in the absence of

the program. Only then, when the analyst knows the welfare position of program beneficiaries without the program, can he or she estimate the true incidence of the benefits. The problem is, of course, that recipients' welfare in the absence of the program is not directly observed; household surveys collect the welfare (how much households consume or spend) after receiving the benefit. We call the income or consumption in the absence of the program the “counterfactual” (income or consumption).

ADePT estimates the counterfactual welfare in the absence of benefit X as the household total welfare minus the value of benefit X the household receives. Nonetheless, different counterfactual estimations are possible to generate quintiles or deciles, and the user must select only one of the following counterfactuals: (a) no adjustments to the observed welfare, (b) removing from the observed welfare all SP benefits received, (c) by removing each individual benefit one by one, and (d) by removing all social assistance benefits.

Specifically, ADePT SP can rank the households using the welfare as it is observed (V0) or using three simplified counterfactuals (V1, V2, V3) as described below:

- a. *No adjustment (V0) scenario.* Keeps the monetary welfare aggregated as given (posttransfer): $W = WAp$, where W is the welfare aggregate pretransfer and WAp is the aggregate posttransfer. W is used to generate quintiles or deciles for ranking and to define the poverty status of households based on the preset poverty line. This scenario is an extreme assumption about behavioral response. It assumes that households will fully compensate the withdrawal of transfers by working more, increasing productivity, or relying more on private transfers, so that their total welfare will remain unchanged.
- b. *Net of some part of social protection transfers (V1) scenario.* Removes some part of SP benefit amounts from the aggregate welfare and accounts for some behavioral response before ranking into quintiles or deciles.

$W = WAp - 50\% \text{ Social Insurance} - 50\% \text{ Unemployment} - 100\% \text{ Social Assistance.}$

In this simulation, we follow Ravallion (2008), who suggest that a reasonable measure of pretransfer income should take out about 50 percent of social insurance benefits and 100 percent of any social

assistance benefits. For the social insurance, the simulation assumes that, in the absence of insurance, households will self-insure—such as by saving more, relying more on private transfers, or increasing their work effort—but only partially compared to full social insurance. And for social assistance benefits, it assumes no behavioral response for a poverty-targeted program.

- c. *Net of each social protection transfer (V2) scenario.* Ranks households independently for each SP program identified in the survey after removing the specific amount of benefits associated to that program:

$$W = WAp - Spi$$
 where Spi is an individual SP program.

This option will generate different population rankings (deciles or quintiles) for each SP program or group of programs.

- d. *Net of all social assistance (V3) scenario.* Removes all social assistance transfers before ranking but keeps social insurance and labor market programs:

$$W = WAp - Sum(all\ SA)$$
 where $Sum(all\ SA)$ is the sum of all social assistance benefit amounts

The choice of the welfare adjustment (or counterfactual welfare) depends on the purpose of the research and on certain parameters specific to the country context (households' consumption preferences, income-replacement ratios, the generosity of benefits among others). The user needs to be aware that results change substantially depending on the welfare counterfactual used. Differences in results depend on the number and types of programs collected and the size of the benefits. For example, the larger the program size (and their importance relative to poor households' income), the more different is the beneficiary incidence indicator in the poorest quintile between V0 and V1/V3.⁷ Users need to carefully assess which assumption makes more sense in the context of their research. If the purpose is to assess the targeting accuracy of a specific program X, then the preferred counterfactual would be V2.

In principle, to estimate the correct household's welfare in the absence of a program most accurately, the user must model changes in the household's labor supply, remittances, savings, and credit. Or alternatively, the user could obtain this information from a comparable counterfactual group, an undertaking more usually carried out under an impact evaluation. These changes provide an estimate of a household's welfare in the absence of a transfer and allow the calculation of correct welfare rankings. The limited evidence

available suggests that for safety net programs with moderate generosity, the net increase in income or consumption after inclusion in the program is close to the value of transfer. In the case of five of the six conditional cash transfer programs reviewed in Fiszbein and others (2009), household consumption increased by almost the whole value of the transfer, equivalent to a marginal propensity to consume of 1 justifying the selection of V2 or V3 options as the most appropriate to approximate the pretransfer income counterfactual. More generous programs with an income-replacement role, such as workfare and social pension programs—but also social insurance programs, such as unemployment benefits or contributory pensions—will likely increase household consumption substantially less than 100 percent. That increase is because, in the absence of the program, households had to earn some income in other ways if they were to survive. For example, in the case of Argentina’s Trabajar workfare program, the average direct gain for participants was about half the gross wage (Jalan and Ravallion 2003), implying a marginal propensity to consume out of transfers of 0.5 justifying the selection of V2 or V3 options as the most appropriate to approximate the pretransfer income counterfactual. That justifies the selection of the V1 scenario as the most empirically sound approach for a pretransfer income counterfactual.

Specifying the number of quintiles or deciles. The user can select the number of partitions of the population for the estimation of some outcomes needed to analyze targeting accuracy. The two options are the following:

- *Quintile, or 5 groups.* Each quintile contains 20 percent of the population. The first quintile (Q1) is composed of the poorest 20 percent population in the sample, according to the welfare aggregate variable, whereas the fifth quintile (Q5) is composed of the richest 20 percent.
- *Decile, or 10 groups.* Each decile contains 10 percent of the population. The first decile (D1) is composed of the poorest 10 percent population in the sample, according to the welfare aggregate variable, whereas the 10 decile (D10) is composed of the richest 10 percent.

Specifying the poverty lines. The bottom panel in the **Consumption** tab allows the user to select which poverty line to use to estimate the poor and nonpoor.

The user can select either “absolute” or “relative” poverty lines as shown in screenshot 4.5. If the absolute poverty line is selected, the user is required to select the corresponding variable in the **Poverty line** dropdown menu. ADePT will accept up to two absolute poverty lines, the lower of which should indicate extreme poverty and the higher will be moderate poverty.

For relative poverty lines, in the **Reference** dropdown menus visible when users select “relative” in the poverty lines field, the user can select the proportion of either the mean, the median, or the percentiles the user wishes to use. For example, if one wants to set the relative poverty line at the poorest quintile of the welfare distribution, he has to select relative, then select percentile in the **Reference** dropdown menu, and finally specify 20 in the percent field. ADePT will calculate these poverty lines automatically based on the sample distribution of income (or expenditure).

Tab 4: Survey Settings

To improve the accuracy of the ADePT SP results, the user has the option to specify the survey design. The user does so by selecting the **Tools** menu on the top bar of the ADePT window (next to **Project** and **Module**) and by choosing **Show survey settings tab**. Selecting this option will add a new tab, which allows the user to specify sampling units, strata, and other options. Survey reports often will have the necessary details on the ex ante and ex post survey to make these selections. Although results (point estimates) are generally not affected, standard errors are improved.

Tab 5: Custom Table

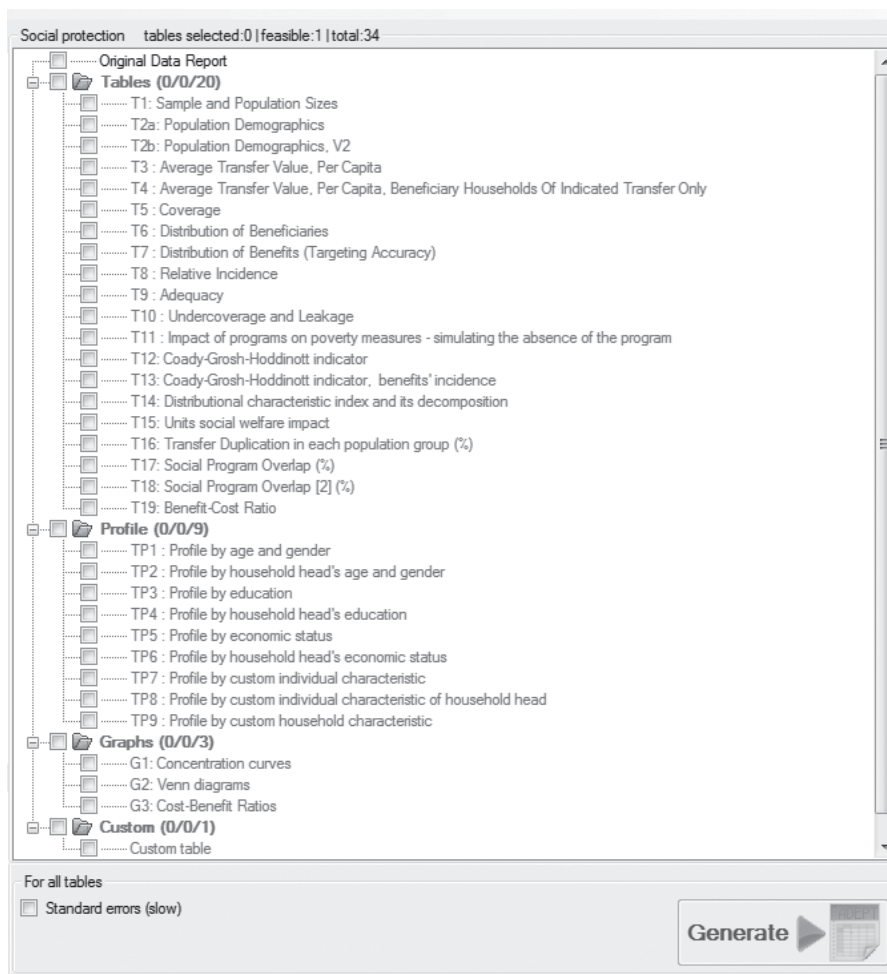
The custom table tab allows users to conduct more user-driven analysis (refer to ADePT User Guide [Lokshin and others n.d., 81–84]). To conduct such analysis, the user needs to select the **Tools** menu, and then **Show custom table tab**. Once on this tab, the user can choose the variables for rows and columns, as well as a **Function**, such as calculating the mean or ratio. This option can be valuable for users who want more customized analysis, such as specifying the eligibility criteria for a particular program, restricting a pension receipt to people ages 60 or older if 60 is the statutory retirement age, or providing coverage for a particular social assistance program on the basis of the proxy means test score.

Step 4: Select the Tables and Graphs to Be Generated by ADePT SP

The user can select up to 34 tables for direct and indirect beneficiaries, 28 tables for direct beneficiaries, and three graphs, as shown in screenshot 4.6.

ADePT SP will highlight the tables and graphs that *can be* generated depending on the information included in the input files (individual or household level), the welfare aggregate selection, the welfare counterfactual adjustment selection, the type of social protection variable

Screenshot 4.6: Social Protection Tables and Graphs Snapshot



(continuous or dummy), and whether the social program is defined at the individual or household level.

For example, if monetary amounts of social benefits are not available in the survey, the generosity, poverty, and inequality simulations, the Coady-Grosh-Hoddinott indicator, distributional characteristic index, and the benefit-cost ratio indicators (and related tables) cannot be generated (in tables T3, T4, T7–T9, T11–T15, and T19 in ADePT SP). Further, if the education or economic status variables have not been defined in the input file or in the ADePT panel with main variables, profile tables TP3 and TP4 cannot be produced.

For ADePT SP to generate all the tables and graphs, the user must have a monetary welfare aggregate and benefit amounts for at least one program. When a nonmonetary welfare aggregate is used, ADePT SP will generate tables on the relative incidence (T8), adequacy (T9), impact on poverty (T11), Coady-Grosh-Hoddinott indicator and benefit incidence (T12 and T13), distributional characteristics (T14), unit social welfare impact (T15), and benefit-cost ratios (T19) but the indicators' values will be reported as "n.a." as they cannot be calculated.

In addition to those requirements, whenever users change the counterfactual, some tables and graphs may not be available. For example, table T2b in screenshot 4.6 is generated only when V2 (pretransfer adjustment) is selected; however, if V2 is selected, then tables T2a, T16, and T18 and graph G1 are not generated.

In addition to the 28 standard tables, ADePT SP produces the following three graphs: concentration curves, Venn diagrams, and benefit-cost ratio figures. If users select the concentration curve graphs, they will automatically have a separate concentration curve graph for each main SP program group—social insurance programs, labor market programs, and social assistance programs. The Venn diagram shows program overlap. And if users select two poverty lines, they will have two graphs of benefit-cost ratios, one for each poverty line.

Step 5: Specify Adept SP Options

Once the user has provided the required information, populated the required fields in the five tabs, and selected the tables and graphs to be generated, the last step is to specify the indicators' estimation options. Different options are available to fine-tune estimates and display statistical outputs, including

estimates with or without standard error shown, frequency estimates, and “if” conditions:

Estimation tables with and without standard error. Users can select this option to produce the standard errors of each indicator. This option is necessary if users formulate a statistical hypothesis test to verify the significance of a single indicator or to compare indicators. Users may add sample design variables in the survey settings tab that will improve robustness of the formulated statistical tests. However, the Standard errors option will affect the speed at which ADePT SP can generate tables and graphs. We therefore recommend using this option once users feel comfortable with other options, such as welfare aggregate, scale of adjustments, pretransfer adjustments, number of quintiles, and poverty lines, and are ready to generate the final outputs needed for their analysis. For an estimation of frequencies for all tables, users can select this option to choose the number of observations used for the calculation of each ADePT SP output table. This option allows users to make sure they have enough observations in a given indicator to generate a reliable indicator. As before, this option does not affect any outcome of ADePT SP; it is recommended to select it if necessary, as proposed in the standard error option.

*Table description and **if condition** option.* The **if condition** is useful if the user wants to generate a table or set of tables for a subpopulation, such as families with children, people above the pensionable age, or people living in urban areas. For example, for a program such as old-age pensions that reach only individuals above a certain age, users can use the **if condition** to estimate how many families with elderly members are covered by this program and its targeting accuracy. To activate the **if condition**, the user must highlight the table to be generated, write the condition in the “Table description and if condition” field at the bottom of the panel, and click on the **Set** button. It is important to note that when the **if condition** is used, the quintiles or deciles generated by ADePT SP will always refer to the total population (that is, it includes those excluded by the if condition). If the user would like to generate quintiles for the selected subpopulation, a new input file for this subgroup needs to be generated and run ADePT SP with that file. For example, if one wants to look at the distribution of the old-age pensions in the urban population, a new input file that includes only the subsample of households living in urban areas will be created and statistics will be generated with respect to the distribution of welfare of urban households, which will differ from the national distribution of welfare.

Screenshot 4.7: Dialog Box for ADePT SP Options

For all tables

☐ Standard errors (slow)

Generate ➡

Table description and if-condition | Messages | CustomTabPage

T2a: Population Demographics

Table presents the share of total, poor, urban and rural population; the share of total consumption; and the mean consumption by quintiles or deciles and other user-defined groups. Depending on the option, quintiles or deciles are based on reported consumption or income or counterfactual welfare aggregates Rows: shares of total, poor, urban, and rural population; share of total consumption; mean consumption Columns: total population, quintiles or deciles; other groups like poor, area of residence, regions

IF-condition: **Set**

Step 6: Click on Generate

The last step is to click on **Generate**. ADePT SP will produce the number of tables and graphs the user selected in a temporary Excel file. Potential errors will be displayed in the **Messages** panel on screenshot 4.7. The user must name that file and save it.

Common Mistakes and How to Avoid Them

A great advantage of ADePT is that its code has been thoroughly checked, so programming errors are highly unlikely. However, ADePT users still could make two kinds of mistakes. The first set of errors may be related to inadequate preparation of input data; the second set of errors involves misinterpretation of the results. This section reviews some common data and interpretation errors.

Common Data Errors

Common mistakes occur that the user needs to be aware of when preparing the data input files that are related to (a) the merging of different data files where the needed variables are stored, (b) the treatment of zeros versus missing values, and (c) the treatment of negative income and outliers.

Careless Merging

The data for most multipurpose household surveys typically are stored in many different files. To prepare a dataset for ADePT, the user needs to merge these files. This step must be done carefully to ensure that the data for a given respondent are matched correctly across the two (or more) data files. Special care is needed when one of the files contains data for households and the second contains data for individuals. Each individual must be matched correctly to her or his household. How to do this depends on the software, but every software's documentation has a discussion of how to merge correctly and how to evaluate whether the merge was successful.

A particular problem in merging different data files results when one file does not include records for every respondent. This omission may be intentional, to reduce the size of the data file by not including unnecessary records or because the survey questionnaire intentionally skipped data collection for certain respondents. But it will result in missing values for the respondents who were left out, which may not be appropriate. The following section discusses ways to avoid the problem.

Missing Values versus Zeros

Questionnaires for household surveys are designed so that not every person or household answers every question. That means that most respondents have missing data for many questions. But often, the correct interpretation of those missing values is zero, not missing. For example, a module on transfer income might begin with the question "Has anyone in this household received a payment in cash or in kind from the government in the past year?" If the answer is "no," the questionnaire is structured to skip the following questions on specific kinds of transfers and amounts received so as not to take up the respondents' time with questions that are irrelevant. The respondent thus has missing data for all the questions regarding transfer income. But it is clear from her response of "no" that the correct value for each transfer is zero. If the value is left as missing, this respondent will be dropped from any analysis of transfer payments, which would be a mistake. The survey should include values of zero for each type of transfer.

This problem is made more likely when data for the transfer payment module are stored in one file and data on other income sources,

demographic characteristics, and other individual characteristics are stored in other data files. A respondent who answers “no” to the screening question on transfers may have no record at all in the transfer payment dataset. When it is merged with other data, she will have missing values for all the transfer payment variables. However, the correct interpretation is zero. To avoid this problem, analysts should review the survey questionnaire carefully before preparing the data for input to ADePT, paying special attention to the skip patterns indicated in the questionnaire. The skip patterns indicate the conditions under which a respondent did not answer a question, and when the response was obviously zero. The user should be careful to ensure that these variables really do have zero values, not missing, by converting missing values to zeros. However, not every missing value is interpreted as a zero: sometimes, the data really are missing and should be left as such.

Outliers

Survey data are subject to both reporting errors and data entry errors. Most national statistical agencies that collect the data are careful to detect and correct these errors for important variables such as household expenditure or income, but errors for individual components of expenditure or income may still be present in the data.

This potential for error is particularly important for social protection analysis since we are often interested in income sources that are relatively rare but could be quite important as a share of recipients’ total income. One or two outliers could yield a significant change in our assessment of the distribution of such transfers. So it is important to examine data on income from SP programs for unusual values, especially very large values, that may reflect data entry errors. Having administrative information on the program can often help, because the transfer amount will be prescribed, and amounts that differ from this amount will be suspect.

Missing or Incorrect Sampling Weights

Most large surveys are not simple random samples of the populations that they represent. Samples are usually stratified to ensure adequate coverage of certain subpopulations and are clustered. Statistical agencies do the

latter because it is much cheaper to interview a group of 10 to 20 households in the same general area than it is to interview 10 to 20 households spread randomly around the country. In most survey designs, stratification and clustering change the probability that a particular household is actually interviewed. Households with a relatively high probability of being interviewed are not as important because there will be many other households like them in the survey. Those with a low probability of being interviewed are more important. Statisticians account for these differences by assigning each respondent a sampling weight that reflects her or his importance in the sample. Analysts must use these weights when calculating statistics about the sample to accurately represent the sampled population.

Some surveys have more than one sampling weight per respondent. This situation occurs when some parts of the survey are collected for only a subsample of the entire sample. For example, it might occur for data that are particularly expensive or cumbersome to collect, such as blood samples. In these cases, it is important to use the appropriate sampling weight in any analysis, and this weight will be different depending on what sample is used.

Another issue concerns use of household-level data for individual-level analysis. For example, when we are concerned about poverty, we are concerned about individuals' poverty, but the income and expenditure data are often available for the household. When we consider income per capita, we arbitrarily divide that income equally among household members. It would be inappropriate to count each household's per capita income equally: larger households are more important because they represent more individuals with that particular per capita income. Thus, they should be weighted according to their sampling weight multiplied by the household size. ADePT handles this adjustment automatically if household-level data are used and the user supplies the household size.

Sample Design Effects

Both stratification and clustering affect the variability of statistics drawn from household surveys. As a result, standard errors for these statistics will be incorrect if the stratification and clustering are not accounted for (see Howes and Lanjouw 1997). This is true even if the sampling weights

are used to calculate the statistic. In general, stratification increases the variation in the sample and thus reduces any statistic's standard error, whereas clustering does the opposite. To have proper estimates of the standard errors of statistics generated with ADePT, the analyst must provide a variable indicating the stratum for each observation and another variable for its cluster. This information usually can be found in the survey's documentation. Note that the sampling design does not affect estimates of a statistic itself, just the estimated standard errors for that statistic.

Negative Income

ADePT SP cannot handle negative income or consumption. Data with negative income values can lead to ADePT producing nonsensical values and tables that are therefore misleading or incorrect. Negative values are more common in advanced economies, where debt may lead to negative income (the European Union Statistics on Income and Living Conditions data are an example). Two approaches are used for dealing with negative values: truncation and topping up. When preparing the data, the user can drop all negative values, or use a filter to do so. The second approach is to change all negative values to zero. A number of calculations will then be able to proceed, such as calculations for the Gini coefficient. A drawback is that dropping or altering the data may decrease the accuracy of the results, especially if the negative values are not randomly distributed. Any truncation will require reweighting the sample, and users should refer to a statistics manual for instruction on how to accurately do that.

Missing Income

At the data preparation stage, users should ensure that missing values are coded as missing, not as 99, 999 or another code. Missing income values can considerably hinder SP analysis, because ADePT SP will generate results, even if they are not sensible. If income is the welfare variable, having any missing values can distort the results. Thus, users should understand the reason for the missing values and could consider dropping observations that have negative income, topping up to zero, or analyzing only positive values. Each of these choices will affect the results.

Common Interpretation Errors

Most of the tables that ADePT SP produces are straightforward and easy to interpret, but two potential errors deserve to be highlighted: correlation versus causation and counterfactuals.

Correlation versus Causation

The tables that ADePT SP produces are descriptive. As such, they show correlations observed in the data, but those correlations may not reflect a causal mechanism. For example, analysts typically find that poverty is higher among recipients of basic income grants than it is in the general population, but that does not mean that the grant *causes* the poverty (and by extension, that a good poverty reduction policy would eliminate the grant).

In general, analysts should be cautious with a conclusion that a correlation really does imply causation. Nevertheless, knowledge of the correlations can be helpful. For researchers, correlations suggest stylized facts that any model should capture. For policy makers, they may give clues as to where social protection policies are most needed.

The Counterfactual Problem

In the “Defining Poverty” section in chapter 2 and as described in this chapter, this manual discussed the problem of selecting an appropriate counterfactual when analyzing a social protection program. Selecting a counterfactual is difficult to do with a simple cross-sectional dataset, and it requires strong assumptions. ADePT allows some flexibility in this regard, but analysts should be aware of the assumptions that they are making when looking at an ADePT SP table. The validity of a comparison of poverty with and without a specific transfer payment, for example, is only as good as the assumption about the counterfactual behind it.

Summary

This chapter showed how to use ADePT SP for analysis. The presentation has been provided such that users can follow along and conduct the steps on their own. The final chapter of this manual will provide more advanced features and guide the accurate interpretation of results.

Notes

1. The head of household is supposed to be the person in the household acknowledged as head by the other members. The head has primary authority and responsibility for household affairs. In some surveys the interviewer asks respondents to identify the head of household. In other surveys, head of household does not denote any particular role and is the code that the interviewer gives to the oldest male of working age, or to the member responding the questionnaire.
2. Import and use the “saveold” command. ADePT may not recognize newer Stata versions, up to Stata 13. Data files saved in Stata 14 are not yet accessible in ADePT.
3. For guidance on constructing a consumption-based welfare measure, see Deaton and Zaidi (2002). For guidance on constructing an income-based welfare measure, see Eurostat (2003) or U.S. Census Bureau (2005). Filmer and Pritchett (2001) and Filmer and Scott (2008) provide valuable information for the construction of nonmonetary welfare aggregates.
4. Generosity is defined as total benefits received by the household divided by total consumption or total income.
5. The extreme poverty line is equal to the cost of adequate calorie acquisition—the “food poverty line”—plus an additional amount equal to the nonfood-expenditure share of people whose total expenditures are just about equal to the food poverty line. The moderate poverty line is equal to the food poverty line plus an additional amount equal to the nonfood-expenditure share of people whose food expenditures are just equal to the food poverty line. Some authors take the food poverty line itself as the indicator of extreme poverty.
6. Examples are OECD or Eurostat for developed countries, and ILO, International Monetary Fund, or the World Bank for developing countries.
7. The same applies to other performance indicators generated by ADePT.

References

- Deaton, Angus, and Salman Zaidi. 2002. “Guidelines for Constructing Consumption Aggregates for Welfare Analysis.” Living Standards Measurement Study Working Paper 135. World Bank. <https://openknowledge.worldbank.org/handle/10986/14101>.

- Eurostat. 2003. “‘Laeken’ Indicators: Detailed Calculation Methodology.” Working Group Statistics on Income, Poverty and Social Exclusion Report,” Luxembourg City, April 28–29. http://www.cso.ie/en/media/csoie/methods/surveyonincomeandlivingconditions/Laeken_Indicators_-_calculation_algorithm.pdf.
- Filmer, Deon, and Lant H. Pritchett. 2001. “Estimating Wealth Effects without Expenditure Data—or Tears: An Application to Educational Enrollments in States of India.” *Demography* 38, 1: 115–32.
- Filmer, Deon, and Kinnon Scott. 2008. “Assessing Asset Indices.” Policy Research Working Paper 4605, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/703351468315315223/Assessing-asset-indices>.
- Fiszbein, Ariel, Norbert Schady, Francisco H. G. Ferreira, Margaret Grosh, Niall Keleher, Pedro Olinto, and Emmanuel Skoufias. 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. World Bank Policy Research Report. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/2597>.
- Howes, Steven, and Jean Olson Lanjouw. 1997. “Poverty Comparisons and Household Survey Design.” Living Standards Measurement Study Working Paper 129, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/548781468739211288/Poverty-comparisons-and-household-survey-design>.
- ILO (International Labour Organization). 2014. *World Social Protection Report: Building Economic Recovery, Inclusive Development and Social Justice 2014/15*. Geneva: ILO.
- Jalan, Jyotsna, and Martin Ravallion. 2003. “Estimating the Benefit Incidence of an Antipoverty Program by Propensity-Score Matching.” *Journal of Business & Economic Statistics* 21 (1): 19–30. http://www1.worldbank.org/prem/poverty/ie/dime_papers/118.pdf.
- Lokshin, Michael, Sergiy Radyakin, Zurab Sajaia, and William Creitz. n.d. *ADePT User Guide Version 5*. http://siteresources.worldbank.org/EXTADEPT/Resources/adept_ug.pdf.
- National Institute of Statistics (Romania). 2012. “Household Budget Survey 2012.” International Household Survey Network (IHSN) Survey Catalog. <http://catalog.ihns.org/index.php/catalog/4694>.
- Ravallion, Martin. 1998. “Poverty Lines in Theory and Practice,” Living Standards Measurement Study No. 133, World Bank, Washington, DC.

- . 2008. “Evaluating Anti-Poverty Programs.” In *Handbook of Development Economics*, Volume 4, edited by T. Paul Schultz and John A. Strauss, 3788–3817. Amsterdam: Elsevier.
- U.S. Census Bureau. 2005. “Alternative Poverty Estimates in the United States: 2003.” *Current Population Reports*, U.S. Department of Commerce, Washington DC. <https://www.census.gov/prod/2005pubs/p60-227.pdf>.

How to Interpret ADePT SP Results

This chapter describes the tables and graphs generated in the ADePT SP output and shows users how to conduct advanced analysis, with examples using data from the Romanian Household Budget Survey 2012 (National Institute of Statistics [Romania] 2012). Each table in this chapter includes a discussion and a short description of the information available in the table and its use, along with cross-references to the relevant sections of the conceptual framework (chapter 2).

To replicate the results and follow along on your own computer,¹ download ADePT software from <http://www.worldbank.org/ADePT> and select the **Social Protection** module. Once the program opens, click on the **Project** menu and select **Open Example Project**.

Throughout the chapter, we use household consumption (the variable *total consumption* on the ADePT SP **Consumption** tab) as a welfare aggregate indicator. ADePT SP automatically calculates per capita welfare from total household consumption (not individual consumption) and household size.² Alternatively, the *adult equivalent adjustment* variable can be specified on the **Main** tab. The value of the welfare aggregate depends on the counterfactual assumption made (chapter 2). The examples in this section use the option V0, the observed posttransfer household consumption with no adjustment. In practice, however, the results will vary with the user's choice of the counterfactual. In the tables that follow, households are accordingly ranked into quintiles according to their posttransfer level of consumption.

Other assumptions used in this chapter include the survey weight variable that allows the extrapolation of results from a sample to the entire population. We assume that such weights are provided as part of the dataset and reflect the sampling selection procedures as well as corrections reflecting response rate during the surveys.

This chapter looks at almost all of the tables that would be generated by the user with ADePT SP, except where limited by size of output. The numbers will be the same as well, because the same data and ADePT settings will result in the same set of results for any user on any computer, although older versions of ADePT SP may have minor differences.

As discussed, to run the ADePT SP program, the user must specify certain variables, whereas certain other variables are needed to generate certain tables. The user needs to specify, at a minimum, the household ID, at least one social protection (SP) program, total household consumption (welfare aggregate), and a poverty line. If the SP program variables indicate receipt of a transfer and not the amounts, then a number of tables—such as those for benefit incidence and the poverty and inequality impact—cannot be generated, so having monetary amounts is preferable if available. To ensure accurate results, the user should make sure the welfare aggregate and SP programs have the same reference period (for example, one day, month, or year). The specification of variables such as urban, regions, age, gender, and so forth will provide more detailed output. Finally, although specifying the household weights is not necessary, doing so is strongly advised; otherwise the statistics in all tables will likely not be accurate.³ If the user would like to generate standard errors, then the **Survey Settings** tab should be populated to reflect the survey design (identifiers for strata and primary sampling units).

The following sections present the different tables and graphs, along with guidance for interpretation. Under each table, ADePT generates brief computational notes. For a quick reference on the technical details, appendix B describes the formulas behind the indicators presented in the tables and graphs.

Initial Tables

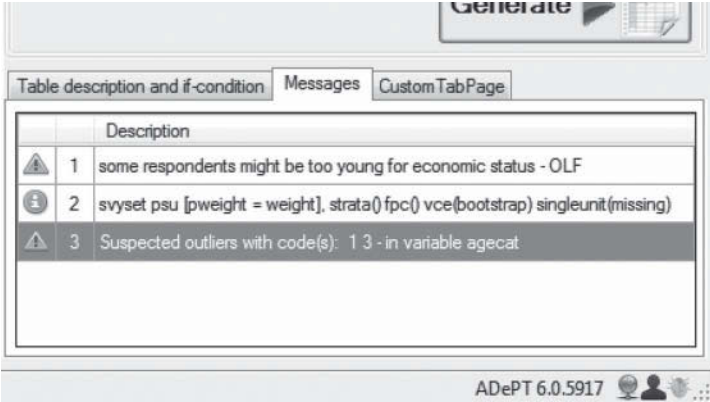
After analyzing data with ADePT by pressing the **Generate** button, the user sees a complex Excel file, starting with its first sheet. On the first worksheets of the Excel ADePT SP output, the “ADePT Social Protection: Table of

Contents” lists the different tables that have been produced. (This varies by the table selected. See chapter 4.) The second sheet, “Notifications,” presents the possible errors, warnings, and notifications generated by the data-checking process. The third sheet, “Original Data Report,” shows the number of observations for each variable, along with other basic descriptive statistics. The rest of the Excel output file consists of a series of tables and graphs, one per worksheet tab.

Errors, Warnings, and Notifications Generated by the Data Checking

The first table produced notifies the user about assumptions, warnings, and errors of running ADePT SP on a given dataset. This table collects the information displayed in the **Messages** tab when running the program and presents it in the “Errors, Warnings, and Notifications” table (shown in screenshot 5.1). The yellow caution icon in the **Messages** tab highlights

Screenshot 5.1: The Messages Tab and the Errors, Warnings, and Notifications Outputs Table



Errors, Warnings and Notifications generated by data checking

Checking variables in ROM 2012:

Age	<p>some respondents might be too young for economic status—OLF</p> <p>svyset psu [pweight = weight], strata() fpc() vce(bootstrap) singleunit(missing)</p>
------------	---

Note: OLF = out-of-labor force.

items such as possible outliers and assumptions made by the program. Red icons may prevent the program from running, which may occur if the data type of a variable is inconsistent, for example, by having numeric and non-numeric values.

The first note in the error log is that the age of respondents may be too young to be out of the labor force. Although because younger people are likely not to be working, this error can be ignored. If young respondents were employed, this might warrant checking the underlying data. Information is given on the **Survey Settings** tab, which allows the user to check that the information was entered correctly. Assumptions will also be listed if they are not specified in ADePT—such as what value is assumed for the variables *male* and *urban*. Users should always check the “Errors, Warnings, and Notifications” worksheet before reviewing the actual output tables, as all tables rely on the underlying quality of data and set of assumptions.

“Original Data Report” Table

The “Original Data Report” table reports basic sample information, such as the number of observations and summary statistics, which provides a crucial data check before the user proceeds to actual analysis of the data in later tables.

The table allows for checks against the survey documentation and knowledge of feasible values. The user can check if the total number of observations (N) is equal or close to what is noted in the survey documentation. The check (N_unique) can be used to check against survey documentation to see if the number of unique households differs; if so, many observations may have been dropped, which may result in inaccurate results. N_unique for many variables often has predictable values: 2 for dummy variables such as gender (male, female) and urban (rural, urban); categorical variables should match the number of responses in the survey. The user should pay attention to the treatment of missing values, which may be coded as 0, 99, 999, and so on.

The summary statistics of mean, minimum (min), maximum (max), and percentiles are also important for checking the reliability of the data. The mean expenditure or income value should seem feasible based on knowledge or checks of different sources. For example, the mean income for a given period, such as a month, should be in line with what the user would expect, and other data sources can be used for cross-checking.

The percentiles, particularly $p99$, act as an outlier check. If the value seems much too high, there may be inaccuracies in the data, and the user may want to check these observations. Examples for such a check would include welfare and age. The max value can act as a check of a need to further process the data prior to analysis.

The “Original Data Report” in screenshot 5.2 is useful for looking at the SP programs with small samples, which cannot be disaggregated reliably because of the low precision of the estimated statistics. For example, in the “Household Budget Survey 2012” (National Institute of Statistics [Romania] 2012) conducted in Romania, the variables *redundancy pay*, *other social assistance benefits*, and *school scholarships* have 1, 59, and 133 observations, respectively. The very low number of observations indicates that these, and possibly more programs, should be checked using the standard errors option to decide if the program-specific variables should be kept as is, dropped, or aggregated into a residual other programs category. In the subsequent tables, the indicators generated for these three programs are not very informative. For example, “redundancy pay” will appear in only one region, one quintile, and so on, so the user should either drop this program or add it to another sensible category (such as unemployment benefits).

The table also includes information on the variable used to measure well-being—shown in the same cell, immediately before (*totalconsumption*)—and on the values of that variable that distinguish the poor from the non-poor. The variable to determine well-being is *welfare*, which represents household welfare and averages 18,457.3 Romanian lei, the name of the local currency units (LCU). As the welfare indicator in social protection analysis has to be defined as value per person, the per capita welfare average is lei 18,457.3/2.9 (average household size), which is lei 7,171.2. Additionally, the poverty line variable is in the second row, in this case *pl_20*, with a value of lei 3,845.33 (that is, the poorest 20 percent of the population will have welfare below that cutoff). In this example, ADePT SP uses a relative line set at the 20th percentile, so any individual with per capita welfare below lei 3,845.33 is considered poor, and those above are considered nonpoor.

The user should also always check the expanded population and household number against other data sources to check on the national representativeness of the survey data. For a survey with national coverage, the expanded population should be close to the population in the survey year, which could

Measuring the Effectiveness of Social Protection

be checked with national statistics, the UN Population (database), and other data sources. Such a check is always suggested, to see if the correct survey weights are selected, and if these weights are reasonably close to the population size (within 5–10 percent). This will not always be the case, such as with surveys that may cover only urban areas, so the user should refer to the survey methodology documentation, which most often states that the military and incarcerated populations are excluded from national surveys.

The “Original Data Report” in screenshot 5.2 is also useful to check whether the survey information for an individual program is reliable by comparing the population estimates for the number of beneficiaries with administrative data on the number of beneficiaries for the same reference period. To facilitate the comparison between survey and administrative data, the “Sample and Population Sizes” report shows the size of the program in different assistance units: households, individuals, or recipients

Screenshot 5.2: Original Data Report

Original Data Report								
	N	mean	min	max	pl	p50	p99	N unique
ROM2012 C:\Users\wb382199\Documents\ADePT\Romania 2012 HBS\rom12_sp_adept.dta	65,385	90,645,756,777,193.0	90,100,001,000,011.0	91,200,779,163,131.0	90,100,098,003,081.0	90,600,709,084,471.0	91,200,660,035,891.0	29,858
hhid (Household ID)	65,385	3,845.3	3,845.3	3,845.3	3,845.3	3,845.3	3,845.3	1
pl_20 (Line 1)	65,385	0.5	0.0	1.0	0.0	0.0	1.0	2
urban	65,385	1.5	1.0	2.0	1.0	2.0	2.0	2
urban==1 (Urban)	65,385	5.5	1.0	9.0	1.0	5.0	9.0	9
region (Regions)	65,385	18,457.3	1,622.7	162,746.7	4,351.6	16,479.6	52,535.7	29,466
welfare (Total consumption)	65,385	326.3	27.2	1,864.8	56.4	193.4	1,122.1	13,341
weight (Household weights)	65,385	1.2	1.0	5.0	1.0	1.0	3.0	5
ethnic (Ethnicity)	65,385	2.9	1.0	12.0	1.0	3.0	8.0	12
hhsiz (Special status)	65,385	2.9	1.0	12.0	1.0	3.0	8.0	12
hhsiz (Custom variable)	65,385	2.0	1.0	10.0	1.0	2.0	7.0	10
reltohed	65,385	0.5	0.0	1.0	0.0	0.0	1.0	2
reltohed==1 (Household head)	65,385	46.7	0.0	100.0	2.0	49.0	87.0	101
age (Age)	65,385	1.5	1.0	2.0	1.0	2.0	2.0	2
male	65,385	1.5	1.0	2.0	1.0	2.0	2.0	2
male==1 (Gender)	65,385	4.2	1.0	10.0	1.0	4.0	9.0	10
education (Education)	58,784	3.4	1.0	6.0	1.0	2.0	6.0	6
l1stat_ilo (Economic status)	65,385	2.0	1.0	5.0	1.0	1.0	5.0	5
marstat (Custom variable)	13,990	10,163.3	1,661.4	121,400.5	4,242.9	9,142.6	24,335.4	11,855
oldage_pen (Program 1)	839	8,715.4	3,837.5	30,258.8	4,192.1	8,156.4	20,643.3	820
antic_pen (Program 2)	2,516	6,965.4	2,258.3	20,791.4	3,943.1	6,719.9	14,264.1	2,325
disab_pen (Program 3)	1,738	5,470.3	145.7	23,029.7	1,275.1	5,193.4	11,112.1	1,575
surv_pen (Program 4)	4,513	4,647.2	888.9	9,758.9	2,370.4	4,529.7	7,013.5	2,450
famm_pen (Program 5)	423	5,646.7	2,764.9	21,755.4	2,872.7	5,497.6	9,352.4	400
unemp_ben (Program 6)	1	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	1
redundancy_pay (Program 7)	65,385	25.6	0.0	2,348.9	0.0	0.0	881.0	327
famallow (Program 8)	571	2,235.8	228.5	6,733.1	483.8	2,064.3	4,961.3	492
gmi (Program 9)	698	1,015.2	83.3	5,171.6	184.2	700.9	3,844.7	559
heating (Program 10)	253	9,003.8	1,153.7	48,594.6	1,180.3	7,496.8	37,639.9	217
child_allow (Program 11)	9,058	618.9	428.5	2,817.0	451.3	508.0	2,514.1	641
child_scholar (Program 12)	133	2,298.3	299.3	6,365.7	359.2	2,227.0	5,494.6	89
school_scholar (Program 13)	806	3,586.1	249.8	16,295.7	390.5	2,952.2	10,269.3	605
disab_allow (Program 14)	194	1,232.0	23.7	4,176.1	70.3	958.7	4,098.9	158
socassit_pen (Program 15)	324	2,830.2	212.6	22,512.1	272.1	1,799.4	10,100.0	276
warpol_priv (Program 16)	59	5,265.9	1,030.0	28,761.1	1,030.0	3,077.8	28,761.1	57
otherassit_ben (Program 17)	7,963	770.3	34.1	42,040.5	81.4	354.3	5,733.1	3,926
inkind_ben (Program 18)	2,386	4,552.9	68.5	53,597.4	348.9	2,991.2	24,895.2	1,713
remt (Program 19)	65,385	2.9	1.0	12.0	1.0	3.0	8.0	12
Generated (Household size)	65,385	7,171.3	1,622.7	81,373.3	1,787.8	6,477.5	18,080.3	29,458
Generated (Consumption per capita)								

Note: The numbers in this table are unweighted.

(with individuals always equal to or higher than the number of recipients, as several household members may benefit from a specific program). In some instances, administrative data are dispersed, and data checking is more of a challenge (see chapter 3 and box 5.1). But in most cases, this is a very useful check on data relevance for the analysis.

The “Sample and Population Sizes” table (table 5.1) gives basic information about the survey, the population that it represents, and the data on SP programs. These data include the number of households, individuals, and recipients of a program or combination of programs, expressed as simple, unweighted survey counts, as well as population estimates. The latter

Box 5.1: Comparing Survey and Administrative Data Is Not Always Simple or Straightforward

Comparing the expanded survey data with administrative data is a necessary step to learn what type of survey information is reliable. This process is not always simple or straightforward. Often, it requires good understanding of the definition of the monitoring data reported by the country.

To account for the wide range of monitoring data, ADePT gives users a wide range of ready-made estimates for comparisons, which allows the user to compare like with like. For example, program administrative data on the Romanian guaranteed minimum income are based on beneficiary families (about 192,713 families at the end of 2012), which, because of the prevalence of single-family households in Romania, is a close approximation for the number of households; hence, it has to be compared to the estimated number of beneficiaries from the survey (147,613).

In this case, the numbers are sufficiently close. To check whether statistically the survey estimate represents the population of beneficiaries, the user could opt for the tables with standard errors, get the 95 percent confidence interval for the estimates of program size, and then compare this with administrative data.

The user should be aware of whether a program is for households or individuals. The user has to be informed by good knowledge of the meaning of the monitoring data. For example, the unemployment benefits numbers should be compared with the Public Employment Office’s average number of unemployed persons receiving benefits (as opposed to registered) during the reference period. For the monthly child allowance program, the monitoring data often represent the number of children receiving payments in a given month; at times this number could be different from the number of beneficiaries, such as in January, when only part of the caseload is actually paid following the annual recertification process. Each country and program will have similar nuances that should be kept in mind.

Measuring the Effectiveness of Social Protection

Table 5.1: ADePT SP Table 1, Sample and Population Sizes

	Sample size ^a			Population ^b			Has amounts	Level ^c
	Households	Individuals	Recipients	Households	Individuals	Recipients		
All observations	29,858	65,385		7,423,550	21,336,134			
<i>For households that receive the indicated transfer only</i>								
All social protection	23,163	52,768	34,951	5,883,163	17,850,236	10,182,887	Yes	Hhold
All social insurance	17,491	33,622	23,256	3,645,006	9,537,380	4,992,819	Yes	Hhold
Old-age pension	11,111	21,430	13,930	2,285,924	5,836,199	2,910,299	Yes	Ind
Anticipated pension	774	1,749	839	184,770	541,999	201,207	Yes	Ind
Disability pension	2,210	5,402	2,516	596,331	1,859,209	683,047	Yes	Ind
Survivor pension	1,701	2,767	1,738	345,263	846,689	356,450	Yes	Ind
Farmer pension	3,945	7,827	4,513	780,462	2,162,782	900,122	Yes	Ind
All labor market programs	405	1,179	424	138,777	487,335	149,188	Yes	Hhold
Unemployment benefits	404	1,177	423	138,615	487,012	149,027	Yes	Ind
Redundancy payments	1	2	1	162	323	162	Yes	Ind
All social assistance	10,579	31,427	15,727	3,647,286	13,189,331	6,024,835	Yes	Hhold
Family allowances	438	1,996	1,996	185,972	896,088	896,088	Yes	Hhold
Guaranteed minimum income	544	1,642	571	147,613	580,289	162,242	Yes	Ind
Heating benefits	698	1,712	698	188,423	600,600	188,423	Yes	Ind
Child care benefit	252	1,029	253	154,164	635,501	155,330	Yes	Ind
Universal child allowance	5,923	23,171	9,058	2,683,084	11,067,714	4,237,703	Yes	Ind
Scholarships, money for high school	112	445	133	46,287	200,158	56,975	Yes	Ind
Disabled allowance	751	2,035	806	242,741	814,231	269,804	Yes	Ind
Social assistance pension	181	401	194	43,027	129,449	46,370	Yes	Ind
Privileges for war benefits, political prosecution, heroes, etc.	316	516	324	61,829	142,315	63,789	Yes	Ind
Other social assistance benefits	57	222	59	20,890	98,044	21,756	Yes	Ind
In-kind benefits	6,160	17,522	7,963	1,970,183	7,047,440	2,692,987	Yes	Ind
All private transfers	2,308	4,483	2,386	555,712	1,449,414	583,493	Yes	Hhold
Money from out of household	2,308	4,483	2,386	555,712	1,449,414	583,493	Yes	Hhold

a. The Sample size columns show the number of households, individuals, and recipients of SP programs in the survey.

b. The Population columns show the number of households, individuals, and recipients of SP programs, expanded to the population using expansion factors.

c. The Level column specifies whether the information on program participation is collected at individual or household level.

use the survey's expansion factors to estimate the total number of households and individuals in the population.

Further, the table indicates if each SP transfer has monetary amounts and if the transfers are at the household or individual level. The column, *amounts*, shows that an SP program variable has monetary values. This measure contrasts to participatory or dummy variables, which are binary and only indicate receipt or participation in a program. As the user will see, having monetary amounts for SP transfers allows much richer analysis and more output tables to be produced. Examples include the distribution of benefits, the simulated poverty and inequality impact, and a range of other useful performance indicators.

Table 5.1 shows the count of social protection recipients at the household level, by individual and by recipient. For example, 11,111 households and 21,430 individuals in the survey received an old-age pension, which corresponds to 2,285,924 households nationally using survey weights and 5,836,199 individuals.

The last column, *Level*, reports whether the transfer is received at the individual (*Ind*) or household (*HHold*) level. The user determined this earlier when specifying whether program variables were for the household or for individuals (see chapter 4, section “Step 1: Create an Input File”). In our example, *Family allowances* and *Money from outside the household* (remittances) are recorded at the household level. The SP aggregate categories (**all social protection**, **all social insurance**, **all labor market programs**, **all social assistance**, and **all private transfers**) are always reported at the household level.

Population Demographics

Tables 5.2a and 5.2b provide some contextual information for the analysis of SP programs, by describing the population and subgroups. The output allows the user to better understand how the population, poverty status, area of residence, and welfare differ across subgroups. The results are grouped into quintiles or deciles, poor and nonpoor, and urban and rural areas. Additional information can be calculated by region, ethnicity, and a custom variable of the user's choice (such as *age group*, *household structure*, *gender*, or *employment status*). There are two table options: In table 5.2a, households are ranked by post-transfer welfare aggregate (option V0), and in table 5.2b, households are ranked by the net of each transfer (option V2). Together the two options provide ex post and ex ante population snapshots of the effect of SP programs.

Table 5.2a: ADePT SP Table 2a, Population Demographics, V0

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
Share of total population	100.0	20.0	20.0	20.0	20.0	20.0	20.0	80.0	54.8	45.2
Share of poor population	100.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	34.5	65.5
Share of urban population	100.0	12.6	16.1	20.5	23.1	27.7	12.6	87.4	100.0	0.0
Share of rural population	100.0	28.9	24.7	19.5	16.2	10.7	28.9	71.1	0.0	100.0
Share of total consumption	100.0	8.9	13.8	17.9	23.2	36.3	8.9	91.1	61.7	38.3
Mean consumption	6,570.2	2,927.9	4,529.7	5,863.6	7,609.3	11,917.3	2,927.9	7,480.6	7,409.5	5,554.7

Note: Data are (number of individuals in group) as a share of (number of individuals in population), using household size-weighted expansion factors to estimate numbers. Welfare aggregate is expressed in monetary values. NP = nonpoor; P = poor; Qn = nth quintile.

Population Demographics

The first five rows in table 5.2a describe the population in terms of shares, and the final row shows it in terms of mean consumption. From this table, we can see that 20 percent of the population is poor and 80 percent is non-poor, with 55 percent living in urban areas and 45 percent living in rural areas. A very brief poverty profile is provided in row 2, where we see all poor are in quintile (Q) 1, and poverty prevalence is higher in rural areas at 65.5 percent of the poor compared with 34.5 percent in urban areas. When looking at the population shares in the row above, we see that even though a higher share of the population lives in urban areas, the poor population is overrepresented in rural areas. The next two rows provide information on the urban and rural populations, respectively, and we see among the urban population that the population share is increasing from Q1 to Q5, whereas an opposite trend is seen in rural areas. Next we see that Q1 commands only 8.9 percent of total consumption, far below its 20 percent population share, compared to 36.3 percent for Q5, well above its population share.

If the user selects the V2 (net of each transfer) option, it will be possible to create table 5.2b, which shows a new distribution of population based on pretransfer welfare for each program. Each quintile demarcation is therefore based on the welfare aggregate minus the transfer listed in each row. For the aggregate all social protection (line 1 in table 5.2b), in Romania, when all SP transfers are removed, Q1 has just 1.4 percent of total consumption, and

Q5 has 46.7 percent. This aggregate shows a very high pretransfer inequality. This result compares with 8.9 percent of total posttransfer welfare accruing to Q1 and 36.3 percent going to Q5 (table 5.2a), showing that social protection reduces inequality by increasing the consumption share of the poorest quintile and lowering that of Q5s. Hence, SP as a whole is progressive. The mean consumption values can also be compared between the two tables to see the magnitude of SP transfers and their relative importance for population subgroups. Before SP transfers, Q1 has a mean consumption of lei 305.6, compared to lei 2,972.9 posttransfer. The differences in pre- and posttransfer welfare decrease as the quintiles increase, also indicating that social protection on the whole is progressive.

In addition, by comparing table 5.2a and table 5.2b, one can infer the effect of each transfer and aggregate on households' welfare. We see that in Romania, the social insurance pillar of social protection is very large in magnitude and redistribution. Without social insurance benefits, the mean consumption for Q1 is only 555 LCU, (table 5.2b using the V2 option), compared to the mean consumption for Q1 after receiving all SP transfers of 2,928 LCU (table 5.2a using the V0 option). Such information is helpful to measure the magnitude of SP programs for subgroups and compare the results with administrative data.

Performance Tables

The core of the ADePT SP analysis is the 17 tables on SP performance (ADePT tables 3–19). These tables cover effectiveness (average transfer values, adequacy, coverage, distribution, targeting, and the effect on poverty and inequality), as well as efficiency (benefit-cost ratio). Each of the tables is explained below, tying in the earlier conceptual and methodological discussion.

Table 5.3 (“Average Transfer Value, per Capita”) and table 5.4 (“Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only”) present the average SP transfer values for individuals and households by key population characteristics. The basic characteristics are by quintile, poverty status, and area of residence. Additional population characteristics include optional breakdowns by region, ethnicity, and a user-defined custom variable. The tables provide mean transfer amounts for the total population and subgroups. This information helps users understand the

Measuring the Effectiveness of Social Protection

Table 5.2b: ADePT SP Table 2b Population Demographics, V2

	Total	Quintiles of per capita consumption, net of each SP transfer					Poverty status		Area of residence	
		Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
Share of total consumption										
All social protection	100.0	1.4	9.4	16.9	25.6	46.7	20.1	79.9	63.3	36.7
All social insurance	100.0	2.3	10.8	17.5	25.1	44.2	18.1	81.9	62.8	37.2
Old-age pension	100.0	4.1	12.4	18.0	24.5	41.0	14.6	85.4	60.7	39.3
Anticipated pension	100.0	8.6	13.7	17.9	23.2	36.6	9.3	90.7	61.7	38.3
Disability pension	100.0	8.1	13.5	17.8	23.4	37.1	10.1	89.9	61.6	38.4
Survivor pension	100.0	8.6	13.7	17.9	23.2	36.6	9.4	90.6	62.1	37.9
Farmer pension	100.0	8.0	13.4	17.9	23.5	37.2	10.3	89.7	63.4	36.6
All labor market programs	100.0	8.8	13.7	17.8	23.2	36.5	9.2	90.8	61.7	38.3
Unemployment benefits	100.0	8.8	13.7	17.8	23.2	36.5	9.2	90.8	61.7	38.3
Redundancy payments	100.0	8.9	13.8	17.9	23.2	36.3	8.9	91.1	61.7	38.3
All social assistance	100.0	7.5	13.3	17.9	23.7	37.5	11.0	89.0	62.0	38.0
Family allowances	100.0	8.9	13.8	17.9	23.2	36.3	9.0	91.0	61.8	38.2
Guaranteed minimum income	100.0	8.7	13.8	17.9	23.2	36.4	8.8	91.2	61.9	38.1
Heating benefits	100.0	8.9	13.8	17.8	23.2	36.3	9.0	91.0	61.7	38.3
Child care benefit	100.0	8.8	13.7	17.9	23.2	36.5	9.5	90.5	61.6	38.4
Universal child allowance	100.0	8.4	13.6	17.8	23.3	36.8	9.8	90.2	62.0	38.0
Scholarships, money for high school	100.0	8.9	13.8	17.8	23.2	36.3	9.0	91.0	61.8	38.2
Disabled allowance	100.0	8.7	13.7	17.8	23.2	36.5	9.2	90.8	61.8	38.2
Social assistance pension	100.0	8.9	13.8	17.9	23.2	36.3	8.9	91.1	61.8	38.2
Privileges for war benefits, political prosecution, heroes, etc.	100.0	8.9	13.8	17.8	23.2	36.3	8.9	91.1	61.8	38.2
Other social assistance benefits	100.0	8.9	13.8	17.8	23.2	36.3	9.0	91.0	61.8	38.2
In-kind benefits	100.0	8.8	13.8	17.9	23.2	36.3	9.4	90.6	61.6	38.4
All private transfers	100.0	8.6	13.8	17.9	23.3	36.4	9.4	90.6	61.4	38.6
Money from out of household	100.0	8.6	13.8	17.9	23.3	36.4	9.4	90.6	61.4	38.6
Mean consumption										
All social protection	4,361.8	305.6	2,059.1	3,673.4	5,586.8	10,179.0	1,683.4	7,276.2	5,041.5	3,539.4
All social insurance	4,752.2	555.1	2,575.1	4,153.3	5,971.5	10,503.4	1,848.4	7,273.1	5,446.5	3,912.0
Old-age pension	5,302.7	1,086.2	3,291.4	4,765.5	6,493.7	10,873.1	2,070.8	7,238.1	5,875.8	4,609.3
Anticipated pension	6,490.4	2,796.0	4,451.2	5,796.7	7,537.0	11,869.8	2,851.2	7,467.1	7,312.2	5,496.0
Disability pension	6,350.6	2,584.2	4,297.0	5,658.2	7,424.8	11,787.5	2,746.7	7,448.8	7,144.3	5,390.2
Survivor pension	6,483.4	2,780.9	4,443.3	5,786.1	7,530.9	11,874.2	2,846.9	7,472.9	7,348.3	5,436.8
Farmer pension	6,378.5	2,547.9	4,284.6	5,697.9	7,495.1	11,862.5	2,736.0	7,523.6	7,381.0	5,165.4
All labor market programs	6,531.7	2,865.4	4,480.6	5,829.3	7,578.7	11,902.6	2,896.6	7,479.2	7,365.5	5,522.8
Unemployment benefits	6,531.8	2,865.5	4,480.6	5,829.3	7,578.7	11,902.6	2,896.7	7,479.2	7,365.5	5,522.9
Redundancy payments	6,570.2	2,927.8	4,529.7	5,863.6	7,609.3	11,917.3	2,927.8	7,480.6	7,409.5	5,554.6
All social assistance	6,190.5	2,336.5	4,129.8	5,550.1	7,328.1	11,605.9	2,623.3	7,434.3	7,013.3	5,194.8
Family allowances	6,563.3	2,905.5	4,521.2	5,861.1	7,608.5	11,917.1	2,915.2	7,487.2	7,407.6	5,541.7
Guaranteed minimum income	6,552.4	2,856.7	4,518.5	5,858.1	7,607.5	11,918.0	2,867.0	7,485.3	7,403.9	5,522.0
Heating benefits	6,560.2	2,914.4	4,516.7	5,853.1	7,603.8	11,912.0	2,921.9	7,478.8	7,397.7	5,546.8
Child care benefit	6,504.2	2,846.3	4,452.2	5,806.2	7,549.2	11,866.6	2,902.7	7,476.4	7,317.6	5,520.0
Universal child allowance	6,443.4	2,713.1	4,373.0	5,745.9	7,523.0	11,859.8	2,820.6	7,483.9	7,293.6	5,414.6

(continued)

Table 5.2b: ADePT SP Table 2b Population Demographics, V2 (continued)

	Total	Quintiles of per capita consumption, net of each SP transfer					Poverty status		Area of residence	
		Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
Scholarships, money for high school	6,564.3	2,916.3	4,523.6	5,857.7	7,605.2	11,916.3	2,922.6	7,482.2	7,405.5	5,546.4
Disabled allowance	6,525.6	2,848.6	4,476.2	5,824.3	7,579.1	11,897.6	2,887.3	7,482.7	7,370.8	5,502.8
Social assistance pension	6,567.7	2,924.4	4,525.6	5,861.4	7,607.5	11,917.9	2,927.1	7,481.2	7,408.6	5,550.1
Privileges for war benefits, political prosecution, heroes, etc.	6,561.9	2,921.0	4,522.1	5,856.1	7,601.4	11,907.8	2,924.9	7,475.3	7,403.7	5,543.3
Other social assistance benefits	6,565.1	2,923.2	4,523.5	5,859.4	7,605.8	11,911.8	2,927.8	7,479.9	7,404.4	5,549.6
In-kind benefits	6,484.0	2,868.6	4,473.9	5,799.4	7,523.8	11,753.9	2,908.8	7,428.0	7,293.8	5,504.2
All private transfers	6,442.1	2,784.1	4,435.7	5,770.2	7,491.6	11,726.9	2,846.1	7,415.6	7,230.1	5,488.6
Money from out of household	6,442.1	2,784.1	4,435.7	5,770.2	7,491.6	11,726.9	2,846.1	7,415.6	7,230.1	5,488.6

Note: Data are (number of individuals in group)/(number of individuals in population), using household size-weighted expansion factors to estimate numbers. Welfare aggregate expressed in monetary values. NP = nonpoor; P = poor; Qn = nth quintile.

magnitude of programs and how the transfer amounts vary across groups. As with other tables, *direct and indirect beneficiaries* refers to households where at least one member is a recipient, whereas *direct beneficiaries only* refers only to the individuals receiving a transfer.

Average Transfer Value, per Capita

Table 5.3 presents the average, per capita transfer value for the total population regardless of whether an individual or households receive a transfer and presents the averages by quintile or decile and other user-specified population groups. The average transfer is estimated by dividing the sum of transfers received by a group by the number of individuals in that group, regardless of whether they are beneficiaries or not.

Whereas the per capita average transfer amount of *all social protection* benefits is 2,417.3 LCU for the total population (both recipients and nonrecipients), there is substantial variation by groups. The Q1 mean is 1,174.5 LCU, whereas the Q5 mean is 3,185.3 LCU. On average, the poor receive 1,174.5 LCU, whereas the nonpoor receive 2,727.9 LCU. The table provides information on the relative magnitudes of programs for the total population and various groups. The analyst should remember that table 5.3 indicators average transfer amounts across beneficiary and nonbeneficiary households. Hence, there are lower than average amounts calculated across only beneficiary households, as shown in table 5.4, or equal in the unlikely case that every household in a subgroup is a recipient.

Table 5.3: ADePT SP Table 3, Average Transfer Value, per Capita

	All households						Poverty status		Area of residence	
	Quintiles of per capita consumption, net of each SP transfer									
	Total	Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
All social protection	2,417.3	6,495.7	2,417.0	1,584.2	1,013.7	577.2	3,813.5	898.0	2,642.2	2,145.1
All social insurance	1,997.3	6,171.1	1,751.9	1,041.6	683.7	339.6	3,572.8	629.6	2,199.6	1,752.6
Old-age pension	1,408.9	5,034.4	915.5	554.8	360.9	181.8	3,121.5	383.3	1,738.5	1,010.1
Anticipated pension	82.1	258.4	60.0	50.1	32.5	9.7	247.8	37.7	100.3	60.1
Disability pension	223.0	645.8	192.7	137.7	87.5	51.5	581.2	113.8	269.7	166.5
Survivor pension	88.5	272.2	65.1	50.8	38.0	16.8	260.4	41.8	62.4	120.1
Farmer pension	194.8	621.6	171.3	96.0	58.0	27.3	564.1	78.7	28.7	395.8
All labor market programs	38.9	101.0	43.1	24.8	19.1	6.6	101.5	22.6	44.6	32.1
Unemployment benefits	38.9	100.8	43.1	24.8	19.1	6.6	101.2	22.6	44.6	32.0
Redundancy payments	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1
All social assistance	381.0	771.1	394.2	270.9	243.1	225.7	692.2	272.5	398.0	360.5
Family allowances	6.9	23.2	8.0	2.5	0.7	0.1	23.2	2.8	1.9	13.0
Guaranteed minimum income	17.8	74.6	9.5	4.1	1.0	0.2	74.3	3.5	5.6	32.7
Heating benefits	10.0	16.1	13.4	9.2	5.7	5.7	16.1	8.5	11.8	7.9
Child care benefit	66.6	164.9	63.2	49.6	34.9	20.4	158.8	41.7	92.9	34.8
Universal child allowance	126.8	224.1	156.5	116.0	82.1	55.3	220.5	99.9	115.8	140.1
Scholarships, money for high school	5.9	13.8	5.6	4.6	4.5	1.2	13.7	4.0	4.0	8.3
Disabled allowance	44.7	113.9	43.6	29.9	21.0	15.2	110.1	27.5	38.7	52.0
Social assistance pension	2.5	4.9	3.7	2.1	1.7	0.2	4.9	2.0	0.9	4.6
Privileges for war benefits, political prosecution, heroes, etc.	8.3	12.7	10.4	4.9	6.3	7.4	12.7	7.3	5.8	11.4
Other social assistance benefits	5.1	9.1	4.9	5.4	2.0	4.2	9.0	4.1	5.1	5.2
In-kind benefits	86.2	68.1	60.6	67.7	98.2	136.3	67.9	91.0	115.7	50.5
All private transfers	131.9	309.2	75.9	100.2	90.0	84.4	295.9	87.5	185.4	67.2
Money from out of household	131.9	309.2	75.9	100.2	90.0	84.4	295.9	87.5	185.4	67.2

Note: Table entries are the average per capita transfer received by all households in a group. It does include households that did not receive the transfer. Averages are calculated setting as expansion factor the household expansion factor multiplied by the household size. Average in monetary values. NP = nonpoor; P = poor; Qn = nth quintile.

Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only

Table 5.4, by contrast, presents average transfer amounts calculated only among households that and individuals who receive a transfer (that is, those who do not receive a given transfer are excluded from the calculation). The results of this table are very helpful for understanding the magnitudes of benefits for

Table 5.4: ADePT SP Table 4, Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only

	Total	Quintiles of per capita consumption					Poverty status		Area of residence	
		Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
Direct and indirect beneficiaries										
All social protection	2,889.3	1,276.8	2,080.1	2,615.1	3,606.0	5,598.3	1,276.8	3,343.8	3,295.3	2,441.1
All social insurance	4,468.2	2,042.8	3,032.8	3,906.3	5,126.1	7,762.4	2,042.8	4,907.4	5,247.2	3,646.2
Old-age pension	5,150.7	2,215.1	3,250.0	4,141.3	5,570.9	8,377.9	2,215.1	5,501.5	5,908.3	4,065.2
Anticipated pension	3,232.9	1,969.1	2,481.8	2,833.5	3,691.1	4,832.3	1,969.1	3,451.4	3,393.2	2,951.4
Disability pension	2,558.9	1,609.9	2,021.6	2,555.3	2,965.0	3,795.6	1,609.9	2,763.0	2,742.5	2,262.0
Survivor pension	2,231.0	1,360.6	1,663.5	2,187.4	2,596.0	3,730.7	1,360.6	2,435.5	2,382.7	2,145.0
Farmer pension	1,921.6	1,325.3	1,721.0	2,159.2	2,451.5	2,664.3	1,325.3	2,114.5	1,453.3	1,977.4
All labor market programs	1,704.3	1,496.7	1,441.5	1,709.9	1,893.3	2,324.3	1,496.7	1,754.4	1,862.9	1,490.8
Unemployment benefits	1,703.5	1,496.7	1,437.2	1,709.9	1,893.3	2,324.3	1,496.7	1,753.3	1,862.9	1,488.5
Redundancy payments	3,000.0	n.a.	3,000.0	n.a.	n.a.	n.a.	n.a.	3,000.0	n.a.	3,000.0
All social assistance	616.3	532.9	568.7	541.8	605.1	986.5	532.9	646.8	657.2	569.0
Family allowances	164.3	166.8	159.9	157.5	176.5	154.9	166.8	160.4	175.1	162.6
Guaranteed minimum income	656.1	626.7	662.5	877.6	1,058.7	1,582.5	626.7	762.7	700.3	647.7
Heating benefits	355.7	246.9	321.2	434.2	407.3	648.3	246.9	410.8	398.3	298.2
Child care benefit	2,235.9	1,564.8	1,620.9	1,943.5	2,513.1	3,709.9	1,564.8	2,301.8	2,528.1	1,627.5
Universal child allowance	244.5	264.4	251.2	223.9	227.7	237.4	264.4	236.0	238.9	250.3
Scholarships, money for high school	633.4	438.7	668.8	833.3	832.3	1,059.0	438.7	782.8	655.0	621.5
Disabled allowance	1,171.1	906.5	1,085.1	1,281.7	1,322.4	1,633.1	906.5	1,271.2	1,195.3	1,150.2
Social assistance pension	420.3	372.3	445.5	431.1	398.8	595.4	372.3	434.5	316.1	454.6
Privileges for war benefits, political prosecution, heroes, etc.	1,251.6	480.7	603.8	1,346.9	1,605.6	2,053.2	480.7	1,423.5	1,554.4	1,117.9
Other social assistance benefits	1,113.9	425.2	896.4	1,264.9	1,081.1	2,137.4	425.2	1,261.8	1,171.6	1,052.4
In-kind benefits	260.9	114.6	151.1	193.3	288.9	732.5	114.6	316.8	355.1	150.4
All private transfers	1,942.0	986.2	1,127.3	1,497.6	1,687.6	4,011.5	986.2	2,216.8	2,283.7	1,295.4
Money from out of household	1,942.0	986.2	1,127.3	1,497.6	1,687.6	4,011.5	986.2	2,216.8	2,283.7	1,295.4
Direct beneficiaries only										
All social protection	5,050.4	2,336.9	3,785.5	4,735.6	6,072.9	8,699.9	2,336.9	5,757.4	5,803.4	4,228.3
All social insurance	8,535.3	6,421.2	7,152.1	7,682.7	8,436.8	10,920.4	6,421.2	8,752.5	9,754.6	7,173.6
Old-age pension	10,329.1	8,199.5	8,964.6	9,401.7	9,853.6	12,155.4	8,199.5	10,459.8	10,863.6	9,369.1
Anticipated pension	8,708.5	7,898.9	8,041.9	7,953.2	8,277.1	10,507.7	7,898.9	8,797.5	8,877.5	8,386.3
Disability pension	6,965.2	6,188.3	6,548.8	6,815.2	7,099.2	7,783.0	6,188.3	7,076.5	7,193.2	6,557.7
Survivor pension	5,299.3	4,776.3	4,907.6	5,089.2	5,301.4	6,199.2	4,776.3	5,376.6	5,795.1	5,028.6
Farmer pension	4,617.1	4,594.2	4,462.6	4,625.1	4,690.3	4,876.1	4,594.2	4,621.8	4,409.1	4,636.3
All labor market programs	5,567.4	5,526.0	5,183.9	5,746.7	5,539.4	5,904.2	5,526.0	5,576.0	5,653.6	5,428.1
Unemployment benefits	5,566.9	5,526.0	5,179.8	5,746.7	5,539.4	5,904.2	5,526.0	5,575.4	5,653.6	5,426.4
Redundancy payments	6,000.0	n.a.	6,000.0	n.a.	n.a.	n.a.	n.a.	6,000.0	n.a.	6,000.0

(continued)

Table 5.4: ADePT SP Table 4, Average Transfer Value, per Capita, Beneficiary Households of Indicated Transfer Only (continued)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All social assistance	1,324.8	1,069.1	1,250.7	1,269.9	1,377.2	1,906.4	1,069.1	1,423.2	1,406.4	1,226.6
Family allowances	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Guaranteed minimum income	2,346.6	2,425.3	2,116.2	2,225.5	2,057.3	2,121.3	2,425.3	2,138.9	2,422.9	2,331.4
Heating benefits	1,133.7	1,051.1	1,142.4	1,330.1	938.2	1,207.2	1,051.1	1,161.5	1,274.9	944.9
Child care benefit	9,147.9	7,496.0	7,777.8	8,126.2	9,042.2	12,615.0	7,496.0	9,284.4	9,553.2	8,043.8
Universal child allowance	638.5	624.5	653.8	623.7	647.5	665.3	624.5	645.3	636.0	641.0
Scholarships, money for high school	2,225.1	1,685.3	2,415.4	2,687.3	2,709.0	2,691.0	1,685.3	2,580.5	2,241.9	2,215.5
Disabled allowance	3,534.2	3,435.5	3,395.8	3,607.9	3,577.0	3,761.9	3,435.5	3,561.8	3,400.2	3,664.1
Social assistance pension	1,173.3	1,193.8	1,313.7	1,172.3	988.4	1,031.1	1,193.8	1,168.2	1,058.0	1,203.3
Privileges for war benefits, political prosecution, heroes, etc.	2,792.3	2,037.4	1,700.6	2,984.0	2,884.0	3,416.3	2,037.4	2,872.5	3,133.2	2,617.5
Other social assistance benefits	5,020.0	2,750.7	4,095.1	3,978.4	5,607.8	8,696.2	2,750.7	5,338.7	4,814.1	5,288.6
In-kind benefits	682.8	327.5	447.4	561.4	720.5	1,383.3	327.5	803.1	871.5	426.7
All private transfers	4,824.0	3,494.0	3,448.0	4,015.3	4,119.5	6,796.1	3,494.0	5,070.8	5,479.7	3,447.8
Money from out of household	4,824.0	3,494.0	3,448.0	4,015.3	4,119.5	6,796.1	3,494.0	5,070.8	5,479.7	3,447.8

Note: Table entries are the average per capita transfer received. It excludes households that did not receive the transfer. Sample of household with positive per capita transfer. Averages are calculated across this sample, setting as expansion factor the household expansion factor multiplied by the household size. All house members, recipients or not, are counted as beneficiaries. For each household, per capita average transfers is estimated as (total transfers received)/(household size). n.a. = not applicable; NP = nonpoor; P = poor; Qn = *n*th quintile.

actual recipients and how these magnitudes vary by characteristic. The results could be cross-checked against administrative data for a more complete picture of the SP transfer landscape. The difference between tables 5.3 and 5.4 is the population used for the calculation. Table 5.3 includes all households, regardless of whether they received a benefit or not; 5.4 only includes households receiving a benefit. Because table 5.4 includes only beneficiary households, the values in the first column of table 5.4 will be larger than those in table 5.3. For example, the average value of all SP benefits for the whole population is 2,417.3 LCU per capita per year in table 5.3, but because not all households are beneficiaries, the average benefits across beneficiaries in table 5.4 increases to 2,889.3 LCU per capita per year. This increase is larger for programs that cover a small fraction of the total population, such as child care benefits: The average per capita transfer across the whole population increases from 66.6 LCU per capita per year (table 5.3) to 2,235.9 LCU per capita per year when calculated across only beneficiary households (table 5.4).

In addition, table 5.4 presents the average per capita transfer calculated over the number of (a) direct and indirect beneficiaries and (b) direct beneficiaries only; for the beneficiary population, quintiles or deciles, and other user-specified groups. The average transfer is estimated by dividing the sum of transfers received by a group by the number of direct and indirect beneficiaries in that group, or the number of direct beneficiaries for the second set of results (direct beneficiaries only). These numbers are important to consider along with other tables, such as the adequacy of benefits presented in table 5.9.

For household-level programs (such as family allowances in the Romanian case), the first column in table 5.4 can be used to check whether the average benefit in the survey is collected reliably, by comparing the survey estimate with the corresponding administrative data. In the case of the Romanian guaranteed minimum income (GMI) the benefit amount equals the difference between the GMI corresponding to the family type (single person, 2-member family, 3-member family, 4-member family, 5- and 5+-member family) and the family net income. In 2012 administrative program-level information, the average benefit amount was 2,124 LCU per family per year. This amount should be compared to 2,346 LCU per household per year on the basis of the Household Budget Survey in table 5.4. Values are close enough to validate survey results as a good approximation of reality, and survey data always differ from administrative records because of recall errors; in this case discrepancy is small. This comparison can be made for the other programs as well, once the two quantities are expressed in the same unit of measure (same assistance unit, same welfare aggregate, and same recall period or frequency of payment).

The second part of the table for direct beneficiaries reports that data are not available (n.a.) for programs that are collected in the survey at the household level (such as remittances). In table 5.5, n.a. is also reported for some programs and groups when not enough observations are available to generate the indicator; for example, only one household in quintile 2 reported receiving redundancy payments based on the report table.

The variation of the average per capita transfer for a specific program across quintiles indicates whether the benefit formula is, *de facto*, progressive or not. If the per capita benefit level falls from the poorer quintiles to the richer ones, it indicates that the benefit formula is progressive. This progressivity of the benefit formula is present, for example, for the GMI program in table 5.4 but not for in-kind benefits, where amounts received are greater for the richer quintiles.

Coverage

Table 5.5 presents the coverage of a program or combination of programs, where coverage is presented as the proportion of (a) direct and indirect beneficiaries and (b) direct beneficiaries only, in each group. This table indicates how many beneficiaries exist in each partition, relative to the total population in the partition. The indicator is calculated for the total population, quintiles or deciles, area of residence, and other user-specified groups. Coverage is an important indicator of social protection and

Table 5.5: ADePT SP Table 5, Coverage

	Total	Quintiles of per capita consumption					Poverty status		Area of residence	
		Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
Direct and indirect beneficiaries										
All social protection	83.7	92.0	89.6	86.8	81.1	68.8	92.0	81.6	80.2	87.9
All social insurance	44.7	34.3	47.1	48.0	50.1	43.9	34.3	47.3	41.9	48.1
Old-age pension	27.4	14.6	26.1	29.4	33.1	33.5	14.6	30.5	29.4	24.8
Anticipated pension	2.5	1.9	2.7	2.7	2.7	2.7	1.9	2.7	3.0	2.0
Disability pension	8.7	7.7	9.8	9.3	9.7	7.0	7.7	9.0	9.8	7.4
Survivor pension	4.0	3.8	4.4	4.0	4.9	2.8	3.8	4.0	2.6	5.6
Farmer pension	10.1	12.4	14.0	11.9	8.5	3.9	12.4	9.6	2.0	20.0
All labor market programs	2.3	2.2	2.7	3.2	2.0	1.3	2.2	2.3	2.4	2.2
Unemployment benefits	2.3	2.2	2.7	3.2	2.0	1.3	2.2	2.3	2.4	2.1
Redundancy payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	61.8	82.8	69.3	62.7	52.5	41.8	82.8	56.6	60.6	63.3
Family allowances	4.2	13.0	5.7	1.6	0.5	0.2	13.0	2.0	1.1	8.0
Guaranteed minimum income	2.7	10.7	1.9	0.7	0.2	0.1	10.7	0.7	0.8	5.1
Heating benefits	2.8	4.7	3.9	2.6	1.6	1.2	4.7	2.3	3.0	2.6
Child care benefit	3.0	1.3	4.6	3.3	3.0	2.6	1.3	3.4	3.7	2.1
Universal child allowance	51.9	77.2	62.4	53.7	40.1	25.9	77.2	45.5	48.5	56.0
Scholarships, money for high school	0.9	2.0	1.2	0.7	0.5	0.3	2.0	0.7	0.6	1.3
Disabled allowance	3.8	5.2	4.7	4.3	3.0	1.9	5.2	3.5	3.2	4.5
Social assistance pension	0.6	0.7	1.0	0.6	0.6	0.1	0.7	0.6	0.3	1.0
Privileges for war benefits, political prosecution, heroes, etc.	0.7	0.6	0.7	0.6	0.6	0.8	0.6	0.7	0.4	1.0
Other social assistance benefits	0.5	0.4	0.7	0.4	0.5	0.4	0.4	0.5	0.4	0.5
In-kind benefits	33.0	45.7	35.8	31.4	26.9	25.4	45.7	29.9	32.6	33.6
All private transfers	6.8	7.6	5.6	6.4	6.5	7.9	7.6	6.6	8.1	5.2
Money from out of household	6.8	7.6	5.6	6.4	6.5	7.9	7.6	6.6	8.1	5.2
Direct beneficiaries only										
All social protection	47.7	49.3	49.0	47.9	48.2	44.3	49.3	47.3	45.5	50.4
All social insurance	23.4	10.9	20.0	24.4	30.5	31.2	10.9	26.5	22.5	24.4

(continued)

Table 5.5: ADePT SP Table 5, Coverage (continued)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
Old-age pension	13.6	3.9	9.5	12.9	18.7	23.1	3.9	16.1	16.0	10.8
Anticipated pension	0.9	0.5	0.8	1.0	1.2	1.2	0.5	1.1	1.1	0.7
Disability pension	3.2	2.0	3.0	3.5	4.1	3.4	2.0	3.5	3.7	2.5
Survivor pension	1.7	1.1	1.5	1.7	2.4	1.7	1.1	1.8	1.1	2.4
Farmer pension	4.2	3.6	5.4	5.6	4.4	2.1	3.6	4.4	0.7	8.5
All labor market programs	0.7	0.6	0.8	0.9	0.7	0.5	0.6	0.7	0.8	0.6
Unemployment benefits	0.7	0.6	0.8	0.9	0.7	0.5	0.6	0.7	0.8	0.6
Redundancy payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	28.2	39.2	30.8	26.6	23.0	21.6	39.2	25.5	28.2	28.3
Family allowances	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Guaranteed minimum income	0.8	2.8	0.6	0.3	0.1	0.0	2.8	0.3	0.2	1.4
Heating benefits	0.9	1.1	1.1	0.9	0.7	0.7	1.1	0.8	0.9	0.8
Child care benefit	0.7	0.3	1.0	0.8	0.8	0.8	0.3	0.8	1.0	0.4
Universal child allowance	19.9	32.7	24.0	19.3	14.1	9.2	32.7	16.7	18.2	21.9
Scholarships, money for high school	0.3	0.5	0.3	0.2	0.2	0.1	0.5	0.2	0.2	0.4
Disabled allowance	1.3	1.4	1.5	1.5	1.1	0.8	1.4	1.2	1.1	1.4
Social assistance pension	0.2	0.2	0.4	0.2	0.3	0.0	0.2	0.2	0.1	0.4
Privileges for war benefits, political prosecution, heroes, etc.	0.3	0.1	0.3	0.3	0.4	0.5	0.1	0.3	0.2	0.4
Other social assistance benefits	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
In-kind benefits	12.6	16.0	12.1	10.8	10.8	13.4	16.0	11.8	13.3	11.8
All private transfers	2.7	2.1	1.8	2.4	2.7	4.6	2.1	2.9	3.4	2.0
Money from out of household	2.7	2.1	1.8	2.4	2.7	4.6	2.1	2.9	3.4	2.0

Note: Program coverage is the portion of population in each group that receives the transfer. Specifically, coverage is: (Number of individuals in the group who lives in a household where at least one member receives the transfer)/(Number of individuals in the group). Program coverage is calculated setting as expansion factor the household expansion factor multiplied by the household size. n.a. = not applicable; NP = nonpoor; P = poor; Qn = nth quintile.

labor performance. It allows policy makers to know the share of households and individuals receiving each program, which may inform decisions to scale up or scale down a program. The information provided by ADePT SP can be compared with administrative data to check for possible under- or overreporting, which in turn may lead to improving program controls.

Conceptually, program coverage is a necessary, but not sufficient, condition for a program to be effective for its target group: only if the program reaches its intended beneficiaries (targeting) and provides adequate benefits will it have a chance to ameliorate the condition for which it was initially designed.

The interpretation of the coverage statistic is straightforward. For example, table 5.5 shows which programs are the largest in direct and indirect beneficiaries by comparing the statistics in column 2, or total program coverage. The three largest SP programs are, in order, the universal child benefit (reaching

households accounting for 51.9 percent of the population), in-kind benefits (with coverage of 33.0 percent), and old-age pension (with coverage of 27.4 percent). The coverage of households with a social assistance program is 61.8 percent of the entire population, which is lower than the sum of the coverage of each social assistance program, given that some beneficiaries receive more than one social assistance program. The same relationship holds for the coverage of all overall SP programs. The other columns indicate the proportion of a quintile, poor and nonpoor, and area of residence covered by each program or combination of programs. Because of high progressivity, the coverage of the poorest quintile with social assistance programs is higher than across the population: 82.8 percent compared to 61.8 percent. Similarly, the coverage of the poorest quintile by the GMI program is substantially higher than the population average: 10.7 percent compared to only 2.7 percent, an indication of strong targeting (as we will see in table 5.7).

The bottom part of table 5.5 reports information on individuals and not households. For example, we can see the proportion of pensioners in a given quintile, as opposed to the statistic in the upper part of the table, which is the number of people in households with at least one pension recipient (direct and indirect beneficiaries of a program). The coverage of direct and indirect beneficiaries will always be larger or, in rare cases, equal to direct beneficiaries only.

Distribution of Beneficiaries

Table 5.6 presents the distribution of beneficiaries (equivalent to beneficiary incidence), that is, the proportion of direct and indirect beneficiaries in each group. Beneficiary incidence is calculated for the total population,

Table 5.6: ADePT SP Table 6, Distribution of Beneficiaries

	Total	Quintiles of per capita consumption					Poverty status		Area of residence	
		Q1	Q2	Q3	Q4	Q5	P	NP	Urban	Rural
Direct and indirect beneficiaries										
All social protection	100.0	22.0	21.4	20.8	19.4	16.5	22.0	78.0	52.5	47.5
All social insurance	100.0	15.3	21.1	21.5	22.4	19.7	15.3	84.7	51.3	48.7
Old-age pension	100.0	10.7	19.1	21.5	24.2	24.5	10.7	89.3	58.9	41.1
Anticipated pension	100.0	14.7	21.3	21.6	21.4	20.9	14.7	85.3	63.7	36.3
Disability pension	100.0	17.7	22.5	21.3	22.3	16.1	17.7	82.3	61.8	38.2
Survivor pension	100.0	19.0	22.0	20.4	24.6	14.0	19.0	81.0	36.2	63.8
Farmer pension	100.0	24.4	27.7	23.5	16.7	7.6	24.4	75.6	10.7	89.3

(continued)

Table 5.6: ADePT SP Table 6, Distribution of Beneficiaries (continued)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All labor market programs	100.0	19.4	24.0	27.9	17.8	11.0	19.4	80.6	57.4	42.6
Unemployment benefits	100.0	19.4	23.9	27.9	17.8	11.0	19.4	80.6	57.4	42.6
Redundancy payments	100.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
All social assistance	100.0	26.8	22.4	20.3	17.0	13.5	26.8	73.2	53.6	46.4
Family allowances	100.0	61.9	27.2	7.6	2.5	0.8	61.9	38.1	13.9	86.1
Guaranteed minimum income	100.0	78.4	14.2	5.2	1.7	0.4	78.4	21.6	16.0	84.0
Heating benefits	100.0	33.6	27.6	18.7	11.3	8.7	33.6	66.4	57.5	42.5
Child care benefit	100.0	8.9	31.1	22.0	20.3	17.6	8.9	91.1	67.6	32.4
Universal child allowance	100.0	29.8	24.1	20.7	15.5	10.0	29.8	70.2	51.2	48.8
Scholarships, money for high school	100.0	43.4	25.5	13.9	11.2	5.9	43.4	56.6	35.4	64.6
Disabled allowance	100.0	27.5	24.5	22.5	15.9	9.7	27.5	72.5	46.4	53.6
Social assistance pension	100.0	22.8	34.5	19.1	20.9	2.7	22.8	77.2	24.8	75.2
Privileges for war benefits, political prosecution, heroes, etc.	100.0	18.2	21.4	16.7	19.4	24.3	18.2	81.8	30.6	69.4
Other social assistance benefits	100.0	17.7	28.6	15.8	21.6	16.4	17.7	82.3	51.6	48.4
In-kind benefits	100.0	27.6	21.6	19.0	16.3	15.4	27.6	72.4	54.0	46.0
All private transfers	100.0	22.3	16.5	18.7	19.2	23.2	22.3	77.7	65.4	34.6
Money from out of household	100.0	22.3	16.5	18.7	19.2	23.2	22.3	77.7	65.4	34.6
<i>Direct beneficiaries only</i>										
All social protection	100.0	20.7	20.5	20.1	20.2	18.6	20.7	79.3	52.2	47.8
All social insurance	100.0	9.3	17.1	20.9	26.0	26.7	9.3	90.7	52.8	47.2
Old-age pension	100.0	5.8	13.9	19.0	27.5	33.9	5.8	94.2	64.2	35.8
Anticipated pension	100.0	9.9	17.7	20.8	25.7	25.9	9.9	90.1	65.6	34.4
Disability pension	100.0	12.5	18.9	21.8	25.4	21.4	12.5	87.5	64.1	35.9
Survivor pension	100.0	12.9	17.7	20.8	28.6	20.0	12.9	87.1	35.3	64.7
Farmer pension	100.0	16.9	25.7	26.4	21.0	10.0	16.9	83.1	8.4	91.6
All labor market programs	100.0	17.2	21.8	27.1	19.9	14.1	17.2	82.8	61.8	38.2
Unemployment benefits	100.0	17.2	21.7	27.1	19.9	14.1	17.2	82.8	61.8	38.2
Redundancy payments	100.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
All social assistance	100.0	27.8	21.8	18.8	16.3	15.3	27.8	72.2	54.6	45.4
Family allowances	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Guaranteed minimum income	100.0	72.5	15.9	7.4	3.2	1.0	72.5	27.5	16.5	83.5
Heating benefits	100.0	25.2	24.7	19.5	15.6	14.9	25.2	74.8	57.2	42.8
Child care benefit	100.0	7.6	26.5	21.5	23.1	21.2	7.6	92.4	73.1	26.9
Universal child allowance	100.0	32.9	24.1	19.4	14.2	9.3	32.9	67.1	50.2	49.8
Scholarships, money for high school	100.0	39.7	24.8	15.2	12.1	8.2	39.7	60.3	36.3	63.7
Disabled allowance	100.0	21.9	23.6	24.1	17.7	12.7	21.9	78.1	49.2	50.8
Social assistance pension	100.0	19.9	32.6	19.6	23.5	4.3	19.9	80.1	20.7	79.3
Privileges for war benefits, political prosecution, heroes, etc.	100.0	9.6	16.9	16.8	24.1	32.5	9.6	90.4	33.9	66.1
Other social assistance benefits	100.0	12.3	28.3	22.6	18.7	18.1	12.3	87.7	56.6	43.4
In-kind benefits	100.0	25.3	19.1	17.2	17.1	21.3	25.3	74.7	57.6	42.4

(continued)

Table 5.6: ADePT SP Table 6, Distribution of Beneficiaries (continued)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All private transfers	100.0	15.7	13.4	17.3	19.6	34.0	15.7	84.3	67.7	32.3
Money from out of household	100.0	15.7	13.4	17.3	19.6	34.0	15.7	84.3	67.7	32.3

Note: Beneficiaries' incidence shows the proportion of beneficiaries in each group. Specifically, beneficiaries' incidence is: (Number of individuals in the group who live in a household where at least one member receives the transfer)/(Total number of direct and indirect beneficiaries). Beneficiaries' incidence is calculated setting as expansion factor the household expansion factor multiplies by the household size. n.a. = not applicable; NP = nonpoor; P = poor; Qn = nth quintile.

quintiles or deciles, and other user-specified groups. It gives the share of beneficiaries found in each subgroup. Because these are shares of benefit recipients, each row of quintiles' shares must sum to 100 percent. Programs that are better targeted to the poor will have high shares of beneficiaries in the lowest quintiles or deciles. As a guide for analysts, beneficiary incidence tells how SP transfers are distributed across beneficiaries (people), whereas the distribution of benefits describes the distribution of benefits (money).

Table 5.6 ranks the household into quintiles based on posttransfer consumption. Using another counterfactual (V1–V3) will lead to a different ranking and results for incidence across quintiles. We see that of all direct and indirect social protection beneficiaries, 22.0 percent are in Q1, whereas only 16.5 percent are in Q5. When using poverty status, we see that counterintuitively, most social assistance beneficiaries are nonpoor (73.2 percent), and as expected, most social insurance beneficiaries are nonpoor (84.7 percent). Of course, this is a result of the adopted counterfactual scenario: many programs are intended to keep beneficiaries out of poverty, and when we look at post-transfer welfare, the success of these programs means that after the transfer, they go to the nonpoor. This example shows that it is necessary to use both post- and pretransfer distribution of welfare to calculate the incidence of social protection and labor programs.

Distribution of Benefits

The term *benefit incidence* (discussed in chapter 2) is used interchangeably with the distribution of benefits and targeting accuracy. Table 5.7 gives us the targeting accuracy measure we find in the literature; it measures the extent to which a program's benefits are reaching the poorest or desired characteristics. Note that the interpretation of the results is similar to table 5.6.

Table 5.7: ADePT SP Table 7, Distribution of Benefits (Targeting Accuracy)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All social protection	100.0	9.7	15.4	18.8	24.2	31.9	9.7	90.3	59.8	40.2
All social insurance	100.0	7.0	14.3	18.8	25.7	34.2	7.0	93.0	60.3	39.7
Old-age pension	100.0	4.6	12.1	17.3	26.2	39.9	4.6	95.4	67.6	32.4
Anticipated pension	100.0	9.0	16.3	19.0	24.5	31.2	9.0	91.0	66.9	33.1
Disability pension	100.0	11.1	17.8	21.3	25.9	23.9	11.1	88.9	66.2	33.8
Survivor pension	100.0	11.6	16.4	20.0	28.6	23.4	11.6	88.4	38.6	61.4
Farmer pension	100.0	16.9	24.8	26.4	21.3	10.6	16.9	83.1	8.1	91.9
All labor market programs	100.0	17.0	20.3	27.9	19.8	15.0	17.0	83.0	62.7	37.3
Unemployment benefits	100.0	17.1	20.2	28.0	19.8	15.0	17.1	82.9	62.8	37.2
Redundancy payments	100.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
All social assistance	100.0	23.2	20.7	17.8	16.7	21.6	23.2	76.8	57.2	42.8
Family allowances	100.0	62.8	26.5	7.3	2.7	0.8	62.8	37.2	14.8	85.2
Guaranteed minimum income	100.0	74.9	14.4	7.0	2.8	0.9	74.9	25.1	17.1	82.9
Heating benefits	100.0	23.4	24.9	22.9	12.9	15.9	23.4	76.6	64.3	35.7
Child care benefit	100.0	6.3	22.6	19.1	22.9	29.2	6.3	93.7	76.4	23.6
Universal child allowance	100.0	32.2	24.7	19.0	14.4	9.7	32.2	67.8	50.0	50.0
Scholarships, money for high school	100.0	30.1	26.9	18.3	14.8	9.9	30.1	69.9	36.6	63.4
Disabled allowance	100.0	21.2	22.7	24.6	17.9	13.5	21.2	78.8	47.4	52.6
Social assistance pension	100.0	20.2	36.5	19.6	19.8	3.8	20.2	79.8	18.6	81.4
Privileges for war benefits, political prosecution, heroes, etc.	100.0	7.0	10.3	18.0	24.9	39.8	7.0	93.0	38.0	62.0
Other social assistance benefits	100.0	6.7	23.1	17.9	20.9	31.4	6.7	93.3	54.3	45.7
In-kind benefits	100.0	12.1	12.5	14.1	18.0	43.2	12.1	87.9	73.5	26.5
All private transfers	100.0	11.3	9.6	14.4	16.7	47.9	11.3	88.7	76.9	23.1
Money from out of household	100.0	11.3	9.6	14.4	16.7	47.9	11.3	88.7	76.9	23.1

Note: Benefits' incidence is the transfer amount received by the group as a percent of total transfers received by the population. Specifically, benefits' incidence is " (Sum of all transfers received by all individuals in the group)/(Sum of all transfers received by all individuals in the population). Aggregated transfer amounts are estimated using household size-weighted expansion factors. NP = nonpoor; P = poor; Qn = nth quintile.

Table 5.7 presents benefit incidence, the transfer amount received by a group as a percentage of the total transfers received by the population. Benefit incidence is calculated for the total population, quintiles or deciles, and other user-specified groups. We see that 9.7 percent of all transfers go to Q1, compared to 31.9 percent accruing to Q5, and so social protection as a whole is regressive. When looking at individual programs we see many are progressive, such as the universal child allowance, where Q1 receives 32.2 percent of benefits and Q5 receives 9.7 percent.

The interpretation of the statistics from table 5.7 is similar to that in table 5.6, but this time the shares refer to the total value of the transfers, not to the number of beneficiaries.

Table 5.8: ADePT SP Table 8, Relative Incidence

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All social protection	36.8	40.1	41.1	38.7	38.5	32.3	40.1	36.5	35.7	38.6
All social insurance	30.4	23.9	31.6	32.0	33.8	28.6	23.9	31.0	29.7	31.6
Old-age pension	21.4	11.0	18.8	20.7	24.3	23.6	11.0	22.5	23.5	18.2
Anticipated pension	1.2	1.3	1.5	1.3	1.3	1.1	1.3	1.2	1.4	1.1
Disability pension	3.4	4.2	4.4	4.0	3.8	2.2	4.2	3.3	3.6	3.0
Survivor pension	1.3	1.8	1.6	1.5	1.7	0.9	1.8	1.3	0.8	2.2
Farmer pension	3.0	5.6	5.3	4.4	2.7	0.9	5.6	2.7	0.4	7.1
All labor market programs	0.6	1.1	0.9	0.9	0.5	0.2	1.1	0.5	0.6	0.6
Unemployment benefits	0.6	1.1	0.9	0.9	0.5	0.2	1.1	0.5	0.6	0.6
Redundancy payments	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	5.8	15.1	8.7	5.8	4.2	3.5	15.1	4.9	5.4	6.5
Family allowances	0.1	0.7	0.2	0.0	0.0	0.0	0.7	0.0	0.0	0.2
Guaranteed minimum income	0.3	2.3	0.3	0.1	0.0	0.0	2.3	0.1	0.1	0.6
Heating benefits	0.2	0.4	0.3	0.2	0.1	0.1	0.4	0.1	0.2	0.1
Child care benefit	1.0	0.7	1.7	1.1	1.0	0.8	0.7	1.0	1.3	0.6
Universal child allowance	1.9	7.0	3.5	2.1	1.2	0.5	7.0	1.4	1.6	2.5
Scholarships, money for high school	0.1	0.3	0.2	0.1	0.1	0.0	0.3	0.1	0.1	0.1
Disabled allowance	0.7	1.6	1.1	0.9	0.5	0.3	1.6	0.6	0.5	0.9
Social assistance pension	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Privileges for war benefits, political prosecution, heroes, etc.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Other social assistance benefits	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
In-kind benefits	1.3	1.8	1.2	1.0	1.0	1.6	1.8	1.3	1.6	0.9
All private transfers	2.0	2.6	1.4	1.6	1.4	2.7	2.6	2.0	2.5	1.2
Money from out of household	2.0	2.6	1.4	1.6	1.4	2.7	2.6	2.0	2.5	1.2

Note: Relative incidence is the transfer amount received by a group as share of total welfare aggregate of the group. Relative incidence is calculated setting s expansion factor the household expansion factor multiplied by the household size. Incidence expressed in monetary values. NP = nonpoor; P = poor; Qn = nth quintile.

Relative Incidence

Table 5.8 presents the relative incidence of a program or combination of programs, where relative incidence is the value of the transfers received by a group divided by the total welfare aggregate of that group. Unlike table 5.7 (“Distribution of Benefits”), the denominator of these indicators is not the sum of transfers received by the population but is the total level of the welfare aggregate of each category. In table 5.8, we therefore see that the level of SP transfers represents 35.7 percent of the level of consumption in the urban population and 38.6 percent in rural areas; therefore, relative incidence represents a larger share of average rural welfare than of urban areas. Incidence is calculated for the total, quintiles or deciles, and other user-specified groups.

As with the other tables, table 5.8 ranks the household into quintiles based on consumption, posttransfer (as option V0 was selected to generate all tables). We also see that for the poorest quintile, SP and labor transfers constitute 40.1 percent of their overall welfare, a very high share. But even for the rich it is 32.3 percent. The comparison of poor and nonpoor shows some degree of redistribution, but we can say that social protection and labor benefits are predominately universal rather than targeted in Romania.

Adequacy

Table 5.9 presents the adequacy of a program or combination of programs across all households, where adequacy (or generosity) is the value of the transfers received by a group divided by the total consumption or income of

Table 5.9: ADePT SP Table 9, Adequacy

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
All social protection	46.6	43.7	45.9	44.6	47.5	48.4	43.7	46.9	47.6	45.2
All social insurance	66.9	66.5	67.1	66.6	67.2	67.0	66.5	67.0	72.1	60.4
Old-age pension	71.7	70.5	71.8	70.6	72.9	71.6	70.5	71.8	77.4	62.2
Anticipated pension	48.4	63.1	53.6	48.9	48.7	42.7	63.1	47.3	48.8	47.5
Disability pension	40.5	53.7	44.1	43.1	39.0	34.0	53.7	39.2	41.1	39.2
Survivor pension	36.2	43.3	37.3	37.0	34.1	34.7	43.3	35.5	37.9	35.2
Farmer pension	35.3	43.4	38.2	37.2	32.4	24.7	43.4	34.0	27.4	36.2
All labor market programs	28.9	47.9	31.4	29.5	24.7	21.0	47.9	26.7	30.5	26.6
Unemployment benefits	28.9	47.9	31.3	29.5	24.7	21.0	47.9	26.7	30.5	26.5
Redundancy payments	70.1	n.a.	70.1	n.a.	n.a.	n.a.	n.a.	70.1	n.a.	70.1
All social assistance	10.6	18.4	12.6	9.3	8.0	8.5	18.4	9.4	9.9	11.6
Family allowances	4.5	5.9	3.6	2.7	2.4	1.7	5.9	3.2	5.1	4.4
Guaranteed minimum income	21.2	25.0	14.8	14.5	14.5	15.7	25.0	14.7	23.4	20.8
Heating benefits	6.9	8.2	7.1	7.4	5.5	5.8	8.2	6.5	6.9	6.8
Child care benefit	34.0	48.5	35.9	33.6	32.8	31.9	48.5	33.4	35.1	30.9
Universal child allowance	4.5	9.2	5.6	3.8	3.0	2.1	9.2	3.6	3.9	5.3
Scholarships, money for high school	13.5	15.6	15.1	13.6	11.1	9.8	15.6	12.8	12.8	13.9
Disabled allowance	21.1	29.7	24.2	22.2	17.3	14.5	29.7	19.6	19.2	23.2
Social assistance pension	7.9	12.5	9.7	7.6	5.2	4.7	12.5	7.2	6.4	8.4
Privileges for war benefits, political prosecution, heroes, etc.	18.1	15.3	13.3	23.0	21.5	16.9	15.3	18.4	16.3	19.4
Other social assistance benefits	17.6	15.0	19.5	22.1	14.7	17.4	15.0	17.9	19.8	15.6
In-kind benefits	4.4	3.9	3.3	3.3	3.8	6.2	3.9	4.5	5.1	3.2
All private transfers	28.5	34.4	24.7	25.1	22.2	32.6	34.4	27.8	30.5	23.2
Money from out of household	28.5	34.4	24.7	25.1	22.2	32.6	34.4	27.8	30.5	23.2

Note: Adequacy is the mean transfer amount received by group as a share of the total welfare of the beneficiaries in the group. Specifically, adequacy is: (transfer amount received by a group)/(Total welfare aggregate of the beneficiaries in that group). n.a. = not applicable; NP = nonpoor; P = poor; Qn = nth quintile.

the beneficiaries in that group. Different from the relative incidence, the denominator in the adequacy indicator refers to total welfare of beneficiaries only in each group (as opposed to the welfare of the full population). Adequacy therefore measures the share of welfare of *recipients* represented by each transfer. For the beneficiaries of SP programs, SP transfers represent 46.6 percent of welfare. For Q1 beneficiaries SP transfers are 43.7 percent, and for Q5 beneficiaries SP transfers represent 48.4 percent. The results are driven by social insurance, the largest transfer type of all SP programs, which tends to be regressive. Social assistance is progressive, with the adequacy of Q1 beneficiaries being 18.4 percent and that of Q5 being 8.5 percent.

Undercoverage and Leakage

Table 5.10 is best suited for assessing antipoverty programs, by presenting coverage of the poor, undercoverage (of the poor), leakage rates (share of

Table 5.10: ADePT SP Table 10, Undercoverage and Leakage

	<i>Total poor</i>				
	<i>Coverage of the poor (1)</i>	<i>Under- coverage (2)</i>	<i>Leakage (% of beneficiaries) (3)</i>	<i>Leakage (benefits) (4)</i>	<i>Targetting differential (5) = (1) – (3)</i>
<i>Direct and indirect beneficiaries</i>					
All social protection	92.0	8.0	78.0	90.3	14.0
All social insurance	34.3	65.7	84.7	93.0	-50.4
Old-age pension	14.6	85.4	89.3	95.4	-74.7
Anticipated pension	1.9	98.1	85.3	91.0	-83.4
Disability pension	7.7	92.3	82.3	88.9	-74.6
Survivor pension	3.8	96.2	81.0	88.4	-77.2
Farmer pension	12.4	87.6	75.6	83.1	-63.2
All labor market programs	2.2	97.8	80.6	83.0	-78.4
Unemployment benefits	2.2	97.8	80.6	82.9	-78.4
Redundancy payments	0.0	100.0	100.0	100.0	-100.0
All social assistance	82.8	17.2	73.2	76.8	9.6
Family allowances	13.0	87.0	38.1	37.2	-25.1
Guaranteed minimum income	10.7	89.3	21.6	25.1	-10.9
Heating benefits	4.7	95.3	66.4	76.6	-61.6
Child care benefit	1.3	98.7	91.1	93.7	-89.7
Universal child allowance	77.2	22.8	70.2	67.8	7.0
Scholarships, money for high school	2.0	98.0	56.6	69.9	-54.5
Disabled allowance	5.2	94.8	72.5	78.8	-67.3
Social assistance pension	0.7	99.3	77.2	79.8	-76.5
Privileges for war benefits, political prosecution, heroes, etc.	0.6	99.4	81.8	93.0	-81.2
In-kind benefits	45.7	54.3	72.4	87.9	-26.7

(continued)

Table 5.10: ADePT SP Table 10, Undercoverage and Leakage (continued)

	<i>Total poor</i>				
	<i>Coverage of the poor</i> (1)	<i>Under-coverage</i> (2)	<i>Leakage (% of beneficiaries)</i> (3)	<i>Leakage (benefits)</i> (4)	<i>Targetting differential</i> (5) = (1) – (3)
All private transfers	7.6	92.4	77.7	88.7	–70.1
Money from out of household	7.6	92.4	77.7	88.7	–70.1
<i>Direct beneficiaries only</i>					
All social protection	49.3	50.7	79.3	90.4	–30.0
All social insurance	10.9	89.1	90.7	93.0	–79.8
Old-age pension	3.9	96.1	94.2	95.4	–90.3
Anticipated pension	0.5	99.5	90.1	91.0	–89.6
Disability pension	2.0	98.0	87.5	88.9	–85.5
Survivor pension	1.1	98.9	87.1	88.4	–86.1
Farmer pension	3.6	96.4	83.1	83.1	–79.5
All labor market programs	0.6	99.4	82.8	83.0	–82.2
Unemployment benefits	0.6	99.4	82.8	82.9	–82.2
Redundancy payments	0.0	100.0	100.0	100.0	–100.0
All social assistance	39.2	60.8	72.2	77.6	–33.0
Family allowances	n.a.	n.a.	n.a.	n.a.	n.a.
Guaranteed minimum income	2.8	97.2	27.5	25.1	–24.7
Heating benefits	1.1	98.9	74.8	76.6	–73.7
Child care benefit	0.3	99.7	92.4	93.7	–92.1
Universal child allowance	32.7	67.3	67.1	67.8	–34.4
Scholarships, money for high school	0.5	99.5	60.3	69.9	–59.8
Disabled allowance	1.4	98.6	78.1	78.8	–76.8
Social assistance pension	0.2	99.8	80.1	79.8	–79.9
Privileges for war benefits, political prosecution, heroes, etc.	0.1	99.9	90.4	93.0	–90.3
Other social assistance benefits	0.1	99.9	87.7	93.3	–87.6
In-kind benefits	16.0	84.0	74.7	87.9	–58.7
All private transfers	2.1	97.9	84.3	88.7	–82.2
Money from out of household	2.1	97.9	84.3	88.7	–82.2

Note: Undercoverage is the percent of poor individuals that do not receive transfer. Leakage is the percent of individuals that receive transfer and are not poor. Sample of all households. Undercoverage and leakage are calculated across this sample, setting as expansion factor the household expansion factor multiplies by the household size. The targeting differential is the difference between the coverage rate and the participation rate for nonpoor. n.a. = not applicable.

nonpoor receiving a transfer), and the targeting differential of a program or combination of programs for direct as well as direct and indirect beneficiaries. This table represents the most crude and simplistic assessment of targeting. All people are either poor or nonpoor; no extent of poverty matters. Programs either includes the poor or excludes them (or undercovers). Undercoverage is the percentage of poor individuals who do not receive a transfer, leakage (number of beneficiaries) is the percentage of individuals who receive a transfer and are not poor, and leakage (benefits) is the share

of benefits accruing to the nonpoor. Finally, the targeting differential is the difference in the coverage of the poor minus coverage of the nonpoor, where a higher and more positive number indicates better targeting of beneficiaries, and a lower more negative value indicates worse targeting. The table reports indicators for direct beneficiaries only (top panel) and for both direct and indirect beneficiaries (bottom panel of the table).

The indicators of coverage and undercoverage will depend on the poverty line. Hence, the results presented in table 5.10 are sensitive to the poverty line chosen. If the selected poverty line is well above the eligibility threshold for the program, the user should expect low coverage of the poor.

Column 1 indicates the share of poor people are covered by the program (and is equivalent to the column with data on coverage of the poor in table 5.5), and 100 minus the coverage rate gives the undercoverage rate in column 2. Column 3 gives the share of beneficiaries that are nonpoor, or leakages in terms of beneficiaries. Column 4 reports the share of benefits that accrue to nonpoor beneficiaries, or leakage in terms of benefits. Column 5 indicates the targeting differential that measures how effective the antipoverty targeting is and is equal to the coverage minus the leakage. A good program has a targeting differential close to 100; a bad program has a targeting differential close to -100 . This is the crudest measure of targeting among all possible measures. Much better assessments can be done with other indexes that we are going to discuss below. But this one can be computed with only participatory dummies, so when surveys do not collect enough information about transfers received, this is the only measure that can be calculated and used for policy analysis.

Note that this table is most relevant for poverty-targeted programs, whereas social insurance and labor market programs often do not have the poor as a target population.

Impact of Programs on Poverty and Inequality Measures

Table 5.11 (Table 11 in ADePT SP) presents the simulated impact of discontinuing a program or combination of programs on poverty and inequality measures. The poverty line is based on the user's initial input, such as selection of a relative or absolute line. It is assumed that, in the absence of the program, the welfare aggregate of a recipient household falls by the value of the transfer. The indicators in this table are the same regardless of the welfare counterfactual—the results are the same whenever the user selects the option V0, V1, V2, or V3.

Table 5.11: ADePT SP Table 11, Impact of Programs on Poverty and Inequality Measures—Simulating the Absence of the Program

	<i>FGT0</i>	<i>FGT1</i>	<i>FGT2</i>	<i>Gini</i>	<i>GE(0)</i>	<i>GE(1)</i>	<i>GE(2)</i>
Indicator	0.200	0.048	0.017	0.273	0.123	0.123	0.142
<i>Indicator without listed transfer</i>							
All social protection	0.521	0.293	0.221	0.453	2.750	0.364	0.377
All social insurance	0.465	0.241	0.177	0.417	2.316	0.311	0.317
Old-age pension	0.375	0.173	0.121	0.366	1.627	0.240	0.244
Anticipated pension	0.212	0.055	0.022	0.279	0.170	0.129	0.147
Disability pension	0.234	0.067	0.030	0.289	0.220	0.140	0.158
Survivor pension	0.214	0.056	0.022	0.280	0.168	0.130	0.148
Farmer pension	0.239	0.069	0.031	0.292	0.232	0.142	0.159
All labor market programs	0.207	0.051	0.019	0.276	0.133	0.126	0.145
Unemployment benefits	0.207	0.051	0.019	0.276	0.133	0.126	0.145
Redundancy payments	0.200	0.048	0.017	0.273	0.123	0.123	0.142
All social assistance	0.259	0.082	0.039	0.299	0.189	0.149	0.166
Family allowances	0.202	0.049	0.017	0.274	0.125	0.124	0.142
Guaranteed minimum income	0.202	0.051	0.020	0.276	0.129	0.126	0.144
Heating benefits	0.202	0.048	0.017	0.274	0.124	0.124	0.142
Child care benefit	0.213	0.052	0.019	0.277	0.132	0.127	0.145
Universal child allowance	0.223	0.059	0.023	0.284	0.136	0.133	0.151
Scholarships, money for high school	0.201	0.048	0.017	0.274	0.124	0.124	0.142
Disabled allowance	0.208	0.052	0.019	0.277	0.132	0.126	0.145
Social assistance pension	0.201	0.048	0.017	0.274	0.124	0.123	0.142
Privileges for war benefits, political prosecution, heroes, etc.	0.201	0.048	0.017	0.274	0.124	0.123	0.142
Other social assistance benefits	0.201	0.048	0.017	0.274	0.124	0.123	0.142
In-kind benefits	0.209	0.051	0.018	0.274	0.124	0.123	0.142
All private transfers	0.213	0.055	0.022	0.277	0.165	0.128	0.145
Money from out of household	0.213	0.055	0.022	0.277	0.165	0.128	0.145

Note: The simulated impact is the change in a poverty or inequality indicator because of transfer, assuming that household welfare will diminish by the full value of that transfer. *FGT0* = poverty headcount; *FGT1* = poverty gap; *FGT2* = poverty severity; *GE(0)* = Generalized entropy index, mean log deviation; *GE(1)* = Generalized entropy index, Theil index; *GE(2)* = Generalized entropy index, half the squared coefficient of variation.

From table 5.11 we learn that after all SP transfers, the poverty headcount (*FGT0*) for Romania in 2012 is 20.0 percent. The poverty gap (*FGT1*) is around 4.8 percent, and poverty severity (*FGT2*) is 1.7 percent, based on the Foster-Greer-Thorbecke (Foster, Greer, and Thorbecke 1984) class of poverty measures. If all SP transfers were removed, the poverty rate would increase to 52.1 percent (a 32.1 percentage point increase), the poverty gap would be 29.3, and poverty severity would be 22.1. The simulated poverty impact of particular programs can be examined as well, where a greater difference with the top indicator in row 3 suggests a greater poverty effect. The old-age pension program has the largest simulated poverty effect, and if it were suddenly discontinued, the poverty headcount would increase to 37.5 percent.

Similarly, the table estimates the distributional impacts including the effect on the Gini index and generalized entropy (GE) measures. The Gini index after SP transfers is relatively low, at 27.3, although this increases to an estimated 45.3 when all SP transfers are removed. The Theil index ($GE(1)$) increases from 12.3 to 36.4, indicating that the impact of removing transfers on the middle class will have relatively smaller consequences for the overall inequality than the impact on the poor.

It may seem surprising that social insurance has a greater effect than social assistance on both poverty and inequality, even though pension systems rarely have poverty alleviation or inequality reduction as stated objectives. One must recall however that the distributional effect is the combined result of who is covered (targeting), how many are covered (coverage), and how much they receive (average transfer amount and adequacy). Despite social assistance having higher coverage (62 percent of the population) than social insurance (45 percent), the poverty-reducing impacts are lower, as social assistance benefits are less generous. Looking again at table 5.4, we see that the average transfer amount of social insurance is 8,535 LCU per year, nearly seven times that of the social assistance average of 1,325 LCU. Similarly, for adequacy, social insurance represents 66.9 percent of welfare, compared to 10.6 percent for social assistance.

Coady-Grosh-Hoddinott Indicator

Tables 12 and 13 in ADePT SP (table 5.12 and 5.13) provide an indicator of targeting accuracy, the Coady-Grosh-Hoddinott (CGH) indicator: table 5.12 refers to beneficiaries, and table 5.13 to benefits. Both tables present results for direct and indirect beneficiaries, as well as direct beneficiaries only. The CGH indicator should be interpreted as if beneficiaries (table 5.12) and benefits (table 5.13) from lowest income strata are overrepresented or underrepresented compared with their population share. A value above 1.0 indicates overrepresentation, and a value below 1.0 indicates underrepresentation.

Coady-Grosh-Hoddinott Indicator, Beneficiaries' Incidence

The CGH indicator in table 5.12 is the share of direct and indirect beneficiaries in the poorest x percent of the population divided by the share of the population in that group. The results are shown for the bottom 10, 20, 30, and 40 percent of the welfare distribution; estimated for both direct beneficiaries only and direct and indirect beneficiaries.

Table 5.12: ADePT SP Table 12, Coady-Grosh-Hoddinott Indicator

	<i>Direct and indirect beneficiaries</i>				<i>Direct beneficiaries only</i>			
	10%	20%	30%	40%	10%	20%	30%	40%
All social protection	1.11	1.10	1.09	1.08	1.07	1.03	1.03	1.03
All social insurance	0.67	0.77	0.87	0.91	0.36	0.47	0.58	0.66
Old-age pension	0.41	0.53	0.69	0.74	0.20	0.29	0.42	0.49
Anticipated pension	0.54	0.74	0.77	0.90	0.33	0.50	0.52	0.69
Disability pension	0.87	0.89	0.94	1.01	0.56	0.63	0.69	0.79
Survivor pension	0.68	0.95	1.07	1.03	0.45	0.64	0.75	0.77
Farmer pension	1.13	1.22	1.28	1.30	0.72	0.85	0.96	1.06
All labor market programs	0.71	0.97	0.96	1.08	0.55	0.86	0.85	0.97
Unemployment benefits	0.71	0.97	0.96	1.08	0.55	0.86	0.85	0.97
Redundancy payments	0.00	0.00	3.33	2.50	0.00	0.00	3.33	2.50
All social assistance	1.40	1.34	1.28	1.23	1.52	1.39	1.30	1.24
Family allowances	3.64	3.09	2.62	2.23	n.a.	n.a.	n.a.	n.a.
Guaranteed minimum income	5.71	3.92	2.88	2.32	5.27	3.62	2.71	2.21
Heating benefits	1.53	1.68	1.60	1.53	1.11	1.26	1.25	1.25
Child care benefit	0.26	0.45	0.79	1.00	0.22	0.38	0.68	0.85
Universal child allowance	1.57	1.49	1.42	1.35	1.81	1.65	1.52	1.43
Scholarships, money for high school	2.35	2.17	1.88	1.72	2.36	1.98	1.70	1.61
Disabled allowance	1.47	1.37	1.33	1.30	1.02	1.09	1.13	1.14
Social assistance pension	0.87	1.14	1.26	1.43	0.69	0.99	1.16	1.31
Privileges for war benefits, political prosecution, heroes, etc.	0.57	0.91	0.91	0.99	0.32	0.48	0.55	0.66
Other social assistance benefits	1.58	0.88	0.93	1.16	0.94	0.62	0.76	1.01
In-kind benefits	1.42	1.38	1.30	1.23	1.31	1.27	1.18	1.11
All private transfers	1.24	1.12	1.00	0.97	0.82	0.78	0.71	0.73
Money from out of household	1.24	1.12	1.00	0.97	0.82	0.78	0.71	0.73

Note: CGH indicator is the share of direct and indirect beneficiaries in a population group divided by the share of the population in that group. Larger numbers indicate that a program is more progressive. A program with even targeting (where every individual received the same transfer) would have CGH indicators of 1.0. The indicator is calculated at household level, setting as expansion factor the household expansion factor multiplied by the household size. n.a. = not applicable.

This indicator shows that, overall, SP programs are progressive: In the first row, all numbers are greater than one, meaning that the bottom of the distribution has better access to SP transfers than the rest. The social assistance programs in Romania are even more progressive, with more beneficiaries belonging to the poorest population. This result is particularly acute for the GMI, where, among the poorest 10 percent, the group is overrepresented among beneficiaries, with a value of 5.71. This means that 57.1 percent of beneficiaries of GMI are in the lowest 10 percent of the income distribution, a very high progressivity index of 5.71. The old-age pension is among the most regressive, with a value of 0.41 (benefits/10 = 0.41), so only 4.1 percent of beneficiaries of old-age pensions are from the bottom 10 percent of the population).

Table 5.13: ADePT SP Table 13, Coady-Grosh-Hoddinott Indicator, Benefits' Incidence

	<i>Bottom</i>				<i>Concentration index</i>
	<i>10%</i>	<i>20%</i>	<i>30%</i>	<i>40%</i>	
All social protection	0.42	0.49	0.57	0.63	0.2220
All social insurance	0.26	0.35	0.46	0.53	0.2740
Old-age pension	0.15	0.23	0.35	0.42	0.3533
Anticipated pension	0.28	0.45	0.49	0.63	0.2127
Disability pension	0.48	0.56	0.62	0.72	0.1435
Survivor pension	0.39	0.58	0.69	0.70	0.1471
Farmer pension	0.71	0.84	0.94	1.04	-0.0666
All labor market programs	0.54	0.85	0.82	0.93	-0.0137
Unemployment benefits	0.54	0.85	0.82	0.93	-0.0132
Redundancy payments	0.00	0.00	3.33	2.50	-0.4768
All social assistance	1.27	1.16	1.11	1.10	-0.0264
Family allowances	3.83	3.14	2.62	2.23	-0.6213
Guaranteed minimum income	5.47	3.75	2.77	2.23	-0.6866
Heating benefits	1.01	1.17	1.19	1.21	-0.0984
Child care benefit	0.17	0.31	0.53	0.72	0.1917
Universal child allowance	1.81	1.61	1.50	1.42	-0.2346
Scholarships, money for high school	1.69	1.50	1.41	1.42	-0.2096
Disabled allowance	0.98	1.06	1.08	1.10	-0.0777
Social assistance pension	0.69	1.01	1.16	1.42	-0.1823
Privileges for war benefits, political prosecution, heroes, etc.	0.12	0.35	0.37	0.43	0.3403
Other social assistance benefits	0.59	0.34	0.45	0.75	0.2086
In-kind benefits	0.59	0.61	0.60	0.62	0.2983
All private transfers	0.60	0.57	0.50	0.52	0.3614
Money from out of household	0.60	0.57	0.50	0.52	0.3614

Note: CGH indicator is the share of transfers going to a population group divided by the share of the population in that group. Large numbers indicate that a program is more progressive. Sample of households with positive per capita transfer. The indicator is calculated across this sample, setting as expansion factor the household expansion factor multiplied by the household size. The concentration index indicates how unequally transfers are distributed; it is the area between the concentration curve of a transfer and the diagonal among which everyone receives the same amount.

Coady-Grosh-Hoddinott Indicator, Benefits' Incidence

Table 5.13 presents two indicators of targeting accuracy: (a) the CGH indicator for the bottom 10, 20, 30, and 40 percent of the welfare distribution and (b) the concentration index, based on the value of the transfers. Different from that in table 5.12, the CGH indicator in table 5.13 reports the share of transfers going to the poorest 10, 20, 30, or 40 percent of the population divided by the respective share in the population. The concentration index indicates how unequally transfers are distributed; it is the area between the concentration curve of a transfer and the perfect equality line plotting the distribution when everyone receives the same amount. As noted in chapter 2, a program where benefit incidence is higher for the poor will have a negative concentration index value and a positive value if the higher welfare groups receive most of the benefits.

The results of the CGH index from table 5.13 differ from table 5.12 because in table 5.13 we are looking at the distribution of benefits, not beneficiaries. The GMI again performs the best, with benefits mostly accruing to lower welfare groups, and as a result it has a negative concentration index value, at -0.6866 , whereas old-age pensions perform the worst, with a positive concentration index value of 0.3533 , meaning that higher welfare groups receive a higher share of benefits than lower welfare groups. The results of concentration curve graphs, which are summarized by the concentration index produced by ADePT SP, are discussed later.

Distributional Characteristic Index

Table 14 in ADePT SP (table 5.14) presents the distributional characteristic index (DCI), its decomposition, and the different values of aversion to

Table 5.14: ADePT SP Table 14, Distributional Characteristic Index and Its Decomposition

	<i>Epsilon</i>			
	<i>0.5</i>	<i>1.0</i>	<i>1.5</i>	<i>2.0</i>
<i>Distributional characteristic</i>				
All social protection	0.76	0.61	0.52	0.47
All social insurance	0.74	0.58	0.47	0.41
Old-age pension	0.72	0.54	0.42	0.35
Anticipated pension	0.76	0.61	0.51	0.45
Disability pension	0.79	0.65	0.56	0.51
Survivor pension	0.78	0.65	0.56	0.51
Farmer pension	0.85	0.75	0.69	0.67
All labor market programs	0.83	0.72	0.65	0.62
Unemployment benefits	0.83	0.72	0.65	0.62
Redundancy payments	0.94	0.88	0.82	0.77
All social assistance	0.85	0.78	0.76	0.78
Family allowances	1.08	1.20	1.38	1.62
Guaranteed minimum income	1.14	1.35	1.65	2.05
Heating benefits	0.86	0.79	0.75	0.75
Child care benefit	0.76	0.60	0.50	0.43
Universal child allowance	0.93	0.90	0.93	1.01
Scholarships, money for high school	0.91	0.88	0.90	0.96
Disabled allowance	0.86	0.77	0.72	0.70
Social assistance pension	0.89	0.82	0.78	0.77
Privileges for war benefits, political prosecution, heroes, etc.	0.72	0.54	0.44	0.37
Other social assistance benefits	0.75	0.60	0.51	0.45
In-kind benefits	0.74	0.59	0.51	0.48
All private transfers	0.72	0.56	0.48	0.45
Money from out of household	0.72	0.56	0.48	0.45

(continued)

Table 5.14: ADePT SP Table 14, Distributional Characteristic Index and Its Decomposition
(continued)

	<i>Epsilon</i>			
	<i>0.5</i>	<i>1.0</i>	<i>1.5</i>	<i>2.0</i>
<i>Targeting efficiency</i>				
All social protection	0.86	0.78	0.75	0.76
All social insurance	0.82	0.71	0.64	0.61
Old-age pension	0.79	0.65	0.56	0.51
Anticipated pension	0.82	0.70	0.63	0.60
Disability pension	0.84	0.74	0.68	0.66
Survivor pension	0.84	0.74	0.68	0.66
Farmer pension	0.89	0.83	0.81	0.82
All labor market programs	0.86	0.77	0.71	0.69
Unemployment benefits	0.86	0.77	0.71	0.69
Redundancy payments	0.94	0.88	0.82	0.77
All social assistance	0.89	0.83	0.83	0.86
Family allowances	1.07	1.19	1.35	1.57
Guaranteed minimum income	1.17	1.40	1.72	2.16
Heating benefits	0.92	0.89	0.90	0.95
Child care benefit	0.81	0.68	0.59	0.53
Universal child allowance	0.91	0.87	0.88	0.94
Scholarships, money for high school	0.98	1.01	1.09	1.22
Disabled allowance	0.89	0.84	0.81	0.83
Social assistance pension	0.90	0.84	0.82	0.84
Privileges for war benefits, political prosecution, heroes, etc.	0.82	0.71	0.66	0.65
Other social assistance benefits	0.85	0.75	0.70	0.68
In-kind benefits	0.88	0.83	0.83	0.87
All private transfers	0.84	0.75	0.73	0.75
Money from out of household	0.84	0.75	0.73	0.75
<i>Redistributive efficiency</i>				
All social protection	-0.10	-0.17	-0.23	-0.29
All social insurance	-0.08	-0.13	-0.16	-0.20
Old-age pension	-0.07	-0.11	-0.14	-0.16
Anticipated pension	-0.06	-0.09	-0.12	-0.14
Disability pension	-0.05	-0.09	-0.12	-0.15
Survivor pension	-0.06	-0.10	-0.13	-0.15
Farmer pension	-0.04	-0.08	-0.11	-0.15
All labor market programs	-0.03	-0.04	-0.06	-0.07
Unemployment benefits	-0.03	-0.04	-0.06	-0.07
Redundancy payments	0.00	0.00	0.00	0.00
All social assistance	-0.04	-0.06	-0.07	-0.08
Family allowances	0.01	0.02	0.03	0.05
Guaranteed minimum income	-0.02	-0.04	-0.07	-0.11
Heating benefits	-0.06	-0.11	-0.15	-0.20
Child care benefit	-0.05	-0.08	-0.09	-0.10
Universal child allowance	0.01	0.03	0.05	0.07
Scholarships, money for high school	-0.06	-0.12	-0.18	-0.25
Disabled allowance	-0.04	-0.07	-0.10	-0.12

(continued)

Table 5.14: ADePT SP Table 14, Distributional Characteristic Index and Its Decomposition (continued)

	<i>Epsilon</i>			
	<i>0.5</i>	<i>1.0</i>	<i>1.5</i>	<i>2.0</i>
Social assistance pension	−0.01	−0.03	−0.04	−0.07
Privileges for war benefits, political prosecution, heroes, etc.	−0.10	−0.17	−0.22	−0.28
Other social assistance benefits	−0.09	−0.15	−0.19	−0.23
In-kind benefits	−0.15	−0.24	−0.32	−0.39
All private transfers	−0.12	−0.19	−0.25	−0.30
Money from out of household	−0.12	−0.19	−0.25	−0.30

inequality (epsilon of 0.5, 1.0, 1.5, and 2.0).⁴ The DCI measures the change in social welfare, which is the welfare distribution of a country as a whole, and social welfare is a function seeking to maximize welfare for a country. As discussed in chapter 2, the measure can be decomposed into two indicators: targeting efficiency and redistributive efficiency.

Comparing old-age pensions and the GMI is useful to better understand the distributional characteristic. Looking at the ADePT output, we can see the results for Romania. If we chose an epsilon value of 1.0, this would mean that if a household h has twice the welfare of another household k , household h would have half the welfare weight as k . In the table below we see that for epsilon of 1.0, old-age pension has a DCI value of 0.54, while the GMI is 1.35, meaning that the GMI has a greater effect on social welfare for the society averse to inequality (or valuing welfare of the poor more than well-being of the rich). An epsilon value of zero would mean no aversion to inequality, and a dollar in the hands of the richest person will have the same social value as a dollar in the hands of the poorest person.

By looking at the index decomposition and keeping the budget fixed, the targeting efficiency of old-age pension is 0.65, and the GMI is 1.40, indicating that the GMI targeting (in selection of the poorest into the program) far outperforms the old-age pension. Holding targeting constant, the redistributive efficiency is −0.11 for old-age pension and −0.04 for the GMI. This result means that both programs are regressive, distributing higher amounts to those who are better off, although the GMI is less so. The DCI is generated by adding the two subcomponents, so for old-age pensions we have $0.54 = 0.65 + (-0.11)$, and for the GMI we have $1.35 = 1.40 + (-0.04)$, with differences because of rounding. We can conclude that the GMI outperforms old-age pension in a greater value for the DCI, and that difference is mainly a result of its superior targeting performance in focusing on the right people. But the GMI does little to tailor benefits according to the needs, and it distributes approximately the same flat

Table 5.15: ADePT SP Table 15, Units of Social Welfare Impact

	<i>Epsilon</i>			
	<i>0.5</i>	<i>1.0</i>	<i>1.5</i>	<i>2.0</i>
All social protection	39,202,332,910	31,545,744,376	26,914,462,698	24,362,280,817
All social insurance	31,600,539,578	24,642,649,602	20,231,540,576	17,501,822,098
Old-age pension	21,506,727,126	16,138,090,319	12,716,750,118	10,535,628,059
Anticipated pension	1,335,523,881	1,068,880,176	899,157,133	795,548,289
Disability pension	3,740,840,329	3,086,447,001	2,676,108,148	2,440,283,640
Survivor pension	1,481,976,107	1,218,921,516	1,052,319,362	954,215,446
Farmer pension	3,535,472,140	3,130,310,594	2,887,205,820	2,776,146,669
All labor market programs	691,970,222	600,598,598	543,136,009	511,719,037
Unemployment benefits	691,061,511	599,746,450	542,336,903	510,969,671
Redundancy payments	908,711	852,148	799,106	749,365
All social assistance	6,909,823,115	6,302,496,177	6,139,786,113	6,348,739,680
Family allowances	159,125,264	177,170,411	202,862,568	238,340,650
Guaranteed minimum income	435,650,021	515,263,758	626,559,529	779,542,894
Heating benefits	184,711,763	168,046,697	160,478,872	160,459,543
Child care benefit	1,080,073,100	859,038,302	712,462,755	614,220,274
Universal child allowance	2,503,524,384	2,448,612,184	2,523,539,522	2,728,682,798
Scholarships, money for high school	115,942,776	112,102,720	114,232,971	122,176,337
Disabled allowance	816,028,486	731,784,976	685,744,110	669,674,185
Social assistance pension	48,294,728	44,404,901	42,347,127	41,944,476
Privileges for war benefits, political prosecution, heroes, etc.	127,887,623	96,892,478	77,545,021	65,613,188
Other social assistance benefits	82,241,270	65,756,914	55,491,916	49,136,502
In-kind benefits	1,356,343,692	1,083,422,831	938,521,719	878,948,829
All private transfers	2,014,565,680	1,572,903,878	1,344,359,243	1,254,136,109
Money from out of household	2,014,565,680	1,572,903,878	1,344,359,243	1,254,136,109

Note: This is the Distributional Characteristic Index times the average transfer amount over the population times the population size. Amounts are in monetary values.

amount to all beneficiaries (redistributive efficiency is only slightly different from zero). The table can be used to decompose the effect on the distribution of social protection overall, the main categories, and each program, thereby providing a valuable single table to see what drives distributional changes.

Units of Social Welfare Impact

Table 15 in ADePT SP (table 5.15) presents the units of the social welfare impact of SP programs, which is the effect of social protection on the welfare of a country as whole. This table is very useful for public expenditure analysis, as it shows the social value of public spending on transfers.

Social welfare impact is equal to the DCI multiplied by the average transfer for the population and by the population size (or the budget of the program). Different values of adversity to inequality (epsilon) of 0.5, 1.0, 1.5, and

2.0 are provided. Staying with the same epsilon values and programs as above, we see the old-age pension has 16.1 billion units of social welfare impact, whereas the GMI has 0.5 billion units. The difference is due to the higher transfer amount of the old-age pension and the higher budget envelope for old-age pensions, even though the GMI has a higher DCI. Note that total transfer budget in GMI is about 380 million LCU (mln) Lei (this information can be recovered in table 19 of the ADePT SP output presented in table 5.19), whereas its impact of social welfare is 515 million Lei. In other words, spending on this program increases social welfare by more than the amount spent. Pensions costs 30 billion (bln) LCU, but increase welfare by just 16 bln. Hence, each unit spent on pensions has less effect on social welfare than a unit spent on GMI. If a program's goal is the reduction of inequality, then ADePT SP tables 11, 14, and 15 (presented, respectively, in table 5.11, 5.14 and 5.15) are particularly useful.

Transfer Duplication in Each Population Group

Table 16 in ADePT SP (table 5.16) reports the share of the population receiving zero, one, two, three, four, or more programs, by population subgroups (by quintiles, poverty status, area of residence, region, and other household characteristics). The indicators refer to both direct and indirect beneficiaries. In the table, 16.3 percent of the population receives no transfers, and the share of those not receiving transfers increases from Q1 to Q5, meaning that higher welfare groups are less likely to receive SP transfers. Those residing in urban areas are more likely to receive no transfers than those in rural areas. Program duplication in the table refers to the households' participation in multiple programs. Program duplication is not a bad outcome per se if multiple programs address households' different risks or needs—for example, a household with children who are part of a school feeding program and with another member who is an

Table 5.16: ADePT SP Table 16, Transfer Frequency in Each Population Group (%)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
<i>Number of transfers received</i>										
0	16.3	8.0	10.4	13.2	18.9	31.2	8.0	18.4	19.8	12.1
1	33.7	25.2	31.8	36.1	39.6	36.0	25.2	35.9	35.2	32.0
2	31.1	34.0	33.4	33.4	29.0	25.7	34.0	30.4	30.5	31.8
3	13.4	22.5	15.9	12.7	9.5	6.2	22.5	11.1	11.1	16.1
4 or more	5.5	10.3	8.5	4.7	3.0	0.9	10.3	4.3	3.4	8.0

Note: Share of population participating in social programs by population group. Households are weighted using household weights multiplies by the household size. NP = nonpoor; P = poor; Qn = nth quintile.

Table 5.17: ADePT SP Table 17, Social Program Overlap (%)

	<i>BFT_SP</i>	<i>BFT_SI</i>	<i>BFT1</i>	<i>BFT2</i>	<i>BFT3</i>	<i>BFT4</i>	<i>BFT5</i>	<i>BFT_LM</i>	<i>BFT_SA</i>	<i>BFT_RM</i>
<i>Beneficiaries of program listed in this row that also receive program listed in column:</i>										
All social protection	100.0	53.4	32.7	3.0	10.4	4.7	12.1	2.7	73.9	6.8
All social insurance	100.0	100.0	61.2	5.7	19.5	8.9	22.7	1.7	52.3	5.0
Old-age pension	100.0	100.0	100.0	2.5	6.2	1.7	13.0	1.6	49.8	4.1
Anticipated pension	100.0	100.0	27.0	100.0	12.1	1.0	6.4	1.5	44.8	6.7
Disability pension	100.0	100.0	19.5	3.5	100.0	3.8	6.4	2.2	58.7	6.6
Survivor pension	100.0	100.0	11.9	0.6	8.3	100.0	16.1	1.7	59.5	6.5
Farmer pension	100.0	100.0	35.2	1.6	5.5	6.3	100.0	1.7	52.6	3.6
All labor market programs	100.0	34.0	19.3	1.7	8.6	3.0	7.3	100.0	64.2	9.9
Unemployment benefits	100.0	33.9	19.3	1.7	8.6	3.0	7.3	100.0	64.2	9.9
Redundancy payments	100.0	100.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
All social assistance	100.0	37.8	22.0	1.8	8.3	3.8	8.6	2.4	100.0	7.7
Family allowances	100.0	24.6	10.4	0.6	4.5	3.6	12.7	2.4	100.0	8.8
Guaranteed minimum income	100.0	17.8	8.1	1.2	0.9	1.5	8.5	0.6	100.0	9.6
Heating benefits	100.0	39.7	18.9	1.4	13.2	3.1	5.8	2.6	100.0	13.8
Child care benefit	100.0	28.1	18.2	1.8	6.7	1.4	4.3	1.7	100.0	8.0
Universal child allowance	100.0	30.2	16.8	1.4	6.3	3.3	7.6	2.5	100.0	7.5
Scholarships, money for high school	100.0	25.3	13.9	2.5	4.3	6.0	4.9	4.3	100.0	10.8
Disabled allowance	100.0	63.3	31.4	2.9	22.9	6.2	16.1	1.9	100.0	7.0
Social assistance pension	100.0	99.6	36.8	4.2	9.1	14.4	78.0	0.0	100.0	1.7
Privileges for war benefits, political prosecution, heroes, etc.	100.0	96.2	45.4	5.9	5.7	27.1	40.4	1.0	100.0	3.3
Other social assistance benefits	100.0	51.9	32.5	0.3	16.3	2.9	2.8	0.2	100.0	6.1
In-kind benefits	100.0	41.2	24.7	2.1	9.7	4.0	8.3	2.3	100.0	8.4
All private transfers	83.6	32.9	16.5	2.5	8.4	3.8	5.4	3.3	70.0	100.0
Money from out of household	83.6	32.9	16.5	2.5	8.4	3.8	5.4	3.3	70.0	100.0

Note: Share of household who has received other programs. Specifically, overlap is as follows: Number of household receiving transfer from program *X* given that they have received transfers from program *Y*. Households are weighted using household weights multiplies by ht household size.

elderly person in a pension program. Table 5.16 provides policy makers with information that could be helpful, such as which groups receive no transfers and which groups are more likely to participate in multiple programs.

Social Program Overlap

Table 17 in ADePT SP (table 5.17) shows the overlap between the broad social protection categories (**social insurance**, **labor market**, and **social assistance**) as well as each separate program. Program overlap means the share of households that receive more than one program. Specifically, overlap is number of households receiving transfers from program *X* if having received transfers from another program. The first column in table 5.17 lists each program name, and

Table 5.18: ADePT SP Table 18, Social Program Overlap [2] (%)

	<i>Total</i>	<i>Quintiles of per capita consumption</i>					<i>Poverty status</i>		<i>Area of residence</i>	
		<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>P</i>	<i>NP</i>	<i>Urban</i>	<i>Rural</i>
No transfer	16.3	8.0	10.4	13.2	18.9	31.2	8.0	18.4	19.8	12.1
Only social insurance programs	21.0	8.7	19.4	23.2	27.7	26.1	8.7	24.1	18.7	23.8
Only labor market programs	0.5	0.3	0.6	0.4	0.7	0.6	0.3	0.6	0.6	0.4
Only social assistance programs	37.5	56.3	40.4	36.9	29.5	24.1	56.3	32.7	36.7	38.4
Only social insurance and labor programs	0.3	0.2	0.3	0.5	0.2	0.3	0.2	0.3	0.3	0.3
Social assistance and other programs	24.4	26.5	28.8	25.8	23.0	17.7	26.5	23.8	23.8	25.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Social assistance and other programs = (SA + SI) + (SA + LM) + (SA + LM + SI); NP = nonpoor; P = poor; Qn = nth quintile.

each column after that lists the name of the program category. The program code *BFT_SP* therefore refers to all SP benefits; *BFT_SI* is for all social insurance benefits; *BFT_1* refers to the first program, “Old-age pension”; *BFT_2* refers to the second program, “Anticipated pension”; and so on. Looking at the table, the user can see that of households that receive an old-age pension, 2.5 percent receive an anticipated pension, 6.2 percent receive a disability pension, 1.7 percent receive a survivor pension, and 13.0 percent receive a farmer pension. The user also can see that of old-age pension recipient households, 1.6 percent receive a labor market transfer *BTF_LM*, and 49.8 percent receive social assistance, *BFT_SA*. The table is therefore a rich resource for policy makers to see the overlap of social insurance, labor market, and social assistance programs; private remittances; and the overlap of specific programs. Policy makers may want, for example, to check that households are following program rules, which may restrict participation if a household receives a particular program. Additionally, the information can be a basis for reforming existing or new programs by letting policy makers see the relationship with existing programs.

Social Program Overlap [2]

Table 5.18 reports the percentage of each group that receives only social insurance, only labor market programs, only social assistance, or a combination. The rows are mutually exclusive and thus sum to 100. This information helps users understand the extent to which different groups in the population benefit from one or more SP functions.

Table 5.18 provides a snapshot of the type of SP program received, by population characteristic. The user can see that of those receiving only social insurance or only labor market programs, the beneficiary distribution is regressive, whereas it is progressive for social assistance programs.

Benefit-Cost Ratio

Table 5.19 presents a simplified benefit-cost ratio for a program and combination of programs, where the benefit is the reduction in the poverty gap owing to the transfer, and the cost reflects the total amount spent on the program in transfers only (as administrative and other costs are not captured in household surveys). We assume no behavioral effects, such as those on the labor supply and savings propensity.

Table 5.19: ADePT SP Table 19, Benefit-Cost Ratio

	<i>Simulated poverty gap without transfer</i>	<i>Upper poverty line</i>		<i>Total amount spent in the program (X)</i>	<i>Benefit- cost (dPG0/X)</i>
		<i>Actual poverty gap</i>	<i>Difference (dPG)</i>		
All social protection	24,036,576,401	3,914,121,027	20,122,455,374	51,574,850,557	0.39
All social insurance	19,799,968,122	3,914,121,027	15,885,847,095	42,615,337,005	0.37
Old-age pension	14,180,860,339	3,914,121,027	10,266,739,312	30,060,712,018	0.34
Anticipated pension	4,487,973,038	3,914,121,027	573,852,011	1,752,204,501	0.33
Disability pension	5,474,804,951	3,914,121,027	1,560,683,924	4,757,545,146	0.33
Survivor pension	4,556,745,481	3,914,121,027	642,624,454	1,888,933,885	0.34
Farmer pension	5,661,190,487	3,914,121,027	1,747,069,460	4,155,941,460	0.42
All labor market programs	4,185,430,057	3,914,121,027	271,309,029	830,587,767	0.33
Unemployment benefits	4,184,600,575	3,914,121,027	270,479,548	829,618,738	0.33
Redundancy payments	3,914,950,509	3,914,121,027	829,482	969,028	0.86
All social assistance	6,740,779,394	3,914,121,027	2,826,658,366	8,128,925,796	0.35
Family allowances	4,010,154,916	3,914,121,027	96,033,889	147,256,146	0.65
Guaranteed minimum income	4,216,789,147	3,914,121,027	302,668,120	380,710,958	0.80
Heating benefits	3,971,556,553	3,914,121,027	57,435,526	213,622,555	0.27
Child care benefit	4,275,251,307	3,914,121,027	361,130,280	1,420,941,250	0.25
Universal child allowance	4,878,409,084	3,914,121,027	964,288,057	2,705,666,267	0.36
Scholarships, money for high school	3,963,571,563	3,914,121,027	49,450,535	126,774,713	0.39
Disabled allowance	4,257,396,615	3,914,121,027	343,275,588	953,547,495	0.36
Social assistance pension	3,929,685,609	3,914,121,027	15,564,582	54,404,837	0.29
Privileges for war benefits, political prosecution, heroes, etc.	3,942,262,895	3,914,121,027	28,141,868	178,121,174	0.16
Other social assistance benefits	3,933,945,240	3,914,121,027	19,824,213	109,215,274	0.18
In-kind benefits	4,173,732,080	3,914,121,027	259,611,052	1,838,665,120	0.14
All private transfers	4,542,303,494	3,914,121,027	628,182,467	2,814,755,674	0.22
Money from out of household	4,542,303,494	3,914,121,027	628,182,467	2,814,755,674	0.22

Note: Benefit-cost ratio is the poverty gap reduction in \$ for each unity (\$1) spent in the social program. Amounts are in monetary values.

Table 5.19 contains useful information. It provides (a) total value of poverty gap before transfers (in LCU) and after transfers and (b) the reduction in poverty gap caused by all SP programs combined and each program separately.

Table 5.19 provides an estimate of the budget spent for each program and the simulated reduction in the poverty gap that results from the program. Even if the program targets the intended poor, only the amount that goes to elimination of the poverty gap counts; all excess payments over and above the poverty gap are counted as cost alongside the amounts going to the nonpoor. The ratio of these two quantities generates the benefit-cost ratio, which indicates the reduction in the poverty gap obtained for each LCU spent in the program. A value of 1.0 would mean that every LCU spent goes to reducing the poverty gap and nothing else (such as leakage to the nonpoor), and a value of 0.0 would indicate that a program has no effect on the poverty gap (see figure 5.3 for a graphic representation). It is a very strict criterion to judge the accuracy of targeting. The user can see the very high benefit-cost ratio for two of the income-tested programs—the GMI (0.80) and the family allowance (0.65)—whereas the universal child allowance is much lower at 0.36.

Profile Tables

ADePT SP produces nine profile tables, which show the distribution of SP transfers and each program according to the socioeconomic and demographic characteristics of program beneficiaries. The tables provide information on either the household (direct and indirect beneficiaries) or the head of the household. The profile tables include (P1) age and gender, (P2) household head's age and gender, (P3) education, (P4) household head's education, (P5) economic status, (P6) household head's economic status, (P7) custom individual characteristic, (P8) custom individual characteristic of household head, and (P9) custom household characteristic. The number of profile tables produced in ADePT SP output depends on the availability of variables. In our example, all variables are available, and the tables are produced below with interpretation. The profile tables refer to both direct and indirect beneficiary characteristics or to the characteristics of the household's head, when specified.

Profile by Age and Gender

The first profile table provides information on SP receipt by gender and age. Each subgroup sums to 100 percent. As shown in table 5.20, 47.8 percent of recipients

in Romania are male, and 52.2 percent are female. Individuals ages 25–49 are most likely to be SP recipients, and those ages 15–24 are the least likely. As expected, there is variation by program, with social insurance most concentrated for those 65+ and 50–64, and the labor market program most concentrated in those of prime working age, 25–49. Program-level information is informative as well. Looking by age, we see that the farmer pension is highly concentrated among the elderly, with 65+ representing 45.9 percent of recipients, whereas for the family allowance, 38.1 percent of all beneficiaries are ages 0–14.

Profile by Household Head's Age and Gender

Profile table P2 (table 5.21) is similar to P1 but looks only at the age and gender of the head of household. In Romania, the majority of SP recipients are male. This result is expected, as in most countries a higher share of males than females are reported as the head of household. SP transfers are distributed by category and program among male and female heads and among heads of different ages.

Table 5.20: ADePT SP Table P1, Profile by Age and Gender

	Total	Gender		Age				
		Male	Female	0–14	15–24	25–49	50–64	65+
All social protection	100.0	47.8	52.2	17.8	12.1	35.2	17.1	17.8
All social insurance	100.0	45.8	54.2	8.1	8.2	24.4	26.3	33.1
Old-age pension	100.0	46.7	53.3	7.1	6.9	21.4	24.5	40.1
Anticipated pension	100.0	49.7	50.3	7.0	6.7	23.5	56.9	5.9
Disability pension	100.0	48.8	51.2	8.8	10.1	30.3	44.3	6.5
Survivor pension	100.0	33.1	66.9	9.6	12.2	27.7	14.8	35.7
Farmer pension	100.0	45.3	54.7	9.0	7.4	23.8	13.9	45.9
All labor market programs	100.0	50.6	49.4	13.5	19.1	43.8	17.3	6.4
Unemployment benefits	100.0	50.6	49.4	13.5	19.2	43.8	17.2	6.4
Redundancy payments	100.0	50.0	50.0	0.0	0.0	0.0	100.0	0.0
All social assistance	100.0	48.4	51.6	24.1	14.3	40.8	11.5	9.3
Family allowances	100.0	49.2	50.8	38.1	14.9	36.9	5.6	4.6
Guaranteed minimum income	100.0	50.7	49.3	30.5	16.3	36.2	11.7	5.3
Heating benefits	100.0	46.9	53.1	20.7	14.1	38.2	17.5	9.6
Child care benefit	100.0	48.8	51.2	36.5	7.1	46.5	6.7	3.2
Universal child allowance	100.0	48.9	51.1	28.6	15.6	43.5	7.7	4.6
Scholarships, money for high school	100.0	45.5	54.5	14.7	33.6	37.3	11.4	3.0
Disabled allowance	100.0	49.6	50.4	10.8	11.8	36.3	23.9	17.3
Social assistance pension	100.0	41.8	58.2	11.5	8.5	26.2	16.0	37.8
Privileges for war benefits, political prosecution, heroes, etc.	100.0	39.4	60.6	7.9	8.3	20.4	9.7	53.7
Other social assistance benefits	100.0	49.5	50.5	30.0	17.0	28.2	18.4	6.4
In-kind benefits	100.0	47.8	52.2	28.0	10.7	38.5	11.6	11.2
All private transfers	100.0	45.2	54.8	18.7	17.2	38.2	15.7	10.2
Money from out of household	100.0	45.2	54.8	18.7	17.2	38.2	15.7	10.2

Table 5.21: ADePT SP Table P2, Profile by Household Head's Age and Gender

	<i>Total</i>	<i>Gender of the household head</i>		<i>Household head's age</i>			
		<i>Male</i>	<i>Female</i>	<i>15–24</i>	<i>25–49</i>	<i>50–64</i>	<i>65+</i>
All social protection	100.0	79.2	20.8	0.4	44.4	27.6	27.7
All social insurance	100.0	70.3	29.7	0.1	11.9	36.9	51.1
Old-age pension	100.0	75.4	24.6	0.1	9.1	29.6	61.2
Anticipated pension	100.0	84.1	15.9	0.6	3.1	86.5	9.8
Disability pension	100.0	80.7	19.3	0.1	16.3	72.1	11.6
Survivor pension	100.0	26.9	73.1	0.2	17.6	25.7	56.4
Farmer pension	100.0	68.2	31.8	0.0	9.6	16.9	73.6
All labor market programs	100.0	81.4	18.6	0.6	48.1	35.9	15.4
Unemployment benefits	100.0	81.4	18.6	0.6	48.1	35.9	15.4
Redundancy payments	100.0	100.0	0.0	0.0	0.0	100.0	0.0
All social assistance	100.0	81.6	18.4	0.5	57.8	23.5	18.3
Family allowances	100.0	82.8	17.2	0.6	65.7	17.8	15.9
Guaranteed minimum income	100.0	83.2	16.8	0.4	59.5	25.0	15.0
Heating benefits	100.0	77.8	22.2	0.5	50.9	31.6	17.0
Child care benefit	100.0	85.5	14.5	1.5	71.2	18.0	9.2
Universal child allowance	100.0	83.7	16.3	0.5	66.2	19.9	13.4
Scholarships, money for high school	100.0	80.8	19.2	0.4	58.7	29.6	11.3
Disabled allowance	100.0	74.5	25.5	0.2	28.9	41.8	29.1
Social assistance pension	100.0	64.1	35.9	0.0	8.5	16.4	75.0
Privileges for war benefits, political prosecution, heroes, etc.	100.0	49.3	50.7	0.0	9.0	13.3	77.8
Other social assistance benefits	100.0	82.3	17.7	0.0	44.4	35.4	20.2
In-kind benefits	100.0	81.2	18.8	0.3	56.7	22.4	20.7
All private transfers	100.0	69.1	30.9	3.9	53.7	27.6	14.9
Money from out of household	100.0	69.1	30.9	3.9	53.7	27.6	14.9

Profile by Education

Understanding the education level of SP recipients is useful for reasons such as ensuring that education-related transfers are allocated to the correct group and that education can be a good proxy for income. The columns again sum to 100 percent.

As can be seen in table 5.22 (P3), the education level most prevalent among SP recipients is middle school at 23.6 percent, and short-term university and other education are the least. The analyst should keep in mind that categories, such as other (P4), have fewer individuals, so it may be desirable to recode education categories into broader groups, such as no education, primary, secondary, and tertiary.

Measuring the Effectiveness of Social Protection

Table 5.22: ADePT SP Table P3, Profile by Education

		No formal school	Primary school (grades 1–4)	Middle school (grades 5–8)	Vocational/ auxiliary/ apprentice school	Lower high school (grades 9–10)	High school (grades 9–12)	Postsecondary specialty/ foremen's school	Short- term university (college)	Long- term uni- versity	Other
All social protection	100.0	13.3	14.0	23.6	16.9	1.9	19.1	3.1	1.3	6.6	0.0
All social insurance	100.0	6.5	16.2	25.7	19.3	1.6	19.3	4.1	1.2	6.1	0.0
Old-age pension	100.0	5.8	13.2	26.3	19.3	1.0	20.3	5.2	1.4	7.6	0.0
Anticipated pension	100.0	6.4	5.4	20.3	26.1	0.8	26.2	6.2	1.9	6.7	0.0
Disability pension	100.0	7.1	7.3	21.8	26.8	2.2	23.8	3.8	1.3	5.8	0.0
Survivor pension	100.0	7.0	27.5	26.8	15.3	2.5	15.8	1.8	0.6	2.7	0.0
Farmer pension	100.0	7.7	33.8	31.9	13.2	2.5	9.0	0.9	0.3	0.8	0.0
All labor market programs	100.0	9.1	9.5	18.8	18.4	3.5	30.6	2.2	1.9	6.1	0.0
Unemployment benefits	100.0	9.1	9.5	18.7	18.4	3.5	30.6	2.2	1.9	6.1	0.0
Redundancy payments	100.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	100.0	17.8	13.1	22.7	15.6	2.1	18.4	2.6	1.2	6.5	0.0
Family allowances	100.0	29.3	17.1	31.7	12.9	3.0	5.5	0.2	0.2	0.1	0.0
Guaranteed minimum income	100.0	24.6	29.1	32.1	8.8	2.4	2.8	0.1	0.1	0.0	0.0
Heating benefits	100.0	16.5	16.2	26.4	18.0	2.7	15.9	1.8	0.2	2.3	0.0
Child care benefit	100.0	34.7	3.5	9.1	14.6	0.7	16.1	2.1	2.8	15.8	0.5
Universal child allowance	100.0	20.7	12.9	22.8	14.6	2.3	17.7	2.1	1.2	5.9	0.0
Scholarships, money for high school	100.0	9.0	14.3	33.0	13.3	4.2	24.5	0.4	0.3	0.9	0.0
Disabled allowance	100.0	15.1	17.3	28.5	18.7	2.1	13.4	1.9	0.6	2.4	0.0
Social assistance pension	100.0	10.0	30.2	31.9	14.3	3.6	7.6	0.6	0.1	1.7	0.0
Privileges for war benefits, political prosecution, heroes, etc.	100.0	7.4	34.1	22.4	7.2	2.9	15.4	3.3	1.7	5.6	0.0

(continued)

Table 5.22: ADePT SP Table P3, Profile by Education (*continued*)

						Lower					
		No	Primary	Middle	Vocational/	high	High	Postsecondary	Short-	Long-	
	Total	formal	school	school	auxiliary/	school	school	specialty/	term	term	Other
		school	(grades	(grades	apprentice	(grades	(grades	foremen's	university	uni-	
			1-4)	5-8)	school	9-10)	9-12)	school	(college)	versity	
Other social assistance benefits	100.0	16.8	18.9	18.3	21.9	1.0	14.8	2.5	0.7	4.9	0.0
In-kind benefits	100.0	18.4	16.4	19.8	15.4	1.9	17.5	2.9	1.1	6.6	0.1
All private transfers	100.0	14.4	12.9	21.5	15.6	2.3	24.2	2.4	1.2	5.4	0.0
Money from out of household	100.0	14.4	12.9	21.5	15.6	2.3	24.2	2.4	1.2	5.4	0.0

Profile by Household Head's Education

The profile by education of household head (table 5.23) provides the user with the distribution for each SP program. Because the head often has more control of how resources may be allocated within households, it can be used with table P3.

Profile by Economic Status

Knowledge of economic status has relevance to all SP programs. Table 5.24 (P5) provides recipient information for direct and indirect members (that is, the household). For social insurance, the user would expect to see that recipients are retired or out of the labor force (OLF), which the table shows is 46.5 percent of recipients. Although the user also could expect that labor market recipient would *not* be employed, employed individuals are, in fact, the main recipients. This finding suggests a weak connection between being unemployed and receiving labor market benefits and indicates a possible need to reform the system. For social assistance, the user could expect to have the lowest incidence among employed individuals, but again, the employed are the main recipient group.

Profile by Household Head's Economic Status

Table 5.25, profile table P6, presents economic status for heads of household. As the head often has the most influence on the household allocation

Table 5.23: ADePT SP Table P4, Profile by Household Head's Education

	Total	No formal school	Primary school (grades 1–4)	Middle school (grades 5–8)	Vocational/auxiliary/apprentice school	Lower high school (grades 9–10)	High school (grades 9–12)	Post-secondary specialty/foremen's scho	Short-term university (college)	Long-term university	Other
All social protection	100.0	0.7	13.2	21.6	28.2	2.4	19.3	4.8	1.5	8.3	0.1
All social insurance	100.0	0.6	20.0	25.4	25.9	1.1	14.0	6.1	1.0	5.9	0.0
Old-age pension	100.0	0.2	15.1	26.8	26.3	0.3	14.3	7.8	1.1	8.0	0.0
Anticipated pension	100.0	0.0	5.1	20.5	39.2	0.4	19.9	9.8	1.7	3.5	0.0
Disability pension	100.0	0.4	6.7	22.5	39.8	2.6	18.6	5.4	0.8	3.2	0.0
Survivor pension	100.0	1.9	37.9	25.4	15.8	2.4	9.3	3.3	0.6	3.4	0.0
Farmer pension	100.0	1.5	45.2	31.0	13.9	1.1	5.2	1.0	0.4	0.6	0.0
All labor market programs	100.0	0.7	7.3	12.6	33.1	7.6	27.0	3.5	2.1	6.1	0.0
Unemployment benefits	100.0	0.7	7.3	12.6	33.0	7.6	27.1	3.5	2.1	6.1	0.0
Redundancy payments	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	100.0	0.8	11.0	19.9	29.2	3.0	21.3	4.2	1.4	9.0	0.1
Family allowances	100.0	1.5	15.7	40.8	26.7	5.6	8.6	0.8	0.2	0.0	0.0
Guaranteed minimum income	100.0	8.3	32.3	37.7	15.1	3.4	2.6	0.5	0.2	0.0	0.0
Heating benefits	100.0	1.2	15.1	27.4	32.4	4.5	14.9	2.4	0.0	2.1	0.0
Child care benefit	100.0	0.0	1.8	12.5	30.3	0.7	25.5	2.6	3.3	22.2	1.1
Universal child allowance	100.0	0.7	10.0	19.6	29.7	3.4	22.2	3.7	1.5	9.1	0.1
Scholarships, money for high school	100.0	3.6	12.6	25.1	33.6	5.6	18.2	0.0	0.2	1.0	0.0
Disabled allowance	100.0	2.0	20.0	29.0	30.2	2.2	9.8	3.9	0.2	2.7	0.0
Social assistance pension	100.0	0.2	44.4	34.4	11.7	1.3	4.0	2.6	0.1	1.2	0.0
Privileges for war benefits, political prosecution, heroes, etc.	100.0	1.7	47.3	25.7	5.0	2.6	8.0	3.5	0.5	5.6	0.0
Other social assistance benefits	100.0	0.0	7.8	10.6	43.8	2.0	14.1	11.0	0.0	10.6	0.0
In-kind benefits	100.0	0.7	11.2	20.9	28.5	2.9	20.9	4.5	1.3	8.8	0.1
All private transfers	100.0	0.9	12.6	20.5	25.8	3.2	25.8	3.4	1.2	6.7	0.0
Money from out of household	100.0	0.9	12.6	20.5	25.8	3.2	25.8	3.4	1.2	6.7	0.0

Table 5.24: ADePT SP Table P5, Profile by Economic Status

	<i>Labor force status, ILO def of unemployed</i>						
	<i>Total</i>	<i>Employed</i>	<i>Self-employed</i>	<i>Unemployed</i>	<i>Retired</i>	<i>Student</i>	<i>OLF</i>
All social protection	100.0	32.9	16.0	4.8	9.3	9.2	27.8
All social insurance	100.0	23.2	14.8	3.7	5.0	6.9	46.5
Old-age pension	100.0	21.3	11.8	3.2	4.3	6.8	52.5
Anticipated pension	100.0	24.3	9.4	5.4	4.4	8.2	48.4
Disability pension	100.0	26.1	11.0	5.8	5.3	6.6	45.1
Survivor pension	100.0	24.4	18.9	3.9	8.5	6.2	38.1
Farmer pension	100.0	22.2	28.4	1.9	4.2	5.6	37.9
All labor market programs	100.0	30.0	9.7	26.7	9.3	14.3	10.0
Unemployment benefits	100.0	30.0	9.7	26.7	9.3	14.2	10.0
Redundancy payments	100.0	0.0	0.0	0.0	0.0	50.0	50.0
All social assistance	100.0	38.8	16.0	5.2	12.6	10.9	16.6
Family allowances	100.0	22.6	36.4	4.6	12.6	16.5	7.2
Guaranteed minimum income	100.0	14.0	40.6	12.1	7.9	20.3	5.0
Heating benefits	100.0	25.9	18.5	14.4	9.9	12.5	18.8
Child care benefit	100.0	73.5	7.7	2.8	4.0	4.3	7.8
Universal child allowance	100.0	43.0	16.6	5.2	15.2	10.8	9.2
Scholarships, money for high school	100.0	21.2	18.7	9.1	33.8	11.2	6.0
Disabled allowance	100.0	21.4	14.6	4.1	5.3	28.3	26.3
Social assistance pension	100.0	26.1	37.0	1.3	5.3	3.7	26.6
Privileges for war benefits, political prosecution, heroes, etc.	100.0	15.9	16.1	2.3	6.1	7.9	51.5
Other social assistance benefits	100.0	43.8	12.1	5.1	14.3	9.3	15.4
In-kind benefits	100.0	37.5	16.6	5.1	9.3	9.7	21.8
All private transfers	100.0	29.3	13.6	12.8	12.1	13.6	18.4
Money from out of household	100.0	29.3	13.6	12.8	12.1	13.6	18.4

Table 5.25: ADePT SP Table P6, Profile by Household Head's Economic Status

	<i>Employment status of the household head</i>						
	<i>Total</i>	<i>Employed</i>	<i>Self-employed</i>	<i>Unemployed</i>	<i>Retired</i>	<i>Student</i>	<i>OLF</i>
All social protection	100.0	36.2	23.0	3.4	0.1	2.3	35.1
All social insurance	100.0	14.7	17.6	1.4	0.0	0.7	65.6
Old-age pension	100.0	12.0	14.8	1.1	0.0	0.3	71.8
Anticipated pension	100.0	12.0	10.9	1.9	0.0	0.5	74.7
Disability pension	100.0	16.3	12.4	2.6	0.0	1.0	67.7
Survivor pension	100.0	20.7	22.6	0.6	0.1	1.1	54.8
Farmer pension	100.0	12.3	33.7	0.6	0.0	1.3	52.0
All labor market programs	100.0	31.1	16.6	25.1	0.0	9.2	17.9
Unemployment benefits	100.0	31.1	16.6	25.1	0.0	9.2	18.0
Redundancy payments	100.0	0.0	0.0	0.0	0.0	100.0	0.0

(continued)

Table 5.25: ADePT SP Table P6, Profile by Household Head's Economic Status (*continued*)

	<i>Employment status of the household head</i>						
	<i>Total</i>	<i>Employed</i>	<i>Self-employed</i>	<i>Unemployed</i>	<i>Retired</i>	<i>Student</i>	<i>OLF</i>
All social assistance	100.0	44.7	24.7	4.1	0.1	2.7	23.8
Family allowances	100.0	18.9	55.0	4.9	0.0	5.7	15.6
Guaranteed minimum income	100.0	2.4	62.4	14.3	0.0	9.5	11.4
Heating benefits	100.0	29.1	27.4	11.8	0.0	4.4	27.3
Child care benefit	100.0	68.9	13.4	3.4	0.1	1.3	12.9
Universal child allowance	100.0	49.2	26.3	4.4	0.1	2.6	17.4
Scholarships, money for high school	100.0	26.2	42.3	11.5	0.4	3.5	16.1
Disabled allowance	100.0	21.8	25.0	3.7	0.0	9.6	39.9
Social assistance pension	100.0	15.1	47.3	0.0	0.0	0.0	37.6
Privileges for war benefits, political prosecution, heroes, etc.	100.0	6.6	17.7	1.0	0.0	2.8	72.0
Other social assistance benefits	100.0	42.4	18.2	10.2	0.0	1.7	27.5
In-kind benefits	100.0	40.4	25.2	4.2	0.0	2.4	27.8
All private transfers	100.0	36.6	19.7	12.1	2.1	6.1	23.4
Money from out of household	100.0	36.6	19.7	12.1	2.1	6.1	23.4

of resources, including SP transfers, it is useful to know their employment status. For social protection we see a near-even share of beneficiaries who are employed and out of the labor force. The labor force status skews more by program type, with 65.6 percent of social insurance recipients out of the labor force, whereas for social assistance, employed status is most common, although with variation among programs.

Profile by Custom Individual Characteristic

ADePT SP allows the user to select variables of interest and create three profile tables: (P7) by custom individual characteristic, (P8) by custom individual characteristic of the head, and (P9) by custom household characteristic (table 5.26–28). Users can select any variable in the dataset, which may include eligibility for particular programs, for example. In the example tables, the individual custom characteristic is marital status, and the household characteristic is household size.

In ADePT SP table P7 (table 5.26), the majority of survivor pensions are widows or widowers, at 41.7 percent (which jumps to 70.5 percent when looking at the head in P8). Also in P7, child care and scholarships have the highest share of married recipients, which could be anticipated. Further, 60.2 percent of recipients of privileges for war benefits are widowers, which is in line with profile tables P1 and P2, where most recipients are older (65+).

Table 5.26: ADePT SP Table P7, Profile by Custom Individual Characteristic

	<i>Total</i>	<i>Marital status</i>				
		<i>Married</i>	<i>Single</i>	<i>Living together</i>	<i>Divorced/separated</i>	<i>Widow(er)</i>
All social protection	100.0	49.0	34.9	3.1	2.8	10.2
All social insurance	100.0	51.1	24.5	2.4	3.8	18.1
Old-age pension	100.0	55.4	21.4	2.3	4.2	16.8
Anticipated pension	100.0	61.3	24.1	2.9	4.3	7.3
Disability pension	100.0	55.5	30.5	2.7	4.0	7.3
Survivor pension	100.0	22.0	29.6	3.1	3.6	41.7
Farmer pension	100.0	51.8	23.8	2.2	2.5	19.6
All labor market programs	100.0	47.2	40.0	3.2	2.5	7.1
Unemployment benefits	100.0	47.2	40.0	3.1	2.5	7.1
Redundancy payments	100.0	0.0	0.0	100.0	0.0	0.0
All social assistance	100.0	46.7	41.2	3.5	2.3	6.3
Family allowances	100.0	37.0	52.3	4.5	2.3	3.9
Guaranteed minimum income	100.0	33.9	50.3	6.7	3.8	5.2
Heating benefits	100.0	40.4	42.2	3.9	4.7	8.8
Child care benefit	100.0	52.0	41.3	2.9	0.4	3.4
Universal child allowance	100.0	46.1	44.6	3.5	1.8	4.0
Scholarships, money for high school	100.0	38.0	51.4	2.9	4.1	3.6
Disabled allowance	100.0	42.0	41.3	4.2	2.7	9.7
Social assistance pension	100.0	52.2	26.1	1.8	4.0	16.0
Privileges for war benefits, political prosecution, heroes, etc.	100.0	38.4	19.9	2.2	2.2	37.3
Other social assistance benefits	100.0	40.8	50.0	2.8	1.7	4.8
In-kind benefits	100.0	45.6	41.7	3.4	2.4	6.9
All private transfers	100.0	38.3	41.5	4.1	5.2	10.8
Money from out of household	100.0	38.3	41.5	4.1	5.2	10.8

Profile by Custom Individual Characteristic of Household Head

The same statistics are shown in P8 (table 5.27) as in P7, although only for the head of household. Because the head is generally older, one would expect the age to be skewed to older ages and gender to be skewed more to female, as females tend to live longer than males. Marital status, which is the variable in this case, also shows differences by program. Looking only at the top row for social protection, 73.3 percent of heads who are SP recipients are married, which compares to 49.0 percent of individual recipients in table P7.

Profile by Custom Household Characteristic

In profile table P9 (table 5.28), where the custom variable is household size, pensions, except disability, have most recipients in two-person households,

Table 5.27: ADePT SP Table P8, Profile by Custom Individual Characteristic of Household Head

	<i>Total</i>	<i>Marital status</i>				
		<i>Married</i>	<i>Single</i>	<i>Living together</i>	<i>Divorced/separated</i>	<i>Widow(er)</i>
All social protection	100.0	73.3	1.6	4.3	3.5	17.3
All social insurance	100.0	63.2	1.5	2.3	3.5	29.4
Old-age pension	100.0	67.1	1.4	2.0	3.6	25.8
Anticipated pension	100.0	78.7	2.0	3.2	3.2	12.8
Disability pension	100.0	76.9	1.6	3.2	4.5	13.8
Survivor pension	100.0	22.3	1.2	3.9	2.1	70.5
Farmer pension	100.0	63.2	1.0	2.2	1.6	32.1
All labor market programs	100.0	72.8	3.6	3.7	4.2	15.7
Unemployment benefits	100.0	72.9	3.6	3.6	4.2	15.8
Redundancy payments	100.0	0.0	0.0	100.0	0.0	0.0
All social assistance	100.0	76.1	1.4	5.2	3.4	13.9
Family allowances	100.0	73.4	1.2	8.2	3.7	13.5
Guaranteed minimum income	100.0	64.9	4.4	11.8	4.4	14.5
Heating benefits	100.0	68.7	2.3	6.7	5.3	17.0
Child care benefit	100.0	83.6	0.2	4.5	1.6	10.0
Universal child allowance	100.0	78.6	1.0	5.5	3.0	11.9
Scholarships, money for high school	100.0	81.4	0.9	1.5	7.2	9.1
Disabled allowance	100.0	66.6	3.7	6.4	4.3	19.0
Social assistance pension	100.0	60.5	0.7	2.9	3.4	32.5
Privileges for war benefits, political prosecution, heroes, etc.	100.0	37.4	0.0	1.1	1.3	60.2
Other social assistance benefits	100.0	76.0	4.5	7.0	2.1	10.4
In-kind benefits	100.0	74.8	1.4	5.8	3.2	14.8
All private transfers	100.0	60.8	8.0	5.8	7.5	17.9
Money from out of household	100.0	60.8	8.0	5.8	7.5	17.9

and the most frequent household size for other transfers is four members. The custom tables give users useful flexibility to conduct analysis on particular issues pertaining to the country context and program.

Custom Table

The custom table option is very useful for users because it allows them to specify elements such as the characteristics of recipients for a particular program. Many programs have differing target groups and eligibility criteria, and custom tables can be used for more thorough analysis. As can be seen in table 5.29, the majority of household members living with social insurance recipients in Romania are ages 19–64, at 59 percent of all recipients. It shows that even though pensions are targeting the old-age groups, they may have large indirect effects on household welfare level.

Table 5.28: ADePT SP Table P9, Profile by Custom Household Characteristic

	<i>Total</i>	<i>Household size</i>											
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
All social protection	100.0	5.4	15.8	23.8	26.6	15.3	7.3	3.0	1.6	0.7	0.4	0.0	0.0
All social insurance	100.0	9.5	26.6	18.0	16.2	16.5	8.1	2.9	1.3	0.5	0.2	0.0	0.1
Old-age pension	100.0	9.1	31.5	17.0	14.9	14.5	8.2	3.1	1.2	0.3	0.1	0.0	0.1
Anticipated pension	100.0	3.6	25.9	25.1	18.6	13.3	6.2	0.9	2.6	3.9	0.0	0.0	0.0
Disability pension	100.0	2.4	20.7	26.3	21.5	16.6	6.6	2.5	2.5	0.5	0.4	0.0	0.0
Survivor pension	100.0	17.1	14.3	18.1	15.3	25.4	6.9	1.5	0.6	0.0	0.6	0.0	0.0
Farmer pension	100.0	8.9	24.5	14.6	12.7	19.6	11.9	5.2	1.5	0.9	0.4	0.0	0.0
All labor market programs	100.0	1.5	13.2	20.4	28.7	22.1	7.0	2.4	0.0	3.1	1.7	0.0	0.0
Unemployment benefits	100.0	1.5	13.2	20.4	28.7	22.1	7.0	2.4	0.0	3.1	1.7	0.0	0.0
Redundancy payments	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All social assistance	100.0	2.0	6.9	24.1	31.5	18.6	9.3	3.9	2.2	0.8	0.6	0.0	0.1
Family allowances	100.0	0.0	0.5	9.6	25.2	27.0	19.6	9.4	3.6	3.0	2.1	0.0	0.0
Guaranteed minimum income	100.0	3.0	7.7	10.4	26.8	18.8	12.5	7.5	7.6	3.1	1.2	0.0	1.4
Heating benefits	100.0	5.4	10.6	23.2	26.6	21.2	9.5	3.1	0.0	0.4	0.0	0.0	0.0
Child care benefit	100.0	0.0	0.3	27.2	29.3	23.6	11.6	3.5	4.5	0.0	0.0	0.0	0.0
Universal child allowance	100.0	0.0	1.2	23.4	34.8	21.0	10.7	4.6	2.6	0.9	0.7	0.0	0.1
Scholarships, money for high school	100.0	0.1	3.5	15.0	27.3	28.6	9.0	10.9	1.2	4.3	0.0	0.0	0.0
Disabled allowance	100.0	2.1	14.1	28.8	20.4	14.8	10.6	5.6	2.6	0.0	1.0	0.0	0.0
Social assistance pension	100.0	5.4	25.0	6.9	21.8	22.3	18.6	0.0	0.0	0.0	0.0	0.0	0.0
Privileges for war benefits, political prosecution, heroes, etc.	100.0	19.5	22.3	14.1	8.3	19.5	2.5	4.8	4.9	4.2	0.0	0.0	0.0
Other social assistance benefits	100.0	0.1	3.3	17.2	18.7	9.8	21.9	14.8	6.1	0.0	0.0	0.0	8.2
In-kind benefits	100.0	2.8	9.1	18.7	30.4	19.6	10.2	4.1	2.9	1.4	0.7	0.0	0.0
All private transfers	100.0	10.8	17.4	26.1	27.3	10.6	5.0	1.5	1.0	0.3	0.0	0.0	0.0
Money from out of household	100.0	10.8	17.4	26.1	27.3	10.6	5.0	1.5	1.0	0.3	0.0	0.0	0.0

Table 5.29: Custom Table

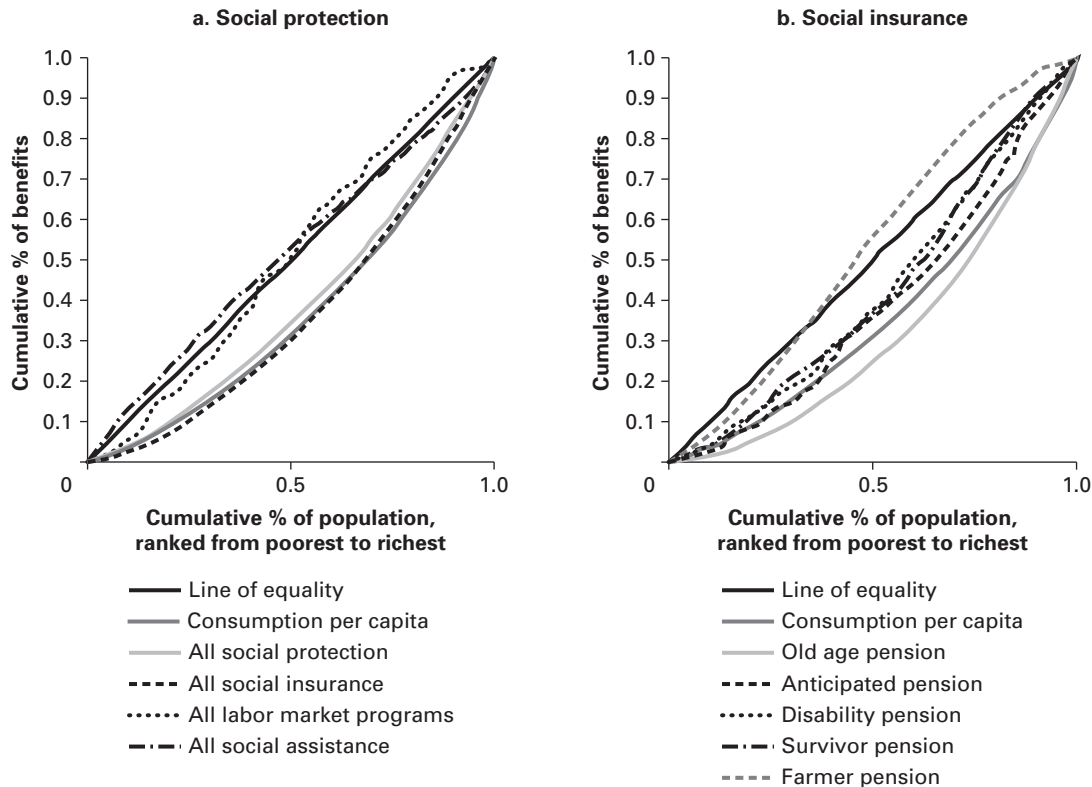
<i>Custom table</i>	<i>Social insurance</i>
<i>Age groups</i>	
0–18	23.7
19–64	58.8
65+	17.4

Figures

Concentration Curves

In addition to tables, ADePT generates a number of graphs that are typical presentations of results in social protection reports. It helps to visualize some key concepts and make the result more intuitively clear. Graphs are

Figure 5.1: ADePT SP Figure 1, Concentration Curve

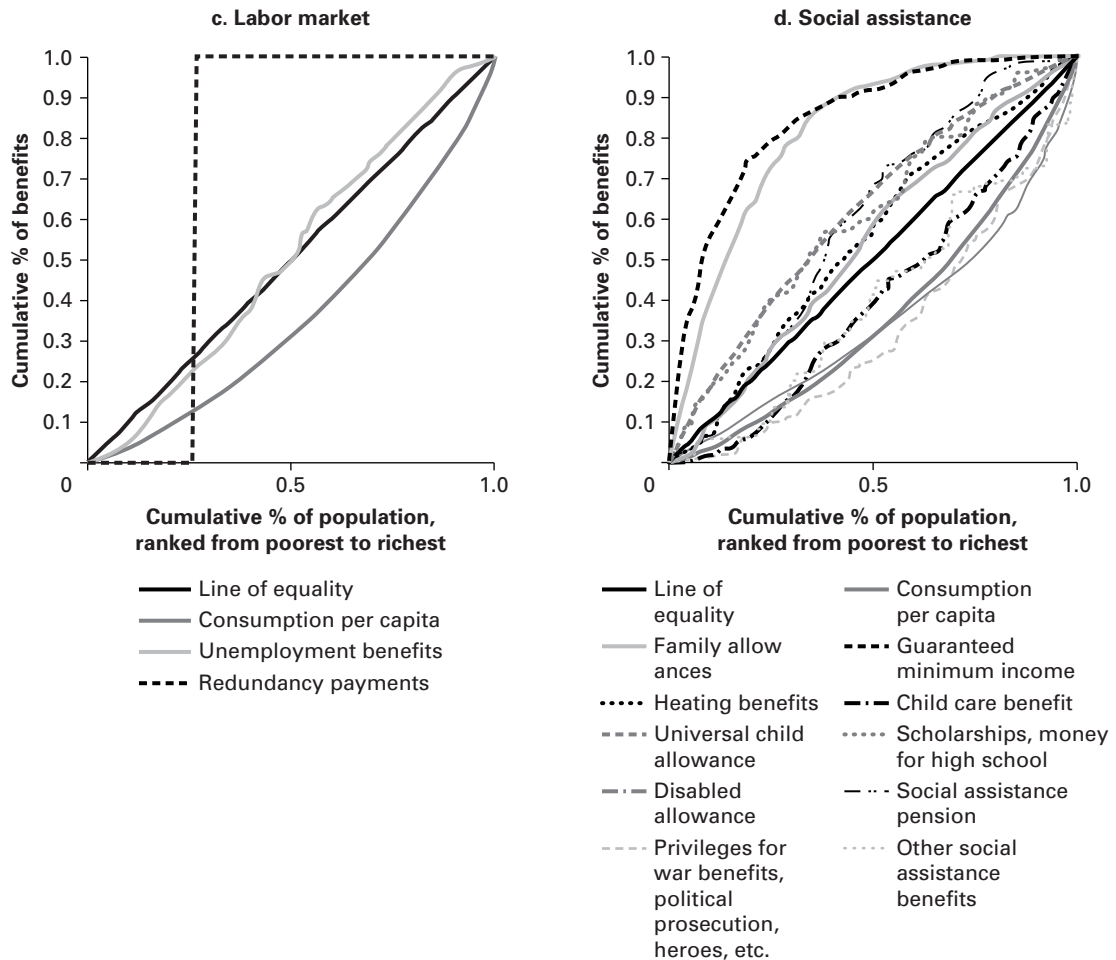


(continued)

generated as part of the Excel file, and the user has some flexibility in modifying their contents before using them in reports.

Figure 5.1 provides a visual depiction of the concentration index, which is a summary of progressivity or regressivity of a given program. The y-axis is the cumulative percentage of benefits, and the x-axis is the cumulative percentage of population, ranked from poorest to richest. Therefore the graphs present benefit incidence. If a program (or broader category) is progressive, most of the program graph lines will be *above* and to the left of the line of equality, whereas the more regressive a program is, the further its line would be *below* the line of equality.

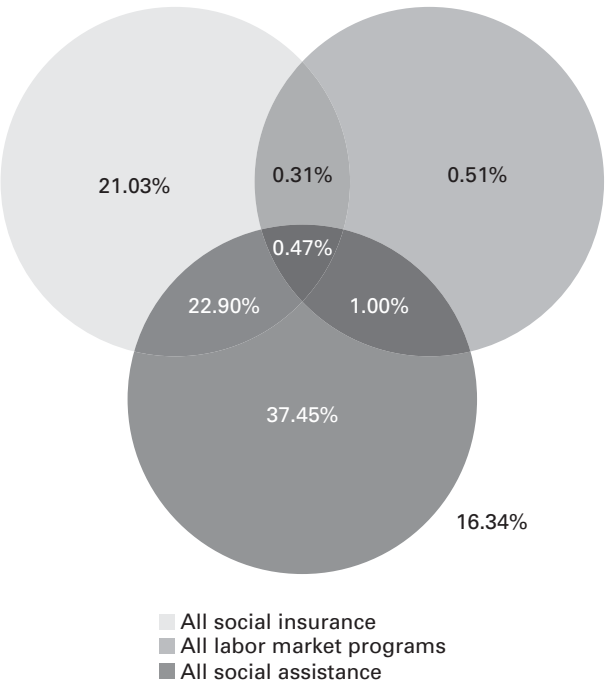
Examining the Romania results, we can see the wide variation in the concentration curves. Starting with social protection, the gray line in panel a, we see that overall benefits accrue more to the rich, as the line is

Figure 5.1: ADePT SP Figure 1, Concentration Curve (*continued*)

Source: ADePT output based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

below the line of equality. Only social assistance has most of its line above, meaning that it is progressive, whereas social insurance and labor market programs are relatively regressive. Focusing on social assistance, we see a range of plots. The GMI is the most progressive, as can be seen by the fact that its plot is most skewed above and to the left of the line of equality, meaning that most benefits are received by the poor. By contrast, privileges for war benefits, political prosecution, and heroes are the most regressive, because most benefits accrue to those with higher welfare.

Figure 5.2: ADePT SP Figure 2, Venn Diagrams



Source: ADePT output based on National Institute of Statistics (Romania) 2012, “Household Budget Survey 2012.”

Note: The 16.34 percent in the figure’s white space refers to the population that receives no social protection transfers.

Venn Diagram

Figure 5.2 produces a Venn diagram illustrating the overlap of three groups of programs (social insurance, labor market, and social assistance) and the share of population not covered by any type of SP transfer. The visualization is based on table 5.18.

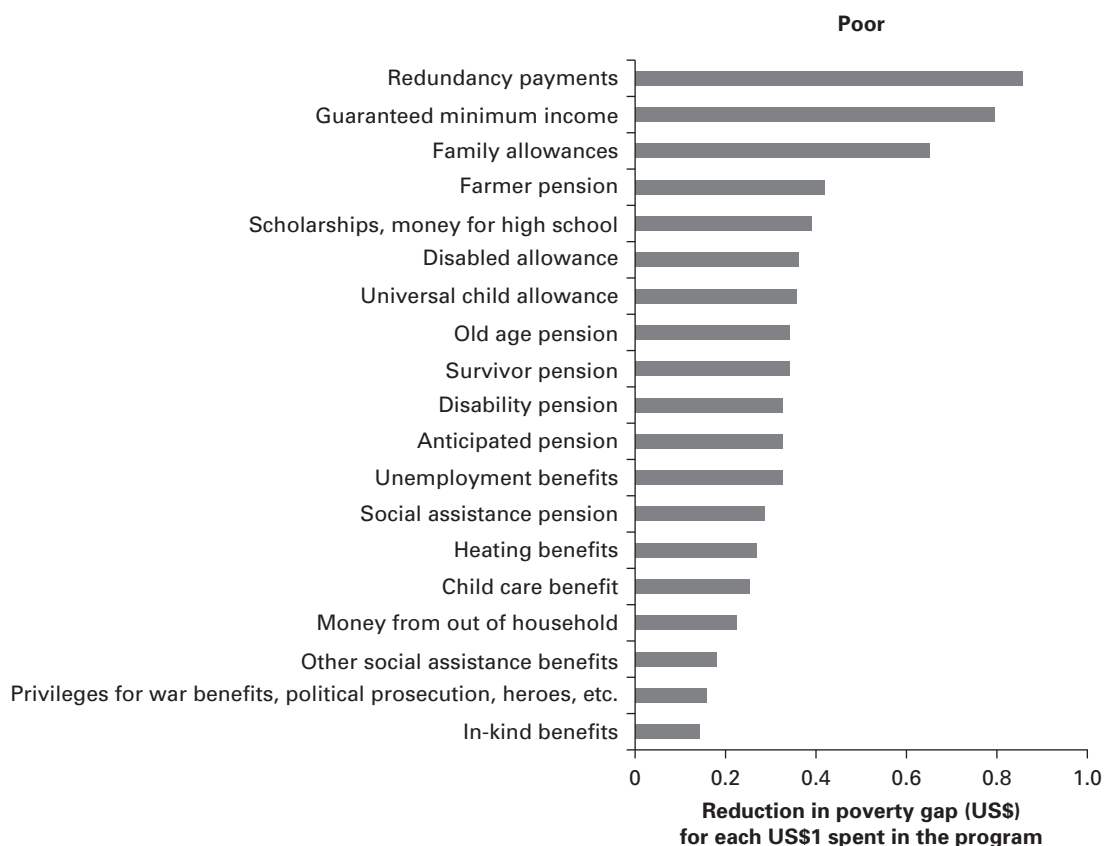
In the results for Romania, we can see the overlap of the three categories clearly. For social insurance, for 21.03 percent of the population, this type is the only transfer received; 22.90 percent receive both social insurance and social assistance; 0.31 percent social insurance and labor market; 0.47 percent receive all three transfer types; and 16.34 percent of the population receive no SP transfers. Examining the overlap areas can be important for policy and program design. In this case, the most overlap is in social

insurance and social assistance, which may indicate weaker targeting for both types, with social insurance including a high share of poor and social assistance including a high share of nonpoor.

Figure 5.3: Benefit-Cost Ratios

Graph 3 shows the estimated reduction in the poverty gap for each LCU spent on a program or group of programs, a simplified benefit-cost ratio. (In the ADePT standard graph, the monetary values are represented as dollars [\$]. A user can change that label.) We assume a marginal propensity to

Figure 5.3: ADePT SP Figure 3, Benefit-Cost Ratios



Source: ADePT output based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

consume out of a transfer of 100 percent. When the user specifies two poverty lines, it generates two graphs with the suffix of *HI* for the higher line and *LO* for the lower line. This graph is the visual presentation of table 5.19.

The results from Romania show a wide range of ratios. Ignoring redundancy payments because of the small number of observations, we see that the GMI has the highest benefit-cost ratio, followed by family allowance, which means these programs have the greatest share of transfers that reduce the poverty gap. These results align with Graph 1, which shows these two programs as the most progressive. The programs with the least impact on poverty are privileges for war benefits and in-kind benefits, again corresponding to Graph 1.

Advanced Topics in Using ADePT SP

Earlier sections of this chapter illustrated how existing SP benefits are distributed across different groups in the population, focusing on groups defined across a welfare variable (poor and nonpoor, quintiles or deciles). This section goes beyond typical use to cover the following advanced topics:

- *Sensitivity analysis.* Examines how results change when using different welfare aggregates (for example, per capita versus per adult equivalent scales, income versus consumption) or different welfare counterfactuals (posttransfer versus pretransfer welfare).
- *Program compliance.* Checks (simulates) whether the program's beneficiaries are those and only those who pass the eligibility requirements or rules of the program.
- *Simulations.* Simulates the incidence of new or restructured social assistance programs: ex ante benefit incidence analysis for simulated change in programs.

As in the previous sections, examples are based on the Household Budget Survey 2012 (National Institute of Statistics [Romania] 2012).

Sensitivity Analysis across Different Welfare Counterfactuals

In this example, we check whether the distributional results for one social assistance program—the GMI program—are relatively stable across different

counterfactuals. If the results do not change substantially, we have an indication that our analysis is robust to different assumptions on how to measure welfare. More specifically, we examine how the program coverage, benefit incidence, and the benefit-cost ratio for the bottom quintile change when using different welfare counterfactuals (posttransfer versus pretransfer welfare). We also check if the differences in program coverage or benefit incidence associated with different welfare counterfactuals are statistically significant or not.

As described in chapter 2, there are four choices for the welfare aggregate:

- V0: *No adjustment*, using the actual welfare aggregate and is therefore posttransfer
 - $WA_PRE = WA$
- V1: *Net of all social protection transfers, but assumes some substitution*
 - $WA_PRE = WA - 0.5*SI - 0.5*LM - SA$
- V2: *Net of each social protection transfer*
 - $WA_PRE_i = WA - BFT_i$
- V3: *Net of all social assistance*
 - $WA_PRE = WA - Sum (all SA)$

To test the sensitivity of the GMI coverage, benefit incidence, and benefit-cost ratio to alternative welfare aggregates, we take the following steps:

1. From the list of available SP programs, we select only the GMI program (variable *guarantee minimum income*).
2. We select as monetary welfare aggregate *welfare*.
3. We select the number of quintiles, 5.
4. We select only three results tables from the list of tables with *direct and indirect beneficiaries*: tables 5.5 (coverage), 5.7 (distribution of benefits), and 5.19 (benefit-cost ratio).
5. We run one set of simulations using per capita income as welfare aggregate (leaving the box for adult equivalent adjustment blank) and generate three sets of tables by checking sequentially each of the three welfare counterfactuals: no adjustment (V0), net of all SP transfers (V1), net of each SP transfer (V2), and net of all social assistance (V3).
6. Finally, we summarize all the results in table 5.30.

Table 5.30: Sensitivity Analysis, Guaranteed Minimum Income

<i>Household welfare</i>	<i>Coverage</i>		<i>Benefit incidence</i>		<i>Adequacy</i>		<i>Benefit-cost ratio</i>
	<i>Population (%)</i>	<i>Q1 (%)</i>	<i>Total (%)</i>	<i>Q1 (%)</i>	<i>Total</i>	<i>Q1</i>	
V0	2.7	10.7	100	74.9	21.2	25.0	0.80
V1	2.7	10.6	100	75.6	21.1	25.1	0.80
V2	2.7	11.6	100	86.6	21.1	24.3	0.80
V3	2.7	11.9	100	85.5	21.2	23.7	0.80

Source: ADePT SP results based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: Q1 = quintile 1.

Table 5.30 summarizes the coverage, benefit incidence, and benefit-cost ratio of the GMI program for two population groups: the overall population and those in the bottom quintile. The table shows the ranking of the households as they differ across income counterfactuals (V0, V1, V2, and V3).

The information in table 5.30 tells the user that in Romania in 2012, the GMI program covered between 10.6 percent and 11.9 percent of the poorest quintile, depending on the counterfactual used to estimate pretransfer welfare. The beneficiaries from the poorest quintile capture between 74.9 percent and 86.6 percent of GMI transfers. These results fall into a relatively narrow band, indicating strong targeting accuracy. Excluding GMI from welfare or excluding all social assistance then results in a significantly higher estimate of targeting accuracy.

The GMI benefit-cost ratio indicates the reduction in poverty gap achieved for 1 LCU of benefit from the program. The closer this indicator is to one, the better is its targeting accuracy. The Romanian GMI has a very high benefit-cost ratio, 0.80, meaning that 80 percent of the benefits are reducing the poverty gap. Note that the benefit-cost ratio does not change with different welfare counterfactuals: this indicator is always estimated on the basis of posttransfer welfare measure, irrespective of the counterfactual option chosen by the user.

Overall, the results from table 5.30 convey a consistent message of a well-targeted program that covers only a fraction of the poorest or the extreme poor. The fact that the program covers only a small fraction of the bottom quintile should not automatically flag that the program has high exclusion errors. A closer examination of the table indicates that up to 11.9 percent of poor households are, in fact, covered by the program. By its nature, the GMI is a last-resort program, which fills the poverty gap after the beneficiaries have received other SP programs.

Program Compliance

Program compliance measures how well an SP program is implemented given its own rules. Although compliance has many aspects, in this advanced analysis we focus on compliance in determining eligibility. The best way to assess compliance with eligibility is by reviewing a random, representative sample of applicants' files shortly after their assessment by the eligibility workers—a method termed *benefit reviews* in the United Kingdom and *quality control review* in the U.S. food stamp program. The results of such assessment will typically quantify the amount of error, fraud, and corruption in the system and the number of incorrect decisions (be they underpayments or overpayments).

The second-best method is to look at the targeting accuracy of the program by using the same criteria as the one applied in the program (same administrative income, same category filters to identify eligible family members, and same eligibility threshold). This weaker version of testing program compliance can be undertaken with household survey data, provided that the survey collects all the information needed to determine (in our case, simulate) eligibility.

In this example, we estimate the proportion of households benefiting from the child allowance program in Romania that complies with the eligibility rule of the program. As of 2007, these rules were quite simple: all children ages 18 years or younger were eligible for this program. Children may be older if they are full-time students. To test how strong the compliance of the child allowance program was, we generated a dummy variable for simulated eligibility, based on the age of the child ($\text{age} \leq 18 \mid (\text{age} > 18 \text{ and } \text{age} < 21 \text{ and } \text{student}=1)$). Then we produce a custom table with ADePT SP that shows the share of child benefits based on eligibility. A variable for eligibility can be created within ADePT or using a statistical program. On the ADePT SP **Main** tab, the custom variable is set as *child_elig*, which has a value of one if the household has a child under the age of 18 or under 21 if the child is a student. Table 5.31 presents the results.

We see for the child care benefit, 99.5 percent of recipient households comply with the program, whereas for the universal child allowance, 98.8 percent of recipient households are eligible. There appears to be very high compliance for these two programs, with only 0.5 percent and 1.2 percent of benefits going to ineligible households. Conducting such analysis is most

Table 5.31: Profile by Custom Household Characteristic

	<i>Total</i>	<i>Child_elig</i>	
		<i>0</i>	<i>1</i>
All social protection	100.0	37.9	62.1
All social insurance	100.0	64.6	35.4
Old-age pension	100.0	68.0	32.0
Anticipated pension	100.0	70.1	29.9
Disability pension	100.0	62.2	37.8
Survivor pension	100.0	57.6	42.4
Farmer pension	100.0	60.1	39.9
All labor market programs	100.0	42.7	57.3
Unemployment benefits	100.0	42.7	57.3
Redundancy payments	100.0	100.0	0.0
All social assistance	100.0	16.5	83.5
Family allowances	100.0	0.2	99.8
Guaranteed minimum income	100.0	18.5	81.5
Heating benefits	100.0	33.0	67.0
Child care benefit	100.0	0.5	99.5
Universal child allowance	100.0	1.2	98.8
Scholarships, money for high school	100.0	17.1	82.9
Disabled allowance	100.0	54.6	45.4
Social assistance pension	100.0	52.6	47.4
Privileges for war benefits, political prosecution, heroes, etc.	100.0	64.3	35.7
Other social assistance benefits	100.0	4.9	95.1
In-kind benefits	100.0	19.7	80.3
All private transfers	100.0	41.3	58.7
Money from out of household	100.0	41.3	58.7

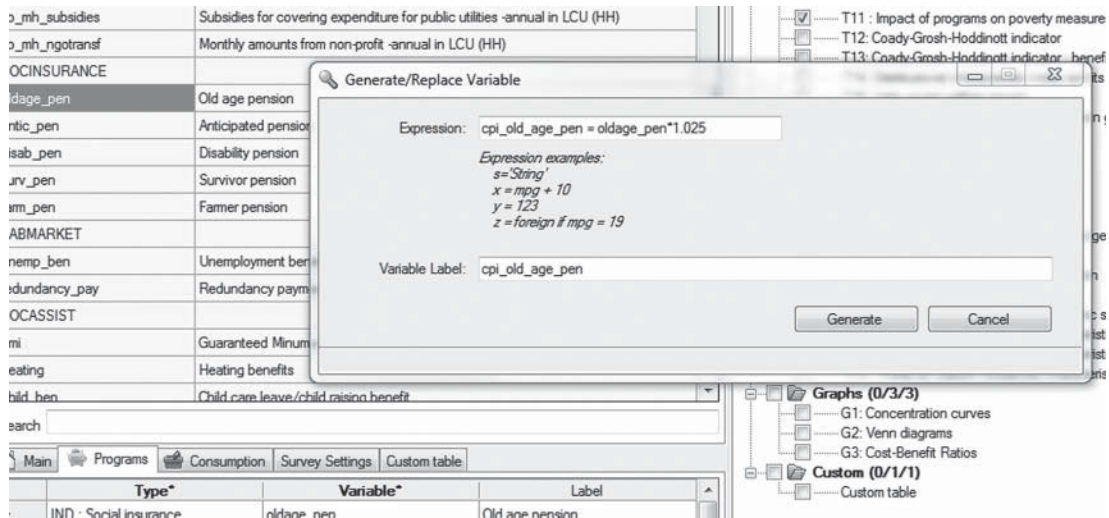
Source: ADePT output based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

important for programs that are not targeted to poverty, because poverty status is not the relevant performance metric.

Simulation of a Parametric Change of a Social Protection Program

All previous examples have used ADePT SP to describe how the benefits of *existing* SP programs are distributed across welfare groups (ex post analysis). You can also perform ex ante analysis with ADePT SP. For example, you can examine what will happen with the program coverage, targeting, the budget, and the poverty impact of an existing program if its design parameters are modified.

There are a few ways to simulate a reform with ADePT SP. First, the user can generate a new variable, which may, for example, increase or decrease the value of a program or impose new eligibility criteria. In the first case, we will assume that the government is considering adjusting the old-age

Screenshot 5.3: Simulating Benefit Increase

pension for inflation to protect the real (inflation-adjusted) value. (See screenshot 5.3.) Here are the steps:

1. Select the **Variables** tab.
2. Right click on the program that the reform will be testing, in this case, **oldage_pen**.
3. Select **Add a variable**.
4. Enter the change in the **Expression**, in this case $Cpi_old_age_pen = oldage_pen * 1.025$ (simulating an increase in pension benefits of 2.5 percent).
5. Add a label, although the **Expression** will be used if none is entered.
6. Select **Generate**.
7. Add the new variable to the **Program** tab.
8. Run ADePT SP and compare the results.

Now we can see the effect of the proposed change. Table 5.32 shows that the average transfer value would increase from 1,408.9 LCU (in table 5.3) to 1,444.1 LCU, a 2.5 percent increase, as expected. As the increase was applied to all receipts, the same percentage increase is observed for all subgroups. Coverage (table 5.5) remains unchanged, again as expected. Adequacy (table 5.9) increases from 71.7 percent to 73.5 percent. The estimated

poverty and inequality impacts (table 5.11) improve slightly. We see the cost of the reform by looking at table 5.19 and the total amount spent on the program and comparing the current amount, which is 30,060,712,018 LCU, with the amount for the proposed reform, which is 30,812,229,831 LCU—an additional 752 million LCU.

In the next example, we assume that because of a budget shortfall, the GMI will alter the eligibility criteria by targeting only Q1, the 20 percent poorest in the population (table 5.33). To simulate that change in the data, we use the expression *povgmi=gmi if quintile==1* to create the new variable. In the new table, we have results for Q1 and not the other quintiles. All benefits and beneficiaries are in Q1, and the targeting differential (see table 5.10) has improved because, although coverage of the poor is the same, now there is no leakage. The DCI (table 5.14) has also improved, from 1.35 to 1.56, driven nearly fully by targeting efficiency and not redistributive efficiency. Finally, the benefit-cost ratio (table 5.19) has increased from 0.80 to 1.00, as now perfect targeting is assumed, so all benefits accrue to those below the poverty line, which is set at the maximum value in Q1.

Table 5.32: Simulating Benefit Increase

	<i>Average transfer value, per capita (table 5.3)</i>	<i>Coverage (%) (table 5.5)</i>	<i>Adequacy (%) (table 5.9)</i>	<i>Poverty headcount impact (%) (table 5.11)</i>	<i>Total amount spent on program (LCU) (table 5.19)</i>
Old-age pension	1,408.9	27.4	71.7	17.5	30,060,712,018
CPI old-age pension	1,444.1	27.4	73.5	17.6	30,812,229,831

Source: ADePT output based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: CPI = consumer price index; LCU = Local currency units.

Table 5.33: Simulating Program Reform

	<i>Distribution of beneficiaries (%) (Q1) (table 5.6)</i>	<i>Distribution of benefits (%) (Q1) (table 5.7)</i>	<i>Targeting differential (%) (table 5.10)</i>	<i>Distributional characteristic index (epsilon 1.0) (table 5.14)</i>	<i>Benefit-cost ratio (table 5.19)</i>
GMI	78.4	74.9	-10.9	1.35	0.80
GMI Q1 only	100.0	100.0	10.7	1.56	1.00

Source: ADePT SP based on National Institute of Statistics (Romania) 2012, "Household Budget Survey 2012."

Note: Q1 = quintile 1.

As has been shown, ADePT SP can be used to simulate a range of social protection reforms, from changing the benefits level to changing eligibility criteria. A reform with both components could also be considered. For example, first the user would create a new variable based on an existing program that decreases the benefit amount of 10 LCU in urban areas (we will call this new variable *gmi_urb*). Next, the user could select *gmi_urb* and apply a series of eligibility criteria to create *gmi_urb_new_elig*. In the process of creating multiple reform variables, the user could then add each of them to ADePT as programs (*gmi*, *gmi_urb*, *gmi_new_elig*), generate results, and see the incremental cost and performance effect of the various reform pieces. ADePT is a powerful tool that allows users to perform reform estimates so they will have more evidence of the likely effects of changes that will help them select the option that most satisfies the objectives.

Notes

1. Microsoft Windows is supported, but Mac and tablets are not.
2. This automatic calculation of per capita welfare can lead to differences from the ADePT Poverty results, as not all individuals, such as servants, listed in the household are members.
3. The one exception is if a survey has a self-weighted sample, although this is rare for household surveys.
4. Epsilon is defined in chapter 2. Greater values place more emphasis on equality, and lower incomes are more important for social welfare. Lower values of epsilon mean that higher incomes are valued more.

References

- Foster, J., J. Greer, and E. Thorbecke. 1984. "A Class of Decomposable Poverty Measures." *Econometrica* 52 (3): 761–66. <https://oied.ncsu.edu/selc/wp-content/uploads/2013/03/A-Class-of-Decomposable-Poverty-Measures.pdf>.
- National Institute of Statistics (Romania). 2012. "Household Budget Survey 2012." International Household Survey Network (IHSN) Survey Catalog. <http://catalog.ihsn.org/index.php/catalog/4694>.

- Skoufias, E., K. Lindert, and J. Shapiro. 2009. "Globalization and the Role of Public Transfers in Redistributing Income in Latin America and the Caribbean." UNU-WIDER Research Paper No. 2009/02. <http://documents.worldbank.org/curated/en/777791468266370494/Globalization-and-the-role-of-public-transfers-in-redistributing-income-in-Latin-America-and-the-Caribbean>.
- Tesliuc, Emil D., and Phillippe G. Leite. 2010. *User Manual for ADePT Social Protection (ADePT SP)*. Washington, DC: World Bank. http://siteresources.worldbank.org/SAFETYNETSANDTRANSFERS/Resources/SPADePTUserManualV1Mar01_2010.pdf.

APPENDIXES

ASPIRE Administrative Data Classification

Table A.1 shows classifications of administrative data that the Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) uses.

Table A.1: Classifications of Administrative Data in ASPIRE

<i>Social protection and labor area</i>	<i>Program category and subcategory</i>
1. Social assistance	1.1. Cash transfers 1.1.1. Poverty targeted cash transfers 1.1.2. Family and child allowance, including orphan and vulnerable children benefits 1.1.3. Public–private charity, including zakat 1.1.4. Housing and utility allowance benefits 1.1.5. Emergency support in cash, including support to refugees and returning migrants 1.1.6. Scholarships benefits 1.1.7. Old-age social pensions 1.1.8. Disability social pensions, allowance, and benefits 1.1.9. War veterans benefits 1.1.10. Noncontributory funeral grants, burial allowances 1.1.11. Public works, workfare, and direct job creation 1.1.12. Other cash 1.2. Food, in-kind and near-cash transfers 1.2.1. Food stamps and vouchers 1.2.2. Food distribution programs 1.2.3. School feeding and take-home 1.2.4. Nutritional programs, including therapeutic, supplementary, and people living with HIV (PLHIV)

(continued)

Table A.1: Classifications of Administrative Data in ASPIRE (continued)

<i>Social protection and labor area</i>	<i>Program category and subcategory</i>
	1.2.5. Emergency support (including refugees and returning migrants) 1.2.6. Targeted subsidies: health benefits and reduced medical fees for vulnerable groups 1.2.7. Targeted subsidies: educational fee waivers 1.2.8. Targeted subsidies: housing and utility 1.2.9. Other food and in-kind program 1.2.10. Food for work (including food for training, food for assets, and so forth) 1.3. Other social assistance 1.3.1. Tax exemptions 1.3.2. Other exemptions 1.3.3. Other social assistance transfer
2. Social insurance	2.1. Contributory- and earnings-related pensions and savings programs 2.1.1. Old age pension (all) 2.1.1.1. Old age pension (national schemes) 2.1.1.2. Old age pension (civil servants schemes) 2.1.1.3. Old age pension (other special schemes) 2.1.2. Survivors pension (all) 2.1.2.1. Survivors pension (national schemes) 2.1.2.2. Survivors pension (civil servants schemes) 2.1.2.3. Survivors pension (other special schemes) 2.1.3. Disability pension (all) 2.1.3.1. Disability pension (national schemes) 2.1.3.2. Disability pension (civil servants schemes) 2.1.3.3. Disability pension (other special schemes) 2.2. Other social insurance 2.2.1. Occupational injuries 2.2.2. Sickness and injury leave 2.2.3. Maternity and paternity benefits 2.2.4. Contributory funeral grants and like insurance 2.2.5. Health insurance 2.2.6. Other social insurance
3. Labor market programs	3.1. Labor market policy services (intermediation) 3.1.1. Labor market services, including public employment services (PES) 3.2. Labor market policy measures (active labor market programs) 3.2.1. Training (vocational, life skills, cash for training) 3.2.2. Job rotation and job sharing 3.2.3. Employment incentives/wage subsidies 3.2.4. Employment measures for disabled 3.2.5. Entrepreneurship support and startup incentives (cash and in-kind grant, loans, training) 3.2.6. Other active labor market programs (ALMPs) 3.3. Labor market policy supports (passive labor market programs) 3.3.1. Out-of-work income maintenance (unemployment benefits, contributory) and severance payment if subsidized by government 3.3.2. Out-of-work income maintenance (unemployment benefits, noncontributory) 3.3.3. Early retirement for labor market reasons

(continued)

Table A.1: Classifications of Administrative Data in ASPIRE (*continued*)

<i>Social protection and labor area</i>	<i>Program category and subcategory</i>
4. Social care services	4.1. Care for children and youth 4.1.1. Day care services for vulnerable children, orphans 4.1.2. Foster care 4.1.3. Specialized social care for children (abandoned, neglected, abused, orphaned) 4.1.4. Nonresidential psychological services for children and vulnerable youth 4.1.5. Basic and specialized social care for substance abusers 4.2. Care for family 4.2.1. Preservation and reunification counseling services 4.2.2. Domestic violence victims' basic and specialized social care services 4.2.3. Rehabilitation services 4.2.4. Community development services 4.2.5. Mother care and counseling services 4.3. Care for vulnerable working age 4.3.1. Basic and specialized social care services for the homeless 4.3.2. Basic and specialized social care for substance abusers 4.3.3. Immigrant counseling and care services 4.4. Care for the disabled 4.4.1. Residential care services for persons with disabilities (PWD) 4.4.2. Psychosocial care services 4.4.3. Personal assistance and day care 4.5. Care for older persons 4.5.1. Residential care facilities 4.5.2. Psychosocial care services 4.5.3. Homeless shelters 4.5.4. Personal assistance and day care services 4.6. Other social care services 4.6.1. Other social care services
5. General subsidies	5.1. General subsidies 5.1.1. Food subsidies 5.1.2. Fuel subsidies 5.1.3. Electricity subsidies 5.1.4. Housing subsidies 5.1.5. Transport subsidies 5.1.6. Agricultural input subsidies (seed and fertilizer subsidies, possibly other types as well)

Formulas

Notation

This appendix provides the definitions for poverty, inequality, and SP indicators both mathematically and with word definitions. The mathematical shorthand is as follows:

Λ is an indicator function, with a value of 1 if true, otherwise 0.

g^h is a binary variable with a value of 1 if a household is a member of the group (e.g., decile, urban/rural, or total population), otherwise 0.

dm^h is the per capita value of a transfer to a household h .

dm^* is the average transfer value for beneficiaries of a transfer.

w^h is the number of persons in a household multiplied by the household survey weight.

y^h is the reported household income or consumption (also referred to as welfare).

α is a parameter for poverty indices.

z is the poverty line.

J indicates a particular group.

y_i is the income or consumption of person i .

β^h is the welfare weight, the social value of additional income to household h .

θ^h is the share of the transfer budget going to each household.

λT is the targeting efficiency.

λR is the redistributive size efficiency.

ε is the aversion to inequality

ΔPG is the change in the poverty gap.

X is the total transfer amounts for a program.

Poverty Measures

$$P(\alpha) = \frac{1}{N} \sum_i \max \left(0, \left(\frac{z - y_i}{z} \right) \right)^\alpha, \quad (1)$$

where z is the poverty line; y_i is income for person i ; and $(z - y_i)/z$ is the poverty gap for person i —the difference between his or her income and the poverty line—expressed as a share of the poverty line. The “max” function says that if income y_i is below the poverty line so that the poverty gap is positive, then we use that value in the sum. Otherwise, we use zero. The α parameter can vary, and specific values of α yield FGT poverty measures. In particular, when $\alpha = 0$, the argument in the sum is just 1 if the poverty gap is positive and 0 if not,¹ and so the sum counts only the number of people who are poor: the “head count” poverty measure. If $\alpha = 1$, then we have the average of all the individual poverty gaps, and thus, it is called the (average) poverty gap. It is the amount of money needed per person in the population to just eliminate poverty if that money could be targeted perfectly so as to bring everyone’s income up to z . When $\alpha = 2$, the sum measures “poverty severity.” In this case, each person’s poverty gap is weighted by her or his distance from the poverty line, so the poorest receive more weight in the poverty measure when $\alpha = 2$, whereas each poor person has equal weight when $\alpha = 1$.

Inequality Measures

The algebraic expression for the Gini index can take multiple forms, including a classical one proposed by its author, Corrado Gini:

$$G = \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2 \sum_{i=1}^n \sum_{j=1}^n x_j} = \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2n \sum_{i=1}^n x_i} \quad (2)$$

This formula is typically interpreted as relative mean deviation. The mean absolute difference is the average absolute difference of all possible pairs i and j of people in a population n . Gini is half of the mean absolute difference divided by the average income.

Generalized entropy indices

Based on the θ parameter used for calculation, the measure places more weight on the bottom of the distribution (θ close to 0), equal weight when $\theta = 1$, and more weight on the upper end as θ increases. The generalized entropy index of inequality is described by equation (7):

$$GE(\theta) = \frac{1}{\theta(1-\theta)} \left(-1 + \frac{1}{N} \sum_i \left(\frac{y_i}{\mu} \right)^\theta \right), \quad (3)$$

where μ is the mean of the income distribution and θ is a parameter that varies the importance of different incomes. Note that the generalized entropy measure is 0 if all incomes are equal (and thus equal to μ). But unlike the Gini, these indexes do not have upper bounds.

Special cases of general entropy indexes are the Theil's L index (mean log deviation) shown in equation (8) and Theil's T index shown in equation (9).

$$GE(0) = \frac{1}{N} \sum_i \ln \left(\frac{\mu}{y_i} \right) \quad (4)$$

$$GE(1) = \frac{1}{N} \sum_i \left(\frac{y_i}{\mu} \right) \ln \left(\frac{y_i}{\mu} \right) \quad (5)$$

Theil's L index has a value close to 0 when all incomes are very proximate and a large value when there is more dispersion. A high Theil T value also indicates high inequality, and a low value shows low inequality. The value of two indexes is the same in the case of lognormal distribution (Aitchison and Brown 1957; see chapter 2 for full reference).

SP Performance Indices

The following equations show the various social protection performance indices. This section draws heavily on Lindert, Skoufias, and Shapiro 2009; see chapter 2 for full reference.

$$\text{Average transfer value, per capita} = \frac{\sum dm^h w^h}{\sum w^h} \quad (6)$$

$$\begin{aligned}
 &\text{Average transfer value, per capita} \\
 &= \frac{\sum (\text{Per capita transfer value to household})(\text{Expanded household size})}{\sum (\text{Expanded household size})} \\
 &\text{Average transfer value, per capita} = \frac{\text{Total transfer value}}{\text{Population}} \\
 &\text{Average transfer value, beneficiaries} = \frac{\sum dm^h w^h}{\sum \Lambda(dm^h > 0)w^h} \quad (7)
 \end{aligned}$$

$$\begin{aligned}
 &\text{Average transfer value, beneficiaries} \\
 &= \frac{\sum (\text{Per capita transfer value to household})(\text{Expanded household size})}{\sum (\text{Household receiving transfer})(\text{Expanded household size})}
 \end{aligned}$$

$$\text{Average transfer value, beneficiaries} = \frac{\text{Total transfer value}}{\text{Total number of beneficiaries}}$$

$$\text{Coverage} = \frac{\sum \Lambda(dm^h > 0)w^h}{\sum w^h} \quad (8)$$

$$\text{Coverage} = \frac{\sum (\text{Household receiving transfer})(\text{Expanded household size})}{\sum (\text{Expanded household size})}$$

$$\text{Coverage} = \frac{\text{Transfer recipients}}{\text{Population}}$$

$$\text{Beneficiary incidence} = \frac{\sum \Lambda(dm^h > 0)g^h w^h}{\sum \Lambda(dm^h > 0)w^h} \quad (9)$$

$$\text{Beneficiary incidence} = \frac{\sum(\text{Household receiving transfer, } 0=\text{no, } 1=\text{yes})}{\sum(\text{Household receiving transfer, } 0=\text{no, } 1=\text{yes}) (\text{Expanded household size})}$$

$$\text{Beneficiary incidence} = \frac{\text{Beneficiaries in group}}{\text{Total beneficiaries}}$$

$$\text{Benefit incidence} = \frac{\sum dm^h g^h w^h}{\sum dm^h w^h} \quad (10)$$

$$\text{Benefit incidence} = \frac{\sum(\text{Per capita transfer values to household}) (\text{Group participant, } 0=\text{no, } 1=\text{yes})}{\sum(\text{Per capita transfer value to household}) (\text{Expanded household size})}$$

$$\text{Benefit incidence} = \frac{\text{Transfers received by group}}{\text{Total transfer value}}$$

$$\text{Relative incidence} = \frac{\sum dm^h g^h w^h}{\sum y^h g^h w^h} \quad (11)$$

$$\text{Relative incidence} = \frac{\sum(\text{Per capita transfer value to household}) (\text{Group participant, } 0=\text{no, } 1=\text{yes})}{\sum(\text{Household welfare}) (\text{Group participant, } 0=\text{no, } 1=\text{yes}) (\text{Expanded household size})}$$

$$\text{Relative incidence} = \frac{\text{Transfers received by group}}{\text{Total welfare of group}}$$

ADePT SP's main indicator of adequacy is the sum of all benefits received by a group divided by the sum of that group's income (or consumption). This indicator is expressed in the following equation:

$$\text{Adequacy} = \frac{\sum \Lambda(dm^h > 0) dm^h g^h w^h}{\sum \Lambda(y^h > 0) y^h w^h} \quad (12)$$

$$\text{Adequacy} = \frac{\frac{\sum (\text{Household receiving transfer, } 0=\text{no, } 1=\text{yes})}{(\text{Group participant, } 0=\text{no, } 1=\text{yes}) (\text{Expanded household size})}}{\frac{\sum (\text{Household receiving transfer, } 0=\text{no, } 1=\text{yes})}{(\text{Household welfare}) (\text{Group participant, } 0=\text{no, } 1=\text{yes}) (\text{Expanded household size})}}$$

$$\text{Adequacy} = \frac{\text{Transfers received (by beneficiary group)}}{\text{Total welfare (of beneficiary group)}}$$

The larger the value of adequacy, the more important this transfer is as a source of income to the group. ADePT calculates this for the entire population, the poor, and each quintile or decile of the income distribution.

$$\text{Undercoverage} = \frac{\sum \Lambda(dm^h = 0) \Lambda(y^h \leq z) w^h}{\sum (y^h \leq z) w^h} \quad (13)$$

$$\text{Undercoverage} = \frac{\frac{\sum (\text{Household not receiving transfer}) (\text{Household poor})}{(\text{Expanded household size})}}{\sum (\text{Household poor}) (\text{Expanded household size})}$$

$$\text{Undercoverage} = \frac{\text{Number of poor not receiving transfer}}{\text{Total number of poor}}$$

$$\text{Leakage of beneficiaries} = \frac{\sum \Lambda(dm^h > 0) \Lambda(y^h > z) w^h}{\sum \Lambda(dm^h > 0) w^h} \quad (14)$$

$$\text{Leakage of beneficiaries} = \frac{\frac{\sum (\text{Household receiving transfer})}{(\text{Household not poor}) (\text{Expanded household size})}}{\frac{\sum (\text{Household receiving transfer})}{(\text{Expanded household size})}}$$

$$\text{Leakage of beneficiaries} = \frac{\text{Number of nonpoor receiving transfer}}{\text{Total number of beneficiaries}}$$

$$\text{Leakage of benefits} = \frac{\sum dm^h \Lambda(y^h > z) w^h}{\sum dm^h w^h} \quad (15)$$

$$\text{Leakage of benefits} = \frac{\sum (\text{Per capita transfer value to household}) (\text{Household not poor})}{\sum (\text{Per capita transfer value to household}) (\text{Expanded household size})}$$

$$\text{Leakage of benefits} = \frac{\text{Transfers received by nonpoor}}{\text{Total transfers}}$$

$$\text{Coverage of poor} = \frac{\sum \Lambda(dm^h > 0) \Lambda(y^h \leq z) w^h}{\sum \Lambda(y^h \leq z) w^h} \quad (16)$$

$$\text{Coverage of poor} = \frac{\sum (\text{Household receiving transfer}) (\text{Household poor})}{\sum (\text{Household poor}) (\text{Expanded household size})}$$

$$\text{Coverage of poor} = \frac{\text{Number of poor receiving transfer}}{\text{Total number of poor}}$$

The poverty head count (FGT0, $\alpha = 0$), gap (FGT1, $\alpha = 1$), and severity (FGT2, $\alpha = 2$) impact of SP transfers is calculated as the following:

$$\begin{aligned} \text{Poverty impact of SP:} &= \frac{\sum \left(1 - \frac{y^h - dm^h}{z} \right)^\alpha \Lambda((y^h - dm^h) \leq z) w^h}{\sum w^h} \\ &- \frac{\sum \left(1 - \frac{y^h}{z} \right)^\alpha \Lambda(y^h \leq z) w^h}{\sum w^h} \end{aligned} \quad (17)$$

Poverty impact of SP:

$$\begin{aligned} &\left[\frac{\sum \left(1 - \frac{\text{Household welfare} - \text{Transfer to household}}{\text{Poverty line}} \right)^\alpha \Lambda \left[\begin{array}{l} \left(\frac{\text{Household welfare} - \text{Transfer}}{\text{to household}} \leq \text{Poverty line} \right) \\ (\text{Expanded household size}) \end{array} \right]}{\sum (\text{Expanded household size})} \right] \\ &- \frac{\sum \left(1 - \frac{\text{Household welfare}}{\text{Poverty line}} \right)^\alpha \Lambda (\text{Household welfare} \leq \text{Poverty line}) (\text{Expanded household size})}{\sum (\text{Expanded household size})} \end{aligned}$$

$$\text{Poverty impact of SP: } \frac{\sum \left[\left(1 - \frac{\text{Pre-transfer welfare}}{\text{Poverty line}} \right)^\alpha \right] [\text{Poor household without transfer}]}{\text{Population}} - \frac{\sum \left[\left(1 - \frac{\text{Welfare}}{\text{Poverty line}} \right)^\alpha \right] [(\text{Poor household}) (\text{Expanded household size})]}{\text{Population (households)}}$$

Poverty impact of SP: (Poverty measure α without transfer) – (Poverty measure α with transfer)

Gini impact of SP: Mathematically, the impact of SP transfers on inequality can be calculated by comparing the Gini pre- and posttransfer.

$$\Delta \text{ Gini (G)} = \text{Gini (pretransfer)} - \text{Gini (posttransfer)}$$

Pretransfer distribution Posttransfer distribution

$$\Delta G = \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2n \sum_{i=1}^n x_i} - \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2n \sum_{i=1}^n x_i} \quad (18)$$

Formally, the CGH is calculated as the following:

$$\text{CGH} = \frac{\sum dm^h g^h w^h / \sum dm^h w^h}{\sum g^h w^h / \sum w^h} \quad (19)$$

$$\text{CGH} = \frac{\frac{\sum (\text{Per capita transfer value to household})}{(\text{Group participant, 0 = no, 1 = yes}) (\text{Expanded household size})}}{\frac{\sum (\text{Per capita value of household transfer}) (\text{Expanded household size})}{\sum (\text{Group participant, 0 = no, 1 = yes}) (\text{Expanded household size})}} \cdot \frac{1}{\sum (\text{Expanded household size})}$$

$$\text{CGH} = \frac{\text{Total transfers to group/Total transfer value}}{\text{Beneficiaries in group/Population}}$$

$$\begin{aligned} \text{DCI} &= \\ \lambda &= \sum_h \beta^h \theta^h, \end{aligned} \quad (20)$$

$$\lambda = \sum_h (\text{welfare weight of household, } \beta^h) (\text{share of transfers going to household, } \theta^h),$$

where ε = aversion to inequality and

$$\beta^h = (y^k/y^h)^\varepsilon$$

$$\begin{aligned} \text{Units of social welfare impact} &= \text{Units of social welfare impact} \\ &= \lambda \sum dm^h w^h \end{aligned} \quad (21)$$

$$\text{Units of social welfare impact} = (\text{DCI}) \sum (\text{Per capita transfer to household})$$

(Expanded household size)

$$\text{Units of social welfare impact} = (\text{DCI}) (\text{Total transfer budget})$$

$$\text{Transfer frequency} = \frac{\sum \Lambda(dm_1^h > 0) + \Lambda(dm_2^h > 0) + \Lambda(dm_3^h > w^h)}{\sum w^h} \quad (22)$$

$$\begin{aligned} &\sum (\text{Household receiving transfer 1, 0 = no, 1 = yes}) + \\ &(\text{Household receiving transfer 2, 0 = no, 1 = yes}) + \\ &(\text{Household receiving transfer 3, 0 = no, 1 = yes}) + \\ &(\text{Expanded household size}) \end{aligned}$$

$$\text{Transfer frequency} = \frac{\sum (\text{Expanded household size})}{\sum (\text{Expanded household size})}$$

$$\text{Transfer frequency} = \frac{\text{Number of transfers received}}{\text{Population}}$$

$$\text{Program overlap} = \frac{\sum \Lambda(dm_1^h > 0) \text{ if } (dm_2^h > 0) w^h}{\sum w^h}$$

$$\begin{aligned} &\sum (\text{Household receiving transfer 1) if (Household receiving transfer 2)} \\ &(\text{Expanded household size}) \end{aligned}$$

$$\text{Program overlap} = \frac{\sum (\text{Expanded household size})}{\sum (\text{Expanded household size})} \quad (23)$$

$$\text{Program overlap} = \frac{\text{Beneficiaries of transfer 1 and 2}}{\text{Population}}$$

$$\text{Benefit - cost ratio} = \frac{dPg}{\sum dm^h} \quad (24)$$

$$\text{Benefit - cost ratio} = \frac{\text{Estimated change in poverty gap}}{\text{Total amount spent on program benefits}}$$

Note

1. Formally, 0^0 is undefined, but it is considered zero in this sum.

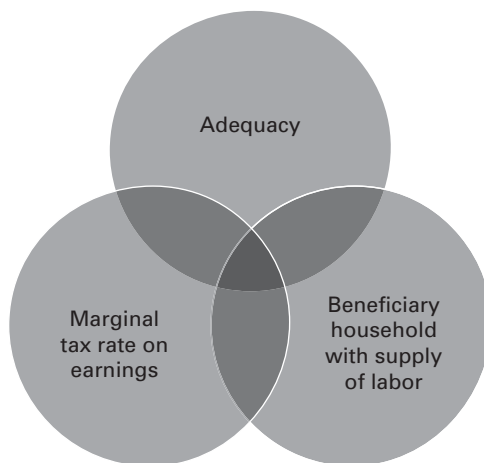
Assessing Whether Social Assistance Programs Could Have Work Disincentives

Whereas analysis is not possible in ADePT SP, understanding the effect of social assistance on the labor market is critical to the design of many programs. This set of indicators applies only to social assistance programs; they can be calculated only if the input file is an individual-level file.

From a theoretical perspective, a social assistance program or group of programs could reduce the supply of labor of beneficiaries if the following conditions apply (see figure C.1):

- *The beneficiary household has a supply of labor.* To simplify, this term means that the beneficiary of the social assistance program should be of working age but in the NEET (not in employment, education, and training) group. Tables P3 and P5 can quantify the number and share of working-age adults who are NEET and offer a socioeconomic profile that can reveal how ready for work the beneficiaries who are able to work are. In addition, custom table P7 allows users to examine the profile of beneficiaries by other custom individual characteristics that prevent participation in the labor market (such as caring duties and functional disabilities).

Figure C.1: Factors That Determine the Extent to Which Social Assistance Transfers Cause Work Disincentives and Dependency



- *Adequacy of benefit for household is high.* The benefit provided by the program would need to be large enough to allow the beneficiary (and the beneficiary's family or household) to "live off the benefit." A proxy for this factor is the generosity indicator: the ratio of benefit to the consumption or income of the beneficiary households (from zero to one). Higher generosity implies stronger disincentives to work. To identify the share of households that depend on benefits for their household income, we quantify the share of social assistance beneficiaries where the share of social assistance income represents more than 33 percent or 50 percent of the total household income. As a rule of thumb and simplifying a little bit, a generosity indicator in excess of 0.33 indicates that one spouse earns in benefits at least half of the income of the other spouse. A generosity indicator at or above 0.5 indicates that one spouse earns benefits equal or greater to the rest of the earnings of the household. The combination of benefits may also want to be considered for assessing adequacy.
- *The marginal tax rate of the program is high.* The marginal tax rate (MTR) on earnings is implicit in the eligibility formula and indicates the value of benefits lost when earnings go up by one monetary unit. The MTR will typically range from 0 to 100 percent, although

certain eligibility conditions may result in values that are larger than one (for example, when moving from social assistance to work results in the loss of benefits, larger than the amount earned). Positive MTRs are found in all income- or means-tested programs. Higher values of MTR indicate fewer incentives to work. For example, a simple guaranteed minimum income program that reduces the value of benefits at the same rate as any extra earnings has a 100 percent MTR and would strongly discourage work. ADePT SP does not offer any guidance here; but a careful read of the program eligibility rules could reveal whether the program imposes a high MTR.

Index

Boxes, figures, notes, and tables are indicated by *b*, *f*, *n*, and *t*, following page numbers.

A

absolute poverty lines, 32–33, 116–17, 134

active labor market programs (ALMPs), 74.

See also labor market programs

ADePT SP

common mistakes, 138–43

counterfactual choices, 37–41, 40_t

data errors, 138–42, 149–50, 149_f

errors in interpretation, 143

formulas, 217–26

generalized entropy indices, 219

inequality measures, 218–19

notation, 217

performance indicators, 219–26

poverty measures, 218

indicators generated by, 4–5, 9–11, 13, 106–8

information requirements, 106

installation, 108–9

key resources, 6–8_t

limitations of, 11–12

overview, 105–6

results, interpretation of, 147–210. *See*

also interpreting ADePT SP results

running, 109–10

step 1-input file creation, 110–22, 116_t, 119_b, 120_t

step 2-read data into ADePT SP, 122–23, 122_f

step 3-assign variables, 123–34, 123–25_f, 129_f

step 4-table and graph selection, 135–36, 135_f

step 5-option specification, 136–37, 138_f

step 6-generate report, 138

Table of Contents, 149

usefulness of, 9–11

adequacy

definitions, 63–64, 64_f

as indicator for poverty and inequality effects, 5, 14_{n1}

indicators generated by ADePT, 107

performance table generation, 9, 171–72, 171_t

- administrative data
 - in ADePT tables, 153*b*
 - ASPIRE database classifications, 213–15
 - sources of, 82, 83
 - survey data limitations and, 93–94
- adult equivalent size, 115
- age and gender. *See also* old-age income insurance
 - population demographics, 155–57, 156*t*, 158–59*t*
 - profile tables by, 187–88, 188*t*
- ALMPs (active labor market programs), 74. *See also* labor market programs
- area of residence, 100
- Argentina, Trabajar workfare program in, 39, 133
- Asian Development Bank (ADB), 20, 26
- ASPIRE database
 - ADePT SP indicator included in, 10
 - administrative data classification, 213–15
 - data quality and, xii, 88
 - social protection benefit categories and subcategories, 22–25, 23–24*t*, 26, 73–76
- assistance and aid programs. *See* social assistance programs
- average transfer value, 53–55, 53–54*f*, 159–63, 160–62*t*
- B**
 - Bangladesh, system gaps in, 11
 - Barrett, Christopher B., 14*n*4
 - Barriento, Armando, 5
 - BCR. *See* benefit-cost ratio
 - Belarus, system gaps in, 11
 - benchmarking performance, 10
 - beneficiary incidence
 - for ADePT input file, 117
 - definitions, 56–57, 57*f*
 - direct vs. indirect beneficiaries, 111–12, 159
 - indicators generated by ADePT, 107
 - performance table generation, 9, 166–68, 166–68*t*, 176–77
 - benefit categories and subcategories, 73–76
 - benefit-cost ratio (BCR)
 - figures, 136, 201–2, 201*f*
 - as indicator, 5
 - performance table generation, 9, 186–87, 186*t*
 - social protection system diagnostics and, 71–73, 72*f*, 72*t*
 - benefit incidence
 - for ADePT input file, 113–14, 117
 - indicators generated by ADePT, 107
 - performance table generation, 9, 168–69, 169*t*, 178–79
 - social protection system diagnostics and, 57–59, 58–59*f*
 - Bergson–Samuelson social welfare function, 77*n*19
 - Bolsa Escola (Brazil), 128
 - Bolsa Familia (Brazil), 94, 127
 - Brazil
 - Bolsa Escola, 128
 - Bolsa Familia, 94, 127
 - household surveys in, 94
 - Programa de Erradicação do Trabalho Infantil (PETI), 128
- C**
 - Caceres, L., 25
 - Carter, Michael R., 14*n*4
 - charities, 25–26, 74
 - child allowance programs, 55–56, 56*f*, 93–94, 111–12, 205
 - clustering effects, 141
 - Coady, D., 64
 - Coady-Grosh-Hoddinott (CGH)
 - indicators
 - interpreting, 176–79, 177–78*t*
 - performance table generation, 107, 136, 176–79, 177–78*t*
 - social protection system diagnostics and, 61–63, 62–63*f*, 62*t*
 - concentration curves, 106, 136, 197–99, 198–99*f*
 - conditional transfers, 2–3, 75, 128
 - consumption data, 84–85, 114, 129–34
 - contributory social assistance, 25, 73
 - Cornia, Giovanni A., 65
 - correlation vs. causation errors, 143
 - counterfactuals
 - ADePT input file and, 130–31
 - defining, 37–41, 40*t*, 77*n*15
 - errors with, 143

coverage
 definitions, 55–56, 56f
 as indicator for poverty and inequality effects, 14n1
 indicators generated by ADePT, 107
 legal vs. effective, 119b
 performance table generation, 9, 164–65t, 164–66
 targeting and, 77n21
 custom household characteristics, 195–96, 197t
 custom individual characteristic, 194, 195t
 custom table options, 196, 197t

D

data checks, 90
 data errors, 138–42, 149–50, 149f
 data quality
 ASPIRE database, xii, 88
 checklist, 92b
 ex post processes, 90–93, 91–92b
 household surveys, 84–85
 during implementation, 89–90
 data requirements for social protection analysis, 81–101
 administrative data used to address survey data limitations, 93–94
 data quality during implementation, 89–90
 ex ante design considerations, 85–89
 ex post data quality processes, 90–93, 91–92b
 household surveys
 area of residence, 100
 data quality, 84–85
 demographic variables, 100–101
 household size, 100
 household weights, 99–100
 sampling procedure, 86–87b
 social protection information in, 94–96
 variable details, 96–99f, 96–101
 sources of data, 81–84
 DCI. *See* distributional characteristic index
 Deaton, A., 87b, 144n3
 Demographic and Health Surveys, 84

demographic variables
 household surveys, 100–101
 population demographics tables, 155–57, 156t, 158–59t
 direct beneficiaries, 111–12, 159
 disability, 4, 27, 73
 disaggregation of indicators, 107
 disaster recovery, 4
 distributional characteristic index (DCI), 43, 46–47, 49t, 50f, 179–82, 179–81t
 distribution of beneficiaries. *See* beneficiary incidence
 distribution of benefits. *See* benefit incidence

E

Eastern Europe and Central Asia,
 last-resort income support (LRIS)
 programs in, 10
 economic status, 191, 193t
 economic well-being
 defined, 13
 indicators, 28–32, 29–31t
 economies of composition, 29–32, 30–31t
 economies of scale, 28–29, 29t
 education
 profile tables by, 189, 190–91t
 social assistance allowances for, 27
 El Salvador, remittances to, 25
 employment status, 155–57, 156t, 158–59t
 equivalence scales, 30–32, 31t, 76n8, 115
 errors
 correlation vs. causation errors, 143
 counterfactuals and, 143
 data errors, 138–42, 149–50, 149f
 household surveys and, 101n2
 interpretation errors, 143
 measurement errors, 89
 Eurostat, 20, 25, 26–27
 expansion factors, 117
 expenditure data, 84–85
 extreme poverty line, 144n5

F

fee waivers, 2, 75, 95
 FGT (Foster-Greer-Thorbecke)
 methodology, 33–34, 175

- figures generated by ADePT
 - benefit-cost ratios, 201–2, 201f
 - concentration curves, 197–99, 198–99f
 - interpreting ADePT SP results, 197–202
 - Venn diagrams, 200–201, 200f
- Filmer, Deon, 144n3
- fiscal analysis, 12
- Fiszbein, A., 39, 133
- food poverty line, 144n5
- formulas, 217–26
 - generalized entropy indices, 219
 - inequality measures, 218–19
 - notation, 217
 - performance indicators, 219–26
 - poverty measures, 218
- Foster-Greer-Thorbecke (FGT)
 - methodology, 33–34, 175
- fragmentation of data sources, 83
- G**
- gender. *See* age and gender
- generalized entropy index of inequality, 36, 43, 46, 176, 219
- generosity, defined, 144n4. *See also* adequacy
- Georgia
 - ADePT survey data analysis for, 10
 - system gaps in, 11
- Ghana, health insurance in, 27
- Gini index, 34–35, 35f, 35t, 43, 45–46, 45f, 176, 218
- Grosh, Margaret, 8
- guaranteed minimum income, 61, 153b, 203–4, 204t
- H**
- head of household. *See* household head
- health insurance, 22, 27
- heating benefits, 61, 62
- household head
 - defined, 144n1
 - profile tables by age and gender of, 188, 189t
 - profile tables by custom individual characteristic of, 195, 196t
 - profile tables by economic status of, 191, 193–94t, 194
 - profile tables by education of, 191, 192t
 - household size, 100, 102n13, 115
- household surveys
 - area of residence, 100
 - clarity of questions, 88
 - data quality, 84–85
 - demographic variables, 100–101, 155–57, 156t, 158–59t
 - design parameters, 117
 - on economic welfare, 28
 - historical use of, 81–82
 - household size, 100, 102n13, 115
 - household weights, 99–100, 117, 140–41
 - outliers, 140, 151
 - sampling procedure, 86–87b
 - social protection information in, 94–96
 - variable details, 96–99f, 96–101
- household weights, 99–100, 117, 140–41
- housing allowances, 27
- I**
- if condition, 137
- income data, 3, 84–85, 142
- India, system gaps in, 11
- indirect beneficiaries, 111–12, 159
- Indonesia, benchmarking
 - performance in, 10
- inequality
 - coverage as indicator for, 14n1
 - defined, 34–36, 35f, 35t
 - formulas, 218–19
 - indicators, 34–36, 35f, 35t
 - performance table generation, 9, 174–76, 175t
 - social protection program effects on, 43–52, 44t, 45–46f, 49t, 50–51f
 - Sustainable Development Goals (SDGs) on, 2
- in-kind transfers, 75, 95
- input file, creation of, 110–22, 116t, 119b, 120t
- installation of ADePT SP, 108–9
- International Household Survey Network, 91b
- International Labour Organization (ILO), 20, 25, 26, 101n3

- interpreting ADePT SP results, 13, 147–210
 - advanced topics, 202–9
 - program compliance, 205–6, 206t
 - sensitivity analysis across different welfare counterfactuals, 202–4, 204t
 - simulation of parametric change of a social protection program, 206–9, 207f, 208t
 - errors, 143
 - figures, 197–202
 - benefit-cost ratios, 201–2, 201f
 - concentration curves, 197–99, 198–99f
 - Venn diagrams, 200–201, 200f
 - initial tables, 148–57
 - errors, warnings, and notifications generated by data checking, 149–50, 149f
 - “Original Data Report” table, 150–55, 152f, 153b, 154t
 - population demographics, 155–57, 156t, 158–59t
 - performance tables, 157–87
 - adequacy, 9, 171–72, 171t
 - average transfer value, per capita, 159–63, 160–62t, 160t
 - beneficiary incidence, 9, 166–68, 166–68t, 176–77
 - benefit-cost ratio (BCR), 9, 186–87, 186t
 - benefit incidence, 9, 168–69, 169t, 178–79
 - Coady-Grosh-Hoddinott (CGH) indicator, 176–79, 177–78t
 - coverage, 9, 164–65t, 164–66
 - distributional characteristic index, 179–81t, 179–82
 - leakage, 9, 172–73t, 172–74
 - poverty and inequality effects, 9, 174–76, 175t
 - relative incidence, 170–71, 170t
 - social program overlap, 184–85t, 184–86
 - transfer duplication in each population group, 183–84, 183t
 - undercoverage, 9, 172–73t, 172–74
 - units of social welfare impact, 182–83, 182t
 - profile tables, 187–96
 - by age and gender, 187–88, 188t
 - by custom household characteristic, 195–96, 197t
 - by custom individual characteristic, 194, 195t
 - custom table option, 196, 197t
 - by economic status, 191, 193t
 - by education, 189, 190–91t
 - by household head’s age and gender, 188, 189t
 - by household head’s custom individual characteristic, 195, 196t
 - by household head’s economic status, 191, 193–94t, 194
 - by household head’s education, 191, 192t
- L**
- labor market programs
 - in ADePT input file, 126–27
 - definitions, 20, 21–22, 26, 74
 - indicators for, 3, 55
 - social program overlap and, 69–70, 184–86, 184–85t
 - last-resort income support (LRIS) programs, 10, 111
 - leakage
 - performance table generation, 9, 172–73t, 172–74
 - social protection system diagnostics and, 64–68, 65t, 68f, 77n21
 - Lindert, K., 219
 - Living Standards Measurement Study, 84
 - Lorenz curve, 34–35, 35f, 35t, 45, 45f
 - Luxembourg Income Study (LIS), 102n11
- M**
- Mallick, Lindsay, 101n6
 - measurement errors, 89
 - Micawber threshold, 14n4
 - microfinance, 22
 - missing income data, 142
 - Multiple Indicator Cluster Surveys, 84

N

National Institute of Statistics
(Romania), 52
National Research Council (U.S.), 31
negative income, 142
noncontributory social assistance, 3, 5,
25, 75
nongovernmental organizations (NGOs),
25–26
nonresponse to surveys, 89
nutritional programs, 75

O

OECD. *See* Organisation for Economic
Co-operation and Development
old-age income insurance
adequacy indicators, 63–64, 64f
classifying for ADePT, 128
definitions, 27, 75
measuring effectiveness of, 4
social program overlap and, 69
social protection system diagnostics
and, 56, 58
Organisation for Economic Co-operation
and Development (OECD), 20,
25, 26, 31, 31t
“Original Data Report” table, 150–55,
152f, 153b, 154t
outliers, 140, 151

P

Partnership in Statistics for Development
in the 21st Century, 91b
pension programs, 3, 4, 13, 58. *See also*
old-age income insurance
performance indicators
adequacy, 9, 63–64, 64f, 171–72, 171t
average transfer value, 53–54f, 53–55,
159–63, 160–62t
beneficiary incidence, 9, 56–57, 57f,
166–68, 166–68t, 176–77
benefit-cost ratio (BCR), 9, 71–73, 72f,
72t, 186–87, 186t
benefit incidence, 9, 57–59, 58–59f,
168–69, 169t, 178–79
Coady-Grosh-Hoddinott (CGH)
indicators, 61–63, 62–63f, 62t,
176–79, 177–78t

coverage, 9, 55–56, 56f, 164–65t, 164–66
distributional characteristic index,
179–81t, 179–82
formulas, 219–26
generosity, 63–64, 64f
leakage, 9, 64–68, 65t, 68f, 172–73t,
172–74
poverty and inequality effects, 9,
174–76, 175t
relative benefit size, 63–64, 64f
relative incidence, 59–60, 60f,
170–71, 170t
social program overlap, 69–71, 70–71f,
184–85t, 184–86
system diagnostics using, 52–73
table generation for, 157–87
transfer duplication in each population
group, 183–84, 183t
transfer frequency in each population
group, 68–69, 69f
undercoverage, 9, 64–68, 65t, 68f,
172–73t, 172–74
units of social welfare impact,
182–83, 182t
Pesquisa Nacional por Amostra de
Domicílios (Brazil), 94
PETI (Programa de Erradicação do
Trabalho Infantil, Brazil), 128
Philippines, health insurance in, 27
poverty
defining, 32–34, 33b
formulas, 218
indicators, 10, 14n1, 32–34, 33b
measurement of, 33–34, 33b. *See also*
poverty lines
performance table generation, 9,
174–76, 175t
social protection program effects on,
3, 41–43, 43f
Sustainable Development Goals (SDGs)
on, xi, 2
poverty gap, 33b, 43, 72, 204
poverty head count, 33b, 43, 77n22, 175
poverty lines, 32–33, 116–17,
133–34, 144n5
poverty profile, 41, 76n6
poverty severity, 33b, 43
poverty traps, 14n4

- primary sampling units (PSUs), 113, 117
Pritchett, Lant H., 144n3
private transfers, 25, 76, 127
profile tables, 187–96
 by age and gender, 187–88, 188t
 by custom household characteristic, 195–96, 197t
 by custom individual characteristic, 194, 195t
 custom table option, 196, 197t
 by economic status, 191, 193t
 by education, 189, 190–91t
 by household head's age and gender, 188, 189t
 by household head's custom individual characteristic, 195, 196t
 by household head's economic status, 191, 193–94t, 194
 by household head's education, 191, 192t
Programa de Erradicação do Trabalho Infantil (PETI, Brazil), 128
program compliance, 205–6, 206t
program size, 41–43, 65
progressive transfers, 44, 65
Protection and Promotion: The Design and Implementation of Safety Nets (Grosh et al.), 8
PSUs (primary sampling units), 113, 117
public expenditure analysis, 10, 11
public works, 75
- R**
Ravallion, Martin, 131
reading data into ADePT SP, 122–23, 122f
redistribution of income or wealth, 3, 15n5, 182
redundancy pay, 151
regression analysis, 12
regressive transfers, 44
relative benefit size, 63–64, 64f
relative incidence, 59–60, 60f, 170–71, 170t
relative poverty lines, 32–33, 116–17, 134
remittances, 25, 155
Romania
 adequacy indicators, 63–64, 64f, 171–72, 171t
 administrative data for, 153b
 age and gender profile tables, 187–88, 188t
 average transfer value indicators, 53–54f, 53–55, 159–63, 160–62t, 163
 beneficiary incidence, 56–57, 57f, 166–68, 166–68t
 benefit-cost ratio (BCR), 71–73, 72f, 72t, 186–87, 186t, 201–2, 201f
 benefit incidence, 57–59, 58–59f, 168–69, 169t
 Coady-Grosh-Hoddinott (CGH) indicators, 61–63, 62–63f, 62t, 176–79, 177–78t
 concentration curves, 197–99, 198–99f
 coverage indicators, 55–56, 56f, 164–65t, 164–66
 custom household characteristic profile tables, 195–96, 197t
 custom individual characteristic profile tables, 194, 195t
 distributional characteristic index, 179–81t, 179–82
 economic status profile tables, 191, 193t
 education profile tables, 189, 190–91t
 household heads
 age and gender profile tables, 188, 189t
 custom individual characteristic profile tables, 195, 196t
 economic status profile tables, 191, 193–94t, 194
 education profile tables, 191, 192t
 household surveys in, 96–98, 97–99f
 inequality impact of social protection transfers in, 46–52, 46f, 50–51f, 174–76, 175t
 leakage indicators, 64–68, 65t, 68f, 172–73t, 172–74
 “Original Data Report” for, 151
 population demographics in, 156–57, 158–59t
 poverty impact of social protection transfers in, 42–43, 43f, 174–76, 175t
 relative benefit size, 63–64, 64f
 relative incidence, 59–60, 60f, 170–71, 170t
 social program overlap, 69–71, 70–71f, 184–85t, 184–86

- Romania (*cont.*)
 - system diagnostics using performance indicators in, 52–73
 - system gaps in, 11
 - transfer frequency in each population group, 68–69, 69f
 - undercoverage indicators, 64–68, 65t, 68f, 172–73t, 172–74
 - units of social welfare impact, 182–83, 182t
 - Venn diagrams, 200–201, 200f
- Rowntree, Benjamin Seebohm, 81
- rural areas, 100, 101n1, 170
- S**
- Saca, N., 25
- sampling procedure
 - data quality and, 92–93
 - household surveys, 86–87b
- SAS (Statistical Analysis System), 111
- Schady, N., 39
- school feeding programs, 75
- school scholarships, 151
- Scott, Kinnon, 144n3
- self-weighted samples, 209n3
- Sen, Amartya, 28, 32
- sensitivity analysis, 202–4, 204t
- Serbia, household survey data in, 128
- Shapiro, J., 219
- simulation of parametric change of a social protection program, 107, 206–9, 207f, 208t
- Skoufias, E., 64, 219
- Social Assistance in Developing Countries* (Barriento), 5
- social assistance programs
 - in ADePT input file, 127
 - definitions, 20, 22, 26, 27, 74–76
 - measuring effectiveness of, 3
 - social program overlap and, 69–70, 70–71f, 184–86, 184–85t
- social insurance
 - in ADePT input file, 126
 - coverage indicators for, 55
 - definitions, 20–21, 26, 73–74
 - measuring effectiveness of, 3
 - social program overlap and, 69–70, 70–71f
- social program overlap, 69–71, 70–71f, 184–86, 184–85t
- social protection, defined, 2
- social protection analysis
 - ADePT for. *See* ADePT SP
 - benefit categories and subcategories, 73–76
 - core indicators, 2–4
 - data requirements for, 13, 81–101. *See also* data requirements for social protection analysis
 - definitions, 19–27, 21f, 23–24t
 - economic welfare indicators, 28–32, 29–31t
 - formulas, 217–26
 - inequality indicators, 34–36, 35f, 35t
 - interpreting ADePT SP results, 13, 147–210. *See also* interpreting ADePT SP results
 - measuring results, 4–9
 - poverty indicators, 32–34, 33b
 - program effects on poverty and inequality, 36–52
 - system diagnostics using performance indicators, 52–73. *See also* system diagnostics using performance indicators
- Social Security Inquiry Database (ILO), 26
- social welfare, 77nn18–19, 182–83, 182t
- sources of data, 81–84
- SPSS data files, 111
- Stata data files, 111
- “State of Social Safety Nets 2014” (Gentilini, Honorati, & Yemtsov), 10
- Statistical Analysis System (SAS), 111
- Statistics on Income and Living Conditions (EU), 26–27
- Staveteig, Sarah, 101n6
- Stewart, Frances, 65
- stratification of sample, 87b, 141
- subsidies, 2, 22, 75, 94, 95
- survey frame, 86b
- survivor benefits, 27, 73
- Sustainable Development Goals (SDGs), xi, 2

system diagnostics using performance indicators, 52–73
adequacy, 63–64, 64f
average transfer value, 53–54f, 53–55
beneficiary incidence, 56–57, 57f
benefit-cost ratio (BCR), 71–73, 72f, 72t
benefit incidence, 57–59, 58–59f
Coady-Grosh-Hoddinott (CGH) indicators, 61–63, 62–63f, 62t
coverage, 55–56, 56f
generosity, 63–64, 64f
leakage, 64–68, 65t, 68f
relative benefit size, 63–64, 64f
relative incidence, 59–60, 60f
social program overlap, 69–70, 69–71, 70–71f, 70f
transfer frequency in each population group, 68–69, 69f
undercoverage, 64–68, 65t, 68f
system gaps, 11

T

tables generated by ADePT, 157–87
initial tables, 148–57
errors, warnings, and notifications generated by data checking, 149–50, 149f
“Original Data Report” table, 150–55, 152f, 153b, 154t
population demographics, 155–57, 156t, 158–59t
performance tables, 157–87
adequacy, 9, 171–72, 171t
average transfer value, per capita, 159–63, 160–62t, 160t
beneficiary incidence, 9, 166–68, 166–68t, 176–77
benefit-cost ratio (BCR), 9, 186–87, 186t
benefit incidence, 9, 168–69, 169t, 178–79
Coady-Grosh-Hoddinott (CGH) indicator, 176–79, 177–78t
coverage, 9, 164–65t, 164–66
distributional characteristic index, 179–81t, 179–82
leakage, 9, 172–73t, 172–74

poverty and inequality effects, 9, 174–76, 175t
relative incidence, 170–71, 170t
social program overlap, 184–85t, 184–86
transfer duplication in each population group, 183–84, 183t
undercoverage, 9, 172–73t, 172–74
units of social welfare impact, 182–83, 182t
profile tables, 187–96
by age and gender, 187–88, 188t
by custom household characteristic, 195–96, 197t
by custom individual characteristic, 194, 195t
custom table option, 196, 197t
by economic status, 191, 193t
by education, 189, 190–91t
by household head’s age and gender, 188, 189t
by household head’s custom individual characteristic, 195, 196t
by household head’s economic status, 191, 193–94t, 194
by household head’s education, 191, 192t
“Sample and Population Sizes,” 153, 154t
targeting of transfers
for ADePT input file, 113–14
coverage and, 77n21
indicators generated by ADePT, 107
measuring effectiveness of, 5, 41–43
social program overlap and, 69
social protection system diagnostics and, 65
taxes, 37, 101n5
Theil’s index, 36, 176
time comparability check, 90–91
Trabajar workfare program (Argentina), 39, 133
transfer duplication in each population group, 183–84, 183t
transfer frequency in each population group, 68–69, 69f
Turkey, ADePT survey data analysis for, 10

U

- unconditional cash transfers, 74–75
- undercoverage, 9, 64–68, 65*t*, 68*f*, 172–74, 172–73*t*
- underreporting issues, 89
- unemployment insurance, 3–4
- United Nations, xi, 2, 91*b*, 100, 102*n*13
- United States
 - charity in, 26
 - measurement error in, 89
 - National Research Council, 31
- units of social welfare impact, 50–52, 51*f*, 182–83, 182*t*
- universal child allowances, 55–56
- urban areas, 100, 101*n*1, 170

V

- variables
 - for ADePT input file, 113
 - assignment of, 123–25*f*, 123–34, 129*f*
 - consumption, 129–34
 - data quality checklist, 92*b*
 - demographic, 100–101, 155–57, 156*t*, 158–59*t*
 - household surveys, 96–99*f*, 96–101
 - labeling in survey design, 91

- main, 123–24, 124*f*

- monetary, 119

- program, 124–27, 125*f*

- simulation of parametric change of a
 - social protection program, 107, 206–9, 207*f*, 208*t*

- Venn diagrams, 106, 136,

- 200–201, 200*f*

- vocational training, 74

W

- warnings, ADePT generation of, 149–50, 149*f*

- welfare

- for ADePT input file, 113–15

- ADePT SP limitations for measuring, 12, 209*n*2

- assessment of, 10, 13

- definitions, 28, 76*n*5

- windfall income, 101*n*4

- women. *See* age and gender

- work disincentives, 227–29, 228*f*

- World Bank, 20, 23, 91*b*

Z

- Zaidi, Salman, 144*n*3

ECO-AUDIT

Environmental Benefits Statement

The World Bank Group is committed to reducing its environmental footprint. In support of this commitment, we leverage electronic publishing options and print-on-demand technology, which is located in regional hubs worldwide. Together, these initiatives enable print runs to be lowered and shipping distances decreased, resulting in reduced paper consumption, chemical use, greenhouse gas emissions, and waste.

We follow the recommended standards for paper use set by the Green Press Initiative. The majority of our books are printed on Forest Stewardship Council (FSC)–certified paper, with nearly all containing 50–100 percent recycled content. The recycled fiber in our book paper is either unbleached or bleached using totally chlorine-free (TCF), processed chlorine-free (PCF), or enhanced elemental chlorine-free (EECF) processes.

More information about the Bank's environmental philosophy can be found at <http://www.worldbank.org/corporateresponsibility>.



Measuring the Effectiveness of Social Protection: Concepts and Applications provides a conceptual and analytical framework for assessing social protection (SP) programs, as well as a practical guide for users seeking to conduct analysis, particularly using the World Bank's Software Platform for Automated Economic Analysis (ADePT). The book constitutes a comprehensive and unique resource to tie together social policy theory, concepts, and practical analytical techniques.

The book's content is targeted to policy makers and practitioners worldwide who are working to improve the outcomes of their SP policies—from pensions and labor markets to social assistance. It suggests advanced methods and a new rapid analysis instrument for technical experts working on quantitative SP analysis for their ministries, national statistics offices, think tanks, universities, and development organizations.

The book seeks to equip users with different statistical backgrounds and SP knowledge to be able to independently conduct SP analysis and prepare a standardized set of tables and graphs to conduct different types of SP performance analysis: benchmarking performance within and across countries, simulating the performance of alternative reform options, and assessing the viability of proposed programs. The book first provides a detailed conceptual and analytical understanding of SP and how to measure SP performance; it then guides users to the ADePT SP software as a tool to analyze household survey data and assess SP performance.

ADePT SP provides users with a standardized and replicable set of indicators that assesses different dimensions of SP systems performance, such as the coverage of SP benefits and services, their incidence over the national welfare distribution, their adequacy with respect to beneficiaries' welfare, and their impacts on poverty and inequality. The software's strength lies in its ability to produce very quickly, and with relatively limited resources, a large volume of quantitative information to conduct SP performance analysis.

"The UN Social Development Goals have focused attention on the need to strengthen social protection systems (SPS). Designing effective SPS relies heavily on sound conceptual and analytical frameworks supported by rigorous empirical analysis. *Measuring the Effectiveness of Social Protection* provides practitioners and analysts with such a toolkit, informed by the immense reservoir of knowledge and data assembled by the World Bank, thus enabling comparisons of social protection systems across countries and with best practice."

Dave Coady, *Division Chief, Expenditure Policy, International Monetary Fund, Washington, D.C.*

"Assessment of the effectiveness of social protection expenditure in meeting its goals is a central requirement of policy analysis in the world today. Such an exercise requires clarity of conceptual framework and clarity of what the analysis can and cannot do. But it also needs a platform on which the analysis can be done, one that can be applied to data in a step-by-step fashion for those at the coal face of policy analysis and policy making. The ADEPT manual on social protection is the first comprehensive tool of its kind that combines conceptual rigor with user-friendly design. It will become a must for social protection analysis the world over."

Ravi Kanbur, *T. H. Lee Professor of World Affairs, International Professor of Applied Economics and Management, Professor of Economics, Cornell University*



Streamlined Analysis with ADePT Software is a series that provides academics, students, and policy practitioners with a theoretical foundation, practical guidelines, and software tools for applied analysis in various areas of economic research. The ADePT Platform is a software package developed in the research department of the World Bank (see www.worldbank.org/adept). The series examines such topics as sector performance and inequality in education, the effectiveness of social transfers, labor market conditions, the effects of macroeconomic shocks on income distribution and labor market outcomes, child anthropometrics, and gender inequalities.

