Pensions panorama: retirement-income systems in 53 countries

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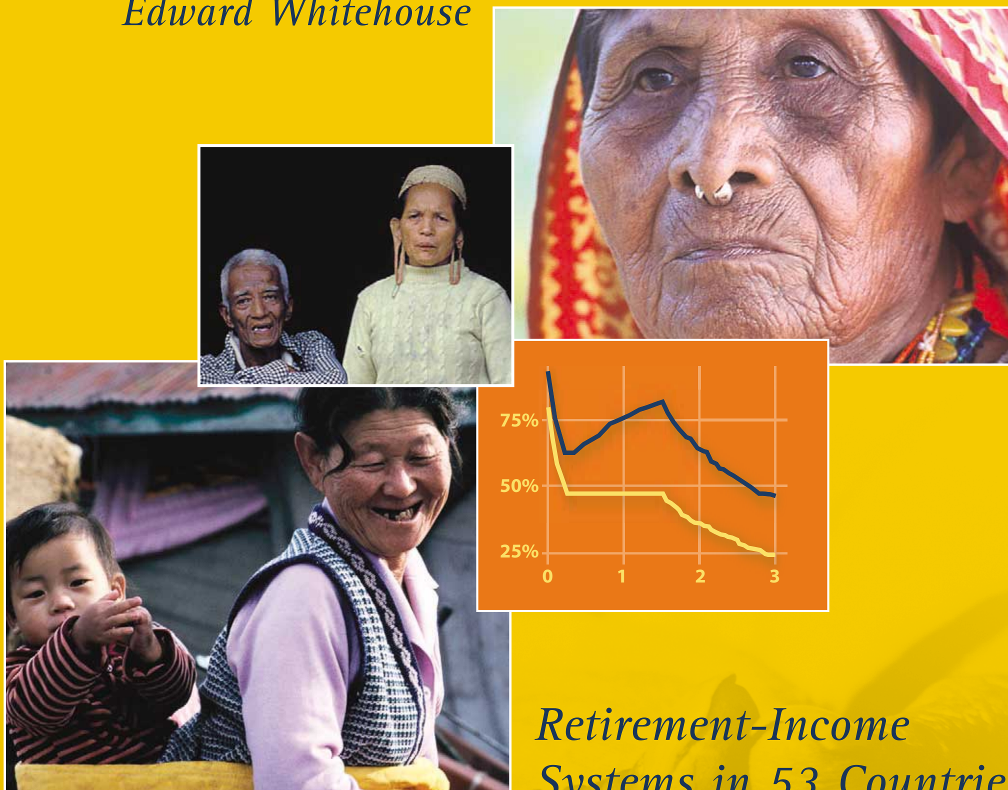

Retirement-Income Systems in 53 Countries

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THE WORLD BANK

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Biographical Note

Edward Whitehouse works in the Social Policy Division of the Organisation for Economic Co-operation and Development (OECD). While this volume was being prepared, he was Director of Axia Economics, a London-based consultancy specializing in the micro-economic analysis of public policy. He was also coeditor of the World Bank's Pension Reform Primer program.

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Background and Acknowledgments

The accurate presentation of pension systems of a country and the comparison of systems across countries are crucial parts of policy analysis and reform. This is equally valid for the high-income countries of the Organisation for Economic Co-operation and Development (OECD) as it is for the low- and middle-income countries that are the clients of the World Bank. Yet such presentations and comparisons are far from easy, and they require a well-thought-through methodology, access to detailed information at the country level, verification of information and outcome by country specialists, and a network of pension experts who provide feedback and input and thus help improve the product over time.

The calculation of pension entitlements uses the Axia Economics APEX (Analysis of Pension Entitlements across Countries) model. This and the country models were developed with the financial support of the OECD (Directorate for Employment, Labour, and Social Affairs, Economics Department; Directorate for Financial and Enterprise Affairs, Centre for Tax Policy and Administration); the World Bank (Social Protection Department, Middle East and North Africa Region, South Asia Region); the International Federation of Pension Fund Administrators (FIAP); and Watson Wyatt (as part of the World Economic Forum's "Global Pension-System Readiness" initiative).

I am especially grateful to Robert Palacios of the World Bank, who has provided constant encouragement and inspiration (along with more mundane help in finding information, particularly on Eastern Europe and Latin America). Monika Queisser of the OECD's Social Policy Division contributed enormously to modeling the OECD countries and coauthored the report *Pensions at a Glance: Public Policies across OECD Countries* (OECD 2005; see also Queisser and Whitehouse 2006). David Robalino of the World Bank provided information on the Middle East and North Africa and many fruitful methodological discussions (results for this region were published in Robalino et al. [2005]). Gordon Keenay of KPMG modeled personal income taxes and social security contributions for the 30 OECD countries.

Numerous people have offered valuable information, advice, and encouragement. These include Bernard Casey of the Pensions Institute, Cass Business School, City University, London; Richard Disney, Professor of Economics at the University of Nottingham; John Martin and Martine Durand, Director and Deputy Director, respectively, of Employment, Labour, and Social Affairs at the OECD; Peter Hicks, Assistant Deputy Minister, Social Development, Canada; Robert Holzmann, Sector Director of Social

Protection and Labor at the World Bank; David Lindeman, formerly of the World Bank and OECD; Montserrat Pallares-Miralles of the World Bank; Mark Pearson, Head of Social Policy at the OECD; John Piggott, Professor of Economics at the University of New South Wales; Anita Schwarz and Yvonne Sin of the World Bank; and David Stanton and Adair Turner of the Pensions Commission in the United Kingdom. Delegates to the OECD Working Party on Social Policy patiently helped us understand their countries' pension systems and checked the modeling results.

The analysis has benefited from discussion at numerous events: a seminar at the Centre for Pensions and Superannuation, University of New South Wales, April 2002 (Whitehouse 2002); the conference "Pension System Perspectives," Vilnius, December 2002; "Adequate and Sustainable Pensions through Private Provision: Lessons from and for Reforms in Central and Eastern Europe," Tallinn, April 2003; a seminar at the Institute of Ageing, University of Oxford, May 2003; World Bank workshops on pension reform in Johannesburg, Malta, Cape Town, and Paris, February, June, July, and September 2003; a seminar at the Directorate of Employment, Labour, and Social Affairs, OECD, Paris, July 2003; the conference "Financial Security in Retirement in Post-socialist Countries," Kiev, October 2003; a seminar at the World Bank, Washington, DC, November 2003; a presentation at the OECD Working Party on Social Policy, Paris, November 2003; a joint OECD and BMGS (Federal Ministry of Social Security, Germany) conference on "Sustainable Old-Age Provision," Berlin, November 2004; a seminar at the Brookings Institution, Washington, DC, May 2005; and at the APPAM Conference, Washington, DC, November 2005.

Full responsibility for the results rests with the author: any views expressed commit neither the OECD Secretariat nor the World Bank nor any of their member governments.

Abbreviations

ACC	Accident Compensation Corporation (New Zealand)
APEX	Analysis of Pension Entitlements across Countries
ATI	aggregate taxable income (Belgium)
ATP	Arbeidsmarkedets Tillægspension (Denmark)
BMGS	Federal Ministry of Social Security (Germany)
CSG	contribution sociale generalisée (France)
DB	defined-benefit
DC	defined-contribution
FIAP	International Federation of Pension Fund Administration
GDP	gross domestic product
ITP	Industrins och handelns tilläggspension (Sweden)
Mig	minimum income guarantee (United Kingdom)
OECD	Organisation for Economic Co-operation and Development
PAYG	pay as you go
PBU	basic universal benefit (Argentina)
SA	social assistance
S2P	state second pension (United Kingdom)
UF	Unidades de Fomento (Chile)

Part I: Cross-Country Analysis

1. Introduction

Pensions panorama provides a compendium of facts and analysis that should inform policy making and public debate about retirement-income systems around the world. **Robert Holzmann**, Director of Social Protection at the **World Bank,** and **Mark Pearson**, Head of Social Policy at the **Organisation for Economic Co-operation and Development (OECD),** introduce the report.

Reforming pensions is a central policy issue in developed and developing countries alike. However, it is challenging and controversial because it involves long-term planning by governments faced with numerous short-term pressures. Pension reform usually provokes heated ideological debates and, often, street protests.

There are valuable lessons to be learned from other countries' pension systems and their experiences of retirement-income reforms. However, national pension systems are very complicated and international comparisons are consequently very difficult. Many international analyses get bogged down in institutional, technical, and legal detail, making it impossible to transfer policy lessons between countries. This study combines painstaking, rigorous analysis with clear, easy-to-understand presentation of empirical results.

Pensions Panorama does not advocate any particular kind of pension system or type of pension reform. We hope the analysis in this report can inform debates on retirement-income systems by presenting "hard" data that people with different visions for the future of pensions can all use as a reference point.

International comparisons of retirement-income regimes to date have tended to focus on the question of fiscal and financial sustainability: whether the pension promises made to today's workers will be affordable in the future. Much less attention has been paid to the future adequacy of pension benefits, to the impact of pension reforms on the distribution of income among older people, and on the means to combat old-age poverty. These issues, which may be termed *social sustainability,* are a core concern of this study.

The OECD published the report *Pensions at a Glance: Public Policies across OECD Countries* in 2005. This study extends the analysis to cover 23 countries that are not members of the OECD. These nations lie in three different regions of the world: Eastern Europe and Central Asia, Latin America and the Caribbean, and the Middle East and North Africa. Together, the countries covered in this report account for a quarter of the world's population and approximately 58 percent of workers around the world who are covered by formal pension systems.

Structure of the Report

The following section sets out a typology: a way of defining and classifying different kinds of pension schemes. It shows which countries have which types of pension schemes, covering all elements of the retirement-income system, including resource-tested benefits and basic pensions as well as public, earnings-related, and compulsory private pension plans. Next, the study sets out the institutional detail: the parameters and rules of different parts of the retirement-income system. The parameters are followed by the methodology: How are pension entitlements modeled? What assumptions are used? The baseline assumptions will not be to everyone's taste, but the beauty of the pension models is that the value of these variables may be changed.

The next section presents the core, empirical results: future pension entitlements of today's workers with different levels of earnings from all sources. This section includes the familiar replacement rate indicator: individual pension entitlements as a proportion of individual earnings when working. The following section explores the important role that personal income taxes and social security contributions play in determining the relative incomes of older people. In particular, it shows net replacement rates (that is, pension net of taxes and any contributions, relative to earnings, net of taxes and contributions). The third section on empirical results looks at the link between pension entitlements in retirement and earnings in work. This analysis highlights the key differences in philosophy between different countries' retirement-income systems. Moreover, changes to the pensions-earnings link have been central to many recent reforms to retirement-income regimes.

Conclusions

The concluding section sets out a number of dimensions in which the pension systems of 53 countries differ. What is the target replacement rate? What weights are given to the objectives of adequacy and insurance? How strongly are pension entitlements linked to earnings when working? What are the relative roles of the public and private sectors? Are antipoverty benefits universal or resource tested? Are insurance pensions provided through defined-benefit systems, points schemes, notional accounts, or defined-contribution schemes?

These questions are central to pension policy making. This report's clarity, objectivity, and rigor should contribute hugely to an improved debate on the future of retirement-income systems.

Future Developments

The World Bank and the OECD aim to continue this productive cooperation over the analysis of pension systems in a number of ways. First, the OECD, in cooperation with the European Commission, is updating the models to parameters and rules for 2004. This covers the 36 countries that are members of the European Union or the OECD. Second, the analysis of the OECD and European Union countries is being extended to look at pension entitlements of workers who do not follow the full careers assumed in this report. For example, many systems offer protection for people who have time out of paid work caring for children. The effect of childcare absences on pension entitlements will be modeled. In addition, the extended analysis will look at how retirement earlier or later than the normal pension age affects pension benefits. Third, the pension models will be expanded to other countries, with the first group being in Asia, including India and China.

This report represents a first, albeit a huge, step toward a consistent, rigorous empirical analysis of pension systems and entitlements around the world. It should be a vital starting point for anyone thinking about pensions or about reforming retirement-income regimes.

Robert Holzmann
World Bank, Washington, DC

Mark Pearson
OECD, Paris

2. Typology

There have been numerous typologies of retirement-income systems. The terminology used in these categories has become very confusing. This paper uses a descriptive classification that may be applied consistently to 53 countries with diverse retirement-income systems.

The approach adopted here is based on the role and objective of each part of the pension system. The framework has two mandatory tiers: a redistributive part and an insurance part. Redistributive components of pension systems are designed to ensure that pensioners achieve some absolute, minimum standard of living. Insurance components are designed to achieve a target standard of living for retirement that is based on the standard of preretirement years.[1] Within these tiers, schemes are further classified by their form (public or private, defined benefit or defined contribution). This typology, therefore, clearly separates form from function, and description from prescription. Table 2.1 summarizes the pension systems of 53 countries, divided into the redistributive first tier and the insurance second tier.

First-Tier, Redistributive Pensions

Nearly all countries have safety nets that aim to prevent poverty among older people. These schemes, called *first-tier, redistributive schemes* here, can be of four different types: basic pension schemes, separate targeted retirement-income programs, minimum pensions within earnings-related plans, and social assistance. All of these are provided by the public sector and are mandatory.

Basic

In basic pension schemes, the benefit is either flat rate, that is, the same amount is paid to every retiree, or the amount is determined by the number of working years (not by past earnings). Additional income from other sources does not change entitlement to the basic pension.

Basic pension schemes are common in the high-income OECD countries (10 out of 24 countries) and in Eastern Europe and Central Asia (4 out of 10 countries). However, there are no examples in the Middle East and North Africa and just one in Latin America and the Caribbean.

Targeted

Targeted plans, in contrast, pay higher benefits to poorer pensioners and reduced benefits to better-off retirees. The targeting takes three different forms. First, benefits may be pension income tested (where the value depends only on the level of pension income a retiree receives), broader income tested (reduced payments if, for example, a retiree has income from savings), or broader means tested (reducing the pension to take account of both income and assets). Some countries do not have specific, targeted programs for older people, but poor older people are entitled to the same general social-assistance

Table 2.1. Structure of Pension Systems

Tier: function	*First tier: universal coverage, redistributive*			*Second tier: mandatory, insurance*	
Provision	*Public*			*Public*	*Private*
Type	*Targeted*	*Basic*	*Minimum*	*Type*	*Type*
High-income OECD countries					
Australia	✔				DC
Austria	✔			DB	
Belgium	✔		✔	DB	
Canada	✔	✔		DB	
Denmark	✔	✔		DB + DC	DC
Finland	✔			DB	
France	✔		✔	DB + points	
Germany	✔			Points	
Greece	✔		✔	DB	
Iceland	✔				DB
Ireland	✔	✔			
Italy	✔			n. acs.	
Japan		✔		DB	
Korea, Rep. of		✔		DB	
Luxembourg	✔	✔	✔	DB	
Netherlands	✔	✔			DB
New Zealand		✔			
Norway	✔	✔		Points	
Portugal	✔		✔	DB	
Spain			✔	DB	
Sweden	✔			n. acs.	DB + DC
Switzerland	✔		✔	DB	defined credit
United Kingdom	✔	✔	✔	DB	
United States	✔			DB	
Eastern Europe and Central Asia					
Bulgaria	✔		✔	DB	DC
Croatia		✔		Points	DC
Czech Republic	✔	✔	✔	DB	
Estonia	✔	✔		Points	DC
Hungary			✔	DB	DC
Latvia			✔	n. acs.	DC
Lithuania		✔		DB	DC
Poland			✔	n. acs.	DC
Slovak Republic			✔	Points	
Turkey	✔		✔	DB	
Latin America and the Caribbean					
Argentina		✔			DC
Chile	✔				DC
Colombia	✔				DC
Costa Rica	✔			DB	DC
Dominican Republic	✔				DC
El Salvador	✔				DC
Mexico	✔				DC
Peru	✔				DC
Uruguay	✔			DB	DC

(*continued on the next page*)

Table 2.1. (continued)

Tier: function	*First tier: universal coverage, redistributive*			*Second tier: mandatory, insurance*	
Provision	*Public*			*Public*	*Private*
Type	*Targeted*	*Basic*	*Minimum*	*Type*	*Type*
Middle East and North Africa					
Algeria			✔	DB	
Bahrain			✔	DB	
Djibouti			✔	DB	
Egypt, Arab Rep. of			✔	DB	
Iran, Islamic Rep. of			✔	DB	
Jordan			✔	DB	
Libya			✔	DB	
Morocco			✔	DB	
Tunisia			✔	DB	
Yemen, Rep. of				DB	

Note: n. acs. = notional accounts. The Slovak Republic has also introduced mandatory defined-contribution pensions (from January 2005).

benefits available to the whole population. These cases are also shown in the "targeted" column of table 2.1.

Virtually all of the OECD countries have some targeted pension scheme or social-assistance program. Most of the Latin American and Caribbean systems have a publicly provided minimum pension to support those with small entitlements to mandatory private pensions. However, less than half of the 10 countries of Eastern Europe and Central Asia have minimum pensions. Indeed, Croatia, Hungary, and the Slovak Republic have abolished or plan to abolish their targeted pensions as part of their fundamental pension reforms.

Minimum

Minimum pensions are similar to targeted plans since they also aim to prevent pensions from falling below a certain level. However the institutional set-up and the eligibility conditions are different. Minimum pensions are defined as schemes that are governed by the rules of the second-tier, earnings-related pension provision. (This means that the schemes called minimum pensions in Latin America and the Caribbean, for example, are here classified as targeted programs since they are institutionally separate from second-tier provision.) Usually, retirees must have paid contributions for a minimum number of years in order to receive benefits.

Minimum credits in earnings-related schemes, such as those in Belgium and the United Kingdom, have a similar effect: benefits for workers with very low earnings are calculated as if the worker had earned at a higher level.

Overall, eight high-income OECD countries have a minimum pension or minimum credits in their earnings-related schemes. They are also very common in Eastern Europe and Central Asia (7 out of 10 countries) and in the Middle East and North Africa (all except the Republic of Yemen).

Approximately half of the OECD countries and those of Eastern Europe and Central Asia rely on one primary instrument to prevent old-age poverty. The other half employ a combination of two or three schemes. In the other two regional groupings of countries, all have only one redistributive program.

Second-Tier, Mandatory Insurance

The second tier in this typology of pension schemes plays an *insurance* role. It aims to ensure that retired people have an adequate replacement rate (retirement income relative to earnings before retirement) and not just a poverty-preventing absolute standard of living. Like the first tier, it is mandatory. Only Ireland and New Zealand of the 53 countries in this study do not have some form of mandatory, second-tier provision.

Defined Benefit

Of the 53 countries, 32 have public, defined-benefit (DB) plans, making that by far the most common form of pension-insurance provision.

In DB schemes, the amount a pensioner receives depends on the number of years of contributions and on some measure of individual earnings throughout the working life.

DB schemes are the only kind of insurance pension found in the Middle East and North Africa. These schemes are rare in Latin America and the Caribbean: only Costa Rica and Uruguay have a DB scheme for new workers. Half of Eastern Europe and Central Asia and more than half of the high-income OECD countries have public DB programs.

Defined Contribution

The second most common form of pension-insurance provision is the defined-contribution (DC) plan. Nineteen out of the 53 countries have DC plans.

In these schemes, each worker has an individual account in which contributions are saved and invested, and the accumulated capital is usually converted into a pension-income stream at retirement; lump-sum withdrawals are rarely permitted. Typically, the capital has to be used to buy an annuity (a guaranteed pension payment until death), which meets certain conditions (such as indexation of benefits and provision of survivors' benefits).

Although only three high-income OECD countries have mandatory DC schemes, they are very common in Latin America and the Caribbean (all nine countries) and in Eastern Europe and Central Asia (seven out of ten countries).

Points

Finally, some countries have earnings-related schemes that do not follow the traditional DB model. First, there are six points systems: the French occupational plans and the Croatian, Estonian, German, Norwegian, and Slovak public pension schemes.

Workers earn pension points based on their individual earnings for each year of contribution. At retirement, the sum of pension points is multiplied by a pension-point value to convert them into a regular pension payment.

Notional Accounts

Four countries also have notional-accounts schemes: the public plans of Italy, Latvia, Poland, and Sweden.

These are schemes that record each worker's contributions in an individual account and apply a rate of return to the accounts. The accounts are notional in that both the incoming contributions and the interest charged to them exist only on the books of the managing institution. At retirement, the accumulated notional capital in each account is converted into a stream of pension payments using a formula based on life expectancy at the time of retirement.

Defined Credits

Mandatory contributions to Swiss occupational plans look at first like a DC scheme, since individuals and their employers must pay a contribution rate that varies with age. However, the government sets the minimum rate of return that the scheme must pay and a mandatory annuity rate at which the accumulation is converted into a flow of pension payments. Hence, the system has more elements of a DB than a DC plan.

Notes

1. Voluntary provision, individual or employer-provided, comprises a third tier. However, the focus of this report is on mandatory pensions alone.

3. Parameters

The main features of 53 countries' pension systems are summarized in tables 3.1 through 3.4. This follows the typology of the previous section (table 2.1), dividing the pension system into two tiers. The summary necessarily leaves out much of the institutional details. Complete descriptions are provided in country chapters in Part II of the report.

First-Tier, Redistributive Schemes

The level of benefits under first-tier, redistributive schemes is expressed as a percentage of average earnings in each country.

In the cases of minimum pensions and basic pension schemes, the benefit entitlement is shown for workers who enter the workforce at age 20 and work without interruption until they reach the standard pension eligibility age. The social-assistance level is shown under the targeted category only when there is no specific, targeted scheme for poor pensioners. (Only full-career workers with very low earnings will be eligible for the targeted and social-assistance programs; the majority of beneficiaries will be those with short and interrupted contribution histories.) The final row shows the total first-tier benefit to which a full-career worker would be entitled. This is relevant because, in some cases, workers can receive several different types of first-tier benefits at the same time, while in others, they are only eligible for one of the different programs.

The average minimum retirement benefit across the 24 high-income OECD countries is 31 percent of average earnings. The basic pension in Japan and targeted schemes in Finland and the United States are on the low side, providing benefits worth approximately one-fifth of average earnings. At the other end of the spectrum, Luxembourg and Portugal have a minimum pension well above 40 percent of average earnings.

The overall minimum retirement income is generally much lower in Eastern Europe and Central Asia than in the high-income OECD countries, averaging approximately 20 percent of average earnings. Only Latvia and Turkey have benefits close to the average of the high-income OECD countries.

The average minimum retirement benefits in Latin America and the Caribbean and in the Middle East and North Africa lie between the averages of the other two groups of countries at approximately 28 percent. However, the range of benefit levels is more diverse. For example, the Islamic Republic of Iran has a minimum of two-thirds of average earnings and Colombia, one-half. The Republic of Yemen has no minimum pension, and the Arab Republic of Egypt pays just 7 percent of average earnings.

Second-Tier, Earnings-Related Schemes

The second-tier insurance schemes offer several types of earnings-related plans: defined benefit, points, or notional accounts. The main parameter that accounts for differences in the value of these schemes is the accrual rate per year of contribution—that is, the rate at which a worker earns benefit entitlements for each year of coverage. The accrual rate is expressed as a percentage of the earnings that are covered by the pension scheme. Most pension schemes cover only part of workers' earnings up to a ceiling to calculate pension benefits. The rationale behind such ceilings is the view that higher-income workers can save individually if they want to reach a higher replacement rate.

Only three of the high-income OECD countries (Australia, Ireland, and New Zealand) do not have an earnings-related, second-tier scheme. Most of the Latin American and Caribbean countries have abolished their earnings-related plans as part of a fundamental pension reform that introduced mandatory DC schemes for new workers. Only two retain an earnings-related scheme. In Eastern Europe and Central Asia, the seven countries that introduced mandatory DC have retained a public, earnings-related element in the pension package, even for new workers.

Most countries have traditional defined-benefit schemes for which accrual rates may be calculated in a straightforward way. For alternative types of earnings-related schemes—points systems and notional accounts—it is also possible to calculate an effective accrual rate.

For points systems, such as the German public plan, French occupational schemes, and the new Slovak public pension, the effective accrual rate (shown in tables 3.1 through 3.4) is the ratio of the cost of a pension point to the pension-point value, expressed as a percentage of individual earnings. This ratio, like the accrual rate in DB schemes, gives the benefit earned each year as a proportion of earnings in that year. The details of this calculation are set out below.

In the notional-accounts schemes, the effective accrual rate is calculated in a similar way. Again, this ratio gives the annual pension entitlement as a proportion of earnings in a given year.

In fewer than half of the countries with earnings-related plans (of all three types), the accrual rates are linear: that is, a single percentage rate applies across the range of covered earnings and to each year of coverage. In the other countries, the pension benefit earned for each year of coverage varies, with individual earnings, with the number of years of contributions, or with individual age. Tables 3.1 through 3.4 show a typical accrual rate in these cases; the details are provided in the country chapters.

In eight cases, the accrual rate varies with earnings (indicated in the tables by [w]). In the public schemes of the Czech Republic, Norway, Portugal, Switzerland, and the United States, the pattern is progressive, giving higher replacement rates to lower-income workers. In the United Kingdom, the accrual rates are U-shaped, highest for low earners, then smaller, then higher again. In the occupational plans of France and Sweden, the accrual rates are designed to offset the redistribution in the public scheme; they pay a higher replacement rate to high earners on pay above the ceiling of the public plan. In the occupational plans of Finland and Switzerland, pension accrual increases with age ([a] in table 3.1).

Nine countries have accrual rates that vary with length of service ([y]). In Luxembourg, the accrual rate increases for people with a longer contribution history. In the other eight countries (Costa Rica, Egypt, Libya, Morocco, Spain, Tunisia, Turkey, and Uruguay), the pattern is the reverse of that in Luxembourg. The highest accrual rate is for the first few years of coverage and the lowest for later years in longer contribution histories.

Accrual rates tend to be highest in Middle East and North Africa, averaging nearly 2.4 percent. The two countries from Latin America and the Caribbean that retain a DB scheme have accrual rates just below 2.0 percent. In the high-income OECD countries, the average is just under 1.5 percent, while in Eastern Europe and Central Asia, it is just over 0.8 percent.

Defined-Contribution Schemes

The largest DC programs are found in Latin America and the Caribbean. Chile, Colombia, El Salvador, and Peru all require contributions of more than 10 percent of earnings (including administrative charges and disability insurance). In Mexico, the contribution is 6.5 percent of earnings with the government paying 5.5 percent of the minimum wage into all accounts. For an average earner, the total contribution comes to 7.1 percent of earnings.

Contribution rates tend to be lower in the DC systems of Eastern Europe, averaging 6.25 percent compared with 9.50 percent in the countries of Latin America and the Caribbean. This is no surprise since all the Eastern European countries with DC programs have retained a sizable public, earnings-related pension, which is a rare policy in Latin American and Caribbean countries.

Ceilings on Pensionable Earnings

Most high-income OECD countries do not require high earners to contribute to the pension system on their entire earnings. Usually, a limit is set on the earnings used to calculate both contribution liability and pension benefits. This ceiling on the earnings covered by the pension system has an important effect on the structure, size, and cost of the second-tier systems. High ceilings or the absence of a ceiling means that high-income workers receive a high replacement rate, and there is little need for voluntary private pensions.

In the other three groups of countries, ceilings are either absent or set at a very high level relative to average earnings. The exceptions are Hungary, Poland, and Turkey in Eastern Europe and Central Asia; El Salvador (mandatory DC scheme) and Uruguay (public DB scheme) in Latin America and the Caribbean; and Egypt and Morocco in the Middle East and North Africa.

The ceiling on public pensions averaged across 16 high-income OECD countries is 190 percent of average economywide earnings. At roughly the level of average economywide earnings, the Canadian ceiling is exceptionally low. Belgium, France, Switzerland, and Sweden also have relatively low ceilings, at 116 to 132 percent of average earnings. In these countries, approximately 15 to 20 percent of workers earn above the ceiling of the public scheme.

Tables 3.1 through 3.4 also show ceilings for mandatory DC pensions and for mandatory occupational plans (in France, Sweden, and Switzerland, for example). Including these programs, the overall ceiling for 17 high-income OECD countries averages 275 percent of average earnings.

Pension Eligibility Ages

Table 3.1 shows that the majority of high-income OECD countries have a standard retirement age of 65 for men. Iceland, Norway, and the United States stand out as having a standard pension age of 67. At the other extreme, France is the only high-income country to allow normal retirement at age 60.

Pension ages are generally lower in the other three groups of countries. In Eastern Europe and Central Asia, they are usually somewhere between 60 and 65, with an average of 62.75.

In Latin America and the Caribbean and the Middle East and North Africa, the rules regarding retirement are more complex. The DC pensions of Latin America can typically be drawn at any age provided the pension reaches a minimum absolute value (or sometimes a minimum replacement rate). The pension ages shown, therefore, tend to be those

Table 3.1. Summary of Pension System Parameters, High-Income OECD Countries

	Australia	*Austria*	*Belgium*	*Canada*	*Denmark*	*Finland*	*France*	*Germany*	*Greece*	*Iceland*	*Ireland*	*Italy*
First tier *(% average earnings)*												
Targeted	23	37	23	16	17	21	31	24	12	25[h]	28	22
Basic	n.a.	n.a.	n.a.	14	17	n.a.	n.a.	n.a.	n.a.	n.a.	31	n.a.
Minimum	n.a.	n.a.	38[a]	n.a.	n.a.	n.a.	29	n.a.	40	n.a.	n.a.	n.a.
Overall entitlement (*full-career worker*)	23	37	38	30	34	21	31	24	40	25	31	22
Second tier Earnings-related												
Type	None	DB	DB	DB	DB/DC	DB	DB/points	Points	DB	DB	None	n. acs.
Accrual rate (% indiv. earnings)	n.a.	1.78	1.50	0.63	n.a.	1.50 [a][d]	1.75 [w][e,f]	1.00	2.57[e]	1.40	n.a.	1.75
Defined contribution *Contribution rate (% indiv. earnings)*	9	n.a.	n.a.	n.a.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ceilings *(% average earnings)*												
Public	n.a.	164	129	100	n.a.	n.a.	128	164	325[g]	n.a.	n.a.	357
Private/ occupational	234	n.a.	n.a.	n.a.	n.a.	None	385	n.a.	n.a.	None	n.a.	n.a.
Pension age												
Normal	65	65	65	65	65	65	60	65	65	67	65	65
(women)	65	60	65	65	65	65	60	65	65	67	65	65
Early	55	n.a.	60	60	n.a.	60	n.a.	63	57	n.a.	n.a.	57
(women)	55	n.a.	60	60	n.a.	60	n.a.	63	57	n.a.	n.a.	57

Sources: OECD, national officials, 2002.

Note: n.a. = not applicable. n. acs.= notional accounts. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

Parameters and rules of 2002 plus any long-term changes that have already been legislated. See "Modeling" section for more details.

a. Belgium and the United Kingdom: minimum benefit calculated from minimum credit.
b. Portugal and the United States: higher accrual rates for lower earnings, lower accruals on higher earnings.
d. Finland: higher accrual rates at older ages.
e. France, Greece, and Sweden: data shown combine two different programs.
f. France and Sweden: higher accrual rate on higher earnings.
g. Greece and Luxembourg: effective ceiling calculated from maximum pension.
h. Iceland: includes three different programs.
i. Luxembourg: accrual rate is higher for longer contribution periods.
k. The Netherlands: accrual rate varies between occupational schemes.
l. Norway: lower accrual rate on higher earnings.
m. Spain: higher accrual rate on earlier years of service and lower on later years.

(*continued on the next page*)

Table 3.1. (continued)

	Japan	*Korea, Rep. of*	*Luxembourg*	*Netherlands*	*New Zealand*	*Norway*	*Portugal*	*Spain*	*Sweden*	*Switzerland*	*United Kingdom*	*United States*
First tier *(% average earnings)*												
Targeted	n.a.	n.a.	36	34	n.a.	33	20	n.a.	34	26	26	20
Basic	19	30	12	34	38	18	n.a.	n.a.	n.a.	n.a.	20	n.a.
Minimum	n.a.	n.a.	46	n.a.	n.a.	n.a.	44	33	n.a.	19	13[a]	n.a.
Overall entitlement (*full-career worker*)	19	30	46	34	38	33	44	33	34	26	33	20
Second tier Earnings-related												
Type	DB	DB	DB	DB	None	Points	DB	DB	n. acs.	DB	DB	DB
Accrual rate (% indiv. earnings)	0.71	0.75	1.85 [y][i]	1.75[k]	n.a.	1.05 [w][l]	2.25 [w][b]	3.00 [y][m]	1.21 [w][e,f]	1.70 [w/a]	0.89 [w]	0.91 [w][b]
Defined contribution												
Contribution rate (% indiv. earnings)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.5[e]	n.a.	n.a.	n.a.
Ceilings *(% average earnings)*												
Public	175	189	240[g]	n.a.	n.a.	219	None	189	132	116	156	262
Private/ occupational	n.a.	n.a.	n.a.	None	n.a.	n.a.	n.a.	n.a.	367	116	n.a.	n.a.
Pension age												
Normal	65	60	65	65	65	67	65	65	65	65	65	67
(women)	65	60	65	65	65	67	65	65	65	64	65	67
Early	60	55	57	60	n.a.	n.a.	55	60	61	63	n.a.	62
(women)	60	55	57	60	n.a.	n.a.	55	60	61	62	n.a.	62

at which people are eligible for the public pension benefit (usually, the minimum pension). Three countries pay these pensions from age 65. The rest have lower eligibility ages: the average for this group is just under 62.5.

In the DB systems of the countries in the Middle East and North Africa, retirement is possible at very early ages provided a minimum number of years of contributions have been made. In Egypt and the Islamic Republic of Iran, the pension can be drawn at any age subject to 20 and 30 years' contributions, respectively. Although the normal pension age is typically 60 (except in Djibouti and Libya), early retirement for a full-career worker is possible at an average age of 50 (in the nine countries with early retirement provisions).

Early retirement provisions are less common in the high-income OECD countries than in the other three groups. Retirement is possible before the normal pension age in 16 out of 24 cases.

Table 3.2. Summary of Pension System Parameters, Eastern Europe and Central Asia

	Bulgaria	*Crotia*	*Czech Republic*	*Estonia*	*Hungary*	*Latvia*	*Lithuania*	*Poland*	*Slovak Republic*	*Turkey*
First tier										
(% average earnings)										
Targeted	14	n.a.	10	14	n.a.	n.a.	n.a.	24	n.a.	6
Basic	n.a.	11	8	7	n.a.	n.a.	17	n.a.	n.a.	n.a.
Minimum	16	n.a.	12	n.a.	22	33	n.a.	n.a.	22	28
Overall entitlement (*full-career worker*)	16	11	12	14	22	33	17	24	22	28
Second tier										
Earnings-related										
Type	DB	Points	DB	Points	DB	n. acs.	DB	n. acs.	Points	DB
Accrual rate (% indiv. Earnings)	1.00	0.25	0.45 [w][a]	0.50	1.22	0.60	0.50	0.67	1.19	2.00 [y][c]
Defined contribution										
Contribution rate (% indiv. Earnings)	2.0	5.0	n.a.	6.0	8.0	10.0	5.5	7.3	n.a.	n.a.
Ceilings										
(% average earnings)										
Public	370	None	None	1,000	220	700	500	245	300	173
Private/occupational	370	None	n.a.	1,000	220	700	500	n.a.	n.a.	n.a.
Pension age										
Normal	63	65	63	63	62	62	62.5	65	62	60
(women)	60	60	59–63[b]	63	62	62	60	60	62	58
Early	n.a.	60	60	60	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
(women)	n.a.	55	56–60[c]	60	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: OECD, World Bank, national officials, 2002.

Note: Pension ages for women are shown only where they are different from men's. Early pension ages are only shown where relevant. n.a. = not applicable. n. acs.= notional accounts. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

Parameters and rules of 2002 plus any long-term changes that have already been legislated. See "Modeling" section for more details.

a. The Czech Republic: higher accrual rates for lower earnings, lower accruals on higher earnings.
b. The Czech Republic: pension ages for women vary with the number of children they have.
c. Turkey: higher accrual rate on earlier years of service and lower on later years.

Pension eligibility ages for women are lower than for men in many countries: 6 of the 10 countries of Eastern Europe and Central Asia, 5 of the 9 countries of Latin America and the Caribbean, and 7 of the 10 from Middle East and North Africa. In the high-income OECD countries, in contrast, nearly all countries have already equalized men and women's pension ages or are gradually doing so (for example, Belgium and the United Kingdom).

Defining Earnings

Earnings-related pension schemes must define and measure individuals' earnings to calculate their pension benefits. There are two ways in which policy may differ between countries: the period over which earnings are measured and the way earnings are adjusted to reflect changes in living standards between the time pension rights accrued and the time they are claimed (table 3.5). These variables have a powerful influence on the level of benefits.

Table 3.3. Summary of Pension System Parameters, Latin America and the Caribbean

	Argentina	*Chile*	*Colombia*	*Costa Rica*	*Dominican Republic*	*El Salvador*	*Mexico*	*Peru*	*Uruguay*
First tier									
(% average earnings)									
Targeted	n.a.	20–25	50	10	40	32	19	25	20
Basic	28	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Minimum	n.a.	n.a.	n.a.	20	n.a.	n.a.	n.a.	n.a.	n.a.
Overall entitlement (*full-career worker*)	28	20–25	50	20	40	32	19	25	20
Second tier									
Earnings-related									
Type	None	None	None	DB	None	None	None	None	DB
Accrual rate *(% indiv. earnings)*	n.a.	n.a.	n.a.	1.95 [y][b]	n.a.	n.a.	n.a.	n.a.	1.97 [y][b]
Defined contribution									
Contribution rate *(% indiv. earnings)*	6.00	12.30[c]	15.00[c]	4.25	8.00	13.00[c]	6.50[a]	11.50[c]	7.50–15.00[d]
Ceilings									
(% average earnings)									
Public	n.a.	n.a.	n.a.	None	n.a.	n.a.	n.a.	n.a.	130
Private/occupational	580	311	1,000	None	1,050	165	482	None	570
Pension age									
Normal	65	n.a.	62	62	60	60	65	65	60
(women)	60	n.a.	60	60	n.a.	55	60	n.a.	n.a.
Early	n.a.	n.a.	n.a.	n.a.	55	n.a.	n.a.	n.a.	n.a.
(women)	n.a.	n.a.	n.a.	n.a.	55	n.a.	n.a.	n.a.	n.a.

Sources: OECD, World Bank, national officials, 2002.

Note: Pension ages for women are shown only where they are different from men's. Early pension ages are only shown where relevant. n.a. = not applicable. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

Parameters and rules of 2002 plus any long-term changes that have already been legislated. See "Modeling" section for more details.

a. Mexico: additional contribution of 5.5 percent of minimum wage.
b. Costa Rica and Uruguay: higher accrual rate on earlier years of service and lower on later years.
c. Includes administrative expenses, insurance coverage, and so on. These are 2.3 percent for Chile, 3 percent for Colombia, 3 percent for El Salvador; and 3.5 percent for Peru. Other countries' contributions are shown gross of these expenses.
d. Uruguay: contribution rate varies with earnings.

Entitlements to earnings-related pensions are calculated in relation to the past earnings of the individual worker. However, the way these are measured differs among countries. The measure might be, for example, a period of final earnings, the lifetime average, or a number of best years of earnings. When individual earnings increase over a worker's career, as is often the case, using only final or a few last years of earnings will result in a higher benefit than when taking into account early years of the career when earnings were much lower. Using short periods to measure earnings in pension benefit formulae was once very common internationally, but most countries have now extended the period of time over which earnings are measured.

The reasons earnings-related pension systems in the past tended to base benefits on a limited number of years are two: first, using final or best salary was a way of offsetting the effects of inflation on earlier years' pay; second, shorter periods of earnings were easier to measure exactly and so reduced administrative costs. Record keeping has improved through the use of information technology, allowing files covering longer periods to be

Table 3.4. Summary of Pension System Parameters, Middle East and North Africa

	Algeria	*Bahrain*	*Djibouti*	*Egypt, Arab Rep. of*	*Iran, Islamic Rep. of*	*Jordan*	*Libya*	*Morocco*	*Tunisia*	*Yemen, Rep. of*
First tier										
(% average earnings)										
Targeted	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Basic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Minimum	33	42	21	7	67	35	25	18	29	n.a.
Overall entitlement (*full-career worker*)	33	42	21	7	67	35	25	18	29	0
Second tier										
Earnings-related										
Type	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Accrual rate (% indiv. earnings)	2.50	2.20	1.50	2.20 [y][b]	3.30	2.50	2.30 [y][a]	2.00 [y][a]	2.67 [y][a]	2.50
Defined contribution										
Contribution rate (% indiv. earnings)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ceilings										
(% average earnings)										
Public	815	None	None	176	800	None	None	218	322	None
Private/occupational	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Pension age										
Normal	60	60	55	60	60	60	65	60	60	60
(women)	55	55	55	60	55	55	60	60	60	55
Early	50	45	n.a.	Yes[c]	Yes[c]	45	62	55	50	50
(women)	45	45	n.a.	Yes[c]	Yes[c]	45	No	55	50	46

Sources: World Bank, national officials, 2002.

Note: Pension ages for women are shown only where they are different from men's. Early pension ages are only shown where relevant. n.a. = not applicable. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

Parameters and rules of 2002 plus any long-term changes that have already been legislated. See "Modeling" section for more details.

a. Libya, Morocco, and Tunisia: higher accrual rate on earlier years of service and lower on later years.
b. Egypt: accrual rate for both basic and variable wage schemes. However, earnings measure and valorization differ. (See "Defining Earnings.")
c. Egypt, the Islamic Republic of Iran: early retirement at any age with 20 and 30 years' contributions, respectively.

maintained rather than relying on a few years' final salary. Also, computerization allows valorization of earlier years' earnings (see below) to be calculated easily. This means that pension formulae based on final salary are no longer needed as a way of protecting against inflation. Furthermore, the problems of using short periods to measure earnings in pension formulae have become apparent, including high costs, strategic manipulation of earnings profiles, and disproportionately higher benefits going to higher-income workers because they tend to have more steeply rising age-earnings profiles.

Earnings Measures

Of the 20 high-income OECD countries with earnings-related schemes, 17 currently use or will use lifetime average, or very close to lifetime average, pay in the benefit formula. The exceptions are the public schemes of France, Greece, and Spain, and the Norwegian points-based scheme and Swedish occupational pensions. Some countries—Austria, Finland and Portugal—are currently phasing in longer averaging periods for earnings in their benefit calculation.

Table 3.5. Earnings Measure and Valorization: Earnings-Related Schemes

	Earnings measure	Valorization
High-income OECD countries		
Australia	n.a.	n.a.
Austria	Best 15 years, moving to 40 years	Yes, to be decided (earnings probable)
Belgium	Lifetime average	Prices
Canada	Lifetime average, excluding 15% of worst years	Average earnings
Denmark	n.a.	n.a.
Finland	Final 10 years, moving to lifetime average	50% of prices and 50% of average earnings, moving to 80% of prices and 20% of average earnings
France	Best 20 years, moving to 25 years (public)	Prices (public)
	Lifetime average (occupational points)	Prices (occupational)
Germany	Lifetime average (points)	Average earnings; adjustment for changes in contributions and potential contribution to voluntary pensions
Greece	Final 5 years	Pension increases of public sector workers
Iceland	Lifetime average (occupational)	Fixed rate
Ireland	n.a.	n.a.
Italy	Lifetime average (notional accounts)	Moving to an average of GDP growth over 5 years
Japan	Lifetime average	Average earnings
Korea, Rep. of	Lifetime average	Average earnings
Luxembourg	Lifetime average	Average earnings
Netherlands	Lifetime average for approx. two-thirds, and final for one-third of schemes (occupational)	Average earnings (occupational)
New Zealand	n.a.	n.a.
Norway	Best 20 years (points)	Average earnings
Portugal	Best 10 out of final 15 years, moving to lifetime average	75% prices and 25% average earnings with maximum real growth of 0.5%
Spain	Final 15 years	Prices up to 2 years before retirement
Sweden	Lifetime average (notional accounts) Final (occupational scheme)	Average earnings with adjustment for demographics (notional accounts)
Switzerland	Lifetime average (public scheme)	Average earnings
	Lifetime average (occupational)	Minimum interest rate specified
United Kingdom	Lifetime average	Average earnings
United States	Best 35 years	Average earnings up to age 60; prices from age 62 to 67

(*continued on the next page*)

Table 3.5. (continued)

	Earnings measure	*Valorization*
Eastern Europe and Central Asia		
Bulgaria	n.a.	n.a.
Croatia	10 consecutive best years, moving to lifetime average	50% of prices and 50% of average earnings
Czech Republic	Since 1985, moving to 30 years	Average earnings
Estonia	Lifetime average (points)	50% of prices and 50% of average earnings
Hungary	Since 1988, moving to lifetime average	Average earnings
Latvia	Lifetime average (notional accounts)	Covered wage bill
Lithuania	Lifetime average	Average earnings
Poland	Lifetime average (notional accounts)	Prices + 75% of real wage-bill growth; policy changes to real wage-bill growth but at least price inflation from 2004
Slovak Republic	Lifetime average (points)	Average earnings
Turkey	Lifetime average	GDP growth
Latin America and the Caribbean		
Argentina	n.a.	n.a.
Chile	n.a.	n.a.
Colombia	n.a.	n.a.
Costa Rica	Best 48 of final 60 months	None
Dominican Republic	n.a.	n.a.
El Salvador	n.a.	n.a.
Mexico	n.a.	n.a.
Peru	n.a.	n.a.
Uruguay	Final 10 years	Average earnings
Middle East and North Africa		
Algeria	Final 5 years	None
Bahrain	Final 2 years	None
Djibouti	Final 10 years	Yes, to be decided
Egypt, Arab Rep. of	Final 2 years (basic wage scheme)	None
	Lifetime average (variable wage scheme)	2% pension increase per year of service
Iran, Islamic Rep. of	Final 2 years	None
Jordan	Final 2 years	None
Libya	Final 3 years	None
Morocco	Higher of final 3 or final 5 years	None
Tunisia	Final 10 years	Prices
Yemen, Rep. of	Final 2 years	None

Sources: OECD, World Bank, national officials, 2002.

Note: n.a. = not applicable (country does not have an earnings-related scheme).

Lifetime average earnings measures also predominate in Eastern Europe and Central Asia. However, in the Middle East and North Africa, final salary schemes are almost universal.

Valorization

Valorization is the adjustment of past earnings to account for changes in living standards between the time pension rights are earned and the time they are claimed. In final salary schemes, there is obviously no need for valorization. However, it is universal practice in schemes where benefits are based on earnings measured over a longer period.

Until very recently, valorization has received much less attention than the related policy of indexation of pensions in payment despite the powerful impact valorization exerts on pension benefits.

Adjustments related to valorization exist also in the different variants of earnings-related schemes. In notional accounts, the exact corollary to valorization is the notional interest rate applied, which again adjusts benefits between the time they were earned and the time they are drawn. Similarly, procedures for uprating the value of a pension point in points systems have the same effect (OECD 2005, annex I.1).

Table 3.5 shows valorization rules—and the equivalent policies for notional accounts and points systems—in the final column.

Of the 20 high-income OECD countries with earnings-related schemes, 11 valorize in line with growth of earnings (or close, as in the United States). The same applies in four of the Eastern European and Central Asian countries. Valorization is purely with prices in Belgium, France (both the public scheme and occupational plans), Iceland, Korea and Spain.

Croatia, Estonia, Finland, Poland, and Portugal valorize with a mix of earnings and prices. In Italy and Turkey, adjustments are linked to a measure of gross domestic product (GDP) growth, and in Latvia, to the covered wage bill.

The effect of valorization policy on pension entitlements can be very large. This is due to a *compound-interest effect.* On the baseline economic assumptions—real wage growth of 2.0 percent and price inflation of 2.5 percent—price valorization for a full career (between ages 20 and 65) results in a pension that would be 40 percent lower than a policy of full adjustment of earlier years' pay in line with economywide average earnings.

Indexation

Pensions in payment are often adjusted during retirement to reflect changes in costs or standards of living over time. The aim is to protect older people from inflation. The adjustment of pension scheme parameters also has a powerful impact on the value of entitlements.

Few countries had formal indexation rules when pension schemes were established. However, the high-inflation era of the 1970s led many governments to adopt automatic procedures for adjusting pensions in payment (Weaver 1998).

Many countries moved from earnings to price indexation during the 1980s and 1990s as a cost-cutting measure (since wages tend to grow faster than prices). With price indexation, the purchasing power of pensions is preserved. However, the standard of living of individual retirees over time falls behind that of workers.

Indexing Pensions in Payment

Table 3.6 shows that most high-income OECD countries adjust earnings-related pensions in line with prices.

There are some exceptions. Luxembourg links pensions in payment to earnings growth; Germany, to earnings growth with an adjustment for changes in pension contributions.

In Eastern Europe and Central Asia, just the Czech Republic and Turkey index to prices. Six of these countries have some form of mixed indexation, with pension increases linked partly to prices and partly to earnings growth. Mixed indexation also applies in Finland and in Switzerland (which pioneered the policy).

Table 3.6. Procedures for Adjustment of Pensions in Payment: Earnings-Related Schemes

Country	*Scheme*	*Prices*	*Wages*	*Notes*
High-income OECD countries		%	%	
Austria		n.a.	n.a.	*Discretionary; prices assumed in modeling*
Belgium		100		*Price index excludes alcohol, cigarettes, and fuel; increases only if inflation exceeds 2%*
Canada		100		
Finland	Occupational	80	20	
France	Earnings-related	100		
	Occupational	100		*No automatic procedure but recent practice*
Germany			100	*Wages net of pension contributions*
Greece		n.a.	n.a.	*Discretionary*
Iceland	Occupational	100		*Minimum legal uprating*
Italy		75–100		*Increase between full and 75% price indexation depending on pension level*
Japan		100		
Korea, Rep. of		100		
Luxembourg		100		*Increase if inflation exceeds 2.5%; additional adjustment to wages*
Netherlands	Occupational		100	*No legal requirement but customary*
Norway		100		*No legal requirement but recent practice*
Portugal		100		
Spain		100		
Sweden	Earnings-related	n.a.	n.a.	*Gross earnings less growth norm of 1.6%*
	Occupational		100	
Switzerland	Earnings-related	50	50	
	Occupational	n.a.	n.a.	*Discretionary*
United Kingdom		100		
United States		100		
Eastern Europe and Central Asia				
Bulgaria		n.a.	n.a.	
Croatia		50	50	
Czech Republic		100		*Adjustment to prices plus increases of at least one-third of real wage growth*
Estonia		50	50	
Hungary		50	50	
Latvia		50	50	*Prices plus 25% of real wage bill, moving to 50% from 2011*
Lithuania		n.a.	n.a.	*Discretionary*
Poland		80	20	*Proposal to shift to pure price indexation*
Slovak Republic		50	50	
Turkey		100		

(*continued on the next page*)

Table 3.6. (continued)

Country	*Scheme*	*Prices*	*Wages*	*Notes*
Latin America and the Caribbean		%	%	
Costa Rica		100		
Uruguay			100	*To civil-service wage index*
Middle East and North Africa				
Algeria		n.a.	n.a.	*Discretionary; annual review*
Bahrain		n.a.	n.a.	*Ad hoc*
Djibouti		n.a.	n.a.	*Discretionary*
Egypt, Arab Rep. of	Basic wage	n.a.	n.a.	*Annual increases; recently 10%*
	Variable wage	n.a.	n.a.	*No adjustment*
Iran, Islamic Rep. of		n.a.	n.a.	*Discretionary*
Jordan		n.a.	n.a.	*Discretionary*
Libya		n.a.	n.a.	*Ad hoc*
Morocco		n.a.	n.a.	*Ad hoc*
Tunisia			100	*Minimum wage*
Yemen, Rep. of		n.a.	n.a.	*Ad hoc*

Sources: OECD, World Bank, national officials, 2002.

Italy and Greece have policies of *progressive indexation*, which gives smaller increases on larger pensions and larger increases on smaller pensions.

In practice, pension-benefit increases in the high-income OECD countries have often strayed from the index set out in the rules (see Vordring and Goudswaard 1997).

Indexation of pensions in payment is almost entirely absent in Middle East and North Africa. There are just two exceptions. Egypt pays a flat increase on basic wage pensions that has recently been just 10 percent a year (while inflation has been both higher and lower than this level). Tunisia links pensions in payment to the minimum wage.

Elsewhere in Middle East and North Africa, benefit adjustments are discretionary (there has to be an annual review, but there is no fixed procedure for determining the increase) or ad hoc (there is no requirement for periodic review of benefits, but there have been sporadic increases in recent years).

Defined-Contribution Plans

In Latin America and the Caribbean, most countries allow workers a choice of ways of withdrawing their pension benefits. Typically, these include life annuities (an insurance company guarantees the payment) or phased withdrawals (a defined portion of the account balance may be taken out each year).

In the first case, the risk of longevity is borne by the insurer, which makes the payment as long as the individual survives. In the second case, the individual bears the longevity risk since a long life means that the accumulated balance will be very small at advanced ages.

In Eastern Europe and Central Asia, in contrast, most countries require benefits to be withdrawn as an indexed annuity, typically linked to prices.

Australia offers the broadest range of withdrawal options. Individuals may choose from a range of income streams (including annuities with different upratings) or make lump-sum withdrawals. Currently, most benefits are taken as lump sums.

Indexing Pension-System Parameters

Indexation policy affects the value of pension benefits other than the earnings-related schemes (table 3.6).

Governments also adjust targeted and basic pension benefits, usually on an annual basis. This policy has much more significance for the value of pension entitlements than does the indexation of pensions in payment.

Take the United Kingdom's basic pension scheme as an example. This has been linked to prices since 1981, when it was worth 23.7 percent of average earnings. Today it is worth just 15.8 percent of average earnings. The change in indexation procedure reduced not only the entitlements of pensioners but also the benefits of all future workers. If the procedure continues, then the basic pension for new entrants will be worth just 6.4 percent of average earnings when they retire in 45 years' time, just 40 percent of its value relative to earnings now. (This calculation uses the baseline real-earnings-growth assumption of 2 percent per year.)

Canada also links its basic pension to prices. Canada and Sweden link their targeted schemes to prices (while the United Kingdom now links this to average earnings). The implication, over the long periods involved in pension policy, is that these programs will become obsolete. For new entrants, the minimum retirement income in 45 years' time would be just 12 percent of average earnings in Canada and 14 percent in Sweden. It is difficult to believe that it will be politically possible to pay such low incomes to poor, old people. As a result, these policies are unlikely to be sustainable or, indeed, sustained.

A similar argument applies to other parameters of the pension system. Canada links the ceiling of its earnings-related pension scheme to prices. The ceiling is already at approximately the average earnings. In 45 years' time, it would be just 40 percent of average earnings. Most pensioners would then be getting the same benefit. Again, it is unlikely that the scheme will be transformed to such a degree.

The modeling implicitly assumes that these benefits and parameters are linked to average earnings (see below).

Taxes and Contributions

Pensioners often do not pay social security contributions. Income taxes are progressive: taxes on lower pension incomes are less than those paid on (higher) work earnings. Most income taxes give preferential treatment to pension incomes or to pensioners. Replacement rates (pensions relative to earnings) are higher net of taxes and contributions than gross. Relevant features of income taxes and social security contributions are shown in three categories in the country studies in Part II of this report.

First, there are age-based tax allowances and tax credits, which exceed those available to taxpayers of working age. In many cases, these concessions are targeted at those with modest incomes and are withdrawn as income increases.

Second, there are reliefs for some or all of pension income received. Several countries fully or partially exempt pensions paid from public sources from the personal income tax. Moreover, in some cases, there is a preferential tax treatment for modest pensions paid from private sector schemes.

Third, social security contributions are typically levied only on wage income and not on pension benefits. However, some countries charge contributions on pension income for health and long-term care insurance or for survivor's benefits.

4. Modeling Pensions

THIS REPORT ADOPTS A MICROECONOMIC APPROACH to comparing retirement-income systems, looking at prospective individual entitlements under 53 countries' pension regimes. These microeconomic techniques were first developed for the retirement-income reviews of nine OECD countries (OECD 2001).

Future Entitlements Under Today's Rules

The pension entitlements that are compared are those that are currently legislated. Pension-system parameters reflect, where possible, the situation in the year 2002.

Changes in rules that have already been legislated, but are being phased in gradually, are assumed to be fully in place from the start. (In some cases where there has been systemic change, such as in the Slovak Republic and Sweden, the modeling calculates what the parameters of the new system would have been had it been in place in 2002.)

It is assumed that the pension rules remain unchanged. This steady-state assumption is also applied to value parameters, such as the level of ceilings or basic pensions. These are assumed to remain at the same level relative to average earnings (see the discussion on indexation above).

Full-Career, Single Workers

The calculations show the pension entitlements of a worker who enters the system today and retires after a full career. A *full career* is defined as entering at age 20 and working until the standard pension-eligibility age, which, of course, varies among countries. The implication is that the length of career varies with the statutory retirement age: 40 years for retirement at age 60, 45 years for retirement at 65.

The reason for modeling only full careers is that periods out of the labor market are covered in many countries' pension systems with credits for periods in higher education, military service, unemployment, child rearing, and so on. Assuming that people are not covered by the pension system during career gaps would produce inaccurate figures for pension entitlements.

The results are shown only for a single person because the rules governing benefits for married couples are complex in many countries and entitlements depend on both partners' career histories.

Coverage

The pension models presented here include all mandatory pension schemes for private sector workers, regardless of whether they are public (that is, they involve payments from government or from social security institutions, as defined in the System of National Accounts) or private. Systems with near-universal coverage are also included, provided they cover at least 90 percent of employees. For example, this degree of coverage of occupational plans is achieved through centralized collective bargaining in the Netherlands and in Sweden.

In Canada, Denmark, the United Kingdom, and the United States, there is broad coverage of voluntary, occupational pensions, and these play an important role in providing retirement incomes. However, coverage is significantly below 90 percent, so they have not been included. However, results including these schemes are available in the OECD report (OECD 2005).

Mandatory personal pensions, known as *individual accounts* in some countries, are also included. These are of the defined-contribution type, so the pension benefit depends on contributions made and investment returns earned. The countries that have recently introduced these schemes have made them mandatory for new labor-market entrants; the majority of older workers are covered only by the old, public schemes in some of these countries. This report focuses on the retirement-income arrangements of new labor-market entrants, and so assumes that people are covered by defined-contribution pensions.[1]

Resource-tested benefits for which retired people may be eligible are also included in pension models. As described above, these can be means tested, where both assets and income are taken into account, purely income tested, or withdrawn only against pension income. Leaving these benefits out of the model would give a misleading picture of the situation of low-income retirees. The comparisons assume all entitled pensioners take up these benefits. Where there are broader means tests, taking account also of assets, the income test is taken as binding. It is assumed that the entire income during retirement comes from the mandatory pension scheme when calculating pension entitlements (or from the voluntary pension in the four countries where these are modeled).

In many countries, there are entirely separate schemes for civil servants and other public sector workers (see Palacios and Whitehouse [2005] for an analysis of these schemes). Some countries also have special programs for agricultural workers and the self-employed. These schemes are not included here. The comparisons currently look only at the main national scheme for private sector employees.

Pension entitlements are compared for workers with earnings between 0.3 times and 3.0 times the economywide average. This large range permits the pensions of both the poorer and richer workers to be examined, and it is sufficiently broad to include people who are employed part-time.

Economic Variables

The comparisons of pension entitlements are based upon a single set of economic assumptions for all countries. In practice, the level of pensions received is affected by economic growth, wage growth, and inflation, and these vary across countries. A single set of assumptions, however, ensures that the outcomes of the different pension regimes are not affected by different economic conditions. In this way, differences across countries in pension levels reflect differences in pension systems and policies alone.

The baseline assumptions are the following:

- *Real earnings growth* is 2.00 percent per year (given the assumption for price inflation, this implies nominal wage growth of 4.55 percent).
- *Individual earnings* are assumed to grow in line with the economywide average. Thus, in the baseline case, the individual is assumed to remain at the same point in the earnings distribution, earning the same percentage of average earnings in every year of the working life.

- *Price inflation* is 2.5 percent per year.
- *Real rate of return* on defined-contribution pensions is 3.5 percent per year.[2]
- *Discount rate* (for actuarial calculations) is 2 percent per year.
- *Mortality rates* are calculated with baseline modeling, which uses country-specific projections (made in 2002) from the United Nations and the World Bank population database for the year 2040.

Changes in these baseline assumptions will obviously affect the resulting pension entitlements. The OECD report (OECD 2005) includes a sensitivity analysis of the effect of these assumptions.

This analysis allows, for example, for economywide earnings growth of between 0 and 3 percent per year, for returns on defined-contribution schemes of between 0 and 6 percent per year, and for individual earnings that grow faster than the economywide average by up to 2 percentage points per year or slower by up to 1 percentage point per year.

Defined-Contribution Schemes

Where there are data on administrative changes, these are deducted from the contribution in calculating benefits. (See Whitehouse [2000, 2001] for a discussion of administrative charges.)

The calculations assume that when DC benefits are received in retirement, they are paid in the form of a price-indexed life annuity at an actuarially fair price.

Studies of voluntary annuity markets in the United Kingdom and the United States have shown that annuities pay out less than they would if insurance companies were to base their calculations on the relevant interest rates and projected population mortality. This does not mean that prices are "actuarially unfair" since they reflect the longer life expectancy of people who choose to buy an annuity. In mandatory annuity markets, which are relevant to the mandatory DC schemes modeled in this paper, prices are much closer to the actuarially fair level (Finkelstein and Poterba 2002, 2004).

The actuarially fair annuity rate is calculated from mortality data. Because of improvements in life expectancy, someone retiring at a given age after having contributed a given amount to a DC scheme will in the future receive a lower pension than a person retiring today would receive.

Similarly, the notional annuity rate in notional-accounts schemes is calculated from mortality data using the indexation rules and discounting assumptions employed by each country.

Average Earnings

It is difficult to produce data on average earnings that are consistent across countries. Consequently, the OECD's average-production worker series is currently the only one available for all 30 OECD member countries (OECD 2005). For the 23 countries that are not members of the OECD, average earnings figures have been obtained from national sources.

Taxes and Social Security Contributions

The information on taxes and social security contributions on which the calculations of the net indicators are based can be found in each country chapter in Part II of this report. For the 30 OECD countries, the chapters describe the tax and social security contribution regimes in each country as they applied to pensioners in 2002. General provisions and the tax treatment of workers for 2002 can be found in the OECD report *Taxing Wages* (2003). The conventions used in that report, such as which payments are considered taxes, are discussed here.

For the 23 countries that are not in the OECD, country chapters include information on tax treatment of both pensioners and workers and general information on the tax schedule and rates of social security contributions.

The same steady-state assumption used for pensions is also applied here. The modeling assumes that tax systems and social security contributions remain unchanged in the future. This implicitly means that *value parameters,* such as tax allowances or contribution ceilings, are adjusted annually in line with average earnings, while *rate parameters,* such as the personal income tax schedule and social security contribution rates, remain unchanged.

Indicators and Results

The basic indicators used in this paper are as follows:

- *Replacement rate*, pension entitlements as a share of individual lifetime-average earnings
- *Relative pension level*, pension entitlements as a share of average economywide earnings
- *Pension wealth*, the discounted stream of future pension payments

The replacement rate is best interpreted as an indicator of the insurance role of the pension system. It shows to what extent pension systems aim to preserve the previous, personal standard of living of a worker moving from employment into retirement.

Often, the replacement rate is expressed as the ratio of the pension over the final earnings a worker had before retirement. However, the indicator used here shows the pension benefit as a share of individual lifetime-average earnings (revalued in line with economywide earnings' growth). Under the baseline assumptions, workers earn the same percentage of economywide average earnings throughout their career, meaning that their individual earnings track the assumed growth in economywide earnings. In this case, lifetime-average revalued earnings and individual final earnings are identical.

Expressed algebraically, individual earnings in any time period i can be expressed as a multiple of earnings in the base period (w_0):$w_i = w_0\,(1 + g)^i$ where w is earnings and g is the growth of (individual and economywide) earnings. Revaluing pay in line with earnings growth gives for each period: $w_i = w_0\,(1 + g)^i\,(1 + g)^{R-i}$. This is constant over time so final and lifetime-average revalued earnings are equal.

If people move up the earnings distribution as they get older, then their earnings just before retirement would be higher than they were on average over their lifetimes. In that case, replacement rates calculated on individual final earnings would be lower than those calculated on individual lifetime-average revalued earnings.

For comparison of countries that use different earnings measures, pension entitlements for all countries are presented as a proportion of individual lifetime-average earnings revalued in line with growth in economywide average earnings. Most of the OECD countries' earnings-related pension schemes use individual lifetime-average pay revalued in line with economywide average earnings—the same as the earnings measure to calculate pensions (table 3.5). For others, replacement rates presented here look different than those calculated using the earnings measure based on the rules of the national pension systems.

The relative pension level is best seen as an indicator of pension adequacy since it shows what benefit level a pensioner will receive in relation to the average wage earner in the respective country. Individual replacement rates may be quite high, but the pensioner may still receive only a small fraction of economywide average earnings. If, for example, a low-income worker—who earned only 30 percent of economywide average earnings—has a replacement rate of 100 percent, the benefit will amount to only 30 percent of economywide average earnings. For an average wage earner, the replacement rate and the relative pension level will be the same.

Pension wealth is an indicator that takes into account all future pension payments to a retiree. It therefore depends not only on the level of pensions paid, but also on how long they are paid. The number of years that someone can expect to receive a pension will depend both on the age of retirement and life expectancy at that age. The way that benefits are adjusted to price or wage growth during the period of payment will also influence pension wealth. The details of calculating pension wealth are set out below.

A Worked Example

X starts working at age 20 and works continuously until he retires at age 65. He starts out with an annual salary of $10,000. The salary corresponds to 75 percent of economywide average earnings at that time. His earnings grow by 2 percent each year. Economywide earnings grow at the same rate. X thus earns 75 percent of average earnings over his entire career.

When X retires, all his past salaries between the time that they were earned and the retirement age are increased in line with the growth in economywide average earnings, a procedure called valorization in this report (see above). In this case, valorization is linked to economywide average-earnings growth. X's lifetime-average revalued salary, which is the earnings measure used in the pension calculation, is $23,900.

The explanation is as follows: taking i as the number of years since labor-market entry, valorization means that each year's earnings are increased by $1.02^{(44-i)}$. Each year, X's earnings increase by a constant amount, so at any given time they are equal to earnings at entry age ($10,000) multiplied by 1.02^{i}. Thus, in each year of the working life, revalued earnings are first-year earnings multiplied by $1.02^{44-i} \times 1.02^{i}$, giving average lifetime-revalued earnings of $\$10{,}000 \times 1.02^{44} = \$23{,}900$.

The pension system has an accrual rate of 1.5 percent of earnings per year. X's gross pension is thus $45 \times 0.015 \times \$23{,}900 = \$16{,}130$. His *gross replacement rate* is $16,130/ $23,900 = 67.5%.

On his gross pension, X has to pay 10 percent in taxes and health-insurance contributions. The net pension is therefore $\$16{,}130 \times (100 - 10)\% = \$14{,}510$. While he was working, X had to pay 20 percent in taxes and social security contributions so that his net earnings at the time of retirement were $19,120. His *net replacement rate* is therefore $14,510/$19,120 = 75.9%.

To assess his pension level relative to average earnings, X divides his gross pension entitlement by gross average economywide earnings in the year of retirement. X's earnings at retirement are $23,900, while the economywide average is $31,790 (since X earns 75 percent of the average). Thus, X's *gross relative pension level* is $16,130/$31,790 = 50.7%.

The net relative pension level is calculated in the same way but using the taxes and social security contributions that X pays as a pensioner and a worker pays on average gross earnings. Workers on average gross earnings pay 25 percent in taxes and social security contributions, giving net average earnings of $\$31{,}790 \times (100 - 25)\% = \$23{,}840$. Therefore, X's *net relative pension level* is $14,510/$23,840 = 60.6%.

When X retires, male life expectancy at age 65 will be 83 years in his country, giving an expected retirement duration of 18 years. X's pension wealth is the discounted stream of pension payments during retirement, weighted by the probability that he will still be alive at that particular age. The discount rate is designed to reflect the fact that money received in the future is worth less than money received today; the rate used is 2 percent per year. The calculation also allows for the postretirement adjustment of pension benefits: in this case, X's pension is increased annually in line with price inflation. The actuarial calculations show that the present value of pension benefits is 14.8 times the annual flow (which is less than the 18 years' expected duration of retirement because future benefits are discounted).

Notes

1. See Mattil and Whitehouse (forthcoming) for a discussion.

2. This rate of return is assumed to be net of administrative charges. In practice, this assumption might disguise genuine differences in administrative fees between countries. See Whitehouse (2000, 2001).

5. Pension Entitlements

Gross replacement rates are compared across 53 countries for people with different levels of earnings. Table 5.1 shows gross replacement rates at earnings between 0.5 and 2.5 times the average.

The replacement rate at average earnings is perhaps the most familiar indicator in pension analysis. At this earnings level, the average gross replacement rate is 56 percent in the 24 high-income OECD countries. The average replacement rate is exactly the same in the 10 countries of Eastern Europe and Central Asia and very similar, on average, in the 9 countries of Latin America and the Caribbean. However the pension promise is much larger in the Middle East and North Africa: the replacement rate averages 78 percent in the 10 countries analyzed, meaning pensions are nearly 40 percent higher on average than in the other 43 countries.

There is substantial variation within all the regions. The most diverse region (measured by the ratio of the standard deviation to the mean) is Latin America and the Caribbean. Projected replacement rates vary from 36 percent in Mexico to over 100 percent in Uruguay (meaning that the pension is higher than earnings before retirement).

The high-income OECD countries are similarly (albeit slightly less) diverse. Luxembourg is an outlier: the replacement rate for a full-career worker exceeds 100 percent. Austria, Greece, Italy, and Spain also provide high pensions to full-career workers on average earnings: replacement rates exceed 75 percent. The gross replacement rate at average earnings is approximately 50 percent in France, Iceland, Japan, and Norway. Not surprisingly, Ireland—which has only basic and targeted pensions and no earnings-related scheme—has the lowest replacement rate at average earnings. In the United Kingdom, the earnings-related public scheme does not result in a high pension: the scheme has a low accrual rate and does not cover the first slice of earnings (up to approximately one-fifth of the average).

Eastern Europe and Central Asia has more uniform replacement rates than high-income OECD and Latin American and Caribbean countries. Half of the countries are in the 50–60 percent range. Nevertheless, there is still substantial variation, from 38 percent in Croatia to 87 percent in Turkey.

The Middle East and North African replacement rates are uniform to a similar degree as Eastern Europe and Central Asia's. Djibouti is something of an outlier: its recent reform substantially cut the pension promise. The gross replacement rate at average earnings of 37.5 percent is one of the lowest in the whole group of 53 countries. In contrast, the other countries in this region offer high pensions: half of the 10 countries have replacement rates at average earnings of 80 percent or more. Half of the highest 12 replacement rates are found in Middle Eastern and North African countries.

Low Earners

At low earnings, defined as half of the average, the pension entitlements of full-career workers vary less than they do at average earnings among the high-income OECD countries. The average replacement rate at half of the average is 75 percent.

Table 5.1. Gross Replacement Rates by Earnings Level, Mandatory Pension Programs, Men (Percentage of individual preretirement gross earnings)

	Individual earnings, multiple of average					
	0.5	*0.75*	*1*	*1.5*	*2*	*2.5*
High-income OECD countries						
Australia	65.1	48.4	40.0	31.7	26.2	21.9
Austria	78.3	78.3	78.3	78.3	64.3	51.5
Belgium	61.6	41.1	37.3	31.9	23.9	19.2
Canada	72.4	52.4	42.5	28.4	21.3	17.0
Denmark	82.4	56.4	43.3	30.3	23.8	19.8
Finland	80.0	71.5	71.5	71.5	71.5	71.5
France	84.2	56.1	49.4	47.3	44.0	42.1
Germany	47.3	45.8	45.8	45.8	37.6	30.1
Greece	84.0	84.0	84.0	84.0	84.0	84.0
Iceland	85.5	63.7	52.8	42.8	41.3	40.3
Ireland	61.3	40.9	30.6	20.4	15.3	12.3
Italy	78.8	78.8	78.8	78.8	78.8	78.8
Japan	69.2	56.6	50.3	44.0	36.9	29.5
Korea, Rep. of	60.9	47.4	40.6	33.8	29.3	23.5
Luxembourg	115.5	106.5	101.9	97.4	95.2	89.8
Netherlands	68.7	68.3	68.3	68.3	68.3	68.3
New Zealand	75.1	50.1	37.6	25.0	18.8	15.0
Norway	65.3	56.1	52.6	46.5	38.4	31.8
Portugal	103.1	68.8	66.7	65.9	65.5	64.7
Spain	80.1	80.1	80.1	80.1	75.6	60.5
Sweden	87.8	72.5	64.8	64.6	66.2	67.1
Switzerland	62.8	60.2	58.2	44.2	33.1	26.5
United Kingdom	67.4	46.4	37.1	29.3	22.5	18.0
United States	53.1	44.6	40.3	36.1	30.6	27.0
Average	**74.6**	**61.5**	**56.4**	**51.1**	**46.4**	**42.1**
Eastern Europe and Central Asia						
Bulgaria	49.7	49.7	49.7	49.7	40.0	33.5
Croatia	47.3	41.3	38.4	35.4	33.9	33.0
Czech Republic	70.5	53.3	44.4	31.7	25.4	21.6
Estonia	58.4	53.9	51.6	49.4	48.2	47.5
Hungary	75.4	75.4	75.4	75.4	75.4	66.3
Latvia	63.6	58.2	58.2	58.2	58.2	58.2
Lithuania	69.9	58.9	53.4	47.8	45.1	43.4
Poland	56.9	56.9	56.9	56.9	56.9	55.8
Slovak Republic	48.6	48.6	48.6	48.6	48.6	48.6
Turkey	96.2	90.2	87.2	84.1	71.9	57.5
Average	**63.7**	**58.6**	**56.4**	**53.7**	**50.4**	**46.5**
Latin America and the Caribbean						
Argentina	104.6	76.6	62.6	48.6	41.6	37.4
Chile	45.0	43.8	43.8	43.8	43.8	43.8
Colombia	100.0	66.7	50.0	46.1	46.1	46.1
Costa Rica	89.0	89.0	89.0	89.0	89.0	89.0
Dominican Republic	105.3	70.2	52.6	35.1	29.4	29.4
El Salvador	64.1	42.7	38.7	38.7	38.7	38.7

(*continued on the next page*)

Table 5.1. (continued)

	Individual earnings, multiple of average					
	0.5	*0.75*	*1*	*1.5*	*2*	*2.5*
Mexico	39.1	37.0	36.0	34.9	34.4	34.1
Peru	49.4	39.1	39.1	39.1	39.1	39.1
Uruguay	102.6	102.6	102.6	90.5	72.8	58.2
Average	**77.7**	**63.1**	**57.2**	**51.8**	**48.3**	**46.2**
Middle East and North Africa						
Algeria	80.0	80.0	80.0	80.0	80.0	80.0
Bahrain	84.0	79.2	79.2	79.2	79.2	79.2
Djibouti	42.5	37.5	37.5	37.5	37.5	37.5
Egypt, Arab Rep. of	90.5	87.0	85.3	75.2	63.6	50.9
Iran, Islamic Rep. of	132.0	115.5	115.5	115.5	115.5	115.5
Jordan	69.6	67.5	67.5	67.5	67.5	67.5
Libya	80.0	80.0	80.0	80.0	80.0	80.0
Morocco	70.0	70.0	70.0	70.0	70.0	61.1
Tunisia	64.0	64.0	64.0	64.0	64.0	64.0
Yemen, Rep. of	100.0	100.0	100.0	100.0	100.0	100.0
Average	**81.3**	**78.1**	**77.9**	**76.9**	**75.7**	**73.6**

Source: Axia Economics APEX model, 2002.

Note: n.a. = not applicable. n. acs.= notional accounts. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

As at average earnings, Luxembourg has the highest pensions, offering a replacement rate above 115 percent. Another set of high-income OECD countries have high pensions for low earners but offer average earners replacement rates nearer the average for all countries. Portugal, for example, has an exceptionally high minimum pension, and the earnings-related scheme has a higher accrual rate for low-income workers. Similarly, France, Iceland, and Sweden have relatively high income-tested or minimum pensions.

At the other end of the scale, German social assistance and the means-tested scheme in the United States pay only about one-fifth of average economywide earnings (table 3.1). This means that gross replacement rates for workers on half average earnings are approximately 50 percent. Countries with redistributive systems, such as Canada, New Zealand, and the United Kingdom, pay little to workers on average earnings, but they move more toward the middle of the scale when it comes to benefits for low earners. Replacement rates for low and average earners in the Netherlands are very similar, even though the basic pension, worth more than a third of average earnings (table 3.1), is at a fairly high level. This is because of the *franchise,* a calculation mechanism applied in the Netherlands, which means that occupational pensions are not earned on the first slice of earnings. The Netherlands therefore has the 7th highest replacement rate among the high-income OECD countries for average earners, but only the 15th highest for low earners.

In Eastern Europe and Central Asia, countries tend to offer a slightly higher replacement rate to low earners than to middle earners. The replacement rate is 64 percent on average for low earners.

Latin America and Caribbean countries pay gross replacement rate of 78 percent to low earners, somewhat more than the OECD countries. Argentina, Colombia, Costa Rica, the Dominican Republic, and Uruguay have among the highest replacement rates for low earners of all 53 countries.

In the Middle East and North Africa, replacement rates for low-income workers are, on average, a little higher than they are for middle earners: 81 and 78 percent, respectively. In half of the countries, the replacement rates are the same at the two earnings levels.

High Earners

Finally, at high earnings, Luxembourg has the highest replacement rate of the high-income OECD countries, with a replacement rate a little short of 95 percent. (*High earnings* are defined as double the economywide average.) The Islamic Republic of Iran and the Republic of Yemen pay 100 percent or greater replacement rates even to high earners.

The effect of pension ceilings is apparent on benefits in some countries that paid high replacement rates to middle earners but much lower replacement rates to high earners. These include Egypt, Turkey, and Uruguay.

The countries with pure flat-rate systems—Ireland and New Zealand—are naturally the least generous to these high earners, even with New Zealand's exceptionally high basic pension of nearly 40 percent of average earnings. Canada and the United Kingdom—although they have earnings-related schemes—also provide benefits that are broadly flat rate.

On average, replacement rates are approximately 10 percentage points lower for high earners than middle earners in the high-income OECD countries and in Latin America and the Caribbean. This differential is about six points in Eastern Europe and Central Asia. The replacement rates are the same for middle and high earners (with double average pay) in all of Middle East and North Africa except Egypt.

6. Net Pension Entitlements

THE AMOUNT OF TAXES AND SOCIAL SECURITY CONTRIBUTIONS people have to pay affects living standards when working and in retirement. The net replacement rate, presented in table 6.1, takes this effect into account. It shows individual net pensions relative to individual net earnings.[1]

As expected, net replacement rates are higher than gross replacement rates. For the 24 high-income OECD countries, net replacement rates are one-fifth larger than gross replacement rates for average earners: 68 percent rather than 56 percent. The difference is even larger in Eastern Europe and Central Asia. The 30 percent differential between net and gross replacement rates stems from the fact that many countries do not tax pensions or effectively do not tax pensions because standard income tax reliefs are so high that very few retirees are liable for tax.[2] Net replacement rates average 73 percent, compared with 56 percent for gross in Eastern Europe and Central Asia. The differentials are smaller in the other two groups of countries: 13 percent in Latin America and the Caribbean and 15 percent in the Middle East and North Africa. The smaller differential reflects the smaller overall tax burden in these countries compared with high-income OECD countries or Eastern Europe and Central Asia. In addition, tax concessions either for pensioners or for pension income are less common.

Among the high-income OECD countries, the difference in taxes paid by pensioners and workers is the highest in Belgium and Germany. In Belgium the large difference is because of the strongly progressive direct tax system, the relatively high direct tax burden, and the relatively low gross replacement rate. In Germany, the difference between gross and net replacement rates reflects the generous tax treatment of pension income. The effect of taxes and contributions on net versus gross entitlements is the smallest in Korea and Luxembourg. In Korea, this is because of a low general tax burden. In Luxembourg, the high gross replacement rate of approximately 100 percent means that older people do not benefit from the general progressivity of the tax system in the way that they do in other OECD countries with gross replacement rates much lower than 100 percent.

In Eastern Europe and Central Asia, taxes and contributions affect the results most significantly in Bulgaria, which does not tax pension income, and Croatia, which does not levy contributions on pension income and has a much higher tax allowance for pensioners than for workers. The smallest differentials in this group of countries—in Estonia and Turkey—are still, however, only a little below the average for the high-income OECD countries.

In Latin America and the Caribbean and in the Middle East and North Africa, there is much less variation than in the other groups in the differential between gross and net replacement rates. The only exception is Egypt, with a gross replacement rate of 85 percent for an average earner and a net replacement rate of 120 percent because pension income is not subject to tax.

Measured on a net basis, pension entitlements in the Middle East and North Africa remain the highest, with an average of 88 percent. The other entitlements for average

Table 6.1. Net Replacement Rates by Earnings Level, Mandatory Pension Programs, Men (Percentage of individual preretirement net earnings)

	Individual earnings, multiple of average					
	0.5	*0.75*	*1*	*1.5*	*2*	*2.5*
High-income OECD countries						
Australia	77.0	61.2	52.4	43.1	36.5	31.3
Austria	91.2	93.4	93.2	93.5	79.3	63.2
Belgium	82.7	63.8	62.8	50.6	40.6	34.2
Canada	89.4	67.6	57.1	39.5	30.6	25.1
Denmark	95.6	68.0	54.1	42.5	35.5	30.8
Finland	90.7	78.8	78.8	79.2	78.3	79.3
France	98.0	70.8	65.0	58.7	55.3	53.4
Germany	61.7	66.6	71.8	79.2	67.0	54.2
Greece	99.9	99.9	99.9	99.9	99.9	99.9
Iceland	95.8	77.1	65.9	54.1	57.2	55.1
Ireland	63.0	47.0	36.6	27.4	21.9	18.3
Italy	89.3	88.0	88.8	88.4	89.1	89.0
Japan	80.1	66.3	59.1	51.9	44.3	35.8
Korea, Rep. of	65.3	51.4	44.3	38.1	34.0	27.8
Luxembourg	125.0	115.0	109.8	105.6	104.2	100.1
Netherlands	82.5	88.2	84.1	85.8	83.8	82.8
New Zealand	77.1	52.0	39.5	27.9	22.0	18.1
Norway	85.5	73.1	65.1	58.2	50.1	42.8
Portugal	115.9	79.8	79.8	84.4	86.3	86.9
Spain	88.7	89.4	88.3	88.4	83.4	68.8
Sweden	90.2	76.4	68.2	70.1	74.3	75.0
Switzerland	71.4	68.9	67.3	53.0	41.4	34.3
United Kingdom	78.4	57.7	47.6	38.2	29.8	24.7
United States	61.4	54.6	51.0	44.9	39.0	35.5
Average	**85.7**	**73.1**	**67.9**	**62.6**	**57.7**	**52.8**
Eastern Europe and Central Asia						
Bulgaria	67.1	73.8	75.2	74.0	61.8	52.9
Croatia	66.7	63.1	61.6	59.7	59.6	58.9
Czech Republic	88.3	68.3	58.2	42.9	35.3	31.0
Estonia	59.9	60.6	60.9	61.3	61.5	61.7
Hungary	86.6	90.9	90.5	99.1	92.6	81.8
Latvia	89.2	83.7	81.8	76.7	74.1	72.5
Lithuania	81.7	75.1	71.3	67.2	64.9	63.5
Poland	69.6	69.7	69.7	69.8	70.5	71.0
Slovak Republic	58.2	59.4	60.2	63.1	65.7	67.8
Turkey	113.2	106.7	103.3	99.9	84.3	66.8
Average	**78.1**	**75.1**	**73.3**	**71.4**	**67.0**	**62.8**
Latin America and the Caribbean						
Argentina	119.2	89.3	73.7	57.8	50.3	45.7
Chile	53.3	52.6	53.5	54.5	56.3	58.5
Colombia	108.8	72.6	54.4	50.2	50.2	50.3
Costa Rica	102.9	103.0	103.1	103.1	103.2	103.2
Dominican Republic	111.8	74.6	55.9	37.3	31.6	32.6

(*continued on the next page*)

Table 6.1. (continued)

	Individual earnings, multiple of average					
	0.5	*0.75*	*1*	*1.5*	*2*	*2.5*
El Salvador	65.1	43.4	39.3	41.2	44.3	44.4
Mexico	50.4	46.4	45.1	44.3	44.1	44.2
Peru	54.8	43.4	43.9	46.4	47.8	48.3
Uruguay	125.1	125.3	125.4	110.8	89.5	71.8
Average	**87.9**	**72.3**	**66.0**	**60.6**	**57.5**	**55.4**
Middle East and North Africa						
Algeria	89.6	89.3	89.1	88.8	88.7	88.7
Bahrain	88.4	83.4	83.4	83.4	83.4	83.4
Djibouti	48.7	42.8	43.4	44.7	45.3	44.6
Egypt, Arab Rep. of	117.5	118.3	119.8	104.8	90.5	73.5
Iran, Islamic Rep. of	141.9	124.2	124.2	126.5	129.5	131.3
Jordan	77.5	75.2	76.1	77.2	77.7	78.7
Libya	89.0	90.2	91.2	93.6	96.1	98.8
Morocco	72.6	72.6	74.1	75.2	75.8	68.1
Tunisia	73.1	72.8	72.7	73.5	73.4	73.9
Yemen, Rep. of	106.2	106.3	106.3	106.3	106.3	106.3
Average	**90.5**	**87.5**	**88.0**	**87.4**	**86.7**	**84.7**

Source: Axia Economics APEX model, 2002.

Note: n.a. = not applicable. n. acs.= notional accounts. [w] = varies with earnings; [y] = varies with years of service; [a] = varies with age.

earners are 73 percent in Eastern Europe and Central Asia, 68 percent in high-income OECD countries, and 66 percent in Latin America and the Caribbean.

The effect of taxes and contributions on net replacement rates for low earners (at half average earnings) is more muted than for average earners in nearly every case. This is because low-income workers typically pay less in taxes and contributions than those with average earnings. In many cases, their retirement incomes are below the level of income tax standard reliefs (allowances, credits, and so on). Thus, they are unable to benefit fully from these additional reliefs. Compared with the 20 percent differential between net and gross replacement rates at average earnings in high-income OECD countries, the difference for low earners is 15 percent on average. There is a similar effect in Eastern Europe and Central Asia, with a 30 percent differential at average earnings and 23 percent at half average.

Similarly, taxes and contributions mean that net replacement rates are higher than gross replacement rates for high earners than for average earners in most countries.

Net replacement rates have the highest average in the Middle East and North Africa, at nearly 90 percent for average earners, just over 90 percent for low earners (on half the average), and 87 percent for high earners (on double the average). They are especially high in the Islamic Republic of Iran, at approximately 125 percent and even higher for low earners. Net replacement rates exceed 100 percent for all earners in the Republic of Yemen and for low and middle earners in Egypt.

The net replacement rate is 73 percent for average earners in Eastern Europe and Central Asia, 68 percent in the high-income OECD countries, and 66 percent in Latin America and the Caribbean. For low earners, the difference between the four groups of countries is smaller, with net replacement rates ranging from 78 percent in Eastern Europe and Central Asia to just over 90 percent in Middle East and North Africa.

Notes

1. See Keenay and Whitehouse (2002a, 2002b, 2003a, 2003b) for a more detailed analysis of the role of personal taxes in old-age support.
2. These differentials are percentages, not percentage points.

7. The Link between Pension and Earnings

DIFFERENT COUNTRIES' PENSION SYSTEMS STRIKE very different balances between the goals of *adequacy*—guaranteeing that all older people meet a minimum standard of living—and *insurance*—ensuring a certain standard of living in retirement relative to that when working.

The relative pension level is the individual pension divided by economywide average earnings rather than by individual earnings as in the replacement rate results presented above. Figure 7.1 shows relative pension levels on the vertical axis and individual preretirement earnings on the horizontal. Countries have been grouped by the degree to which pension benefits are related (or not) to individual preretirement earnings. For each region, the results are ordered from the weakest to the strongest link between pension and earnings.

The 24 high-income OECD countries have been divided into four groups. In the first set of four countries (fig. 7.1a), there is little or no link between pension entitlements and preretirement earnings. In Ireland and New Zealand, pension benefits are purely flat rate. In Canada, the relative pension level varies little: from 36 percent for low earners to 42 percent for those on average earnings and above. Although Canada has an earnings-related pension scheme, its target replacement rate is very low, its ceiling is set at average economywide earnings, and a resource-tested benefit is withdrawn against additional income from the earnings-related scheme. Thus, the relative pension level changes little with individual preretirement earnings, although the composition of the pension package varies (between targeted, basic, and earnings-related benefits). In Denmark, basic and targeted schemes dominate the mandatory retirement-income regime.

In the second set of five countries (fig. 7.1b), the link between pension entitlements and preretirement earnings is also weak, despite the fact that all of the countries have mandatory earnings-related or defined-contribution pensions. Australia, Iceland, and the United Kingdom all have significant resource-tested public schemes. There are important minimum credits in the earnings-related pension plans of Belgium and the United Kingdom. The Korean pension system has a strongly progressive formula since benefits depend on both individual and economywide average earnings.

At the other end of the spectrum lie countries with a very strong link between pension entitlements and preretirement earnings (fig. 7.1d). In Finland and the Netherlands, there is no ceiling on pensionable earnings in the occupational schemes. In Italy, the ceiling on pensionable earnings in the public plan is well over three times average economywide earnings. In these countries, the replacement rate is constant for much of the earnings range. The contrast with the nine countries in figures 7.1a and 7.1b—where pension values are constant or close to flat, and replacement rates decline with earnings—is stark.

The final six high-income OECD countries lie toward the middle in terms of the link between pension entitlements and preretirement earnings (fig. 7.1c). In Switzerland, Norway, and the United States, this results mainly from progressive formulae in earnings-related schemes. Redistributive programs—minimum and targeted schemes in France and Portugal, the basic scheme in Japan—explain these other countries' presence in this group.

Figure 7.1. The Link between Preretirement Earnings and Pension Entitlements (Gross pension entitlement as a proportion of economywide average earnings to individual earnings)

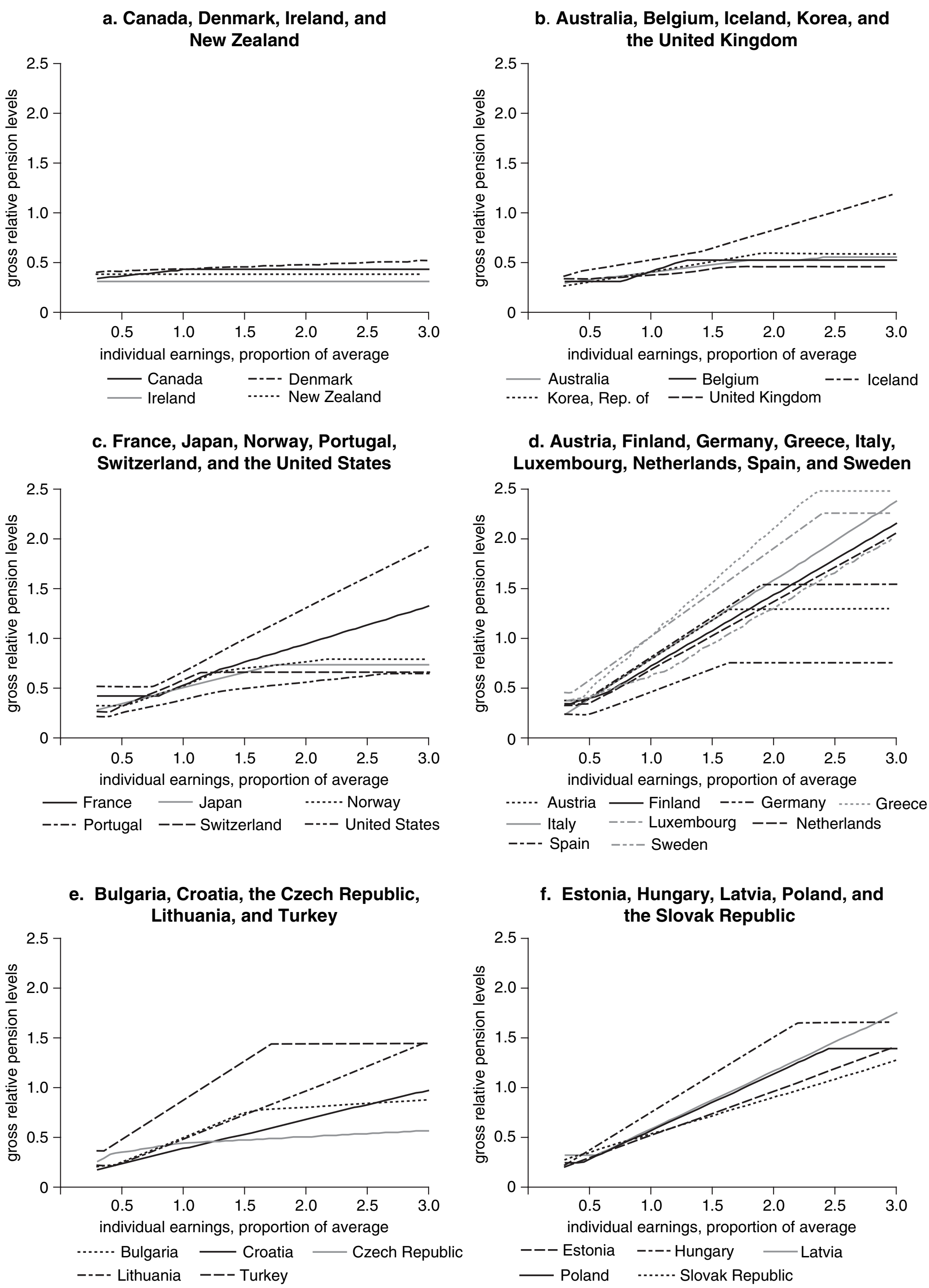

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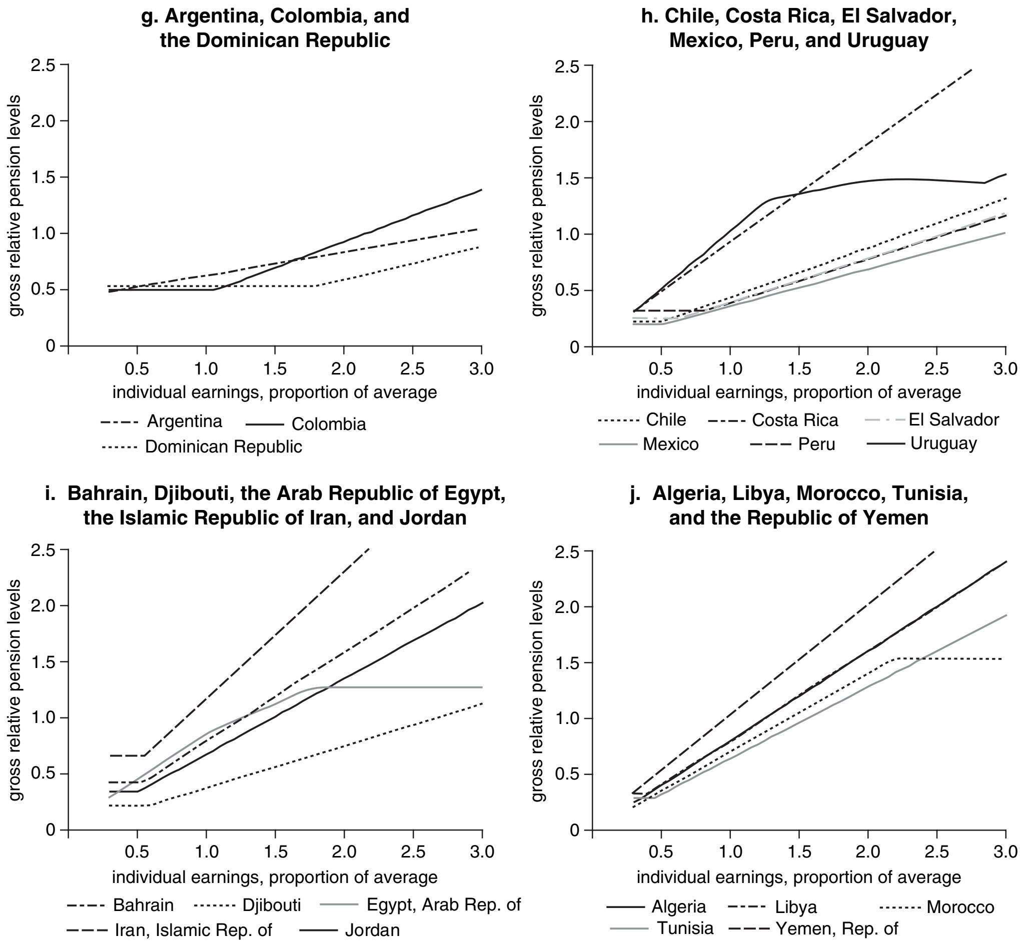
Figure 7.1. (continued)



Note: To ease comparisons between countries, the vertical axis is capped at 2.5.

There is a similar degree of divergence in the relationship between pension entitlements and earnings in Latin America and the Caribbean (figs. 7.1g and 7.1h). Argentina has a significant, public basic scheme, resulting in a relatively flat profile of pension level against preretirement earnings. In Colombia and the Dominican Republic, there are very high minimum pensions worth 50 percent or more of average earnings. Given the contribution rate required for the defined-contribution scheme, workers with earnings beyond average earnings in Colombia, and well beyond the average in the Dominican Republic, would still be entitled to the minimum pension.

There are six Latin American countries with a closer link between earnings and pension entitlements. In Chile, El Salvador, Mexico, and Peru, the contributions to defined-contribution schemes are fairly comparable, and minimum pensions are set at a similar level relative to average earnings, much below the level in Colombia and the Dominican Republic, for example. Costa Rica and Uruguay still have public, defined-benefit schemes. In Costa Rica, the schemes have quite a high replacement rate, with the defined-contribution plan providing additional pension. In Uruguay, the defined-benefit and defined-contribution schemes cover different slices of earnings.

In the Middle East and North Africa, there is generally a close link between earnings and pension entitlement. Coverage of retirement-income systems in this region is generally much narrower than in the other groups of countries. It is unsurprising that there should be a close link between earnings and pensions when coverage is narrow because redistribution is difficult under such circumstances. Ceilings affect the results only in Egypt and Morocco. Minimum pensions are significant in Djibouti, Jordan, and, especially, the Islamic Republic of Iran. Elsewhere, minimum pensions affect only a very small number of full-career workers.

The relationship between pension and earnings is more diverse in Eastern Europe and Central Asia. Again, the left-hand panel (fig. 7.1e) shows the countries with the weaker link, the right-hand, those with a stronger link. In Croatia, the Czech Republic, and Lithuania, there is a basic element to pensions. In Bulgaria, there is a maximum pension that affects the earnings-related benefits of higher earners. The Czech Republic also has a progressive formula in its earnings-related pension scheme.

The other countries of Eastern Europe and Central Asia (fig. 7.1f) have a strong link between pensions and earnings. In Estonia, Latvia, and the Slovak Republic ceilings on pensionable pay are three times economywide average earnings or more. Minimum pensions are also fairly low in these countries: 14 percent of average earnings in Estonia and 24 percent in Poland, for example.

8. Conclusions

THE 53 COUNTRIES ANALYZED SHOW NUMEROUS, very different approaches to pension provision. They vary in many dimensions.

Target Replacement Rate

First, pension provision differs in the target replacement rate. The gross replacement rate for an average earner ranges from 30 percent in Ireland to 116 percent in the Islamic Republic of Iran. The target gross replacement rate is nearly four times higher in the Islamic Republic of Iran than it is in Ireland. Replacement rates for average earners are also 100 percent or more in Luxembourg, Uruguay, and the Republic of Yemen. Most of the highest targets are in the Middle East and North Africa, although replacement rates above 80 percent are also promised in Greece, Spain, and Turkey. In contrast, target replacement rates for average earners are 40 percent or less in Australia, Djibouti, Mexico, and the United States, among others.

The size of the target replacement rate for mandatory pensions illustrates the balance of voluntary versus mandatory provision that particular countries have adopted. It is, of course, no accident that voluntary private pension provision is widespread in countries such as Canada, the United Kingdom, and the United States that have relatively small mandatory pensions. In countries with high replacement rates under the mandatory system, covered members have no need to make any voluntary provision for retirement.

Adequacy versus Insurance

A second dimension in which pension systems differ is the relative emphasis placed on redistribution or pension adequacy versus insurance or pension-replacement rates. In the language of the typology set out at the beginning of this paper, it is the difference in weight that is given to first-tier or second-tier pensions.

The English-speaking countries tend to emphasize pension adequacy with redistributive pension systems that have a weak link or no link between pension entitlements and pre-retirement earnings. Mandatory pensions are said to be *targeted*, meaning that replacement rates are higher for people who had lower pay when in work. These countries include Australia, Canada, Ireland, New Zealand, the United Kingdom, and, to a slightly lesser extent, the United States. The emphasis on adequacy and redistribution is also strong in some Nordic countries, such as Denmark, Iceland, and Norway. The pension systems of Argentina, Belgium, Colombia, the Czech Republic, Croatia, the Dominican Republic, and Switzerland are also progressive.

In the Middle East and North Africa, the emphasis is very firmly on providing the same or very similar replacement rates to all workers, so there is a strong link between pensions and earnings. The same is true of many continental European countries, such as Greece, Hungary, Italy, Latvia, the Netherlands, Poland, and the Slovak Republic. In Latin

America and the Caribbean, only Costa Rica has such a strong link between pension entitlements and preretirement pay.

Public or Private Provision?

A third way in which pension systems differ from one another is in the relative role of the public and private sectors in pension provision. As discussed above, a lower target replacement rate from the mandatory system means a larger role for voluntary, private provision. However, in many countries, the private sector is involved in running the mandatory pension system. The best-known cases of pension reforms that increase the role of the private sector are in Latin America and the Caribbean. In Chile, El Salvador, Mexico, and Peru, nearly all pension benefits in the future are likely to come from private, defined-contribution plans. Although Costa Rica and Uruguay also have defined-contribution schemes, the public, earnings-related benefit will continue to dominate.

Seven of the 10 countries of Eastern Europe and Central Asia under study now also have defined-contribution provision.[1] Unlike Latin America and the Caribbean, the provision acts only as a partial substitute for public, earnings-related schemes. Workers in the new system will continue to get part of their pension from the public sector and part from private pensions. However, even here, the balance of responsibility between public and private sectors varies, illustrated by the range of contributions from 2 percent in Bulgaria to the eventual 10 percent in Latvia.

There is no private sector involvement in mandatory pensions in the Middle East and North Africa, and voluntary provision is also, in most cases, rare.

The private sector plays an important role in mandatory pension provision in approximately one-third of the high-income OECD countries. In Iceland and Switzerland, private, occupational pensions are mandatory. In the Netherlands and Sweden, occupational pensions are best thought of as quasi-mandatory, since coverage of more than 90 percent is achieved through industrial relations agreements. Australia introduced a mandatory defined-contribution plan in 1992, which, when mature, will play a major role in retirement-income provision. Sweden also recently introduced a mandatory defined-contribution scheme, while Denmark has a long-standing defined-contribution provision. Workers in the United Kingdom were permitted to "contract out" of the public, earnings-related scheme in 1978. Initially, only occupational defined-benefit plans were permitted to substitute for the public scheme, but this has since been extended to defined-contribution schemes. Between 50 and 75 percent of employees have used this option to substitute private for public provision since the 1970s.

Designing the First Tier

In Latin America and the Caribbean and the Middle East and North Africa, there is little variation in the design of first-tier, adequacy-oriented pensions. There are minimum pensions that are part of earnings-related schemes in the Middle East and North Africa. In Latin America and the Caribbean, minimum pensions are generally a separate, targeted public benefit that tops up benefits from private, defined-contribution schemes. Eastern European and Central Asian countries have also changed their first-tier pensions in fundamental pension reforms. For example, Poland abolished its basic pension when it moved to a system of notional accounts and a minimum pension. There has been increased targeting of benefits in high-income OECD countries. In the future, Canada, France, Sweden, and the United Kingdom will all rely more on resource-tested benefits to provide retirement incomes.

Designing the Second Tier

In the past, public defined-benefit schemes were the way most countries provided second-tier pensions, with few exceptions. France, Germany, and Norway have long used points systems, which are closely related to defined-benefit schemes. Iceland and the Netherlands have never had public, earnings-related schemes. Second-tier pension provision is now much more diverse. First, all 9 Latin American and Caribbean countries and 7 out of 10 Eastern European and Central Asian countries have introduced private, defined-contribution plans, as discussed above. Second, countries that have maintained public provision of earnings-related pensions have adopted a greater variety of designs. Estonia and the Slovak Republic, for example, have adopted points systems. Italy, Latvia, Poland, and Sweden have opted for the notional-accounts variant. These changes have all acted to increase diversity in the design of second-tier insurance pensions.

The 53 countries studied in this paper, which span all continents of the world, have a remarkable variety of retirement-income systems. Countries can learn valuable lessons from each other in designing and reforming pension systems. It is hoped that this paper, by comparing pension systems in a consistent way, will ease the transmission of constructive policy lessons between countries.

Notes

1. The Slovak Republic has (since January 2005) also introduced mandatory defined-contribution pensions.

Part II: Country Studies by Region

9. Introduction

THE FIRST PART OF *PENSIONS PANORAMA* COMPARED RETIREMENT-INCOME SYSTEMS across countries. It described the parameters and rules of pension schemes and calculated the value of pension entitlements for workers on different levels of earnings. This second part, in contrast, proceeds country by country. It provides more detail on the parameters and rules in each country and gives country-specific results for pension entitlements. Part I explains the methodology underlying the calculations presented here.

The country chapters follow a standard schema. First, there are detailed descriptions of the rules and parameters of the pension schemes:[1]

- Qualifying conditions, pension eligibility (or retirement) age, and years of contributions required to receive a pension.
- Benefit calculation, the rules for each of the schemes making up the pension system, such as earnings-related schemes, mandatory private plans, and resource-tested schemes.
- Treatment of pensioners under the personal income tax and social security contributions, including any reliefs for pension income. For OECD countries, general rules of personal income taxes and social security contributions can be found in *Taxing Wages* (OECD 2003). For countries outside the OECD, summary information on the tax system is given in Part II.

Values of the parameters of pension, tax, and social security contribution systems are given in national currencies and as a proportion of average earnings.[2] Parameter values in national currencies are generally rounded to the nearest currency unit.

A summary results table gives relative pension levels, replacement rates, and pension wealth at different individual levels of earnings. These are given in both gross and net terms (the latter taking account of taxes and contributions paid when working and when drawing the pension). Summary charts show the breakdown of the gross relative pension value into the different components of the pension scheme (the first row of the figures). As far as possible, the same terminology is used to describe these schemes as was set out in Part I. Some standard abbreviations are used in the legends of the charts:

- SA: social assistance
- Targeted: separate resource-tested schemes for older people
- Minimum: a minimum pension within an earnings-related scheme
- Basic: a pension based only on number of years of coverage or residency

- Earnings-related: all public earnings-related programs, including notional accounts and points schemes as well as traditional defined-benefit plans
- DC: defined-contribution, mandatory private plans
- Occupational: mandatory pensions, which can be provided by employers through industrywide schemes (the Netherlands) and profession-based schemes (Sweden) or can be provided publicly (Finland, France)

There are some retirement-income programs that are difficult to classify, including the new savings credit in the United Kingdom, the government's flat-rate contribution to DC plans in Mexico, the end-of-year scheme in Luxembourg, and the ATP scheme in Denmark. These programs are described in the relevant country chapters.

The second row of country figures shows the effect of personal income taxes and social security contributions on relative pension values and replacement rates, giving the gross and net values.

The figures use a standard scale to ease comparisons between countries: the scale for replacement rates runs to 125 percent, while that for relative pension values runs to 2.5 times average earnings. In some cases, pension benefits exceed these maxima, and so the measure has been capped at these levels.

The final row of country figures shows, for reference, the taxes and contributions paid by pensioners and workers. This illustrates the source of any concessions to older people in these systems since the values are shown for workers and pensioners with the same income. The effect of taxes and contributions on net replacement rates is more complex than illustrated here. Since replacement rates are usually less than 100 percent, the normal progressivity of the tax system means that people tend to pay fewer taxes when retired regardless of any concessions.

The final row also shows the sources of the net replacement rate. In addition to the components of the pension system shown in the first row of charts, the sources include the effect of taxes and contributions. The computation uses the results of the tax models on the amount of taxes paid on earnings of a particular level and the amount of taxes due on the pension entitlement calculated for someone earning at that level.

Notes

1. Note that the modeling relates to single, full-career workers drawing pension from the normal eligibility age. Systems can (a) have complex rules for periods out of the labor market (caring for children or in unemployment, for example); (b) treat married couples as a single unit; or (c) adjust benefits for early and late retirement. Since these rules do not affect the modeling under the current assumptions, they are described only briefly.

2. For the 30 OECD countries, these are the earnings of the average production worker, as explained in *Taxing Wages* (OECD 2003). For other countries, average earnings are taken from national sources.

10. High-Income OECD Countries

Australia

Australia's pension system has two components: a means-tested age pension plus the superannuation guarantee, a compulsory contribution to a private pension plan. These plans are mainly defined-contribution plans.

Qualifying Conditions

The age pension is paid from age 65 for men. Women's pensionable age—currently 62.5—will increase gradually to become 65 from 2013. The minimum age for withdrawing superannuation guarantee benefits is currently 55, increasing to 60 by 2025.

Benefit Calculation

Defined Contribution

The superannuation guarantee was introduced in 1992. It consists of a mandatory employer contribution to a private pension plan. The mandatory contribution rate has been 9 percent since 2002/03. Employers need not contribute for workers earning less than A$ 450 a month (equivalent to A$ 5,400 a year or about 12 percent of average earnings). There is also a limit to the earnings covered by the superannuation guarantee: employers need not contribute for employees' pay above this threshold. For calendar 2002, this limit was A$ 113,460 (calculated from a quarterly limit of A$ 27,510 for 2001/02 and A$ 29,220 for 2002/03). This limit—worth approximately 2.5 times average earnings—is indexed to earnings. For comparison with other countries, the capital from the superannuation guarantee is converted to a price-indexed annuity.

Targeted

The value of the age pension is adjusted biannually. The average for calendar 2002 gives an annual benefit of A$ 10,984. The age pension's value is set to ensure that it does not fall below 25 percent of pretax male average weekly earnings. The age pension is withdrawn once income from other sources exceeds a threshold, known as the *free area*. The calendar year figure for 2002 was A$ 2,964, approximately 7 percent of average earnings. The withdrawal rate is 40 percent. There is also an asset test.

Personal Income Tax and Social Security Contributions

Older Australians are entitled to two additional tax concessions. The more generous credit (the senior Australians tax offset) is available for those of pensionable age. This is A$ 2,230 for singles since 2002 with income up to an income threshold of A$ 20,000 and is withdrawn at a rate of 12.5 percent for income in excess of the threshold. The credit is nonrefundable; it cannot create a negative tax liability. Taxpayers eligible for the senior Australians tax offset benefit from a higher value of the low-income Medicare levy threshold (A$ 20,500).

The superannuation guarantee has a complex tax treatment, with some tax extracted at all three possible stages. A 15 percent tax is levied on employer contributions to the fund. A superannuation surcharge is also applied to contributions for higher-income workers. The maximum surcharge is 15 percent. The threshold where the superannuation surcharge first applies is worth approximately 1.9 times average earnings, and the full 15 percent rate applies once earnings reach 2.3 times the average. Investment earnings of the superannuation fund are taxed, again at 15 percent. Benefits are taxable at normal rates on withdrawal but are subject to a 15 percent rebate. (However, the first A$ 1,000 does not attract a rebate.)

There are no social security contributions in Australia.

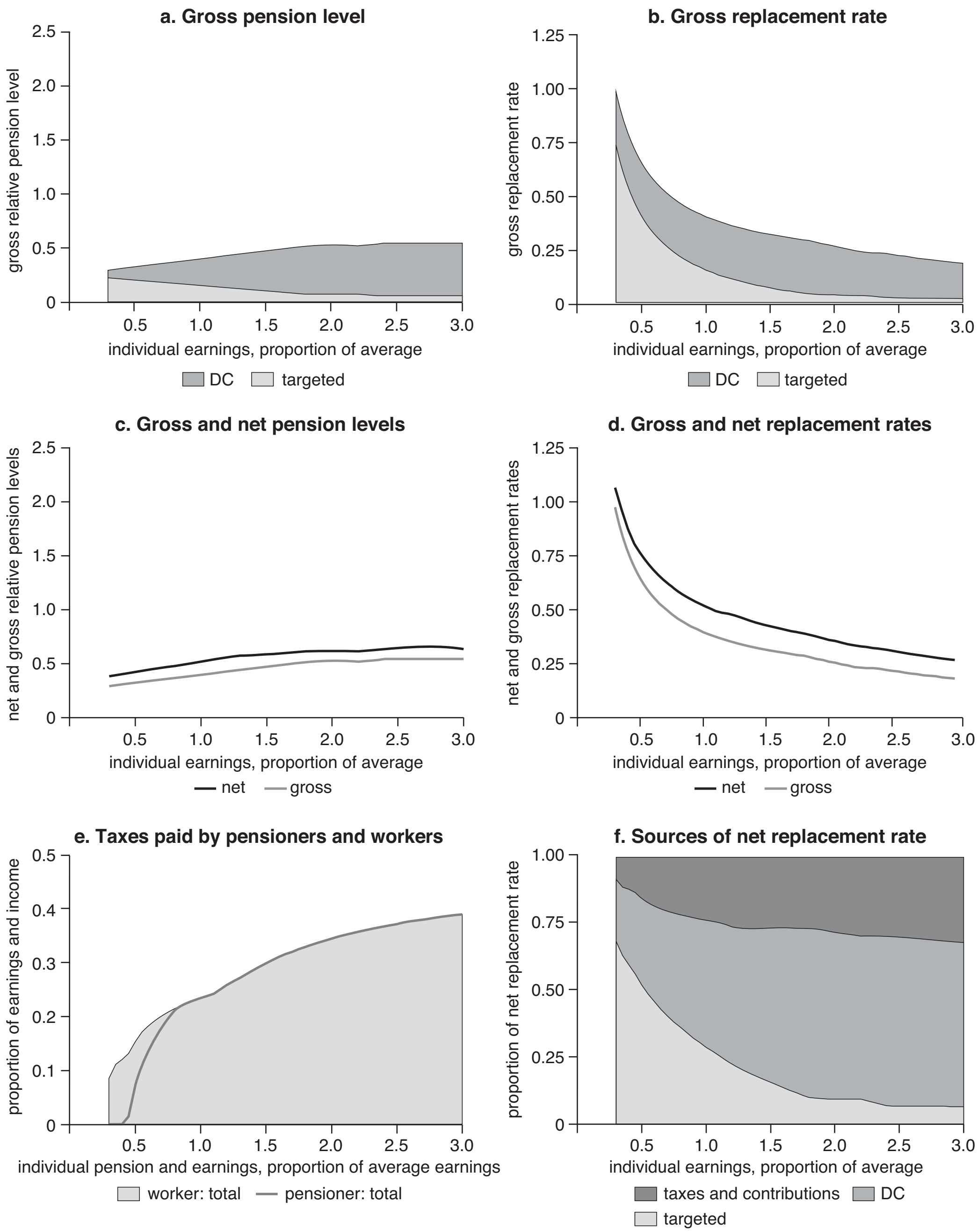
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	32.5	36.3	40.0	47.5	52.4	54.7
Net pension level (% of average net earnings)	42.6	47.5	52.4	59.2	62.3	64.0
Gross replacement rate (% of individual earnings)	65.1	48.4	40.0	31.7	26.2	21.9
Net replacement rate (% of individual net earnings)	77.0	61.2	52.4	43.1	36.5	31.3
Gross pension wealth	5.7	6.2	6.7	7.7	8.3	8.6
(multiple of average earnings)	*6.7*	*7.2*	*7.8*	*8.9*	*9.6*	*10.0*
Net pension wealth	7.5	8.1	8.8	9.6	9.9	10.1
(multiple of average net earnings)	*8.8*	*9.5*	*10.2*	*11.1*	*11.5*	*11.7*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Australia



Source: OECD pension models.

Austria

AUSTRIA HAS A DEFINED-BENEFIT PUBLIC scheme with an income-tested top-up for low-income pensioners.

Qualifying Conditions

Normal pension age is 65 for men and 60 for women. There is a coverage condition: 180 months' (15 years') employment in the last 30 years or 300 months (25 years) during the full lifetime. Alternatively, 180 months of contributions actually paid (as opposed to coverage alone) are sufficient. Insured months are either contributory months (from employment or voluntary contributions) or supplementary (credited months, known as *Ersatz-zeiten*) for which only limited contributions are paid.

Benefit Calculation

Earnings-Related

The pension benefit currently accrues at 2.00% of earnings for each year of contributions, but this will fall gradually, reaching 1.78 percent by 2009. The earnings measure is currently the best 15 years' earnings. The valorization procedure is complex, although in practice adjustments have been closer to price inflation than to earnings growth. The averaging period is being extended; it will reach 40 years from 2028. Valorization under this new procedure is still under discussion. The modeling takes this full-career measure and assumes that earlier years' earnings are revalued in line with earnings growth.

Contributions are payable up to a ceiling of €39,240, approximately 175 percent of average earnings.

In recent years, pensions in payment were adjusted in line with prices up to the average pension; pensions above this threshold were increased by a flat amount, which was equal to the absolute increase given to the average pensioner. This method was used ad hoc, but it is not legally determined. Thus, adjustment of pensions in payment is discretionary. For the pension wealth calculations, the modeling assumes all pensions are price indexed.

Targeted

There is a means-tested top-up (*Ausgleichszulage*) that ensures a minimum retirement income of €631 per month for single people and €900 for a couple. There are 14 annual payments. Again, adjustment of the safety-net income is discretionary; the modeling implicitly assumes that it will rise in line with average earnings.

Personal Income Tax and Social Security Contributions

There are no special rules for pensioners. Pensioners are unable to claim the deduction for work expenses if their only income is a pension.

There are no special reliefs for pension income.

Pensioners do not pay most social security contributions but do pay for sickness insurance.

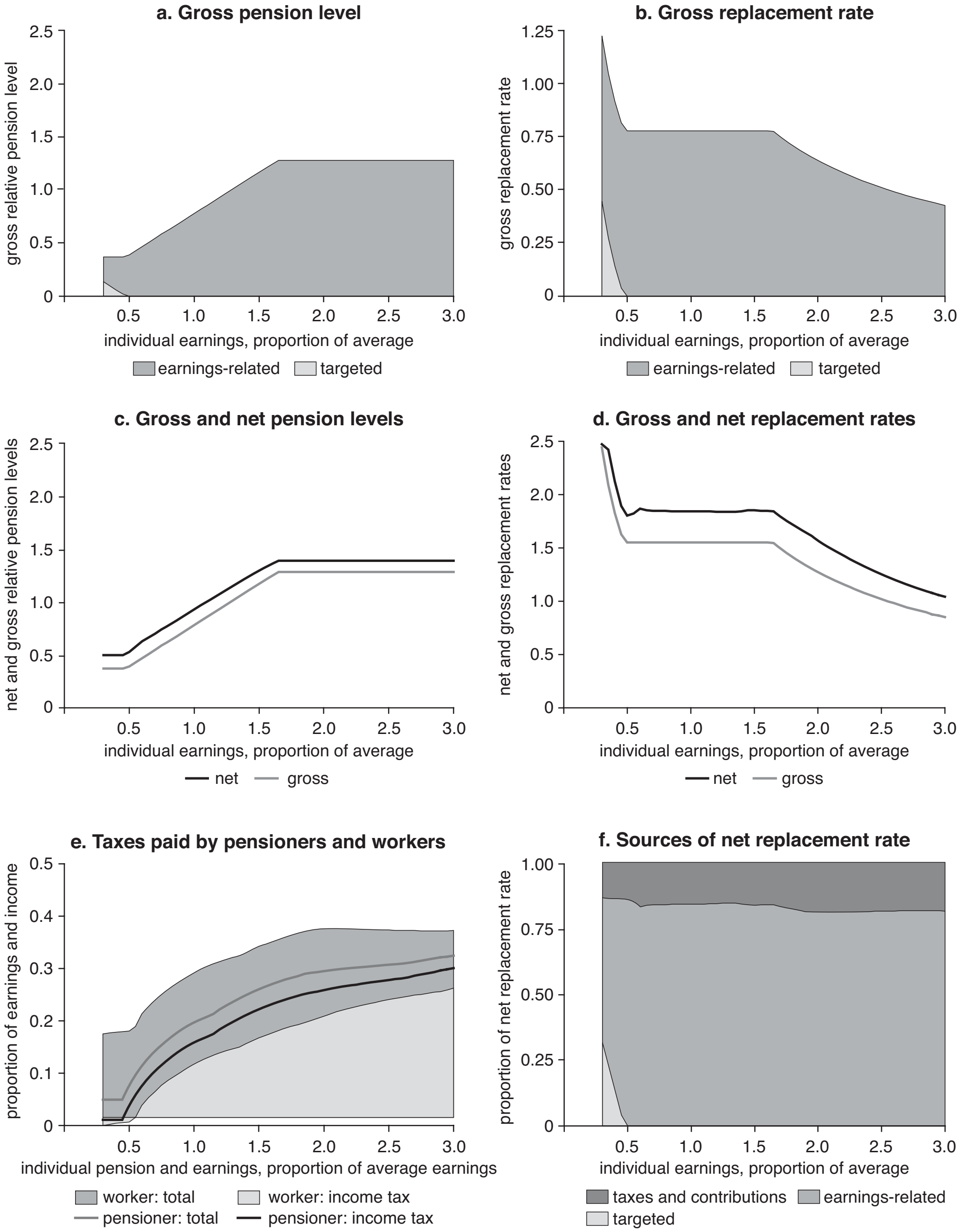
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	39.2	58.7	78.3	117.5	128.7	128.7
(% of average earnings)	*37.0*	*52.1*	*69.4*	*104.1*	*114.1*	*114.1*
Net pension level	52.9	74.2	93.2	130.1	139.3	139.3
(% of average net earnings)	*50.0*	*67.4*	*84.6*	*117.7*	*127.3*	*127.3*
Gross replacement rate	78.3	78.3	78.3	78.3	64.3	51.5
(% of individual earnings)	*74.0*	*69.4*	*69.4*	*69.4*	*57.0*	*45.6*
Net replacement rate	91.2	93.4	93.2	93.5	79.3	63.2
(% of individual net earnings)	*86.1*	*84.8*	*84.6*	*84.6*	*72.5*	*57.8*
Gross pension wealth	6.0	9.0	11.9	17.9	19.6	19.6
(multiple of average earnings)	*7.6*	*10.7*	*14.2*	*21.4*	*23.4*	*23.4*
Net pension wealth	8.1	11.3	14.2	19.8	21.2	21.2
(multiple of average net earnings)	*10.3*	*13.8*	*17.4*	*24.1*	*26.1*	*26.1*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Austria



Source: OECD pension models.

Belgium

BELGIUM HAS AN EARNINGS-RELATED PUBLIC SCHEME with a minimum pension and a means-tested safety net.

Qualifying Conditions

The pension may be claimed at age 60 with 30 years' contributions. This condition will increase to 35 years in 2005. Since a full-career worker will meet this condition, the modeling assumes that people draw the pension from age 60. Normal pensionable age is 65 for men. For women, the eligibility age in 2002 was 62. It will increase to 63 in 2003, to 64 in 2006, and 65 in 2009.

Benefit Calculation

Earnings-Related

The full replacement rate for a single pensioner is 60 percent. For shorter contribution histories, the pension is proportionally reduced. The earnings measure is average lifetime pay. Earlier years' earnings are revalued in line with prices. There is a ceiling on pensionable earnings of €39,368 for 2002 (approximately 125 percent of average earnings). This ceiling was frozen between 1982 and 1999.

Pensions in payment are uprated in line with prices. There have also been discretionary real increases, which have recently been very limited (either to the lowest or the longest-running pensions).

Minimum

There is a minimum annual credit: annual earnings of less than €13,956 (equivalent to approximately 45 percent of average earnings) are inflated to a minimum level. At least 15 years' insurance is necessary to qualify for the minimum credit. (This gives an effective minimum pension for a full-career worker of €11,495 for a single person, worth 37 percent of average earnings.)

The minimum earnings-related pension is €9,438 for a single person meeting the full contribution condition. This is worth approximately 30 percent of average earnings. The benefit value can be reduced proportionally for less-than-full careers, but only if the beneficiary has a minimum of two-thirds of the full number of years. The minimum pension is indexed to prices. Pensioners receive whichever is higher of the minimum pension and the pension from the minimum annual credit.

Targeted

The safety-net income for the elderly is €7,163 for a pensioner living alone and €4,775 for a pensioner living with others. Indexation is again to prices excluding certain goods.

Personal Income Tax and Social Security Contributions

There are no special credits or allowances for pensioners. Pensions are taxable. There is an additional tax reduction of €1,590 for a single person in receipt of pension income. This is subject to restrictions based on the ratio of pension income to aggregate taxable income (ATI) and on total ATI.

Pensioners with a pension above a threshold pay social security contributions of 3.55 percent for health and disability. However, the net pension may not fall below €1,023 per month. There are also "solidarity" contributions of between 0.5 and 2.0 percent levied on all pensions that exceed €13,401 per annum for single pensioners.

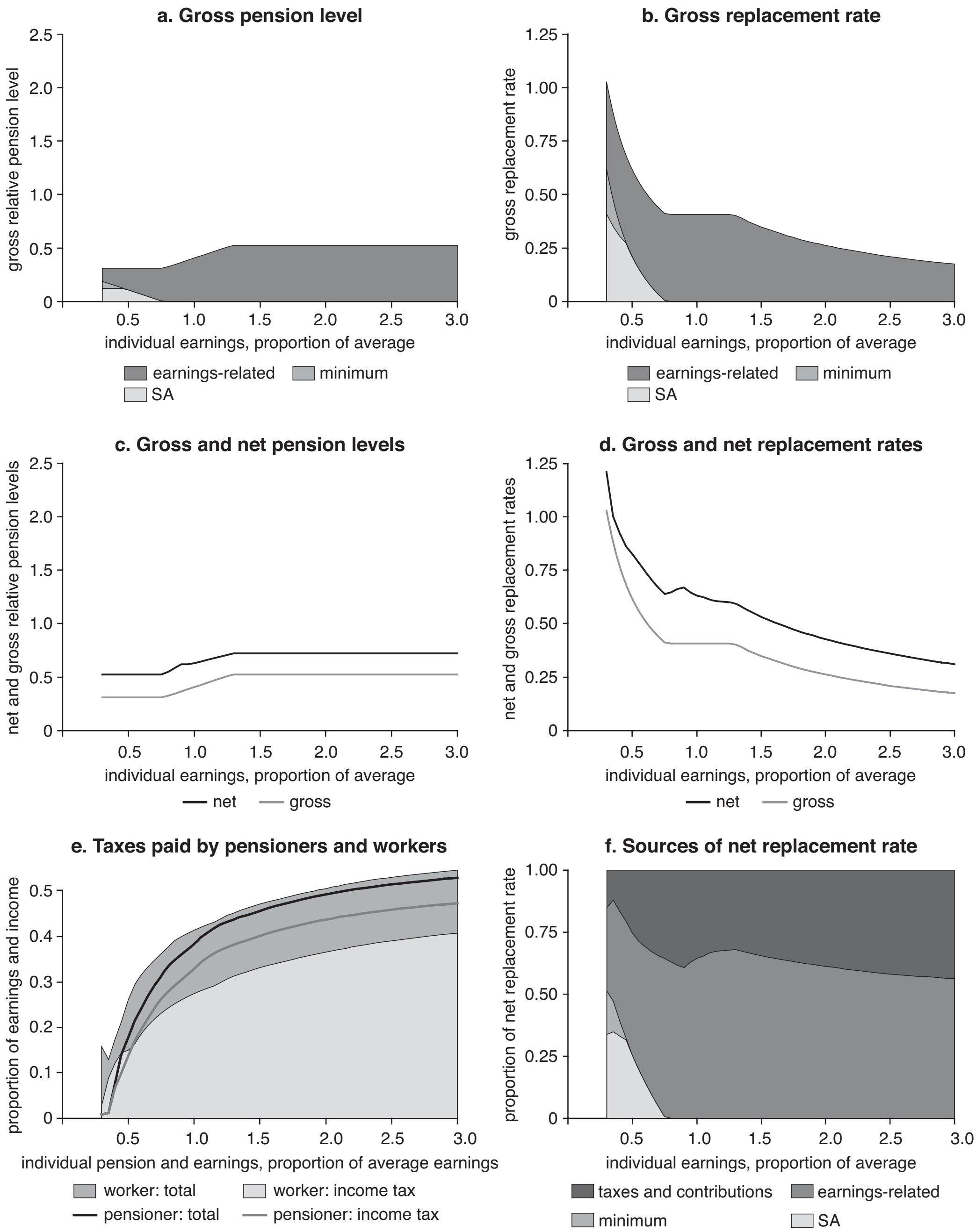
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	30.8	30.8	37.3	47.9	47.9	47.9
Net pension level (% of average net earnings)	52.1	52.1	62.8	68.4	68.4	68.4
Gross replacement rate (% of individual earnings)	61.6	41.1	37.3	31.9	23.9	19.2
Net replacement rate (% of individual net earnings)	82.7	63.8	62.8	50.6	40.6	34.2
Gross pension wealth (multiple of average earnings)	5.5 *6.3*	5.5 *6.3*	7.3 *8.4*	9.4 *10.7*	9.4 *10.7*	9.4 *10.7*
Net pension wealth (multiple of average net earnings)	9.3 *10.7*	9.3 *10.7*	11.3 *12.9*	12.9 *14.8*	12.9 *14.8*	12.9 *14.8*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Belgium



Source: OECD pension models.
Note: SA = social assistance.

Canada

In Canada, universal, flat-rate pension, known as *old-age security*, can be topped up with an income-tested benefit, known as the *guaranteed income supplement.* A tier of earnings-related benefits is provided by the Canada Pension Plan and Québec Pension Plan. These two plans offer broadly similar benefits.

Qualifying Conditions

The basic pension is subject to a residency test, with 2.5 percent of the maximum pension earned for each year of residence after age 18 up to a maximum of 40 years. A minimum of 10 years' residency is required to receive any benefit. It is payable from age 65. For the earnings-related scheme, normal pension age is again 65, but an early pension may be claimed from age 60.

Benefit Calculation

Basic

The average 2002 level of old-age security was C$ 5,320 (14 percent of average earnings). The value of the basic pension is price indexed. This pension is subject to an income test operated through the tax system. Once income exceeds C$ 56,968, the basic pension is withdrawn at a 15 percent rate. This threshold, equivalent to just less than 1.5 times average earnings, is indexed to prices.

Targeted

The guaranteed income supplement gives a maximum pension, including the basic pension, which averaged C$ 11,600 in 2002 (30 percent of average earnings) for a single person. This is withdrawn against income other than the basic pension at a 50 percent rate. The benefit level is price indexed.

Earnings-Related

This scheme targets a 25 percent replacement rate based on average lifetime salary, with earlier years' pay revalued in line with economywide earnings. The full benefit requires 40 years' contributions with proportional reductions for shorter work histories. The maximum earnings-related pension for 2002 was C$ 779 a month (just under a quarter of average earnings).

People earning less than C$ 3,500 a year (10 percent of average earnings) are not required to contribute. There was a ceiling of C$ 39,100 in 2002 (just over average earnings) on both contributions and benefits. The ceiling is indexed to prices, while the contribution floor is frozen in nominal terms. The value of the earnings-related pension is indexed to prices.

Personal Income Tax and Social Security Contributions

Under the personal income tax, an additional age credit of 16 percent on an amount of C$ 3,728 in 2002 is available if total income is C$ 27,749 or less. The amount of age credit is reduced at a rate of 15 percent of income in excess of C$ 27,749.

There is also a credit of 16 percent on the first C$ 1,000 of pension or annuity income. Only pension income other than from the public schemes is eligible. Public pension benefits are taxable, with the exception of the targeted scheme.

Social security contributions are not levied on pension income.

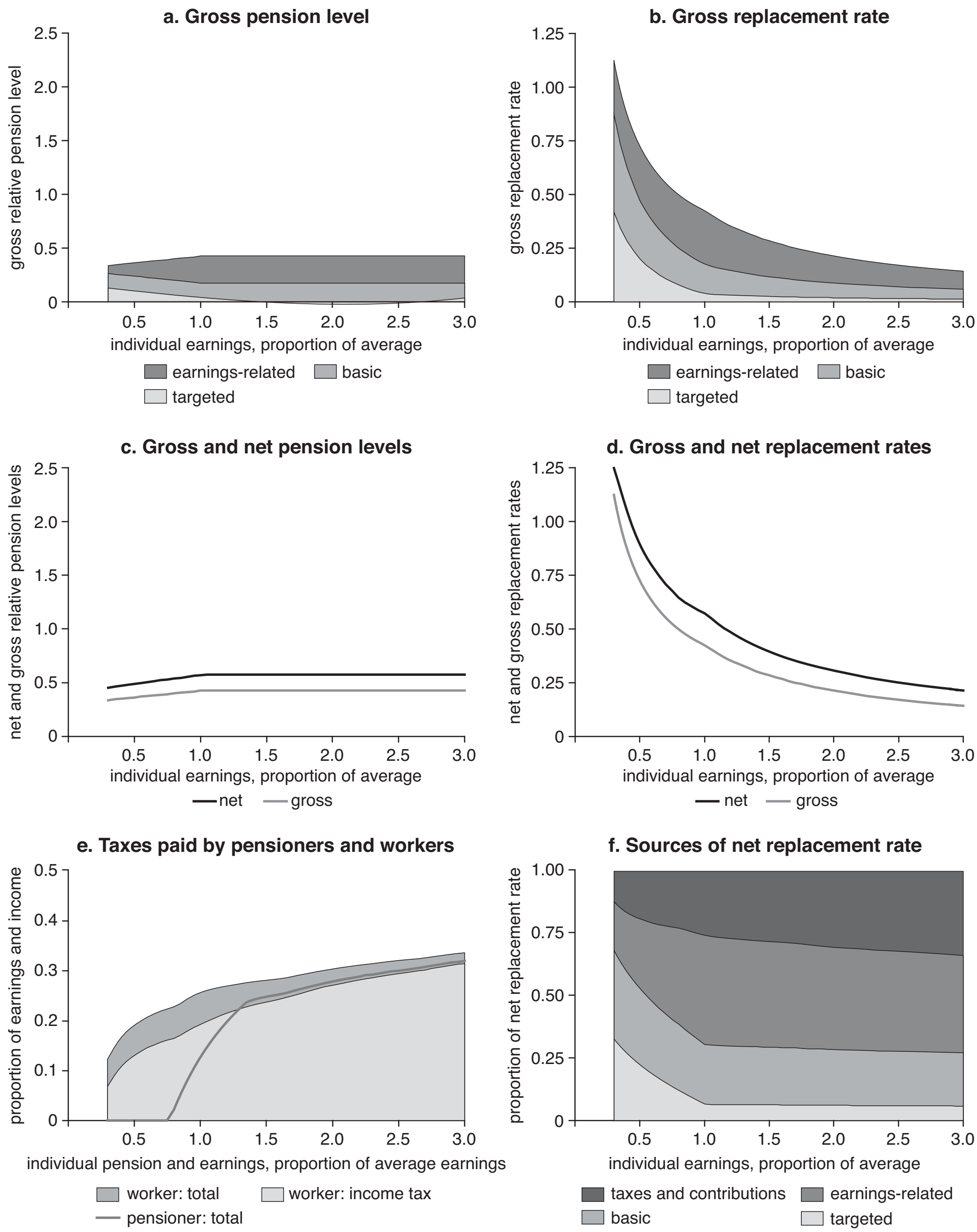
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	36.2	39.3	42.5	42.5	42.5	42.5
Net pension level (% of average net earnings)	48.7	52.9	57.1	57.2	57.2	57.2
Gross replacement rate (% of individual earnings)	72.4	52.4	42.5	28.4	21.3	17.0
Net replacement rate (% of individual net earnings)	89.4	67.6	57.1	39.5	30.6	25.1
Gross pension wealth	5.5	6.0	6.5	6.5	6.5	6.5
(multiple of average earnings)	*6.4*	*7.0*	*7.6*	*7.6*	*7.6*	*7.6*
Net pension wealth	7.4	8.1	8.7	8.7	8.7	8.7
(multiple of average net earnings)	*8.7*	*9.4*	*10.2*	*10.2*	*10.2*	*10.2*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Canada



Source: OECD pension models.

Denmark

DENMARK HAS A PUBLIC BASIC SCHEME with an income-tested supplement for low-income pensioners. There are also two schemes based on individuals' contribution records, the *Arbeidsmarkedets Tillægspension* (ATP) and SP, or special pension savings schemes. Voluntary occupational schemes cover about 80 percent of the workforce.

Qualifying Conditions

The normal pension age is 65. A full state old-age pension requires 40 years' residence. Shorter periods qualify for a prorated benefit (subject to a minimum of three years' residence).

Benefit Calculation

Basic

The full amount of the basic scheme is DKK 52,524 per year (17 percent of average earnings). An earnings test reduces the benefit by 30 percent if pay exceeds DKK 223,200 per year (approximately 75 percent of average earnings).

Targeted

The full supplement is DKK 52,872 per year for single people (approximately 17 percent of average earnings). The benefit is tested against all sources of income except the basic pension. It is withdrawn at a rate of 30 percent once income exceeds DKK 49,200 a year for single people (approximately 16 percent of average earnings). The basic amount and the pension supplement are uprated annually in line with average earnings. If nominal earnings growth exceeds 2 percent a year, up to 0.3 percentage points of the excess is put in a reserve.

ATP

Two-thirds of the contributions for ATP are paid by employers and one-third by workers. The contribution depends on hours worked (not earnings). A full-time employee in the private sector paid DKK 2,684 in 2002. The contribution is adjusted sporadically; the modeling assumes it increases in line with average earnings. A notional nominal interest rate of 1.5 percent is applied. However, ATP is a with-profit scheme: if actual returns exceed 1.5 percent, pensions are increased. The model assumes that the ATP earns the same interest rate as defined-contribution schemes. Pensions in payment increase with prices if financial conditions allow.

Defined Contribution

The contribution to the SP is 1 percent of earnings. If the accumulated balance is less than DKK 15,000 at age 65, it is paid as a lump sum. If it is between DKK 15,000 and DKK 120,000, then one-tenth of the balance is paid out in the first year, one-ninth the next year, and so on. If the balance is more than DKK 120,000 at age 65, then the payments are made monthly, with annual adjustments to reflect the market value of the account. There is no ceiling on earnings covered by this scheme.

Personal Income Taxes and Social Security Contributions

There are no special tax allowances or credits for pensioners. Pensions are subject to income tax. There are no special reliefs for pension income. The payment under a funded pension scheme is subject to a tax of 40 percent on lump-sum withdrawals. Since 2001, investment income of all types has been taxed at a 15 percent rate. Pensioners do not pay social security contributions.

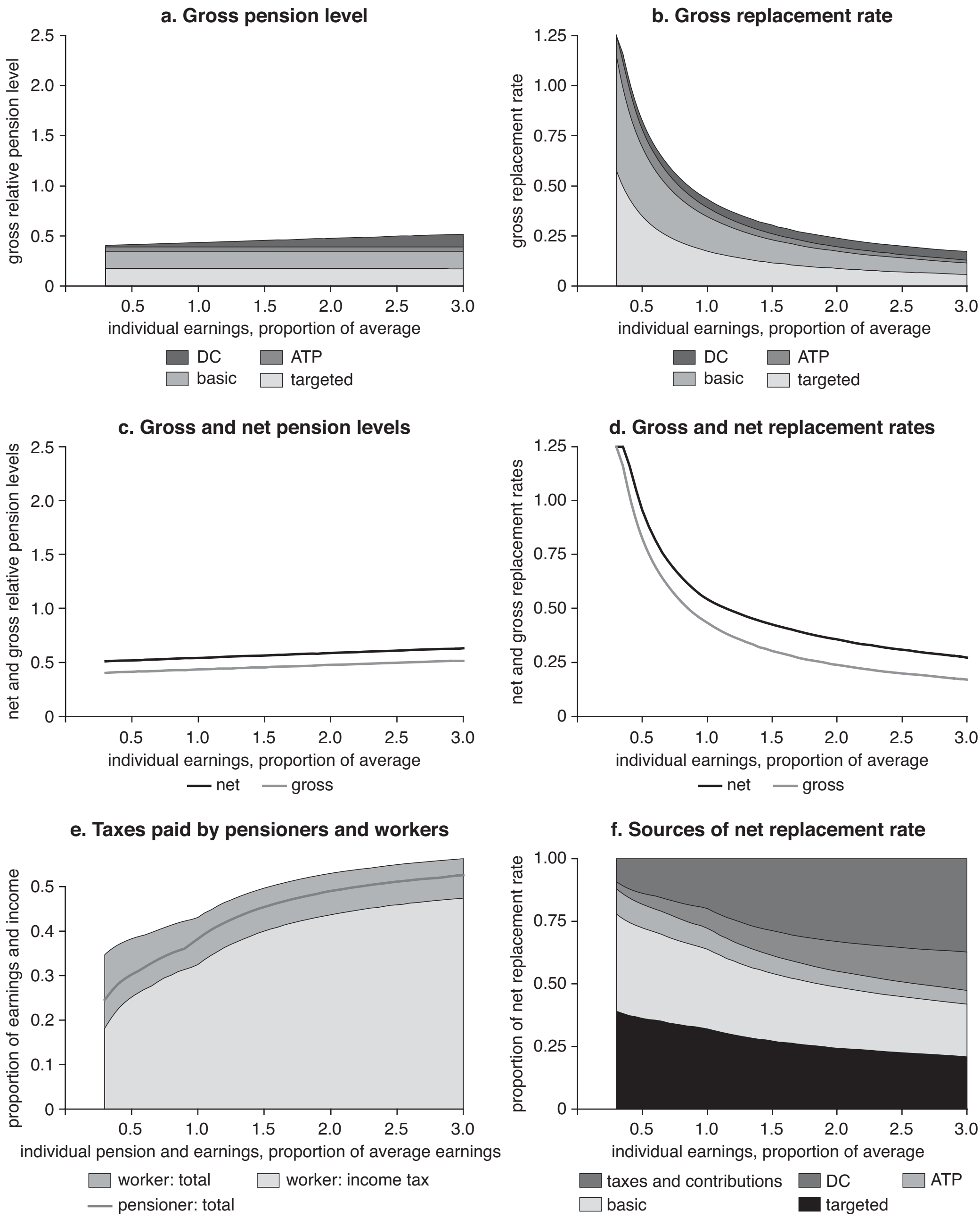
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	41.2	42.3	43.3	45.4	47.5	49.6
Net pension level (% of average net earnings)	51.9	53.0	54.1	56.4	58.7	60.9
Gross replacement rate (% of individual earnings)	82.4	56.4	43.3	30.3	23.8	19.8
Net replacement rate (% of individual net earnings)	95.6	68.0	54.1	42.5	35.5	30.8
Gross pension wealth	7.0	7.2	7.4	7.7	8.0	8.3
(multiple of average earnings)	*8.1*	*8.2*	*8.4*	*8.7*	*9.0*	*9.3*
Net pension wealth	7.5	7.7	7.8	8.2	8.5	8.8
(multiple of average net earnings)	*10.2*	*10.3*	*10.5*	*10.8*	*11.2*	*11.5*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Denmark



Source: OECD pension models.

Finland

FINLAND'S TWO-TIER PENSION SYSTEM consists of the national state pension, which is pension income tested, and a range of statutory earnings–related schemes with similar rules. The schemes for private sector employees are partially prefunded, while the public sector schemes are pay-as-you-go, financed with buffer funds.

Qualifying Conditions

The national pension is subject to a residency test (but no contribution requirements) and is withdrawn against pension income from the earnings-related schemes. Both the national and the earnings-related pensions are payable from age 65. The full benefit is payable with 40 years' residence as an adult, with pro rata adjustments for shorter periods of residence.

Benefit Calculation

Earnings-Related

From 2005, the accrual rate will be 1.5 percent of pensionable pay at ages 18–52, 1.9 percent at 53–62, and 4.5 percent at 63–67. For a full-career worker (20–65), the aggregate accrual at the time of retirement will be 77.5 percent of pensionable earnings. The maximum replacement rate of 60 percent is abolished from 2005. From that year, pensionable pay will be based on career-average earnings, with earlier years revalued in line with a mix of economywide earnings and prices: wage growth will have an 80 percent weight, and price inflation, 20 percent. Pensionable pay is gross earnings less employees' pension contributions. A recently legislated change will reduce pension benefits from 2010 according to increases in life expectancy from that date. The adjustment takes the form of an annuity calculation using a discount rate of 2 percent per year. The adjustment expected in the year 2040, based on the mortality projections, is to reduce benefits to 88.6 percent of their value under the prereform rules. There is no contribution floor and no ceiling to contributions or pensionable earnings. After retirement, the pension is uprated using a mix of 20 percent of earnings inflation and 80 percent of price inflation.

Targeted

The basic monthly benefit for a single pensioner in 2002 was between €467 and €488 (approximately a fifth of average earnings) depending on municipality. The pension is reduced by 50 percent of the difference between other pension income and a disregard of €550 per year. The basic pension benefit and the parameters of the means test are uprated annually in line with prices.

Personal Income Tax and Social Security Contributions

There are no special rules for the taxation of pensioners. Recipients of pension income may deduct an allowance from their income subject to municipal income tax to a maximum of €6,540 for a single person in 2002. The allowance is withdrawn at a rate of 70 percent of income above the full allowance. The allowance is "wasteable": the pension-income allowance cannot exceed the amount of pension income.

Workers receive a deduction for work-related expenses, which is not available for pensioners.

There are no contributions on pension income for pension or unemployment insurance. From 2003, however, the same sickness-insurance contributions are levied on pensioners' incomes as on those of workers. The sickness-insurance contribution is levied on taxable income as defined in municipal taxation.

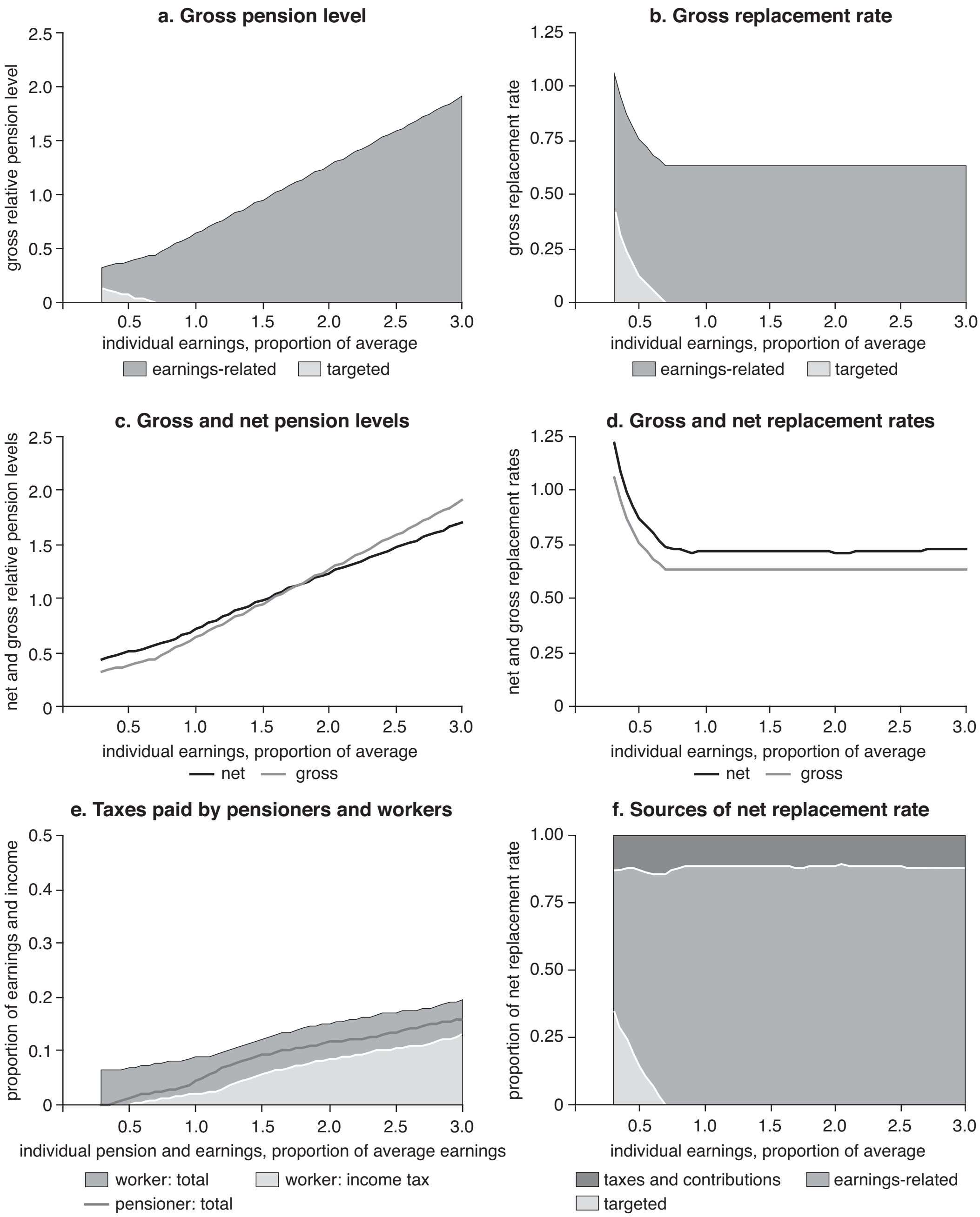
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	38.0	47.5	63.3	95.0	126.6	158.3
Net pension level (% of average net earnings)	50.5	58.5	71.5	98.3	123.1	146.6
Gross replacement rate (% of individual earnings)	75.9	63.3	63.3	63.3	63.3	63.3
Net replacement rate (% of individual net earnings)	87.3	73.1	71.5	71.8	71.3	71.9
Gross pension wealth	5.9	7.5	10.0	14.9	19.9	24.9
(multiple of average earnings)	*7.0*	*8.9*	*11.8*	*17.7*	*23.6*	*29.5*
Net pension wealth	7.9	9.2	11.2	15.5	19.4	23.0
(multiple of average net earnings)	*9.3*	*10.9*	*13.3*	*18.3*	*23.0*	*27.3*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Finland



Source: OECD pension models.

France

France has a two-tier system, with an earnings-related public pension and mandatory occupational schemes, based on a points system. The public scheme also has a minimum pension.

Qualifying Conditions

A full state pension will require 40 years' contributions from 2008, compared with 37.5 years in 2002. The normal pension age is 60. The minimum pension has the same qualifying conditions as the public, earnings-related scheme.

Benefit Calculation

Earnings-Related

The target replacement rate is 50 percent for a full career. For shorter contribution periods, the target is reduced pro rata, with an additional penalty for missing years (or each year the pension is drawn before age 65). The earnings measure is a number of best years, valorized in line with prices. From 2008, pay will be averaged over 25 years. There is a ceiling on eligible earnings, which in 2002 was €28,224, equivalent to approximately 125 percent of average earnings. Benefits in payment are indexed to prices.

Minimum

The minimum pension was €525 per month in 2002 (a little under 30 percent of average earnings). For the full benefit, 40 years of contributions are needed; the pension is prorated for shorter periods. The value of the minimum pension is indexed to prices.

Mandatory Occupational

The ARRCO scheme covers the majority of private sector employees. The description relates to noncadres. Benefits are earned on 6 percent of earnings up to the public pension ceiling. Benefits are earned on 16 percent of pay, between one and three times the public ceiling, giving an ARRCO ceiling of €84,672 (approximately 375 percent of average earnings). Points earned each year are contributions divided by pension-point cost. At retirement, accumulated points are converted into a pension by multiplying these by the pension-point value. The calendar 2002 point value was €1.05, and the point cost, €11.00. The current accord between the social partners (government, employers, and trade unions), which is valid until 2008, increases the pension-point cost relative to earnings and the pension-point value relative to prices. The modeling assumes that the increases will remain.

Targeted

The minimum income for people aged 65 or over is €6,832 a year (approximately 30 percent of average earnings). This income is adjusted in line with earnings. The 2003 reform introduced a new objective: from 2008, full-career workers earning the minimum wage (about 60 percent of average earnings) would receive a pension of at least 85 percent of the net minimum wage. For 2002, the net minimum wage was €10,882.

Personal Income Tax and Social Security Contributions

There are no specific deductions for older people. There are no special reliefs for pension income. Older people are not liable for standard social security contributions. However, they pay the general social tax (CSG, *contribution sociale generalisée*) of 6 percent. There is an exemption for the lowest-income pensioners (depending on liability for the personal income tax and the housing tax, *taxe d'habitation*), which means that some 40 percent of older people do not pay CSG.

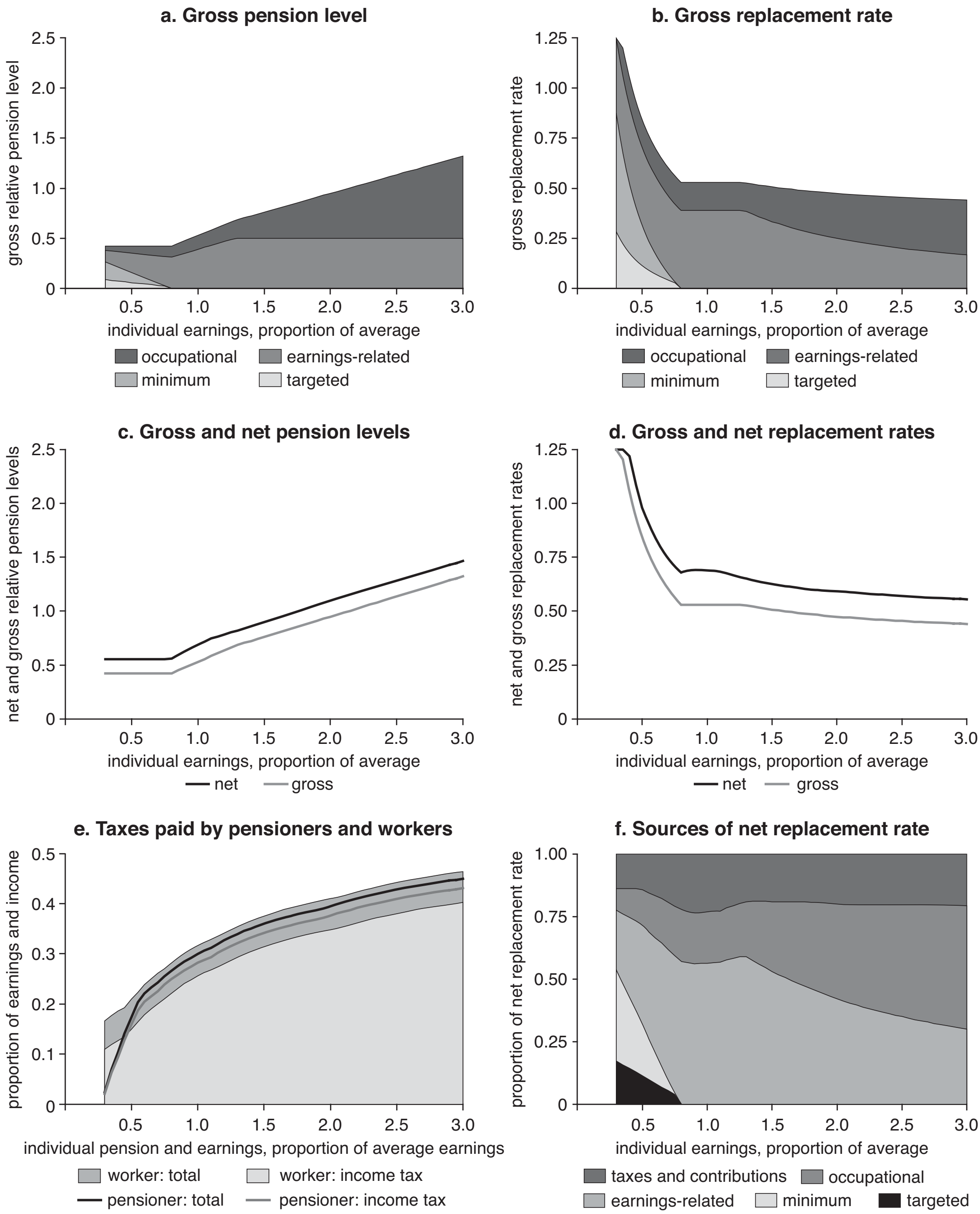
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	42.1	42.1	49.4	70.9	88.0	105.2
Net pension level (% of average net earnings)	55.5	55.5	65.0	84.3	102.6	120.1
Gross replacement rate (% of individual earnings)	70.1	56.1	49.4	47.3	44.0	42.1
Net replacement rate (% of individual net earnings)	84.2	70.8	65.0	58.7	55.3	53.4
Gross pension wealth	7.6	7.6	8.9	12.8	15.9	18.9
(multiple of average earnings)	*8.7*	*8.7*	*10.2*	*14.7*	*18.2*	*21.8*
Net pension wealth	10.0	10.0	11.7	15.2	18.5	21.6
(multiple of average net earnings)	*11.5*	*11.5*	*13.5*	*17.5*	*21.3*	*24.9*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

France



Source: OECD pension models.

Germany

The public pension in Germany has a single tier, based on pension points. There is also a social-assistance safety net.

Qualifying Conditions

The pension is payable from age 65 with five years' contributions and from age 63 with 35 years' contributions. Fewer than five years' contributions earn no benefit.

Benefit Calculation

Earnings-Related

A year's contribution at average earnings earns one point. Contributions are levied on monthly earnings between €325 and €4,500 (2002 values). The floor and ceiling are equivalent to 12 percent and 163 percent of average earnings, respectively. The ceiling also applies to the number of points earned. Average covered earnings were €28,626 in 2002, equivalent to 86 percent of the earnings of the average production worker in that year. The sum of points at pension age is multiplied by a pension-point value, which was €25.31 in the first half of 2002 and €25.86 in the second half of the year. The first three years' contributions before age 25 are adjusted upward to the lesser of the two quantities: 75 percent of total pension entitlement or 75 percent of lifetime-average pay. The pension-point value is uprated annually in line with gross wages subject to an adjustment for increases in the total contribution rate to the public scheme. The government aims to limit this rate to 22.0 percent. In 2002, the total contribution rate was 19.1 percent. In the long term, therefore, the pension-point value will fall relative to real earnings. A further change in rules was legislated in 2004 but has not been modeled. The sustainability factor will link the uprating of the pension-point value to changes in the system-dependency ratio—that is, the ratio of pensioners to contributors. Some parameters are slightly different in the new *Länder* (the federal states that made up the German Democratic Republic before reunification).

Social Assistance

The benefit value is determined regionally. The government pays the health and long-term care contributions of older social-assistance recipients. There is also a supplement to cover housing and fuel costs. Average total social-assistance receipt in the Western *Länder* in 2002 was €648 per month.

Personal Income Tax and Social Security Contributions

There is no special relief for older people. Income up to a statutory line (the *Existenzminimum*) is exempt from tax. This was €7,236 per person in 2002. This provision applies equally to citizens of pension age and those of working age.

Some forms of pension income are taxed as if they were annuities. A part of the income reflecting the (notional) repayment of capital is not taxable, while a part relating to the (notional) interest on the capital is taxable. The taxable part covers the public pension, privately purchased annuities, and two types of occupational pension plans. The proportion of the income subject to tax varies with the age at which the individual first started drawing the pension. For retirement at age 65, only 27 percent of the pension is taxable. The share at other illustrative ages is as follows: 38 percent at age 55, 32 percent at age 60, and 21 percent at age 70. There are additional deductions totaling €138 (€102 plus €36) for pensions drawn at any age.

Pensioners do not pay social security contributions on pension income for unemployment or pension insurance. However, pensioners pay half of the rate paid by workers for sickness and long-term care, which, in 2002, were 7.00 percent and 0.85 percent, respectively.

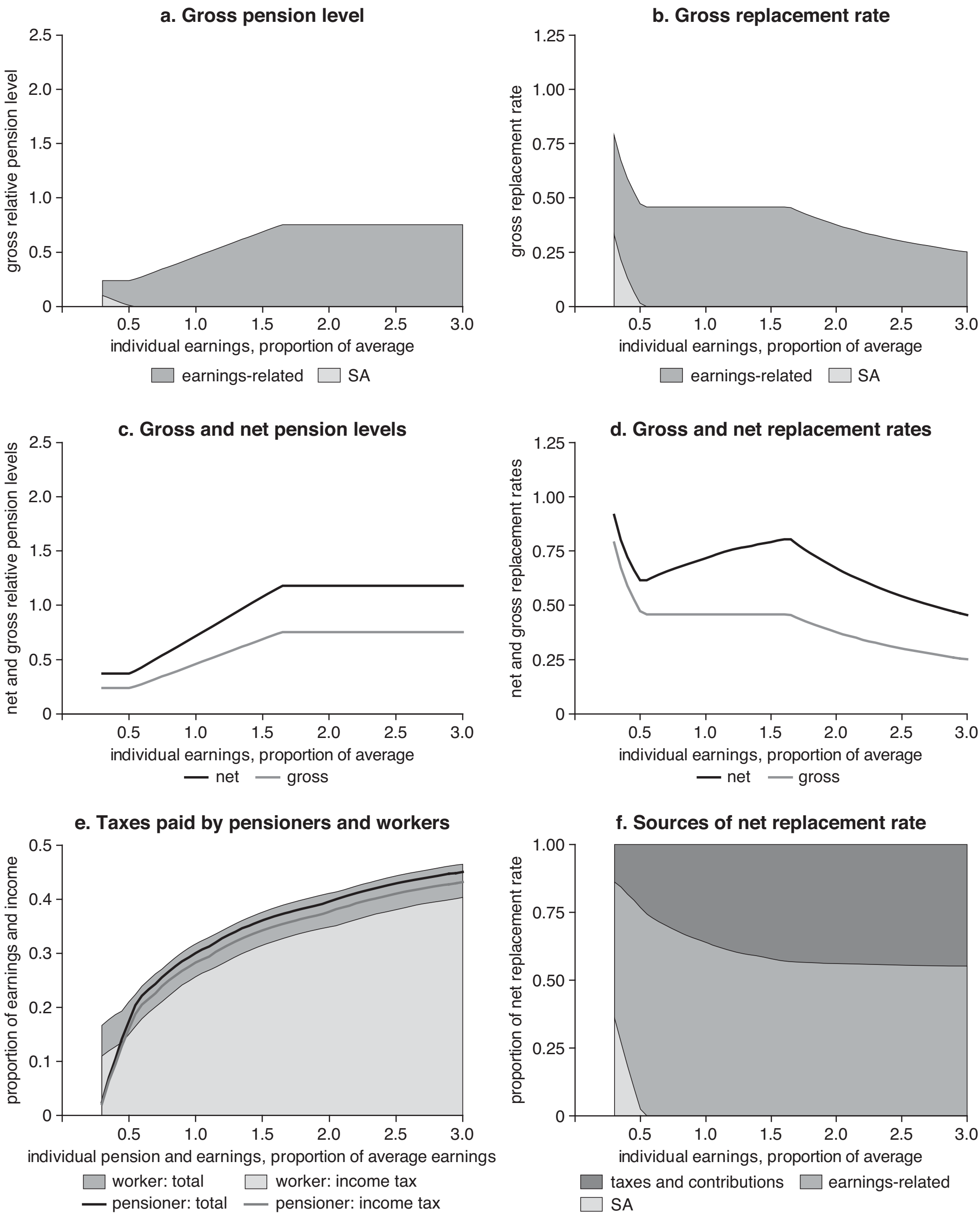
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	23.6	34.4	45.8	68.7	75.2	75.2
Net pension level (% of average net earnings)	37.0	53.8	71.8	107.7	117.8	117.8
Gross replacement rate (% of individual earnings)	47.3	45.8	45.8	45.8	37.6	30.1
Net replacement rate (% of individual net earnings)	61.7	66.6	71.8	79.2	67.0	54.2
Gross pension wealth (multiple of average earnings)	4.3 *5.1*	6.2 *7.4*	8.3 *9.8*	12.5 *14.8*	13.7 *16.2*	13.7 *16.2*
Net pension wealth (multiple of average net earnings)	6.7 *8.0*	9.8 *11.6*	13.0 *15.4*	19.6 *23.1*	21.4 *25.3*	21.4 *25.3*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Germany



Source: OECD pension models.

Greece

Greece has an earnings-related public scheme, with two components plus a series of minimum pensions and social safety nets. The system applies to labor-market entrants from 1993.

Qualifying Conditions

Normal pensionable age is 65 for men and 60 for women, equalized at 65 for people entering the labor force from 1993. A full pension requires a minimum of 4,500 days of contributions (equivalent to approximately 15 years). Workers with 11,100 working days (approximately 37 years) can retire on a full benefit regardless of age. An early pension is payable from age 60 with the standard contribution requirement (of 4,500 days). There are concessions for people who work in arduous or hazardous occupations and for women with dependent or disabled children. The minimum social pension requires 15 years' contributions. The safety-net programs—the social solidarity grant and social solidarity benefit—pay benefits from age 60, subject to income tests as described below.

Benefit Calculation

Earnings-Related: Main Component

For labor-market entrants from 1993, the pension is 2 percent of earnings for each year of contributions. The maximum insurance period is 35 years. The earnings measure is the average over the last five years before retirement. Earlier years' pay is valorized in line with the increase in the pensions for public sector workers (see below). There is a maximum pension of four times 1991 gross national product (GNP) per capita, linked to the evolution of civil servants' pensions. For 2002, this cap on pension benefits was €2,144 per month. The calculations indicate that, for a full-career worker, this is equivalent to a ceiling on pensionable earnings of 325 percent of average earnings. Adjustment of pensions in payment is discretionary. In the past five years, pension increases have been progressive (larger increases for smaller pensioners), with one exception. Given the lack of consistent practice in recent benefit adjustments, pension wealth calculations are based on price indexation. All pensions have 14 "monthly" payments (with two bonus payments at different times in the year).

Earnings-Related: Supplementary Component

The full supplementary pension is 20 percent of the earnings measure under the main component of the earnings-related scheme for workers with 35 years of contributions. The pension is proportionally reduced for shorter contribution periods, implying a linear accrual rate of 0.57 percent. The value is increased by one-thirty-fifth for each year of contributions (300 days) beyond 35 years.

Minimum

The minimum pension is set as 70 percent of the minimum wage for a married, full-time employee. For 2002, the value was €377 per month, equivalent to approximately 40 percent of average earnings. This value is adjusted annually as part of the income policy. There are additional income-tested, noncontributory schemes—the social solidarity grant and the social solidarity benefit—as well as a scheme for the uninsured. These are not relevant to a full-career worker.

Personal Income Tax and Social Security Contributions

There are no special reliefs for pensioners or for pension income. Pensioners do not pay social security contributions.

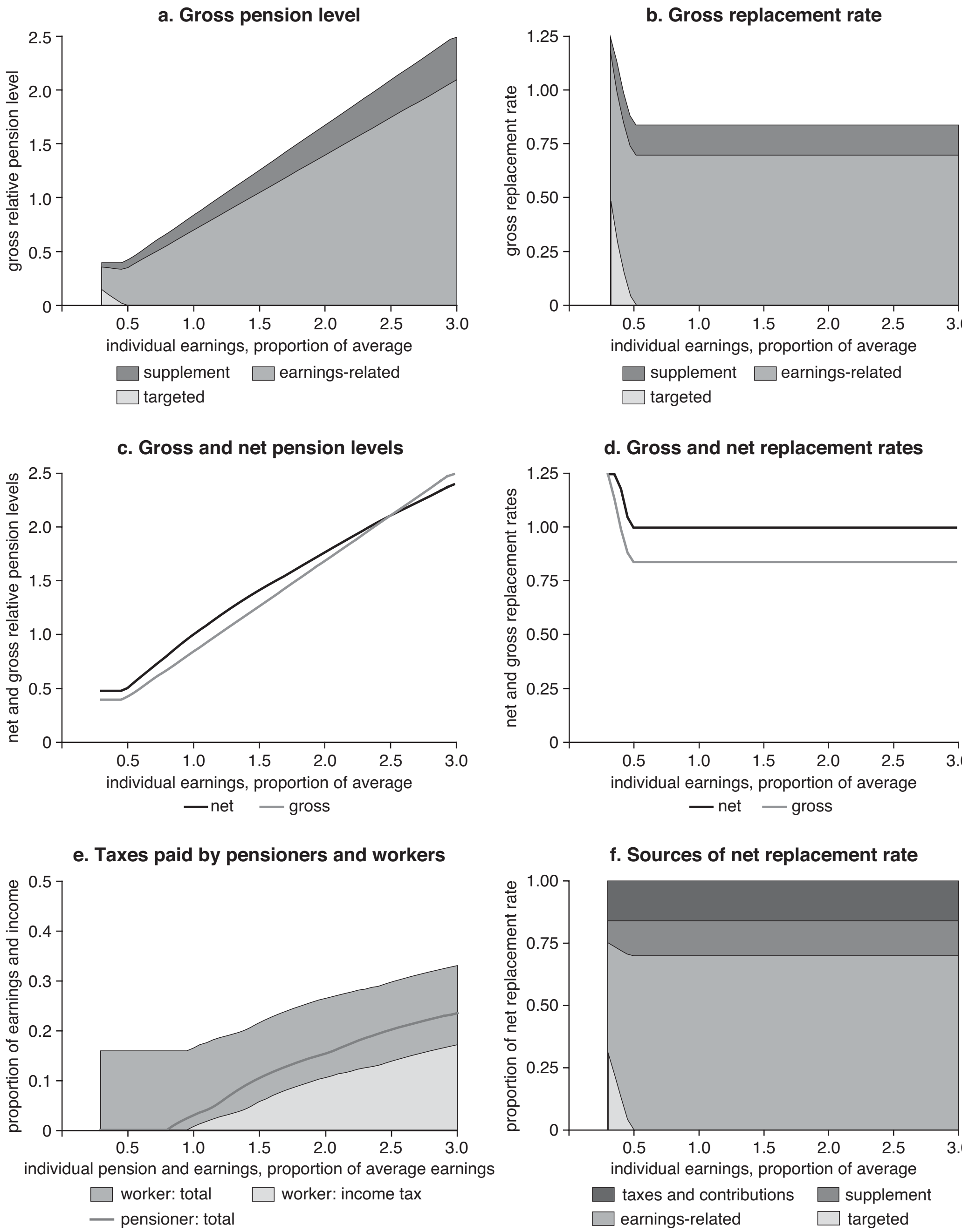
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	42.0	63.0	84.0	126.0	168.0	210.0
Net pension level (% of average net earnings)	50.3	75.4	99.9	140.8	176.0	210.3
Gross replacement rate (% of individual earnings)	84.0	84.0	84.0	84.0	84.0	84.0
Net replacement rate (% of individual net earnings)	99.9	99.9	99.9	99.9	99.9	99.9
Gross pension wealth	6.3	9.4	12.6	18.9	25.2	31.5
(multiple of average earnings)	*7.3*	*10.9*	*14.5*	*21.8*	*29.1*	*36.3*
Net pension wealth	7.5	11.3	15.0	21.1	26.4	31.5
(multiple of average net earnings)	*8.7*	*13.0*	*17.3*	*24.4*	*30.4*	*36.4*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Greece



Source: OECD pension models.

Iceland

THE PUBLIC PENSION IN ICELAND HAS THREE COMPONENTS, a basic and two income-tested schemes. There are also mandatory occupational pensions with a hybrid (albeit a mainly defined-benefit) formula.

Qualifying Conditions

The normal pension age is 67. A full basic pension is earned with 40 years' residency. The pension is proportionally reduced for shorter periods of residency, with a minimum requirement of three years. The pension age is also 67 for members of private sector occupational plans but is 65 for public sector workers.

Benefit Calculation

Basic

The full basic pension value is ISK 19,900 per month (approximately 9 percent of average earnings). This benefit is income tested: withdrawal begins once income (from sources other than the supplementary pension) exceeds ISK 1,296,060, equivalent to half of average earnings. The withdrawal rate is 30 percent. This income test applies only to nonpension income, such as earnings or capital income.

Targeted

A second element is the pension supplement, with a maximum value of ISK 34,372 per month for a single person (16 percent of average earnings). This is withdrawn against income above ISK 415,894 per year (approximately 16 percent of average earnings), but the basic pension does not affect its value. The withdrawal rate for the income test in the pension supplement is 45 percent. Finally, there is an additional pension supplement with a maximum entitlement of ISK 15,257 per month (just 7 percent of average earnings). The supplement is withdrawn at a rate of two-thirds against all other income. All public benefit levels are adjusted in line with public sector pay, (which is assumed to be the same as economywide earnings growth).

Mandatory Occupational

The law requires schemes to target a replacement rate of 56 percent with 40 years' contributions, giving an accrual rate of 1.4 percent for each year of service. Coverage is mandatory for people aged 16 to 70. The earnings base is average lifetime salary. There is no ceiling on pensionable earnings. Occupational pensions in payment must, by law, increase at least in line with consumer price inflation.

In practice, many schemes pay more than the legal minimum outlined above, typically introducing a hybrid defined-contribution and defined-benefit element into the system. There is a minimum contribution to occupational schemes of 10 percent of earnings. Contributions above the level needed to finance the statutory benefits described above may be either used to increase defined-benefit entitlements or diverted to individual accounts, thus delivering a defined-contribution pension. However, the modeling covers only the mandatory component and not these extrastatutory benefits (which are by no means guaranteed).

Personal Income Tax and Social Security Contributions

Pensioners are taxed in the same way as people of working age: there are no additional allowances. There is no specific relief for pension income. Pensioners do not pay social security contributions.

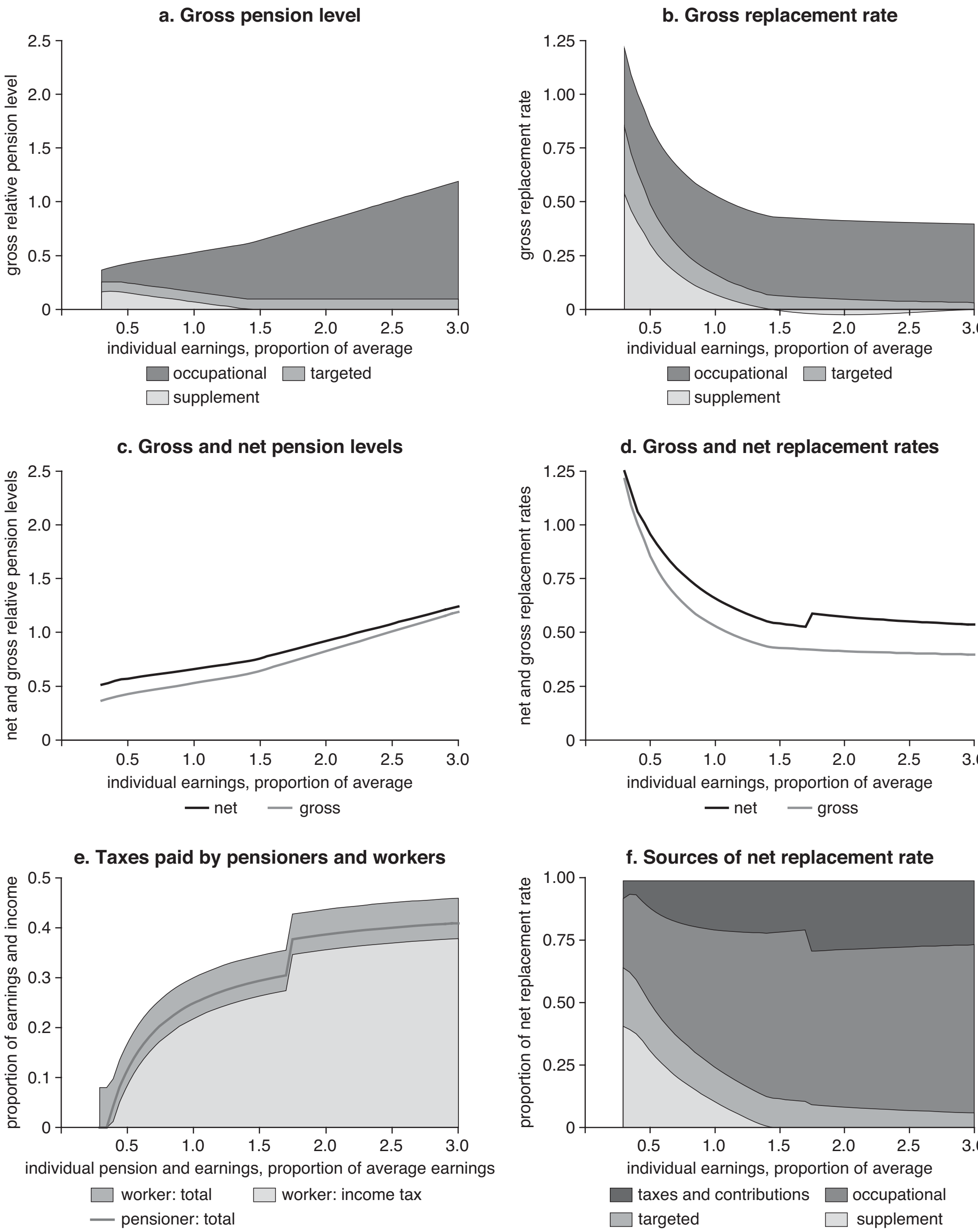
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	42.8	47.8	52.8	64.3	82.6	100.9
Net pension level (% of average net earnings)	57.1	61.5	65.9	76.0	92.0	108.1
Gross replacement rate (% of individual earnings)	85.5	63.7	52.8	42.8	41.3	40.3
Net replacement rate (% of individual net earnings)	95.8	77.1	65.9	54.1	57.2	55.1
Gross pension wealth	7.1	7.8	8.4	9.9	12.6	15.3
(multiple of average earnings)	*8.1*	*8.8*	*9.4*	*11.1*	*14.1*	*17.2*
Net pension wealth	9.5	10.0	10.5	11.7	14.0	16.4
(multiple of average net earnings)	*10.8*	*11.3*	*11.8*	*13.1*	*15.8*	*18.4*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Iceland



Source: OECD pension models.

Ireland

THE PUBLIC PENSION IN IRELAND IS A BASIC SCHEME paying a flat rate to all who meet the contribution conditions. There is also a means-tested pension to provide a safety net for the low-income elderly. Voluntary occupational pension schemes provide broad coverage to approximately half of employees. (The government has a target to increase this proportion to 70 percent.)

Qualifying Conditions

The old-age contributory pension is payable from age 66 while the retirement pension is paid from age 65. Full entitlement to both benefits requires an average of 48 weeks' contributions or credits per year throughout the working life. The pension value is proportionally reduced for incomplete contribution histories. However, the old-age contributory pension requires a minimum average of 10 weeks' contributions per year, and the retirement pension, 24 weeks' per year. There is also a minimum total period of contributions of 260 weeks (equivalent to five years' full coverage).

The means-tested pension is payable from age 66.

Benefit Calculation

Basic

The values of the old-age contributory pension and the retirement pension are both €147.30 per week (paid for 53 weeks per year), which is approximately 30 percent of average earnings. There is an addition of €98.10 for a dependent adult of working age and €113.80 for a dependent age 66 or over. The value of the basic pension under a recent long-term plan is fixed relative to earnings: the target rate is 34 percent of average earnings.

Targeted

The maximum value of the means-tested benefit is €134 per week for a single person with an extra €88.50 for an adult dependent. The single person's benefit is worth 28 percent of average earnings. There is a small disregard in the means test. Otherwise, the benefit is withdrawn at 100 percent of income. There is also an assets test, which converts capital of more than €20,315 to income using a standard formula.

The value of the target safety-net income in the means-tested scheme broadly follows the uprating of the basic schemes (it is linked to earnings).

Personal Income Tax and Social Security Contributions

There is an additional tax credit for single people over 65 of €205. This is on top of the general credit, which was €1,520 per person in 2002. Over 65s are also entitled to a much higher exemption limit (below which no tax is paid). Single people over 65 have an exemption of €13,000 compared with the general exemption of €5,210. There are no special rules regarding the taxation of pension income. Pensioners are not liable for social security contributions.

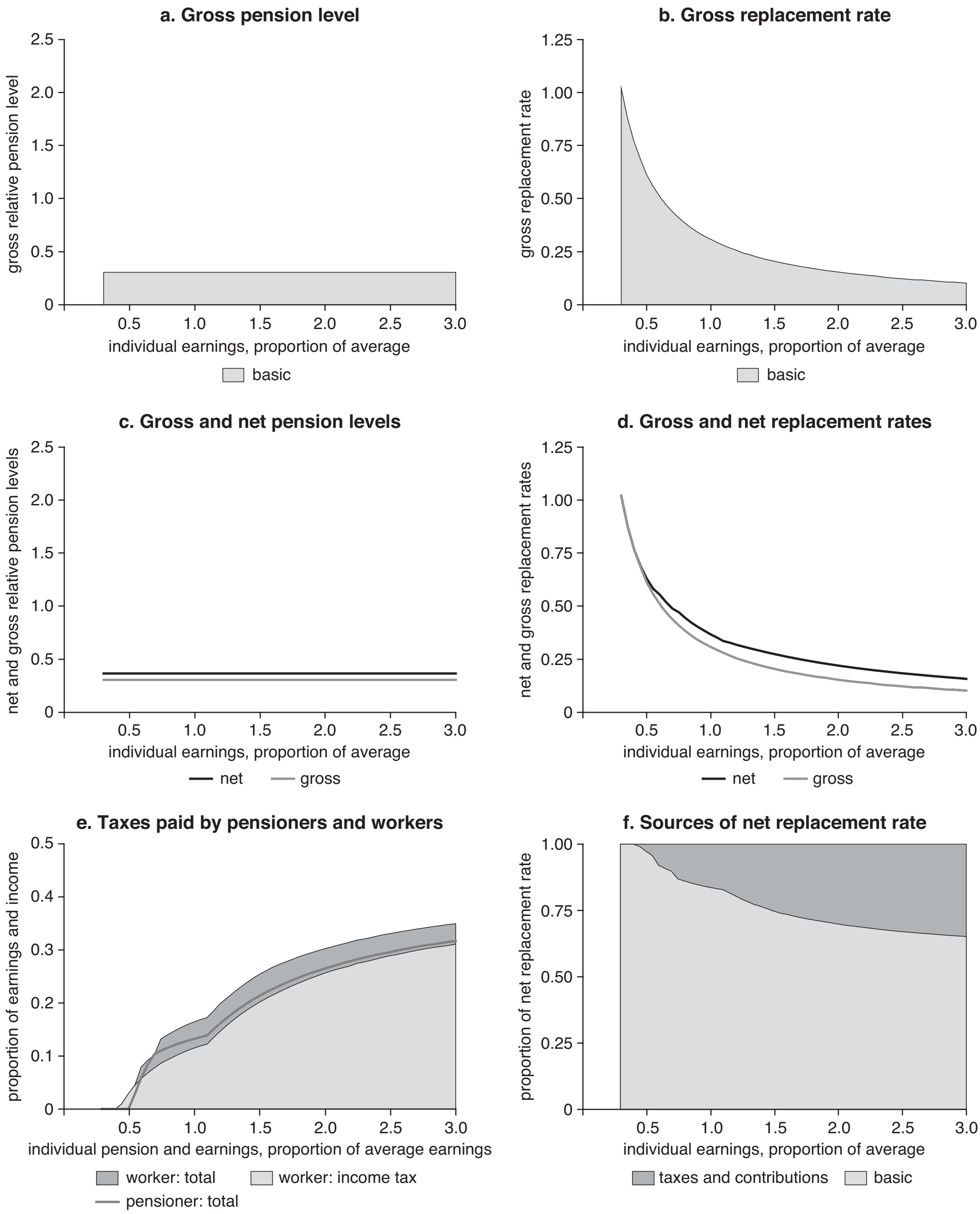
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	30.6	30.6	30.6	30.6	30.6	30.6
Net pension level (% of average net earnings)	36.6	36.6	36.6	36.6	36.6	36.6
Gross replacement rate (% of individual earnings)	61.3	40.9	30.6	20.4	15.3	12.3
Net replacement rate (% of individual net earnings)	63.0	47.0	36.6	27.4	21.9	18.3
Gross pension wealth (multiple of average earnings)	5.4 *6.5*	5.4 *6.5*	5.4 *6.5*	5.4 *6.5*	5.4 *6.5*	5.4 *6.5*
Net pension wealth (multiple of average net earnings)	6.5 *7.7*	6.5 *7.7*	6.5 *7.7*	6.5 *7.7*	6.5 *7.7*	6.5 *7.7*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Ireland



Source: OECD pension models.

Italy

THE NEW ITALIAN PENSION SYSTEM is based on notional accounts. Contributions earn a rate of return related to GDP growth. Benefits are a function of accumulated notional capital and an actuarial factor, which takes account of average life expectancy at retirement. The new system applies in full to labor-market entrants from 1996 onward.

Qualifying Conditions

The normal pension age under the new system will be 65, but it will be possible to draw the pension from age 57, subject to five years' contributions. However, the pension value must also be worth at least 1.2 times the social-assistance pension. The modeling assumes that people retire at age 65.

Benefit Calculation

Earnings-Related

Notional accounts are credited with 33 percent of earnings, slightly more than actual contributions. The notional interest rate is a five-year moving average of GDP growth. Given the projected decline in the Italian labor force and a baseline assumption of 2 percent real wage growth, real GDP should grow at 1.6 percent per year. The resulting notional capital is multiplied by a *transformation coefficient* at retirement, which varies with the age at which the pension is claimed. The values are reviewed every 10 years on the basis of evidence of mortality rates at different ages and assuming a real discount rate of 1.5 percent. Minimum pay for contribution purposes is €152 per week (37 percent of average earnings). Maximum earnings are €76,443 per year (nearly 360 percent of average earnings). The indexation of pensions in payment is complex. For benefits up to three times the minimum pension, there is full price indexation. This threshold is €1,178 (approximately two-thirds of average earnings). Between three and five times the minimum pension, uprating is 90 percent of price inflation. Above this threshold, uprating falls to 75 percent of prices.

Social Assistance

The minimum pension is abolished for people covered only under the new system (that is, entrants in 1996 and after). However, pensioners with incomes below the social-assistance level can claim a benefit from age 65, subject to a means test. The 2002 value of social assistance (*assegno sociale*), including supplements, was €4,725 (€364 a month). There is a higher benefit of €6,714 for individuals over 70.

Personal Income Tax and Social Security Contributions

In addition to standard reliefs, pensioners with no other income received tax credits as set out in the 2002 schedule below:

Income (lower limit)	€ 4,855	€ 9,296	€ 9,554	€ 9,813
Age < 75	€ 98	€ 62		
Age > 75	€ 222	€ 186	€ 93	€ 46

Private pension incomes are only partially taxable: 87.5 percent of benefits are taxable for occupational pension schemes and 60.0 percent for personal pension plans. Social security contributions are not levied on pension income.

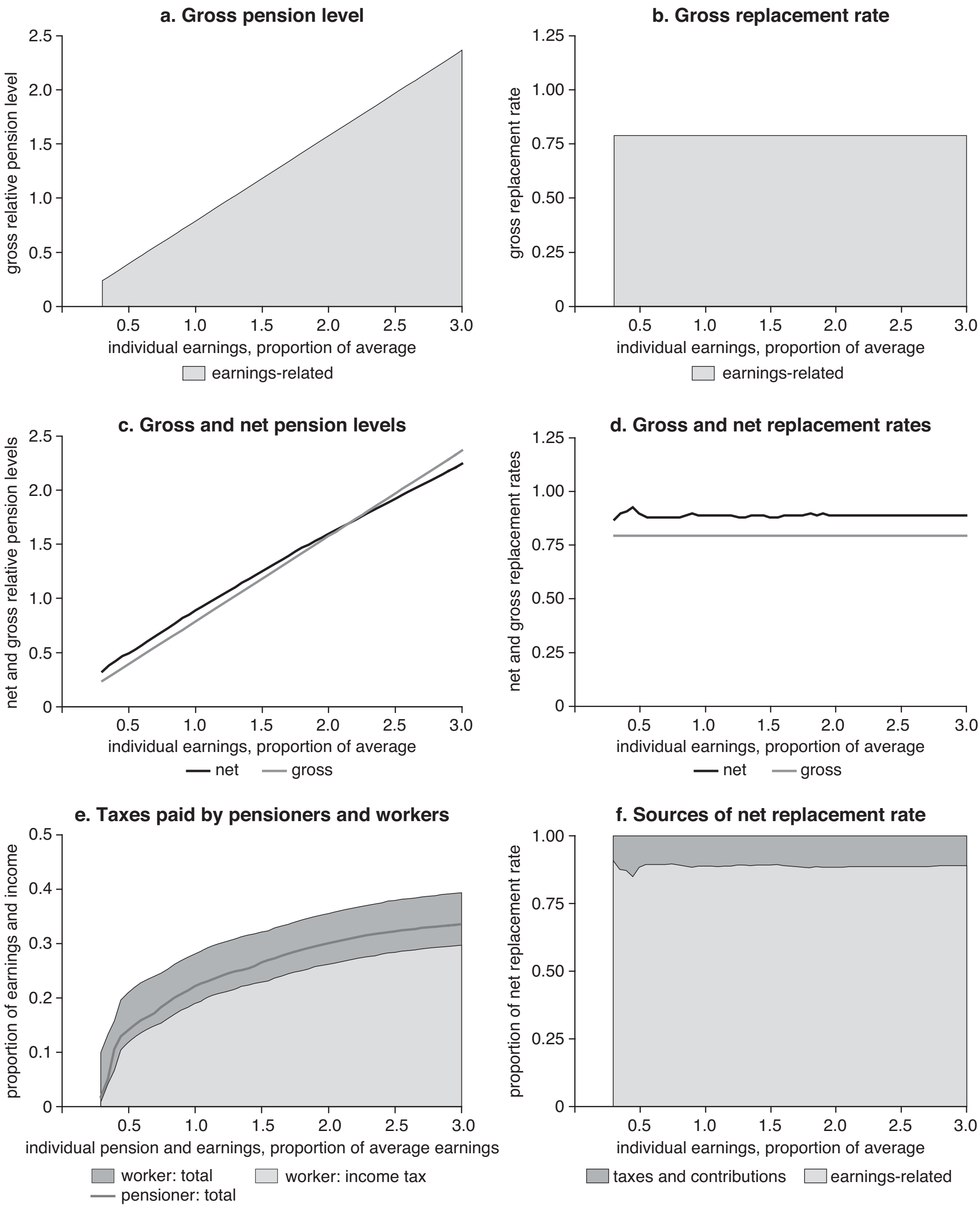
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	39.4	59.1	78.8	118.2	157.6	197.0
Net pension level (% of average net earnings)	49.1	69.3	88.8	125.2	159.7	192.0
Gross replacement rate (% of individual earnings)	78.8	78.8	78.8	78.8	78.8	78.8
Net replacement rate (% of individual net earnings)	89.3	88.0	88.8	88.4	89.1	89.0
Gross pension wealth	5.8	8.7	11.4	16.5	22.0	27.5
(multiple of average earnings)	*6.9*	*10.4*	*13.5*	*19.4*	*25.9*	*32.4*
Net pension wealth	7.2	10.2	12.8	17.5	22.3	26.8
(multiple of average net earnings)	*8.6*	*12.2*	*15.2*	*20.6*	*26.3*	*31.6*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Italy



Source: OECD pension models.

Japan

The Japanese public pension system has two tiers: a basic, flat-rate scheme and an earnings-related plan.

Qualifying Conditions

The old-age, basic pension is paid from age 65 with a minimum of 25 years' contributions. However, reduced benefits may be received from age 60. The earnings-related pension is paid in addition to basic pension with a minimum of one month's contribution, provided a pensioner is entitled to the basic pension. The pension age under this program is gradually being increased from 60 years to 65 for men in 2025 and for women in 2030.

Benefit Calculation

Basic

The full basic pension for 2002 was JPY 804,200 per year, corresponding to 19 percent of average earnings. Average receipt of the basic pension is approximately JPY 620,000 per year. The value of the basic pension is price indexed.

Earnings-Related

The employees' pension scheme has a flat rate and an earnings-related component. The most important part is the earnings-related pension. The accrual rate was 0.7500 percent of lifetime average earnings, gradually falling to 0.7125 percent. Past earnings are valorized in line with average earnings. There is a ceiling on earnings applied to calculate contributions; it is set at JPY 620,000 a month, equivalent to 175 percent of average earnings.

The flat-rate benefit amounts to JPY 1,676 per month of contributions. This is paid only to pensioners aged between 60 and 64 years. As the model assumes retirement at 65, this component is not included.

The employees' pension in payment is price indexed.

Personal Income Tax and Social Security Contributions

There is an additional JPY 500,000 deduction for over 65s if their income is less than JPY 10 million in total.

There is a schedule of deductions for over 65s, beginning with 100 percent of the first JPY 1 million of income from the public pension scheme (or from a particular type of private pension scheme such as a tax-qualified retirement plan). Next, 25 percent of income up to JPY 3.6 million is deductible, followed by 15 percent of income up to JPY 7.2 million, and 5 percent thereafter. Finally, the deduction is subject to a minimum of JPY 1.4 million. There are no special rules for the taxation of pension income.

Contributions to health insurance and elderly care insurance are levied on pension income.

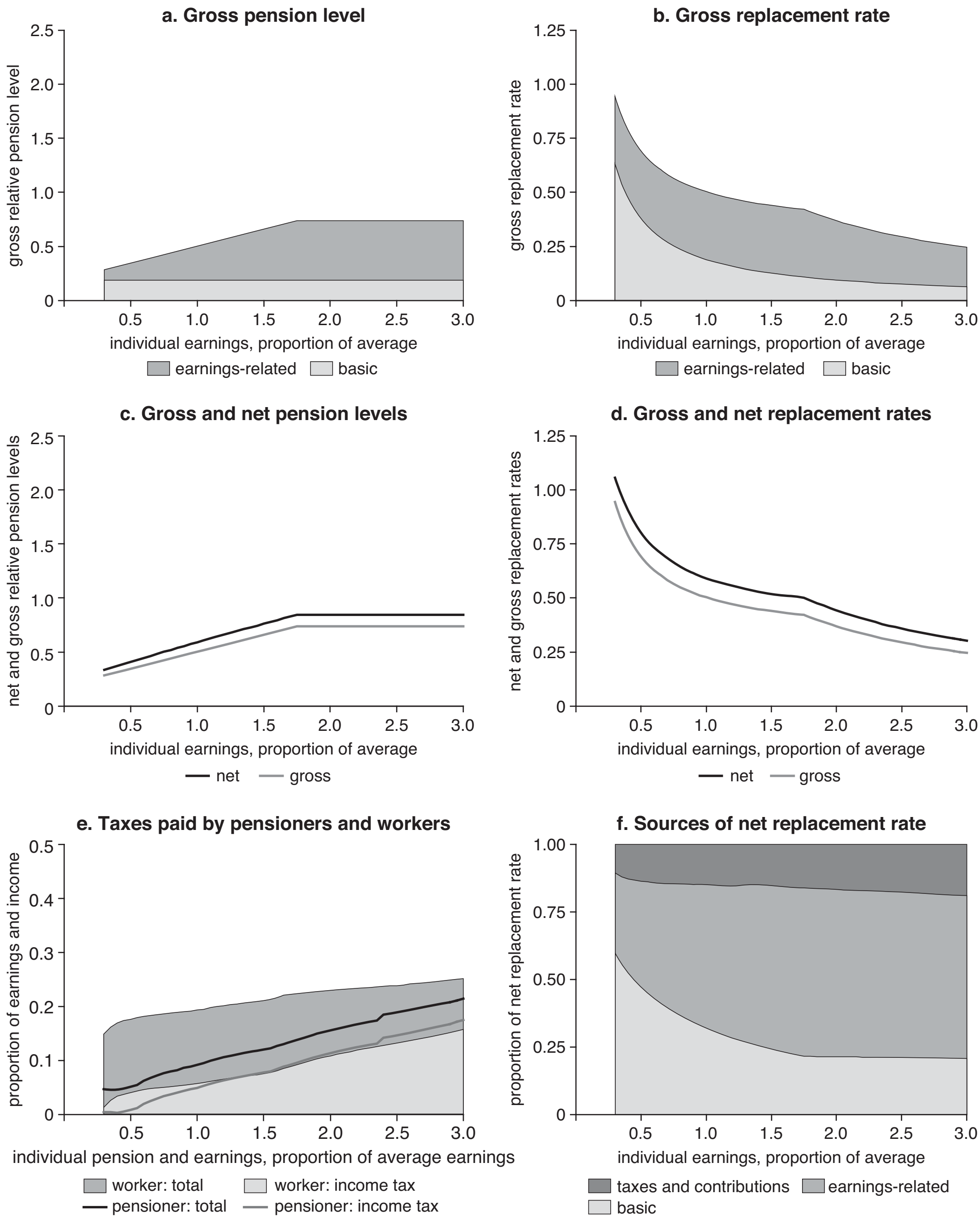
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	34.6	42.4	50.3	65.9	73.7	73.7
Net pension level (% of average net earnings)	40.9	50.2	59.1	76.1	84.5	84.5
Gross replacement rate (% of individual earnings)	69.2	56.6	50.3	44.0	36.9	29.5
Net replacement rate (% of individual net earnings)	80.1	66.3	59.1	51.9	44.3	35.8
Gross pension wealth	5.7	7.0	8.3	10.9	12.2	12.2
(multiple of average earnings)	*6.5*	*7.9*	*9.4*	*12.3*	*13.8*	*13.8*
Net pension wealth	6.8	8.3	9.8	12.6	14.0	14.0
(multiple of average net earnings)	*7.6*	*9.4*	*11.0*	*14.2*	*15.8*	*15.8*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Japan



Source: OECD pension models.

Republic of Korea

THE KOREAN PUBLIC PENSION SCHEME was introduced relatively recently. It is an earnings-related scheme with a progressive formula: benefits are based on both individual and economywide average earnings.

Qualifying Conditions

The pension is available from age 60 provided the individual has contributed for 10 years or more. An actuarially reduced early pension can be drawn from age 55.

Benefit Calculation

Earnings-Related

The scheme is earnings related. Benefits accrue at the rate of 1.5 percent of earnings per year of membership up to a maximum replacement rate of 100 percent. Earlier years' earnings are valorized in line with average earnings. The earnings measure used in the formula is the average of individual lifetime-average earnings and economywide average pay (measured over the previous three years).

The component of pension based on individual earnings and the part based on average earnings are shown separately in the charts since the part based on economywide average earnings is akin to basic schemes operated in other countries.

There is a ceiling to pensionable pay of KRW 3.6 million per month, which is equivalent to double average earnings.

The benefit is indexed to prices after retirement.

Personal Income Tax and Social Security Contributions

Pensioners receive an additional allowance of KRW 0.5 million on top of the standard allowance of KRW 1 million.

Pension income is taxable. There is a pension-income deduction, the thresholds of which are half of those that apply to workers. Below KRW 2.5 million, all income is deductible. Above that level, the marginal rate of deduction falls to 40 percent, 20 percent, and, finally, 10 percent as shown below:

Lower limit (KRW million)	0	2.5	5	9
Deduction (KRW million)	total amount	2.5	3.5	4.3
Marginal deduction (%)	100	40	20	10

Pensioners do not pay social security contributions.

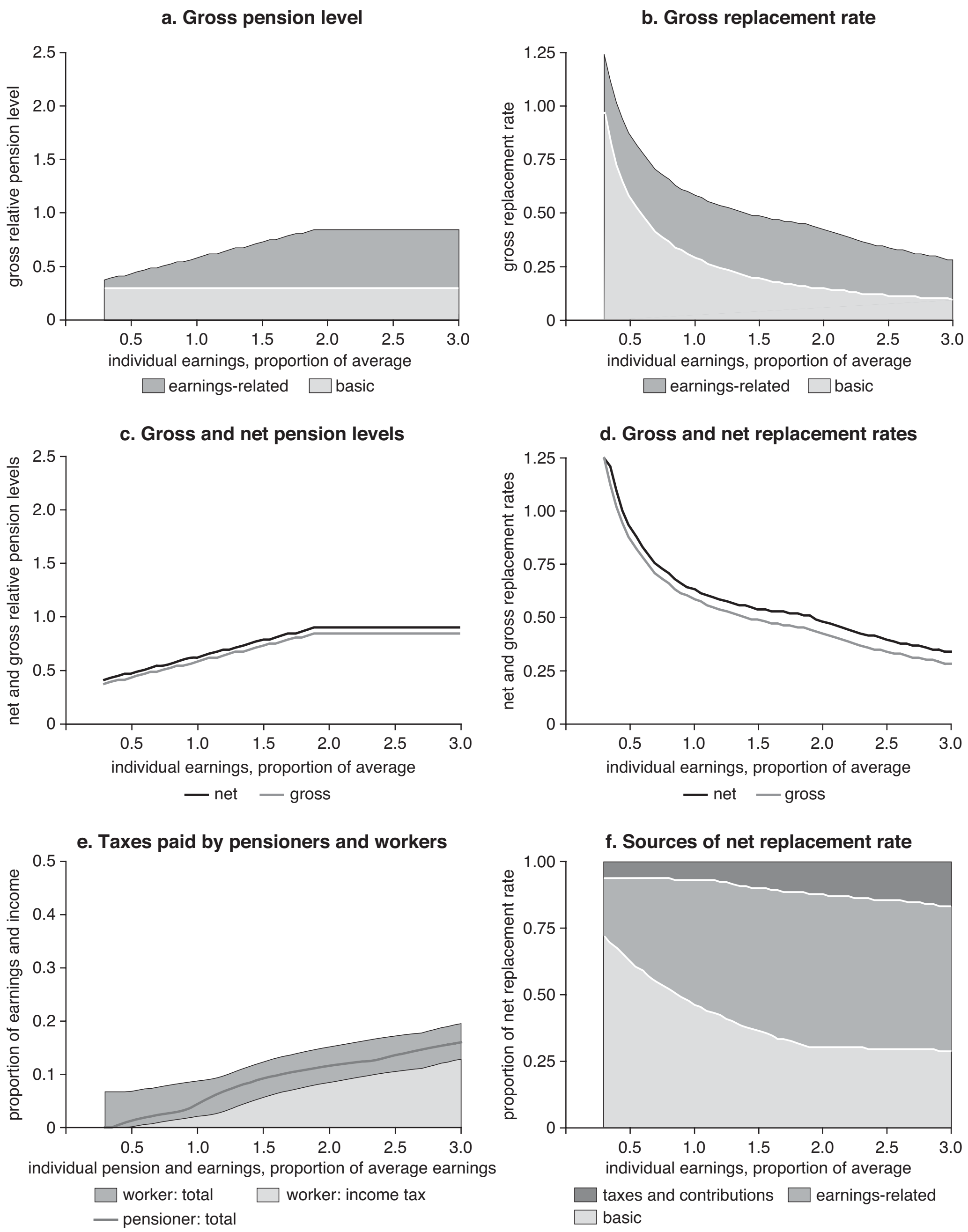
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	43.9	51.2	58.5	73.1	84.5	84.5
Net pension level (% of average net earnings)	47.7	55.3	63.0	78.2	89.8	89.8
Gross replacement rate (% of individual earnings)	87.8	68.3	58.5	48.8	42.2	33.8
Net replacement rate (% of individual net earnings)	93.4	73.0	63.0	54.2	48.3	39.6
Gross pension wealth (multiple of average earnings)	7.2 *8.5*	8.4 *9.9*	9.6 *11.3*	12.0 *14.2*	13.9 *16.4*	13.9 *16.4*
Net pension wealth (multiple of average net earnings)	7.9 *9.2*	9.1 *10.7*	10.4 *12.2*	12.9 *15.1*	14.8 *17.4*	14.8 *17.4*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Korea



Source: OECD pension models.

Luxembourg

The public pension scheme in Luxembourg has two components: a flat-rate part contingent on years of coverage and an earnings-related part. There is also a minimum pension.

Qualifying Conditions

The pension is payable from age 57 with 40 years' (compulsory or voluntary) contributions. With 40 years of compulsory, voluntary, or credited contributions, it is paid from age 60. Otherwise, pension age is 65 (with at least 10 years' contributions).

Benefit Calculation

Basic

The basic pension was worth €311 per month in March 2002, subject to 40 years' coverage (approximately 12 percent of average earnings). For incomplete insurance, the benefit is proportionally reduced. There is also an end-of-year allowance, which adds €42 per month to the pension for 40 years' contributions. This is proportionally reduced for insurance periods under 40 years, implying a little over €1 per month for each year covered. The end-of-year allowance is indexed to nominal earnings.

Earnings-Related

The accrual rate is 1.85 percent per year. The earnings measure is the lifetime average revalued in line with average earnings. The accrual rate is higher for older workers and longer contribution periods. Each year of work after age 55 increases the accrual rate by 0.01 percentage points, as does each year of contributions above 38. The maximum accrual rate is 2.05 percent. The maximum pension in March 2002 was €5,513 per month (just above twice the average earnings). Benefits are indexed to prices and additional adjustments to real wages are considered every two years. Recently, increases have kept pace with the growth of average earnings; the modeling assumes that this scenario continues.

Minimum

The minimum pension is €1,191 per month for 40 years' coverage (equivalent to 46 percent of average earnings). The amount is proportionally reduced for shorter periods, subject to a minimum 20 years of service periods (compulsory, voluntary, or credited contributions).

Social Assistance

The social-assistance safety-net level is €942 per month for a single person.

Personal Income Tax and Social Security Contributions

Pensioners receive a deduction for professional expenses of a minimum of €300 (compared with €540 for people of working age). Pensioners do not receive the travel expenses deduction (a minimum of €396 for workers) or the special deduction (€600 for workers).

There are no special tax reliefs for pension income. Pensioners pay 2.65 percent sickness contributions on their gross income plus about 1.00 percent for long-term care insurance. This compares with 4.95 percent sickness contributions for employees (and the same 1.00 percent for long-term care). Pensioners also contribute to the unemployment-insurance scheme through a 2.50 percent solidarity surcharge on their central government income tax liabilities. However, they do not contribute to the pension scheme.

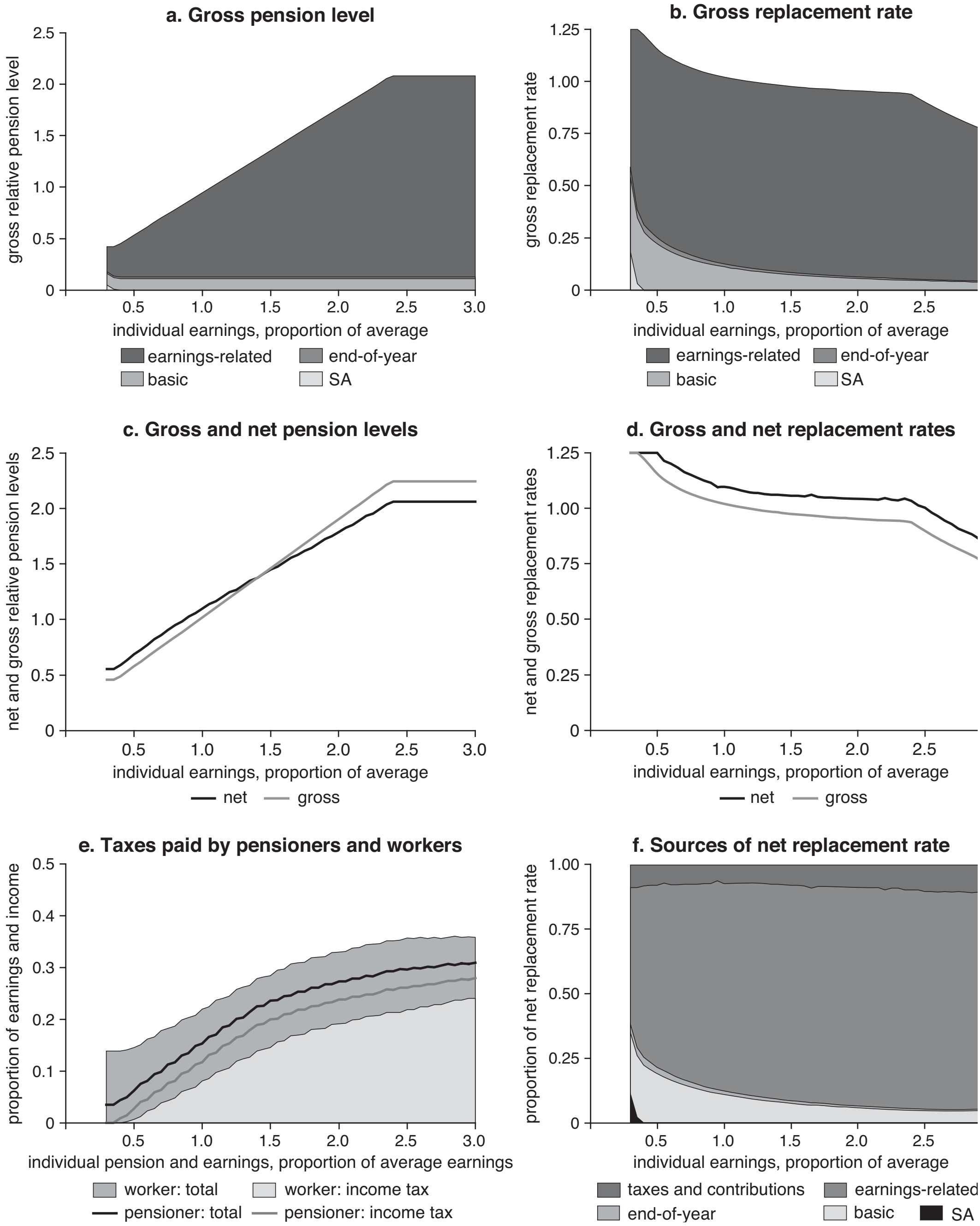
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	57.7	79.8	101.9	146.2	190.4	224.5
Net pension level (% of average net earnings)	68.6	90.4	109.8	145.2	178.8	205.9
Gross replacement rate (% of individual earnings)	115.5	106.5	101.9	97.4	95.2	89.8
Net replacement rate (% of individual net earnings)	125.0	115.0	109.8	105.6	104.2	100.1
Gross pension wealth	10.3	14.3	18.3	26.2	34.1	40.2
(multiple of average earnings)	*12.8*	*17.7*	*22.6*	*32.3*	*42.1*	*49.7*
Net pension wealth	12.3	16.2	19.7	26.0	32.0	36.9
(multiple of average net earnings)	*15.2*	*20.0*	*24.3*	*32.1*	*39.6*	*45.6*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Luxembourg



Source: OECD pension models.

The Netherlands

THE DUTCH PENSION SYSTEM HAS TWO MAIN TIERS, consisting of a flat-rate public scheme and earnings-related occupational plans. Although there is no statutory obligation for employers to offer a pension scheme to their employees, industrial relations agreements mean that 91 percent of employees are covered.

Qualifying Conditions

The basic pension is payable from age 65. Normal retirement age is also typically 65 in occupational plans.

Benefit Calculation

Basic

For a single person, the gross benefit in 2002 was €11,013 (just over a third of average earnings). Its value is uprated biannually in line with the net minimum wage. The social-assistance benefit for older people is equal to the net basic pension.

Quasi-mandatory Occupational

The Netherlands also has a private pension system with broad coverage. More than 90 percent of its members are covered by defined-benefit schemes. Of these, approximately two-thirds use an average salary measure of earnings in the benefit formula, while the rest use a final salary measure. There is no ceiling to pensionable earnings.

There is no statutory requirement for entry ages for occupational plans. In 2003, a little over half of the employees were in schemes with no entry age, 6 percent in schemes with an entry age of 16–20, 15 percent with 21–24, and 23 percent with entry age 25. Most final-salary schemes give 1.75 percent of those earnings for each year of service, implying a replacement rate of 70 percent after a complete 40-year career. Average-salary plans typically have an accrual rate of 2.25 percent for each year of service.

There are no legal requirements for valorization of earlier years' pay; thus, practice varies. Some schemes valorize with average earnings; others use the index for uprating pensions in payment. Since the latter is also typically average earnings, the modeling assumes an average-salary scheme with valorization to average earnings. Benefits in payment are typically indexed to earnings (more than half of the members are covered in such schemes), although there is no legal uprating requirement.

Occupational pensions are integrated with the public pension system. The current tax rules allow a maximum benefit of 100 percent of final pay at age 65 from both public and private systems. Most schemes have a target total replacement rate of 70 percent of final pay, so private benefits are reduced by an amount approximately equal to the value of the public pension entitlement, a process known as *franchising.*

Personal Income Tax and Social Security Contributions

The basic tax credit for over 65s is €737. This tax credit is increased by €289 for incomes less than €28,563. Single people with incomes below €28,563 receive an additional tax credit of €256. There are no special allowances for pension income.

Pensioners pay 11.5 percent of pension income for general health insurance and survivor's pensions. Depending on their income, they pay for their own health insurance. The social security contributions are less than the contributions for employees (who also pay for old-age pensions, unemployment, and so on).

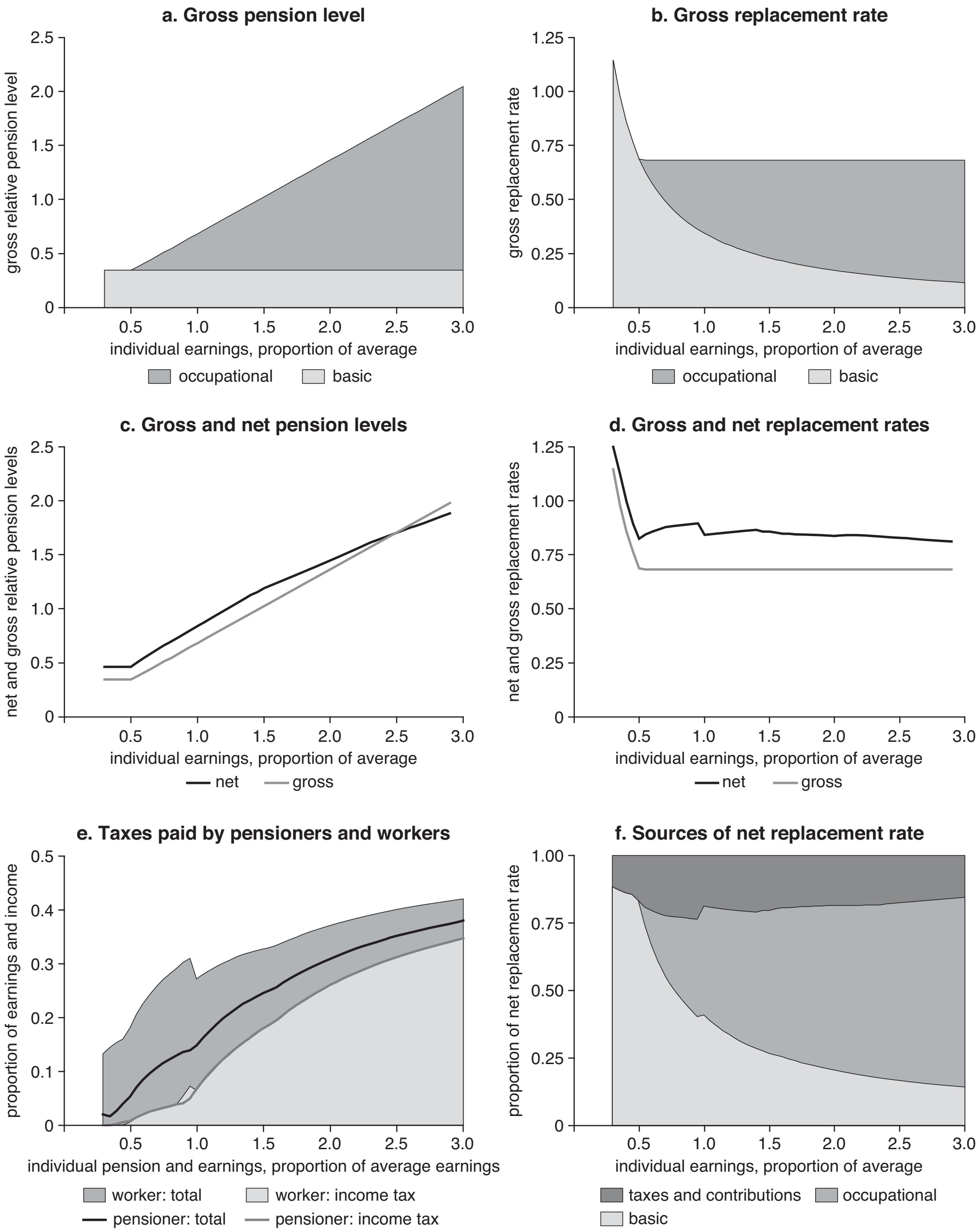
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	34.3	51.2	68.3	102.4	136.5	170.6
Net pension level (% of average net earnings)	46.4	66.3	84.1	118.8	144.7	170.3
Gross replacement rate (% of individual earnings)	68.7	68.3	68.3	68.3	68.3	68.3
Net replacement rate (% of individual net earnings)	82.5	88.2	84.1	85.8	83.8	82.8
Gross pension wealth	5.2	7.7	10.3	15.5	20.6	25.8
(multiple of average earnings)	*5.9*	*8.9*	*11.8*	*17.7*	*23.6*	*29.5*
Net pension wealth	7.0	10.0	12.7	18.0	21.9	25.7
(multiple of average net earnings)	*8.0*	*11.5*	*14.6*	*20.6*	*25.1*	*29.5*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Netherlands



Source: OECD pension models.

New Zealand

The public pension in New Zealand is a flat rate, subject to a residency test.

Qualifying Conditions

Ten years' residency since the age of 20 (including five years' after age 50) entitles people to the public pension at 65 years of age.

Benefit Calculation

Basic

The pension in 2002 for a single person living alone was NZ$ 288 gross per week, which is approximately 38 percent of average earnings. The value is a little lower for people sharing accommodation. It is NZ$ 437 gross per week for married pensioner couples, equivalent to 58 percent of average earnings.

The rates of public pensions are linked by law to average earnings, with the net couple rate being set between 65.0 and 72.5 percent of the net average wage, depending on movements in prices. The rates for single people are set at 65.0 percent (living alone) and 60.0 percent (sharing) of the couple rate.

Personal Income Tax and Social Security Contributions

New Zealand does not provide any tax concessions specifically for older people.

The public pension is subject to personal income tax (in the same manner as any other personal income). Note that the calculations for the worker tax differ slightly from those reported in the OECD's *Taxing Wages* (OECD 2003). For workers, these include the 1.2 percent accident compensation corporation levy, which is not paid by pensioners. Thus, people of working age pay a slightly higher average effective tax rate than do pensioners.

The New Zealand system is funded through general taxation and not specific social security contributions.

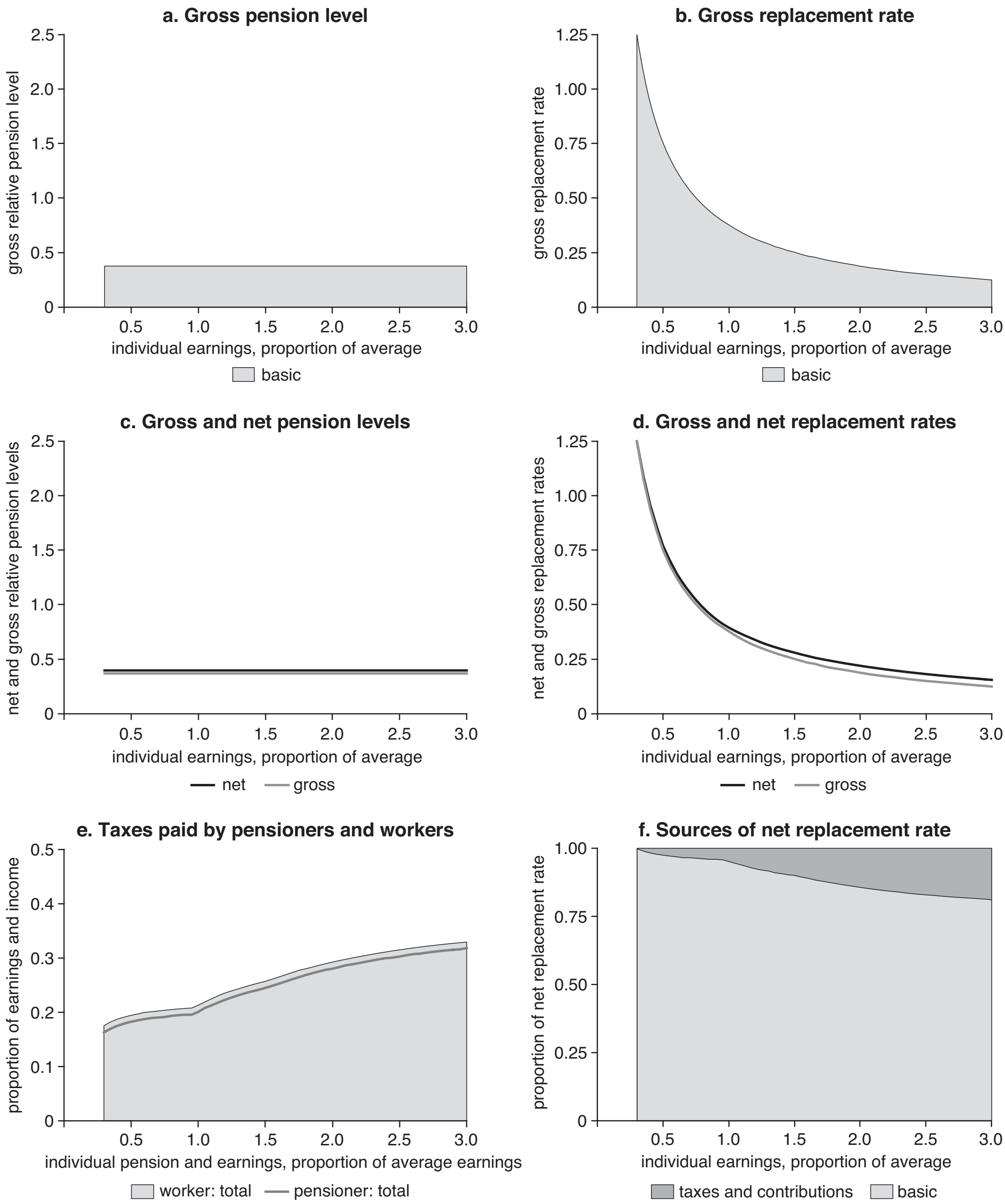
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	37.6	37.6	37.6	37.6	37.6	37.6
Net pension level (% of average net earnings)	39.5	39.5	39.5	39.5	39.5	39.5
Gross replacement rate (% of individual earnings)	75.1	50.1	37.6	25.0	18.8	15.0
Net replacement rate (% of individual net earnings)	77.1	52.0	39.5	27.9	22.0	18.1
Gross pension wealth (multiple of average earnings)	5.7 *6.5*	5.7 *6.5*	5.7 *6.5*	5.7 *6.5*	5.7 *6.5*	5.7 *6.5*
Net pension wealth (multiple of average net earnings)	6.0 *6.9*	6.0 *6.9*	6.0 *6.9*	6.0 *6.9*	6.0 *6.9*	6.0 *6.9*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

New Zealand



Source: OECD pension models.

Norway

The public pension system in Norway consists of a flat-rate, basic pension and an earnings-related scheme. People with small earnings-related pensions receive an income-tested supplement.

Qualifying Conditions

The normal pension age is 67. Forty years' insurance is required to receive the full pension, both basic and earnings-related benefits. Both benefits are proportionally reduced for shorter insurance histories. A minimum of three years of contributions is required to receive an earnings-related pension.

Benefit Calculation

Basic

Benefits are determined in relation to a basic amount, *G*, that was NOK 53,233 (on average) in 2002. The full basic pension for a single pensioner equals the basic amount (approximately 18 percent of average earnings). There is no formal indexation procedure for the value of the basic amount or pension. Although past increases were below earnings growth, in recent years the government has agreed to increase the basic pension in line with average earnings. The modeling assumes that this continues.

Earnings-Related

Since the basic pension replaces the first slice of earnings, the earnings-related scheme covers pay only above the basic amount. The earnings-related scheme has a progressive formula: the replacement rate falls for higher earnings. Annual earnings between 2.89 and 6.00 times the basic amount are replaced at a 42 percent rate. From 6.00 to 12.00 times the basic amount, the replacement rate is one-third of that level (that is, 14 percent). Given that 40 years' contributions are needed for a full pension, these are equivalent to annual accrual rates of 1.05 and 0.35 percent, respectively. The first threshold, where the accrual rate declines, is a little over average earnings (109 percent). The ceiling on earnings eligible for benefits is therefore a little over double average earnings (219 percent). The calculation of the pension uses the best 20 years of earnings. It is specified as a points system.

Targeted

The special supplement is 79.33 percent of the basic amount, giving a total minimum pension for a single pensioner of 1.7933 times the basic amount, NOK 95,463, which is equivalent to approximately a third of average earnings.

Personal Income Tax and Social Security Contributions

The age deduction provided an additional allowance of NOK 18,360 in 2002. There is also a separate tax-limitation rule for pensioners. Approximately half the people receiving benefits or pensions either pay no tax or do so under the limitation rule. The additional allowance cannot be used along with the tax-limitation rule. As a result of the tax-limitation rule, pensions below NOK 105,325 in 2002 are not subject to income tax or social security contributions.

Pension income is liable for social security contribution at a lower rate (3.0 percent) than employees' wage earnings (7.8 percent). The social security contribution is not a part of the tax-limitation rule.

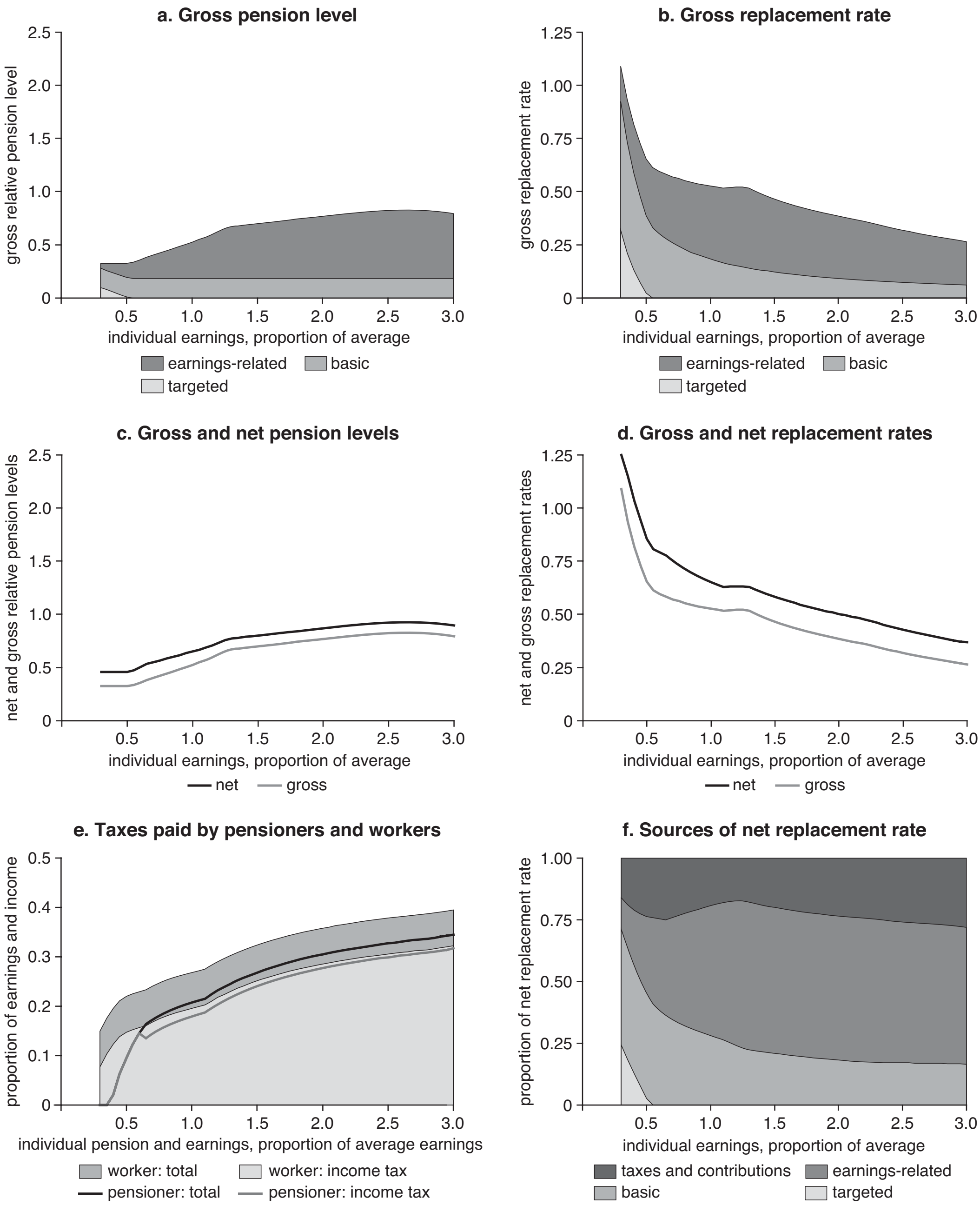
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	32.7	42.1	52.6	69.8	76.8	79.4
Net pension level (% of average net earnings)	45.9	56.6	65.1	80.0	86.8	89.3
Gross replacement rate (% of individual earnings)	65.3	56.1	52.6	46.5	38.4	31.8
Net replacement rate (% of individual net earnings)	85.5	73.1	65.1	58.2	50.1	42.8
Gross pension wealth	5.3	6.7	8.2	10.7	11.7	12.1
(multiple of average earnings)	*6.2*	*7.7*	*9.5*	*12.4*	*13.5*	*14.0*
Net pension wealth	7.4	9.0	10.1	12.2	13.2	13.6
(multiple of average net earnings)	*8.7*	*10.4*	*11.7*	*14.2*	*15.3*	*15.7*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Norway



Source: OECD pension models.

Portugal

PORTUGAL HAS AN EARNINGS-RELATED PUBLIC pension scheme with a means-tested safety net.

Qualifying Conditions

The standard pension age is 65 although early retirement is possible from age 55. A minimum of 15 years of contributions is also required for retirement at 65. Early retirement is possible with 30 years of contributions.

Benefit Calculation

Earnings-Related

The pension accrues at 2 percent of the earnings base for each year of contributions for 20 or fewer years' contributions. For beneficiaries with 21 or more years of contributions, the accrual rate ranges between 2.0 and 2.3 percent, depending on earnings. The schedule for the accrual rate depends on individual earnings relative to the value of the national minimum wage.

Earnings/minimum wage	< 1.1	1.1	2.0	4.0	8.0
Accrual rate (%)	2.3	2.25	2.2	2.1	2.0

Pension accrues for a maximum of 40 years. The earnings measure is presently the best 10 of the final 15 years. However, this base is currently being extended so that it will reach lifetime-average earnings from 2017. Valorization of earnings from the beginning of 2002 is a mix of earnings and prices. The weights are 75 percent price inflation and 25 percent earnings growth, subject to a maximum real increase of 0.5 percent. Pensions in payment are indexed to prices.

Minimum

There is a minimum pension of €190 (for workers with up to 15 years of contributions). For workers with 15 to 40 years, the amount of the minimum pension varies between 65 and 100 percent of the minimum wage, net of employees' social contributions. For 2002, the minimum pension was between €201 and €310. There are 14 "monthly" payments a year (including two bonuses).

Targeted

For people who do not qualify for the earnings-related scheme, the social pension was €138 per month in 2002. This is only paid if total income for a single person does not exceed 30 percent of the minimum wage. The social pension is payable from age 65. Although there is no formal indexation procedure for the social pension, increases have usually been above inflation. The government has a target for the social pension of half the minimum wage, net of employees' social security contributions, which it expects to achieve gradually. Again, there are 14 "monthly" payments.

Personal Income Tax and Social Security Contributions

There are no special reliefs beyond the general allowance for all taxpayers. However, there is an additional allowance for disabled people. There are no special reliefs for pension income. Pensions are exempt from social contributions.

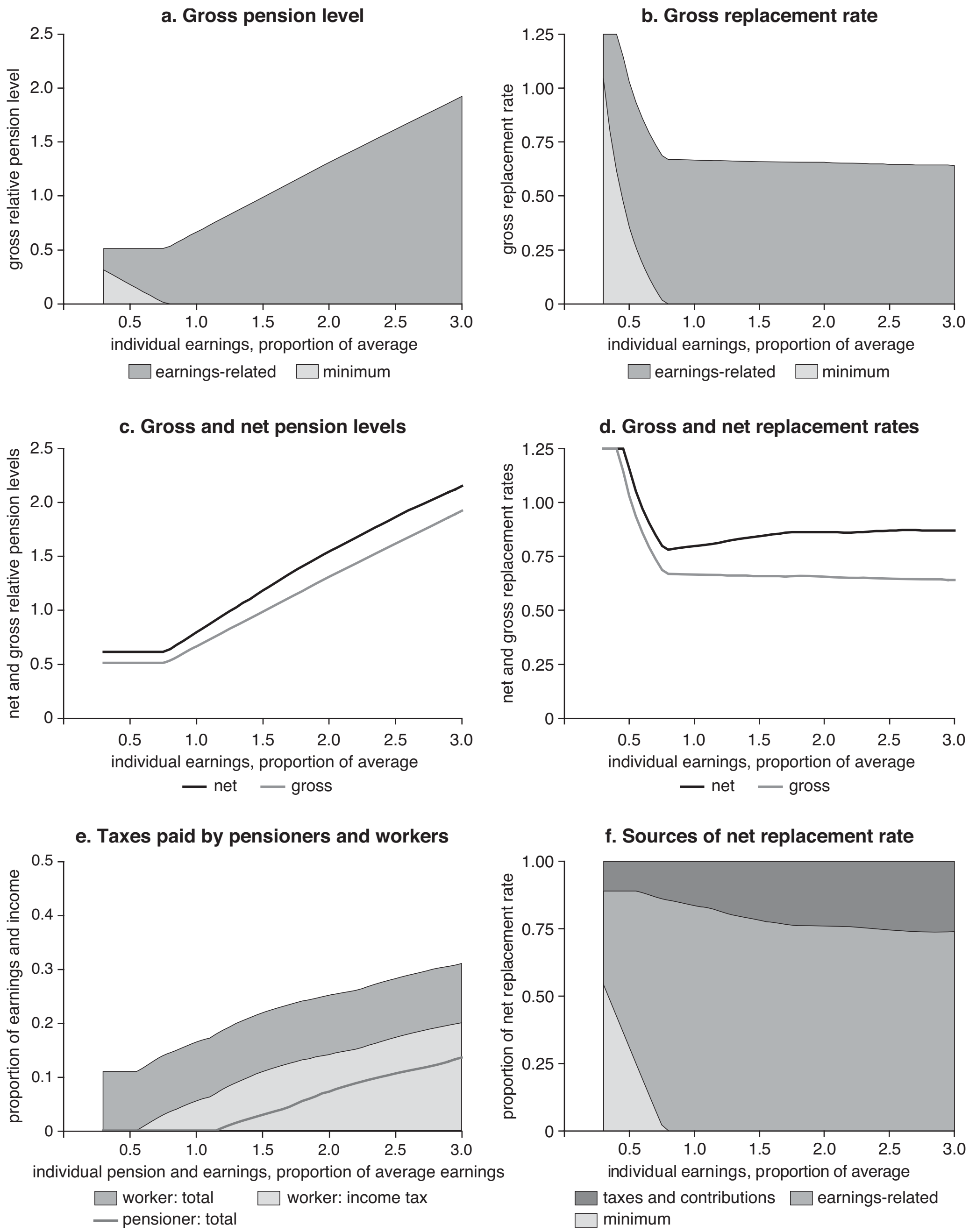
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	51.6	51.6	66.7	98.9	131.1	161.8
Net pension level (% of average net earnings)	61.7	61.7	79.8	118.4	154.5	186.4
Gross replacement rate (% of individual earnings)	103.1	68.8	66.7	65.9	65.5	64.7
Net replacement rate (% of individual net earnings)	115.9	79.8	79.8	84.4	86.3	86.9
Gross pension wealth (multiple of average earnings)	7.9 *9.2*	7.9 *9.2*	10.2 *12.0*	15.1 *17.7*	20.0 *23.5*	24.7 *29.0*
Net pension wealth (multiple of average net earnings)	9.4 *11.1*	9.4 *11.1*	12.2 *14.3*	18.1 *21.2*	23.6 *27.7*	28.5 *33.4*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Portugal



Source: OECD pension models.

Spain

THE SPANISH PUBLIC PENSION SYSTEM CONSISTS OF A SINGLE, earnings-related benefit. There is also a means-tested minimum pension, which replaces the previous special social-assistance scheme.

Qualifying Conditions

The retirement age for a full benefit is 65 years for men and women. Fifteen years of contributions are necessary to qualify for a pension benefit.

Benefit Calculation

Earnings-Related

The benefit accrues according to a schedule. After 15 years' contributions, it is 50 percent of the earnings base. Over the next 10 years, an extra 3 percent is accrued per year, followed by 2 percent per year thereafter. The maximum accrual is 100 percent, reached after 35 years' contributions.

The earnings base equals pay over the last 15 years that is uprated in line with prices. However, there is no adjustment for price inflation in the last two years before retirement. This means that the replacement rate relative to final salary is less than 100 percent. On the standard assumptions for earnings growth and price inflation, the replacement rate is calculated to be 88 percent. There is a ceiling on earnings for contributions and benefit purposes of €30,899, or 191 percent of average earnings.

Benefits are price indexed.

Minimum

There is a minimum pension payable from age 65 amounting to €393 per month. There are 14 payments per year.

Personal Income Tax and Social Security Contributions

There are no special rules for the taxation of pensioners. There are no special allowances for pension income. Social security contributions are not levied on pension income.

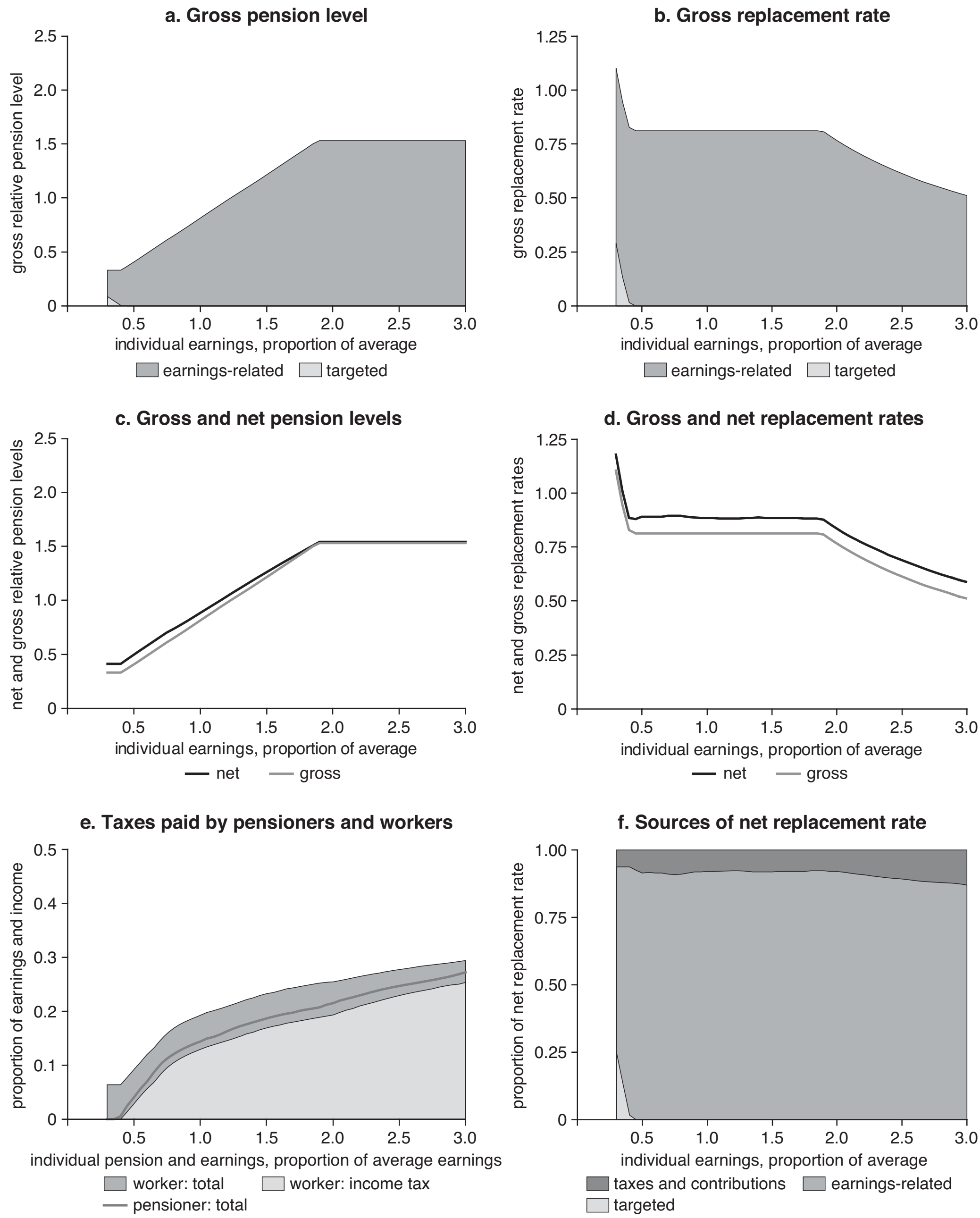
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	40.6	60.9	81.2	121.8	153.3	153.3
Net pension level (% of average net earnings)	49.9	69.9	88.3	126.0	154.1	154.1
Gross replacement rate (% of individual earnings)	81.2	81.2	81.2	81.2	76.7	61.3
Net replacement rate (% of individual net earnings)	88.7	89.4	88.3	88.4	83.4	68.8
Gross pension wealth	6.1	9.1	12.2	18.3	23.0	23.0
(multiple of average earnings)	*7.1*	*10.7*	*14.3*	*21.4*	*26.9*	*26.9*
Net pension wealth	7.5	10.5	13.2	18.9	23.1	23.1
(multiple of average net earnings)	*8.8*	*12.3*	*15.5*	*22.1*	*27.1*	*27.1*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Spain



Source: OECD pension models.

Sweden

THE EARNINGS-RELATED PART OF THE NEW PENSION SYSTEM IS BASED ON NOTIONAL ACCOUNTS. There is a small mandatory contribution to defined-contribution pensions and an income-tested top-up. Occupational pension plans—with defined-benefit and defined-contribution elements—have broad coverage.

Qualifying Conditions

Eligibility for the *guarantee pension* is earned with three years' residency. The maximum pension requires 40 years' residency and is reduced proportionally for shorter periods. The standard pension age for occupational plans is 65 with an early pension age of 55 and an entry age of 28. The earnings-related, public pension may be claimed from age 61.

Benefit Calculation

Earnings-Related

Contributions to notional accounts are 16 percent of pensionable pay and are uprated in line with a three-year moving average of economywide earnings. Pensionable pay is earnings net of employee contributions (7 percent), giving an effective contribution rate on gross earnings of 14.88 percent. Contributions were levied when earnings exceeded a floor of SEK 11,310 in 2002 (less than 5 percent of average earnings). There was a ceiling on pensionable earnings of SEK 291,000 in 2002. At retirement, notional capital is converted to an annuity using a coefficient dependent on retirement age and life expectancy (from the previous five years' unisex mortality table). A discount rate of 1.6 percent a year is assumed. After retirement, pensions are normally uprated with average earnings less 1.6 percent.

Targeted

The guarantee pension is an income-tested top-up with a full benefit in 2002 of SEK 80,727 (approximately a third of average earnings). It is withdrawn at 100 percent against the first SEK 47,754 (2002) of income from the earnings-related pension, and thereafter at 48 percent. This threshold is equivalent to 20 percent of average earnings. The guarantee level is price indexed.

Defined Contribution

A further 2.5 percent of pensionable income (effectively 2.325 percent of gross earnings) is paid into personal pension accounts.

Quasi-mandatory Occupational

The modeling uses the *industrins och handelns tilläggspension* (ITP), white-collar workers' scheme. Its defined benefit is 10 percent of final salary on earnings up to a ceiling of 7.5 times the base amount—SEK 291,000 in 2002. Between this threshold and 3.1 times average earnings, the replacement rate is 65.0 percent, and from 3.1 to 4.6 times average earnings, 32.5 percent. A full pension requires 30 years' contributions. Shorter tenures deliver a proportionally reduced benefit. Indexation of pensions in payment is discretionary, but recent increases have been broadly in line with prices. The ITP also has a defined-contribution component, with a contribution of 2 percent of gross earnings.

Personal Income Tax and Social Security Contributions

Tax concessions for pensioners were abolished in 2003 as part of the policy package that included the introduction of the guarantee pension. There are no allowances for pension income. Social security contributions are not levied on pension income.

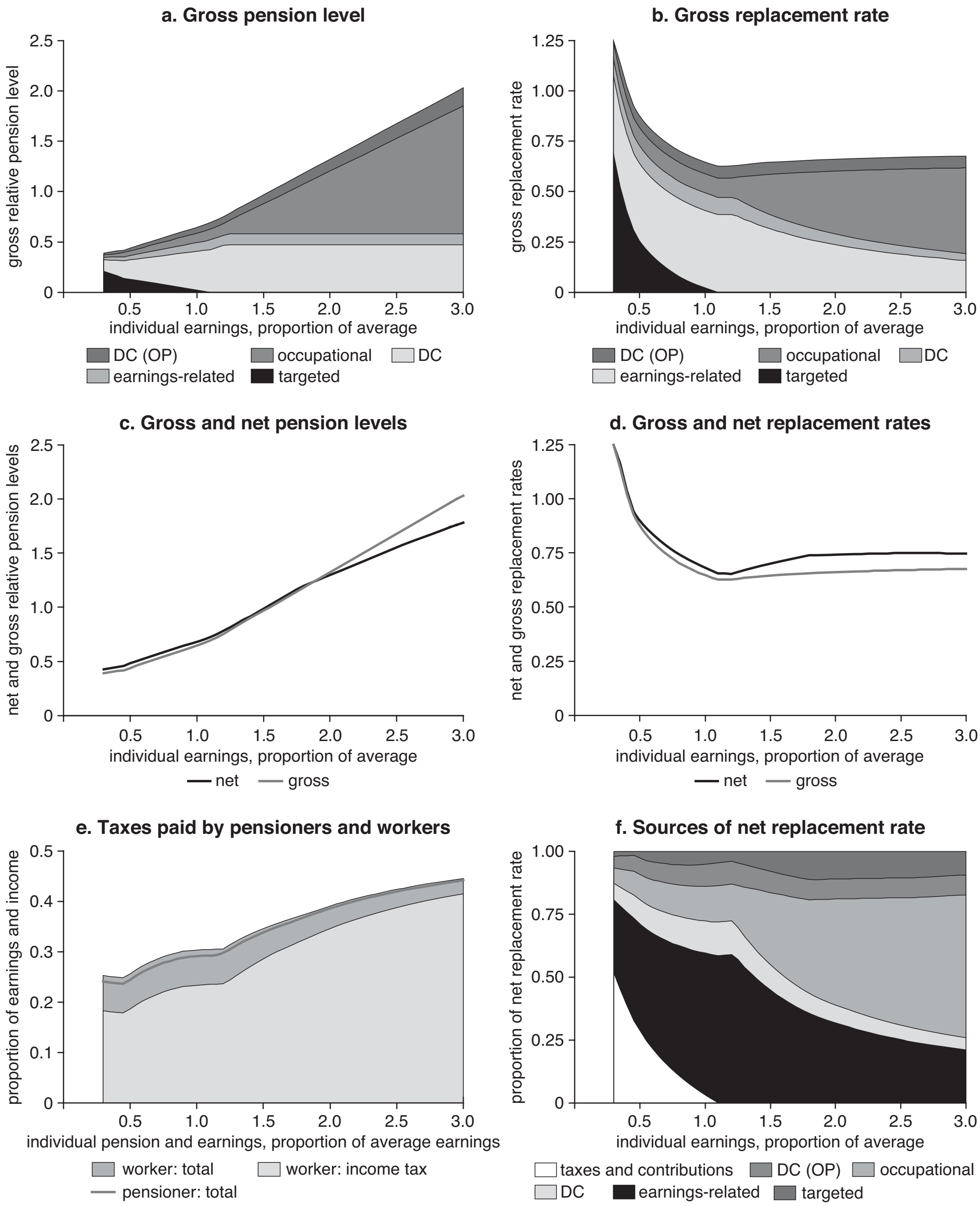
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	43.9	54.4	64.8	96.9	132.4	167.8
Net pension level (% of average net earnings)	48.1	58.4	68.2	98.7	129.9	155.1
Gross replacement rate (% of individual earnings)	87.8	72.5	64.8	64.6	66.2	67.1
Net replacement rate (% of individual net earnings)	90.2	76.4	68.2	70.1	74.3	75.0
Gross pension wealth	7.0	8.7	10.4	15.5	21.0	26.6
(multiple of average earnings)	*7.8*	*9.6*	*11.4*	*16.7*	*23.0*	*29.3*
Net pension wealth	7.7	9.3	10.9	15.8	20.6	24.5
(multiple of average net earnings)	*8.6*	*10.4*	*12.1*	*17.0*	*22.8*	*27.3*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Sweden



Source: OECD pension models.

Note: OP = occupational plan.

Switzerland

THE SWISS PENSION SYSTEM HAS THREE MAIN PARTS. The public scheme is earnings related with a progressive formula. There are also mandatory occupational pensions and an income-tested supplementary benefit.

Qualifying Conditions

Pensionable age under the public scheme and mandatory occupational pensions is currently 65 for men and 63 for women, although the latter will increase to 64 by 2005.

Benefit Calculation

Earnings-Related

The public pension is based on average lifetime earnings. If these are less than CHF 37,080, then the benefit is CHF 9,146 plus 26 percent of average lifetime earnings. Above the threshold, the entitlement is CHF 12,854 plus 16 percent of average lifetime earnings. There is a minimum pension of CHF 12,360 and a maximum pension of twice that level (20 and 40 percent of average earnings, respectively). Pensions in payment are indexed 50 percent to prices and 50 percent to nominal earnings.

Mandatory Occupational

The system of mandatory occupational pensions was introduced in 1985. It is built around defined credits to an individual's pension account. These vary by sex and age:

Men (age)	25–34	35–44	45–54	55–64
Women (age)	25–31	32–41	42–51	52–63
Credit (% of coordinated earnings)	7	10	15	18

Earlier years' contributions must receive a minimum interest rate, which was cut from 4.00 to 3.25 percent from 2003, with further reductions planned. The modeling assumes that the interest rate will be the same as earnings growth over the long term. This gives a man with a full career a total credit of 500 percent of earnings at age 65. The minimum annuity rate of 7.2 percent implies a full-career replacement rate of (500 × 7.2% =) 36 percent. The defined credits apply only to coordinated earnings: between the maximum pension of the public scheme (CHF 24,720) and three times that level (CHF 74,160), equal to 38 and 115 percent of average earnings, respectively.

Targeted

The supplementary benefit scheme targets a minimum income for single people of CHF 16,880 (26 percent of average earnings). The supplementary benefit is indexed in the same way as the public old-age pensions to a mixed index of 50 percent prices and 50 percent wages. There are discretionary cantonal additions for low-income pensioners; these are disregarded in the model.

Personal Income Tax and Social Security Contributions

Swiss cantons often grant pensioners an additional allowance, but there is no extra allowance in the federal income tax. The modeling assumes a resident of the city of Zurich in the canton of Zurich. There are no special allowances for pension income. Social security contributions are not levied on pension income.

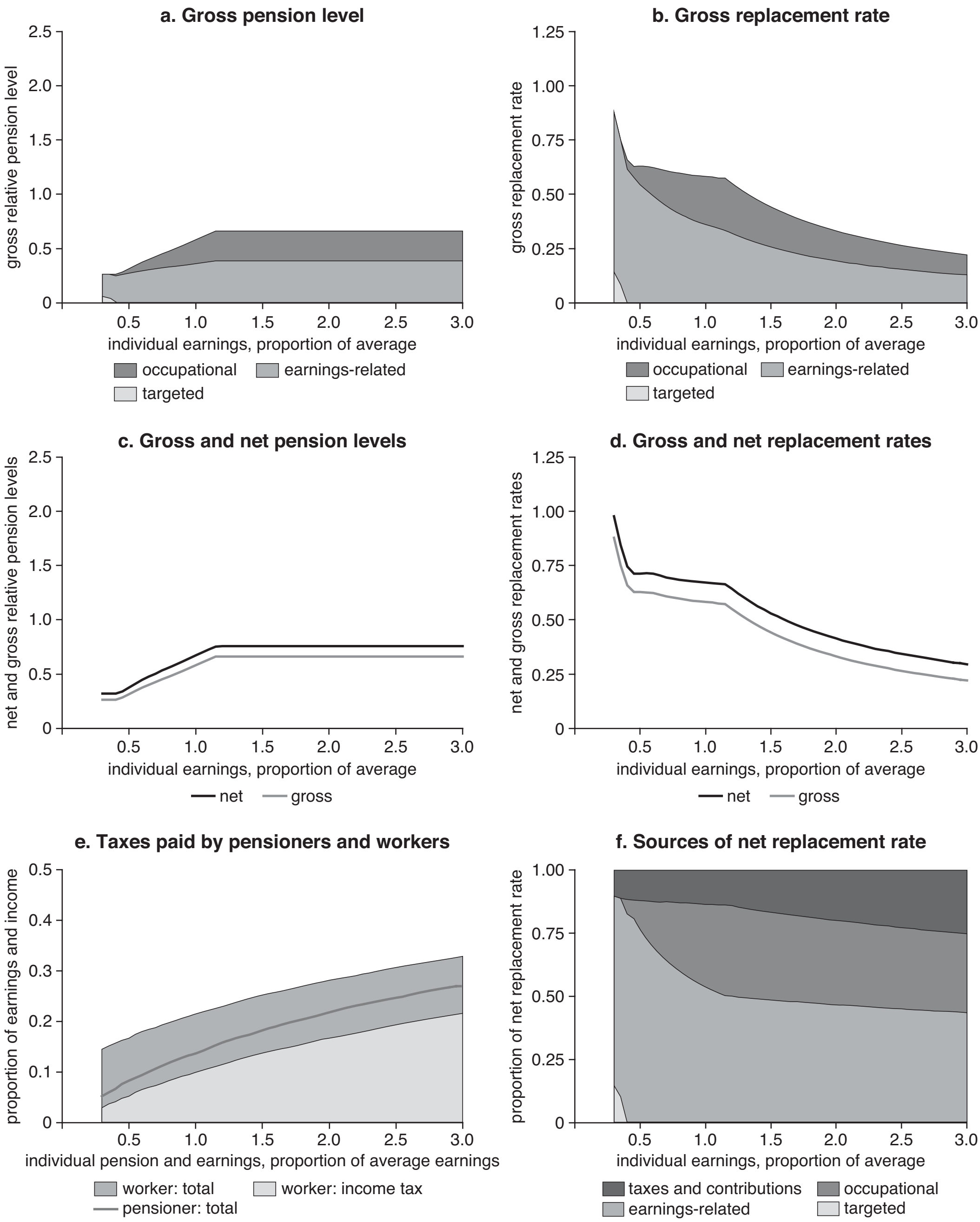
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	31.4	45.2	58.2	66.3	66.3	66.3
(% of average earnings)	*31.5*	*45.6*	*58.8*	*67.1*	*67.1*	*67.1*
Net pension level	37.8	53.1	67.3	75.7	75.7	75.7
(% of average net earnings)	*38.0*	*53.6*	*68.0*	*76.6*	*76.6*	*76.6*
Gross replacement rate	62.8	60.2	58.2	44.2	33.1	26.5
(% of individual earnings)	*63.0*	*60.7*	*58.8*	*44.7*	*33.5*	*26.8*
Net replacement rate	71.4	68.9	67.3	53.0	41.4	34.3
(% of individual net earnings)	*71.6*	*69.5*	*68.0*	*53.6*	*41.8*	*34.7*
Gross pension wealth	5.5	7.9	10.1	11.5	11.5	11.5
(multiple of average earnings)	*6.7*	*9.7*	*12.5*	*14.2*	*14.2*	*14.2*
Net pension wealth	6.6	9.3	11.7	13.2	13.2	13.2
(multiple of average net earnings)	*8.1*	*11.4*	*14.4*	*16.3*	*16.3*	*16.3*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Switzerland



Source: OECD pension models.

The United Kingdom

The U.K. public scheme has two tiers, a flat-rate basic pension and an earnings-related additional pension, which are complemented by a large voluntary private pension sector. A new income-related benefit (pension credit) has recently been introduced to target extra spending on the poorest pensioners.

Qualifying Conditions

Pension age, currently 65 for men and 60 for women, will be equalized at 65 from 2010. The eligibility age for the minimum income guarantee (Mig) or pension credit is 60, and will increase in line with women's pension age. The new savings credit is available only from age 65 for both men and women. To qualify for the basic state pension, people need to pay social security contributions or have credits for approximately nine-tenths of their potential working lives (44 years). A proportionally reduced pension is available for people who do not meet the full condition, but only to a minimum of 25 percent (11 years).

Benefit Calculation

Basic

The full basic state pension for a single person was £3,896 for the calendar year 2002.

Earnings-Related

The state second pension (S2P) has a progressive schedule. For earnings between the lower-earnings limit (£3,910 per year in 2002/03) and the first threshold (£10,800), the replacement rate is 40 percent of the difference, regardless of earnings. Over the next range, the replacement rate is 10 percent, ending at £24,650. Between this threshold and the ceiling, the replacement rate is 20 percent. The ceiling was £30,505 in 2002/03. The benefit value is calculated on average lifetime salary, with earlier years' pay uprated with average economywide earnings. The benefit is then price indexed after retirement.

Targeted

The minimum income guarantee is, from 2003/04, converted into a pension credit. For consistency, the pension credit has been modeled using 2002 calendar year parameters. The target annual income level was £5,041. The pension credit includes a new savings credit on top of the guarantee credit that replaces Mig. This reduces the withdrawal of benefits from 100 percent under the Mig to 40 percent. Individuals whose income (apart from the pension credit) is less than the target minimum but more than a "starting point" receive a top-up. The starting point is equal to the full value of the basic pension. The top-up is 60 percent of income above the starting point. For people with incomes above the target minimum income, the benefit is reduced by 40 percent of the amount of the excess. The maximum credit for 2004/05 is therefore (£105 − £80) × 60 percent = £15 per week.

Personal Income Tax and Social Security Contributions

A single person under 65 had an income tax allowance of £4,615 per year in 2002/03, compared with £6,100 for ages 65–74 and £6,370 for ages 75 or over. Once a pensioner's total income exceeds £17,900, the additional allowances are withdrawn at 50 percent of the excess, so that high-income pensioners have the same tax allowances as people of working age. No special reliefs are available for pension income. Social security contributions are not levied on the income of those over state pension age.

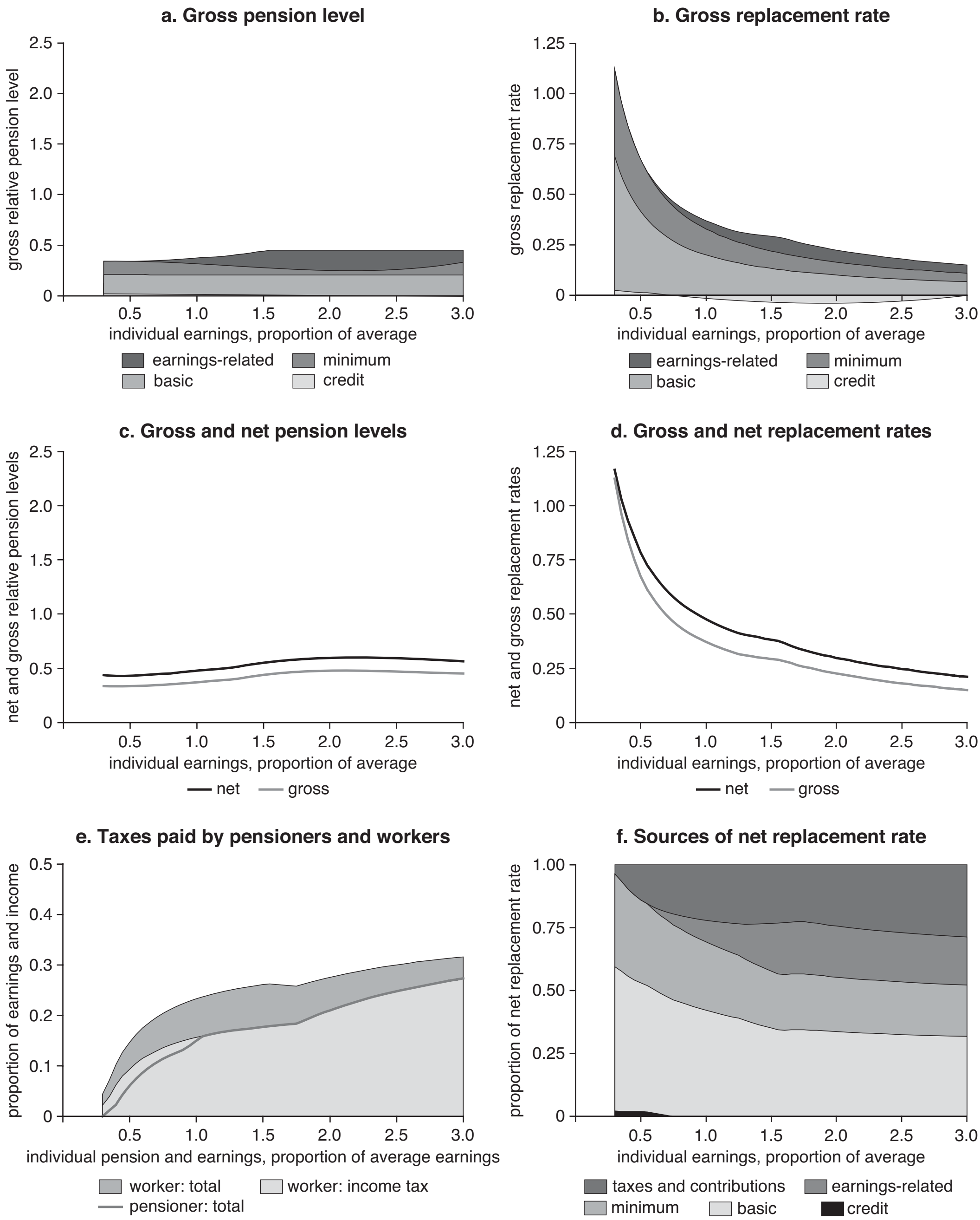
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	33.7	34.8	37.1	43.9	45.1	45.1
Net pension level (% of average net earnings)	43.6	44.9	47.6	55.1	56.3	56.3
Gross replacement rate (% of individual earnings)	67.4	46.4	37.1	29.3	22.5	18.0
Net replacement rate (% of individual net earnings)	78.4	57.7	47.6	38.2	29.8	24.7
Gross pension wealth	5.0	5.2	5.5	6.6	6.7	6.7
(multiple of average earnings)	*5.8*	*6.0*	*6.4*	*7.5*	*7.7*	*7.7*
Net pension wealth	6.5	6.7	7.1	8.2	8.4	8.4
(multiple of average net earnings)	*7.5*	*7.7*	*8.2*	*9.4*	*9.6*	*9.6*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

The United Kingdom



Source: OECD pension models.

The United States

The publicly provided pension benefit in the United States, known as *social security*, has a progressive benefit formula. There is also a means-tested top-up payment available for low-income pensioners.

Qualifying Conditions

The current normal retirement age is between 65 and 66, increasing to 67 in steps. Eligibility depends on the number of years of contributions, with a minimum requirement of 10 years. Early retirement is possible from age 62 with lower benefits.

Benefit Calculation

Earnings-Related

The benefit formula is progressive. The first US$ 592 a month of relevant earnings attracts a 90 percent replacement rate. Earnings between US$ 592 and US$ 3,567 a month (22 and 133 percent of average earnings, respectively) are replaced at 32 percent. A replacement rate of 15 percent applies between the latter threshold and the ceiling. Earlier years' earnings are revalued to age 60 with growth in average earnings. There is no adjustment between ages 60 and 62. Thereafter, previous earnings are revalued with prices to age 67. The benefit is based on the 35 highest years' earnings. The ceiling for contributions and benefits is US$ 84,900 a year—2.5 times average earnings—uprated annually in line with earnings growth. Pensions in payment are price indexed.

Targeted

Single people over the age of 65 are eligible for up to US$ 6,540 a year of supplemental security income (approximately 20 percent of average earnings), depending on assets and other income. This benefit is indexed to prices. There is a small (US$ 20 a month) disregard. The benefit is then withdrawn at a 100 percent rate against income above this level. States often supplement the federally determined minimum: 28 administer their own system and 12 offer supplements operated by the federal administration. The average additional payment in these 12 states is 13 percent for single pensioners and 18 percent for couples.

Personal Income Tax and Social Security Contributions

Older people are entitled to an additional deduction in the federal income tax. For single people of working age, the deduction is US$ 4,700 compared with US$ 5,850 for over 65s. There is also a tax credit for poorer pensioners. The maximum credit is US$ 1,125 for a single individual. This is withdrawn against income and is exhausted once total income exceeds US$ 17,500, or nontaxable public pension benefits exceed US$ 5,000. Up to one-half of social security (public pension) benefits is taxable if income, including one-half of the pension, exceeds US$ 25,000. This proportion can increase to a maximum of 85 percent for higher-income pensioners if half of social security benefits plus other income exceeds US$ 34,000. Social security contributions are not levied on pension income.

Following the OECD standard methodology, the modeling looks at a person living in Detroit, Michigan. The state income tax system for Michigan gives an extra tax-free allowance of US$ 900 for single people over age 65. Public pensions are entirely exempt from the Michigan state income tax, as is the first US$ 33,810 of income from a private pension. All income from pensions (public and private) is exempt from the Detroit income tax.

No social security contributions are levied on pension income.

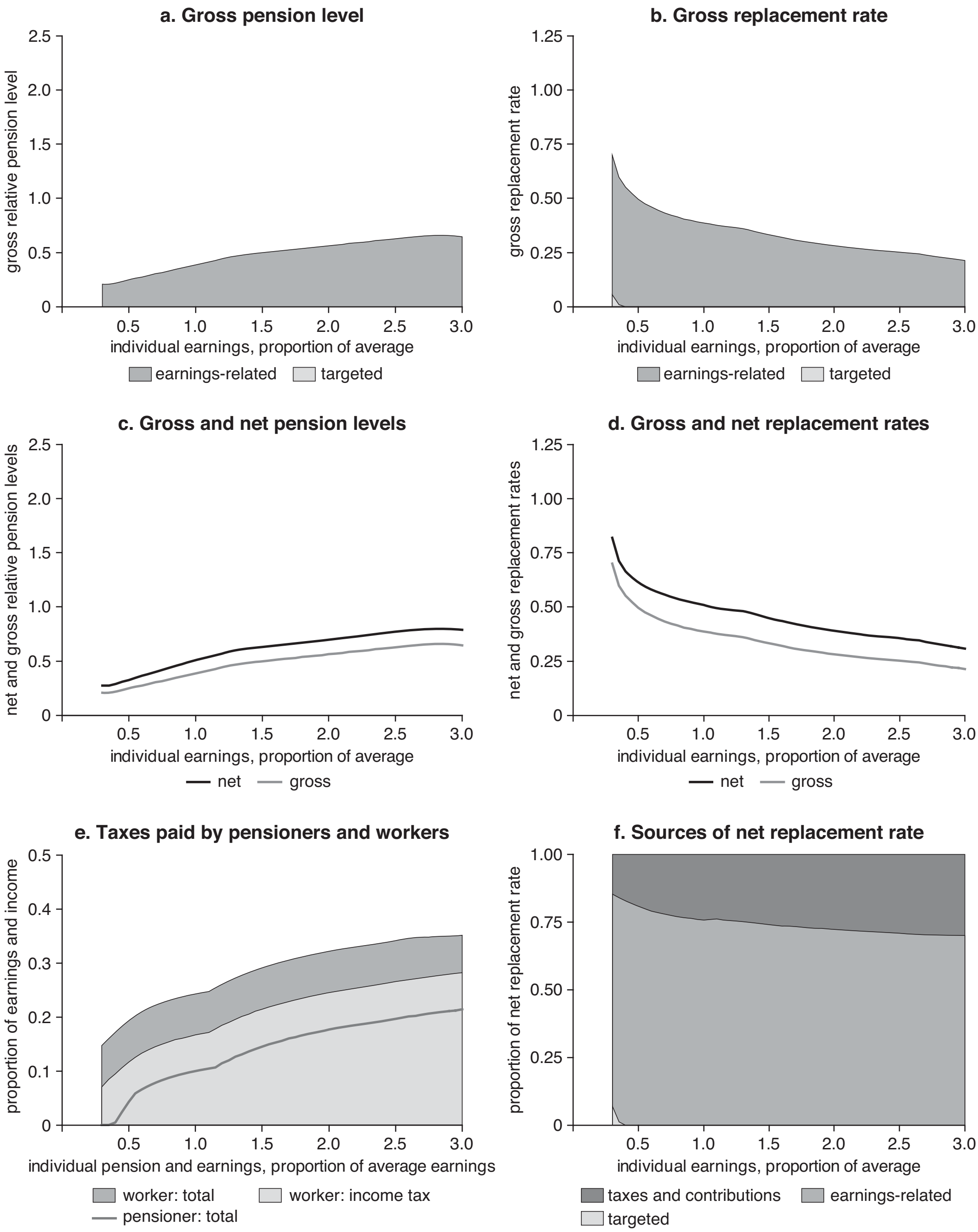
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	24.8	31.7	38.6	49.8	56.3	62.7
Net pension level (% of average net earnings)	32.7	41.9	51.0	63.0	69.8	77.1
Gross replacement rate (% of individual earnings)	49.6	42.3	38.6	33.2	28.1	25.1
Net replacement rate (% of individual net earnings)	61.4	54.6	51.0	44.9	39.0	35.5
Gross pension wealth	3.5	4.5	5.5	7.1	8.0	8.9
(multiple of average earnings)	*4.1*	*5.3*	*6.4*	*8.3*	*9.3*	*10.4*
Net pension wealth	4.7	6.0	7.3	9.0	9.9	11.0

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

The United States



Source: OECD pension models.

11. Eastern Europe and Central Asia

Bulgaria

THE NEW BULGARIAN SYSTEM COMBINES AN EARNINGS-RELATED public scheme with mandatory contributions to individual accounts.

Qualifying Conditions

The pension age is currently being increased gradually and will reach 63 for men and 60 for women from 2009. A pension also requires qualification points, which are the sum of age and years of service. These need to be 100 for men and 90 for women, which is equivalent to 37 years' coverage for men and 30 for women.

Benefit Calculation

Earnings-Related

The earnings-related scheme pays 1 percent of earnings for each year of service. There is a maximum benefit of four times the social pension.

Minimum

The minimum pension is 115 percent of the social pension. The social pension is Lev 44 per month.

Defined Contribution

Some 2 percent of earnings are diverted to the individual account. Accumulated capital is converted to an income stream by the pension fund, and no annuity is bought. The actuarial calculations are set by the state insurance supervisory agency. For comparison with other countries, the modeling assumes that this calculation is actuarially fair, based on the standard discount rate and price uprating of the benefit.

Personal Income Tax and Social Security Contributions

Employer and employee contributions to the mandatory pension system are deductible under the personal income tax. Investment returns are not taxed (although this provision might be subject to amendment). Benefit payments from both the pay-as-you-go and mandatory private pension funds are not taxed. The only exception is payments of capital to dependents of deceased members, which are subject to inheritance tax. The tax schedule follows:

Band lower limit (Lev)	0	1,320	1,680	4,800	12,000
Rate (%)	0	18	24	28	29

Total social security contributions are 22.25 percent for employees and 8.75 percent for employers. Of the total, 0.5 percentage points of employee and 1.5 percentage points of employer contributions are diverted to the funded account. There is a ceiling on contributions of Lev 1,000 per month. Pensioners do not pay social security contributions.

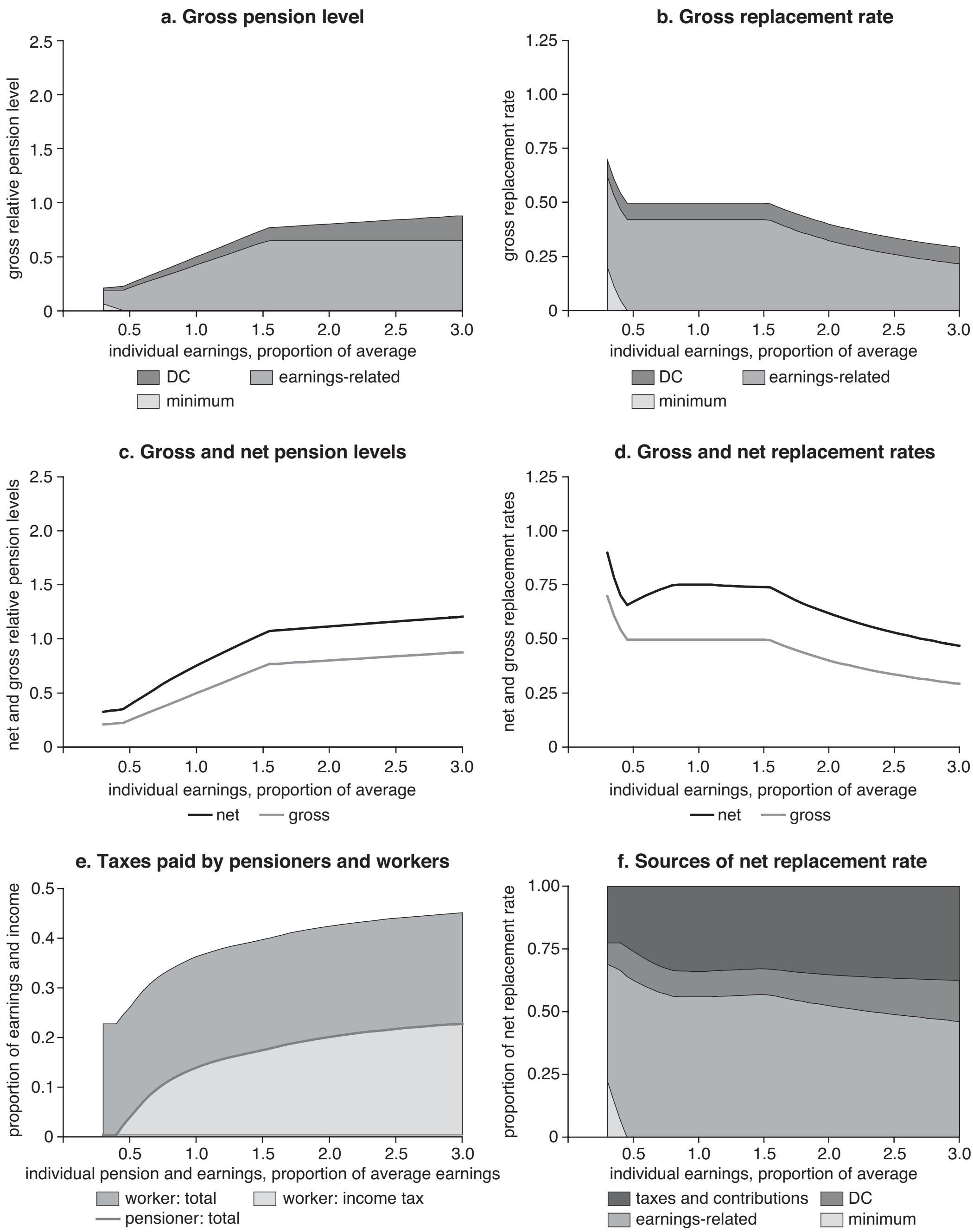
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	24.8	37.2	49.7	74.5	80.0	83.9
(% of average earnings)	*22.6*	*34.0*	*45.3*	*67.9*	*77.3*	*80.5*
Net pension level	38.9	58.3	75.2	104.9	111.5	116.0
(% of average net earnings)	*35.5*	*53.2*	*69.6*	*97.1*	*108.2*	*112.0*
Gross replacement rate	49.7	49.7	49.7	49.7	40.0	33.5
(% of individual earnings)	*45.3*	*45.3*	*45.3*	*45.3*	*38.7*	*32.2*
Net replacement rate	67.1	73.8	75.2	74.0	61.8	52.9
(% of individual net earnings)	*61.2*	*67.3*	*69.6*	*68.5*	*60.0*	*51.1*
Gross pension wealth	3.5	5.2	6.9	10.4	11.2	11.7
(multiple of average earnings)	*4.2*	*6.3*	*8.4*	*12.6*	*14.3*	*14.9*
Net pension wealth	5.4	8.1	10.5	14.6	15.5	16.2
(multiple of average net earnings)	*6.6*	*9.9*	*12.9*	*18.0*	*20.0*	*20.7*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Bulgaria



Source: Axia Economics APEX model.

Croatia

A new system combining public and mandatory private pensions was introduced in Croatia in 2002. This is mandatory for workers aged 40 years and younger, and optional for those between 40 and 50 years. The public scheme is a points system but has a redistributive formula.

Qualifying Conditions

An increase in pension age has been legislated, and this will reach 65 for men and 60 for women in 2009. Fifteen years' service is required to receive any pension benefit. Early retirement is possible five years early, conditional on 35 years' service (men) and 30 years' (women).

Benefit Calculation

Earnings-Related

The averaging period for earnings in the pension formula will increase gradually from the 10 consecutive best years to full career, reaching the latter in 2008. The points system implies that the pension is 0.25 percent of individual earnings divided by average covered earnings plus 0.25 percent of average covered earnings for each year of service (which are shown as earnings—related and basic, respectively—in the figures). There is no ceiling on pensionable earnings and no minimum pension under the new system. The average covered earnings in the formula are those for 1998, uprated 50 percent in line with economywide average earnings and 50 percent in line with prices. Average earnings in 1998 were HRK 4,141. Pensions in payment also follow the mixed 50–50 indexation to earnings and prices.

Defined Contribution

Some 5 percent of social security contributions are diverted to funded pensions for people covered by the new system. The accumulated balance is converted to a price-indexed life annuity at retirement.

Personal Income Tax and Social Security Contributions

The income tax allowance for workers is HRK 1,500 per month. The bands of the tax schedule are multiples of this deductible amount, giving the following on an annual basis:

Band lower limit HRK (000s)	18	36	90
Rate (%)	15	25	35

The tax allowance for pensioners is 1.7 times that for workers (that is, HRK 2,550 per month).

The total social security contribution rate is 19.50 percent: 10.75 percent for employees and 8.75 percent for employers. Pensioners do not pay social security contributions.

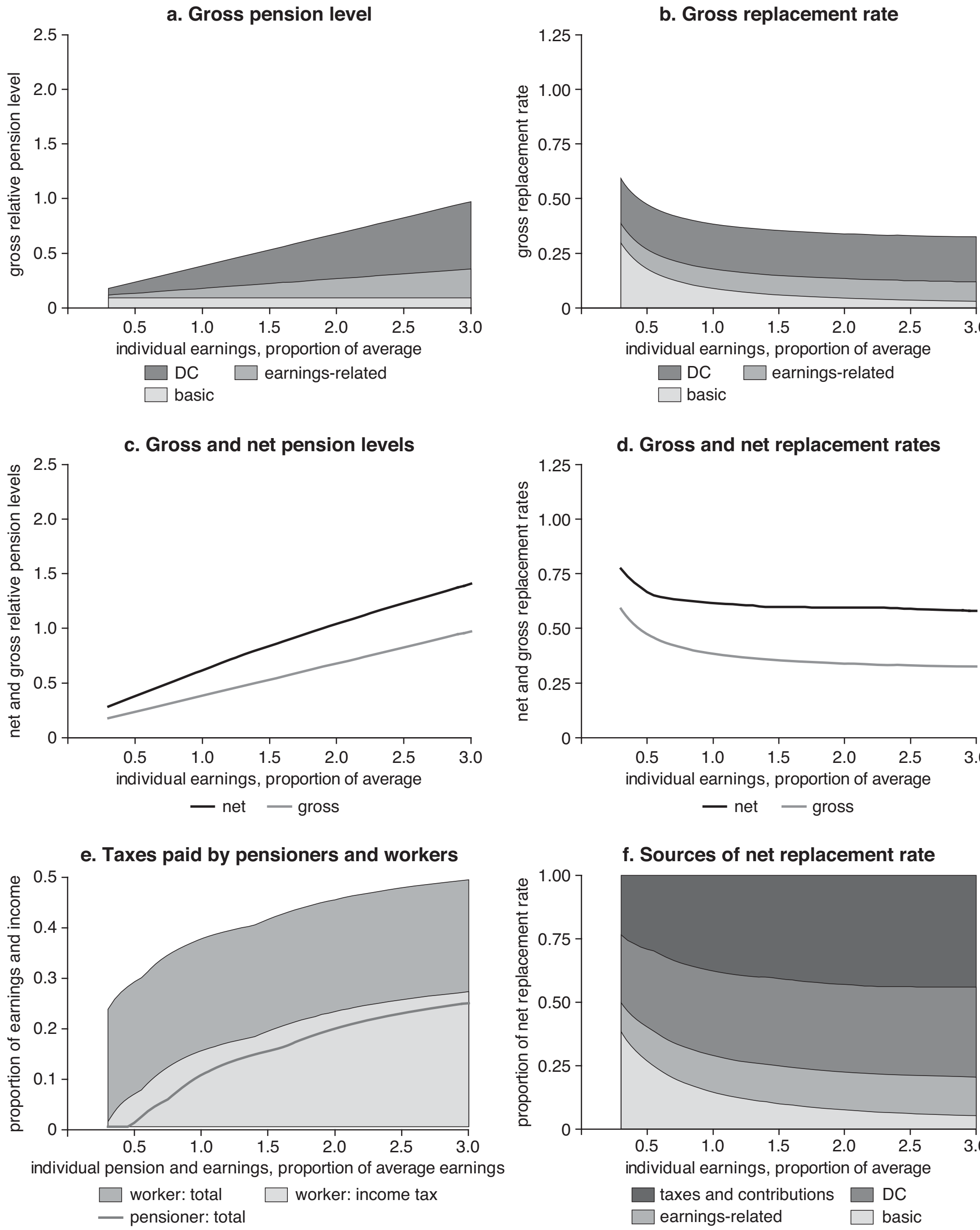
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	32.5	36.3	40.0	47.5	52.4	54.7
Gross pension level	23.6	31.0	38.4	53.1	67.8	82.6
(% of average earnings)	*19.6*	*25.3*	*31.1*	*42.5*	*54.0*	*65.5*
Net pension level	37.9	49.8	61.6	83.9	104.0	123.0
(% of average net earnings)	*31.4*	*40.6*	*49.9*	*68.3*	*85.2*	*100.9*
Gross replacement rate	47.3	41.3	38.4	35.4	33.9	33.0
(% of individual earnings)	*39.1*	*33.7*	*31.1*	*28.4*	*27.0*	*26.2*
Net replacement rate	66.7	63.1	61.6	59.7	59.6	58.9
(% of individual net earnings)	*55.2*	*51.5*	*49.9*	*48.6*	*48.8*	*48.3*
Gross pension wealth	3.4	4.5	5.5	7.6	9.7	11.8
(multiple of average earnings)	*4.1*	*5.3*	*6.5*	*8.8*	*11.2*	*13.5*
Net pension wealth	5.5	7.2	8.9	12.0	14.9	17.5
(multiple of average net earnings)	*6.6*	*8.5*	*10.4*	*14.2*	*17.6*	*20.9*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Croatia



Source: Axia Economics APEX model.

The Czech Republic

THE CZECH PUBLIC SCHEME HAS A BASIC ELEMENT AND AN EARNINGS-RELATED part calculated according to a progressive formula. There is also a minimum pension in this program.

Qualifying Conditions

A phased increase in the standard retirement age will make it 63 for men from 2013. The pension eligibility age will be 59 to 63 for women, depending on the number of children they have. A full pension requires 25 years' coverage, but people with 15 years' contributions may receive a pension from age 65.

Benefit Calculation

Basic

The value of the basic pension is CZK 1,310 per month. There is no statutory indexation requirement for the value of the basic benefit alone, but total pensions in payment must be increased at least by prices plus one-third of real wage growth.

Earnings-Related

The earnings-related pension gives 1.5 percent of earnings for each year of contributions. Currently the earnings measure takes an average across all years since 1985, but it will gradually reach 30 years. There is a progressive formula with the first CZK 7,100 per month replaced at 100 percent; the slice of earnings between this limit and CZK 16,800, at 30 percent; and above this level, at 10 percent. The first threshold, below which there is 100 percent replacement, is equivalent to just over 40 percent of average earnings, while the second threshold is just below average earnings. There is no statutory indexation requirement for these thresholds. Earlier years' earnings in the benefit formula are valorized fully to average earnings.

There is no specific statutory indexation requirement for the earnings-related pension component in payment. However, the combined total pension benefit (flat-rate and earnings-related components) is adjusted at least to price inflation, with additional, real increases of at least one-third of real wage growth.

Minimum

The total value of the minimum pension benefit is CZK 2,080, which is made up of a minimum earnings-related pension of CZK 770 plus the basic component of CZK 1,310. This combined minimum pension is indexed as described above.

Social Assistance

Older people are covered by the general social-assistance scheme and related benefits in kind. The target safety-net income for a single-person household is CZK 1,780.

Personal Income Tax and Social Security Contributions

Old-age pensions are not taxed up to a value of CZK 144,000. The standard tax-free allowance is CZK 38,400, giving pensioners an effective allowance four times higher than workers have. There are no special income tax reliefs for pension income. Recipients of old-age pensions do not pay social security contributions.

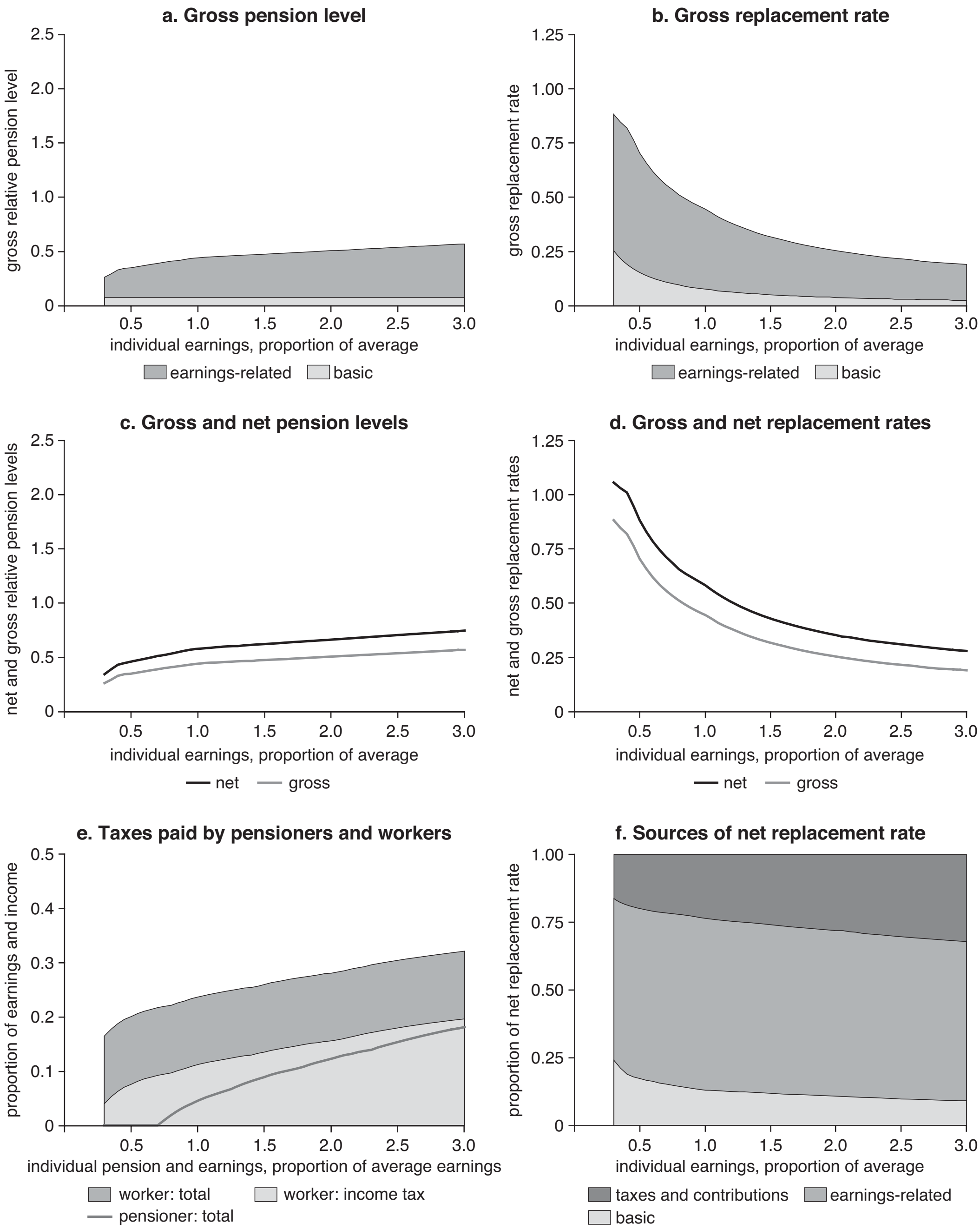
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	35.3	40.0	44.4	47.6	50.7	53.9
Net pension level (% of average net earnings)	46.2	52.4	58.2	62.3	66.4	70.6
Gross replacement rate (% of individual earnings)	70.5	53.3	44.4	31.7	25.4	21.6
Net replacement rate (% of individual net earnings)	88.3	68.3	58.2	42.9	35.3	31.0
Gross pension wealth	5.8	6.6	7.3	7.8	8.3	8.9
(multiple of average earnings)	*6.8*	*7.7*	*8.6*	*9.2*	*9.8*	*10.4*
Net pension wealth	7.6	8.6	9.6	10.2	10.9	11.6
(multiple of average net earnings)	*8.9*	*10.1*	*11.3*	*12.1*	*12.9*	*13.7*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Czech Republic



Source: OECD pension models.

Estonia

THE NEW SYSTEM IN ESTONIA COMBINES AN EARNINGS-RELATED PUBLIC SCHEME with mandatory contributions to funded pensions. There is also a safety-net national pension and a flat-rate basic scheme.

Qualifying Conditions

The pension age will be equalized for men and women at age 63 from 2016. The pension may be claimed up to three years before the standard age (from age 60 in the long term) provided that the individual retires.

Benefit Calculation

Basic

There is a basic pension payable to all contributors with 15 years' coverage. The 2003 value is EEK 447.

Earnings-Related

Since 1998, the pension has been earnings related with a points system. Points depend on individual earnings relative to the average. Accumulated points are multiplied by the *annual pension-insurance coefficient* to calculate pension entitlement. The coefficient was EEK 31.69 per month in 2002 and EEK 34.04 in 2003. This is equivalent to an accrual rate of approximately 0.5 percent per year of service (31.69/6,122 [monthly average earnings] = 0.005). There is no ceiling on pensionable earnings. Parameters are uprated annually to 50 percent of price inflation and 50 percent of growth in contribution revenues. The pension value is reduced by 4.8 percent for each year that an individual retires early. Deferring pension earns an increment of 10.8 percent per year.

Targeted

A minimum retirement-income guarantee is provided by the national pension. This was EEK 867.20 per month in 2002 and EEK 931.00 in 2003. This is substantially above the social-assistance minimum, which has not therefore been modeled.

Defined Contribution

Individuals choosing the funded option must make an additional contribution of 2 percent of earnings into their pension fund. Four percentage points of the total social security contribution is then also diverted to this fund. New labor-market entrants (those born in 1983 or after) are required to take the funded option. Most current workers may choose this option (those born in 1942 or after, up to age 60).

Personal Income Tax and Social Security Contributions

The personal income tax has a single, flat rate of 26 percent. There is a general allowance of EEK 3,000 per month. Pension payments now count as taxable income, but only if they exceed three times the general allowance. Pensioners are also entitled to the general allowance.

Employers pay social security contributions of 33 percent of gross earnings, of which 20 percentage points finance pensions. There is no ceiling on contributions. Pensions in payment are not subject to social security contributions. As noted previously, individuals taking the funded option must contribute 2 percent of their earnings.

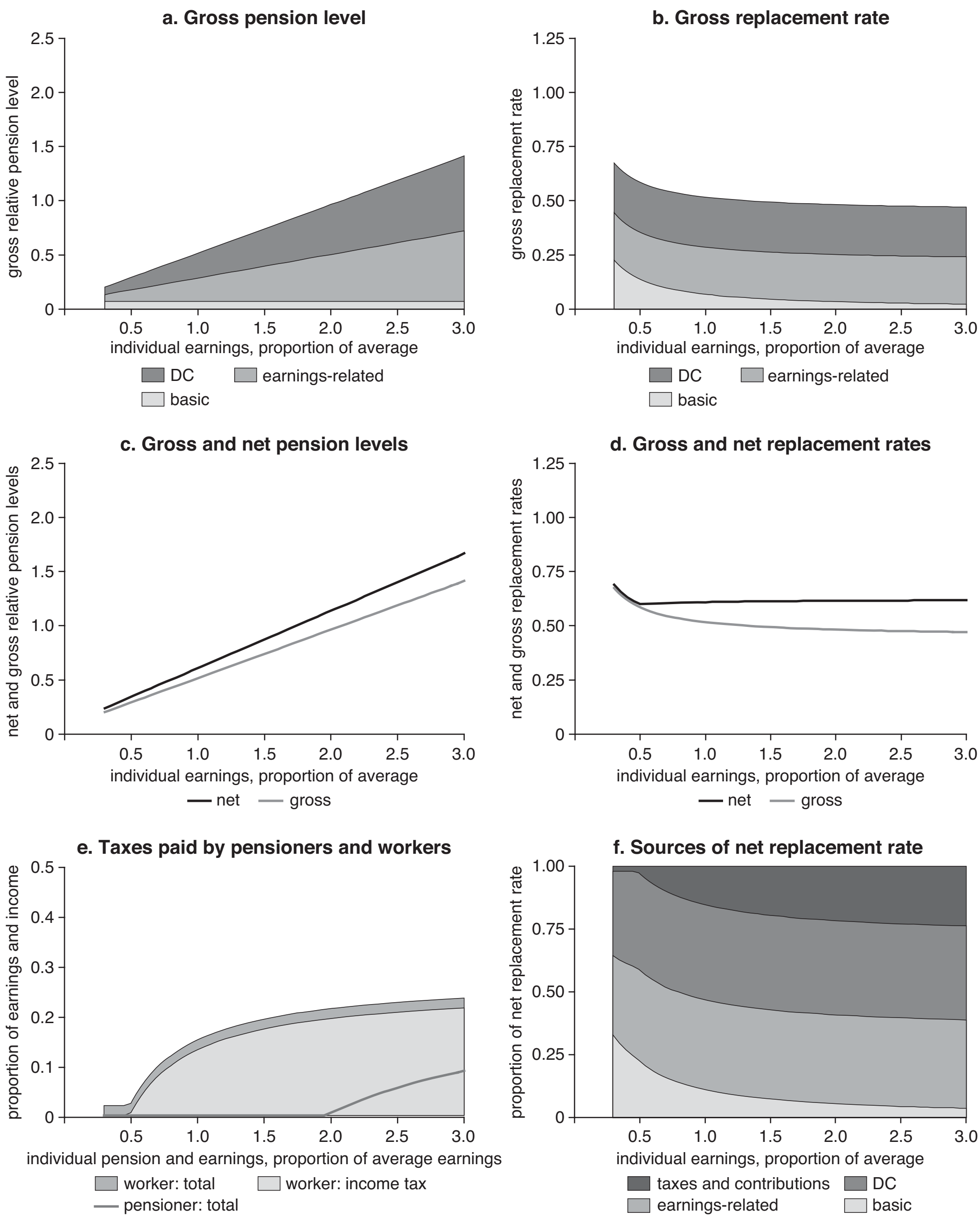
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	29.2	40.4	51.6	74.0	96.5	118.9
Net pension level (% of average net earnings)	34.5	47.7	60.9	87.4	113.8	140.2
Gross replacement rate (% of individual earnings)	58.4	53.9	51.6	49.4	48.2	47.5
Net replacement rate (% of individual net earnings)	59.9	60.6	60.9	61.3	61.5	61.7
Gross pension wealth	4.2	5.8	7.4	10.6	13.7	16.9
(multiple of average earnings)	*5.4*	*7.5*	*9.5*	*13.6*	*17.7*	*21.8*
Net pension wealth	4.9	6.8	8.7	12.5	16.2	20.0
(multiple of average net earnings)	*6.4*	*8.8*	*11.2*	*16.0*	*20.9*	*25.7*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Estonia



Source: Axia Economics APEX model.

Hungary

THE NEW SYSTEM IN HUNGARY COMBINES AN EARNINGS-RELATED PUBLIC PENSION with mandatory, funded, defined-contribution schemes. The modeling assumes that workers are covered by the mixed system.

Qualifying Conditions

A phased increase in pension eligibility age will equalize it at 62 for men and women (from 60 and 55, respectively). The age for men reached 62 in 2000 and will reach 62 for women from 2009. Also, 20 years' service is required for both earnings-related and minimum pensions. For those retiring before the start of 2009, 15 years' service is required for a partial pension. The reformed system was introduced in June 1998. People who switched voluntarily to the mixed system were allowed to return to the pure pay-as-you-go system until the end of 2002. The obligation for new entrants to join a private pension was suspended for 2002.

Benefit Calculation

Earnings-Related

For those covered by the mixed system, the accrual rate is 1.22 percent of earnings for each year of service (subject to the contribution ceiling). This compares with an accrual rate of 1.65 percent for those covered by the pay-as-you-go system alone.

Currently, the earnings base is income of all years since 1988, moving toward the full lifetime. Earlier years' earnings excluding the last two years before retirement are valorized with economywide average earnings. A ceiling on pensionable earnings was introduced in 1992. In 2002, the ceiling was HUF 2,368,850 (225 percent of average earnings). Increases in the ceiling since 2002 took it to approximately 2.5 times average earnings in 2003 and 3.0 times in 2004.

The pension in payment has been indexed half to wages and half to prices since 2000.

Defined Contribution

Some 8 percent of gross pensionable earnings is diverted to the funded plan from 2004 for people covered by the mixed pension option, increased from 6 percent in 2002 and 7 percent in 2003. By use of unisex life tables and the same indexation of pension in payment as the public scheme, the accumulated capital must be converted into an annuity on retirement.

Minimum

The minimum pension was worth HUF 20,100 a month in 2002 (approximately 23 percent of average earnings). Its value is indexed in the same way as the earnings-related scheme. The minimum pension will be abolished from 2009.

Personal Income Tax and Social Security Contributions

There is no additional relief for pensioners beyond the standard tax credit that also applies to people of working age. The earnings-related pension has not been taxable since 2002; previously it was taxed at a rate of zero. The social security pension is taxed when it is awarded. Twenty-five percent of individual contributions to both private and public pensions could be deducted from the income tax liability. This credit was abolished in 2004. Neither investment returns nor private pension payments are currently taxed. Social security contributions are not levied on pension income.

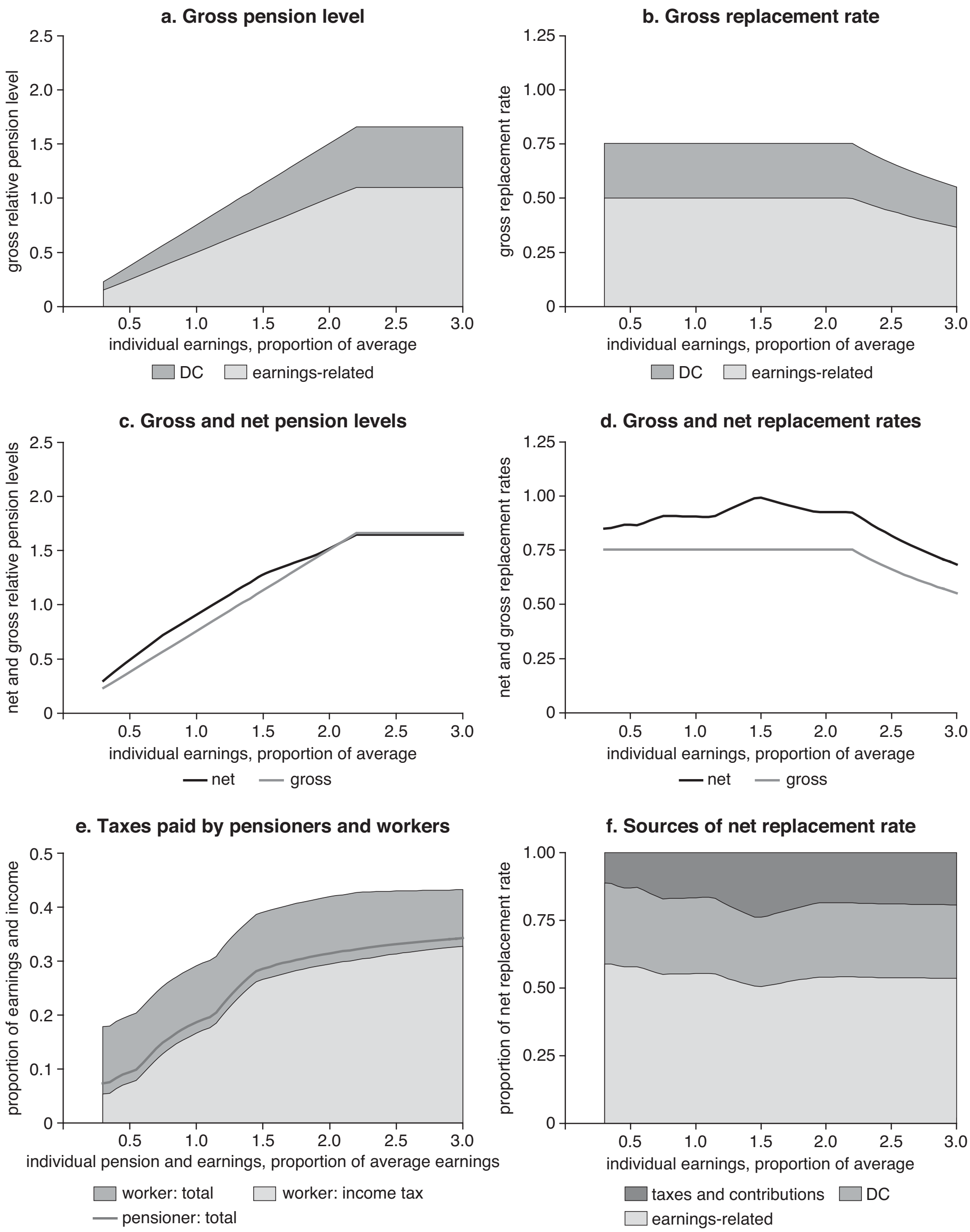
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	37.7	56.5	75.4	113.0	150.7	165.6
Net pension level (% of average net earnings)	48.9	71.8	90.5	127.7	151.7	164.3
Gross replacement rate (% of individual earnings)	75.4	75.4	75.4	75.4	75.4	66.3
Net replacement rate (% of individual net earnings)	86.6	90.9	90.5	99.1	92.6	81.8
Gross pension wealth	6.1	9.1	12.2	18.3	24.4	26.8
(multiple of average earnings)	*7.5*	*11.3*	*15.1*	*22.6*	*30.1*	*33.1*
Net pension wealth	7.9	11.6	14.6	20.6	24.5	26.6
(multiple of average net earnings)	*9.8*	*14.3*	*18.1*	*25.5*	*30.3*	*32.8*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Hungary



Source: OECD pension models.

Latvia

THE NEW SYSTEM IN LATVIA COMBINES AN EARNINGS-RELATED PUBLIC SCHEME, based on notional accounts, with mandatory contributions to funded pensions. There is also a safety-net pension.

Qualifying Conditions

The pension age will reach age 62 for both sexes in the long term. A full pension entitlement requires 10 years' service.

Benefit Calculation

Earnings-Related

The new pension system is based on notional accounts. The pension value is the sum of notional capital at retirement (contributions uprated in line with the covered wage bill) divided by the *g-value* (calculated annually using projected life expectancy at retirement age with a unisex life table). The ceiling on covered earnings is Lat 17,300. The pension in payment is currently uprated by consumer prices plus 25 percent of real wage-bill growth. From 2011, it is envisaged that the share of wage growth will increase to 50 percent, with the possibility of moving to 100 percent earnings indexation.

Minimum

The guaranteed minimum pension is set at the same level as the general safety-net benefit: 50 percent of the minimum wage. From 2002, this varies with the length of service in the pension-insurance system:

Years of service	20	30	>30
Multiple of minimum pension	1.1	1.3	1.5

Defined Contribution

People under age 30 at the time of the reform must contribute to a new funded scheme. Those between 30 and 49 must choose between remaining only in the public, pay-as-you-go system or belonging to both the public and the funded scheme. The proportion of earnings diverted into the funded scheme is very small at first—just 2 percent—but will increase over a 10-year period, with the growth concentrated in later years. The envisaged path is as follows:

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Contribution (%)	2	2	2	2	2	2	4	8	9	10

At retirement, the accumulated capital must be converted to an income stream under these alternatives. First, individuals can add the balance of the fund to the notional capital built up under the public scheme, which yields a benefit dependent on the g-value. Second, they can buy a whole-life annuity from a life insurance company (without restriction on, for example, indexation or provision of survivor's benefits).

Personal Income Tax and Social Security Contributions

There is a flat rate tax of 25 percent on all income above a threshold. This is Lat 252 per year for people of working age and Lat 1,200 per year for people of pension age. Pension income is fully taxable. Social security contributions are 35 percent of earnings, falling to 33 percent from 2003, 9 points of which are levied on employees, the rest on employers. Contributions are income tax deductible. Pensions are not subject to social security contributions.

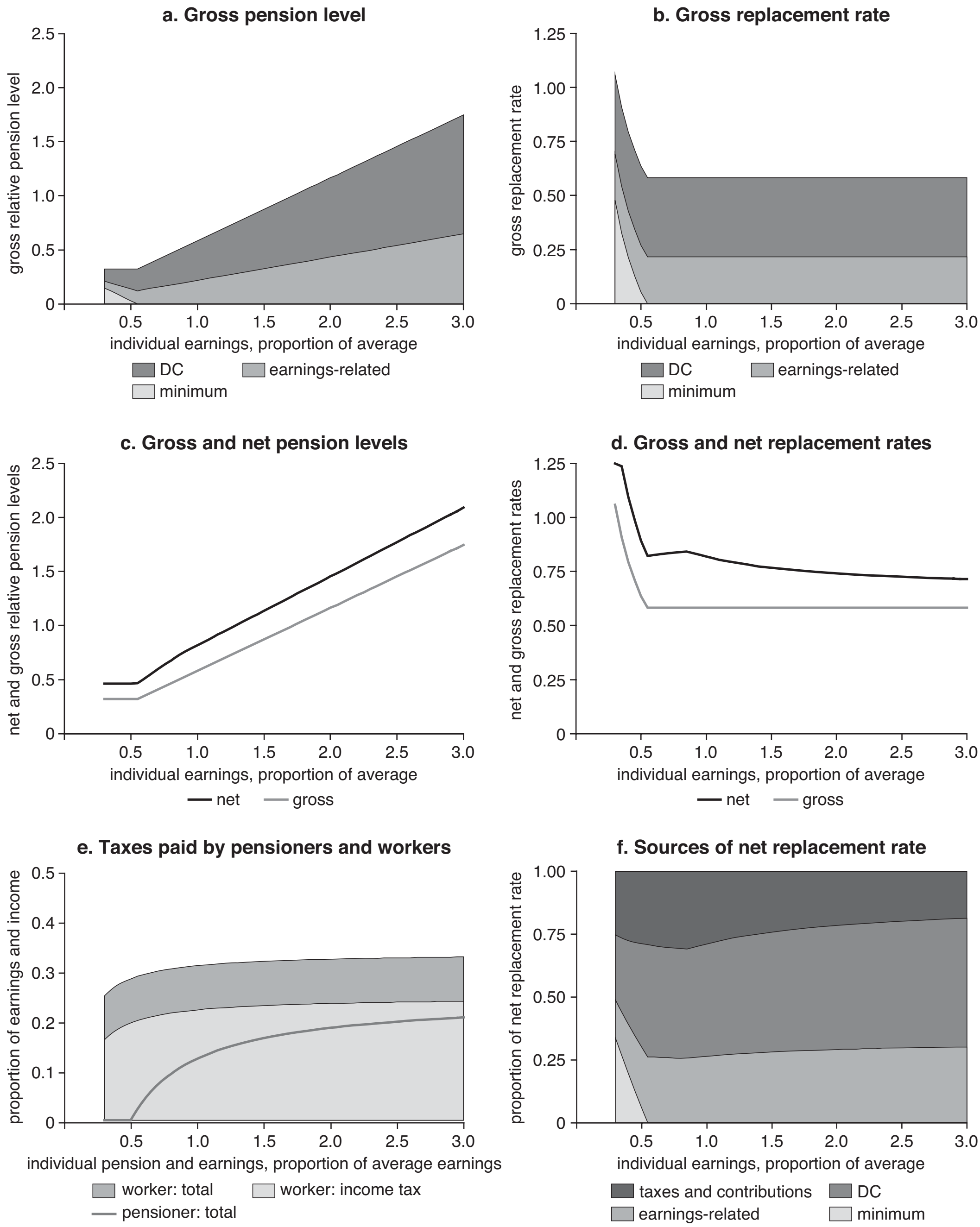
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	31.8	43.6	58.2	87.3	116.4	145.4
Net pension level (% of average net earnings)	46.3	63.6	81.8	113.6	145.4	177.2
Gross replacement rate (% of individual earnings)	63.6	58.2	58.2	58.2	58.2	58.2
Net replacement rate (% of individual net earnings)	89.2	83.7	81.8	76.7	74.1	72.5
Gross pension wealth	4.6	6.3	8.4	12.6	16.8	21.0
(multiple of average earnings)	*5.8*	*7.9*	*10.5*	*15.8*	*21.1*	*26.3*
Net pension wealth	6.7	9.2	11.8	16.4	21.0	25.6
(multiple of average net earnings)	*8.4*	*11.5*	*14.8*	*20.6*	*26.3*	*32.1*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Latvia



Source: Axia Economics APEX model.

Lithuania

The new system in Lithuania has a two-tier public scheme with an earnings-related and a flat-rate benefit. There are also mandatory contributions to funded pensions.

Qualifying Conditions

Pensionable age will reach 62.5 for men and 60 for women in the longer term. Individuals must have 15 years' coverage to receive a pension. To qualify for a contribution year, the individual must have made contributions equivalent to a full year at the minimum wage.

Benefit Calculation

Basic

The basic pension is a flat-rate contributory benefit. The full rate is earned with 30 years' contributions, with a proportionally reduced benefit available for people with shorter contribution histories. Its value is set at 110 percent of the government's minimum subsistence level, which is Lit 147 for 2002.

Earnings-Related

The earnings-related pension offers 0.5 percent of individual average pay for each year of coverage. Earlier years' earnings are uprated in line with average earnings. The ceiling on pensionable pay is five times average earnings.

It is possible to defer the pension after standard age: both the basic and earnings-related components are increased by 8 percent for every year of deferral.

Defined Contribution

The law establishing the mandatory funded scheme was passed in December 2002. This envisages an initial contribution rate of 2.5 percent with an eventual increase to 5.5 percent should the finances of the social security program prove sufficiently robust. The value of the pay-as-you-go components will be reduced proportionally to the amount of the contrbution diverted to the pension funds.

Personal Income Tax and Social Security Contributions

There is a standard allowance of Lit 290 per month (with higher allowances for disabled people and people with numerous children). The standard income tax rate is 33 percent, although a lower 15 percent rate applies to income from some forms of saving. Public pensions are not subject to tax.

The total social security contribution rate is 34 percent of earnings; the employee pays 3.0 percentage points. Of the total contribution, some 25.0 percentage points are earmarked for the pension system; the employee pays 2.5 points. There is no ceiling on contributions (although there is a ceiling on benefits: see above). Pensioners do not pay social security contributions.

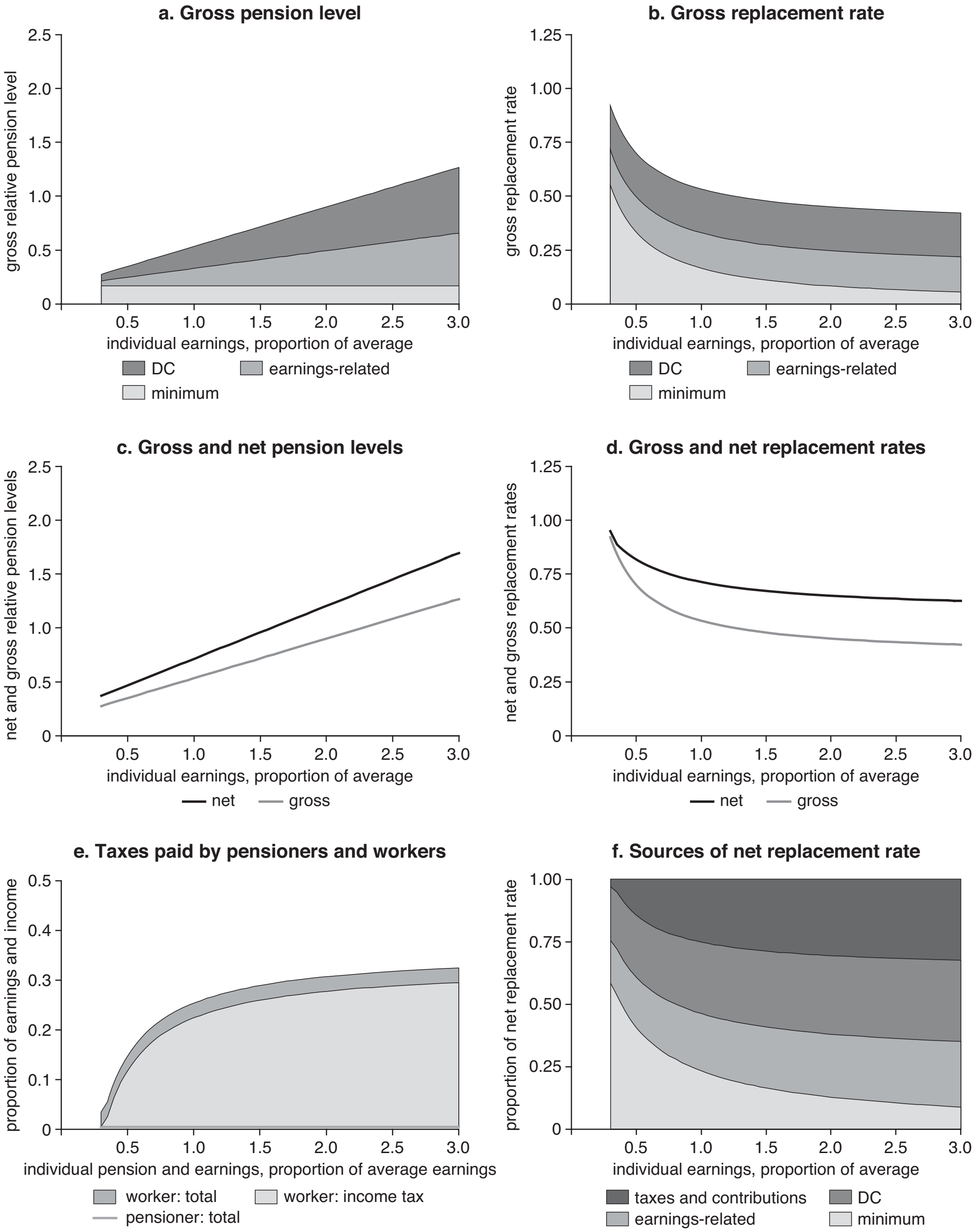
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	35.0	44.2	53.4	71.7	90.1	108.5
(% of average earnings)	*32.6*	*40.6*	*48.6*	*64.6*	*80.6*	*96.6*
Net pension level	46.8	59.0	71.3	95.9	120.5	145.0
(% of average net earnings)	*43.6*	*54.3*	*65.0*	*86.4*	*107.8*	*129.2*
Gross replacement rate	69.9	58.9	53.4	47.8	45.1	43.4
(% of individual earnings)	*65.2*	*54.1*	*48.6*	*43.1*	*40.3*	*38.7*
Net replacement rate	81.7	75.1	71.3	67.2	64.9	63.5
(% of individual net earnings)	*76.2*	*69.0*	*65.0*	*60.5*	*58.1*	*56.6*
Gross pension wealth	5.0	6.3	7.6	10.2	12.8	15.4
(multiple of average earnings)	*6.3*	*7.9*	*9.5*	*12.6*	*15.7*	*18.8*
Net pension wealth	6.6	8.4	10.1	13.6	17.1	20.5
(multiple of average net earnings)	*8.5*	*10.6*	*12.7*	*16.8*	*21.0*	*25.1*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Lithuania



Source: Axia Economics APEX model.

Poland

The new pension system in Poland applies to people aged 50 at the time of the reform. The new public scheme is based on notional accounts. People under 30 at the time of the reform must participate in the funded scheme; people aged 30–50 could choose, but the choice had to be made in 1999 and was irrevocable.

Qualifying Conditions

The minimum pension age in the new system will be 65 for men and 60 for women. For the minimum pension, 25 and 20 years' contributions are required from men and women, respectively.

Benefit Calculation

Earnings-Related

A contribution of 12.22 percent of earnings is credited to notional accounts. These contributions are uprated (by price inflation plus 75 percent of the growth of the real covered-wage bill) between the time they are made and the time of retirement. From 2004 onward, the notional interest rate will be defined as the greater of the growth in real covered-wage bill and growth in prices. At retirement, accumulated notional capital is divided by the g-value to arrive at the pension. The g-value is average life expectancy at retirement age. The g-value is calculated using projections from the United Nations and World Bank population database. The ceiling on contributions and pensionable earnings is PLN 64,620, set annually at 2.5 times projected average earnings. Pensions in payment are uprated in line with 80 percent of prices and 20 percent of average earnings. However, the 2004 government proposal includes a shift to prices uprating from 2005.

Minimum

The minimum pension was PLN 530 per month in 2001/02 and PLN 533 in 2002/03. The model uses the average value for calendar 2002. The target is adjusted to 80 percent prices plus 20 percent earnings.

Defined Contribution

Some 7.3 percentage points of the total contribution are diverted to the funded scheme for those compulsorily covered or voluntarily choosing this option. At retirement, the accumulated capital must be converted to an annuity. At the minimum, this must be price indexed (to be used in the model calculation). Annuity rates will most likely have to be based on unisex life tables, though this has not been decided yet.

Personal Income Tax and Social Security Contributions

There is no specific income tax relief for pensioners. There are no special rules for the taxation of pension income. The one exception is that employees may deduct PLN 1,444 for 2002 from their incomes for work-related expenses (although this varies with the number of workplaces and whether the workplace is the same as the dwelling). Of course, this deduction does not apply to pensioners. Pension income is not subject to contributions for pensions, unemployment insurance, and the like. However, there is a tax-deductible health-insurance contribution of 7.75 percent. This contribution increases by 0.25 percentage points a year from 2003 to reach 9.00 percent, but only 7.75 percent will be tax deductible. It is paid by both pensioners and workers.

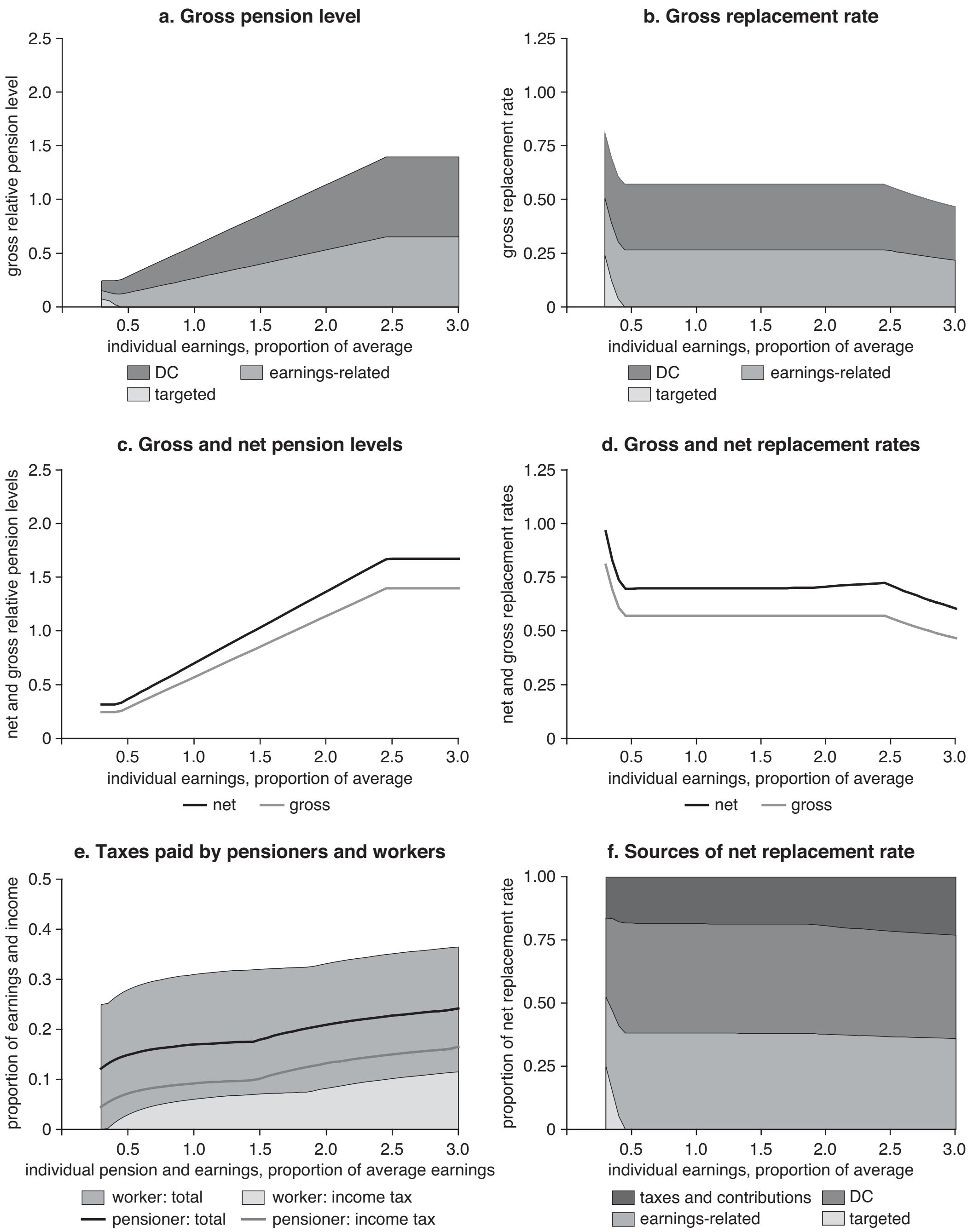
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	28.4	42.6	56.9	85.3	113.7	139.4
(% of average earnings)	*24.2*	*31.0*	*41.4*	*62.1*	*82.8*	*101.5*
Net pension level	36.4	53.0	69.7	103.1	136.5	166.7
(% of average net earnings)	*31.4*	*39.4*	*51.6*	*75.9*	*100.2*	*122.1*
Gross replacement rate	56.9	56.9	56.9	56.9	56.9	55.8
(% of individual earnings)	*48.4*	*41.4*	*41.4*	*41.4*	*41.4*	*40.6*
Net replacement rate	69.6	69.7	69.7	69.8	70.5	71.0
(% of individual net earnings)	*60.1*	*51.8*	*51.6*	*51.3*	*51.7*	*52.0*
Gross pension wealth	4.0	5.9	7.9	11.9	15.8	19.4
(multiple of average earnings)	*4.8*	*6.1*	*8.2*	*12.3*	*16.4*	*20.1*
Net pension wealth	5.1	7.4	9.7	14.4	19.0	23.2
(multiple of average net earnings)	*6.2*	*7.8*	*10.2*	*15.0*	*19.8*	*24.1*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Poland



Source: OECD pension models.

The Slovak Republic

THE SLOVAK EARNINGS-RELATED, PUBLIC SCHEME HAS RECENTLY BEEN TRANSFORMED from a standard defined-benefit formula to a point system. There is a minimum annual pension accrual related to the minimum wage.

Qualifying Conditions

The normal pension age is gradually increasing to 62 for men and women, reaching 62 for women in 2014. Eligibility depends on making at least 10 years of contributions.

Benefit Calculation

Earnings-Related

The new pension formula applies from 2004. Pension points are calculated as the ratio of individual earnings to average earnings. Each pension point from 2004 is worth SKK 183.58. This point value is indexed to average earnings.

Based on Slovak government estimates of 7.8 percent nominal wage growth in 2004 and actual wage growth of 6.3 percent in 2003, the pension-point value for 2002 would have been SKK 160.18. (Note that for comparison with other countries, the calculations are based on the parameters had the reformed pension system been in operation in 2002.) Average earnings in 2002 were SKK 13,511 per month. Dividing the point value by the national average earnings gives the equivalent to the accrual rate in a defined-benefit scheme, which is just under 1.2 percent.

There was a maximum pension of SKK 8,282 in the first half of 2002 and SKK 8,697 in the second half. However, this is abolished under the new points-based system. Instead, there is a ceiling on pensionable earnings, fixed in 2003 at three times average earnings. Based on the 2002 average earnings, the ceiling would have been SKK 486,396 in that year.

Pensions in payment are indexed to the arithmetic average of earnings growth and price inflation.

Minimum

The minimum pension is abolished under the new system. However, there is a mechanism to lift low pensionable earnings to the level of the minimum wage, which for 2004 is SKK 6,080. In 2002, the minimum wage was SKK 4,920 until October, when it was increased to SKK 5,570.

Personal Income Tax and Social Security Contributions

There are no special tax allowances or credits for pensioners. Pensions are not subject to the income tax. Pensioners do not pay social security contributions.

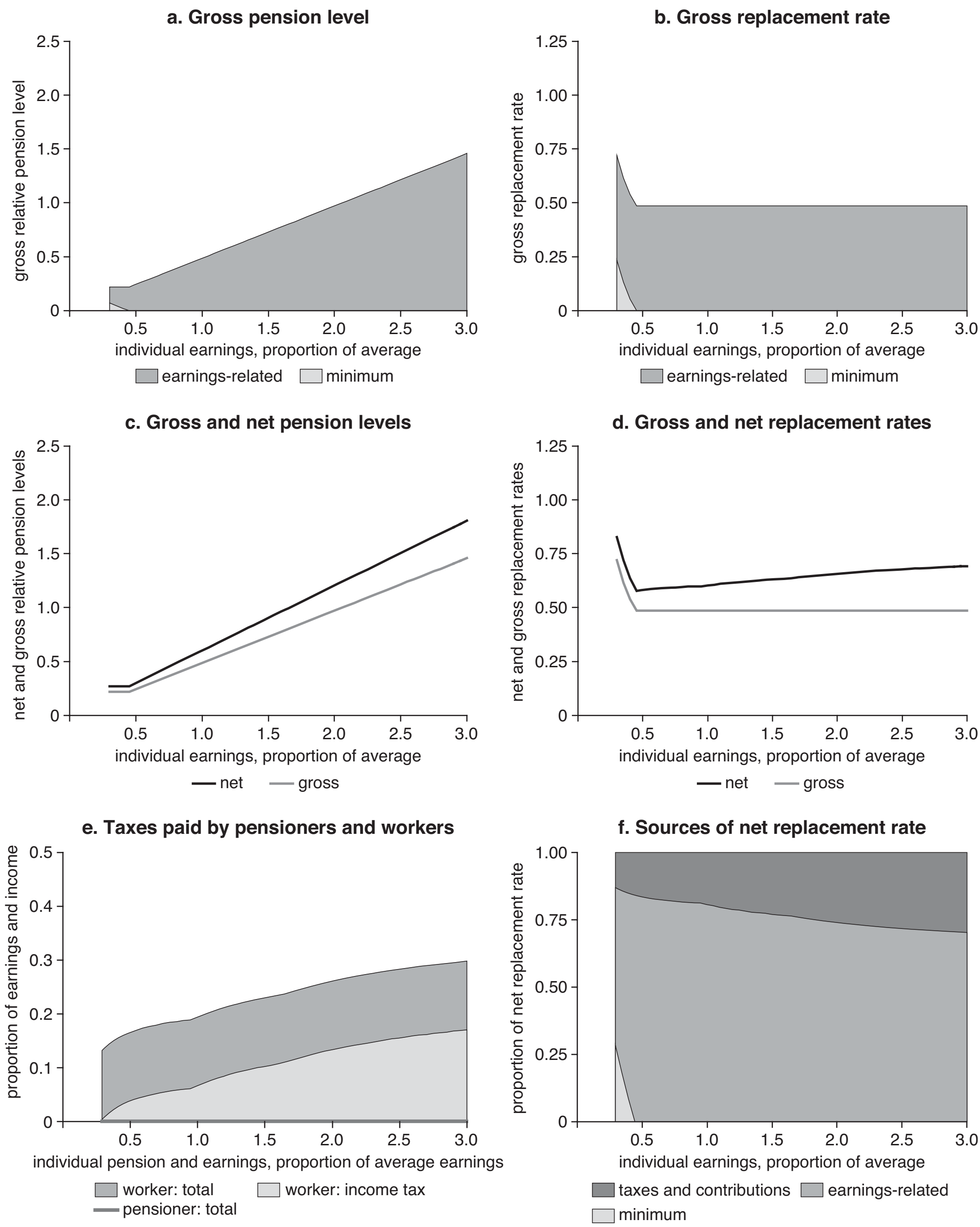
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	24.3	36.4	48.6	72.9	97.2	121.5
Net pension level (% of average net earnings)	30.1	45.2	60.2	90.4	120.5	150.6
Gross replacement rate (% of individual earnings)	48.6	48.6	48.6	48.6	48.6	48.6
Net replacement rate (% of individual net earnings)	58.2	59.4	60.2	63.1	65.7	67.8
Gross pension wealth	4.0	6.0	8.0	12.0	15.9	19.9
(multiple of average earnings)	*4.9*	*7.3*	*9.8*	*14.6*	*19.5*	*24.4*
Net pension wealth	4.9	7.4	9.9	14.8	19.8	24.7
(multiple of average net earnings)	*6.0*	*9.1*	*12.1*	*18.1*	*24.2*	*30.2*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Slovak Republic



Source: OECD pension models.

Turkey

TURKEY HAS AN EARNINGS-RELATED PUBLIC PENSION SCHEME with an income-tested safety net and a flat-rate supplementary pension.

Qualifying Conditions

Recent entrants (from September 1999) can draw a pension from age 60 (men) or 58 (women) with 7,000 days of contributions. This is equivalent to approximately 28 years of contributions for continuous employment. An alternative eligibility condition is 25 years of insurance coverage with 4,500 days of contributions.

The means-tested pension is payable from age 65 only to those who are disabled or have no other social security rights.

Benefit Calculation

Earnings-Related

The pension under the new scheme is based on average lifetime earnings revalued in line with nominal GDP growth. The pension has a nonlinear formula with years of coverage. The first 10 years earn a pension of 35 percent of pay, with an extra 2 percent per year for the next 15 years and 1 percent per year thereafter.

There is a floor above which contributions are required. The floor had three different values during calendar 2002, varying between TRL 210 million at the beginning of the year and TRL 328 million at the end.

There is a ceiling on pensionable earnings; its value was TRL 1,050 million at the start of the year and TRL 1,638 million at the end of 2002.

Indexation of pensions in payment is to the consumer price index. Pensions are adjusted monthly.

Minimum

There is a minimum pension, which varied between TRL 202 million and TRL 257 million in 2002.

Targeted

The means-tested pension is paid quarterly. For the first half of 2002 the pension was TRL 45 million per month; for the second, pension was TRL 49 million per month.

A monthly supplement is paid to all retirees. Its value started in 2002 at TRL 75 million. As the monthly increases are awarded to individuals' earnings-related pensions, this supplement is reduced by the amount of those increases.

Personal Income Tax and Social Security Contributions

There are no special income tax allowances or credits for pensioners. Pension income is not subject to income tax. Pension income is not subject to social security contributions.

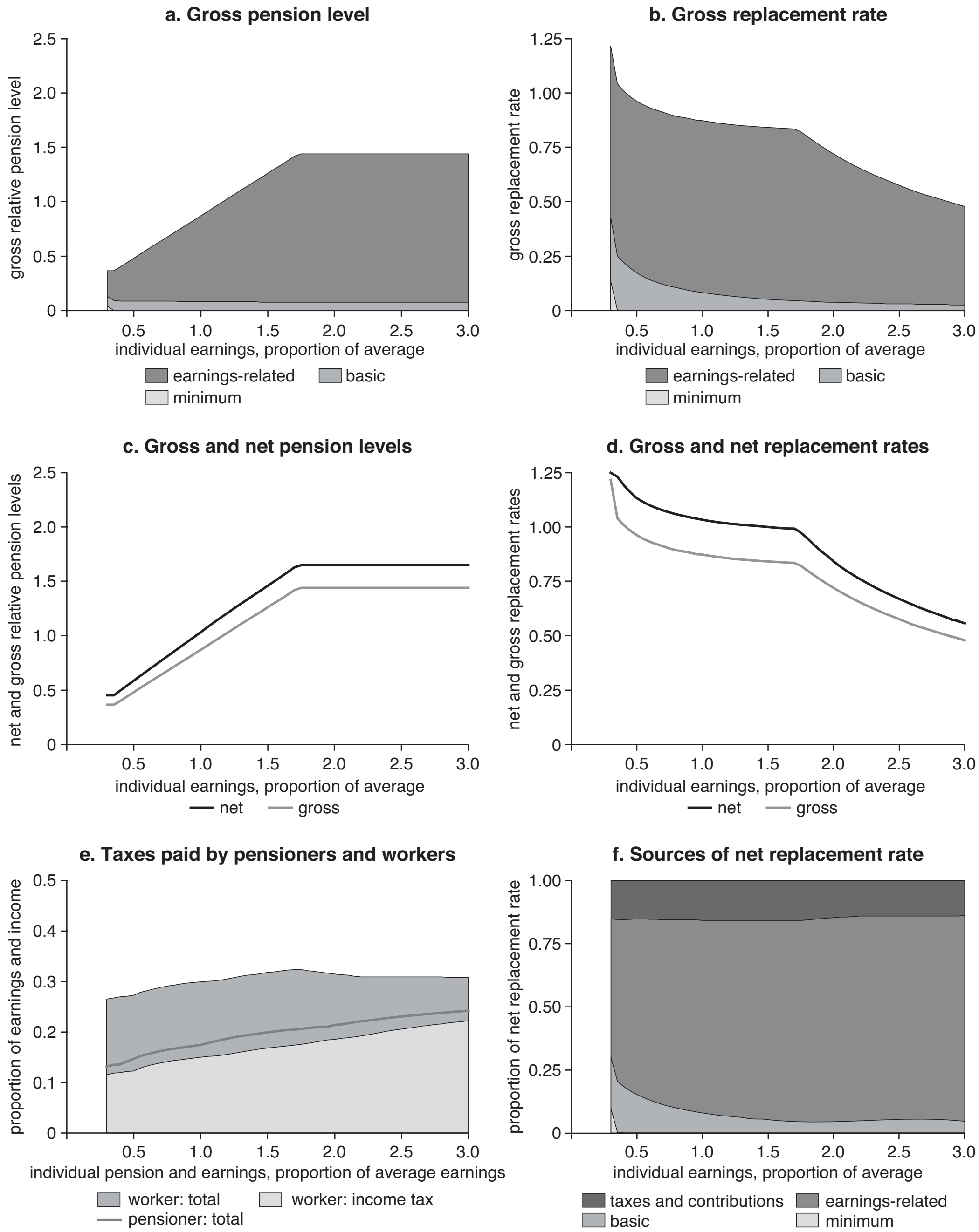
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	48.1	67.6	87.2	126.2	143.8	143.8
(% of average earnings)	*47.1*	*66.2*	*85.2*	*123.2*	*140.4*	*140.4*
Net pension level	58.7	81.0	103.3	146.0	164.8	164.8
(% of average net earnings)	*57.6*	*79.3*	*101.1*	*142.8*	*161.2*	*161.2*
Gross replacement rate	96.2	90.2	87.2	84.1	71.9	57.5
(% of individual earnings)	*94.2*	*88.2*	*85.2*	*82.2*	*70.2*	*56.2*
Net replacement rate	113.2	106.7	103.3	99.9	84.3	66.8
(% of individual net earnings)	*111.0*	*104.5*	*101.1*	*97.8*	*82.4*	*65.4*
Gross pension wealth	6.1	8.5	11.0	15.9	18.2	18.2
(multiple of average earnings)	*7.2*	*10.2*	*13.1*	*18.9*	*21.6*	*21.6*
Net pension wealth	7.4	10.2	13.0	18.4	20.8	20.8
(multiple of average net earnings)	*8.8*	*12.2*	*15.5*	*21.9*	*24.8*	*24.8*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Turkey



Source: OECD pension models.

12. Latin America and the Caribbean

Argentina

THE NEW SYSTEM IN ARGENTINA ALLOWS WORKERS TO CHOOSE between an earnings-related public, defined-benefit scheme and a funded, privately managed, defined-contribution plan. With 30 years' contributions or more, people also receive a (broadly) flat-rate benefit. This is pay-as-you-go (PAYG) financed.

Qualifying Conditions

Normal retirement age is 65 for men and 60 for women. Retirement is possible only after 30 years of contributions, although each two years of deferral after the normal retirement age counts as one contribution year. A reduced pension is available with 10 years of contributions for individuals aged 70 that have contributed in five of the last eight years before retirement.

Benefit Formula

Basic

The basic universal benefit (PBU) is a broadly flat-rate pension contingent on years of contributions but not on preretirement earnings. Its value is adjusted ad hoc: it has been worth approximately 28 percent of average earnings in the past few years. The entitlement is increased by 1 percent per year of contribution above the minimum 30 years, up to a maximum of 45 years.

Defined Contribution

The contribution rate for the funded scheme has varied over time. In the year 2000, for example, it was 7.72 percent (after administrative charges and the premium for disability insurance). In 2001 and 2002, the contribution was cut in response to macroeconomic conditions, with approximately 2.75 percent of earnings going into retirement accounts. In 2003 and 2004, the overall contribution was 7.00 percent of earnings, of which 4.46 percent went into individual accounts. The modeling assumes that this contribution rate is maintained in the long term.

Personal Income Tax and Social Security Contributions

Contributions and investment returns to the funded scheme are not taxed, but pension payments count as taxable income.

There is a general income tax deduction of Arg$ 4,020. The rate schedule, above the standard deduction, is:

Band lower limit Arg$ (000s)	0	10	20	30	60	90	120
Rate (%)	9	14	19	23	27	31	35

Employers pay social security contributions of 22 to 31 percent of gross earnings, of which roughly 7 to 16 percentage points finance pensions, (depending on sector and location of firm). Workers pay 15 percent of gross earnings, of which 11 points are for pensions (as of November 2003). The ceiling on earnings subject to pension contributions is Arg$ 4,800, which is not indexed. Pensioners pay social security contributions for sickness benefit of 3 to 6 percent.

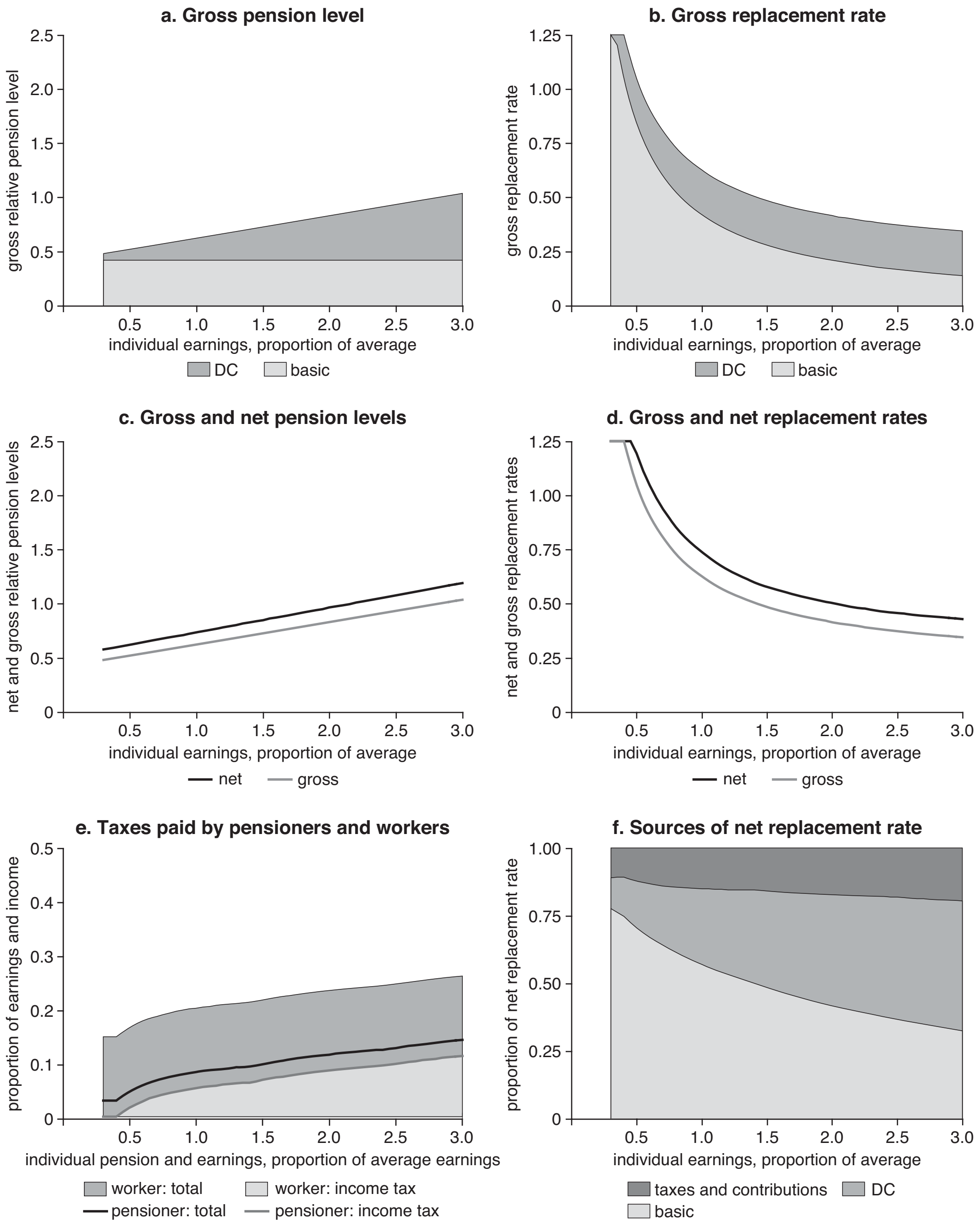
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	52.3	57.4	62.6	72.9	83.1	93.4
(% of average earnings)	*43.2*	*46.3*	*49.4*	*55.6*	*61.8*	*68.0*
Net pension level	62.3	68.0	73.7	85.1	96.4	107.8
(% of average net earnings)	*52.3*	*55.7*	*59.2*	*66.0*	*72.9*	*79.7*
Gross replacement rate	104.6	76.6	62.6	48.6	41.6	37.4
(% of individual earnings)	*86.4*	*61.7*	*49.4*	*37.1*	*30.9*	*27.2*
Net replacement rate	119.2	89.3	73.7	57.8	50.3	45.7
(% of individual net earnings)	*100.0*	*73.2*	*59.2*	*44.8*	*38.0*	*33.8*
Gross pension wealth	7.1	7.8	8.5	9.8	11.2	12.6
(multiple of average earnings)	*8.2*	*8.8*	*9.4*	*10.6*	*11.8*	*13.0*
Net pension wealth	8.4	9.2	10.0	11.5	13.0	14.6
(multiple of average net earnings)	*10.0*	*10.6*	*11.3*	*12.6*	*13.9*	*15.2*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Argentina



Source: Axia Economics APEX model.

Chile

WORKERS IN CHILE ARE REQUIRED TO CONTRIBUTE TO A PRIVATELY MANAGED, defined-contribution scheme. There is also a guaranteed minimum pension financed from the central budget. Finally, there is a separate social-assistance pension

Qualifying Conditions

There is no minimum retirement age. Withdrawal of accumulated balances is conditional upon being able to buy an annuity of at least 110 percent of the prevailing minimum pension or 50 percent of the worker's own average earnings over the last 10 years.

For the minimum pension guarantee, there is a pension eligibility age of 65 for men and 60 for women. Also, 20 years' contributions are required to qualify. Periods of unemployment can count for up to three years toward the 20-year requirement.

Benefit Calculation

Defined Contribution

The contribution to the individual account that serves exclusively as retirement savings is 10.0 percent of gross salary. Additional charges amounting to about 2.3 percent of wages cover commissions and insurance for death and disability; these charges have been paid by contributors in recent years. There are no asset-based charges. As of the end of 2002, participants could choose from five different kinds of investment portfolios, subject to some limitations. Several withdrawal options are available, although, for comparison, the modeling assumes that benefits are taken as a price-indexed annuity at the age at which the member qualifies for the minimum pension benefit.

Targeted

The minimum pension guarantee is set by the government on an ad hoc basis. In the past five years, its value has oscillated between 20 and 25 percent of average covered wages.

Personal Income Tax and Social Security Contributions

Neither contributions nor investment returns are taxable. Pensions considered income are subject to taxation and to a 7 percent health insurance tax. The personal income tax schedule is as follows:

Band lower limit Ch$ (000s)	0	3,423	10,269	17,114	30,806	41,075
Rate (%)	0	5	10	15	25	35

In addition to paying roughly 12.30 percent of gross salary for old age and survivor's and disability pensions, employees pay 7.00 percent of earnings for health insurance. Employers pay 0.95 percent of payroll plus up to 6.80 percent for work-injury coverage, according to risk, as well as 4.11 percent for severance allowances. As of January 2003, the ceiling on earnings subject to pension contributions has been 60 *Unidades de Fomento* (UF) or US$ 1,414. The UF is a price-indexed monetary unit, but otherwise, the ceiling is not indexed.

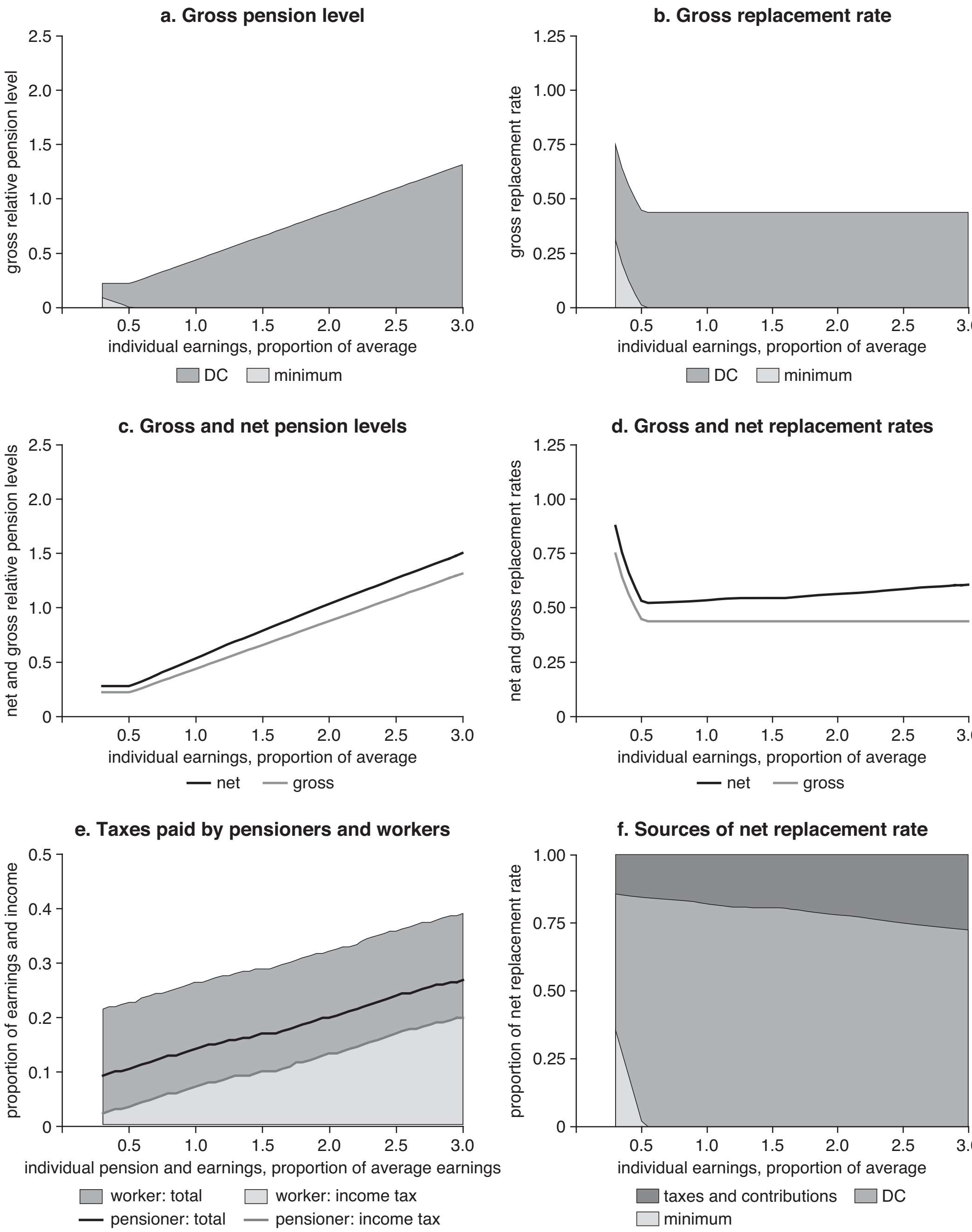
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	22.4	32.8	43.8	65.7	87.5	109.4
(% of average earnings)	*22.4*	*22.4*	*27.1*	*40.6*	*54.1*	*67.7*
Net pension level	28.0	40.4	53.5	78.8	103.4	126.7
(% of average net earnings)	*28.0*	*28.0*	*33.5*	*49.7*	*65.8*	*81.0*
Gross replacement rate	44.9	43.8	43.8	43.8	43.8	43.8
(% of individual earnings)	*44.9*	*29.9*	*27.1*	*27.1*	*27.1*	*27.1*
Net replacement rate	53.3	52.6	53.5	54.5	56.3	58.5
(% of individual net earnings)	*53.3*	*36.5*	*33.5*	*34.4*	*35.8*	*37.4*
Gross pension wealth	3.2	4.7	6.2	9.3	12.5	15.6
(multiple of average earnings)	*4.4*	*4.4*	*5.3*	*7.9*	*10.6*	*13.2*
Net pension wealth	4.0	5.8	7.6	11.2	14.7	18.0
(multiple of average net earnings)	*5.5*	*5.5*	*6.6*	*9.7*	*12.9*	*15.9*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Chile



Source: Axia Economics APEX model.

Colombia

THE NEW SYSTEM IN COLOMBIA PROVIDES A CHOICE between a public, defined-benefit scheme and a funded, privately managed, defined-contribution scheme. There is also an option to switch from one scheme to the other periodically. For a new entrant, a minimum pension is guaranteed with 25 years' contributions.

Qualifying Conditions

Normal retirement age rises gradually to 57 for women and 62 for men by 2014 for the public, defined-benefit scheme. It is currently 60 for women and 62 for men in the private scheme (unless the accumulated balance is enough for an annuity of 110 percent of the minimum pension). The minimum contribution period is increasing to 1,300 weeks (or 25 years) from 2015.

Benefit Calculation

Earnings-Related

From 2004, the pension is between 55 and 65 percent of average individual earnings over the final 10 years, revalued by inflation plus 2.0 percentage points for each of four 50-week periods (up to 85 percent). If the earnings base equals the minimum wage, the replacement rate is 65 percent, with a 0.5 percentage point reduction for each multiple of minimum wage to a minimum of 55 percent.

Targeted

The minimum pension is equivalent to the minimum wage. (In 2002, the minimum wage was equivalent to roughly half of the estimated average covered wage.) There are 14 monthly payments per year (including two bonuses).

Defined Contribution

Individuals choosing the funded option contribute 13.5 percent of gross earnings, rising to 16.5 percent (of which the employee pays one-quarter.) By the year 2008, 12.0 percent of gross earnings will be destined for the individual account, while 3.0 percent will go to finance commissions and insurance premiums. An additional 1.5 percent finances the minimum pension guarantee fund. Workers can switch back to the pay-as-you-go scheme once every 5 years but cannot do so within 10 years of retirement. The minimum pension guarantee is the same as that which applies in the defined-benefit scheme but is paid only 12 times during the year.

Personal Income Tax and Social Security Contributions

Contributions and investment returns are not taxed; pension payments count as taxable income, but only when total income exceeds 50 times the minimum wage. The personal income tax schedule is

Band lower limit (Col$ million)	0	18.2	18.7	27.4	72.8
Rate (%)	0	10	20	30	35

Employers pay social security contributions of 23.5 to 31.8 percent of gross earnings (excluding severance fund contributions), of which 10.125 percent finances pensions. This is scheduled to rise to 12.375 percent by 2008. Employees pay 7.375 percent of gross earnings, of which 3.375 percent is for pensions (rising to 4.125 percent by 2008). There is an additional 1 percent solidarity contribution on earnings above four times the minimum wage. The ceiling is 20 times the minimum wage. Pensioners do not pay social security contributions.

Pension Modeling Results

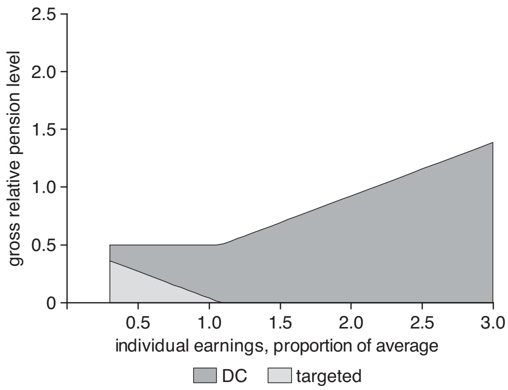
	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	50.0	50.0	50.0	69.1	92.2	115.2
(% of average earnings)	*50.0*	*50.0*	*50.0*	*50.0*	*57.8*	*72.3*
Net pension level	54.4	54.4	54.4	75.3	100.3	125.4
(% of average net earnings)	*54.4*	*54.4*	*54.4*	*54.4*	*63.0*	*78.7*
Gross replacement rate	100.0	66.7	50.0	46.1	46.1	46.1
(% of individual earnings)	*100.0*	*66.7*	*50.0*	*33.3*	*28.9*	*28.9*
Net replacement rate	108.8	72.6	54.4	50.2	50.2	50.3
(% of individual net earnings)	*108.8*	*72.6*	*54.4*	*36.3*	*31.5*	*31.6*
Gross pension wealth	7.4	7.4	7.4	10.2	13.6	17.0
(multiple of average earnings)	*9.9*	*9.9*	*9.9*	*9.9*	*11.5*	*14.3*
Net pension wealth	8.0	8.0	8.0	11.1	14.8	18.5
(multiple of average net earnings)	*10.8*	*10.8*	*10.8*	*10.8*	*12.5*	*15.6*

Source: Axia Economics APEX model.

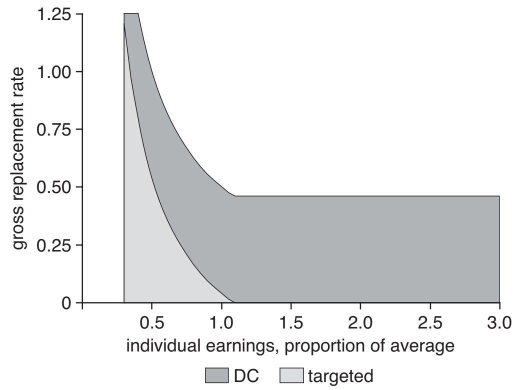
Note: Results in *italics* are for women where the results of women are different from those of men

Colombia

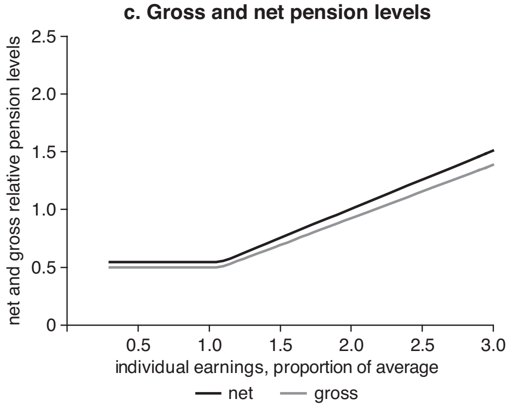
a. Gross pension level



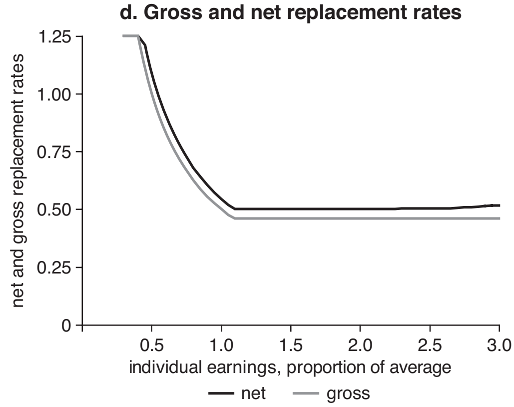
b. Gross replacement rate



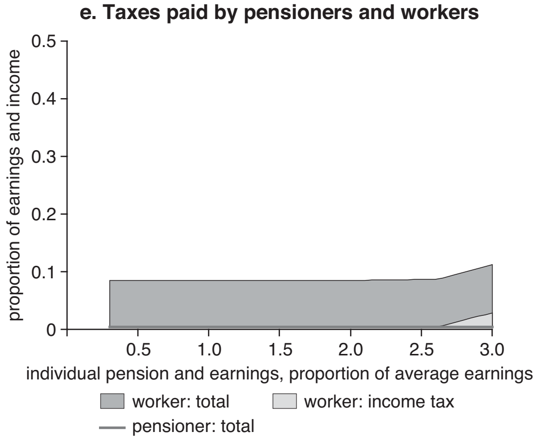
c. Gross and net pension levels



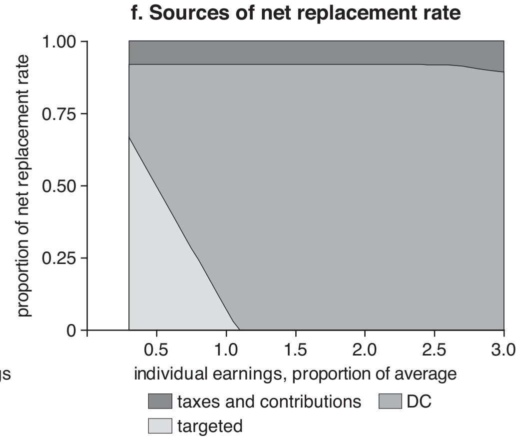
d. Gross and net replacement rates



e. Taxes paid by pensioners and workers



f. Sources of net replacement rate



Source: Axia Economics APEX model.

Costa Rica

All workers in costa rica participate in the public, defined-benefit scheme. Lower-income workers have the option to split their contributions evenly between a defined-contribution scheme and the defined-benefit scheme. Higher-income workers must split their contributions between the two schemes. There is a separate social-assistance pension.

Qualifying Conditions

Retirement is possible at age 59 and 11 months for women and 61 and 11 months for men if they have contributed for 450 or 462 months, respectively. The contribution requirement is reduced for each month so that retirement is possible at age 65 for both sexes after 240 months of contribution. The social-assistance program targeted to the elderly is based on a means test.

Benefit Calculation

Earnings-Related

The target replacement rate for pensions is 60 percent of individual earnings after the first 240 months' coverage plus 1 percentage point per year thereafter. The earnings base is the best 48 out of the last 60 months' pay. Earnings are not revalued for the purposes of this calculation. Pensions in payment are indexed to prices.

Targeted

The minimum pension has been set recently at approximately 20 percent of average covered earnings, while the social-assistance pension has been set at about 10 percent of average earnings.

Defined Contribution

Contributions equivalent to 4.25 percent of gross wage are made to individual accounts for all covered workers. A commission is deducted from this flow with a maximum of either 8 percent of returns or 4 percent of contributions. Disability and survivor's benefits are paid from the public scheme. Benefits may be taken as indexed annuities or scheduled withdrawals.

Personal Income Tax and Social Security Contributions

Employer contributions are tax deductible. However, the 1 percent employee contribution to the funded scheme is not deductible. Investment returns are not taxed. Benefits are taxed as income. The personal income tax schedule is

Band lower limit C (000s)	0	296	445
Rate (%)	0	10	15

Employers pay a total of 27.00 percent gross wages for social insurance and the mandatory severance program, while the employee pays 11.75 percent. There is no ceiling on the wages subject to contributions. Pensioners do not pay social security contributions.

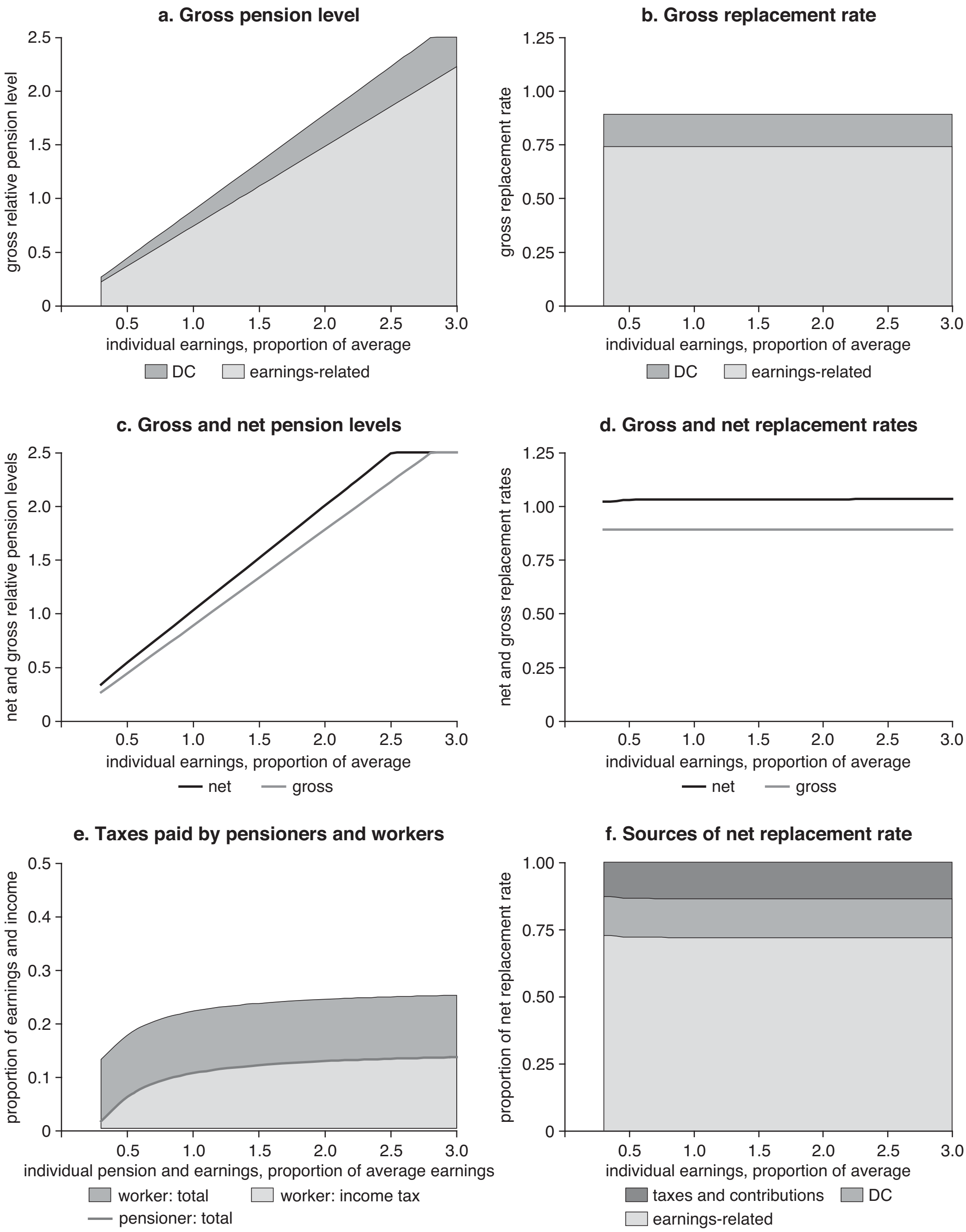
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	44.5	66.7	89.0	133.5	178.0	222.5
(% of average earnings)	*41.8*	*62.7*	*83.5*	*125.3*	*167.1*	*208.8*
Net pension level	54.5	78.8	103.1	151.7	200.3	248.9
(% of average net earnings)	*51.5*	*74.3*	*97.1*	*142.7*	*188.4*	*234.0*
Gross replacement rate	89.0	89.0	89.0	89.0	89.0	89.0
(% of individual earnings)	*83.5*	*83.5*	*83.5*	*83.5*	*83.5*	*83.5*
Net replacement rate	102.9	103.0	103.1	103.1	103.2	103.2
(% of individual net earnings)	*97.3*	*97.2*	*97.1*	*97.1*	*97.0*	*97.0*
Gross pension wealth	7.2	10.8	14.4	21.6	28.8	36.0
(multiple of average earnings)	*8.4*	*12.6*	*16.7*	*25.1*	*33.5*	*41.9*
Net pension wealth	8.8	12.8	16.7	24.6	32.4	40.3
(multiple of average net earnings)	*10.3*	*14.9*	*19.5*	*28.6*	*37.8*	*46.9*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Costa Rica



Source: Axia Economics APEX model.

The Dominican Republic

New labor-market entrants in the dominican republic are obliged to join the new, funded, and privately managed defined-contribution scheme. A minimum pension guarantee applies after 30 years of contributions at age 60. A social-assistance benefit for the elderly is also being introduced.

Qualifying Conditions

Workers who have contributed for 30 years can retire at age 60 and are eligible for the minimum pension guarantee. Regardless of contribution history, if they have sufficient funds to purchase an annuity equivalent to at least half of the minimum pension, they may retire at age 55.

Benefit Calculation

Earnings-Related

The two defined-benefit schemes covering civil servants and formal private sector workers are phased out over time, as all new entrants are required to join the new scheme.

Defined Contribution

Contribution rates will rise over a five-year period. From 2007, employees and employers will contribute 2.88 percent and 7.12 percent of gross wages, respectively, for old-age, survivor's, and disability insurance. Of this amount, 8.0 percentage points are destined for the individual accounts. Insurance premiums are set by law at 1.0 percent of gross wages, and commissions are capped at 0.5 percent of wages, although charges on returns over a certain level are permitted. A fee of 0.1 percentage points is levied to finance the specialized pension fund supervisory agency, and a contribution to the solidarity fund of 0.4 percent is required. Benefits can be taken as scheduled withdrawals or price-indexed annuities.

Targeted

The minimum pension is equivalent to the lowest minimum wage in the country: approximately 40 percent of the estimated average covered wage.

Personal Income Tax and Social Security Contributions

Contributions and investment returns are not taxed, but pension payments count as taxable income. The personal income tax schedule is

Band lower limit RD$ (000s)	0	120	200	300
Rate (%)	0	15	20	25

Employers pay social security contributions of 14.12 percent of gross earnings for health, pensions, and work injury, while employees pay 5.88 percent. The ceiling for contributions is 10 minimum wages for health and 20 minimum wages for pensions. The minimum wage was estimated at approximately 40 percent of projected average covered wage. Pensioners do not pay social security contributions.

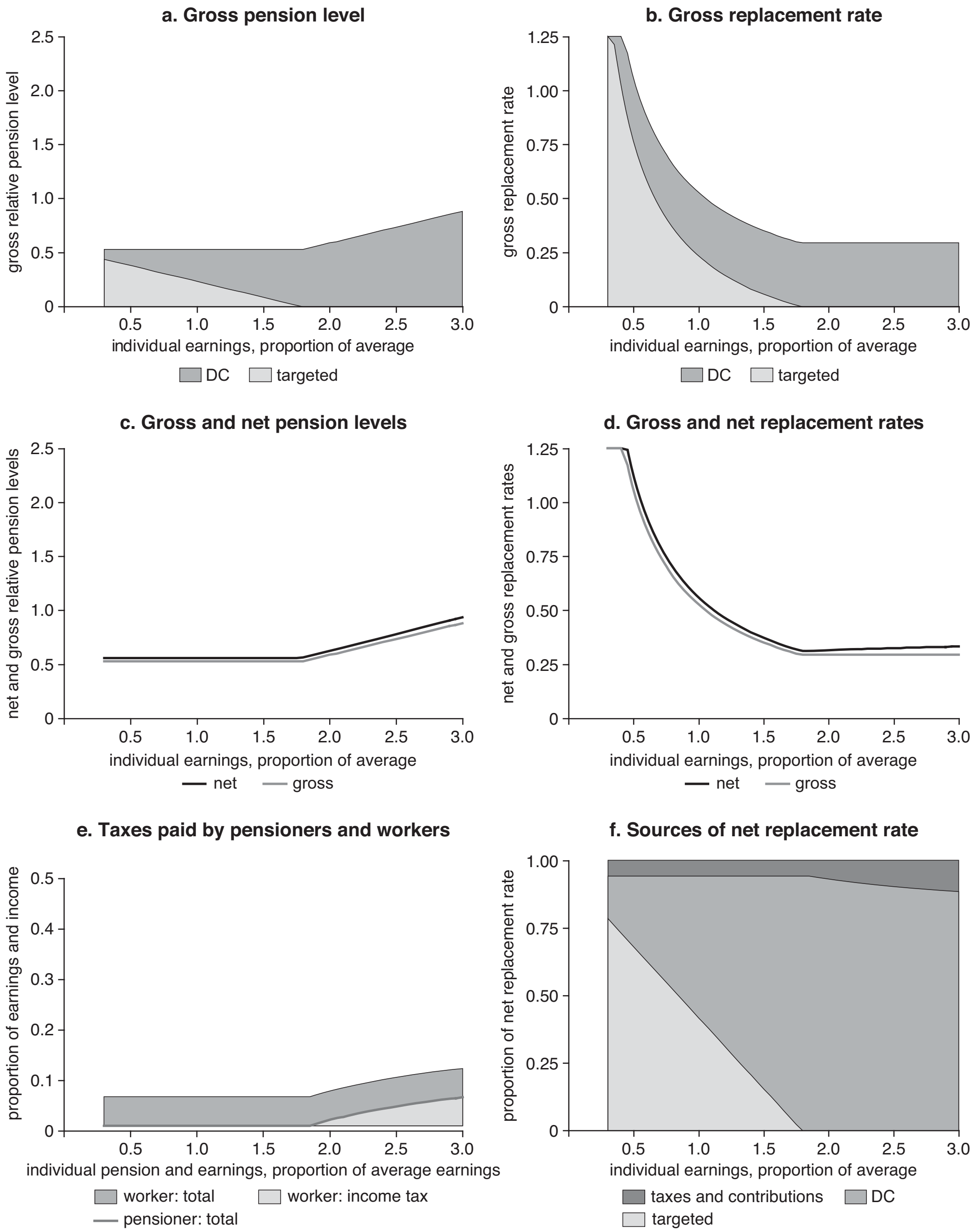
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	52.6	52.6	52.6	52.6	58.7	73.4
(% of average earnings)	*52.6*	*52.6*	*52.6*	*52.6*	*52.6*	*59.9*
Net pension level	55.9	55.9	55.9	55.9	62.4	78.0
(% of average net earnings)	*55.9*	*55.9*	*55.9*	*55.9*	*55.9*	*63.6*
Gross replacement rate	105.3	70.2	52.6	35.1	29.4	29.4
(% of individual earnings)	*105.3*	*70.2*	*52.6*	*35.1*	*26.3*	*23.9*
Net replacement rate	111.8	74.6	55.9	37.3	31.6	32.6
(% of individual net earnings)	*111.8*	*74.6*	*55.9*	*37.3*	*28.3*	*26.5*
Gross pension wealth	7.6	7.6	7.6	7.6	8.5	10.6
(multiple of average earnings)	*9.3*	*9.3*	*9.3*	*9.3*	*9.3*	*10.6*
Net pension wealth	8.1	8.1	8.1	8.1	9.0	11.3
(multiple of average net earnings)	*9.9*	*9.9*	*9.9*	*9.9*	*9.9*	*11.3*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Dominican Republic



Source: Axia Economics APEX model.

El Salvador

NEW ENTRANTS IN EL SALVADOR ARE OBLIGED TO JOIN THE NEW, FUNDED, and privately managed defined-contribution scheme. A minimum pension guarantee requires 25 years of contributions at minimum retirement age.

Qualifying Conditions

Men that have contributed for 25 years are eligible to retire at age 60 and women at age 55. After 30 years of contribution, there is no age requirement. Retirement is also allowed if the account balance is sufficient to purchase an annuity equal to 60 percent of basic earnings or 160 percent of the minimum pension.

Benefit Calculation

Defined Contribution

Employees and employers contribute 6.25 and 6.75 percent, respectively, of which 10 percentage points are allocated to individual accounts. Commissions and disability and survivor's insurance are financed from up to 3 percentage points of the total contribution. Benefits can be taken as scheduled withdrawals or price-indexed annuities, although currently the former are only allowed.

Targeted

The minimum pension is set at US$ 100. Eligibility for the minimum pension is achieved with 25 years of contribution.

Personal Income Tax and Social Security Contributions

Contributions and investment returns are not taxed, but pension payments count as taxable income. Wages and pensions are subject to a progressive income tax. Below the lower limit (US$ 3,800) no tax is due. Beyond that the tax consists of a flat amount plus a rate levied on income above a certain threshold, as set out in the table:

Band lower limit (US $)	Flat payment (US $)	Rate on excess (%)	Threshold (US $)
3,800	57	10	3,800
5,630	57	10	2,743
9,143	720	20	9,143
22,856	2,743	30	22,856

Employers pay social security contributions of 14.25 percent of gross earnings for health, pensions, and work injury, while employees pay 9.25 percent. Of this, 13 percentage points are for pensions. The ceiling is US$ 6,100. It is adjusted on an ad hoc basis. Pensioners pay 7.80 percent of their pensions for public health insurance.

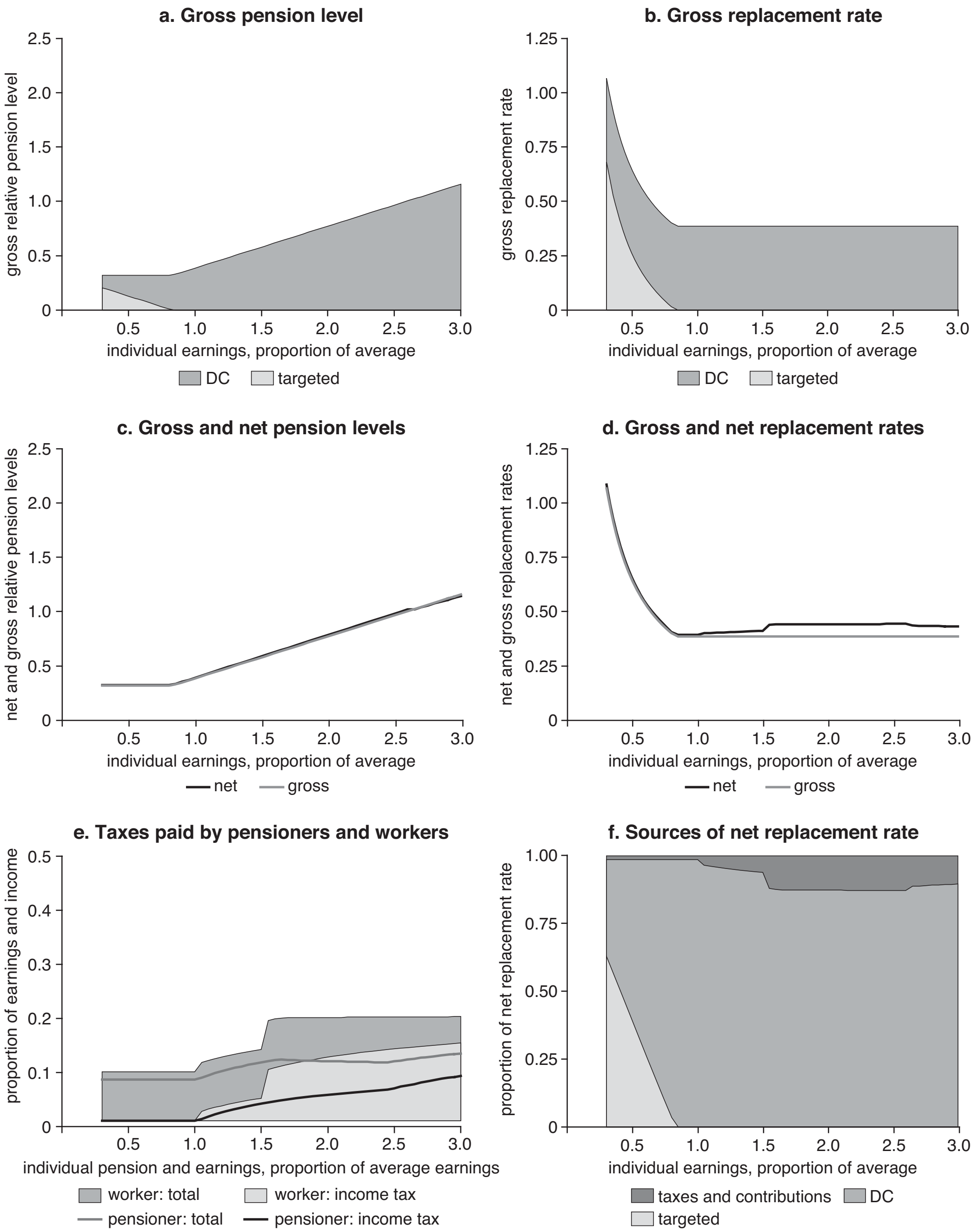
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	32.1	32.1	38.7	58.0	77.4	96.7
(% of average earnings)	*32.1*	*32.1*	*32.1*	*35.8*	*47.7*	*59.7*
Net pension level	32.6	32.6	39.3	58.9	78.6	98.2
(% of average net earnings)	*32.6*	*32.6*	*32.6*	*36.4*	*48.5*	*60.6*
Gross replacement rate	64.1	42.7	38.7	38.7	38.7	38.7
(% of individual earnings)	*64.1*	*42.7*	*32.1*	*23.9*	*23.9*	*23.9*
Net replacement rate	65.1	43.4	39.3	41.2	44.3	44.4
(% of individual net earnings)	*65.1*	*43.4*	*32.6*	*25.4*	*27.4*	*27.4*
Gross pension wealth	4.8	4.8	5.8	8.8	11.7	14.6
(multiple of average earnings)	*6.6*	*6.6*	*6.6*	*7.3*	*9.8*	*12.2*
Net pension wealth	4.9	4.9	5.9	8.9	11.9	14.8
(multiple of average net earnings)	*6.7*	*6.7*	*6.7*	*7.4*	*9.9*	*12.4*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

El Salvador



Source: Axia Economics APEX model.

Mexico

NEW LABOR-FORCE ENTRANTS IN MEXICO ARE OBLIGED TO JOIN THE NEW, funded, and privately managed defined-contribution scheme. The government contributes 5.5 percent of the 1997 real minimum wage to the individual account. There is also a minimum pension.

Qualifying Conditions

Normal retirement age is 65 for men and 60 for women, subject to 1,250 weeks (approximately 25 years) of contribution.

Benefit Calculation

Defined Contribution

Workers and employers contribute a total of 6.275 percent of earnings to an individual account; a government contribution equivalent to 0.225 percent of earnings is added to that amount. An additional 5.0 percent contribution is made to an individual housing account (a scheme known as *Infonavit*), which reverts to the retirement account when it is not used. Finally, the government contributes 5.5 percent of the 1997 real minimum wage into all individual retirement accounts.

The calculations assume that the individual converts the accumulated account balance into a price-indexed annuity at normal pension age. Annuity rates are sex specific.

Minimum

The minimum pension is equivalent to the same 1997 real minimum-wage value and was estimated to be approximately 23 percent of the average covered wage in 2002. The link to the real minimum wage means that the minimum pension is effectively price indexed.

Personal Income Tax and Social Security Contributions

The allowance for pensioners is set at nine times the minimum wage in place of the workers' formula based on bonuses and holiday entitlements (no tax is paid on pensions up to this level). There are no reliefs for pension income over the higher allowance. Pensioners do not pay social security contributions.

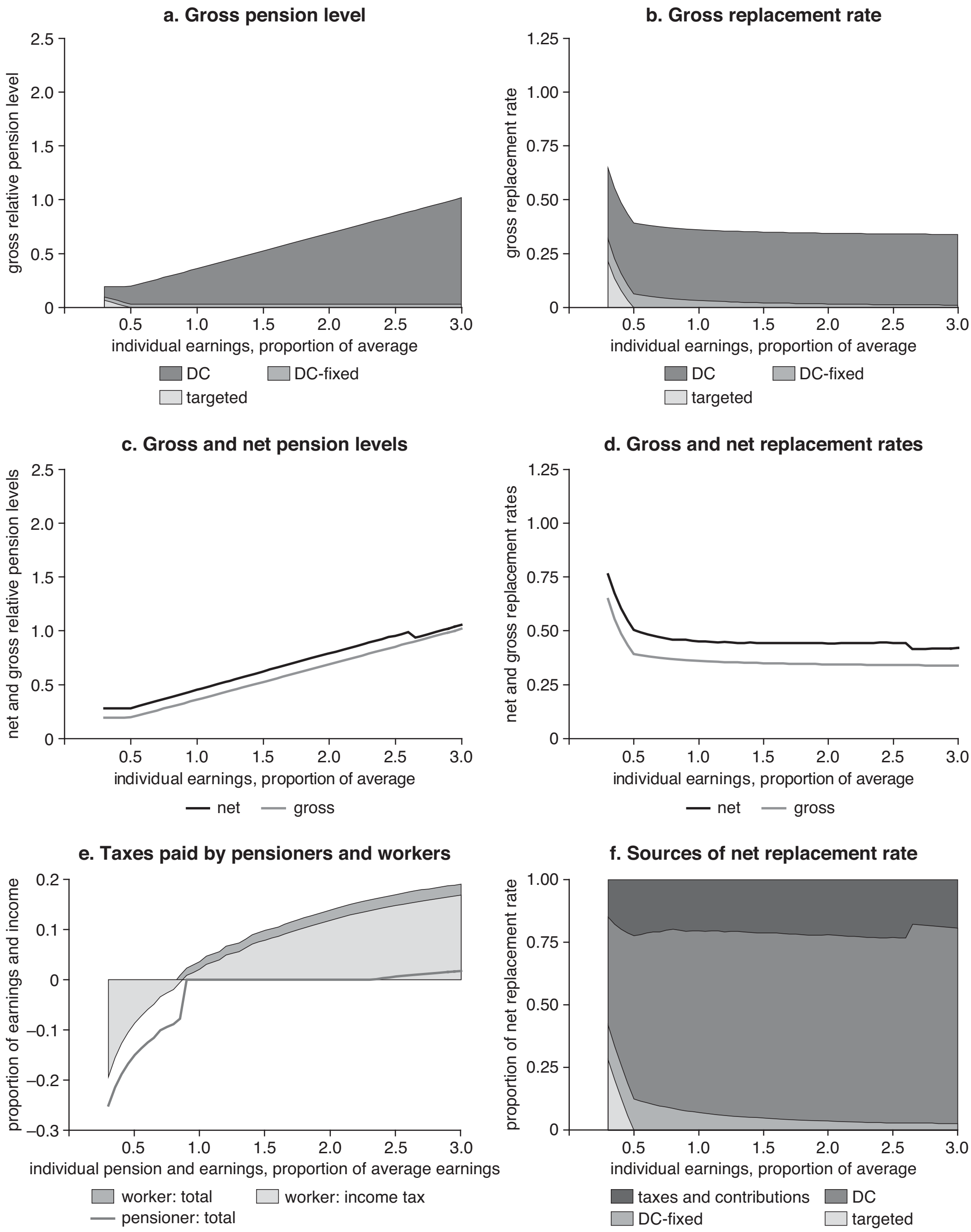
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	19.6	27.8	36.0	52.4	68.7	85.1
(% of average earnings)	*19.4*	*19.4*	*21.7*	*31.6*	*41.5*	*51.3*
Net pension level	28.1	36.6	45.1	62.1	78.7	95.1
(% of average net earnings)	*27.9*	*27.9*	*30.4*	*40.6*	*50.8*	*61.1*
Gross replacement rate	39.1	37.0	36.0	34.9	34.4	34.1
(% of individual earnings)	*38.8*	*25.9*	*21.7*	*21.1*	*20.7*	*20.5*
Net replacement rate	50.4	46.4	45.1	44.3	44.1	44.2
(% of individual net earnings)	*50.1*	*35.4*	*30.4*	*28.9*	*28.5*	*28.4*
Gross pension wealth	2.6	3.7	4.8	7.0	9.1	11.3
(multiple of average earnings)	*3.6*	*3.6*	*4.1*	*5.9*	*7.8*	*9.6*
Net pension wealth	3.7	4.9	6.0	8.3	10.5	12.6
(multiple of average net earnings)	*5.2*	*5.2*	*5.7*	*7.6*	*9.5*	*11.5*

Source: OECD pension models.

Note: Results in *italics* are for women where the results of women are different from those of men.

Mexico



Source: OECD pension models.

Peru

THE DEFINED-CONTRIBUTION PENSION SCHEME IN PERU is an option for new labor-market entrants as well as for current workers. The minimum pension for people taking the funded option has not yet been established.

Qualifying Conditions

The standard pension age for both men and women is 65. The vesting requirement is 20 years' contributions.

Benefit Calculation

Targeted

The minimum pension, as currently legislated, does not apply to younger workers. However, there appears to be a general expectation that this will be extended to younger cohorts in due course. The value of the scheme is currently 415 pesos per month, equivalent to approximately a quarter of average covered earnings.

Defined Contribution

The contribution rate to the funded scheme is 8.00 percent. In addition, there are contributions of 2.27 percent and 1.23 percent on average, respectively, for insurance and charges.

Personal Income Tax and Social Security Contributions

Contributions and returns on individual account balances are exempted from tax. There is a general allowance of 1,560 pesos per month. The income tax schedule is based on multiples of tax reference units (UITs), which are 0, 27, and 54. This converts into annual income as follows:

Band lower limit S/. (000s)	0	83.7	167.4
Rate (%)	15	21	30

The total employee contribution for pensions is 13.5 percent (split, as set out above). There are no further employee social security contributions. For sickness and maternity, employers pay 9.0 percent, and pensioners, 4.0 percent. For work injury, the employer contribution varies between 1.0 and 12.2 percent, according to risk in the relevant industry.

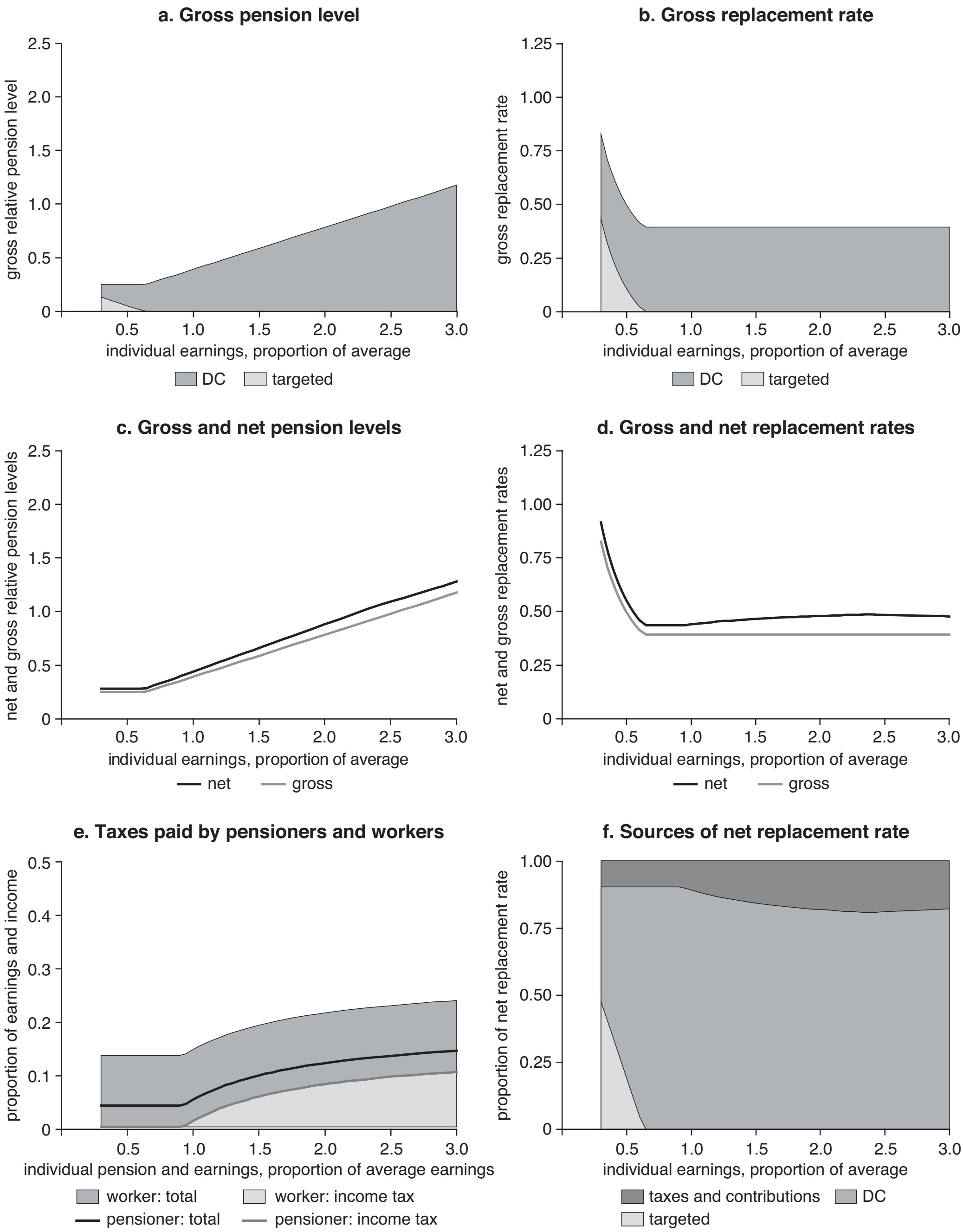
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	24.7	29.3	39.1	58.6	78.2	97.7
(% of average earnings)	*24.7*	*25.7*	*34.2*	*51.3*	*68.4*	*85.5*
Net pension level	27.8	32.9	43.9	65.9	87.8	109.0
(% of average net earnings)	*27.8*	*28.8*	*38.4*	*57.7*	*76.9*	*96.1*
Gross replacement rate	49.4	39.1	39.1	39.1	39.1	39.1
(% of individual earnings)	*49.4*	*34.2*	*34.2*	*34.2*	*34.2*	*34.2*
Net replacement rate	54.8	43.4	43.9	46.4	47.8	48.3
(% of individual net earnings)	*54.8*	*38.0*	*38.4*	*40.7*	*41.9*	*42.6*
Gross pension wealth	3.2	3.7	5.0	7.5	10.0	12.5
(multiple of average earnings)	*3.6*	*3.7*	*5.0*	*7.5*	*10.0*	*12.5*
Net pension wealth	3.5	4.2	5.6	8.4	11.2	13.9
(multiple of average net earnings)	*4.0*	*4.2*	*5.6*	*8.4*	*11.2*	*14.0*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Peru



Source: Axia Economics APEX model.

Uruguay

THE PUBLIC, DEFINED-BENEFIT SCHEME IN URUGUAY COVERS earnings up to a specific level. Lower-income workers can split their contributions evenly between defined-contribution and defined-benefit schemes. The split for higher-income workers varies with income. There is a separate social-assistance pension.

Qualifying Conditions

Retirement is allowed at age 60 for both men and women with 35 years of contribution. Pensions can also be paid to individuals with 15 years of contributions at age 70.

Benefit Calculation

Earnings-Related

The pension is 50.0 percent of the earnings base plus 0.5 percent for each contribution year above 35 years (up to 2.5 percent). It increases by 3.0 percent for each year retirement is deferred after age 60 (up to 30.0 percent). The earnings base is the final 10 years' pay (revalued with average earnings). The ceiling, indexed to average earnings, is approximately twice average earnings. In the calculation of pensionable earnings, the portion of pay subject to contributions is multiplied by 1.5 up to the maximum earnings base (10,908 pesos in 2003).

Targeted

The minimum pension, linked to the minimum wage, is worth approximately 20 percent of average earnings. From age 70, an individual with 15 years' contributions qualifies for an advanced age pension and a higher minimum pension.

Defined Contribution

On earnings below the maximum base, the contribution is 7.5 percent of earnings up to half the maximum base and 7.5 percent on half of pay below half the maximum base. On earnings between 1.0 and 1.5 times the maximum base, the contribution is 7.5 percent on half of pay up to the maximum base. For these workers, the entire 15 percent contribution on income between 1.0 and 1.5 times the maximum base goes to the earnings-related scheme. On earnings above 1.5 times the maximum base, the whole contribution (up to the ceiling on taxable earnings) goes to the individual account. For workers with individual accounts, the contribution to the funded scheme covers disability and survivor's insurance as well as commissions for private providers. Over the past few years, this has cost about 2.7 percent of covered wage. Benefits must be taken as price-indexed annuities.

Personal Income Tax and Social Security Contributions

Contributions and investment returns are exempt. The income tax is 2 percent on incomes above three times the minimum wage and 3 percent above six times. The minimum wage was approximately 17 percent of average earnings in 2002. The progressive tax schedule is

Band lower limit (minimum wages)	20	30	40	50
Rate (%)	3	4	5	8

Employers contribute at least 22.5 percent, while employees pay 18.0 percent. The ceiling is 32,725 pesos per month (2003) or 5.7 times average covered earnings. It is indexed to average earnings.

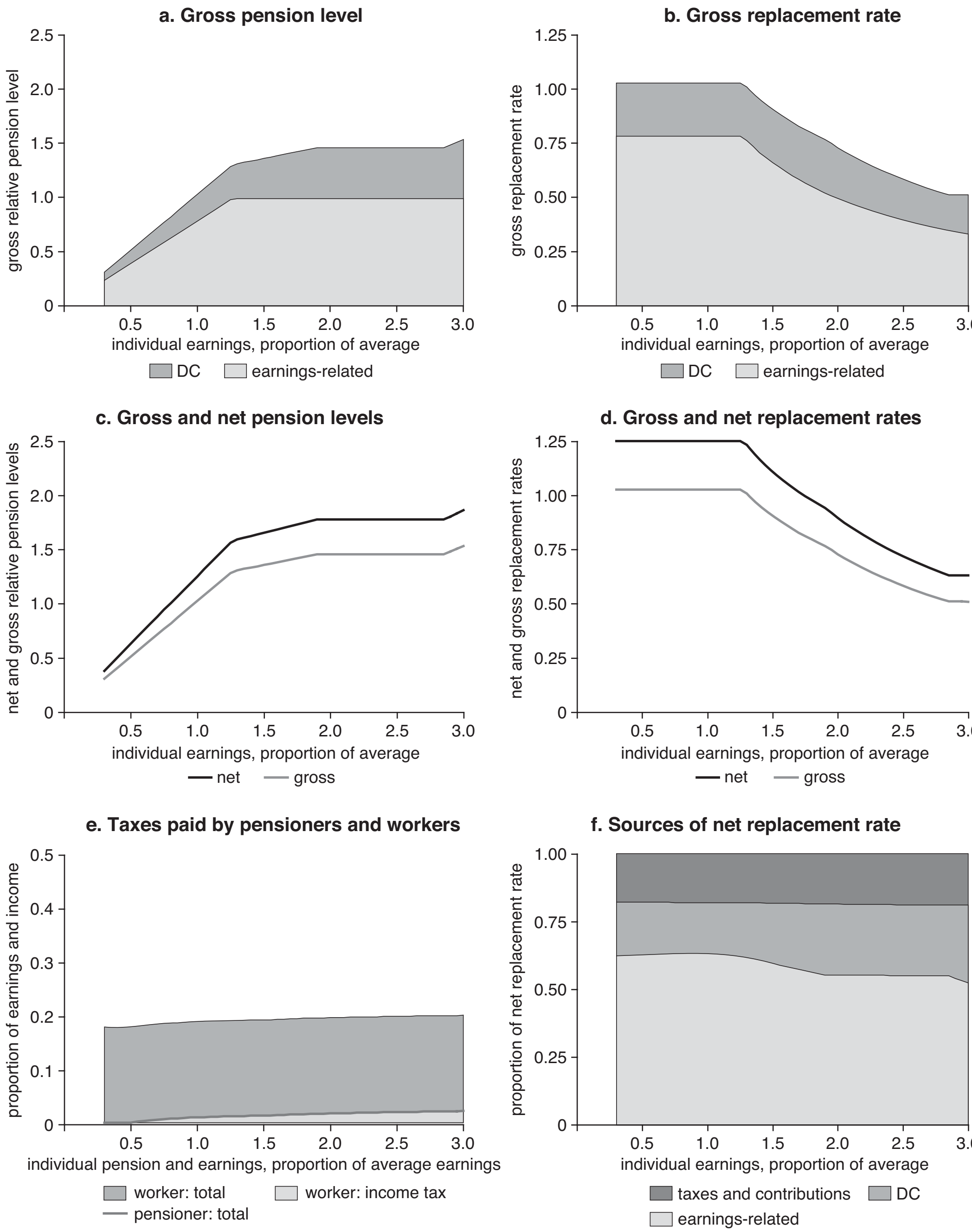
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	51.3	77.0	102.6	135.8	145.6	145.6
(% of average earnings)	*49.0*	*73.5*	*98.0*	*128.8*	*136.8*	*136.8*
Net pension level	63.3	94.4	125.4	165.5	177.4	177.4
(% of average net earnings)	*60.5*	*90.2*	*119.8*	*157.1*	*166.8*	*166.8*
Gross replacement rate	102.6	102.6	102.6	90.5	72.8	58.2
(% of individual earnings)	*98.0*	*98.0*	*98.0*	*85.9*	*68.4*	*54.7*
Net replacement rate	125.1	125.3	125.4	110.8	89.5	71.8
(% of individual net earnings)	*119.5*	*119.7*	*119.8*	*105.2*	*84.2*	*67.5*
Gross pension wealth	8.3	12.4	16.6	21.9	23.5	23.5
(multiple of average earnings)	*9.7*	*14.6*	*19.5*	*25.6*	*27.2*	*27.2*
Net pension wealth	10.2	15.2	20.2	26.7	28.6	28.6
(multiple of average net earnings)	*12.0*	*17.9*	*23.8*	*31.2*	*33.1*	*33.1*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Uruguay



Source: Axia Economics APEX model.

13. Middle East and North Africa

Algeria

ALGERIA HAS AN EARNINGS-RELATED PUBLIC SCHEME with a minimum pension that covers both public and private sectors.

Qualifying Conditions

The normal pension age is 60 for men and 55 for women. The contribution condition is 15 years for men and 10 years for women. Earlier retirement is available for veterans and for people in arduous or hazardous occupations. The pension age for women is reduced by one year for each child they have raised, to a maximum of three children. Pension receipt is subject to a retirement test.

Early retirement is possible at 50 for men and 45 for women, subject to 14 years of employment for women and 20 years of employment for men.

Finally, people may retire at any age with 32 years of contributions.

Benefit Calculation

Earnings-Related

The accrual rate is 2.5 percent of earnings per year of coverage. The earnings measure is the final five years of pay. There is no valorization of earlier years' earnings. There is a maximum replacement rate of 80 percent (achieved after 32 years of contributions).

There is a maximum pension (15 times the minimum wage or DA 150,000) and a ceiling on pensionable earnings.

There is a reduction of 1 percent for each year that the pension is claimed earlier than the legal retirement age.

There is a requirement that the value of pensions in payment be reviewed annually, but there is no formal indexation procedure.

Minimum

There is a minimum pension worth 75 percent of the minimum wage, which in 2002 was equivalent to DA 7,500 per month.

Personal Income Tax and Social Security Contributions

The income tax schedule is shown below. Employees' social security contributions are deductible against the personal income tax. Pension benefits are taxable.

Band lower limit DA	0	10,000	15,000	30,000	70,000	100,000
Rate (%)	0	5	10	15	20	25

Total social security contributions are 34.5 percent of gross earnings, of which 25 percentage points are paid by employers and the remainder by employees. Of the total contribution, 16 percentage points go toward financing pensions, 4 points go toward unemployment insurance, and the balance covers health insurance. There is no ceiling on earnings subject to social security contributions. The contribution rates are the same for national and public sector schemes. Pensioners do not pay social security contributions.

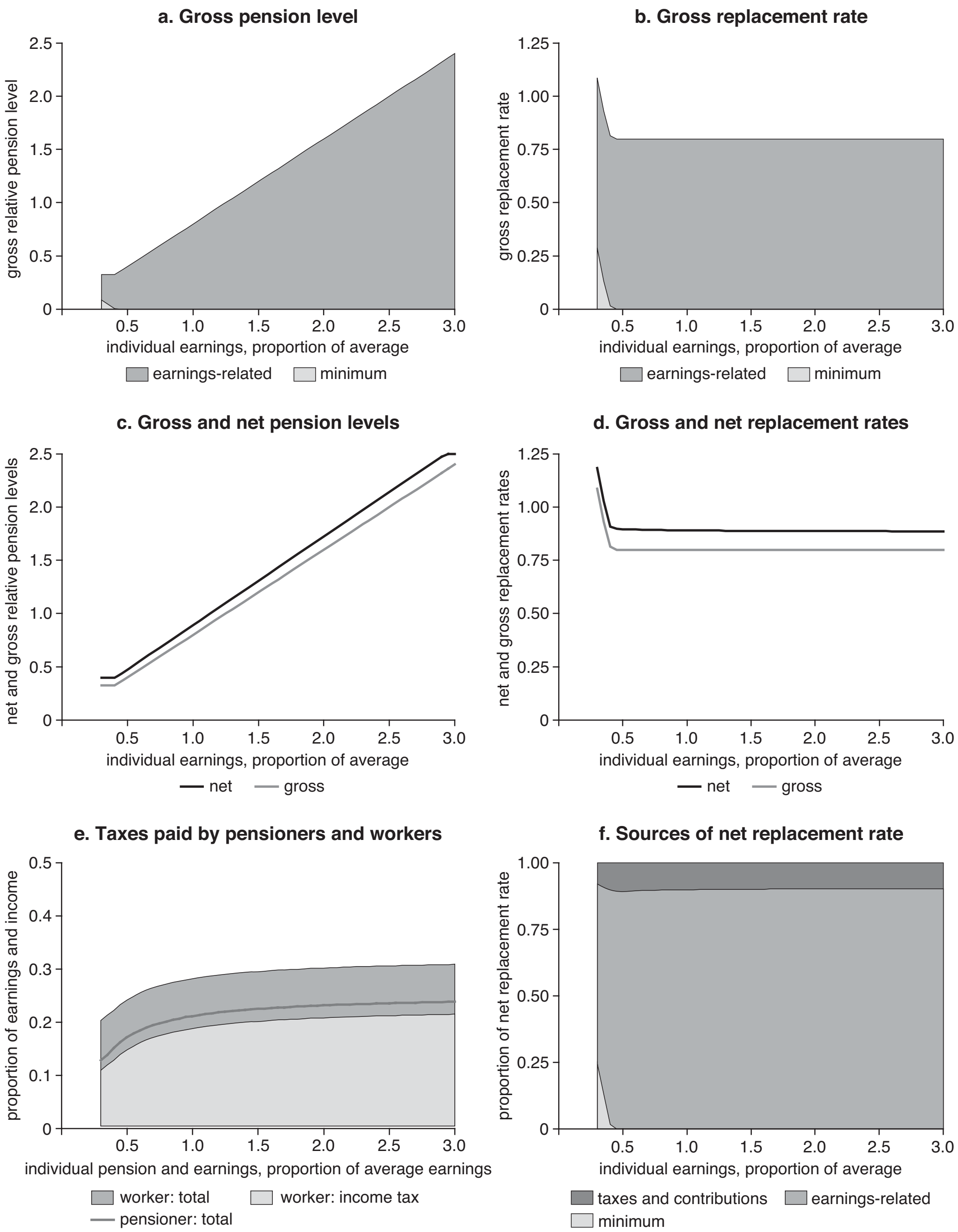
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	40.0	60.0	80.0	120.0	160.0	200.0
Net pension level (% of average net earnings)	47.4	68.2	89.1	130.8	172.4	214.1
Gross replacement rate (% of individual earnings)	80.0	80.0	80.0	80.0	80.0	80.0
Net replacement rate (% of individual net earnings)	89.6	89.3	89.1	88.8	88.7	88.7
Gross pension wealth (multiple of average earnings)	7.8 *8.6*	11.7 *13.0*	15.7 *17.3*	23.5 *25.9*	31.3 *34.6*	39.1 *43.2*
Net pension wealth (multiple of average net earnings)	9.3 *10.2*	13.3 *14.7*	17.4 *19.2*	25.6 *28.3*	33.7 *37.3*	41.9 *46.3*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Algeria



Source: Axia Economics APEX model.

Bahrain

BAHRAIN HAS AN EARNINGS-RELATED SCHEME WITH A MINIMUM PENSION.

Qualifying Conditions

Retirement is possible at different ages depending on the number of years of contributions. The normal pension age in the scheme for private sector workers is 60 for men and 55 for women. There is a contribution condition of 15 years for men and 10 years for women to retire at the normal pension age. Early retirement is possible from age 45 with 20 years of contributions for men and 15 years for women. Pension receipt is subject to retirement from the current job. Earnings plus pension receipt must not exceed previous earnings.

Benefit Calculation

Earnings-Related

The pension value is 2.2 percent of earnings for each year of contributions. There is a maximum replacement rate of 80 percent, normally reached after 36 years' contributions.

The earnings measure is average pay in the two years before retirement. There is an additional credit of five years of coverage for retirement after age 60, subject to a maximum accrual of 30 years.

There is no ceiling on pensionable earnings. Pensions in payment are adjusted ad hoc.

Minimum

There is a minimum pension of 150 dinars per month.

Personal Income Tax and Social Security Contributions

There is no personal income tax in Bahrain.

Employees contribute 5 percent, and employers contribute 7 percent for pensions. Employers pay an additional 3 percent for the work-injury scheme. There is no ceiling on earnings subject to contributions. Pensioners do not pay social security contributions.

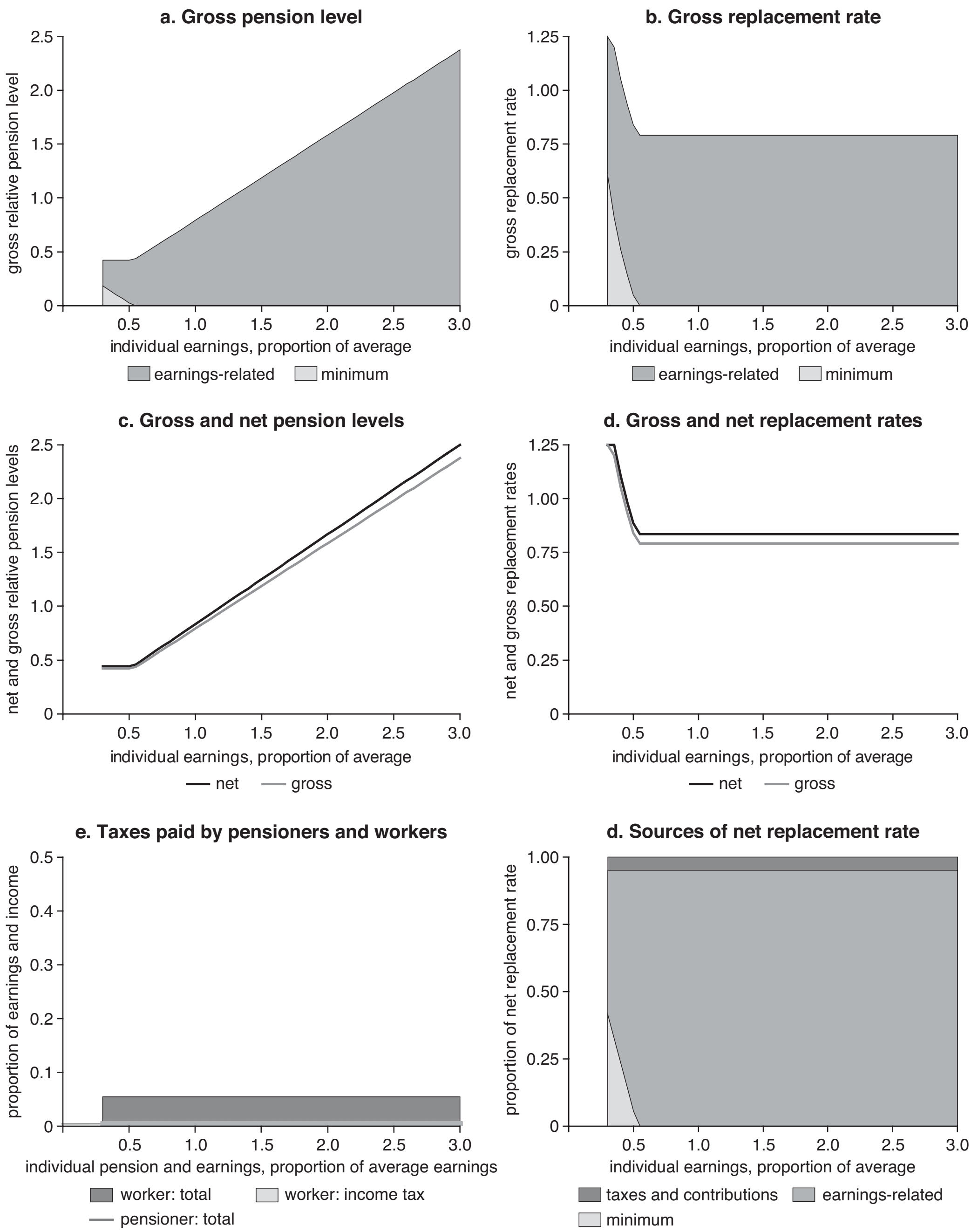
Pension Modeling Results

Results	Individual earnings, multiple of average					
	0.5	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	42.0	59.4	79.2	118.8	158.4	198.0
(% of average earnings)	*42.0*	*57.8*	*77.0*	*115.5*	*154.0*	*192.5*
Net pension level	44.2	62.5	83.4	125.1	166.7	208.4
(% of average net earnings)	*44.2*	*60.8*	*81.1*	*121.6*	*162.1*	*202.6*
Gross replacement rate	84.0	79.2	79.2	79.2	79.2	79.2
(% of individual earnings)	*84.0*	*77.0*	*77.0*	*77.0*	*77.0*	*77.0*
Net replacement rate	88.4	83.4	83.4	83.4	83.4	83.4
(% of individual net earnings)	*88.4*	*81.1*	*81.1*	*81.1*	*81.1*	*81.1*
ross pension wealth	7.7	10.9	14.5	21.7	29.0	36.2
(multiple of average earnings)	*9.0*	*12.4*	*16.5*	*24.8*	*33.0*	*41.3*
Net pension wealth	8.1	11.4	15.3	22.9	30.5	38.1
(multiple of average net earnings)	*9.5*	*13.0*	*17.4*	*26.1*	*34.8*	*43.5*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Bahrain



Source: Axia Economics APEX model.

Djibouti

SEPARATE PROGRAMS COVER PRIVATE AND PUBLIC SECTOR WORKERS, but the parameters and rules have been partially harmonized between the two programs. There is also a minimum pension.

Qualifying Conditions

The normal pension eligibility age under the national scheme is 55 for both men and women. The number of years of contributions required has recently been increased. Thus, people born after 1951 need 25 years' contributions, while those born in 1946 or before require only 15 years'. During the phased introduction of this reform, the number of contribution years increases by two years per year. For people not meeting the vesting requirement, it is intended that they will be able to retire at 55 or later with a reduced pension. However, the regulations have not yet been issued. Retirement on medical grounds is possible from age 50.

Benefit Calculation

Earnings-Related

The accrual rate has been changed recently and will fall from 2.0 percent (up to the end of 2001) to 1.5 percent (2006 onward). In the interim, the accrual rate is 1.8 percent. There is a maximum replacement rate of 81 percent of earnings.

The earnings measure is the average over the last 10 years. There is a legal requirement to valorize earlier years' earnings according to an index specified by the government. However, again, no regulations have been issued. The modeling therefore assumes that these earlier years' earnings are valorized in line with the growth of average earnings.

There is no ceiling on pensionable earnings.

Indexation of pensions in payment is discretionary.

Minimum

There is a minimum pension of DF 170,000 per year.

Personal Income Tax and Social Security Contributions

Pension contributions are deductible against the personal income tax. Pensions in payment are taxable. For incomes between DF 25,000 and DF 30,000 per year, the tax liability is DF 500. Thereafter, there is a schedule as follows:

Band lower limit DF (000s)	30	50	150	600
Rate (%)	15	18	20	30

For private sector employees, total contributions are 19.7 percent of earnings, of which 8 percentage points are for pensions. These contributions are split 50–50 between employees and their employers. Pensioners do not pay social security contributions.

Pension Modeling Results

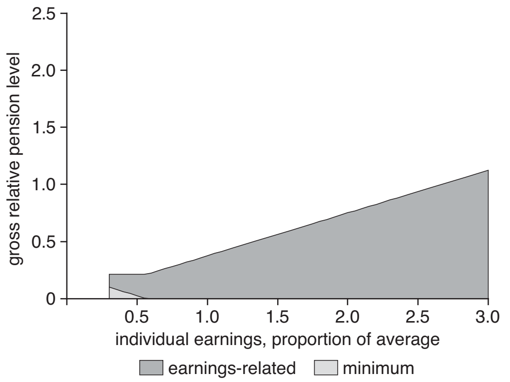
	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	21.3	28.1	37.5	56.3	75.0	93.8
Net pension level (% of average net earnings)	25.3	32.9	43.4	64.3	85.2	103.5
Gross replacement rate (% of individual earnings)	42.5	37.5	37.5	37.5	37.5	37.5
Net replacement rate (% of individual net earnings)	48.7	42.8	43.4	44.7	45.3	44.6
Gross pension wealth	4.2	5.6	7.4	11.1	14.8	18.5
(multiple of average earnings)	*4.4*	*5.8*	*7.8*	*11.7*	*15.6*	*19.5*
Net pension wealth	5.0	6.5	8.6	12.7	16.8	20.4
(multiple of average net earnings)	*5.2*	*6.8*	*9.0*	*13.4*	*17.7*	*21.5*

Source: Axia Economics APEX model.

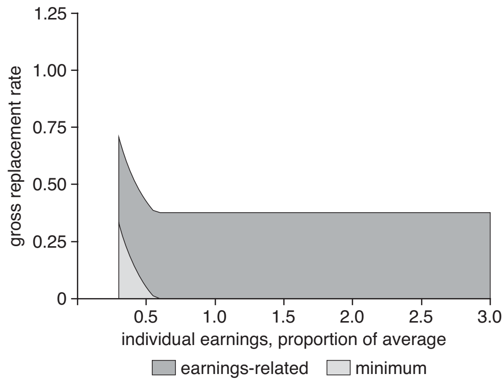
Note: Results in *italics* are for women where the results of women are different from those of men.

Djibouti

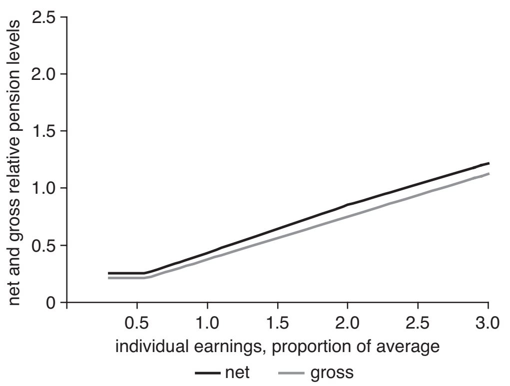
a. Gross pension level



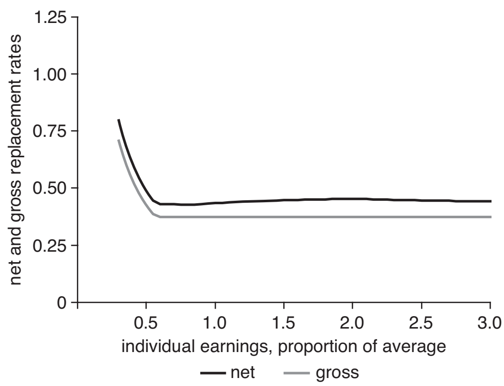
b. Gross replacement rate



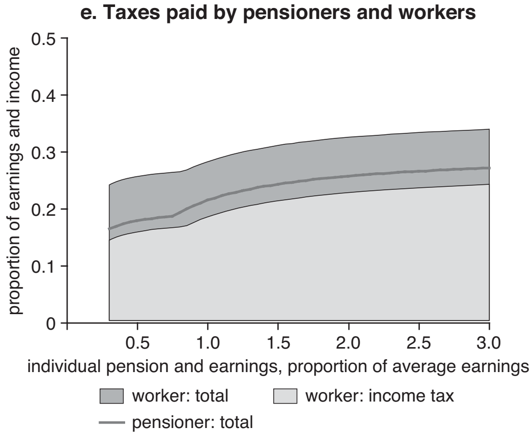
c. Gross and net pension levels



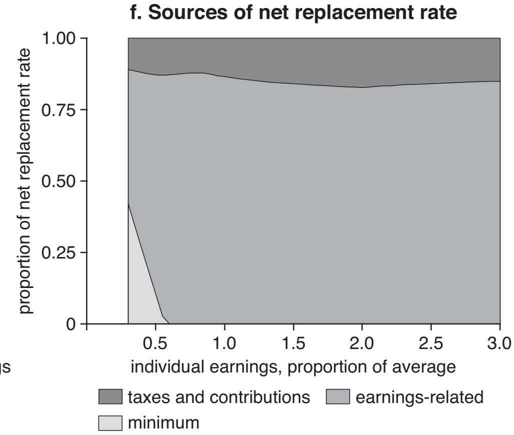
d. Gross and net replacement rates



e. Taxes paid by pensioners and workers



f. Sources of net replacement rate



Source: Axia Economics APEX model.

The Arab Republic of Egypt

EGYPT HAS AN EARNINGS-RELATED SCHEME that covers both public and private sectors along with a minimum pension.

Qualifying Conditions

The basic wage pension is available from age 60 subject to 120 months (10 years) of contributions. Early retirement is possible at any age when 20 years of contributions are reached, subject to an actuarial decrement. These qualifying conditions also apply to the variable wage pension. Lump-sum payouts are made at age 60 to people who do not qualify for the pension.

Benefit Calculation

Earnings-Related

The basic wage pension covers earnings up to LE 8,100 per year. The pension is 1/45th (2.2 percent) of earnings, with higher accrual rates for periods in arduous or hazardous work. The earnings measure is the average pay in the last two years. Maximum coverage is 36 years, giving a maximum replacement rate of 80 percent. (Contribution years beyond 36 earn a lump sum of 15 percent of basic wage.) There is an additional bonus of 25 percent of the basic wage pension, subject to a minimum of LE 20 and a maximum of LE 35 per month. Early retirement, conditional on 20 years' contributions, is subject to adjustments:

Pension age	<45	45–49	50–54	55+
Reduction (%)	15	10	5	0

The variable wage pension covers earnings above LE 8,100 per year and variable remuneration, such as bonuses and commissions, up to LE 6,000 per year. This gives an overall ceiling of LE 14,100 per year. The accrual rate is 1/45th of earnings. However, the earnings measure is the lifetime average of nominal earnings. For variable wage pensions claimed before age 60, the pension is reduced by 5 percent per year. The earnings measure is increased by 2 percent per year of contributions (an ad hoc alternative to valorization). At baseline assumptions for price and earnings growth, this reduces pensions to 66 percent of their value under a policy of full valorization to earnings. There is no legal requirement to adjust pensions in payment, but the basic wage pension is increased annually. Recent rises were 20 percent in 1987, 15 percent per annum in 1988–91, 20 percent in 1992, and 10 percent per annum in 1993–2004.

Minimum

The minimum pension is LE 105 per month for civil servants and LE 45 per month for others (covering both basic and variable wage pensions). The minimum is not reduced for early retirement. The maximum pension is LE 900 per month.

Personal Income Tax and Social Security Contributions

Pensions are not subject to personal income tax. There is a general deduction of LE 2,000 per year for single taxpayers plus an additional allowance of LE 2,000 per year, for earnings. The schedule applied after these allowances is

Band lower limit (LE)	0	2,500	7,000	16,000
Rate (%)	20	27	35	40

Contributions for pensions by employees are 12 percent of basic wages and 10 percent of variable wages. For employers, the rates are 18 and 15 percent, respectively. Employee social security contributions are deductible under the personal income tax. The government contributes 1 percent of payroll and covers any deficit. Pensioners do not pay social security contributions.

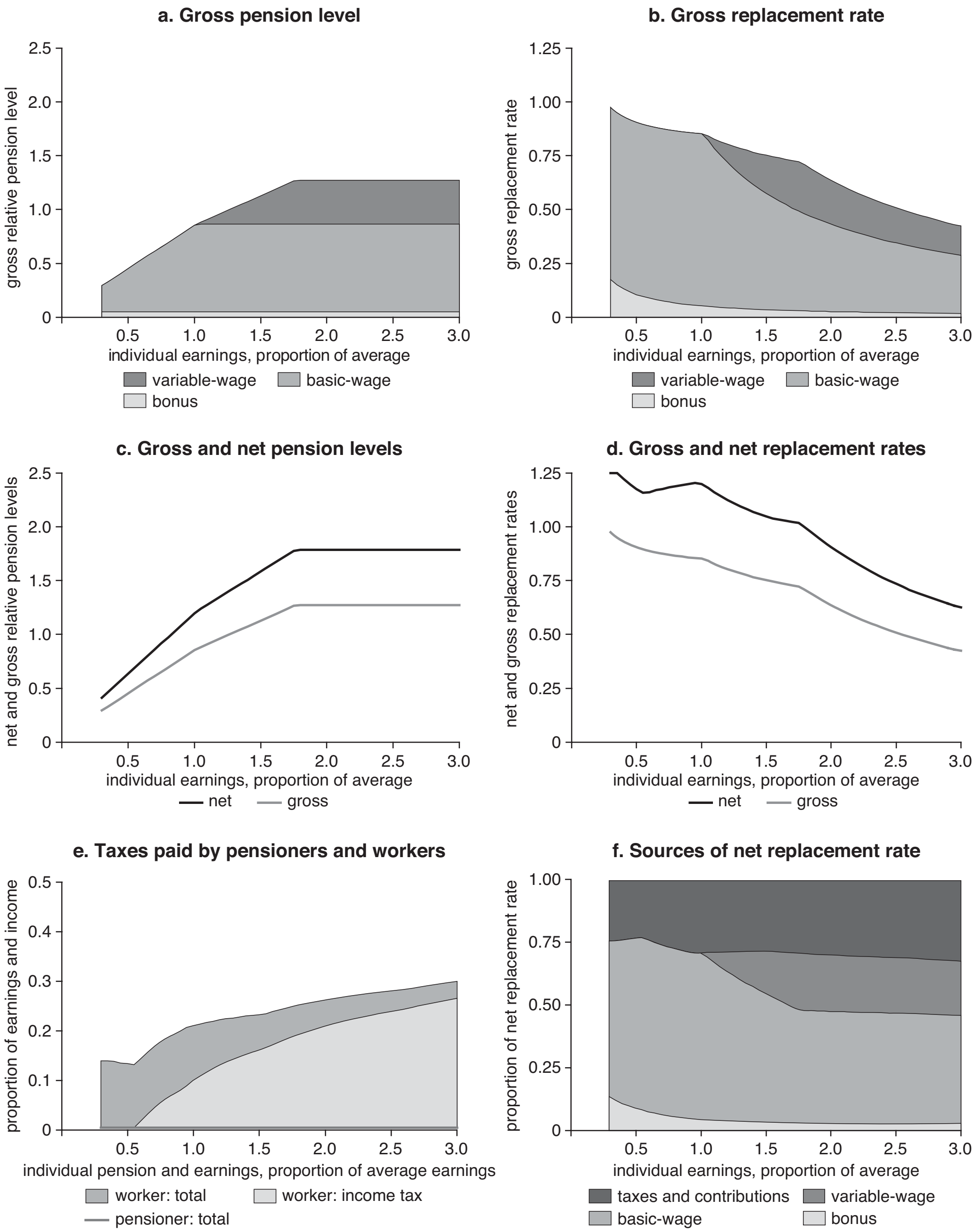
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	45.3	65.3	85.3	112.8	127.1	127.1
Net pension level (% of average net earnings)	63.6	91.7	119.8	158.5	178.6	178.6
Gross replacement rate (% of individual earnings)	90.5	87.0	85.3	75.2	63.6	50.9
Net replacement rate (% of individual net earnings)	117.5	118.3	119.8	104.8	90.5	73.5
Gross pension wealth	7.8	11.3	14.7	19.5	21.9	21.9
(multiple of average earnings)	*8.7*	*12.5*	*16.4*	*21.7*	*24.4*	*24.4*
Net pension wealth	11.0	15.8	20.7	27.4	30.8	30.8
(multiple of average net earnings)	*12.2*	*17.6*	*23.0*	*30.4*	*34.3*	*34.3*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Arab Republic of Egypt



Source: Axia Economics APEX model.

The Islamic Republic of Iran

THE ISLAMIC REPUBLIC OF IRAN HAS AN EARNINGS-RELATED public scheme with a minimum pension.

Qualifying Conditions

Under the national scheme, the pension may be claimed at any age once 30 years' contributions have accrued. With fewer years' contributions, the pension may be claimed at 60 by men and 55 by women, subject to a minimum of 10 years' contributions. For 20–25 years' coverage in a hazardous or arduous occupation, the pension age is 50 for men and 45 for women. Pension receipt is subject to a retirement test.

Benefit Calculation

Earnings-Related

Pension accrues at 3.3 percent of earnings per year of contributions. There is a minimum replacement rate of 50 percent (normally reached at 15 years) and a maximum of 116 percent (reached after 35 years). The earnings measure in the benefit formula is the pay in the final two years before retirement without adjustment for price inflation or earnings growth.

There is a ceiling on covered earnings of eight times average earnings.

Indexation of pensions in payment is discretionary.

Minimum

There is also a minimum pension amount equal to the minimum wage, which is approximately two-thirds of average earnings or 850,000 rials.

Personal Income Tax and Social Security Contributions

There is a general income tax allowance of 19.2 million rials. Income above this level is taxed at a 10 percent rate. Social security contributions are not deductible for income tax purposes. Pensions in payment are not subject to tax.

Under the national scheme, employees pay 7 percent of earnings, and employers, 20 percent for pensions. Employers also pay an additional 3 percent of earnings for unemployment benefits. The government contributes 3 percent of earnings. There is a floor (equal to the minimum wage of 696,460 rials) and a ceiling (of 2,507,400 rials) on both contributions and pensionable earnings.

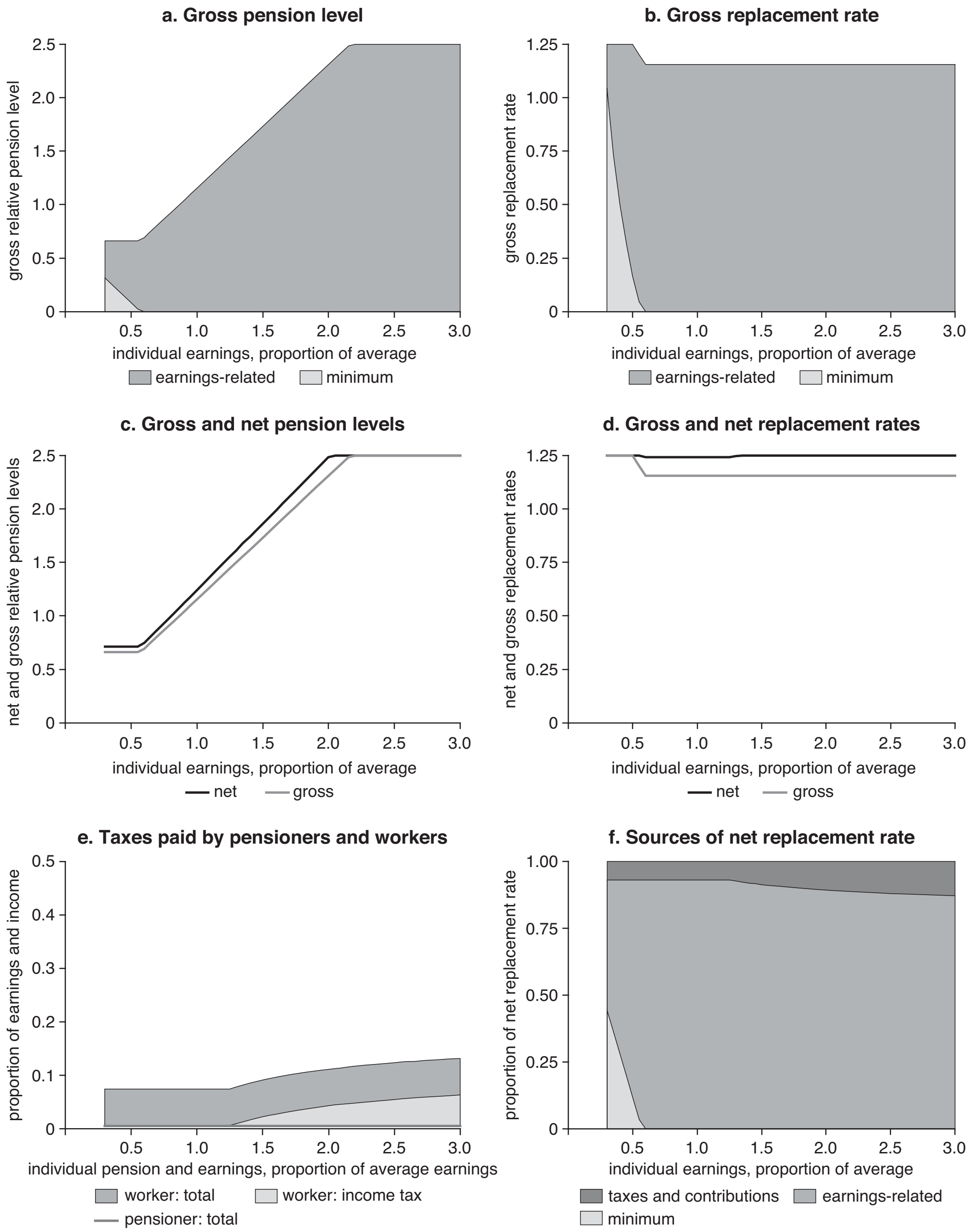
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	66.0	86.6	115.5	173.3	231.0	250.0
Net pension level (% of average net earnings)	71.0	93.1	124.2	186.3	248.4	310.5
Gross replacement rate (% of individual earnings)	132.0	115.5	115.5	115.5	115.5	115.5
Net replacement rate (% of individual net earnings)	141.9	124.2	124.2	126.5	129.5	131.3
Gross pension wealth	12.0	15.7	20.9	31.4	41.8	52.3
(multiple of average earnings)	*13.2*	*17.3*	*23.1*	*34.6*	*46.1*	*57.6*
Net pension wealth	12.9	16.9	22.5	33.7	45.0	56.2
(multiple of average net earnings)	*14.2*	*18.6*	*24.8*	*37.2*	*49.6*	*62.0*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Islamic Republic of Iran



Source: Axia Economics APEX model.

Jordan

Jordan has an earnings-related public scheme with a minimum pension. The separate schemes for public sector workers are closed to new entrants who are covered by the national scheme.

Qualifying Conditions

The normal pension age is 60 for men and 55 for women, subject to 180 months (15 years) of coverage or 60 months (five years) of actual contributions. An early pension may be claimed from age 45 with 18 years' contributions (men) or 15 years' (women). People with incomplete contribution histories may pay between the normal pension age and 65 or 60 (men or women) to complete their record, provided they have already reached 10 years' coverage. There is provision for lump-sum payments for people who do not qualify for a pension. Early pensions are subject to an actuarial reduction (see below).

Benefit Calculation

Earnings-Related

Pension accrues at 2.5 percent of earnings per year of contributions. The earnings measure is average (nominal) pay in the last two years before retirement. The earnings measure is adjusted upward to 1.2 times initial earnings (if final pay is below this level) and downward to 1.6 times initial earnings (if it exceeds this ceiling). There is a maximum replacement rate of 75 percent, normally reached after 30 years' contributions. There is a reduction for early retirement, which for women is

Pension age	45–49	50–54	55+
Reduction (%)	10	5	0

For men the reductions are larger:

Pension age	45–46	47	48	49	50–60
Reduction (%)	18	16	14	12	1 per year

Both pensions in payment and the value of the minimum pension are subject to discretionary uprating: there is no automatic indexation procedure. There is no ceiling on pensionable earnings.

Minimum

There is a minimum pension that is equal to the minimum wage, 960 dinars per year in 2003.

Personal Income Tax and Social Security Contributions

Employee social security contributions are deductible against the personal income tax. Pensions in payment are not subject to tax. There is no general allowance or basic relief, and the income tax schedule is as follows:

Band lower limit (dinars)	0	2,000	6,000	12,000
Rate (%)	5	10	20	25

For pensions, employees contribute 5.5 percent and employers, 7.0 percent. Employers pay 2.0 percent for the work-injury program.

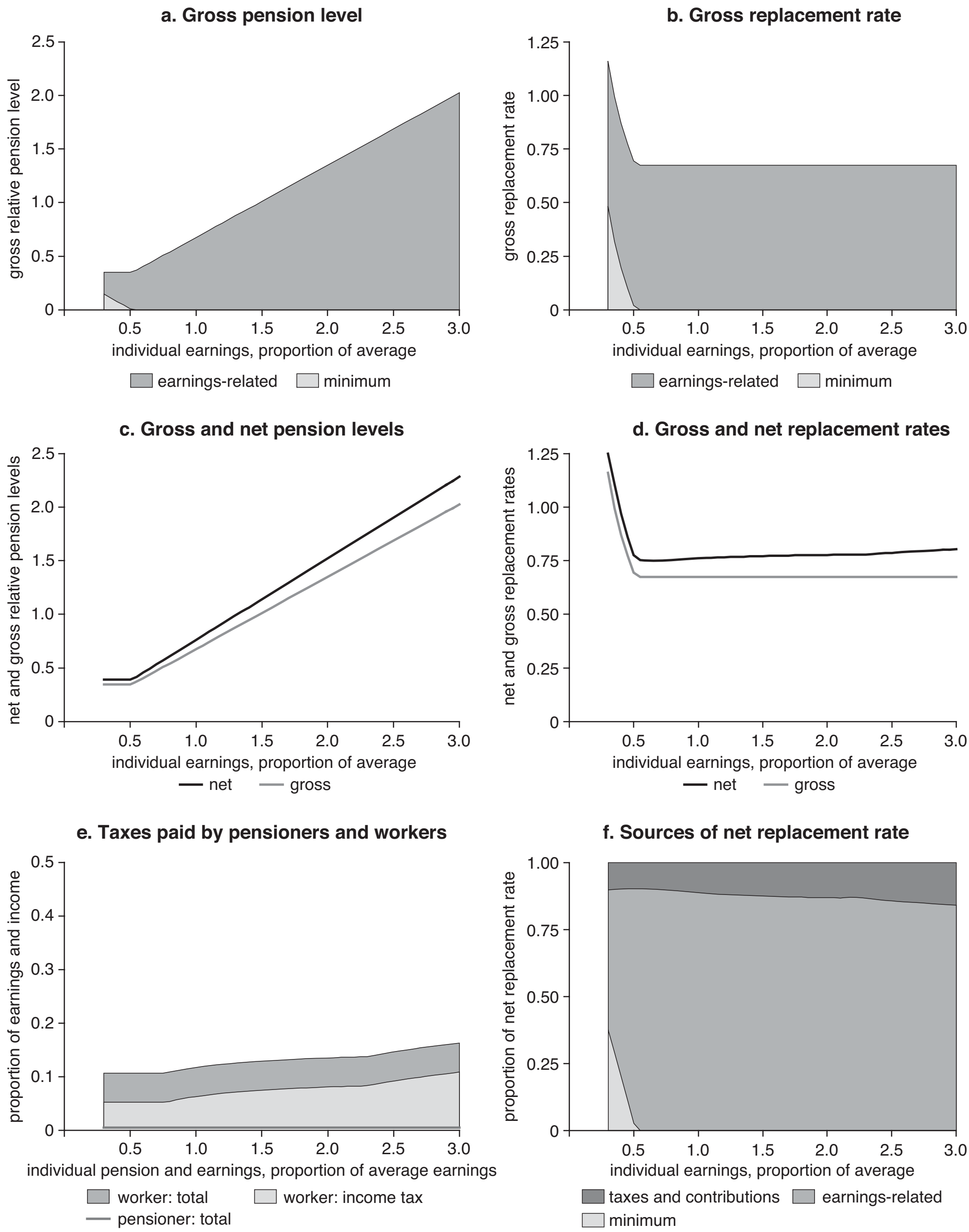
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	34.8	50.6	67.5	101.3	135.0	168.8
(% of average earnings)	*35.6*	*53.4*	*71.3*	*106.9*	*142.5*	*178.1*
Net pension level	39.2	57.1	76.1	114.2	152.2	190.3
(% of average net earnings)	*40.2*	*60.3*	*80.4*	*120.5*	*160.7*	*200.9*
Gross replacement rate	69.6	67.5	67.5	67.5	67.5	67.5
(% of individual earnings)	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*	*71.3*
Net replacement rate	77.5	75.2	76.1	77.2	77.7	78.7
(% of individual net earnings)	*79.4*	*79.4*	*80.4*	*81.5*	*82.0*	*83.1*
ross pension wealth	7.3	10.7	14.2	21.4	28.5	35.6
(multiple of average earnings)	*8.2*	*12.4*	*16.5*	*24.7*	*32.9*	*41.2*
Net pension wealth	8.3	12.0	16.1	24.1	32.1	40.2
(multiple of average net earnings)	*9.3*	*13.9*	*18.6*	*27.9*	*37.1*	*46.4*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Jordan



Source: Axia Economics APEX model.

Libya

Libya has an earnings-related public scheme with a minimum pension.

Qualifying Conditions

The normal pension age is 65 for men and 60 for women. Vesting is immediate: there is no requirement for minimum years of contributions. Early retirement is possible from age 62 for men in the private sector.

Benefit Calculation

Earnings-Related

The accrual rate is 2.5 percent per year for the first 20 years and 2.0 percent thereafter to a maximum replacement rate of 80 percent, normally reached after 35 years' contributions. There is no actuarial adjustment for early retirement. The earnings measure is the average over the final three years. There is no ceiling on pensionable earnings. There is no legal requirement to adjust the value of pensions in payment.

Minimum

There is a minimum pension of 80 percent of the minimum wage. The latter is 85 dinars per month, giving a minimum pension of 68 dinars per month.

Personal Income Tax and Social Security Contributions

There is a general personal allowance in the income tax, which is 480 dinars for a single person (higher for married people and for those with children). The rate schedule after this allowance is as follows:

Band lower limit (dinars)	0	1,800	3,000	4,800	6,600	8,400
Rate (%)	8	10	15	20	25	35

There is an additional Jihad tax on taxable incomes. This has three rates (1, 2, and 3 percent). Pensioners are not subject to income tax.

The total contribution for social security programs is 15 percent of gross earnings. The employee pays 25 percent of this total; the employer, 70 percent; and the government, the balance of 5 percent. Of the 15.0 percentage-point total, 10.5 percentage points finance pensions, with the remainder going to other programs. Pensioners do not pay social security contributions.

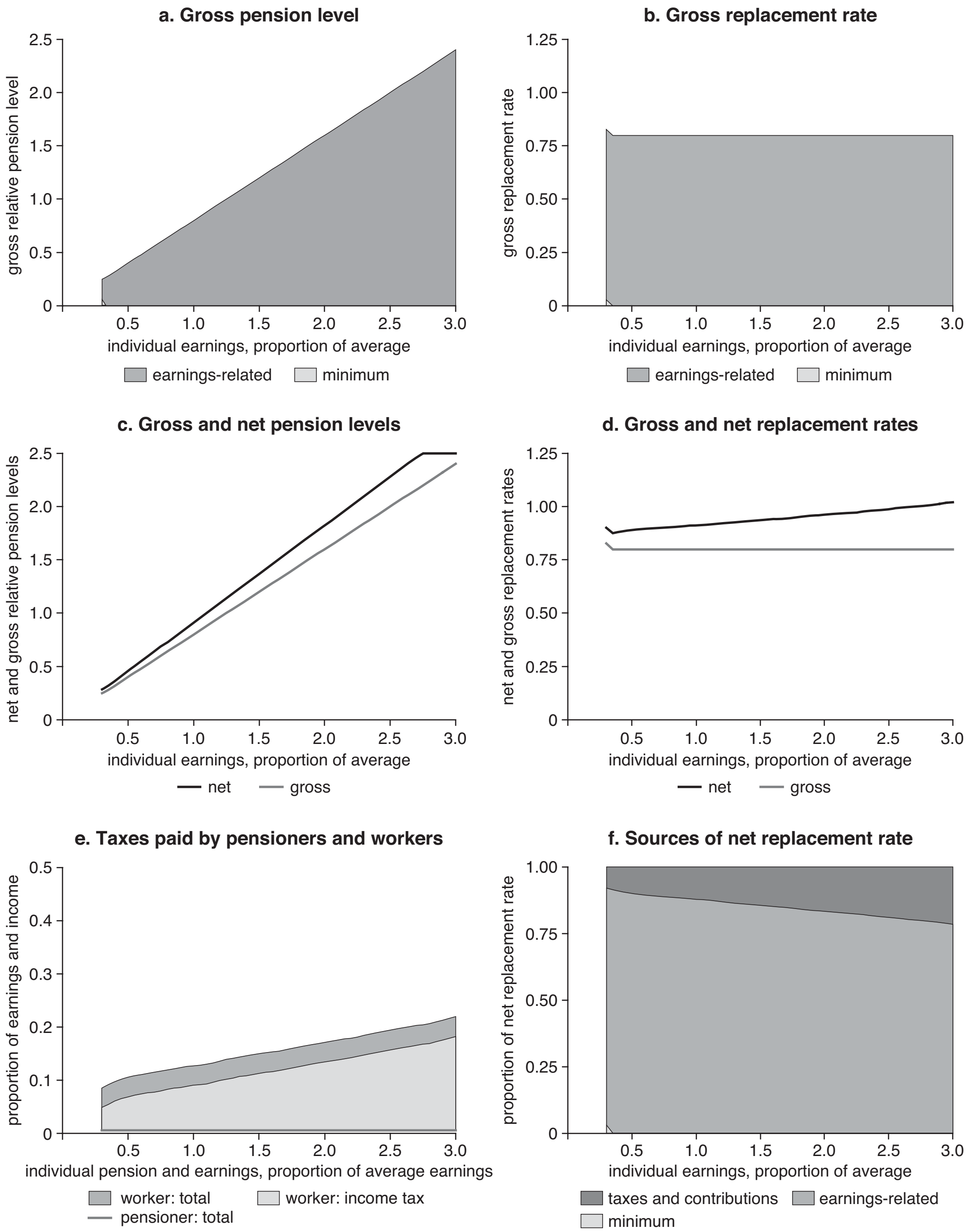
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	40.0	60.0	80.0	120.0	160.0	200.0
Net pension level (% of average net earnings)	45.6	68.4	91.2	136.8	182.4	228.0
Gross replacement rate (% of individual earnings)	80.0	80.0	80.0	80.0	80.0	80.0
Net replacement rate (% of individual net earnings)	89.0	90.2	91.2	93.6	96.1	98.8
Gross pension wealth	5.6	8.4	11.2	16.9	22.5	28.1
(multiple of average earnings)	*7.7*	*11.6*	*15.5*	*23.2*	*30.9*	*38.6*
Net pension wealth	7.4	11.2	14.9	22.3	29.8	37.2
(multiple of average net earnings)	*10.2*	*15.5*	*20.6*	*30.6*	*40.9*	*51.1*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Libya



Source: Axia Economics APEX model.

Morocco

Morocco has an earnings-related national scheme with a minimum pension. Three separate schemes cover civil servants, the military, and contractual, public-sector workers.

Qualifying Conditions

The pension-eligibility age under both national and civil service schemes is 60 for both men and women.

Early retirement is possible at age 55, but the employer must pay the pension between ages 55 and 60. (This early pension, since it requires employers to provide voluntarily the pension, is not modeled.) There is also a lower pension-eligibility age for miners under the national program. Pension receipt is subject to a retirement test. The qualifying contribution period for a pension is 3,240 days of contributions. Based on the 216 days, which qualify as a single year for contribution purposes (see below), this is equivalent to a 15-year vesting period.

Benefit Calculation

Earnings-Related

The pension is 50 percent of earnings once the contribution condition is met plus 1 percent of earnings for each 216 days above the minimum. This implies an accrual rate of 3.33 percent for the first 15 years of coverage. There is a maximum replacement rate of 70 percent, which is reached after 35 years' contributions. The earnings measure is the average pay during the last three or five years, whichever is higher. There is no valorization of earlier years' earnings. The ceiling on pensionable earnings is 6,000 dirhams per month. Pensions in payment are adjusted periodically. However, there is no formal indexation policy.

Minimum

There is a minimum pension of 500 dirhams per month.

Personal Income Tax and Social Security Contributions

Social security contributions are deductible against the personal income tax. There is a general relief against earned income, meaning that only 83 percent of wages are subject to the income tax. Similarly, only 60 percent of pension income is taxable. The personal income tax schedule is

Band lower limit (dirhams)	0	20,000	24,000	30,000	60,000
Rate (%)	0	13	21	25	44

The total contribution for the private sector pension scheme is 20.39 percent, of which 11.89 percent goes toward pensions. Of the total, 16.10 points are paid by the employer, and 4.29 points, by the employee. Pensioners do not pay social security contributions.

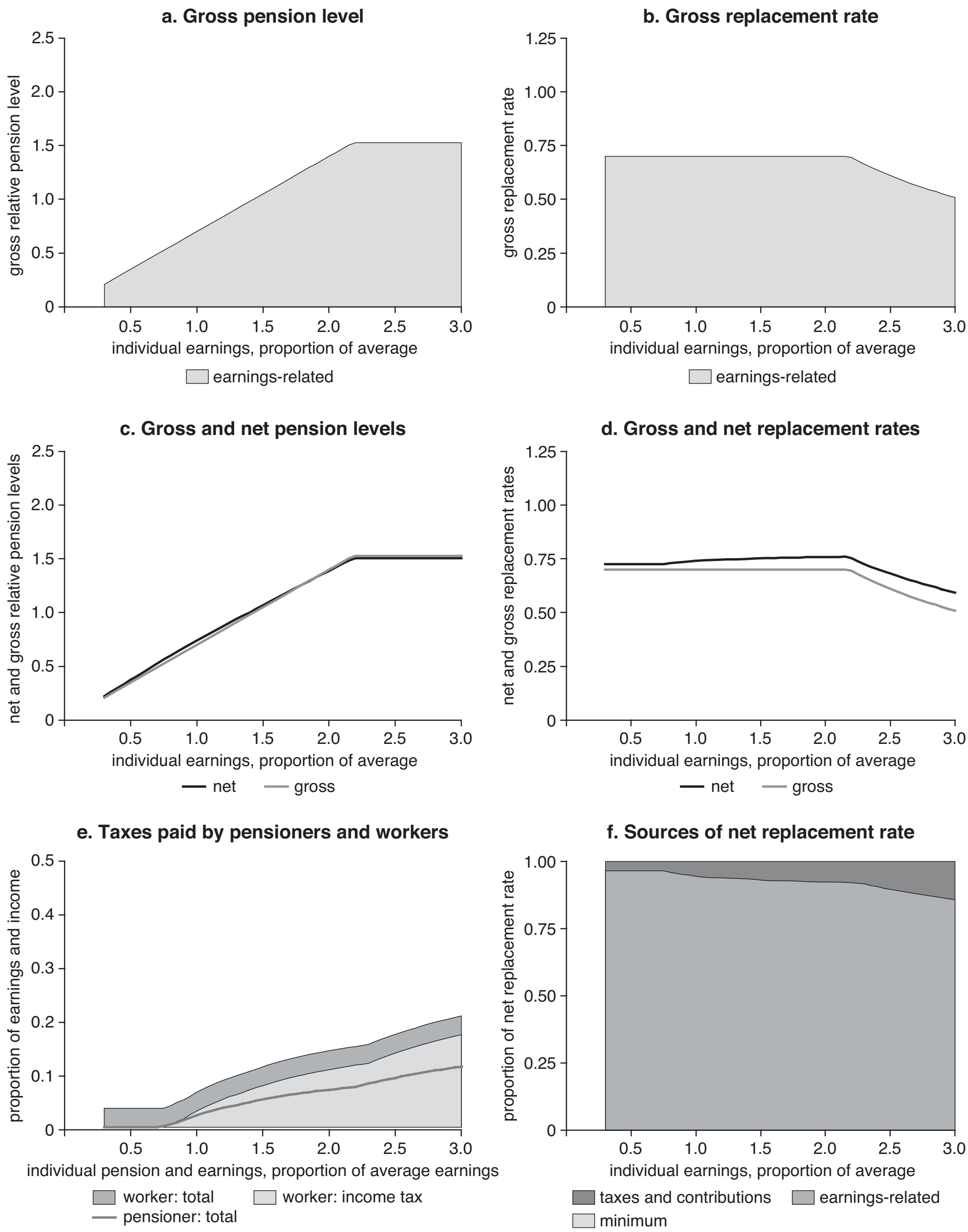
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	35.0	52.5	70.0	105.0	140.0	152.6
Net pension level (% of average net earnings)	37.5	56.2	74.1	107.0	138.9	150.4
Gross replacement rate (% of individual earnings)	70.0	70.0	70.0	70.0	70.0	61.1
Net replacement rate (% of individual net earnings)	72.6	72.6	74.1	75.2	75.8	68.1
Gross pension wealth	5.1	7.7	10.3	15.4	20.5	22.4
(multiple of average earnings)	*6.7*	*10.1*	*13.5*	*20.2*	*26.9*	*29.4*
Net pension wealth	5.5	8.2	10.9	15.7	20.4	22.0
(multiple of average net earnings)	*7.2*	*10.8*	*14.3*	*20.6*	*26.7*	*28.9*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Morocco



Source: Axia Economics APEX model.

Tunisia

TUNISIA HAS ONE PUBLIC SECTOR AND FOUR PRIVATE SECTOR SCHEMES with earnings-related pensions plus a minimum pension.

Qualifying Conditions

The normal pension age in the national scheme is 60, subject to 120 months (10 years) of contributions for the full benefit. Retirement at 50 is possible for people in arduous occupations, subject to unemployment conditions, or mothers of three or more children. Other workers may also retire at 50 if they have 360 months (30 years) of contributions. A proportionally reduced pension is paid to people with between 60 and 120 months of coverage (that is, at least five years). There are lump-sum payments for workers with fewer than 60 months' (five years') contributions at age 60 or above.

Benefit Calculation

Earnings-Related

The pension value is 40 percent of earnings plus 0.5 percent for each quarter of contributions beyond 120 months (10 years), equivalent to an accrual rate of 4 percent per year for the first 10 years and 2 percent per year thereafter. The earnings measure is the average over the final 10 years, valorized in line with price inflation. There is a maximum replacement rate of 80 percent, normally reached after 30 years' contributions. The maximum pension is six times the minimum wage, which is 13,236 dinars per year. Early pensions are subject to an actuarial reduction of 0.5 percent per quarter that the pension is paid before age 60. The proportionally reduced partial pension has a minimum pension of half of the minimum wage, giving a value of 1,103 dinars. Pensions in payment are indexed to the minimum wage, which is assumed to increase in line with average earnings.

Minimum

There is a minimum pension of two-thirds of the minimum wage relevant to workers covered by this scheme. The latter was 2,206 dinars per year, giving a minimum pension of 1,470 dinars.

Personal Income Tax and Social Security Contributions

Pension benefits are subject to tax, but there is an abatement of 25 percent. Social security contributions are deductible under the personal income tax. Furthermore, 10 percent of earnings are exempted from tax. The income tax schedule is

Band lower limit (dinars)	0	1,500	5,000	10,000	20,000	50,000
Rate (%)	0	15	20	25	30	35

In the private sector scheme, contributions total 12.50 percent of gross earnings, of which the employer pays 9.75 percent and the employee, 2.75 percent. Pensioners do not pay social security contributions.

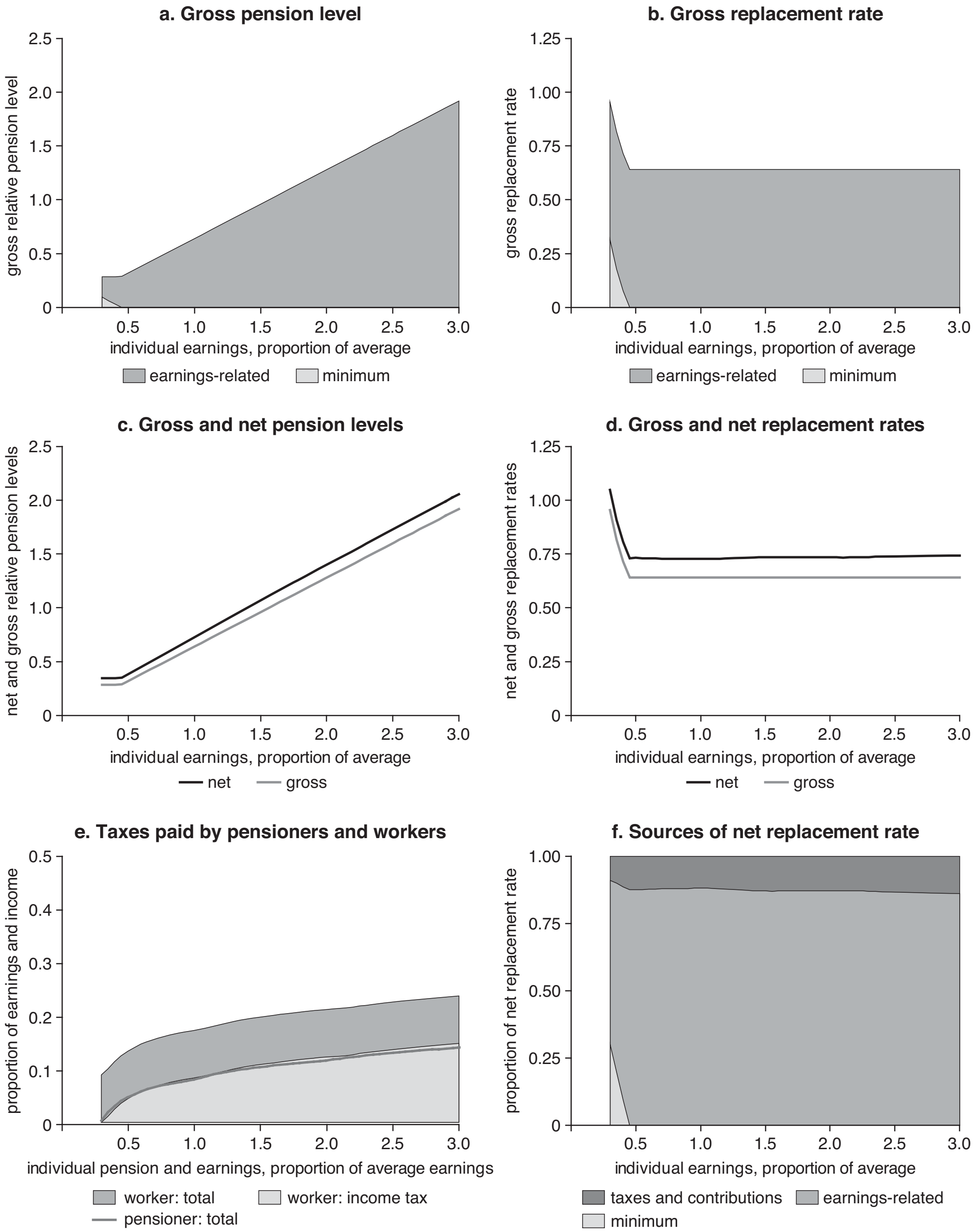
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level (% of average earnings)	32.0	48.0	64.0	96.0	128.0	160.0
Net pension level (% of average net earnings)	38.3	55.5	72.7	107.0	139.9	172.8
Gross replacement rate (% of individual earnings)	64.0	64.0	64.0	64.0	64.0	64.0
Net replacement rate (% of individual net earnings)	73.1	72.8	72.7	73.5	73.4	73.9
Gross pension wealth	9.0	13.5	18.0	27.0	36.0	45.0
(multiple of average earnings)	*11.3*	*17.0*	*22.7*	*34.0*	*45.4*	*56.7*
Net pension wealth	10.8	15.6	20.4	30.1	39.3	48.6
(multiple of average net earnings)	*13.6*	*19.7*	*25.7*	*37.9*	*49.6*	*61.3*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

Tunisia



Source: Axia Economics APEX model.

The Republic of Yemen

THE REPUBLIC OF YEMEN HAS AN EARNINGS-RELATED NATIONAL SCHEME with separate programs for civil servants and the uniformed services.

Qualifying Conditions

The pension under the national scheme may be claimed at any age once 30 years' contributions have accrued for men and 25 years' for women. For 25 years' contributions, the pension age is 50 for men. For 20 years' contributions, women may retire at age 46. With 15 years' contributions, the pension may be claimed at 60 by men and 55 by women.

Benefit Calculation

Earnings-Related

The accrual rate is 2.5 percent of earnings for each year of service. There is a maximum replacement rate of 100 percent. The earnings measure is the average pay over the final two years. There is no minimum pension under this scheme. There is no ceiling on pensionable earnings. There is no legal requirement to adjust the value of pensions in payment.

Personal Income Tax and Social Security Contributions

Pension benefits are subject to tax. Social security contributions are deductible against the personal income tax. This is the income tax schedule:

Band lower limit (rials)	0	3,000	7,000	22,000
Rate (%)	0	10	15	20

In the national pension program, employers contribute 9 percent of earnings for pensions, and employees pay 6 percent. Employers pay an additional 4 percent for the work-injury plan. Pensioners are not liable for social security contributions.

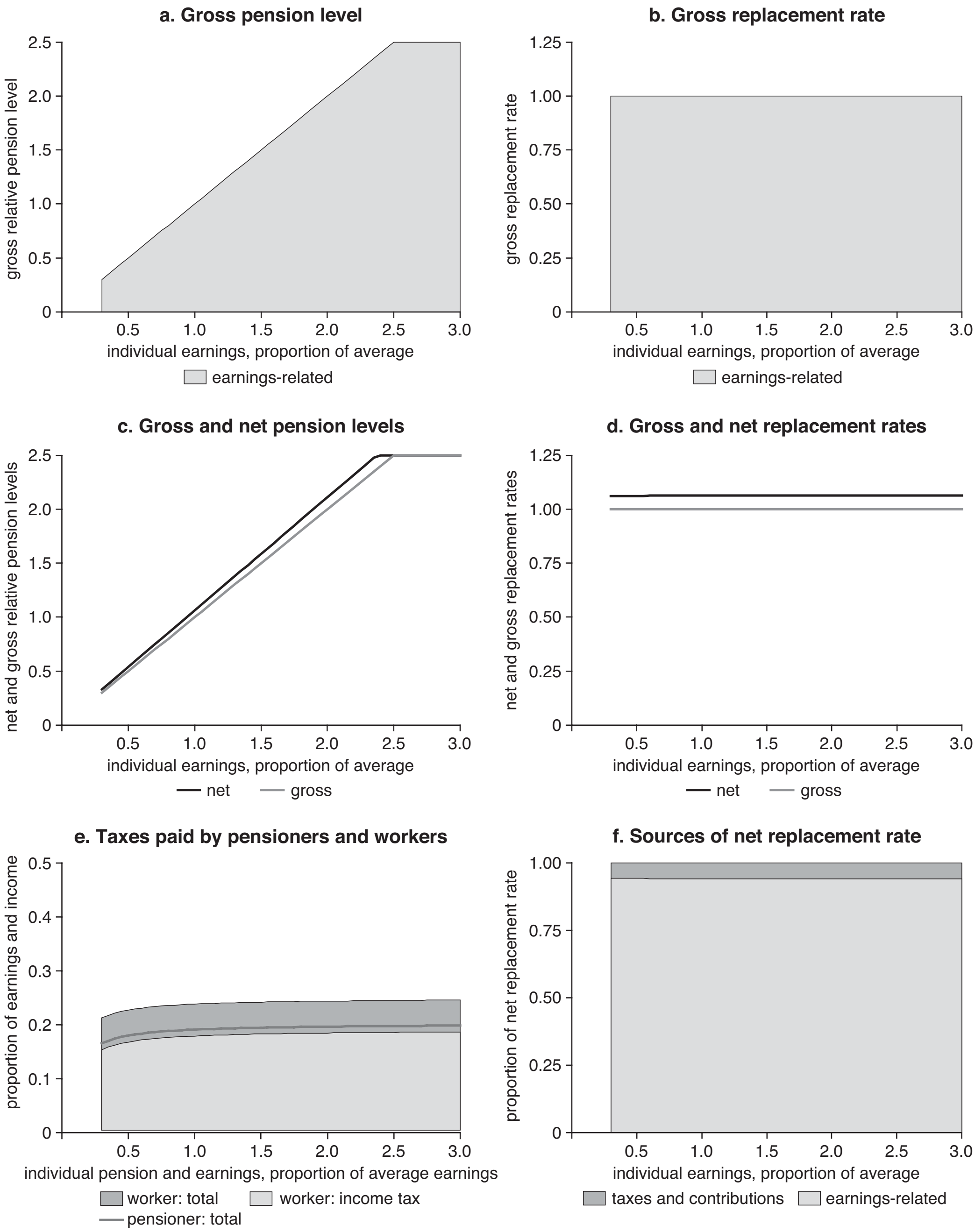
Pension Modeling Results

	Individual earnings, multiple of average					
Results	*0.5*	*0.75*	*1*	*1.5*	*2*	*2.5*
Gross pension level	50.0	75.0	100.0	150.0	200.0	250.0
(% of average earnings)	*43.8*	*65.6*	*87.5*	*131.3*	*175.0*	*218.8*
Net pension level	53.9	80.1	106.3	158.7	211.1	263.5
(% of average net earnings)	*47.3*	*70.3*	*93.2*	*139.0*	*184.9*	*230.8*
Gross replacement rate	100.0	100.0	100.0	100.0	100.0	100.0
(% of individual earnings)	*87.5*	*87.5*	*87.5*	*87.5*	*87.5*	*87.5*
Net replacement rate	106.2	106.3	106.3	106.3	106.3	106.3
(% of individual net earnings)	*93.3*	*93.2*	*93.2*	*93.2*	*93.1*	*93.1*
Gross pension wealth	6.7	10.0	13.4	20.1	26.8	33.5
(multiple of average earnings)	*7.6*	*11.4*	*15.2*	*22.9*	*30.5*	*38.1*
Net pension wealth	7.2	10.7	14.2	21.2	28.3	35.3
(multiple of average net earnings)	*8.2*	*12.2*	*16.2*	*24.2*	*32.2*	*40.2*

Source: Axia Economics APEX model.

Note: Results in *italics* are for women where the results of women are different from those of men.

The Republic of Yemen



Source: Axia Economics APEX model.

References

Keenay, G., and E. R. Whitehouse. 2002a. "Taxing Pensioners." In *Taxing Wages*. Paris: OECD. 2003.

———. 2002b. "The Role of the Personal Tax System in Old-Age Support: A Survey of 15 Countries." Discussion Paper 02/07, Centre for Pensions and Superannuation, University of New South Wales, Sydney.

———. 2003a. "Financial Resources and Retirement in Nine OECD Countries: The Role of the Tax System." Social, Employment, and Migration Working Paper 8, OECD, Paris.

———. 2003b. "The Role of the Personal Tax System in Old-Age Support: A Survey of 15 Countries." *Fiscal Studies* 24 (1): 1–21.

Mattil, B., and E. R. Whitehouse. Forthcoming. "Individual Incentives to Switch between Public and Private Pension Schemes." Social, Employment, and Migration Working Paper, OECD, Paris.

OECD (Organisation for Economic Co-operation and Development). 2003. *Taxing Wages*. Paris: OECD.

———. 2005. *Pensions at a Glance: Public Policies across OECD Countries*. Paris: OECD.

Palacios, R. J., and E. R. Whitehouse. 2006. "Civil-Service Pension Schemes Around the World." Pension Reform Series, Social Protection Discussion Paper No. 0602, World Bank, Washington, DC.

Queisser, M., and E. R. Whitehouse. 2006. "Comparing the Pension Promises of 30 OECD Countries." *International Social Security Review* 59 (3): 49–77.

Robalino, D., E. R. Whitehouse, et al. 2005. *Pensions in Middle East and North Africa: Time for Change*. Washington, DC: World Bank.

Vordring, H., and K. Goudswaard. 1997. "Indexation of Public Pension Benefits on a Legal Basis: Some Experiences in European Countries." *International Social Security Review* 50 (3): 31–44.

Weaver, R. K. 1988. *Automatic Government: The Politics of Indexation*. Washington, DC: Brookings Institution.

Whitehouse, E. R. 2000. "Administrative Charges for Funded Pensions: Measurement Concepts, International Comparison, and Assessment." *Journal of Applied Social Science Studies* 120 (3): 311–61.

———. 2001. "Administrative Charges for Funded Pensions: Comparison and Assessment of 13 Countries." In *Private Pension Systems: Administrative Costs and Reforms, Private Pensions Series*. Vol. 3. Paris: OECD.

———. 2002. "Pension Systems in 15 Countries Compared: The Value of Entitlements." Discussion Paper 02/04, Centre for Pensions and Superannuation, University of New South Wales, Sydney.

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ECO-AUDIT

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The accurate presentation of a country's pension system and the comparison of pension systems across countries are crucial parts of policy analysis and reform. This is equally valid for high-income countries of the Organisation for Economic Co-operation and Development as it is for low- and middle-income countries. *Pensions Panorama: Retirement-Income Systems in 53 Countries* provides a compendium of facts and analysis that should inform policy making and public debate about retirement-income systems around the world. Reforming pensions is a central policy issue for all countries; it is challenging and controversial because it involves long-term planning by governments that face numerous short-term pressures.

In *Pensions Panorama*, Edward Whitehouse combines painstaking, rigorous analysis with a clear, easy-to-understand presentation of empirical results. While the author does not advocate any particular kind of pension system or type of pension reform, the analysis presented can inform debates on retirement-income systems. A core concern is social sustainability, which involves the future adequacy of pension benefits, the impact of pension reforms on income distribution among older people, and the means to combat old-age poverty. *Pensions Panorama* is a useful resource for policy makers, government officials, and others involved in pension reform.

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