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Pension Schemes

Study for the EMPL Committee

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Pension Schemes

EUROPEAN PARLIAMENT

DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

Pension Schemes

STUDY

Abstract

Large variations exist in the approach to pensions in EU member states. This Policy Department A study aims at providing the EMPL Committee with information about the risks and replacement rates of the different pension schemes. Vulnerable groups are less likely to contribute to individual plans or 'third-pillar' schemes, which complicates a shift in replacement rates from Pillars 1 (aimed at avoiding old age poverty) and 2 (occupational schemes) to Pillar 3. Pillars 1 and 2 should ensure pension adequacy, leaving Pillar 3 as a tool for individuals to enhance their replacement rates.

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LIST OF ABBREVIATIONS

DB	Defined benefit
DC	Defined contribution
EC	European Commission
EP	European Parliament
FT	Flat Rate
GDP	Gross Domestic Product
IMF	International Monetary Fund
MT	Means tested
NDC	Notional Defined Contributions
OECD	Organisation for Economic Cooperation and Development
PAYG	Pay as You Go
SHARE	Survey of Health, Ageing and Retirement in Europe
WB	World Bank

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EXECUTIVE SUMMARY

The context for the continuous focus on pension reform in EU Member States is well known: demographic change is putting pressure on state-funded pay-as-you-go (PAYG) elements of pension systems, which are a substantial part of any pension system in the EU. In addition, the economic crisis has made postponement of reforms increasingly difficult in many Member States.

Although several countries implemented major changes to their pension systems before the crisis, reform efforts have gained impetus during the past years. Most countries have focused their reforms on the statutory public pillar and the most common reform is increasing the statutory age of retirement. Twenty out of 28 EU countries have raised the retirement age since 2010. Several countries have also increased the contributory period, reformed the contributory rates or made other choices affecting the calculation of pension income, but few have implemented more significant changes to the occupational and individual pillars of pension schemes, which are likely to play a larger role in ensuring the adequacy and sustainability of pension systems in the future.

The three pension pillars

For the purpose of this study our categorisation of pension systems into pillars follows closely that of the OECD, although we include only completely voluntary pension schemes in the third pillar, i.e. where the decision to contribute is unrelated to the workplace. We want to emphasise that any categorisation is arbitrary; it is done to obtain a better understanding of the differences in the structure and the financing of the pension systems in the EU, but it does not do justice to the idiosyncrasies of the different national schemes.

Following this categorisation, the first pillar serves as a means for avoiding old-age poverty, the second pillar focuses on an adequate pension in terms of the replacement rate, while the third pillar is meant to provide an opportunity for individuals to save towards increasing their retirement income. The first pillar is state-managed PAYG with an element of redistribution, since there is no close link between contribution and benefits. The second pillar contains the earnings-related pension provision in traditional PAYG schemes as well as funded pension defined contribution (DC) and defined benefit (DB) schemes available to a smaller or larger group in a number of Member States.

Some population groups with little labour market attachment during their prime age years will rely heavily on the first pillar for their pension income, and for those countries where Pillar 1 consists of a universal pension, it will be the most important part of pension income for all but the individuals in the top wealth deciles. To avoid old-age poverty, pillar one pensions must be designed to meet the basic needs of vulnerable groups. Attention to perverse incentives in the labour market is important when designing targeted or means-tested schemes.

The second pillar is, in general, organised as an earnings-related PAYG system or a private DC (or DB) system. Design is important for either system to limit or make transparent the amount of risk allocated to the individual. Proper risk management is important for DC (or DB) schemes, whereas earnings-related PAYG schemes must ensure sustainability and long-term transition periods related to longevity and fertility. In addition, attention to the effects on, in particular, labour market participation and savings behaviour is important for Pillar 2 design.

Pension Pillar 3 should allow individual flexibility with respect to pension savings. It cannot be expected to deliver much in terms of replacement rate for population groups

with limited Pillar 2 savings. Because of the potentially close substitution with non-pension savings, attention should go to limiting the potential for pure tax optimisation purposes.

Given the background of demographic change, rewarding and incentivising a longer (formal) working life should be an integral part of all three pillars. This includes limiting, as far as possible, negative effects from, for example, the system of means testing on the incentive to work and save in general, but in particular towards the end of the working life.

Main risks from pension systems

All pension schemes and their pillars face a number of risks depending on their exact design. Four major types of risk are identified: financial, longevity, behavioural and regulatory risks.

Financial risks refer to the fact that for funded pensions, the returns to the underlying financial assets are uncertain and variable. Thus, one may end up with a lower pension than anticipated given how much was saved. Individual lifespan is uncertain and, unless provisions are taken to avoid this, there is a risk that one may outlive pension means. We refer to this as longevity risk. Behavioural risks denote the risk associated with individual non-professional portfolio management now amply demonstrated in the behavioural economics literature. This includes a tendency to trade too often (thereby incurring excessive trading costs), to under-diversify portfolios, and to fail to regularly balance the risk profile as retirement gets closer. It is related to financial literacy for individually managed pension savings. Finally, regulatory risks are present with respect to governance of pension funds. Key issues here are the transparency of management fees and the ability to change pension providers or fund managers. Large differences exist in management fees for funded second and third-pillar pension products, not necessarily related to performance. Over a long horizon, fees can have a large impact on the pension outcome at retirement.

For all pillars, careful attention to the detailed design is important in order to limit and distribute these risks between individuals and the managing entity, whether the scheme is state managed or privately managed.

While the four types of risk are present to a greater or lesser extent in all pension pillars, third-pillar (and funded second-pillar) pension products can be particularly exposed. One way to limit the exposure to risks in third-pillar pension products is to allow for voluntary contributions to be paid into existing occupational defined contribution schemes in the second pillar. This clearly implies the precondition that Pillar 2 pensions are well regulated; however, occupational defined contribution schemes will often have features limiting the risk exposure along with other desirable characteristics such as group insurance elements.

Voluntary pension savings in the third pillar

It is important to note that focusing on the third pillar alone for individual private pension provision is somewhat artificial. Third-pillar voluntary savings will only include the individual contractual pension savings, but additional private savings providing for income after retirement may be available in other means of savings, such as real estate, regular savings accounts and financial investments. In any country, the division of savings between third-pillar pension savings and other private savings will depend on the incentives offered for third-pillar savings relative to other savings (e.g. tax incentives).

In fact, there may be substantial substitution between regular savings and third-pillar pension savings, meaning that increasing incentives to save in third-pillar pension products or introducing a third-pillar pension scheme may not increase total private savings by the full amount placed in the third-pillar schemes. Taking into account state

incentives in the form of tax deductibility, for example, implies that national savings increase even less. The exact effects of third-pillar schemes on savings, though, will differ nationally depending on existing tax policies and savings incentives.

The voluntary nature of third-pillar pension schemes results in an unequal pattern of beneficiaries of private pension provision in society. Our case studies show that, in particular, societal groups that already suffer from lower wages and thus lower expected pension incomes from the second pillar are less involved in third-pillar provision. Women, less educated people, people with migration backgrounds, less wealthy people and the atypically employed tend to show lower participation rates. Hence, if no counteracting measures are implemented, there is a risk that an increasing relevance of third-pillar pension provision would sustain or even exacerbate existing societal inequalities. Moreover, these observations suggest that it is difficult to use third-pillar pensions as an instrument to induce groups with weak labour market attachment or gaps in their contributory records to save more.

Substitution of third pillar for Pillars 1 and 2

Saving in third-pillar pension schemes is, in general with a few exceptions, low across Member States, although there was a marked increase in assets in third-pillar schemes from 2001 to 2012 where data are available. There are two reasons for this. First, many third-pillar schemes are young and not mature and, thus, still in a build-up phase. Second, as pointed out above, a large part of the population does not participate – or saves very little – in third-pillar pension products.

While data is limited, we do not find any clear connection between changes in replacement rates from Pillars 1 and 2 (measured from OECD data from 2006 to 2012) and changes in third-pillar pension assets under management. There is likely more to be learned from individual survey data about the relationship between replacement rates from Pillars 1 and 2 and the third pillar, but this goes beyond the scope of this study.

Turning to case studies of the introduction of third-pillar pension schemes in Germany, Austria, France and Romania, we find that these are introduced as part of broader reforms of Pillars 1 and 2 in order to introduce or strengthen the funded element of the pension system. We do not find any signs that third-pillar schemes directly influence the coverage of the first and second pillars.

Concluding

Voluntary savings in a third-pillar pension scheme is a good way of enhancing replacement rates from Pillars 1 and 2 for the individual. The ability to “lock in” savings for retirement helps overcome the common behavioural biases working against long-term savings. Given tax incentives, savings in Pillar 3 schemes are also likely to yield a higher effective return than regular long-term savings. However, there are clear limits to the extent to which Pillar 3 products can substitute for Pillars 1 and 2, in particular for vulnerable population groups. Tax incentives are also likely to distort the distributional profile of third-pillar benefits, particularly if it can be used for tax optimisation late in the working life.

It is therefore important that Pillars 1 and 2 are able to provide an adequate replacement rate and ensure against old-age poverty.

Reforms to all three pillars should pay special attention to getting incentives for working longer (beyond the statutory pension age) right.

1. INTRODUCTION

KEY FINDINGS

- Demographic changes and the economic crisis have increased the pressure for pension reform across the EU. Most countries have focused their reforms on the statutory public pillar and the most common reform is increasing the statutory age of retirement.
- Although several countries implemented major changes to their pension systems before the crisis, reform efforts have gained impetus during recent years. Twenty out of 27 EU countries have raised the retirement age since 2010.
- Several countries have also increased the contributory period or reformed the contributory rates, but few have implemented more significant changes to the occupational and individual pillars of pension schemes, which are likely to play a larger role in ensuring adequacy and sustainability of pension systems in the future.

In recent years almost every European state has undergone a significant change in its pension system; increasing life expectancy and widely falling birth rates have increased, or are about to increase, the share of the population dependent on public pension schemes. At the same time, the growing importance given to austerity and balancing budgets has aggravated the situation and many states seemed to be running the risk of straining their pension systems.

The national ways to deal with this challenge are as diverse as the highly variable national preconditions. Finland, for example, is among the European countries currently ageing the fastest. It had therefore already reformed its pension system significantly in 2005, virtually abolishing a binding retirement age, launching a discourse-shifting campaign on the value of experienced workers for the economy, and assigning generous pension accrual rates on work years taken above the age of 62. Nevertheless, the actual behaviour of its people did not change much and further reforms followed in 2010 and 2011, while the country-specific recommendations of the European Semester 2013 already call for further reform effort.

In order to reduce future public liabilities, most reforms in Europe aim at reforming the statutory public pension schemes. This is most visible in recent reforms in countries under the support of the European Stability Mechanism. Greece, for example, increased the retirement age for women in 2010 from 60 to 65 years and extended the required contribution period for full pension claims from 37 to 40 years. Then, in 2012, it increased the retirement age for all workers from 65 to 67. While Greece is an extreme case, the approaches resemble those taken across Europe. Of the 28 Member States, 18 have undertaken some kind of reform since 2010 in order to increase the official or effective retirement age. Some – including the Czech Republic, Italy, Slovakia and Finland – have implemented measures that ensure a dynamic adjustment of the retirement age to life expectancy. The UK has even fully abolished the default retirement age. This wave of reforms is particularly remarkable as pension-lowering reforms usually encounter considerable political resistance. Further adjusting mechanisms that have often been subject to reform are the contributory period for full pension claims (Belgium, Bulgaria, Luxembourg, Romania, Slovenia), the contributory rates for employers and employees (Cyprus, Ireland, Slovakia), and the eligibility criteria for early retirement schemes (Austria, Denmark, France, Hungary, Italy). Only Malta and

Germany have undertaken no changes to their public statutory pension systems since 2010. Much attention was also paid to the harmonisation of retirement conditions of men and women. Nevertheless, despite widely seen recent efforts for equalisation in, for example, Austria, the Czech Republic, Poland, Greece and Slovenia, there remain two countries – Bulgaria and Romania – that have not yet induced the full harmonisation of retirement conditions between men and women.

Much less effort has been undertaken to reform other categories of pension provision, however. Only a few reforms have dealt with occupational schemes and voluntary personal schemes. Nevertheless, the latter in particular may well constitute an increasingly important pillar for ensuring both adequate and sustainable pensions, as the replacement rates of the statutory pension provision are likely to decline. Private pension saving schemes vary widely between Member States with respect to their coverage, their replacement rate and the public incentives at play. Recent evaluations of national pension scheme mixes have also given rise to concerns that the current fashion for diversification will lead to increased income inequalities in old age (Horstmann, 2012).

This study first gives an overview of the different pension systems in place and discusses the traditional three-pillar classification. Second, the merits of the different pillars are discussed in terms of replacement rates and security. It then focuses on the third pillar of voluntary pension schemes and looks at the main contributors and beneficiaries. The final chapter looks at recent developments in replacement rates and discusses the importance of third pillar pensions in enhancing replacement rates and coverage.

2. PENSION SCHEME CLASSIFICATION AND CHARACTERISTICS

KEY FINDINGS

- The historical development of pension systems has led to complex systems across the EU, making it difficult to classify them consistently and therefore to evaluate their functioning in a comparative way. It is possible to identify divisions among the social welfare systems, but only to a limited degree.
- The traditional three-pillar classification based on the World Bank (1994) taxonomy was devised with the goal of developing diversified multi-pillar pension systems. It has gradually been converted into a modified three-category classification with one sub-category, based on the nature of the originator: state (public statutory pension schemes), employee/employer (occupational pension schemes), or individual (individual provisions).
- OECD (1998) and ILO (Gillion, 1999) have suggested different pillar classifications emphasising different aspects of pension schemes. The numerous dimensions relating to any pension scheme is clear from OECD (2005), which provides detailed coverage of all features. For the purpose of this study we take as our basis the classification used in OECD (2005b) and subsequent OECD publications, where the pillars are defined in terms of their main purpose.
- The first pillar serves as a means for avoiding old-age poverty, the second pillar focuses on an adequate pension in terms of the replacement rate, whereas the third pillar is meant to provide an opportunity for individuals to save towards increasing the retirement income.
- The first pillar is mostly defined by the progressivity of its distribution and its social security and poverty prevention aspects. Defined benefits and a minimalistic approach to adequacy therefore prevail, with pay-as-you-go (PAYG) schemes being the rule.
- Second-pillar schemes, whether earnings-related PAYG or funded occupational, are designed to ensure a greater proportionality to income and to ensure a higher replacement rate for middle- and high-income individuals, and have been subject to reforms in recent years.
- Voluntary funded schemes (third pillar) present a set of challenges to policy-makers even in terms of their mere definition. Voluntary occupational schemes form part of these under the classical taxonomy, the distinction from semi-mandatory occupational schemes is thin and often presents no conceptual differences, and the overlap with other financial products and policies is strong. Due to the pressure on PAYG and increasingly also on second-pillar schemes, they have gained in relative importance, but their development remains low.
- Although these categorisations are important for the sustainability of the pensions and their reform, the division into defined benefit (DB) and defined contribution (DC) systems is more important in classifying the distribution of investment and adequacy risks. In the DB and DC (or notional defined contribution, NDC systems), the managing institution or the contributor, respectively, bear the larger part of these risks.

Detailed comparison of pension systems across EU countries is a difficult task. All the countries of the Union have set up schemes whereby workers are assured of a certain level of income upon their retirement. These schemes are in the first instance part of a public statutory social security system (mostly financed through taxes or social contributions, therefore classified as PAYG systems) and, in the second instance, part of mandatory or voluntary contribution schemes by the employer/employee or an individual.

The presence and the degree of development of both systems vary widely across the European Union, however, and it is even not always possible to trace a line between social security, employment-related systems and voluntary contributions. In addition, the actual development of these systems has sometimes led to a gradual conceptual change.

Pension systems have traditionally been characterised based on the original reasons for their introduction. Two systems can broadly speaking be distinguished in this historical respect: the Beveridgean and the Bismarckian systems.

Under the Beveridgean system, social security benefits ensure for each citizen (resident) a basic income, a flat-rate pension (potentially means-tested) independent of his or her profession and earnings during active employment. Citizens are free to supplement this income with occupational provisions as part of a contract with an employer or through collective bargaining. This system was put in place in Denmark, Ireland, the Netherlands, and the United Kingdom in various forms. It largely corresponds today to a system of a flat rate or social allowance for PAYG systems complemented by an important, often mandatory or semi-mandatory, occupational scheme and a voluntary savings part.

The Bismarckian system assumes that people have a right to social security benefits only insofar as they acquire that right by work. The pension benefits are earnings-related and profession-related, generally subject to maximum limits. This system has been followed in Germany, Belgium, Sweden, France and the southern European countries, but also originally in most of the eastern European Member States (with much lower benefit levels). The Bismarckian system is often supplemented with a minimum pension guarantee for people who have had only weak attachment to the labour force. This system generally speaking corresponds today to a more differentiated formula for the basic PAYG scheme with a correspondingly lower role for funded occupational schemes.

However, even this Bismarckian/Beveridgean distinction is to some extent arbitrary, as both systems have evolved differently within national contexts and have gone through reforms. One example of this is that funded occupational pension schemes often exist within the Bismarckian system and have expanded recently.

2.1. Pension system taxonomies

Since the World Bank publication Averting the old age crisis: policies to protect the old and promote growth (World Bank, 1994), the main division of pension schemes has been made on the basis of a three-pillar system. This has developed into and been broadly interpreted as a public pillar, an occupational pillar and a voluntary individual pillar (see e.g. Davis, 2013)

ILO (Gillion, 1999) suggested another prescriptive three tier scheme with a poverty-averting first pillar, a mandatory public PAYG system and third-pillar fully funded defined contribution scheme to supplement the first two tiers – both of which could be redistributive in nature. The distinction of the first two tiers was to some extent translated into the addition of the 0^{th} Pillar by the World Bank, which refers to pension schemes provided on a universal basis without any work- or income-related conditionality (Schwarz et al., 2014).

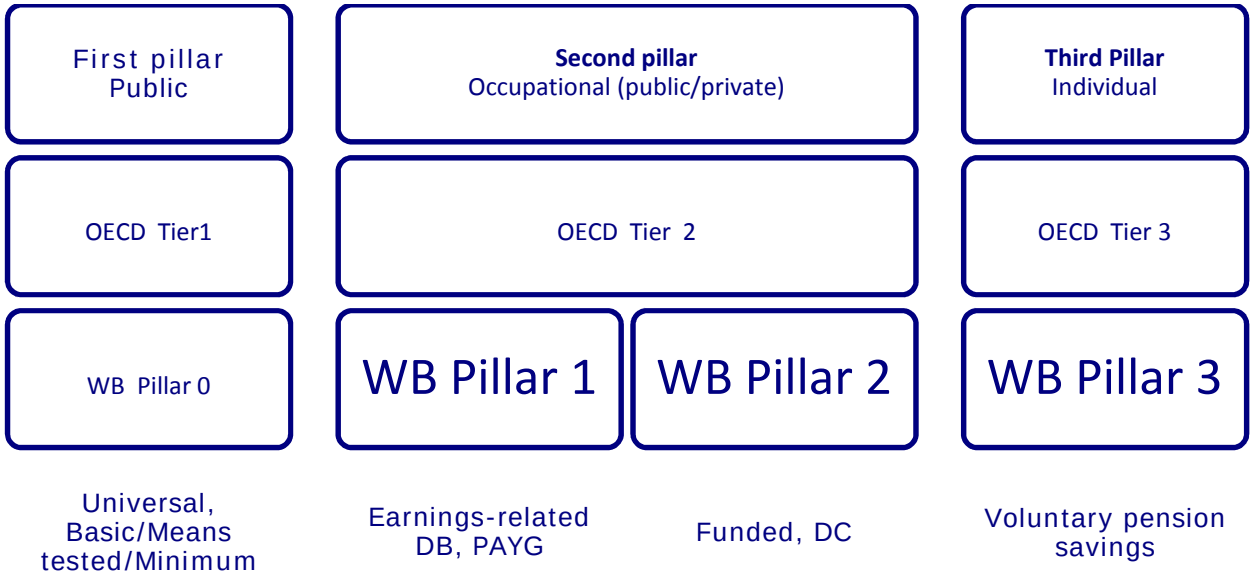
The OECD has also traditionally used the tier label. OECD (2005b) developed a taxonomy that is more descriptive in nature with a first pillar focusing on insuring against old-age poverty (mandatory PAYG). The second pillar is mandatory, either earnings-related PAYG or funded schemes, and aims to 'insure' individuals against an inadequate replacement rate during retirement. The third pillar is defined by voluntary retirement savings.

The aim of the three-pillar taxonomy described in World Bank (1994) was to introduce a prescriptive classification of pension schemes for addressing the perceived need for reform of, in particular, public PAYG pensions. The 1994 report called for a multi-pillar system of three pillars; the first mandatory publically managed, the second mandatory privately managed, and the third voluntary. The first pillar was originally meant to serve to alleviate poverty in old age, but has since simply been classified as a general public pension pillar.

The original World Bank classification was meant to be a prescriptive way for countries to reform their pension systems, and therefore not necessarily well suited as a tool to describe pension schemes in place. For this purpose the OECD (OECD, 2005b) devised a more descriptive taxonomy of pension types, substituting pillars for tiers and highlighting only the mandatory character of the scheme rather than its management.

Both the World Bank and OECD classifications aim at making clear the mandatory or voluntary character on one side, and the funding nature of the parameters (PAYG or funded) on the other. They highlight the redistributive and the savings nature of different systems, whereas the World Bank classification was initially more based on funding sources than the OECD classification. A broad outline of the World Bank and OECD classification systems and their subdivision can be seen in Figure 1.

Figure 1: World Bank/OECD taxonomy: Different types of retirement income provisions



Source: OECD (2005b, 2013), World Bank (1994).

As is clear from Figure 1, some differences exist between the World Bank and OECD classifications. For the purpose of this study, we follow the OECD classification focusing

on the purpose of each of the pillars, i.e. prevention of poverty in old age, adequate replacement rates, and individual choice to save additionally for pension purposes. In order to avoid confusion, the terminology of pillars – rather than tiers – will be used throughout[1].

1st Pillar: Avoiding poverty in old age. This covers mandatory public (PAYG) pension plans, which aim at ensuring a minimum standard of living for all pensioners. This is either done through a universal or basic flat rate pension, a minimum pension (in earnings-related PAYG schemes), or provisions in the social security system available to all citizens. The first pillar contains a strong redistributive element.

2nd Pillar: Occupational schemes. This covers employment-related pension plans: either earnings-related PAYG DB plans (public or private), or occupational DC schemes. Schemes may vary in their degree of redistribution, from very limited redistribution in private DC occupational schemes to a larger degree in PAYG DB public schemes, depending on the exact design.

3rd Pillar: Individual plans. This covers personal savings plans consisting of voluntary contributions by individuals. They are often privately managed, but can be part of voluntary extra contributions to occupational schemes and managed in the same way. The third pillar makes possible some individualisation of the replacement rate. It can also serve as a (favourable tax treated) means for groups outside the formal labour market to save for retirement. This pillar is rather vaguely defined, since it is not part of provisions on pensions schemes, but rather contracted on a private basis between the individual and the financial institution, with the state intervening financially or on a regulatory basis only in the case of matching or tax incentives.

It is important to note that in the OECD definition of pillars that is used in the present study, pension schemes "interact" across pillars. The traditional earnings-related PAYG DB scheme in place in a number of countries has its main part in Pillar 2, where it serves to maintain an adequate replacement rate. However, if the earnings-related pension income accrued via the labour market falls short of the minimum pension as defined in Pillar 1, the person receives the minimum pension together with any targeted or means-tested benefits.

We stress again that this categorisation is rough and only serves for a very broad grouping of pension schemes. The extent to which a given system or scheme fulfils the purpose of the pillar it is broadly categorised under will depend on the details of the implementation.

2.2. Preventing poverty and ensuring basic adequacy: Redistributive public schemes

Redistributive schemes in the public Pillar 1 may differ in their detailed goals and therefore have different formulas determining the value of contributions and of benefits in order to fulfil the redistributive and poverty-prevention roles. Three types of redistributive schemes are identified by the OECD (2013): basic, minimum and targeted. Different provisions may apply to different cases and they are therefore not exclusive.

Basic: Under the provisions of the basic redistributive schemes of the first pillar, the benefits are either flat rate (i.e. not linked to labour market participation) or are

[1] Our only deviation from the OECD classification is in the classification of occupational DC schemes with low coverage of the population. The OECD classifies occupational DC schemes with coverage of less than 60 % of the population as Pillar 3 voluntary savings, whereas we regard this as Pillar 2. We only classify pension savings which are entirely voluntary as Pillar 3. We stress this in the text where it is important.

predominantly linked to number of years worked. Countries using these standard provisions include the Czech Republic, Denmark, Estonia, Ireland, Luxembourg, Malta and the Netherlands (OECD, 2013). Basic pensions can be combined with targeting/means testing.

Minimum: These schemes are the most common way of approaching the distribution of benefits under the first pillar, but are often combined with targeted help. Minimum pensions ensure a floor under the pension income, and they are defined in most Member States. Note that the minimum pension will often be linked to the second pillar: if the labour market attachment has been so weak that the minimum pension has not been reached by the usually earnings related system of Pillar 2, the minimum pension will be activated.

Means-tested/targeted: The targeted redistribution scheme under the first pillar refers to conditional provisions dependent on the needs of specific individuals. They depend on current means rather than contributory history. Countries featuring elements of this system include Belgium, Bulgaria, Cyprus, Denmark, Germany, Italy, Latvia, Luxembourg, Malta, and the United Kingdom.

The three types can co-exist in Pillar 1 (Table 1). For example, a country may have a basic provision available for all, and a targeted supplement that is subject to means testing (e.g. Denmark, Luxembourg, Malta, the United Kingdom). In addition, there may be a minimum pension that guarantees a minimum income as a pensioner. The minimum can either be higher or lower than the basic provision, if other criteria have to be fulfilled in order to receive basic pension rights, such as a residence requirement (OECD, 2013; Table 1).

Table 1 presents the components of Pillar 1 pension provision for EU member countries.

Table 1: Structure of retirement income provision in Pillar 1

Pillar 1			
	Targeted	Basic	Minimum
Austria			
Belgium	✓		✓
Bulgaria	✓		✓
Croatia		✓	✓
Cyprus	✓		✓
Czech Republic		✓	✓
Denmark	✓	✓	
Estonia		✓	
Finland			✓
France			✓
Germany	✓		

Pillar 1			
Greece			✓
Hungary			
Ireland		✓	
Italy	✓		
Latvia	✓		✓
Lithuania			
Luxembourg	✓	✓	✓
Malta	✓	✓	✓
Netherlands		✓	
Poland			✓
Portugal			✓
Romania			✓
Slovak Republic			✓
Slovenia			✓
Spain			✓
Sweden			✓
United Kingdom	✓	✓	✓

Source: OECD (2013); European Commission (2012); Bodiroga-Vukobrat (2013).

Most changes undertaken since 2010 in the statutory provisions related to the public Pillar 1 have concerned the increase or equalisation of the age of retirement, or even the removal of the default retirement age altogether (see Annex 1). Altogether, 20 EU countries have implemented such reforms.

This currently most common modification of the parameters of the pension schemes does not necessarily alter the characteristics of the pension scheme, although it may have redistributive repercussions. Its main effects are rather increasing employment in certain age brackets and reducing the number of pensioners, most importantly in the long run, as transitional generations sometimes have specific conditions for their retirement.

In Finland, Slovakia and Spain, the rise in the retirement age was rendered automatic through being linked to life expectancy. Other countries – such as Austria, Belgium, Denmark, Greece and Poland – have introduced limits for early retirement or have scrapped early retirement schemes altogether. In the Czech Republic, a dynamic formula has been introduced implying an automatic long-term and potentially unlimited increase in the pensionable age.

2.3. Ensuring adequacy: Occupational and earnings-related plans (Pillar 2)

Adequacy is composed of two main elements: poverty reduction and wage replacement. Most of the pension systems in the EU provide some basic, minimum or means-tested provisions, as was demonstrated in the previous section. Pillar 2 is meant to ensure an adequate income replacement rate. Income replacement rates are as important as a part of adequacy as poverty prevention. Technically speaking, the replacement rate is defined as the ratio of the pension to the average wage during the lifetime or a specified period of lifetime. In a more qualitative assessment, it determines the degree to which the pension enables the pensioners to maintain living standards during retirement.

A large part of the public pension systems (PAYG) is earnings-related in a sense that the wage should be to some extent commensurate to earnings during a lifetime, therefore taking into account both the wage level and the period of contributions. The formula determining the pension is devised from life-time earnings based on the last earnings or on average earnings during a certain period. Most countries of the EU use life-time earnings and some reduce this period to a certain period of time, such as Spain which uses only the last 25 years (previous years have no incidence on the basis from which pension is calculated), and France which uses the best 25 years of earnings (OECD, 2013).

There are three ways of formulating the relation of public pensions to earnings: defined benefit systems, points systems, and notional account systems (Robalino and Bodor, 2007). Beyond this basic classification, national pension systems also vary in their definition of the accrual rate, which is the rate at which potential benefits rise for each year of contribution. In some countries this accrual rate is strictly linear, in others it changes with earnings or with age (OECD, 2013).

Most countries with earnings-related pension systems apply a progressive formula under the second pillar for replacement rates. This gives low-income groups a higher replacement rate than high-income groups.

Privately managed schemes in the second pillar consist of DC and DB pension schemes. They also ensure a link between career-long earnings and the pension benefit. However, in contrast to the public earnings-related schemes in place, private schemes are most often not mandatory. The extent to which this affects pension coverage at retirement depends on how the systems are designed, i.e. whether periods of unemployment count towards benefit levels in public schemes.

Making defined contribution occupational schemes mandatory or ensuring that incentives are set so that a larger part of the population tends to use them (semi-mandatory occupational schemes) is, to a large extent, a direct way of enhancing the replacement rate of the first and second pillars.

2.3.1. The main determinant of risk sharing: Defined benefits (DB) vs. defined contributions (DC)

The most important distinction of the pension systems in Europe in terms of redistribution, but also of risk sharing, is the formula translating the contributions (or other parameters) into benefits. This is particularly the case for occupational Pillar 2 pension schemes. Generally, two types of system exist: defined benefit (DB) and defined contribution (DC) schemes. These are described in detail below following the taxonomy used by the OECD (2005, 2013), but are generally accepted by other institutions (Holzmann and Koettl, 2011; World Bank, 1994; European Commission, 2009, 2012a, 2012b). They can exist under both funded and PAYG systems (see Chapter 3).

The major difference between a defined benefit and defined contribution system is in the distribution of risks. In the DB system, the risks are borne by the provider of the

scheme, most often the state but less often a company or a pension fund, and there are clear conditions on achieving a level of pension relative to the others. In a DC or NDC system, there is very little or no guarantee in terms of the final annuities, the risk of the pension being inadequate is borne by the individual. For both DC and (N)DC, however, the amount of risk borne by the individual varies with the design and setup of the pension scheme.

- Defined benefit schemes are available in one form or other in almost all member countries in either the first and/or the second pillar. Pension plans with DB are determined by formulas taking into account number of years of contributions and the level of earnings for some part of the working career. Benefits do not necessarily have a direct link with the (notional) amount contributed. Depending on the parameters of the DB system, contributions to the system throughout active life are generally used only as a condition for benefits, with an element of income adequacy ensuring some degree of differentiation for higher earners. The redistributive character nonetheless implies that higher earners will have lower replacement rates overall than lower earners.
    - The DB system can be translated into a points system under which the final benefits are calculated based on points awarded in proportion to earnings and years of contribution.
- Defined contribution systems determine benefits in proportion to the amount contributed rather than to labour participation. Contributions are registered to an individual account which is paid out upon retirement in one form or other (see Chapter 3).
    - A hybrid of a DC system managed as a PAYG system can result in notional accounts (NDC) where the individual accounts are notional: contributions create rights of the contributor and a quantitatively determined liability of the managing institution, but the source of benefits is often tax-based.

One of the main differentiating features of these two systems is the risk of investment and adequacy. Under DB, the managing institution – usually the state, but it can also be a pension fund – bears the investment risk and the (related) risk of providing an adequate pension income. Under DC, there is no guarantee of a minimum real or even nominal income upon retirement, and therefore the risk is entirely borne by the contributor. Hybrid systems aim at splitting these risks (Eichhorst, 2011; Barr, 2002).

2.3.2. Country examples and recent changes to occupational schemes

A number of countries have implemented pension reforms, shifting part of the funds from the previously public pillar to a funded occupational private pillar. The most recent changes have been undertaken mostly in eastern European Member States, such as Bulgaria, the Czech Republic (temporarily), Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia. These private pillars are making very small contributions to the overall replacement rate due to the limited time since their establishment, but their importance will increase in the future (European Commission, 2009).

However, for many countries the reforms to the second pillar are the same as for the first pillar, given how they are intertwined in PAYG earnings-related schemes. Thus, increases in the retirement age – or the earliest age at which it is possible to draw pension benefits (e.g. Austria, Finland and Greece) – affect the second pillar to an even larger extent than the first pillar. An increase in the age or the minimum number of years of contribution before full pension benefits can be drawn (e.g. Belgium, France, Greece and Italy) has a similar effect. See Annex AX1 for a full list of reforms.

Compared to the changes in the parameters of the first pillar, however, fewer reforms have been made to the second-pillar schemes. In some countries – such as Poland, Hungary and Slovakia – the recently introduced second-pillar schemes have even been transformed back into voluntary schemes under the third pillar, as a step back from the shift towards mandatory funded pension schemes[2].

2.4. Voluntary funded schemes (Pillar 3)

Third-pillar pension schemes cover all pension plans where contributions are voluntary, funded and private. As mentioned above, for the purpose of this study we consider only completely voluntary pension savings as third pillar[3]. The exact design of third-pillar schemes can vary in many ways, but they are primarily of the DC type due to their private character where the risk is mostly borne by the saver depending on the specific design. Individual third-pillar pension products can be very close in design to occupational schemes in Pillar 2. In fact, in some countries (e.g. Denmark) employees can add voluntary contributions to their occupational scheme and these contributions are then treated on the same terms as contractual contributions (in terms of management, fees, etc.).

Because of the voluntary nature of third-pillar pension products, they often carry with them special tax treatment, employee matching contributions, or both. This is supplemented by limits on when and how the assets can be liquidated and paid out so that the character of a pension saving is ensured.

The changes introduced to the third pillar have mostly concerned conditions under which the private pension products are considered for a tax or other allowance. The most recent changes to pension systems have not concerned third-pillar schemes. Further, despite the potentially growing importance of the third pillar, the changes in the last four years have not been unequivocally in favour of third-pillar schemes. In Slovakia and in Denmark, as part of fiscal consolidation measures, tax allowances have been reduced. In Ireland, private pension funds' assets were taxed an extra 0.6 % per year during the period 2010 to 2014. On the other hand, in Romania, the state guaranteed the payment of benefits from private schemes to increase their attractiveness for citizens and in other countries, portability and flexibility of pension products have been increased.

Even marginal changes in policies concerning their parameters can have large impact on the third-pillar schemes. In cases where pension tax allowances or other subsidies are scrapped, the pension saving product de facto becomes an ordinary savings product and its value should not be part of the replacement rate, although it could be used as a source of pension income.

2.5. Conceptual challenges in qualifying pension scheme characteristics

As illustrated above, the variety in taxonomies and classifications does not allow for a single approach to classifying pension schemes in a comparative perspective. Even larger problems arise when we try to place existing pension policies and schemes in a completely unequivocal manner into those categories.

On the one hand, it is possible to have very different schemes in terms of sustainability and adequacy in the same category. On the other, while some of the schemes fall into different classifications, in reality they may have very similar results in terms of creating

[2] For Slovakia this change was later reversed.

[3] In some countries (e.g. Belgium), defined contribution occupational schemes exist in the labour market provided voluntarily by firms as part of the compensation package. However, once adopted by a firm the package has to cover all employees, and is thus not voluntary for an employee of the given firm.

incentives or redistribution of risks. Therefore categorisations should not serve as a conclusive depiction of the characteristics of each of the schemes, and an appraisal should be made based mainly on the character of the parameters of the concrete scheme or policy.

For instance, voluntary individual pension savings under Pillar 3 can have the exact same risk-sharing characteristics as occupational pensions under Pillar 2, although tax incentives might vary as the state may intervene differently in occupational and individual pension schemes. At the same time, employees' voluntary contributions made as part of an occupational scheme under Pillar 2 could receive a different tax treatment from employers' contributions. It is therefore not possible to identify all the relevant characteristics of a scheme simply by identifying the concrete pillar to which it belongs.

Similarly, occupational pension contributions under Pillar 2 can have very different tax treatment and management models (e.g. company management or even a separate entity focusing on pension management, such as in the Netherlands) from purely individual voluntary contribution under Pillar 3. This naturally has far-reaching consequences for the distribution of risks. Some of the shortcomings are shared by both of the categorisations. The notional accounts (NDC), when introduced in the second pillar and followed properly, can have very similar or the same results in terms of redistribution and adequacy risks as funded mandatory schemes under Pillar 2 (Barr, 2002). It is therefore important that each of the pension schemes or policies is always considered in its entirety and that its benefits and risks are spelled out so that the underlining characteristics are not simply assumed through inexact categorisation.

2.5.1. Occupational vs. personal

In some countries (e.g. Denmark and Latvia) it is possible to top up DC occupational schemes with voluntary contributions. Such contributions, being purely voluntary, belong in Pillar 3, but they are paid into Pillar 2 managed occupational schemes and in a statistical sense are indistinguishable from Pillar 2 funds. This makes it difficult to compare pension schemes across countries, and to clearly distinguish between replacement rates stemming from Pillar 1, occupational Pillar 2 and voluntary Pillar 3.

2.5.2. Mandatory vs. semi-mandatory

In some countries, the mandatory or voluntary character of a pension scheme cannot be clearly determined. In Portugal and Slovenia, funded occupational schemes are defined as mandatory for some professions. In Spain, Ireland and Cyprus, all public employees participate in a mandatory occupational scheme. In other countries, despite the nominally voluntary character of the funded pension scheme, it is not possible to withdraw contributions to occupational schemes if the company or the sector is part of an agreement on occupational pensions. In Belgium, for instance, despite the (in principle) voluntary nature of its occupational scheme, a company has to offer the same occupational scheme to every employee. Therefore the employees are not free to decide whether or not they prefer an occupational pension scheme if other employees of the company are already part of one.

The OECD employs a terminology stating that the semi-mandatory character of a pension scheme should be determined based on the coverage of the schemes, independently of the nominal legal requirement. This arbitrary line has been set at 60 % so in countries where more than 60 % of the employed population participate in a scheme, the scheme is considered semi-mandatory and therefore part of Pillar 2. Thus, the OECD classification of occupational schemes varies between Denmark and Belgium. The coverage in Denmark is above 60 % and therefore considered Pillar 2 in the OECD

terminology. The opposite is the case in Belgium, where private occupational schemes have much lower coverage. The pillar taxonomy we use in this study (public, occupational related, voluntary individual) avoids the problems of mandatory and voluntary characteristics, but at the expense of clarity on whether an occupational Pillar 2 scheme is in effect voluntary or mandatory, which has consequences for the extent of coverage.

2.5.3. Savings vs. pension savings

As emphasised by the OECD (2013), achieving the objectives of decent old-age living standards is not merely the result of pension income. Other characteristics, including access to health, housing and other services, are a non-negligible part of both state and private provisions for pensions.

One of the most significant difficulties in assessing the development of private individual pension schemes is the substitution nature of pension savings and classical or other savings. The only thing that distinguishes some other savings from pension savings is the maturity and right to withdraw. There is likely to be some substitution between pension savings and other savings, especially among high-income households, when pension savings incentives are introduced. Thus, contributions to tax-favoured third-pillar pension schemes cannot be considered purely “extra” savings for retirement (Hinz et al., 2012).

Therefore when looking at replacement rates of Pillar 3 pensions, there will inevitably be a bias increasing the overall replacement rate because part of the savings, which would not be part of the rate without financial incentives, figure as part of the pension income (see Chapter 3 for a more detailed discussion).

3. EVALUATION OF PENSION PILLARS

KEY FINDINGS

- Pension schemes and the different pension pillars face a number of risks to varying degrees, including financial, longevity, behavioural and regulatory risks. For all pillars, careful attention to detailed design is important.
- The first pillar, where pay-as-you-go and defined benefits are the norm, should aim at avoiding poverty in old age and therefore carry limited or no risk. The second pillar should provide an adequate replacement rate for people with normal labour market careers, while the third pillar can leave room for individual savings to top up the replacement rate.
- Some population groups with little labour market attachment during their prime age years will rely heavily on the first pillar. To avoid old-age poverty, it must be designed to meet basic needs for vulnerable groups. Attention to negative incentive effects is important when designing targeted or means-tested schemes.
- The second pillar is, in general, organised as a public, earnings-related PAYG system or a private DC system. The design is important for either system to limit or make transparent the amount of risk allocated to the individual. Proper management of all types of risk is important for DC schemes, whereas earnings-related PAYG schemes must ensure sustainability and long-term transition periods related to longevity and fertility.
- Attention to incentive effects on, in particular, labour market participation and savings behaviour is important for Pillar 2 design.
- Pillar 3 should allow individual flexibility with respect to pension savings. It cannot be expected to deliver much in terms of the replacement rate for population groups with limited Pillar 2 savings. Because of the potentially close substitution with non-pension savings, attention should be focused on limiting the potential for pure tax optimisation purposes.
- Considering the financial challenges entailed by societal ageing, rewarding a longer working life should be an integral part of all three pillars.

The three pillars perform different roles with respect to providing an adequate – in terms of replacement rate and security – retirement income during the full length of the retirement period. These roles are connected to the different risk profiles carried by the pillars from the point of view of the individual. Even within pillars, there are differences in how the design affects the risk profiles and the ability to ensure an adequate replacement rate. For a detailed analysis of the properties of different pension systems it can be beneficial to distinguish between risk and uncertainty (see Box 1). However, in what follows, no formal distinction will be made between the two concepts, except where necessary for clarity.

Two traditional types of risk are of particular importance when it comes to pensions: financial risk and longevity risk. Financial risks are those associated with the performance of the portfolio of assets underlying the relevant pension schemes. Longevity risk refers to the “risk” of living longer than expected and, as a consequence, facing a shortage of pension assets towards the end of life.

Box 1: The difference between risk and uncertainty

An event carries risk if the outcome is unknown (such as with a toss of a coin) but the probabilities associated (0.5 in the coin example) with all outcomes (in this case two) are known or can be estimated with reasonable precision. With uncertainty, the probabilities related to the outcomes are unknown.

Risk can normally be insured away if many people face the same event/situation or it is repeated a sufficient number of times. Uncertainty on the other hand is much harder to insure and the discussion of who bears the risk becomes relevant. An example is longevity uncertainty. Because models for forecasting future mortality – and therefore remaining life expectancy at any given age – are error prone, life expectancy at, say, 65 for the current cohort of 65 year olds is uncertain (see Barr, 2002).

Two other types of risk are considered in this chapter: behavioural risk and regulatory risk. Behavioural risk refers to the risks related to individual (non-professional) portfolio management, and thus is only relevant where pension savings are individually managed or parts of the portfolio can be individually chosen or adjusted. This is mainly the case for Pillar 3 pension products, but can also apply to occupational pensions in Pillar 2, e.g. "unit-linked" pension products in Denmark (Pensionsmarkedsrådet, 2006).

Regulatory risk refers to the legal framework governing pension plans, mostly funded pension schemes. Since funded schemes rely on the performance of asset managers in investing individual pension contributions and generating positive returns, asset allocation and the conduct of business regulation matter, but so too does the overall macroeconomic environment. Different countries have created different regulatory frameworks which so far have only been harmonised to a limited extent at the EU level.

Finally, it is worth mentioning that some authors also consider political risks to pension schemes. Börsch-Supan (2010) associates political risks primarily with the first pension pillar and, to some extent, with the second pillar where these are state-managed and PAYG systems. Benefits from these systems can be reduced at political will and are prone to mismanagement. We argue that the same argument can be applied to all the pillars in a given pension scheme, because all pillars are subject to political risks insofar as they all rely on effective governance. Furthermore, funded pensions are subject to changes in tax rates, means-testing criteria, and so on in the payout phase. Political risk is therefore not considered further here (Barr, 2002; Kay, 2003).

The expected replacement rate and security in terms of pension adequacy are linked to the different types of risk pension savers face. Below we first develop in more detail the concepts of financial, longevity, behavioural and regulatory risk, and then relate these to the performance of the three pillars – and different pension products within each pillar – with respect to replacement rates and pension adequacy.

3.1. Financial, longevity, behavioural and regulatory risks related to pension savings

3.1.1. Financial risks

Financial risk refers first and foremost to the reality that the return on savings is uncertain, especially when the investment horizon is 30 to 40 years. If the returns on a planned portfolio of assets turn out to be lower than expected, the saver will either have to save more for the remaining period or face a lower pension.

The role of financial risks in pension provision was especially visible in the funded pension schemes in the aftermath of the financial crisis. The returns turned out to be lower than expected and the vulnerability of the pension systems to economic shocks turned out to

be high (see Asisp, 2012b). These shortcomings either accelerated (Estonia) or underlined (Latvia) the necessity of counteracting reforms in the regulation of these schemes (see regulatory risks below).

Another related aspect of financial risks is the price of lifelong annuities – a guaranteed income stream from retirement to death – at the time of retirement. If the saver wants to convert the total savings accumulated into a lifelong annuity, i.e. a fixed income stream during retirement, the size of the income stream depends on the annuity market. If there are low expectations of future returns on investment, the total accumulated savings will be worth less as a guaranteed income stream.

If pension wealth is not converted into an annuity at the time of retirement, but is instead managed as an investment portfolio, financial risks are present until the end of life.

3.1.2. Longevity risks

Longevity risk refers to the uncertainty over the average future mortality for a given cohort of the population. It is important to emphasise the cohort dimension. Even if population ageing were to come to a halt, such that life expectancy at, say, 65 would stay constant for the foreseeable future, each individual would still face an uncertain lifespan. However, from the cohort turning 65 at time t, the number of people alive at any point in the future would be known with large certainty, because mortality at each age would be known. In case of certainty of longevity, the individual risk each person is facing to her lifespan can be insured away by pooling resources within a cohort, and giving all individuals an annuity based on known mortality rates. In this case, some individuals are unlucky and die before reaching average life expectancy. Their remaining capital will contribute to financing those who are lucky enough to live beyond average life expectancy. If mortality rates are known, the pension income stream can be calibrated to match the pooled total savings or capital stock available[4]. The increasing tendency to link the statutory pension age (and in some cases, the early retirement age) to longevity is precisely to partly offset the longevity risk faced by Pillar 1 universal pension schemes and Pillar 2 defined benefit earnings related schemes.

3.1.3. Behavioural risks

Behavioural risk covers the tendency for individual (non-professional) investors to trade too often (thereby incurring excessive trading costs), to under-diversify their portfolio, and to fail to regularly balance their risk profile as retirement gets closer[5]. Behavioural risk, as defined here, is related to financial illiteracy, i.e. individual investors may be ill-informed of important factors such as the risk profile of an asset class (Orszag and Stiglitz, 2001) and be unable to process the necessary information (Barr & Diamond, 2009; Tapia and Yermo, 2007). These factors can contribute to an underperforming portfolio and lead to lower-than-expected pensions for a given savings profile. The core distinction vis-à-vis financial risks is that behavioural risks have effects even in a situation where the overall macro-financial performance is as expected at the time of the pension savings decision. Behavioural risks are likely to have a heterogeneous impact in the population, such that those who are least able to bear them in terms of pension adequacy are likely to be most exposed to these risks (Barr, 2002).

[4] The pension income stream will still be subject to financial risks as covered above.

[5] Behavioural risks can also refer to the tendency of people to keep postponing savings for retirement into the future and therefore in the end “under-save” relative to what they would have wished to do (Thaler and Benartzi, 2004). However, here we consider risks to the available pension savings.

3.1.4. Regulatory risks

Once financial and behavioural risks have been adequately addressed in legislation and design, rules will need to be applied and enforced. Asset allocation and conduct of business regulation requires a very detailed level of control by authorities, which can easily be defrauded. Cases of fraud and mismanagement of pension money over the last 20 years, from Maxwell to Equitable Life, are well known.

Apart from prudential regulation, asset management regulation also covers the conduct of managers, which has a direct impact on performance. This includes transparency of fees and trading costs. OECD data indicate that returns on pension funds and the fee structure vary considerably in developed countries, and that they are not necessarily related. UK and US pension funds, for example, had negative real net returns over the period 2001-2011 (OECD, 2012). Management fees seem unrelated to performance, as the country with the lowest fees (Denmark) had the highest return over the same period (de Mirzha and Lannoo, 2012).

Because the savings horizon is so long (30 to 40 years), the fee level is no trivial matter. De Mirzha and Lannoo (2012) report a large variation in fees, both within and between countries. As an example, annual management fees in Dutch pension funds can vary by a factor of ten (from 0.13 % to 1.20 %). Even if such differences are not persistent over time among funds, close monitoring of fee levels may be necessary. De Mirzha and Lannoo (2012) illustrate how an annual management fee of 0.75 % can consume around 12 % of total savings over a 30-year period[6]. Similar arguments are put forward by Barr and Diamond (2006), who state that a 1 % administrative fee can lower pensions by 20 % over a 40-year working life.

While increased competition (also across Member States) should in principle lead to growth in those pension funds managed in the leanest way, it is well known from the behavioural economics literature that consumers rarely (re)consider their pensions, let alone shift providers if possible, cf. behavioural risks above (see, for example, Barrett et al., 2013; Thaler and Benartzi, 2004). Because of the importance of adequate pension savings, increased competition, if deemed desirable, has to go hand in hand with a strong regulatory framework.

As is the case with behavioural risks, regulatory risks, if not managed well, are likely to hit hardest those population groups that are not well prepared to counter them.

These matters are barely regulated at the EU level, if at all, but depend most importantly on national idiosyncrasies. A more European-wide pension fund market, which allows for more competition and more transparency, could be one solution, but many other elements of the national frameworks will need to be addressed, such as taxation, labour markets and social policy.. Political developments, however, do not point in that direction at the moment.

3.2. Pillar 1 – Public pension schemes: Avoiding poverty in old age

Pension schemes in Pillar 1 are, as a general rule, publicly managed PAYG systems mostly based on the defined benefit (DB) principle. This type of scheme was the first pension to be introduced in industrialised countries and it has traditionally helped to alleviate income-related risks and decreased poverty levels among the elderly (World Bank, 2014). In most – if not all – countries, the first pillar serves to set a floor under the income one can expect at retirement age, independent of one's previous labour market attachment. In countries with traditional DB PAYG systems, this is often done by

[6] Based on a stylised example. Exact costs of fees will depend on investment returns, fee structure, etc.

setting a minimum pension, potentially in combination with additional means-tested benefits. In other countries, Pillar 1 takes the form of a universal basic pension income (in Denmark, the Netherlands, Ireland, Czech Republic, Luxembourg and the UK), potentially combined with means testing (see Chapter 2). Both models redistribute income progressively from individuals with more labour market success to individuals with less luck in the labour market. By design, the state assumes the full longevity risk in Pillar 1.

The first pillar is, in principle, the only pillar which can guarantee an adequate pension for all population groups by making sure that the minimum or basic pension, together with additional means-tested pension income, keeps retired people out of poverty. However, in some cases the full minimum pension income is conditional on a certain length of residency (e.g. in Denmark and Luxembourg), and is reduced pro-rata depending on the shortfall in years of residency. This design means that immigrants are vulnerable to old-age poverty if they have failed to save significantly through either Pillar 2 or 3 pension schemes (see Chapter 4).

Figure 2: Value and coverage of Pillar 1 pensions

	Relative Benefit Value (% of AW earnings)			Coverage (% of over 65s receiving)	
Title	Basic	Targeted	Minimum	Targeted	Minimum
Austria		27.9		11	
Belgium		25.3	28.3	5	11
Czeck Republic	9.1		12.1		n.a.
Denmark	17.5	18.1		88	
Estonia	13.2	14.7		6	
Finland			20.6		47
France		25.4	22.5	4	37
Germany		18.9		2	
Greece		13.7	36.4	19	60
Hungary			12.4		<1
Ireland	36.7	34.9		17	
Italy		21.6	19.3	5	32
Luxembourg	10.2	30.8	38.9	1	29
Netherlands	29.5				
Poland		14.7	24.6	12	n.a.
Portugal		17.4	33.8	17	59
Slovac Republic		22.2		3	

Title	Basic	Targeted	Minimum	Targeted	Minimum
Slovenia		31.1	13.2	17	2
Spain		19.6	33.9	6	28
Sweden		14.8	24.2	1	42
United Kingdom	15.6	19.9	10.2	27	n.a.

Note: This table gives an overview of existence, the value and coverage of Pillar 1 pensions in selected countries.
Source: OECD, 2013.

There are a number of ways governments can contain the costs of the first pillar depending on how generous the minimum or basic pension incomes are from the outset. One is to adjust these two components (and additional means-tested benefits) for inflation rather than wage growth (the indexation method). The real value of the pension will remain unchanged during retirement, but retirees will be relatively poorer than the working population (Whiteford, 2006). Of course, indexation can be done at a level below inflation if a lower real level is deemed adequate. Changing the indexation method is one way to slowly phase in lower benefits in real terms.

Another mechanism is to taper the means testing at a faster pace. This means that additional means-tested benefits are only available to the poorest retirees and taper off faster with additional pension income. However, this may have behavioural repercussions in the labour market and on the incentives to build private savings close to retirement age. This is because the taper rate of means-tested benefits acts as an implicit tax on any other pension savings (see Box 2).

Box 2: Means-tested pension income and implicit tax rates

Means testing pension income is good for reasons of equity, but it can introduce adverse incentives into the labour market and general pension system. The reason is that – by design – the amount you get as a consequence of means testing depends on your pension income. If your pension income is greater than a certain threshold you will stop receiving means-tested benefits. This can either be a “sharp” threshold, so that benefits are fully available for individuals with pension income below the threshold but not above the threshold, or the means-tested benefits can be tapered off according to how close your pension income is to the threshold level.

As an example, consider the case of a sharp threshold and the incentives to save for someone who is close to the retirement age and has low pension savings (in all of the pillars the part of the income stream on which means testing is done). If her pension savings are low but close to the threshold, she will face an implicit tax through the loss of the means-tested benefits from further pension savings (i.e. in voluntary pension products as part of Pillar 3) (Goda et al., 2010).

The importance of this savings disincentive depends on the exact design of the means-testing scheme, but it is potentially substantial, in particular for groups of the population which have very low pension savings rates (cf. Chapter 4).

Thus, a sharper reduction in additional means-tested retirement income may discourage workers from taking up employment close to retirement or from saving in any voluntary third-pillar pension products available. For the same reasons, some workers may also prefer informal employment close to retirement age. Depending on the generosity of the

means testing (i.e. which income groups will fall within the income range where they are entitled to means-tested benefits), these disincentives may only affect the individuals that have had little fortune early on in their working lives. However, it is not a trivial issue. A study of the Danish pension system and savings behaviour found that once the implicit tax stemming from reduced means-tested benefits was taken into account, some groups faced an effective tax rate of more than 80 % on each Danish krone saved (DØRS, 2008).

By design, in the first-pillar component of pension systems there is little if any association between contributions (whether through the general tax system or dedicated social security contributions) and benefits received at retirement. For this reason, Pillar 1 can potentially introduce distortions to the labour market because part of the social security contributions or general taxes does not benefit the individual, but is appropriated to finance a minimum or basic pension and means-tested benefits. However, the distortionary effect of Pillar 1 is likely to be of second order importance relative to other labour market distortions. Pillar 1 will have little influence on people's labour supply choice when they are young and their pensions are decades away, but it could influence older workers with very little previous labour market attachment. Because this segment of the population tends to have low wages, they often already have numerous disincentives to take up paid work stemming from the loss of social benefits and transportation costs, as well as pension considerations (Barr and Diamond, 2006).

Increasing the age at which benefits can first be drawn from Pillar 1 has been the focus of many recent pension and retirement reforms (cf. Chapter 2). This has an immediate and substantial effect on the costs of this part of the pension system. The total effect on public finances may be much less if employment is not available and most people have to be placed on other public support programmes.

A design that incentivises people to work longer than the statutory retirement age, compensating them by raising their pension actuarially when they retire, is another way to reduce the cost of Pillar 1. However, such incentives have had little effect so far (Barr, 2006; Barslund, forthcoming, for the Danish case).

The objective of the first pillar is to provide retirees with a secure minimum income stream avoiding old-age poverty. In the case of systems with universal minimum pensions (i.e. Denmark and the Netherlands), the first pillar adds to the combined replacement rate, but for many income groups it will not in itself provide for a large replacement rate and it therefore contributes only in a limited way towards spreading consumption over the life cycle. However, this does not mean that the first pillar necessarily plays a secondary role in providing for an adequate replacement rate. A case in point is Denmark, with a well-developed second-pillar DC occupational scheme covering around 80 % of workers. Even here, first-pillar pensions will be the main income source for half the pensioners in years to come.

The PAYG nature of Pillar 1 allows for sharing of longevity risk across generations or cohorts, so-called intergenerational risk sharing. Because most increases to life expectancy now take place at old age, this is an important feature[7]. In case of unexpected increases in life expectancy at the retirement age, people will on average spend longer in retirement than expected. This increases the costs of Pillar 1 pensions. With an unchanged system, the full burden of financing the extra cost will fall on younger generations – either the current working age population via increased social security contributions or taxes, or

[7] This is contrary to the first half of the 20th century where much of life expectancy gains came from reductions in child mortality below the age of five.

future generations via the inheritance of a larger public debt. However, risk can be shared by some combination of lower benefits and increased contribution.

It is worth stressing that the same mechanism would work in the opposite direction in the case of longevity not increasing as expected. The financial cost of the Pillar 1 pension will then be lower than forecasted, meaning a smaller burden on younger generations in an unchanged system.

Importantly, the notion of intergenerational longevity risk sharing applies only to unexpected changes to the development in longevity. If a Pillar 1 pension component is perceived as being too generous from the outset, there is no need to invoke the argument of intergenerational risk sharing when reforming it.

The PAYG nature of Pillar 1 means that financial, behavioural and regulatory risks are not present to any large extent.

3.3. Pillar 2 – Pension plans linked to labour market outcomes: Consumption smoothing

The purpose of the second pillar is to provide a reasonable replacement rate during retirement; that is, to allow individuals to maintain an income level which reflects the level of earnings during their working career. It is a means to partly facilitate the maintenance of a given consumption level into old age, so-called consumption smoothing (see Chapter 2).

Pillar 2 is made up of privately funded schemes and public pension schemes. Private pension schemes come in the form of defined contribution (DC) and defined benefit (DB) (see Chapter 2). Most, if not all, private companies have now stopped for new enrolments into DB schemes (Eichhorst et al., 2011). The Netherlands and the UK have traditionally had private DB schemes, but they have also been present to a much smaller extent in other Member States. Public earnings-related second-pillar schemes are of the DB nature and PAYG financed.

3.3.1. Private schemes

Private DC schemes can be organised collectively at the occupational level, at the individual firm level, or both (as in Denmark). Private DC schemes play a major role in Denmark, Estonia, Poland, the Slovak Republic and Sweden, and a smaller role in many other Member States.

Depending on their design, private DC schemes are open to all the risks outlined above. However, it is important to stress that the details of implementation are important.

In Denmark, which has one of the most mature DC schemes, around 80 % of employees are covered by a DC scheme with an average contribution rate of 10.6 % of gross earnings (OECD, 2013). Most of the DC schemes in Denmark are organised along occupational lines, which means that employees often auto-enrol into a scheme depending on their occupation. Further, depending on your workplace, enrolment is mandatory. This method ensures large economies of scale for occupational pension schemes and limits the costs related to, for example, marketing. Thus, it provides for a very competitive investment product in terms of cost. The other side of the coin is that it leaves little or (in many schemes) no individual choice regarding the investment portfolio and detailed design of, for example, the payout profile.

On the other hand, DC schemes organised through a company are often more flexible and allow the contributor to choose both the portfolio and the risk profile. This also leaves them open to behavioural risks. Collective DC schemes, organised along occupational lines

or otherwise, also have access to collective annuities, which can have better implicit returns than individual annuities products (Finkelstein and Poterba, 2002).

One particular issue related to the design of occupational DC schemes is the profile of the payout phase. Generally, the profile of payouts is of one of the following forms: life-long annuity, a one-time capital payout at retirement of the entire pension savings, or payout in instalments over a fixed period (say, ten years). Only life-long annuities insure life expectancy risks and are potentially able to deliver insurance against (very) old-age poverty (if the initial pension savings was sufficiently large). While pension products which have payout profiles other than life-long annuities can in principle be converted into life-long annuity profiles, there are behavioural risks at play which may induce retirees not to do so at the time of retirement (Brown et al., 2013; Davidoff et al., 2005).

The payout profile can also have implications for the uptake of means-tested or targeted benefits depending on the income/wealth base on which benefits are means tested. If means testing is done on pension income only, two individuals with the same pension wealth at retirement but with a life-long annuity and a ten-year instalment payout scheme, respectively, could end up with very different uptakes of means-tested public benefits. The person with the ten-year instalment payout plan may be eligible for means-tested public benefits after ten years when her pension income is reduced, whereas the individual with a life-long annuity may never be eligible for means-tested benefits.

The advantage of life-long annuities over other payout profiles in avoiding old-age poverty has to be weighed against the implicit redistribution from short- to long-lived individuals in collective annuity schemes (Kremer et al., 2010). Income and longevity tend to be positively correlated, implying that collective annuities, while effective at insuring against life span uncertainty, can also be regressive in terms of redistribution. Further, in converting small amounts of savings into life-long annuities one also runs the risk of high implicit tax rates if the annuity income is part of the means testing of other social benefits (c.f. the discussion of means testing above).

In private DC schemes, financial risks and longevity risks are only addressed in terms of diversification of the portfolio, and by mandating insurance companies and pension providers to have certain reserves should longevity estimates turn out to be too low. Private DB schemes differ in that risks are shared more broadly, since retirement benefits depend on some function of past wages and not on financial market returns. Financial risks in this case are carried by current and future employees (through lower wages), shareholders (lower profits) and society at large (via an effect on prices) (Barr, 2006). This is also the case for longevity risks.

Well-designed private DC and DB schemes can ensure a secure and adequate replacement rate throughout retirement; however, it is not given that a DC or DB scheme will accomplish this.

3.3.2. Public schemes

Three types of public Pillar 2 system exist within the EU: defined benefit (DB), notional defined contribution (NDC), and the so-called points systems. The most common is PAYG DB schemes, which are the central part of Pillar 2 in a large number of Member States (see Chapter 2).

Some countries have both private and public systems co-existing. For example, Belgium has a public PAYG DB scheme as its main ingredient in Pillar 2, but a small share of workers are also covered by private DC schemes organised at the company level.

In the public DB scheme the pension at retirement is determined by a combination of earnings and number of years of contribution (which is most often equivalent to number of years having worked in the country), the accrual rate, the rate of valorisation and – during the payout phase – the indexation method (OECD, 2005b; OECD, 2013 gives an overview).

DB schemes are paid out as annuities during retirement and are most often indexed to either price inflation or wage growth, or a combination of both. Public DB schemes therefore remove the different types of risk from the individual, at least in principle. However, as with Pillar 1 pensions, Pillar 2 pensions are subject to changes in the parameters determining the retirement benefit in and before retirement. This is not only the case for public Pillar 2 schemes, since private schemes are subject to changes in, for example, taxation of benefits.

Notional defined contribution schemes mimic private DC schemes in that each individual has a notional account to which his yearly contribution is credited. Contrary to private DC schemes, the account is notional in the sense that it is not backed by financial assets, that is, contributions are not invested but are instead used as part of a PAYG system. The returns accruing to the notional accounts are therefore not market-based either, but are instead based on a system rate on return defined by the parameters of the system. The return to the notional account can be linked to macroeconomic variables (e.g. wage or GDP growth) and/or be adjusted on a discretionary basis in order to ensure that the system remains financially sustainable.

In NDC schemes there is a direct link between how much an individual has contributed and how much is paid out in pensions. This is similar to a funded defined contribution scheme. The difference is in the level of pension payouts. In a funded defined contribution scheme the level will be determined by accumulated market returns, whereas in an NDC scheme the level will depend on how the “system” pays returns to the notional account.

NDC schemes often have a closer association between what is notionally paid into the scheme and the pension that is received at retirement compared to earnings-related DB schemes. However, this need not to be the case per se. In fact, a traditional DB scheme which determines pensions payout based on working life contributions (rather than, say, the best 10 or 25 years) can be entirely equivalent to a NDC scheme if the internal returns are the same.

Because of the close relationship between what is being paid in and what one receives in pension payouts, NDC (and funded DC) schemes may be better at incentivising people to retire later. However, DB schemes can be amended to reward longer working lives by putting a higher weight on earnings after a certain age is reached (e.g. the statutory retirement age).

Both private and public schemes can be designed to allow for individual choice over the desired replacement rate, by accommodating a flexible retirement age approach with an actuarially fair change in the pension payout according to the age of retirement.

3.4. Pillar 3 - Individual private plans: Enhancing replacement rates

Pillar 3 pension plans are purely market-based, being both voluntary and private with defined contributions and no certainty of benefits. There is an important conceptual issue related to Pillar 3 pension savings: because saving is voluntary it is in principle not possible to distinguish Pillar 3 pension savings from other long- and short-term savings an individual might have (see also Chapter 2). Thus, Pillar 3 savings are

implicitly defined as voluntary savings for pension purposes covered by some inducement to save. Most often this will be tax deductibility of contributions or, equivalently, the state matching part of the individual's contribution (so-called matching contribution systems) (Hinz et al., 2013)[8]. There can also be a different tax treatment of the returns relative to the tax treatment of regularly (non-contractual) savings. Finally, withdrawal of funds before a specified age (often the statutory retirement age or age of eligibility for early retirement) is either restricted or carries large penalties.

All EU countries except Cyprus have a third-pillar pension component (EC, 2012).

The conceptual issue of measuring Pillar 3 pensions is important for international comparisons of the contribution to the replacement rate of this pillar. Most, if not all, countries have limits on the value of matching contributions or tax breaks offered, which will effectively constrain individuals' deposits into the system at this set maximum. This means that the replacement rate offered by Pillar 3 pension schemes will, to some extent, be given by this maximum.

As an example, take two countries that have the same pension systems with the same third-pillar components, the only difference being that the limit for tax deductibility of deposits into the third pillar is higher in country 1 than in country 2. It would then be no surprise to see more savings in the third-pillar scheme in country 1 (the country with the higher limit for tax deductibility). But this would not necessarily mean that individuals in country 1 save more for their pensions than individuals in country 2, only that more is institutionalised (see also Chapter 4).

There are significant differences between countries in the detailed design of the third pillar, and in the maximum possible contributions that can be made.

The main function of Pillar 3 schemes is to offer individuals an attractive option to enhance their combined pension replacement rate – the consumption-smoothing element. Pillar 3 can also serve as a means for particular groups (not covered by Pillar 2 schemes) to supplement their pension savings. This would be the case for self-employed, immigrants and people without a longer attachment to the labour market, for example. However, the evidence suggests that the third pillar is only used for this purpose to a limited extent (see Chapter 4). Thus, to the extent that data are available, there is no sign that the third pillar plays more than a minor role in providing adequacy and security in old age.

Third-pillar pension components also offer a means to overcome the tendency for procrastination and problems with commitment which are present in the case of long-term savings by providing a tax subsidy and a lock-in mechanism (Thaler & Benartzi, 2004; O'Donoghue and Rabin, 1999).

Other parts of the pension and social security systems can limit incentives to save in third-pillar pension products, in particular targeted and means-tested elements of Pillar 1. Individuals with little initial savings and weak (formal) lifetime labour market participation may face steep implicit marginal tax rates of savings in third-pillar products if these are included in the basis for means-tested or targeted benefits (cf. the description under Pillar 1 above). This may partly explain why groups vulnerable to low pension income during retirement do not seem to use the Pillar 3 pension component much. Again, country-specific implementations of third-pillar schemes are of central importance to understanding the detailed mechanisms at play.

[8] There is no clear consensus as to what extent tax incentives increases total private savings (see also Chapter 4).

As with DC schemes in Pillar 2, third-pillar pension schemes are subject to the full list of risks, and even more so because they tend not to be collective. Due to their defined contribution nature, financial risk falls to a large extent on the individual. There are also risks stemming from the regulatory environment, in particular with respect to management fees, but also with respect to options and risk profiles promoted by institutions offering these products. Finally, longevity risks and behavioural risks are present. The extent to which each of these risk factors plays a prominent role depends on the regulatory basis in each country. The EU has enacted some harmonising rules in this area, for insurers managing pension plans under the Solvency II regulation and for pension funds under the Institutions for Occupational Retirement Provisions directive. Solvency II will be implemented in national law over the next two years, while the pension funds directive barely touched upon prudential rules, although revisions have just been proposed by the EU Commission.

The cost related to the different risk types can be overcome in various ways. If individuals can pool resource as investors, management fees (which are subject to large economies of scale) can be kept down. The involvement of insurance companies can partly offset longevity risk, and well-structured choice architecture can limit behavioural risks (Iyengar and Kamenica, 2010; Benartzi et al., 2012). However, there is limited scope for inter-generational risk sharing.

One particular way to reduce costs and to lower the risk exposure to Pillar 3 pension products to some extent is to allow for voluntary contributions to be paid into existing occupational defined contribution schemes in the second pillar. This clearly implies the precondition that Pillar 2 pensions are well regulated and cost-managed effectively; however, occupational defined contribution schemes will often have features limiting the risk exposure along with other desirable characteristics such as group insurance elements. This is the case in Denmark, where in some occupational pension schemes it is possible to top up the mandatory contribution with an additional voluntary contribution (where the tax deductibility is subject to the same limits existing for other third-pillar products). Clearly, this works best in countries with well-developed funded second-pillar schemes with high coverage among the population, and therefore may have limited feasibility where funded schemes are most likely to be introduced. However, it is not inconceivable that a similar system could be set up in countries with PAYG schemes with notional accounts (e.g. Sweden or Italy) or even traditional earnings-related schemes, although in this case it would not expand the funded part of the pension system but merely be integrated into the existing PAYG system. The key precondition is that an individual record is kept and updated on a regular basis (say, yearly at a minimum) and not just at the time of retirement. This is the case in countries with NDC systems, but may also be true of many countries with an earnings-related PAYG system. To calculate the return to voluntary payments it would be straightforward to apply the system rate of return.

3.5. Evaluation of pillars – an overview

Pillar 1 is the only pension pillar which can ensure a decent standard of living in old age for all population groups. Groups with weak labour market attachment are likely not to save enough in Pillar 2 (whether PAYG or private, or defined contribution or benefit) to reach an adequate level of pension payouts during retirement; they are even more unlikely – for lack of means or incentives – to make sufficient voluntary contributions via voluntary pension schemes in Pillar 3. The drawback of Pillar 1 is that means testing and targeting of benefits create disincentives in the labour and voluntary pension savings market, especially close to retirement age. Pillar 2 should be designed to ensure an adequate replacement rate for workers with normal career length, and this is possible to achieve through multiple different designs of Pillar 2. An important issue

related to the private DC schemes is that of mitigating risks – in particular financial and longevity risks, but also regulatory and behavioural risks. For the general sustainability of pension schemes, each pillar should be designed so as to incentivise longer working lives where possible.

4. INTRODUCTION OF THIRD-PILLAR PENSION SCHEMES – CONTRIBUTORS AND BENEFICIARIES

KEY FINDINGS

- Voluntary private pension savings (i.e. third-pillar pensions) usually differ from general savings in two ways: 1) governments provide financial incentives to promote savings; and 2) withdrawal from voluntary pension savings either is only possible after a certain age is reached, or entails a financial penalty.
- The voluntary nature of third-pillar pension schemes results in an unequal pattern of beneficiaries of private pension provision in society. In particular, societal groups that already suffer from lower wages and thus lower expected pension incomes from the second pillar are less involved in third-pillar provision; women, less educated people, people with migration background, less wealthy people and the atypically employed tend to show lower participation rates. Hence, if no counteracting measures are implemented, there is a risk that an increasing relevance of third-pillar pension provision will sustain or even exacerbate existing societal inequalities.
- The extent to which the incentives for additional pension savings that third-pillar schemes provide do in fact lead to additional private savings is not clear. While incentives indeed render savings relatively cheaper compared to consumption or general savings, it is uncertain whether people actually accumulate higher pension savings or whether they simply reallocate the gain to other expenses, holding pension savings fixed.

This chapter considers voluntary private pension schemes, known as "third-pillar pensions". It is important to stress the focus on "schemes" in this context. Most individuals have positive private savings when all private assets are considered, and it is likely that a part of the private asset portfolio is meant or foreseen to be spent after retirement and, thus, should be considered voluntary private savings for retirement (cf. Chapter 3).

A change in this element of private savings is to be expected in response to parametric pension reforms (Hurd et al., 2012; Arnberg and Barslund, 2013). Looking at the part of total private savings that is meant as retirement savings is not feasible due to data constraints and the fact that most individuals are unlikely to appropriate any precise fraction of their savings as "retirement savings". Therefore the focus here is on "schemes", i.e. savings mechanisms with some public policy inducement behind them.

Third-pillar schemes most often have two elements: a tax deduction, or equivalently, part of the contribution being matched by the government; and restrictions on the time frame for withdrawal and potentially the profile of withdrawal. The investment return from third-pillar schemes may also have a favourable tax treatment relative to non-pension investments. Often withdrawal can only take place – or without significant penalty costs – after a certain age, and there may be restrictions on the profile of withdrawal, i.e. life annuity, ten-year annuity, etc.

This chapter looks at the main contributors to (and therefore future main beneficiaries of) third-pillar pension schemes. It then discusses to what extent third-pillar pension schemes can be expected to increase national savings. However, we first discuss

coverage of third-pillar voluntary products among current retirees, that is, current beneficiaries from past savings in third-pillar pension schemes. While data sources are limited, SHARE data provide some insights into current and near future coverage of pensioners (Schuth and Haupt, 2013)[9]. Coverage is small, at below 10 % for most of the 14 countries covered by the survey. For a few countries (Sweden, Denmark, France, and Czech Republic) it is above 20 %. In all countries the coverage rate from third-pillar pensions is set to increase substantially for future pensioners (those aged 50 and above but not yet retired), suggesting an increasing role for voluntary private pensions in future pension provision. In terms of the share of current pension income, voluntary private pensions made up less than 5 % in the ten countries covered by SHARE in the 2004 wave (Brunner et al., 2005). Unfortunately, there are no secondary data based on the 2011 SHARE wave to assess the current comparable figure.

4.1. Contributors to third-pillar pension schemes

In order to understand the extent to which the current expansion of private pension participation will affect future pension adequacy, it is helpful to evaluate the determinants of engaging in such voluntary pension provision schemes. There are only a few studies available that explicitly assess these determinants, but they at least offer some orientation[10]. First, wealth and income positions are important determinants of third-pillar pension savings. Second and closely related, educational level, and financial literacy in particular, are substantial factors. These characteristics may, for example, shape the awareness of potential future shortfalls in personal pension prospects. They can also affect the information costs of engaging in private pension investments (Le Blanc, 2011). Third, country-specific pension system characteristics and expectations of the future action of policy-makers in this regard are likely to affect the decision of whether or not to participate in private pension schemes. There are four population subgroups that might be particularly vulnerable to the risk of not benefitting sufficiently from the compensatory effect of the third pillar due to the above-mentioned factors.

4.1.1. Gender

The status quo raises concerns that an already existing gender pension gap might be exacerbated by the increasing significance of private pension provision (EGGSI, 2011). Bettio et al. (2013) assess SHARE data and present data (Table AX3 in the Annex) which display the differences between male and female participation in all three pension pillars across countries. The last column of Table AX3 depicts the difference with respect to the third pillar and reveals that in most countries, men participate more often in private pension schemes. Women contribute less frequently to voluntary private schemes Bettio et al. (2013) conclude. Considering the average pension income, they find that the third pillar widens the gender pension gap at least in Denmark, Sweden, Germany and the UK. However, these numbers refer to current pensioners and do not necessarily reflect persistent patterns of participation. These differences might rather stem from known factors that generally distinguish women's and men's pension prospects: 1) differences in educational attainment, which translate into different lifetime earnings; 2) different marital status, such as being married or divorced; 3) differences in life expectancy, for example as women tend to live longer, they are more likely to be widowed; 4) differences

[9] The questionnaire-based SHARE data set is not without methodological problems since respondents might not have interpreted questions related to private voluntary pensions correctly. There is some suggestion that this is the case for Sweden, for example.

[10] Survey sources that could offer additional insights are SHAREDATA and EU SILC. Primary analysis of survey data is beyond the scope of this study.

in years of full employment, which might be affected, for example, by motherhood and the higher shares among women of the part-time and temporary employed.

Bettio et al. (2013) use EU-SILC data and calculate the gender gap in the actual pension income, which they adjust for these and some other given differences between men and women, to assess the extent to which the pension gap is robust to these adjustments, i.e. which part of the average income pension gap is not explained by the observed differences. They find that being married or being widowed lessens the residual gap, while educational measures and years in employment widen it. The authors also find that the combined characteristics and their interactions affect the pension gap differently across countries, but even when adjusting for the propensity to invest in third-pillar schemes, do not explain the whole gap. The remaining gap is probably partly explained by wage discrimination against women, though the authors also suggest that risk attitudes differ between men and women and that women might therefore benefit less from investments in private pension provision. This indeed could depict a persistent disadvantage in benefits drawn from voluntary private schemes. Moreover, until recently individual voluntary schemes have been often entailed sex-disaggregated tariffs (EGGSI, 2011) that make contracts appear more expensive for women. With respect to all three pension pillars, the ASISP synthesis report lists groups at risk of poverty in old age. Women in particular belong to this group and might face old-age poverty in, for example, Ireland, Lithuania, Poland, Slovakia, Sweden and the UK (ASISP, 2012).

4.1.2. Education

Le Blanc (2011) draws on SHARE data in order to quantify the impact that education and financial literacy have on people's capacity to replace decreasing statutory pension benefits with private investments. She finds that while education matters less in countries with a long-established private pension system, it matters much more in countries where the third pillar only recently gained relevance. Here, higher educational attainments entail a higher propensity of investing in private schemes. Keeping in mind that education is also linked to wages and thus the benefits people draw from statutory schemes in many countries, low-educated people run the risk of not covering themselves sufficiently against decreasing statutory benefits by engaging in private pension provision, in particular in countries without a long-standing tradition of private provision. This is why the EC (2009) stresses the importance of implementing automatic enrolment and default options that prevent the less financially literate from staying away from the sometimes complex arrangements of private pension provision. High-income individuals are more likely to have access to independent financial advice which helps them to take full advantage of, for example, tax relief. Similarly, public information campaigns turned out to be a useful measure (EC, 2009).

Just as with information about potential third-pillar benefits, transparency of and access to information about the expected benefits from Pillars 1 and 2 is crucial for promoting investment in third-pillar pension schemes: only when people can easily comprehend how much income they can expect to receive during old-age retirement from the first two pillars can they allocate their current income to additional schemes in the third pillar in a timely and purposeful manner.

4.1.3. Wealth and income

The results from an analysis of the Household and Consumption Survey of the Eurosystem provide evidence on the impact of income and wealth on the compensatory power of private pension provision. A study by the European Central Bank (2013) establishes a strong relationship between income and wealth positions on the one hand, and the participation rate and values invested across countries on the other. In the first wealth

quintile (i.e. the 20 % of the population with the least wealth), only 13.2 % participate in private pension schemes and hold a median value of EUR 4,400. In contrast, more than 58 % of the two highest income deciles engage in private schemes, holding a median value of EUR 23,000. However, part of this disparity will be due to different age profiles, as for example young people at the beginning of their career are likely to be part of the lower wealth quintiles and naturally have accumulated lower amounts of private pension claims due to their age. In the end, the third pillar appears to be "more addressed to higher income groups" (European Commission, 2012d). For these higher income groups, private provision is "more beneficial" (EGGSI, 2011). De Manuel and Lannoo (2013) point out that the lowest earning deciles are better off relying on anti-poverty safety nets than investing in complementary private pension schemes. The lowest income deciles will struggle to make up for decreasing statutory benefits with private provision. An increasing relevance of private provision therefore seems to imply immediate disadvantages for this group.

4.1.4. Employment

Atypically employed people also constitute a typically vulnerable group. Antolin et al. (2012) break up private pension coverage by employment and contract type for four European states and reveal a considerable falling apart of private pension participation. While the coverage of full-time and part-time employed is almost equal in Germany (where 57.8 % of the full-time employed vs. 53.4 % of the part-time employed labour force is covered) and Spain (22.5 % vs. 17.8 %), the gaps turn out to be sizeable in Ireland and the UK, where the share of part-time employees covered is less than that of the full-time employed. In Ireland 47.2 % of the full-time employed and only 21.8 % of the part-time employed are covered. In the United Kingdom, the 55.9 % of covered full-timers is in contrast to the 24.3 % of the part-timers who save in private pension schemes.

Less heterogeneous between countries but similarly significant are the differences in private provision coverage among the permanent and temporary employed. In Germany, the Netherlands and Spain this gap amounts to at least 17 percentage points. Antolin et al. (2012) concede that part of this difference is due to age, which correlates with temporary employment. The general tendency, however, seems to confirm the supposition that particularly vulnerable labour market groups run the risk of not compensating their shortfall in statutory pension provision with private savings.

The coverage of the self-employed, by the way, is difficult to evaluate. The ECB (2013) report shows that above-average numbers of this group are enrolled in private pension schemes. It is nevertheless not possible to infer a generally sufficient provision as, on the one hand, statutory schemes may not cover the self-employed, while on the other hand business capital may serve as private provision. Antolin et al. (2012) stress, however, that the self-employed are potentially hard to reach and are not covered sufficiently.

4.1.5. Migrants

Finally, immigrants are typically vulnerable to decreasing statutory benefits. There has been no extensive EU-wide research on the pension provision activity of migrants. As this might be due to the apparent heterogeneity of migrants within and between states, this subsection presents evidence from three countries. In general, immigrants are a part of the population that are vulnerable to a situation of inadequate pensions upon retirement for a number of reasons. First, immigrants – when arriving as adults – have a shorter period in which to save for pensions than non-immigrants. Second, labour market activity tends to be lower for immigrants (at least for third-country nationals) and when working they have on average lower earnings. This is important when

pensions have an earnings-related component. The question is to what extent third-pillar savings are able to serve as an effective means of supplementary pension savings for this population group. The country cases show that private third-pillar pensions are not necessarily effective in ensuring an adequate pension for immigrants.

Denmark

An analysis of pension savers in Denmark showed that 43 % of immigrants and their direct descendents save in either occupational second-pillar or voluntary third-pillar pension schemes, whereas the corresponding figure for Danish nationals is 80 % (ATP, 2008)[11]. Since descendents of immigrants are likely to have higher labour market activity than their immigrant parents, the share of first-generation immigrants saving in second- and third-pillar pension schemes is likely to be lower than 43 %. In addition, this covers considerable heterogeneity among nationalities, and nationalities with little labour market activity are considerably worse off in this respect.

The effect of lower pension accumulation by immigrants in second- and third-pillar pension schemes due to lower labour market activity which is not made up for by third-pillar savings is amplified by the fact that in some countries, receiving the full statutory state (minimum) pension scheme is dependent on the history of residence. A case in point is the Danish system, where the full statutory state pension is available conditional on 40 years of residency. If the resident criterion is not fulfilled, the pension is reduced according to the shortfall in years as a resident in Denmark. This affects all immigrants arriving after their 25th birthday.

Germany

In 2001, Germany introduced the Riester-Rente, a government-sponsored private pension scheme intended to cushion the effect of the reduced benefits from statutory pensions. Whether the Riester pension is a success as a compensatory instrument or not is highly debatable. While the declining benefits from statutory schemes affected the pension benefits of all employees, only 35-40 % of eligible people entered into a contract for a Riester pension (Geyer, 2011). The analysis shows that the probability of saving in the Riester scheme for men with a migration background is still 8.5 percentage points lower than for men without a migration background. The gap is even wider for women, for whom having a migration background lowers the probability by 12.6 percentage points. These numbers refer to West Germany; the difference between a migration background and non-migration background is not significant for East Germany. However, fewer than 10 % of the people in Germany with a migration background live in East Germany.

The actual shortfall in private provision for migrants is likely to be even higher on average. The analysis[12] shows that a low level of income and a low level of educational attainment also entail a lower probability of entering into a Riester saving contract. Immigrants tend to display both characteristics – they are generally less educated and also earn below the average. It is worth noting here that the statutory scheme in Germany is based on an equivalence principle, i.e. the amount of pensionable income contributed throughout a career affects the pension benefits from the statutory scheme as well. While scholars also stress the significant differences between migrant groups from different countries of origin, of different cohorts and with different legal status, the increasing relevance of

[11] Unfortunately the numbers published do not allow for a more detailed breakdown.

[12] The estimated probabilities stem from a multivariate logistic regression; the single estimates reflect changes in the probability given that all other factors are constant. The disadvantage of low-educated migrants is therefore higher than the disadvantage of migrants in general.

private provision is likely to expand the pension gap between people with a migration background and autochthones.

Despite the heterogeneity of the groups of migrants between and within countries, these country studies reveal the pattern that people with a migration background tend to save less in, and benefit less from, private pension provision than the average person. Summing up, these disadvantages are mainly traceable back to two complexes. First, people with a migration background display characteristics that have also been identified as leading to lower savings in private schemes in other vulnerable groups. That is, people with a migration background generally tend to be poorer and less educated than the average person. In addition, migrants may also struggle with specific difficulties that impede private investments, such as remaining language barriers or a lack of knowledge of the specific national systems. Moreover, people with a migration background may send remittances to their home country of origin, which leaves them with less capacity to save. Migrants may also be considering returning to their home country and hesitate to invest their money on a long-term basis. All in all, there are several reasons why an increasing relevance of voluntary pension provision can entail considerable disadvantages for people with a migration background.

4.2. National savings and third-pillar pension schemes

Private pension schemes usually differ from regular private saving in that withdrawal before a certain age is restricted and that the government provides financial incentives for participating in private pension schemes. The underlying intention is to increase the total private saving.

From a theoretical point of view, however, it is not straightforward that this effect is actually attained, as the following example shows. Irrespective of funded pension schemes, people may for instance use their income only for either consumption or pension savings. According to their preferences, people will therefore allocate their income to one of these two options. When governments subsidies – as tax deductibility for contributions, for example – for pension savings are introduced, this policy intervenes in the equilibrium and technically decreases the price of saving and relatively increases the price of consumption. People will react to this new situation with two steps. First, keeping their expense level stable, they will adjust their allocation of money to the two options according to the new price ratio, i.e. they will save more and will consume less (substitution effect).

At the same time, however, the reduced price for savings leaves them more money to allocate to the two options of saving and consuming. The direction of this so-called income effect is not as clear as the direction of the substitution effect, however, i.e. people may either invest the additional money in savings or in consumption. Thus, whether the income and substitution effects work in the same direction or not depends on people's preferences and price elasticities and is not predictable by economic theory. It is nonetheless likely that the saving as such will increase as the income effect is unlikely to offset the entire substitution effect. This logic of course also applies to the allocation of income in pension-unrelated saving schemes and pension-related saving schemes.

It is therefore not clear, albeit likely, from theory that government funding increases savings in pension schemes. Even if total private savings are increasing as a result of subsidising the third pillar via savings incentives, the extent of this and whether the resulting benefits offset the costs of the public funding are uncertain.

Moreover, the distributional profile from offering tax deductions to voluntary private pensions is potentially regressive given that low-income and other vulnerable groups are less likely to save in tax-subsidised third-pillar schemes.

5. INDIVIDUAL PENSION SAVINGS AND REPLACEMENT RATES

KEY FINDINGS

- There can be substantial substitution between third-pillar voluntary pension savings and general (non-contractual) savings for retirement, complicating an assessment of changes in third-pillar pension savings.
- Savings in third-pillar pension schemes are in general low.
- For those countries where data are available, there was a marked increase in assets in third-pillar schemes from 2001 to 2012, though from a low base.
- In the period from 2006 to 2012 there was a small decrease in replacement rates from Pillars 1 and 2 for the EU as a whole. However, this masks large variations among Member States.
- Case studies of the introduction or strengthening of Pillar 3 in Germany, Austria, France and Romania show that Pillar 3 pension schemes are often strengthened as part of larger reform efforts. No evidence is found that the third pillar directly influences reforms of Pillar 1 and 2, rather that changes to the third pillar are minor additions to large reforms.
- We find only a very weak correlation between changes in modelled replacement rates and changes in third-pillar savings, but data are sparse.

This chapter will focus on Pillar 3 as defined in this study, that is, as voluntary individual pension schemes. Pillar 3 schemes can affect the replacement rates of Pillar 1 and 2 pensions through a number of factors. The most direct channel is if part of a Pillar 1 state pension is means tested or targeted, and where Pillar 3 pension income is part of the means testing. This is the case in most of the countries where means-tested minimum pensions are combined with a relatively significant presence of individual private schemes, such as Belgium, Sweden, Denmark and Poland. A second channel is via a weakening of either Pillar 1 or 2 (whether universal, PAYG earnings-related or occupational pensions negotiated via social partners) mandatory pension schemes, whereby a strengthening of Pillar 3 serves as an argument for lowering contributions to the first two pillars.

Another way that Pillar 3 and Pillars 1 and 2 may be interconnected is through political processes. If it is argued from an ideological point of view that savings (for retirement) should not be mandated but rather left to individual decision-making, one can make a case for strengthening the third pillar and weakening Pillars 1 and 2. This argumentation was used during the recent pension reform in the Czech Republic leading to occupational schemes becoming voluntary rather than mandatory and therefore weakening their coverage. This led to a relative strengthening of the individual third pillar at the expense of the mandatory second pillar.

A final argument for the influence of third-pillar voluntary savings on replacement rates from Pillars 1 and 2 relates to increased economic growth. If third-pillar savings increase national savings, this may have an effect on long-term economic growth. An increase in economic growth will tend to make Pillar 1 and 2 pension promises more sustainable, meaning that replacement rates stemming from Pillars 1 and 2 would tend to be higher when national savings have been higher. However, this effect would likely be very small

and is not considered further (Solow, 1956; Carroll and Weil, 1994; Attanasio et al., 2000).

Conventional logic would suggest that the causality usually runs in the direction from changes in Pillars 1 and 2 towards a change in Pillar 3 pension savings. That is, the threat of a decrease in the replacement rates in the first pillars forces both governments and individuals to consider the advantages of voluntary individual schemes (Pillar 3). There is some evidence that a reduction in Pillar 1 and 2 generosity (or the threat hereof) has prompted an increase in voluntary third-pillar pension savings in EU countries (Le Blanc, 2011; Hurd et al., 2012).

Pillar 3 individual schemes are in general not very well developed (see Chapter 2), so that their current amounts do not allow for robust quantitative assessment of their development. The future development in the importance of third-pillar schemes is also much more difficult to forecast in comparison with Pillar 1 and 2 schemes because there is no explicit link with wage or GDP growth. The most important factor in predicting changing behaviour with respect to Pillar 3 savings is likely changes to Pillars 1 and 2 in the form of a perceived need to save more or less.

Financial products related to Pillar 3 schemes are similar to the usual savings products with some specifics (mostly limits on disbursement and tax incentives). This similarity implies that they form part of a larger pool of measures for people to prepare for their retirement outside of mandatory pension-scheme-related income (e.g. substitution between pension savings products and traditional savings products or a mortgage as a way of investment). Therefore it cannot be assumed independently of the policy developments (such as tax incentives for individual funded pension schemes) what share of the increased need for alternative wealth enhancements (beyond Pillars 1 and 2) will fall upon the products that are officially part of Pillar 3 (see Chapter 4) and what share will be ensured by more traditional saving products or other ways of ensuring future income (investment, house purchase, etc.).

This chapter first looks at the development in theoretical replacement rates in the first two pillars and shows that there is currently little evidence of Pillar 3 (voluntary individual) schemes replacing Pillar 1 and 2 schemes, or replacing parts of the potential income from them. Case studies of reforms in Germany, France, Romania and Austria show that a strengthening of Pillar 3 often goes hand in hand with changes to Pillars 1 and 2.

5.1. Pension savings, savings rates and replacement rates

Income adequacy in old age is not only a matter of pension income. Generally speaking, individuals tend to broadly respect the lifecycle theory, at least in that savings rates have a hump-shaped age profile showing that cohorts close to pension age save more than younger cohorts (Ando and Modigliani, 1963). Individuals tend to – at least partly – prepare for the inactive part of life, although they may not undertake financial preparations sufficient for the whole retirement period.

It is also important to note that when considering welfare in retirement, other elements, such as housing, health and provisions of other services, should also be taken into account, as they form a non-negligible part of income in means during retirement.

5.1.1. Substitution of pension savings for other savings

Of particular difficulty in this respect is the elusive character of pension savings as compared to general savings or other wealth accumulation in retirement, as there can be extensive substitution between (contractual) non-pension savings and (voluntary contractual) pension savings, especially among high-saver (mostly high-income) groups,

who use the tax incentives of pension schemes to optimise their tax burden. The substitution or crowding-out effect of voluntary individual pension schemes has, for the most part, been difficult to refute (Hinz et al., 2012: 93). Others find substantial evidence that pension savings partly substitute for other forms of private saving (Bosworth and Burtless, 2004; see Arnberg and Barslund, 2013 for a detailed discussion).

While there is extensive evidence of substitution between voluntary individual (non-pension) savings and pension savings, there appears to be little or no displacement of wealth caused by mandatory pension coverage (Gustman, 1999; Hurd et al., 2012; though Alessie et al., 2013 find a significant effect). This would suggest that traditional mandatory pensions have a very limited displacement effect on other wealth, implying that pensions of the first two pillars add to total wealth at the pensionable age, while purely voluntary individual Pillar 3 schemes do this only to a lesser extent.

From this perspective, for some (high) income groups, voluntary pension schemes may be serving as a tax-optimising device, allowing the substitution of pensions with non-pension savings. The main conclusion is therefore that there are significant substitution effects between individual pension schemes (Pillar 3) and other non-pension savings instruments (see Chapter 4 for considerations of concrete demographic and other groups). It should be mentioned, though, that the empirical literature is not clear on the size of these effects and that in any given country, how much third-pillar voluntary savings increase total savings probably hinges on the details of the design and implementation.

5.1.2. Increasing savings through pension schemes

When looking at savings, enlarging mandatory pillars has a higher probability of increasing both savings and pension wealth, and therefore adequacy in old age, than voluntary pillars. As the findings of Bailliu and Reisen (1998) suggest, if there is to be a positive impact of pension savings on the aggregate savings rate, then it must be ensured that low savers, mostly from low-income groups, take part in pension savings schemes, as there appears to be a substitution of savings products among the high earners and high savers. The most efficient way to increase these savings is to make them mandatory. If this is not possible, then another option could be to introduce tax exemptions targeted only at low-savings population groups, although this is difficult to design in practice.

There is also a case for considering occupational systems to replace purely individual savings, making them semi-mandatory (i.e. mandatory at the level of the workplace) as they have larger pension wealth-increasing effects. Another solution would be to introduce opt-out clauses to the voluntary programmes, increasing the likelihood of participation while maintaining the option to not be part of the programme if specific personal situations require it. Again, practical implementation of this in the context of the third pillar is not straightforward.

Another major issue linked to the thin line between general savings products and pension products is how they are accounted for in theoretical replacement rates. If we consider pension savings of Pillar 3 as part of replacement rates, there will be a positive bias towards them as even a full crowding-out effect of savings from general products by pension products would appear to increase the replacement rates (and therefore adequacy), while in reality keeping the income and living standards of the elderly unchanged or increased only by the part of the matching or of the tax subsidy.

Considering the saving substitution and the vague distinction in definition between pension products under Pillar 3 and other financial products, it is likely that at least a substantial part of the increase in potential replacement rates due to the increase in Pillar 3 savings would not mean an effective increase in income for the elderly.

5.2. Repercussions of pension reforms for replacement rates in Pillars 1 and 2

It is beyond the scope of this study to consider survey data for analysing replacement rates. However, current survey-based replacement rates are also less useful in assessing the relationship between replacement rates of Pillar 3 schemes and those of the first two pillars. Current replacement rates reflect savings made in the past (for third-pillar schemes) and they do not take into account recent changes to Pillar 3.

In order to assess the repercussion of the developments of current reforms on replacement rates, we use the OECD model-based replacement rates of mandatory schemes, which represent an interpretation of current legislation combined with assessments of the future development of the market and of the economy. They are a forecast of replacement rates from mandatory schemes for people entering the workforce at the very moment of the projections (i.e. 2006 to 2012, the period for which data are available).

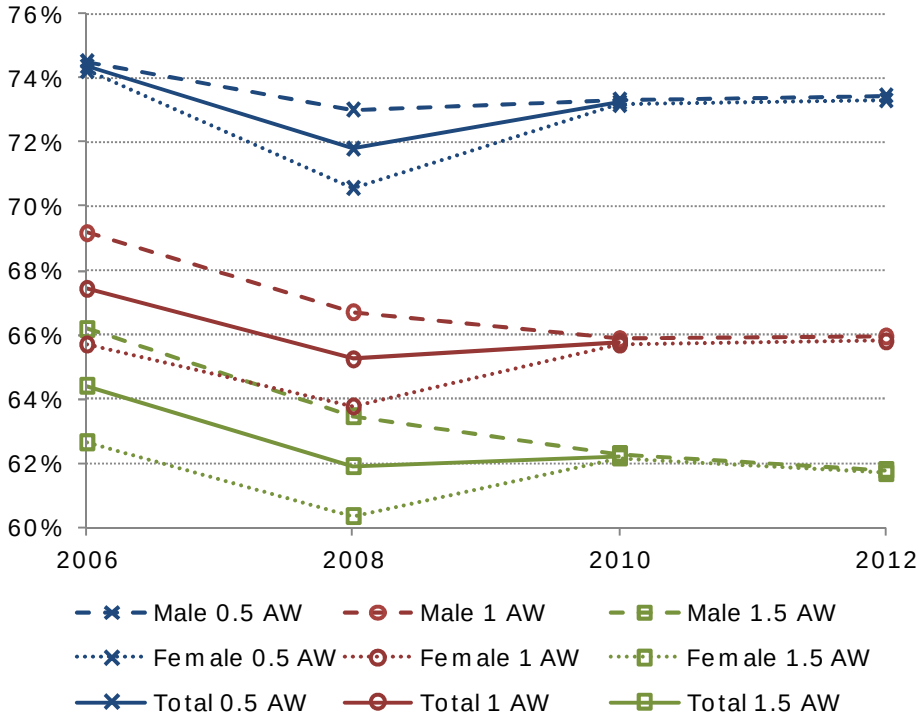
Therefore, the replacement rates that we analyse below do not take into account the effective income of current pensioners, but are based on current legislation (thus reflecting the long-term effects of its immediate change) and development of macroeconomic and personal-level variables. This has the advantage of being forward-looking and of assessing the pension system itself as it is being reformed. Therefore, changes from year to year in these replacement rates should reflect the personal projections of the currently active population, which formulates its savings behaviour on the basis of these projections. In other words, it is a good proxy for assessing the young to middle-aged population's general perception of what they can expect from their pensions. It is likely that these reforms, if they lead to a decrease in replacement rates, would increase psychological and other incentives to save, since the risk of inadequate income after the reform increases.

Figure 3 shows the expected replacement rates of males and females entering the workforce of the mandatory pillars in the years between 2006 and 2012 with income levels of 50 % to 150 % of the average wage in all EU27 countries. In fact, these changes in replacement rates reflect the repercussions of pension reforms on future pensioners who enter the work force now.

In order to fully assess the extent of the reforms, it should be taken into account that the majority of European countries have implemented increases in the effective or nominal pensionable age. Therefore, even if replacement rates were kept constant, this would imply lower theoretical pension wealth at the moment of retirement for the same individuals as compared to the non-reform scenario. The extent of the reform is therefore not fully reflected by the changing theoretical replacement rates alone. This implies, on one hand, that the changes in pension wealth are greater than we can assume from the changes of replacement rate figures alone. On the other hand, it requires relatively less voluntary pension savings to supplement the pension income by the same amount compared to the non-reform scenario.

Figure 3Error! Reference source not found. shows average replacement rates for the EU27 weighted by population for different groups of reference income. The three groups of reference for income range from half the average wage (0.5 AW), to average income (1 AW), to 150 % of average wage (1.5 AW). The figure describes the repercussions of pension reforms between 2006 and 2012 on potential replacement rates for people just entering the work force and is therefore taken as a proxy of replacement rate change in Pillar 1 and the mandatory part of Pillar 2.

Figure 3: Average replacement rates of individuals entering work force in respective years by sex and income in all countries of the EU27



Note: This figure displays the replacement rates that individuals who enter the labour force in the respective year can expect for their future retirement based on a "model normal/average" working life. The top blue lines show replacement rates for a low wage earner (50 % of average wage) – men, women and combined. The middle red lines show the equivalent for average earners, and the three green lines at the bottom show the replacement rate of high earners (50 % above the average wage). Replacement rates of countries are weighted by population size.

Source: OECD Database

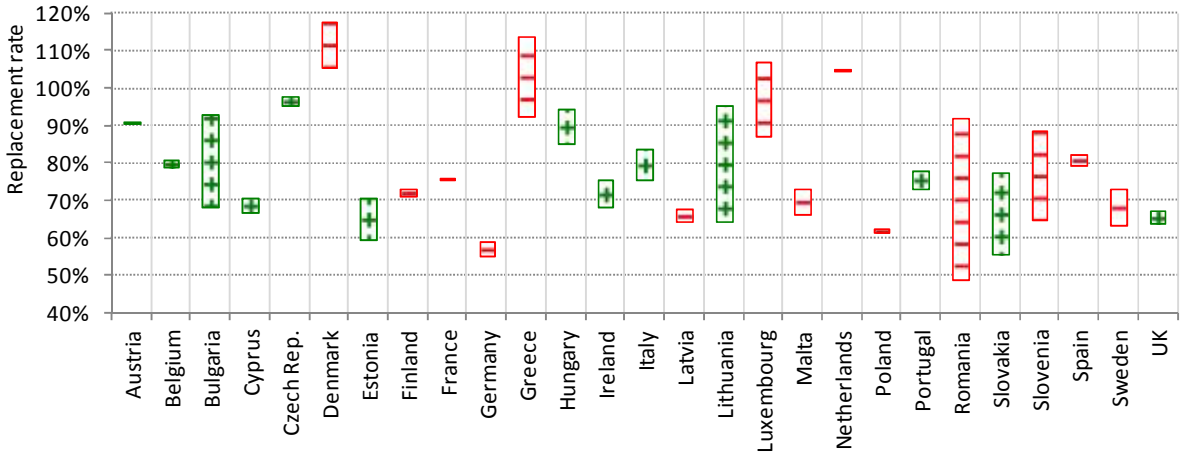
There are two main points to be made in terms of past changes in replacement rates in the first two pillars. First, there has been an overall reduction in replacement rates, though this has been more significant among average or above-average earners. The bulk of reforms in Europe affecting replacement rates came in the period before fiscal consolidation, which is somewhat surprising but is consistent with the finding that most reforms during the last couple of years have aimed at increasing the retirement and early retirement ages. Such parametric reforms can leave the replacement rate (after later retirement than pre-reform) largely unchanged.

Second, there has been a clear, very recent trend for convergence between the replacement rates of males and females, which corresponds to the overall recommendations on the elimination of differences in the pensionable age of both sexes. This has led to an effective shortening of the retirement period for women but a commensurate increase in women's replacement rates due to more years of contributions to the pension system. Note that the replacement rate of men and women does not reflect the gender differences in life expectancy at pension age, as such practice would be considered discriminatory.

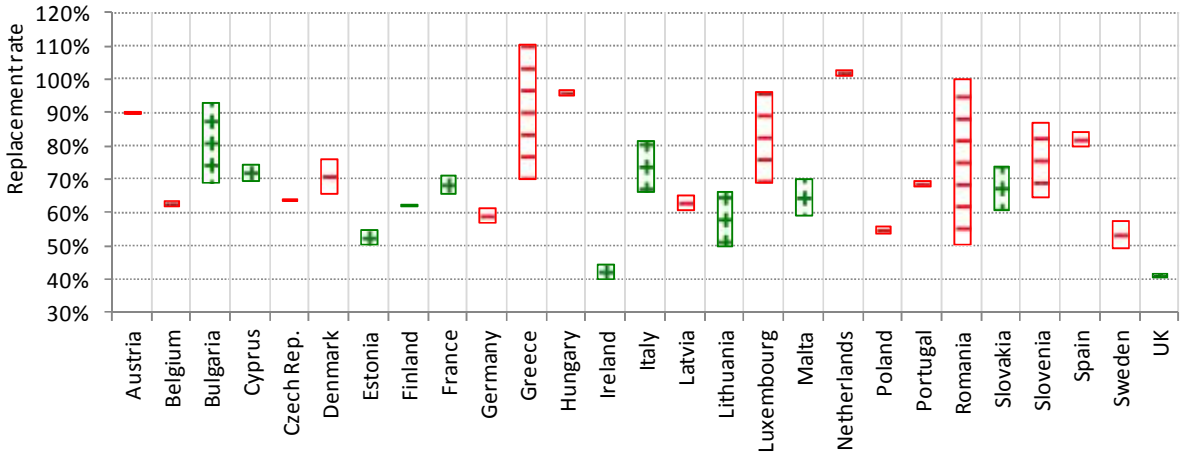
Figure 4 shows changes in theoretical replacement rates in all EU countries. Bars with minus signs represent the implementation of reforms decreasing replacement rates between 2006 and 2012, while bars with plus signs represent reforms increasing replacement rates over this period.

Figure 4: Changes and levels of theoretical replacement rates of individuals entering the labour force between 2006 and 2012

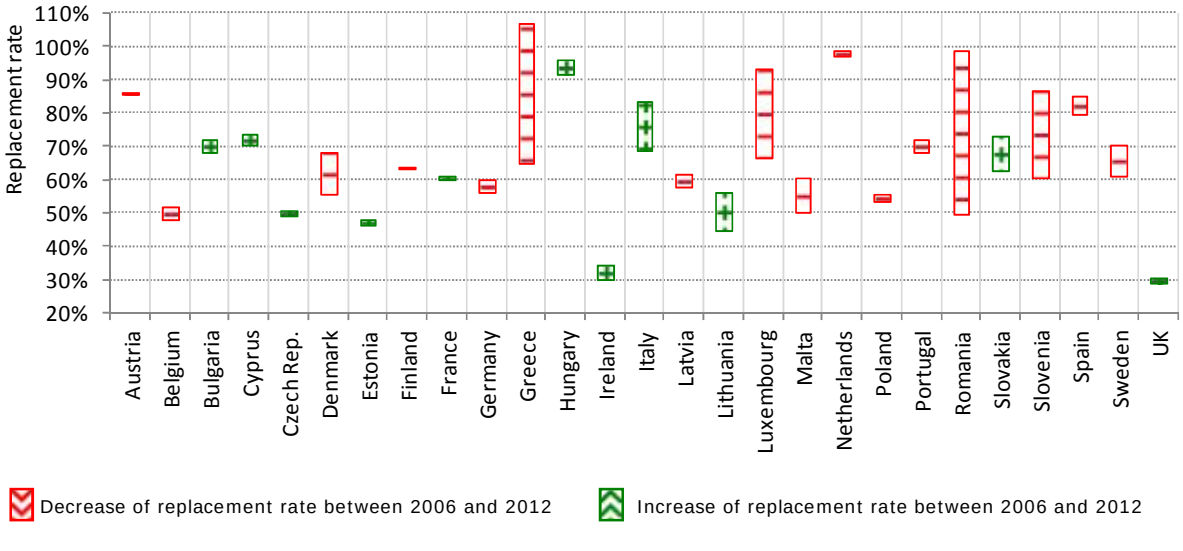
Replacement rate for workers earning 50 % of average wage during the reference period



Replacement rate for workers earning 100 % of average wage during the reference period



Replacement rate for workers earning 150 % of average wage during the reference period



Source: OECD database.

It should be noted that the development in replacement rates of mandatory pillars is not uniform across the EU. As Figure 4 shows, there is clear evidence of very diverse and, to some extent, opposing development of theoretical replacement rates in European countries. According to the OECD model, while the reforms implemented in Romania led to a significant decrease of theoretical replacement rates for all wage categories and by as much as 49 percentage points for average and higher earners, there has been an increase in replacement rates by 25 and by 3 percentage points for earners of half the average wage in Bulgaria and Lithuania, respectively. The same opposing development applies for countries with perceived fiscal difficulties in the south, for example, Greece reduced its theoretical replacement rates by around 40 percentage points for average and above-average earners, while Italy increased corresponding rates by 15 percentage points.

The fluctuations of replacement rates in individual Member States illustrate that the changes have sometimes been erratic. The abrupt changes to the second pillar in Slovakia led to a temporary increase of 50 percentage points in Slovakia for below-average earners followed by a reduction by 30 percentage points. During a similar reform u-turn in Hungary, theoretical replacement rates registered an inverse development with a reduction of roughly one third compensated by a modest increase for below and above-average earners.

5.3. Development of individual contributions – Pillar 3

Section 5.2 described the recent legislative changes in replacement rates of the mandatory public and occupational pillars. In order to be able to make assumptions on interconnections of these two pillars with the individual private Pillar 3, it is not possible to compare current replacement rates of Pillar 3, as they are too low due to developments being very recent. In order to avoid making conclusions from forecasts, which would be equivalent to evaluating underlining assumptions of these forecasts and not the true interconnection, we discuss the recent changes in the wealth accumulated in voluntary individual pension accounts, to compare them with modelled development of replacement rates in mandatory pillars of the preceding chapter.

The percentages in Table 2 represent the amounts of assets of individual voluntary funds in each of the countries, divided by the number of people of active age as a part of average annual earnings. Therefore, this amount could be interpreted as a rough representation of how much these funds would contribute to the replacement rate in one year if they were disbursed only during one year for each individual currently of active age. That is, we hypothetically divide the current savings in third-pillar schemes between all potential savers to get an idea of the societal relevance of third-pillar savings as displayed in Table 2. Since the average retirement period varies between 15 and 25 years in Europe, the figures should be divided by these factors to yield the potential to increase the replacement rates of the current active population over the whole period of retirement. The actual potential of third-pillar savings to extend replacement rates for the entire period of retirement is thus even smaller. This illustrates just how small the role these funds play today is in ensuring adequacy or sustainability of pensions, and without a significant increase their role will remain low for the sustainability of the pensions as a whole. They can – if concentrated among one socio-economic group – ensure, nonetheless, a significant replacement rate on an individual basis. The previous chapter has shown that certain socio-economic groups contribute much more to third-pillar schemes. Hence, while the societal significance of the displayed savings remains too low to provide significantly higher replacement rates to all people, the rather small number of contributors might draw considerable benefits from these schemes.

Table 2: Stock of individual voluntary contributions (Pillar 3) per capita of active population as part of average gross annual earnings (%)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	4.3	5.0	5.7	6.6	7.8	8.6	9.1	9.6	10.4	11.0	11.6	12.5
Czech Rep.	17.4	18.4	19.3	21.6	25.6	28.8	29.7	23.8	28.5	29.8	28.9	31.0
Denmark	0.0	0.0	0.1	0.1	0.2	0.4	0.6	8.5	11.1	12.4	12.8	15.3
Estonia	3.6	4.5	5.4	6.3	7.3	6.1	8.1	7.0	7.9	7.7	7.1	7.5
Finland	3.1	2.3	1.6	0.9	0.8	1.0	1.1	1.2	0.8	0.9	1.0	1.0
France	6.8	7.7	9.1	12.0	14.8	16.8	18.5	15.9	19.4	23.0	5.9	4.9
Hungary	0.1	0.2	0.3	0.5	0.6	0.8	0.9	1.0	1.3	1.6	1.8	2.2
Italy	2.9	4.6	6.4	8.6	11.4	14.9	16.1	15.2	19.0	22.5	21.5	25.5
Poland	0.5	2.3	2.5	2.8	3.2	3.2	3.0	1.7	1.6	1.5	1.2	1.3
Portugal	0.0	0.0	0.0	0.0	0.0	0.1	0.2	9.3	11.3	13.5	15.5	17.9
Slovakia	4.5	4.4	5.0	5.7	6.5	7.2	8.2	6.8	7.0	6.7	7.6	8.4
Spain	1.7	1.3	1.6	9.0	13.0	17.0	18.6	13.2	18.6	21.8	20.6	23.8

Source: OECD, own compilations.

Individual voluntary pension contributions (Pillar 3) are a very recent phenomenon in some Member States of the EU. As Table 2 shows, in 2001 assets on these non-occupational voluntary accounts exceeded 5 % of average annual gross earnings in only two Member States for which the OECD registers data: Denmark and Hungary (in Denmark, the funds exceeded 17.4 % of average annual gross earnings, the equivalent of two months worth of income). Therefore the potential of replacement rates from these funds in the early years of the 21st century was limited.

Between 2001 and 2012, the assets on these accounts increased significantly in relative terms, with only Hungary and France registering a fall. However, taken as part of average earnings (a relevant measure due to its significance in terms of potential replacement rate), they remain very modest.

Potential pensions payable from private individual pension schemes therefore also remain extremely low across Europe. Due to the limited and very recent development of individual private funded schemes, it is not possible to make clear quantitative assessments based on their development at the European aggregate level beyond the theoretical assumptions made in the previous chapters of this report.

5.4. Implementing reforms of pension pillars simultaneously: Case studies

In order to look into how developments in Pillars 1 and 2 are related to changes to Pillar 3, case studies of recent pension reforms affecting all pillars are presented below for Germany, Austria, Romania and France. The case studies suggest that the introduction or strengthening of Pillar 3 is often a part of larger pension reforms of Pillars 1 and 2 being implemented either simultaneously or closely following each other. While a close

look at the rhetoric and rationale for pension reforms in various countries is beyond the scope of this study, it is likely that a strengthening of Pillar 3 is meant as a means for individuals to make up for a weakening of Pillars 1 and 2.

5.4.1. Germany: The Riester-Rente

The German pension system until 2001 was designed as a traditional Pillar 1 and 2 DB PAYG system providing a replacement rate of 70 % of the last net income for a worker with a complete 45-year earnings history and average lifetime earnings profile (Börsch-Supan and Wilkem, 2006). Minor reforms of the system in 1992 and 1999 tackled, but could not solve, a substantial problem: the rapid ageing of German society would cause a steep increase of the employee's contribution rates to the pension system as fewer contributors raise the retirement benefits for increasing numbers of pensioners. A projection from 1997 estimated that the contribution rate, which at that time was slightly less than 20 % of gross wages, would have reached more than 30 % in 2030 (Börsch-Supan, 1997).

In 2001 the contribution rate temporarily rose to 24.2 %. The then minister for labour, Walter Riester, urged the implementation of a major pension reform with the key goal of lowering the contribution rate by reducing the replacement rate. As non-wage labour costs, the contribution rate was considered an important factor for the competitiveness of the German economy (Oehler, 2009). The 2001 reform therefore stipulated that the contribution rate should remain below 20 % until 2020 and below 22 % until 2030. The PAYG pension level was thus meant to decrease at the same time to a replacement rate of around 63.5 % of net wages for a pensioner earning the average wage and contributing for the complete 45 years (Börsch-Supan and Wilke, 2006).

The lower replacement rate was supposed to be offset by corresponding reforms. 1) Prior to the reform, occupational pensions were a voluntary benefit from employers. Thereafter, however, employees were basically entitled to demand occupational schemes. 2) The accumulation of individual private savings in third-pillar certified schemes (popularly called Riester-Rente) was subsidised by the government in order to incentivise private pension provision. The Riester reform depicted a salient change, replacing a traditional PAYG system with a complex multi-pillar system.

The success of the reform, however, is still being debated. Concerning occupational schemes, the development is difficult to retrace: based on survey results, the German government states that the crude number of occupational pension claims increased between 2001 and 2011 by 34 % to a coverage of 60 % of employees. This number, however, assumes that there is no multi-referencing and thus overestimates the actual share. Moreover, much of the increase in occupational pensions is due to the growing number of employees in general and does not necessarily indicate an ongoing trend for occupational schemes. The government therefore assumes that the share of employees covered by occupational pension schemes only increased between 2001 and 2005. A reason for this stagnation could be that occupational schemes are sometimes exclusively financed by the employee and do not pay off for all income groups (Birk, 2014). Concerning Riester schemes, the situation is similarly open to debate: while the number of signed Riester-Rente – which covered 30 % of the people between 16 and 64 years in 2010 (Geyer, 2011) – is still increasing, studies suggest that many of the certified schemes are actually not profitable for pensioners and do not offset the reductions in the statutory schemes (Hagen and Kleinlein, 2011; Gasche et al., 2013). Riester-Rente are also reputed to be too complex and partly non-transparent with regards to the basis for the pension calculation, which complicates the choice of suitable schemes (Hagen, 2011).

Moreover, low-income recipients are in particular less likely to benefit from Riester schemes as investments only pay off beyond a certain contribution and Riester benefits are deducted from the minimum pension when exceeding the allowance (Oehler, 2009). A study by Corneo et al. (2011) eventually suggests that the total private savings rate is hardly affected by the introduced Riester scheme. At the same time, however, reforms in the labour market and the statutory pension system further reduced the expected pay out of statutory pensions: since 2004, pensioners have had to contribute fully to the care insurance scheme. The 2004 reform also introduced a sustainability factor in the pension indexation formula which will muffle the link between pension benefits and wage development. The labour market reforms of 2005 (popularly called the Hartz reforms) virtually lowered the pension contribution of the long-term unemployed; since 2011 the unemployed no longer contribute at all to the pension system. The resulting gaps in their contribution biography effectively shrink later pension claims. In total, the pension reforms from 2001 onwards decreased the gross replacement rate by 16 % (Börsch-Supan et al., 2013), while the contribution rate has in fact been kept below 20 % up to now.

5.4.2. Austria – voluntary private pensions

The Austrian pension system was designed in a primarily PAYG fashion, where the employee's contributions rates were replenished with public subsidies to the statutory pension system. While third-pillar schemes existed in principle, the wide coverage (93 % of the working population in 2006) and the comparably generous replacement rate (gross replacement rate 10 percentage points above the EU15 level in 2004) rendered the pension system virtually a purely PAYG one (Knell et al., 2006). Similar to other European countries, the ageing of Austrian society put pressure on the pension system so that either contribution rates were likely to increase or the public expenditure on pensions would have had to increase. In 2001, the pension expenditure measured as a share of GDP was estimated to rise from 13.4 % in 2004 to 18.7 % in 2035. Hence, pension claims seemed to depict an implicit danger to the future public deficit and the competitiveness of the Austrian economy (Knell et al., 2006). The Austrian PAYG approach therefore witnessed a wave of reforms (2000, 2003 and 2004) in the early years of the century and is still subject to an ongoing reform process (2010, 2012, and the latest taking effect in 2014).

The Austrian employment rate of the elderly and the effective retirement age are well below the EU average (EC, 2012). Most of the reforms in the early 2000s tackled these problems or were of a parametric nature and, for example, increased and harmonised the retirement age of men and women, lifted the minimum age for early old-age retirement or extended the assessment basis from the "best" 15 to 40 years. In addition, some reforms bear minor implications for second and third-pillar schemes: since 2003 employers have had to pay 1.53 % of an employee's gross wage in mandatory occupational schemes, from which the employee can either draw a monthly supplementary pension or a lump sum payment when he or she retires. Voluntary private pension schemes existed in Austria in that old-age provision related insurance benefits were free of income tax. A more extensive third-pillar scheme (Prämienbegünstigte Zukunftsvorsorge) with a higher maximum contribution indexed to the social insurance contribution was introduced in 2003 and entailed public subsidies on the accumulation of private stocks that are transformed into a so-called pension supplement insurance (Pensionszusatzversicherung) before retirement. In 2009, 36 % of the Austrian labour force contributed to such a third-pillar scheme (Url, 2011) while the average premium amounted to only between 640 and 780 euros per year in 2010 (EC, 2012).

After all, compared to other European countries, Austria did not witness a paradigm shift in the organisational principles of its pension provision. The major reforms in the previous

decade in fact have strong implications for the expected pension level and improved the financial sustainability of the system (Knell et al., 2006; EC, 2012). Second- and third-pillar schemes, however, still play a rather minor role in pension provision (EC, 2012). The biggest cuts in the expected benefits of the statutory scheme were then also seen for comparably high pensions and, for example, civil servants (EC, 2012; Knell et al. 2006). A second major characteristic of economising in the pension system comes from a change in the pension indexation: while the gross replacement rate of the statutory pension system will only slightly decrease from 69.9 % to 68.8 %, the average pension level (measured as the average pension's share of the average income) is indexed to the price development and not to the wage development, and will thus decrease by 6.6 % (Knell et al., 2006). The indexation of the pensions reduces the initially high pension level year by year as the pensioners become poorer relative to the working population.

5.4.3. Romania – voluntary private pensions

Coming from a situation of a bankrupt pension system and an estimated effective average retirement age of 55 (Ghinararu, 2011), Romania started in 2001 to reform its pension system resolutely with a number of parametric reforms, including an increase in the statutory retirement age and consideration of wage records of whole life instead of only the best income years. A second wave of parametric reforms was set up in 2010, when it was agreed, for example, to index pensions to prices instead of to wage development from 2030 onwards. The heavy decrease of net replacement rates in the statutory system (for a man retiring with 65 after 40 years of work, the rate equalled 70.7 % in 2010 and is estimated to be 45 % in 2050), which will hit higher incomes harder (up to 52 percentage point decreases in NRR) than lower incomes (10.12 percentage point decrease), are expected to be offset by prolonged working lives on the one hand and private pension provision on the other (EC, 2012).

Romania therefore introduced a mandatory and a voluntary private pension scheme in 2007. The mandatory scheme is privately managed and draws on a contribution rate increasing steadily to 6 % in 2016. The voluntary scheme is also privately administered with defined contributions on individual accounts, whereas the contributions are deductible from gross wages up to an amount of the equivalent of 200 euros.

The success of these schemes is, however, uncertain: while the number of people with accounts is steadily increasing, in June 2013 39 % of the accounts of the mandatory scheme and 50 % of the accounts of the voluntary scheme were empty. In particular a lack of financial literacy seems to be problematic; for example, 85 % of Romanians do not have any private insurance. Most are neither habituated to taking care, nor knowledgeable enough to take care, of pension provision privately (Zaman, 2013).

5.4.4. France – the Raffarin reform in 2003

The third-pillar part of the French PAYG pension system was strengthened following the Raffarin pension reform in 2003 named after the then prime minister Jean-Pierre Raffarin. The so-called Baladur reform of 1993 had reformed the earnings related pension system in the private sector. While the primary goal of the Raffarin reform was to reform public earnings-related pensions in Pillars 1 and 2 to bring them closer in line with conditions in the private sector, a secondary purpose was to promote voluntary savings in the third pillar (Lavigne, 2003). This led to the introduction of a new private savings form for retirement, "plan d'épargne pour la retraite", with contributions tax deductible.

The main elements of the Raffarin reform were an increase in the number of contributory years to 40 for eligibility for a full pension and incentives for working beyond

the retirement age by including a bonus per extra quarter of a year worked. Similarly, a penalty is applied to earned pension rights in case of early retirement

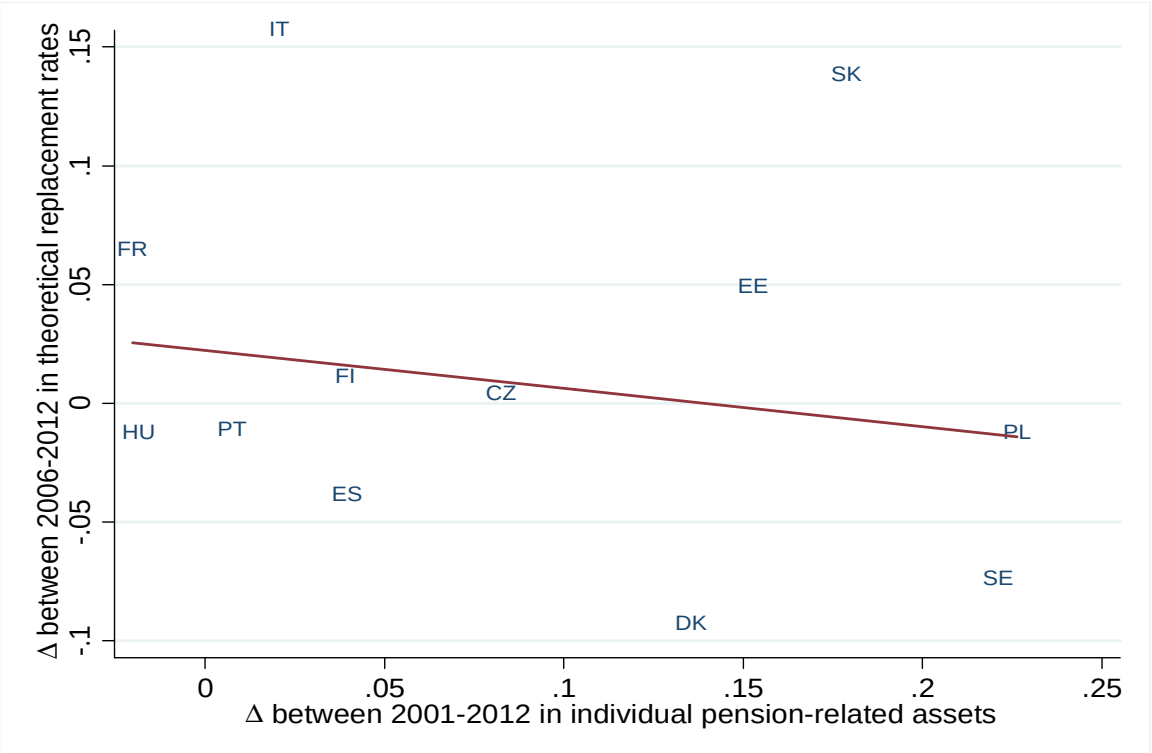
The changes to the voluntary funded part in the third pillar were not widely publicly debated (Bonoli and Shinkawa, 2006). However, these changes made it possible for individuals to make up for the implicit decreases in Pillar 1 and 2 coverage by making voluntary pension contributions to third-pillar schemes.

5.5. Third-pillar savings and changes to Pillars 1 and 2

The ultimate aim of a pension policy is usually to ensure a decent income for the elderly population, and therefore the main focus of pensions has long been adequacy and poverty prevention. Considering the constraints of the past, the main aim of a pension reform could now be considered sustainability. There has been a significant relative increase in individual pension assets, as demonstrated in Table 2, although from a low base, and to some extent a decrease in replacement rates of Pillars 1 and 2. It is therefore of interest to see if, at the country level, there is a correlation between changes in (modelled) future replacement rates and Pillar 3 pension savings. The question we ask is: To what extent are changes to Pillar 1 and 2 pensions related to changes in savings accumulated in Pillar 3?

Data on both changes in modelled replacement rates from Pillars 1 and 2 (from 2006 to 2012) and changes in third-pillar pension assets (as a percentage of annual earnings in the period 2001 to 2012) are available for 11 EU countries (see Figure 5).

Figure 5: Scatter plot of the change in replacement rate as a function of assets on individual funded pension accounts



Note: This figure displays the relationship between the change in theoretical replacement rates and the change in individual pension-related assets. While the regression line suggests a weak negative relationship, the model shows only very low explanatory power.

Source: OECD Database, own analysis.

While there is a small negative correlation between changes in replacement rates and changes in third-pillar pension assets, i.e. there is a tendency to observe a worsening of the replacement rate of Pillars 1 and 2 together with higher increases in third-pillar pension savings, the correlation is weak and not statistically significant (Figure 5).

As pointed out earlier in this chapter, there are a number of reasons why one should be cautious not to read too much into this simple scatter plot. Changes in replacement rates are not uniform across countries with regards to their timing. In some countries the bulk may have taken effect whereas in others they will only be felt later (and thus by younger generations only). As for third-pillar savings, as argued above there can be substantial substitution between third-pillar savings and other savings, so only focussing on third-pillar saving may mean important parts of changes in retirement savings are missed.

More information may be learned from survey data, although even with survey data it is often difficult to tease out general (non-contractual pension) savings. Furthermore, and importantly, as indicated in Chapter 4, third-pillar pension savings – because of their voluntary nature – may have a very different distribution across income groups than explicit or implicit savings under Pillar 2.

What stands out from this chapter is that third-pillar pension savings are, in general, still small. The third pillar of voluntary pension savings is often strengthened as part of pension reforms which implicitly or explicitly limit the replacement rate from Pillars 1 and 2. Thus, the third pillar can be seen as offering a way to compensate for the weakening of the first two pillars. However, as discussed in Chapter 4, the characteristics of the typical third-pillar pension saver are likely to be different from those saving in the first and second pillars. Therefore, even if at the aggregate level third-pillar savings would make up for reductions in replacement rates stemming from reforms to Pillars 1 and 2, replacement rates would likely differ at the individual level pre and post reform for many individuals. We have not seen evidence from the country case studies that third-pillar savings have influenced the parameters of the first and second pillars, and thus their replacement rates. However, to study this in detail one would have to look at the political processes preceding reform proposals and their adoption.

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ANNEXES

Annex 1: Selected pension reforms in EU Member States since 2010[13]

	Pillar 1	Pillar 2
Austria	2011: Entry age for early retirement increased from 60 to 62 for men and from 55 to 57, for younger cohorts even to 62, for women. Pension deductions for each year of earlier retirement. 2012: Tightened access to early retirement due to extension of required period of pensionable services.	Temporary reduction of the state subsidies on private pension provision between April 2012 and 2016 in order to spare public deficits.
Belgium	2011: Minimum age and length of career are increased to 62 and 40 years, respectively, for early retirement.	2011: Reduction of the fiscal advantage to second- and third-pillar pension schemes.
Bulgaria	2011: Gradual increase of retirement age from 63 (men) and 60 (women) to 65 and 63; insurance period increases by 3 years. Contribution rates of both employer and employee increase by 1.8 %. 2013: Gradual increase "frozen" by new government.	
Croatia	2010: Gradual equalisation of retirement age across gender.	
Cyprus	2013: Implementation of dynamic adjustment of statutory retirement age every 5 years in line with life expectancy; pension penalty for each month of early retirement. Contribution rate increasing since 2009 every 5 years by 1.3 percentage points.	
Czech Republic	2011: Progressive increase to the retirement age by 2 months each year without prescribed endpoint. Equalising of the retirement age between genders. 2010: Reduction of early retirement benefits.	2011: Funded second tier on 1st pillar allows risk allocation by participants. 2013: Pre-retirement scheme allows withdrawal of subsidized private pensions.
Denmark	2011: Increasing of eligibility age for early retirement from 60 to 64; agreement on raising old-age retirement from 65 to 67.	2012: Reduction of the tax-empted payments to 3rd pillar pension schemes.
Estonia	2010: Retirement age will be gradually increased from currently 63 for men and 61.5 for women to 65 for both.	2011: Simplification of the exchange of fund shares; moving between pension fund products tax-free; upper limit for tax-free contributions introduced.
Finland	2011: Increase of the lower age limit for part-time pensions from 58 to 60. 2010: Earnings-related pensions linked to life expectancy; eliminating employer contributions to public plan.	2013: Contributions to new contracts are only tax-deductible if the retirement begins at the earliest at the deferred old-age retirement age.

[13] Germany and Malta are not featured in the table as they have not implemented pension reforms recently.

	Pillar 1	Pillar 2
France	2012: Reintroduction of possibility to retire with 60 when started to work before 20. 2011: Age for full pension raised from 65 to 67. 2010: Increasing minimum statutory retirement age from 60 to 62, tightened eligibility for early retirement.	
Greece	2012: Increase in pension age from 65 to 67, with 40 years of work from 60 to 62. 2011: Increasing age limit for early retirement from 53 to 60; 2010: Extending contribution period for full pension from 37 to 40 years; rise of women's pension age to men's (65).	
Hungary	2009-2011: Reform package increasing the standard retirement age from 62 to 65; limit early retirement access.	2010: Virtually closing of the funded pillar.
Ireland	2011: Regular pension age increases gradually to 68 years. 2010: Limitations on tax-free withdraws from pension accounts; lower contribution for employers (8.5 to 4.25 %).	2011: Tax levy of 0.6 % on assets in private pension funds every year between 2011 and 2014. 2010: Tax relief on private contributions for high earners reduced.
Italy	2011: Increase in pension age of women from 60 to 66 to harmonise with men's; after 2018, pension age aligned to life expectancy; narrowing access to seniority pension and de facto introduction of flexible retirement between 63 and 70 years.	
Latvia	2012: Increase of pension age from 62 to 65 years; contribution period for entitlement expanding from 10 to 20 years; early retirement permanently established (2 years before statutory age).	
Lithuania	2012: New pension formula gives disincentives to take a badly paid job in pre-retirement years; statutory retirement age increased from 62.5 (men) and 60 (women) to 65 for both; access to early retirement loosened.	2012: Voluntary supplementary tier with public funding introduced.
Luxembourg	2012: Decrease in annual accrual rates, whereas rates will increase after a certain number of contributory years; contribution rate for full pension thereby increases from 40 to 43 years.	
Netherlands	2012: Gradual increase of the pension age from 65 to 67 years. 2011: Financial disincentive for early retirement.	
Poland	2012: Retirement age increases from 60 (women) and 65 (men) to 67.	2012: New voluntary savings vehicle as third-pillar pension.
Portugal	2012: Suspension of early retirement until 2014, cutting of 13th and 14th month paying for pensions above 1,100 euros. 2011: Increase in employees' contribution rate.	
Romania	2011: Statutory pension age increases for men to 65 and for women to 63; standard contributory period is extended from 28 to 35 years, minimum contribution to 15 years. 2012: Formerly removed exceptions for military and police staff reintroduced.	2012: Tax claim for private administrators of pension funds increased by 50 %. 2011: New third-pillar fund is set up to guarantee the payment of benefits if pension funds companies come under strain.

	Pillar 1	Pillar 2
Slovakia	2012: Increase of the contribution rate from 9 to 14 % of gross wages. 2013: Linking retirement age to life expectancy. 2011: Restricting early retirement schemes; pension indexed to price growth in pensioners' households instead of average wages.	2012: Employees by default in funded second pillar may opt out; three funds (growth, balanced, conservative) are available. 2014: Pay out age of funded private pensions raised from 55 to 62.
Slovenia	2012: Statutory retirement age for men remains 65 but with an increased contributory period of 40 instead of 38 years; gradual alignment for women to same retirement conditions.	
Spain	2011: Increase of retirement age from 65 to 67 or 38.5 years of contribution; introduction of sustainability factor from 2027. 2013: Contributory period for early retirement increased from 33 to 35 years, age to access gradually increasing from 61 to 65; accrual rates incentive for prolonged careers.	
Sweden	Minor changes in order to enhance labour supply of elderly.	2010: Introduction of reviewed life-cycle default fund.
United Kingdom	2012: Equalisation of state pension age and gradual increase to 67 years; abolition of default retirement age of 65.	2012: Every worker will be automatically enrolled in a second-pillar occupational pension scheme.

Sources: Asisp Annual National Reports 2012; Asisp country documents 2013; OECD Pensions at a glance, 2013; European Semester country recommendations, 2013; Eurofound: Social partners involvement in pension reform in the EU.

Annex 2: Summary table of pension scheme types with minority arrangements in bold (public part)

Country	PAYG Def of benefits/	Minimum	Old-age	Early reatirement
Belgium	DB	MT (social allowance)	ER	ER
Bulgaria	DB	MT (social allowance)	ER	ER
Czech Republic	DB	FT	ER	ER
Denmark	DB	FT + MT	FR + MT	Voluntary
Germany	Point system	MT (social allowance)	ER	ER
Estonia	DB	FT	FR + ER	ER
Ireland	DB	MT + FT (social allowance)	FR	Means tested + Flat rate (social allowance)
Greece	DB	MT + FT (social allowance)	ER	ER
Spain	DB	MT	ER	ER
France	Point system	Earnings related + MT (social allowance)	ER	ER
Italy	Notional DC	MT (social allowance)	ER	ER
Cyprus	DB	MT-Earnings related	ER	ER
Latvia	Notional DC	MT (social allowance)	ER	ER
Lithuania	DB	Social allowance	ER	ER
Luxembourg	DB	MT (social allowance)	ER	ER
Hungary	DB	MT (social allowance)	ER	ER
Malta	Flat rate + DB	MT (social allowance)	FR + ER	Does not exist
Netherlands	DB	Social allowance	FR	Does not exist
Austria	DB	MT (social allowance)	ER	ER
Poland	Notional DC	MT	ER	ER
Portugal	DB	MT (social allowance)	ER	ER
Romania	Point system	Social allowance	ER	ER

Country	PAYG Def of benefits/	Minimum	Old-age	Early reatirement
Slovenia	DB	MT (social allowance)	ER	ER
Slovakia	Point system	MT (social allowance)	ER	ER
Finland	DB	MT	ER	ER
Sweden	Notional DC	MT	ER	ER
UK	DB	FT-MT (social allowance)	ER -	Does not exist

Continued – Summary table of pension scheme types with minority arrangements in bold (private part)

				Tax incentives				
Country	Public net replace-ment rates	Occupational schemes	Mandatory private pension schemes	Contri-butions	Invest-ment returns	Pensions	Tax credits	Development of private schemes
Belgium	39	Voluntary	.	Exempt	Exempt	Taxed		Moderate
Bulgaria	46	Voluntary	M-X	Exempt	Exempt	Exempt		Recent
Czech Republic	26	-	.	Taxed	Exempt	Taxed		Recent
Denmark	36	quasi M	.	Exempt	Taxed	Taxed		Important
Germany	47	Voluntary	.	Exempt	Exempt	Taxed	Yes	Moderate
Estonia	39	-	M-X	Exempt	Exempt	Exempt		Recent
Ireland		M-Voluntary	.	Exempt	Exempt	Taxed		Important
Greece	36	-	.					Low
Spain	55	M-Voluntary	.	Exempt	Exempt	Taxed		Low
France	40	Voluntary	.	Exempt	Exempt	Taxed		Recent
Italy	49	Voluntary	.	Exempt	Taxed	Taxed		Moderate
Cyprus	43	M-Voluntary	.					Moderate
Latvia		-	M-X					Recent
Lithuania	39	-	V					Recent
Luxembourg	59	Voluntary	.	Taxed	Exempt	Taxed		Low
Hungary	31	-	V	Taxed	Exempt	Exempt		Recent
Malta	51	M-X	.					Low
Netherlands		M-Voluntary	.	Exempt	Exempt	Taxed		Important
Austria	42	M-Voluntary	.	Exempt	Exempt	Taxed	Yes	Recent
Poland	47	Voluntary	M-X	Exempt	Exempt	Taxed		Recent

				Tax incentives				
Country	Public net replace-ment rates	Occupational schemes	Mandatory private pension schemes	Contri-butions	Invest-ment returns	Pensions	Tax credits	Development of private schemes
Portugal		M-Voluntary	.					Moderate
Romania	39	-	M					Recent
Slovenia	19	M-Voluntary	.					Recent
Slovakia	44	-						Recent
Finland	49	Voluntary		Exempt	Exempt	Taxed		Moderate
Sweden	35	quasi M		Exempt	Taxed	Taxed		Moderate
UK		M		Exempt	Exempt	Taxed		Important

Annex 3: Gender Gap in Coverage by Pensions

	Gender Gap in Coverage by Pension System, by Pillar (Persons aged 65+ years)								
	Pillar 1			Pillar 2					
	Mean pension		Gap	Mean pension		Gap	Mean pension		Gap
	Men	Women	W-M	Men	Women	W-M	Men	Women	W-M
DE	94.0	90.2	-3.8	30.3	13.0	-17.3	4.5	4.0	-0.5
NL	93.2	96.3	3.1	76.8	48.4	-28.4	10.1	7.2	-3.0
FR	99.4	94.2	-5.2	4.7	1.7	-3.1	4.8	3.3	-1.5
GR	82.8	72.5	-10.3	8.7	6.1	-2.6	0.2	0.2	0.0
AT	98.5	88.6	-9.9	11.0	4.9	-6.1	1.8	4.3	2.5
ES	90.1	62.7	-27.4	4.5	1.2	-3.4	1.0	1.4	0.4
SE	94.5	95.6	1.2	64.8	69.0	4.3	21.3	14.9	-6.4
IT	90.1	82.8	-7.3	6.7	3.9	-2.7	0.2	0.1	-0.1
BE	92.9	78.7	-14.2	6.7	2.5	-4.1	2.0	1.0	-1.0
PL	97.4	95.2	-2.2	0.0	0.0	0.0	1.8	1.9	0.1
DK	96.9	97.9	1.0	23.3	16.2	-7.0	21.6	13.7	-7.9
CZ	96.5	98.9	2.4	4.0	5.8	1.8	1.4	0.9	-0.5
CH	93.2	98.0	4.8	60.7	27.9	-32.8	5.7	7.3	1.6

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