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**Pension Policy in Europe and the United States –  
Towards a new Public-Private Pension Mix**

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MEA DISCUSSION PAPERS



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Pension reform has occupied and will continue to occupy an important place in the welfare state reform agenda on both sides of the Atlantic. In both the European Union (EU) and the United States (US) demographic forces in the form of an aging population and low fertility pose significant long-run fiscal challenges to traditional public pay-as-you-go (PAYG) systems. In addition, the pace of pension reforms in most EU countries has accelerated since the financial crisis in 2008 and the subsequent debt crisis, often adopting a mix of temporary short-term measures and structural long-term measures. Thus, economic and political forces in the past decades have been pushing countries in the direction of creating and/or maintaining mixed pension systems in which private pensions play a significant role alongside public pensions. In this paper, we focus on countries of the EU-15 that nicely depict this transition to private pensions for the “old Europe” as well as the US. We first provide a theoretical overview of pension system types in general before we depict the main development and trends of public pension systems and policies in Europe and the US. We find that countries that do not already have a well-developed private pension sector can reap benefits by implementing policies and structural changes that foster the development of a private pension sector. In contrast, countries that already have a true mixed system, relying on both public and private pension elements, need to ensure that such systems continue to provide secure and adequate retirement benefits. The paper concludes with a discussion on selected public policy options in order to improve coverage and contributions, ensure active participation and portability and successfully manage benefit risks.

## **Zusammenfassung:**

Die Rentenpolitik nimmt nach wie vor eine wichtige Stellung im Rahmen der sozialpolitischen Reformagenda auf beiden Seiten des Atlantiks ein. Sowohl in der Europäischen Union (EU) als auch in den Vereinigten Staaten (USA) stellt der demografische Wandel die traditionellen öffentlichen Umlageverfahren (PAYG) langfristig vor erhebliche fiskalische Herausforderungen. Darüber hinaus hat sich das Tempo der Rentenreformen in den meisten EU-Ländern seit der Finanzkrise im Jahr 2008 und der anschließenden Schuldenkrise stark beschleunigt, die im Ergebnis zumeist eine Mischung aus vorübergehenden kurzfristigen Maßnahmen und strukturellen langfristigen Maßnahmen verfolgen. In der Folge sahen sich viele Länder ökonomisch und politisch dazu gedrängt, gemischte Rentensysteme zu schaffen und / oder aufrechtzuerhalten, in denen private Renten neben den gesetzlichen Renten eine bedeutende Rolle spielen. In diesem Papier konzentrieren wir uns auf die Länder der EU-15, die diesen Übergang hin zu mehr privaten Renten für das „alte Europa“ sehr schön darstellen sowie auf die USA. Wir geben zunächst einen theoretischen Überblick über die Rentensystemtypen im Allgemeinen, bevor wir die wichtigsten Entwicklungen und Trends der Rentensysteme und -reformen in Europa und den USA darstellen. Wir stellen fest, dass Länder, die noch keinen gut entwickelten privaten Rentensektor haben, durch die Umsetzung von Maßnahmen und strukturellen Veränderungen, die die Entwicklung eines privaten Rentensektors fördern, Vorteile erzielen können. Im Gegensatz dazu müssen Länder, in denen bereits ein wirklich gemischtes System existiert, sicherstellen, dass solche Systeme weiterhin sichere und angemessene Altersversorgungsleistungen bieten. Das Papier schließt mit einer Diskussion ausgewählter Rentenreformmaßnahmen zur Verbreitung privater Rentensysteme, ihrer Portabilität sowie ihrer Risiken im Hinblick auf die zu erwartenden Leistungen.

## **Keywords:**

Pension Reform, Bismarck System, Beveridge System, Public-Private-Pension-Mix, Occupational Pensions

## **JEL Classification:**

H55, J18, J26, J32

# **Pension Policy in Europe and the United States – Towards a new Public-Private Pension Mix**

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In diesem Papier konzentrieren wir uns auf die Länder der EU-15, die diesen Übergang hin zu mehr privaten Renten für das „alte Europa“ sehr schön darstellen sowie auf die USA. Wir geben zunächst einen theoretischen Überblick über die Rentensystemtypen im Allgemeinen, bevor wir die wichtigsten Entwicklungen und Trends der Rentensysteme und -reformen in Europa und den USA darstellen. Wir stellen fest, dass Länder, die noch keinen gut entwickelten privaten Rentensektor haben, durch die Umsetzung von Maßnahmen und strukturellen Veränderungen, die die Entwicklung eines privaten Rentensektors fördern, Vorteile erzielen können. Im Gegensatz dazu müssen Länder, in denen bereits ein wirklich gemischtes System existiert, sicherstellen, dass solche Systeme weiterhin sichere und angemessene Altersversorgungsleistungen bieten. Das Papier schließt mit einer Diskussion ausgewählter Rentenreformmaßnahmen zur Verbreitung privater Rentensysteme, ihrer Portabilität sowie ihrer Risiken im Hinblick auf die zu erwartenden Leistungen.

## **1. Introduction**

Pension reform has occupied and will continue to occupy an important place in the welfare state reform agenda on both sides of the Atlantic. In both the United States (US) and the European Union (EU) demographic forces in the form of an aging population and low fertility pose significant long-run fiscal challenges to traditional public pay-as-you-go (PAYG) systems. In addition, the pace of pension reforms in most EU countries has accelerated since the financial crisis in 2008 and the subsequent debt crisis, often adopting a mix of temporary short-term measures and structural long-term measures (e.g. Ebbinghaus 2015 or Carone et al. 2016).

In Europe, these long-term and short-term fiscal challenges have been serious enough to call forth retrenchment along familiar lines in PAYG systems, the so-called “first pillar” of pension systems: retirement ages have been raised, replacement rates have been reduced, benefits have been de-indexed from wages to prices and the link between benefits and contributions has been strengthened. Similar measures have been considered in the US as well but have yet to be adopted in part because pressures on the public PAYG system have been less immediate.

Consequently, the importance of public pensions as the dominant source of retirement income has declined significantly in several European countries in the past two decades. Instead, many countries have strengthened the role of private pensions, expanding on their existing (but small) occupational pension schemes or even setting-up new schemes. In addition, international institutions such as the World Bank also strongly have promoted private schemes as a crucial part of

mixed and thus better diversified so-called multipillar pension systems (World Bank 1994 or Holzmann 2012). Many of the Central Eastern European countries followed this advice during the 1990s and created new private pension schemes from scratch in addition to their reformed public PAYG pension schemes (e.g. Perlitz et al. 2010). With the pressures on public PAYG systems rising, shifting towards more private pension provision therefore seemed a natural response for many Western European countries. Other European countries, as well as the US, that already possessed well established private schemes have been encouraged to improve existing schemes challenged by the development of financial markets and the worldwide crisis in 2008. Thus, economic and political forces in the past decades have been pushing countries in the direction of creating and/or maintaining mixed pension systems in which private pensions play a significant role alongside public pensions.

In this paper, we will focus on countries of the EU-15 that nicely depict this transition to private pensions for the “old Europe” and on the US. Section 2 provides a theoretical overview of pension system development and structure as the basis for our analysis. In section 3 and 4 we then depict the main development and trends of pension systems and public policy in Europe as well as the United States highlighting selected reform policies that have accompanied or are currently shaping the transition to private pension provision. Section 5 systematically structures vital private pension scheme characteristics and corresponding public policy options, discussing selected reform examples on both sides of the Atlantic. Section 6 concludes.

## **2. Pension system development and structural concepts – a theoretical overview**

In this section, we briefly review the reasoning behind the promotion of mixed, multipillar pension systems as one driver of the transition to private pensions and discuss the distinction between public and private schemes. We then introduce the concept of defined-benefit versus defined-contribution based pension schemes that has largely shaped the pension reform process of both public and private pension schemes worldwide in the past twenty-five years.

### *2.1 The rising importance of private pension schemes as part of a mixed system*

A mixed or multipillar system comprises a public component based on an intragenerational contract as well as private, employer-based pensions and/ or tax-favored individual retirement savings based on financial returns. The idea is that such a system helps to better diversify the demographic risks associated with the public and the financial risks associated with the private pension component.

The “mixed system” has been first proposed as a solution to the old controversy of the nineties on the efficiency of fully funded versus PAYG systems. (World Bank 1994) Advocates of placing greater reliance on fully funded pensions pointed to the fact that the rate of return to assets invested in capital markets (which in a portfolio of both bonds and equities at that time was estimated to earn around five percent) exceeded the implicit rate of return to contributions within PAYG systems (which was estimated to lie between one and two percent for advanced economies depending on projected wage growth). (e.g. Feldstein 1996, Siegel 1998 or Modigliani et al. 2001)

There has been a large debate on this argument. First, past returns do not

necessarily need to forecast future returns. Already Diamond (1999) listed several convincing reasons (such as developments in the capital market and the expectation of slower economic growth in the future) why the future equity premium could be declining as compared to the past. Indeed, this is what we mainly perceive since the dot com bubble burst at the beginning of the new millennium, followed by the financial crisis in 2008.

Second, higher returns from equities are a compensation for higher risk. A pronounced volatility however could impair the true availability of the capital stock (e.g. Modigliani et al. 2001 or Diamond and Orszag 2004). Modigliani et al. (2001) and Modigliani and Muralidhar (2004) therefore strongly advocated a return guarantee by the State. As we will see later, this idea has been implemented e.g. within the German Riester Reform. Indeed, the financial crisis seems to call into question the “risk diversification” rationale.

Third, for most countries, the problem was not to decide whether to create ex nihilo a funded or a PAYG scheme but whether to favor the birth or the growth of a funded scheme side by side with an already existing and developed PAYG system in need of reform. This has raised important issues of transitional funding. Namely: young workers who are told that they will receive lower pensions for the same payroll tax rate and are invited to contribute to a funded pillar as an offsetting measure are being asked to save more for the same replacement ratio. If, instead, contributions to the funded pillar are compensated by a reduction of the payroll tax rate, obligations to present and prospective retirees must be partly covered by other means (i.e. from general taxation). An even partial transition from PAYG to funding, therefore, can only be a very

gradual one, and an awkward political decision must be taken as to how to share the implied cost between present and prospective pensioners, present workers and taxpayers.

Thus, for conceptual and practical reasons, the path to pension reform in both the EU and the US can best be characterized as expanding or creating a second, funded pillar within a mixed public-private system. From the standpoint of fiscal politics, the mixed system approach is the only route that is politically feasible. Conceptually, a mixed system also has the advantage of providing a form of portfolio diversification – if their returns are not (or at least not highly) correlated – and may therefore enrich the set of available opportunities in the risk-return space.

## *2.2 Private versus public pensions – a blurred distinction?*

In principle, the realm of private pensions should be that of fully funded, actuarially based voluntary pensions, either employment-related and collective (sector-wide or company based, closed or open) or bought individually in insurance markets. Conversely, the public pension system (social security) is normally conceived as a mandatory and redistributive PAYG mechanism, financed by payroll contributions and/or general taxes imposed on workers that are earmarked to pay for public pension benefits.

The real world is much less clear-cut. Features of the public system are also present in the private one and vice versa. Some private schemes are run on a PAYG basis (e.g. occupational pension funds in France and Italy). Similarly, some public PAYG systems accumulate reserves on a prudential basis or mimic

private insurance contracts, without resorting to funding, as in the case of so-called Notional Defined Contribution (NDC) systems (e.g. Börsch-Supan et al. 2005 and 2007). Indeed, elements of pension reform in countries such as Sweden and Italy have substituted the traditional earnings-based formula with a formula which implies a stronger dependence of benefits on contributions as in funded schemes.

Moreover, partly in recognition of their social importance, private pensions are typically not allowed to operate on a *laissez faire* basis. Participation in private pension funds in some instances is mandated strictly rather than being a matter of free individual choice. Thus, private pensions are typically subject to some measure of public regulation and supervision and partially even backed by public guarantees and/ or protection funds.

This blurred boundary between the public and private pension spheres is not an outcome of deliberate, rational policy choices but rather an accretion over time of successive law-making, which in the case of the EU has been reinforced by quite different national histories and social values. Thus, there have been efforts to clarify the terminology and provide an accepted classification, both to promote harmonization in pension statistics for policy use and to avoid misinterpretation of public finances in view of compliance with the European stability pact (Eurostat 2004). For the present study, we apply the OECD classification (OECD 2005, p.12), which considers as private pension schemes administered by an institution other than general government. Consequently, a whole variety of pension plans can be recorded as private pensions – indeed, any form of savings for retirement not managed by the state. Within this rather

general class of savings instruments, we shall focus on occupational private pension plans.

### *2.3 The concept of defined-benefit versus defined-contribution schemes*

Pension schemes, both public or private, may be designed as defined-benefit (DB) or defined-contribution (DC) plans. Whereas pension benefits in DB pension schemes are determined by a formula based on the level of past earnings or average wages and the length of employment, pension benefits in DC pension schemes are directly derived from accumulated individual contributions that may yield true returns on the capital market in private schemes or notional returns depending on population or labor force growth (in public NDC systems).

Table 1 provides an overview of selected distinct features of DB and DC plans for private occupational pension schemes. Whereas in DB plans employers typically solely contribute to the scheme offering their employees an additional (pension) income component, it is the employees that contribute to DC plans and may choose whether and how much to contribute. Being designed as individual plans, DC plans therefore in theory should be easily portable whereas DB based plans are difficult to transfer since they are linked to the employer that offered them. Furthermore, it is important to understand that the two concepts also incorporate quite different risks for the beneficiaries. In DB based schemes the financial and longevity risks stay with the employer, whereas in DC schemes, it is the employees who bear the financial and longevity risks.

Table 1: Characteristics of DB versus DC based private occupational pension schemes

	<b>Defined-Benefit (DB)</b>	<b>Defined-Contribution (DC)</b>
<b>Employer contributes</b>	Virtually always	Sometimes
<b>Employee contributes</b>	Rarely	Virtually always
<b>Participation</b>	Mostly automatic	Usually employee's choice
<b>Contribution Level</b>	Mostly Employer's choice in accordance with institutional rules	Employee's choice in accordance with institutional rules
<b>Portability of pension rights</b>	Difficult	Easy in theory but bound to some restrictions
<b>Benefit Level</b>	Mostly defined by Employer	Defined by insurance contract
<b>Risks</b>	Employer bears risk	Employee bears risk

Source: Authors' compilation based on Gale et al. (2005).

On both sides of the Atlantic, a clear shift from Defined Benefit (DB) schemes to Defined Contribution (DC) schemes can be perceived in the last twenty-five years, especially for private pension plans. In countries with established private pension systems, the shift to DC plans has been prompted by financial challenges associated with the financing of DB plans that raised concerns about the adequacy and security of existing private pension arrangements (see e.g. the "Turner Report" by the Pension Commission in the United Kingdom in 2004 or the "White Paper" by the European Commission in 2012). In European countries that have moved to expand the role of private pensions, the DC model has been accepted as the basic framework for organizing the development of a new and significant private pension sector. Thus, basically all new private pension schemes established in the past two decades years have been based on the DC approach.

This widespread acceptance, if not embracing of DC plans has raised issues both in the United States and in Europe regarding the shift of pension risk

to individuals, adequate participation in DC plans, concerns about the distributional implications of relying on DC plans and the role of government regulation in fostering the development of DC plans that meet the policy objectives of providing adequate, affordable, sustainable and robust retirement income as stated by the World Bank (Holzmann and Hinz 2005).

### **3. Private pensions in the EU: Main Features, Reforms and Trends**

An intensive public pensions reform process has taken place in Europe during the last twenty-five years. From the early Nineties on, an increasing awareness of the perverse incentives that existing PAYG schemes offered to retire early (resulting in rather low retirement ages while life expectancy steadily increased) provided the first stimulus for pension reform in many European countries. A decade later, the challenges associated with demographic change to ensure the long-run sustainability of PAYG systems began to dominate the pension reform debate in many countries and have contributed to the increased importance of a funded second pillar as a supplementary income to maintain living standards in old-age. Finally, the tightened budgetary situation in many European countries due to the financial crisis lead to an urgent need for reform not only in the public but also in the private pension sector (e.g. Natali 2015).

However, the fifteen older EU countries (and even more so the enlarged twenty-eight ones) comprise a very diverse group. History, tradition and political choice have left their ineffaceable mark, so that each country offers its own pattern of public and private pension institutions (Castellino and Fornero 2003). To illustrate this European pension reform process, we will describe reform approaches and changes in the institutional framework for the EU-15 in general as well as for some selected country cases in more detail.

#### *3.1 The Bismarck Beveridge Typology*

In general, pension systems in the EU-15 can be categorized into two different types: the so-called Bismarck and Beveridge models (e.g. Bonoli 2003, Ebbinghaus 2012). While pension systems according to the Bismarck model

comprise a strong public PAYG pillar with earnings-related benefits and thus rather high replacement rates, pension systems according to the Beveridge model only provide a base pension but cover all residents, not only the working population. Thus, redistribution under the Beveridge model is high whereas it is only of a minor importance under the earnings-related Bismarck model. Table 2 classifies the countries of the EU-15 according to the Bismarck and Beveridge Typology and summarizes their main characteristics.

Table 2: Countries of the EU-15 within the Bismarck and Beveridge Typology

	<b>Bismarck</b>	<b>Beveridge</b>
<b>Examples from the EU-15</b>	Austria, Belgium, Finland, France, Germany, Greece, Italy, Luxembourg, Portugal, Spain	Denmark, Ireland, Netherlands, Sweden, United Kingdom
<b>Objective</b>	Maintain living standard	Poverty alleviation
<b>Coverage</b>	Working population	All residents
<b>Financing</b>	Contributions	Taxes
<b>Benefit Level</b>	Earnings-related	Basic pension
<b>Redistribution</b>	Minor	Large

Source: Authors' compilation.

Note that the distinction between the Bismarck and Beveridge models is not always clear-cut.

In countries where first pillar pensions follow the Bismarck model their objective is to maintain living standards enjoyed during active life also after retirement. This can best be achieved when benefits are linked to earnings (like in France, Germany and Spain) or through the rather new type of NDC systems (like in Italy and Sweden) as an indirect way of linking pensions to lifetime earnings. In these countries, heavy state intervention takes place even without (or with little) redistribution. In contrast, in countries where pension systems are designed according to the Beveridge model (like the Netherlands and UK), the first pillar does not try to replace previous earnings but only offers a basic income

considerably lower than the earnings previously enjoyed during active life. It can be perceived that countries following the Beveridge model, like the Netherlands or the United Kingdom, therefore traditionally possess a well-developed and often mandatory private pension system as an important complement to the first pillar.

On the contrary, in countries following the Bismarck model, such as Germany and Italy, private pensions traditionally existed only as a fringe benefit for privileged employees or sectors that were mainly financed by employers through their book reserves. Thus, these countries had to heavily expand or even set up from scratch new private pension institutions. An exception here is France, where a supplementary and even compulsory occupational pension scheme already exists – but on a PAYG basis.

As we will see, this transition to private pensions in the “Old Europe” has led to some convergence among European pension systems so that the Bismarck Beveridge distinction turns less clear-cut (e.g. Rohwer 2008). The Swedish system, for instance, originally followed the Beveridge model covering all individuals with a flat rate public pension (plus a modest earnings-related pension of the best 15 years) accompanied by strong occupational plans. After a fundamental reform in 1998, Sweden has strengthened its first pillar considerably (introduction of an NDC scheme) thereby shifting the pension system more in the direction of the Bismarck model while maintaining and elaborating on the existing private pension scheme.

### *3.2 European pension reform in countries following the Beveridge model – The case of the United Kingdom*

In the United Kingdom (UK), the PAYG pillar consists of two layers. The first layer offers a flat rate benefit (Basic State Pension) while the second layer (State Second Pension or S2P) offers a benefit related to lifelong earnings (but with very strong redistributive elements which tend to turn it into another flat rate). The second, funded pillar consists of occupational or personal pensions that are arranged by the employer, either by directly administering them or by resorting to a pension provider. A third pillar of personal pensions has been introduced in 1988 for workers who did not have access to occupational pensions. An important and characteristic feature of the UK system has been the option for every employee to “contract out” from S2P, with a rebate on contributions, provided he/she joins (since 1978) an occupational or (since 1988) a personal pension scheme. The public scheme is currently being reformed from the former two-layer form to a solely flat-rate basic pension scheme. Regarding occupational pensions, the so-called “Stakeholder Pension Scheme” – targeted for middle earners – has been launched in 2001. Firms employing at least five people are now required to nominate a stakeholder pension provider. Annual charges must be no more than one percent of the accumulated fund. The 2008 Pension Act further introduced so-called “Personal Account” schemes, as it had been suggested in the previous Turner Report. (Pensions Commission 2004) Starting from 2012, all eligible workers without work-based pension plans will automatically be enrolled into their employer’s pension scheme or in the new low-cost personal accounts. To support automatic enrolment, a DC based contribution scheme named National

Employment Savings Trust (NEST) was established. With the adoption of the new public state pension the option to choose to contract-out will be abolished. Employees' contributions will be supplemented by employer's contributions and will benefit from fiscal incentives. In 2017, additional voluntary privately managed savings accounts open to individuals between 18 and 40, so-called Lifetime Individual Savings Accounts (LISA), were introduced as a state-subsidized form of retirement or home-purchase savings.

### *3.3 European pension reform in countries following the Bismarck model – The German case*

Germany's PAYG system is based on a point system and thus highly earnings-related. Apart from a ceiling on contributions and correspondingly on benefits, there is only few redistribution (some acknowledgement for children etc.). Back in the early Nineties it provided generous benefits reaching net pension levels of around 70%. Lately, in an effort to render the system more sustainable, pension levels are projected to fall for future generations of retirees. Occupational funded pensions, until a major reform in 2001, were provided in various forms based on the DB concept (such as commitments by the employer funded by book reserves or resorted to an external Pensionskasse) but proper pension funds, like in the UK or other Beveridge countries, did not exist and coverage of occupational pension plans was rather low. In 2001, the "Riester Reform" granted workers the right to convert parts of their salary into private occupational or individual pension contributions and introduced an annual basic allowance for specific state subsidized private pensions (Riester-Rente). For most new plans, this also meant a shift from the DB to the DC concept. The reform further encouraged agreements

between employers and employees on occupational retirement provision by introducing the widely acknowledged form of pension funds as a new legal entity also for Germany (Pensionsfonds). In 2005, an amendment called “Rürup-Rente” was introduced to include the self-employed who had not been eligible for the state subsidized Riester pensions. Most recently, in 2018, Germany passed another reform of its occupational system (Betriebsrentenstärkungsgesetz). It increased tax incentives for employers of low income earners to contribute to occupational pension plans by allowing a deduction from wage taxes for 30% of the additional contributions made (within the range of EUR 240 and EUR 480 per year). (OECD 2017, p. 26). Another new feature is an auto-enrolment clause for pension plans that are part of collective bargaining agreements. In addition, a partial exemption of private pension income for recipients of means-tested benefits was introduced so that not the full amount of potentially existing private pension income is considered when calculating the means-tested basic income at old age. Also, the annual basic allowance for the state subsidized Riester pensions was raised to reflect past inflation.

### *3.4 The importance of private pensions in the EU today*

The reform measures described above for Germany were intended to increase the number of workers covered by the second and third pillar and thereby increase its share in old-age income and thus total replacement rates. Similar reform approaches can be perceived in other Bismarck countries, like Italy, while others, like Spain, so far have not shown substantial reform efforts. Countries following the Beveridge model, like the UK, in contrast traditionally show rather low replacement rates for the first, public pillar and rather high replacement rates

for the private pillars.

Table 1 in the Appendix lists theoretical replacement rates for the EU-15 (and the US, see next section) computed by the OECD according to the country-specific institutional regulations for the three pillars for a hypothetical average earner who enters the system today and retires after a full career. While theoretical first pillar gross replacement rates remain comparatively high for typical Bismarck countries like France, Italy and Spain (above 70%), they turn out modest after reforms in Germany and also Belgium (around 40%) as well as in some original Beveridge countries like Sweden and Ireland and are low for typical Beveridge countries like the UK and the Netherlands (below 30%) and very low in the case of Denmark (below 15%). In all cases, except the Netherlands, these rates are expected to decrease further in the next decades. (European Commission and European Policies Committee 2015) If mandatory private pensions are considered, gross replacement rates rise to 56% for Sweden, 86% for Denmark and even 97% for the Netherlands. Similarly, gross replacement rates rise above 50% for both Germany and the UK (where private pensions are not mandatory) and above 60% in Belgium when voluntary private pensions are considered.

These country differences in public and private pension replacement rates reflect the different (newly implemented) institutional regulations for the three pillars but not the actual coverage of private pension schemes that can be perceived. These coverage rates are summarized in Table 2 in the Appendix (again for the EU-15 as well as for the US, see next section). It runs out that only few countries have an occupational pension coverage above 80% (Denmark, Finland, the Netherlands and Sweden) thanks to mandatory enrolment. Coverage rates in

voluntary private occupational pension system are only rarely above 50% as for Germany or Belgium (around 60%) but also considerable (around 40%) like in the UK or Ireland. For France, voluntary occupational pension coverage has also spurred in the last ten years from roughly 15% in 2008 to 25% in 2015. But in many European countries, occupational pension coverage is still rather low or even non-existent – coverage rates in Italy for the average earner are e.g. computed to be below 10%, for Spain, Portugal and Greece even below 5%. Additional coverage in personal private pension plans is highest for Germany (around a third), around a fourth in the Netherlands and Sweden and around a fifth in Beveridge countries like the UK and Denmark but also in some Bismarck countries like Austria and Finland.

The evidence from countries that have adopted reforms is thus encouraging in some cases while not as much in others. A satisfactory response in Germany to the Riester reform indicates that coverage in private plans can be spurred by setting the right incentives, as it also is the case in France and Italy – though to a far lesser extent. As mentioned earlier, most Eastern European countries have also followed the reform approach of installing a mixed system and thus introduced new private schemes. (see European Commission 2010)

This development is also reflected in the size of occupational pension fund sectors across countries. (see Table 3 in the Appendix, again for the EU-15 and the US as well as EIOPA 2017) Penetration rates (total assets over GDP) are highest for Denmark and the Netherlands where relative wealth accumulated by the sector even surmounts GDP. Here, a very dynamic development from roughly 30% to above 200% can be perceived for the small country of Denmark in the past ten

years. Apart from these two, only the UK, Sweden, Finland and Ireland comprise substantial occupational pension wealth. In most other countries occupational fund sectors still record much lower wealth relative to GDP below 15%. In some of these countries, like France and Germany, occupational pensions so far are still financed through pension insurance contracts and/ or book reserves rather than through pension funds. In contrast, Italy e.g. tried to foster growth of its pension fund sector by diverting to them the annual flow of *Trattamento di Fine Rapporto* (TFR), a book reserve in the firms' balance sheet paid to workers when these leave the firm.

### *3.5 The Role of the EU*

A distinctive element of pension reform in the European Union has been a tension between the role of national and EU-wide policies and institutions. Because pensions fall under the subsidiary principle of the European Union, individual member countries have full autonomy in implementing pension reforms. At the same time, maintaining and/or creating strong private pension schemes, has also been an important element of a broader EU policy agenda of fostering mobility of capital and labor.

Accordingly, after the June 2001 Gothenburg Council identified ageing population as a problem of paramount importance, the Social Protection Committee was given the mandate to study the long-term future of social protection, focusing on the sustainability of pension schemes. The appropriate approach has been identified in the open method of coordination (social OMC), which involves agreeing on broad common objectives, translating them into national policy strategies, and working out “best strategies”, and monitoring

progress periodically. The common objectives have been classified under three headings: adequacy, financial sustainability, and modernization. (Prpic 2014) As part of this process, member states have been asked to submit national strategy reports (the first was released in 2002) which were then merged in a joint report, assessing national strategies and identifying good practice. The challenges and proposed solutions are reflected in the Country-Specific Recommendations (CSR) as a part of the so-called European Semester that provides a new additional framework for steering and monitoring EU countries' social economic and thus also pension reforms.

While restating the responsibility of each Member State for its own system, the institutions of the European Union thus have played an important role in monitoring national policies, suggesting common goals and favoring as much convergence as possible between the different systems. There are basically four main areas for which EU level rules apply (Eatock 2015):

- coordination of social security as well as supplementary pensions across member states claiming minimum standards,
- establishing an internal market for funded occupational schemes,
- facilitating the portability of occupational pensions and finally
- setting anti-discrimination rules which apply to all three pillars.

One example of EU regulation are occupational pension funds that are regulated by directive 2003/41/EC (the so-called IORP directive). The directive grants Member States full responsibility for organizing their pension systems as well as the role and functions of the various institutions providing occupational

retirement benefits but proposes and provides an adequate regulatory framework. In December 2016, the EU adopted a new version of the directive (Directive (EU) 2016/2341) to encourage long-term investment through occupational pension funds that need to be transposed into national law by January 2019. The new rules shall ensure that occupational pensions are sound, members and beneficiaries are better informed about their entitlements, cross-border-obstacles are removed, and occupational pension funds invest in economic activities that enhance growth and employment on a long-term basis.

So far, when the EU has drafted directives dealing with funded pension schemes, these have been always framed in ways that do not interfere with the sovereign power of the individual member states to design their pension systems. Whenever there have been efforts to assert greater control by the EU over national pension policies, these attempts have met with resistance and been only partially successful.

One example is directive 98/49/EC that dealt with the portability of pension rights for workers moving among member states. It was redrafted in 2005 and further amendments were proposed by the European parliament in June 2007. A compromise text was finally approved in directive 2014/50/EU in April 2014. It established minimum standards for the protection of mobile workers' pension rights. Member states are expected to transpose these into national law by May 2018. The directive applies to workers who move between member states but may be extended to workers switching jobs within a country. However, in contrast to earlier ambitions, the directive does not cover the transferability of occupational pensions rights to a new scheme. (Guardiancich 2015) While touted as an

improvement over the status quo, critics already noted in 2007 that by denying workers the right to true portability, those provisions left mobile workers “with many mini pensions like drying pieces of salami.” (Reuters 2007).

#### **4. Private pensions in the US: Main Features, Reforms and Trends**

In contrast to the intense reform processes that can be observed in Europe, pension reforms in the United States have been rather modest with no significant changes to the public pension component and only incremental changes to the private pillar in the past two decades. In the following, we will first describe the structure of the US pension system before we consider past developments and trends as well as the role of the single states.

##### *4.1 The US pension system today*

Public, first pillar pensions in the United States are part of the Social Security System, covering all workers (employees and self-employed) and being earnings-related. Contributions are paid at a rate of 12.4 per cent on all labor incomes up to the maximum taxable earnings base (in 2017 set at 127,200 dollars a year). For a worker who retires at the standard retirement age (66 in 2012, gradually rising to 67), the pension formula is based on the average monthly wage of his best 35 years. In this, the US public pension system resembles the Bismarck model described above.

However, the benefit formula in the US system is highly progressive. According to a study by the United States Congressional Budget Office “a typical middle-income individual born in the 1950s and retiring in 2015 would receive a Social Security benefit equal to 56% of their late-in-life earnings. For low-income individuals in the bottom fifth of the earnings distribution, the replacement rate would be about 87% of late-in-life earnings.” By comparison, the replacement rate for an individual in the top fifth of the income distribution

would be around 30%. (US CBO 2015) This rather large redistribution is untypical under the Bismarck model, shifting the US public pension system more in the direction of the Beveridge model.

As in many European countries, concerns about the fiscal sustainability of the US Social Security system have been raised repeatedly, where the cost of promised benefits is forecasted to exceed payroll tax revenues starting in 2020, and amounts accumulated in the social security Trust Fund are projected to be exhausted in 2034 (US Board of Trustees 2016). Already almost two decades ago, in December 2001, the President's Commission to Strengthen Social Security issued a report (President's Commission 2001) suggesting several reform models, all of them including an improvement of the fiscal sustainability of the public system aside a strong private pension system.

Private pensions in the US come in several different forms including:

- occupational plans of the DB or DC type, sponsored by one or more employer(s), either voluntarily or after bargaining with unions,
- 401(k) plans created from 1978 onwards, which may be incorporated into occupational plans of the DC type and
- several different tax-favored individual retirement savings plans which can also be offered by employers (Diamond and Orszag 2004).

Most retirement savings plans in the private sector are provided through the employer on a voluntary basis but only about 40% of the working-age population are covered by voluntary occupational and about 20% by voluntary personal pension plans. (see the US data in Table 2 in the Appendix). Altogether,

roughly half the workforce does not participate in any plan (Ellis et al. 2014). Still, the importance of the US private pension sector is high with total assets exceeding GDP by more than a third (see the US data in Table 3 in the Appendix).

For the average earner who would enter the system today, theoretical gross replacement rates after a full career (computed by the OECD, remember the introduction of this concept in section 3) would amount to roughly 40% for the first pillar and thus about the same level that is projected for Germany now after its reforms. Once voluntary pensions are included the ratio adds up to around 70% like e.g. in Ireland. (see Table 1 in the Appendix)

#### *4.2 US pension reform in the past*

The basis of the US private pension system today dates to 1974, when the congress passed the Employee Retirement Income Security Act (ERISA), a complex set of rules protecting employees benefit rights, setting preferential tax treatment and regulating actuarial certifications. Furthermore, the Pension Benefits Guarantee Corporation (PBGC) was created, a federal agency that ensures against the insolvency of DB plans. Since then, the whole working of the US funded pillar has operated under ERISA rules and their subsequent innovations. In addition to ERISA, tax laws have required employers to ensure that all employees, not just higher paid workers, can participate in private pension plans.

Since the 1970s, the proportion of private sector workers covered by occupational plans had remained stable and well above 50% for decades until it began to decrease towards 40% recently. Still, a major shift has taken place

within the class of occupational plans. In the 1970s, occupational pension funds consisted almost entirely of DB plans in which retirement benefits were based on years of service and on the salary of the final or of the best years. However, beginning in the 1980s, the share of DC plans, spurred by a dramatic rise in the adoption and expansion of 401(k) plans, radically changed the American private pension landscape. „By 1980, for example, some 32% of active members of an occupational pension scheme were covered by a DC plan. This proportion doubled over the next 15 years to reach 64% by 1995 and grew further to 71% by 2003 (US Department of Labor).“ (OECD 2007, p. 80) In contrast, the percentage of participants in private DB based pension plans fell from 56% in 1990, to about 40% in 2003 (Buessing and Soto 2006) and further to just under 20% today (US Bureau of Labor Statistics, 2016). In the US, the shift from DB to DC based private pension schemes thus began much earlier than in Europe and is almost finished.

#### *4.3 Pension reform on the state level*

Despite some widely discussed proposals during the presidency of George W. Bush that failed to be turned into a nation-wide pension system reform, no further serious reform efforts have been made under the subsequent Barack Obama and now Donald Trump era. Still, there have been some initiatives on the state level. In accordance with the principle of subsidiarity, as in the EU, member states may take full responsibility for the organization of their pension systems. Thus, the design of private pension schemes may differ among the states. While some states put some efforts in setting up state-

sponsored retirement programs for uncovered private sector employees by automatically enrolling them into individual retirement accounts of the 401(k) type others set up a marketplace to make it easier for small employers to find an appropriate plan. So far, the latter has been adopted by only two states, Washington and New Jersey. However, to make the US pension system sustainable for the long-term fiscal and demographic challenges, a nation-wide reform agenda comprising all three pillars would be needed. (see Munnell et al. 2016)

## **5. Private pensions and public policy options – selected EU and US experience**

Although the reform measures that can be perceived in the EU and the US on private pensions during the past twenty-five years differ in many details, some general themes emerge. These include questions on how to set the right incentives to improve coverage rates and contribution levels, how to ensure active participation in private plans and portability of pension rights (contribution period) as well as how to best manage the risks associated with the pay-out phase of private pension plans (benefit period).

### *5.1 Improving coverage and contributions*

Securing private pension income first requires that there be adequate coverage in private pension plans. In the US, among middle-income workers, membership in DB plans was traditionally seen as a bastion of financial security for old age but since then has steadily declined and is low today. While many workers are still covered by DB plans in Europe, coverage rates are also expected to diminish rapidly since many schemes now close for new members. Most new plans in the past decades have been DC plans and coverage here seems harder to achieve. Particularly, most voluntary occupational pension schemes fail in covering individuals who otherwise would end up in the lowest quintiles of the retirement income distribution (Halperin and Munnell 2005).

To promote occupational pension coverage, public policies can either

- adopt requirements for mandatory participation,
- implement default rules for auto-enrollment or by collective bargaining,
- set financial incentives for employees to participate,

- mandate or set incentives for employers to contribute to their employees' plans or
- conduct informational programs that inform workers about the general need to save for retirement to maintain living standards in old age.

As we have seen, occupational pensions are mandatory e.g. in the Netherlands and in Denmark. Since 1999, the Swedish public pension system also entails a mandatory funded component. In the Netherlands, contributions to pension funds are only compulsory for the self-employed and have been discussed also for employees to reduce insufficient coverage.

Drawing on evidence that voluntary pension plan participation and contributions show high levels of inertia and procrastination, Italy in 2007 changed the default rule for occupational pension plans from “no participation” into “participation” which automatically enrolls workers into a plan unless they opt-out. (Fornero et al. 2011 and 2014) This concept is referred to as nudging and has been investigated by the Nobel laureate Richard Thaler who received the 2017 Nobel prize for this. In Italy, after only the first year of the reform, the participation rate of private sector employees in DC plans had risen from 15% to 25% at the end of 2006 (Covip 2008). In the US, employers have also been urged to structure 401(k)'s as opting-out plans, however, so far they are not obliged to do so. Germany, in its most recent pension reform of 2018, also introduced an auto-enrolment clause, but only for pension plans that are part of collective bargaining agreements so that each industry can decide whether to offer such plans or not.

Tax rebates and other financial incentives by the state such as subsidies

are another policy instrument to spur private pension coverage. Many EU countries have rationalized their system of privileged taxation of private pension savings at the beginning of the new millennium (e.g. Italy in 2000, France in 2003 or the UK and Germany in 2004). Before, tax rebates or tax credits for savings were often accorded to life insurances in general and not limited to pension arrangements. In the UK, an important and characteristic feature of the public system has been the option for employees to “contract out” from S2P, with a rebate on contributions, provided he/she joins an occupational (since 1978) or a personal (since 1988) private pension scheme. These financial rebates for opting out initially had been favorable particularly for younger workers which is why rebates were designed such as to increase with age by 1997. In Germany, the 2001 Riester reform introduced the possibility of choosing between a subsidy and a tax allowance, in a manner that is particularly favorable to low-income earners or families with children. This way, distributional elements can be introduced in the otherwise actuarially fair DC plans.

Another possibility is to mandate or set incentives for employers to contribute to a retirement plan on behalf of their employees or to match employees’ contributions to make plans more attractive for employees. France has introduced in 2003 a voluntary DC based savings plan called PERCO (plan d’épargne pour la retraite collectif) that operates at the firm or branch level side by side with a third pillar plan PERP (plan d’épargne retraite populaire). To foster the development of small and medium sized firms (SME), the social tax paid by employers to the PERCOs was lowered from previously 20% to 8% in 2016 for companies with less than 50 employees for a limited period of six years.

In Germany, as part of the most recent German pension reform in 2018, new tax incentives were set for employers of low income earners to contribute to occupational pension plans.

Finally, programs of financial education may enable people to take more adequate and informed decisions about their retirement savings. In Germany, a huge information campaign was launched together with the 2001 Riester reform that stressed the need for additional pension savings to maintain living-standards in old-age.

### *5.2 Ensuring active participation and portability*

Participation in a plan is not a sufficient condition for adequate income in old age if it is not active. Covered employees may e.g. experience a break in their pension contribution records because of work career interruptions due to unemployment, sickness, maternity or caring duties. These social risks cannot be prevented but existing entitlements in plans (and thus opportunity costs of contributions foregone) can be made more transparent to contributors as it is regulated for pension funds in the EU (Directive (EU) 2016/2341). In some countries like e.g. the US, workers can also choose to participate in a DC plan and then access the fund before retirement, either by withdrawals or by borrowing from it. This can substantially erode balances at retirement. However, withdrawals may be also of advantage. There is evidence that making pension savings more liquid by allowing early withdrawals can increase both participation and contribution rates in private plans (Munnell et. al. 2004). Of course, the extent to which the decision to withdraw or to borrow affects the

future retirement wealth depends on what the worker decides to do with the cashed amount. If it is invested in forms other than a retirement account or used to reduce the outstanding level of liabilities the individual's net worth must not necessarily be reduced.

Furthermore, occupational pension plans need to be fully portable to facilitate the mobility of workers between firms. (e.g. Antolin et al. 2012) In its directive 2014/50/EU, the EU therefore established minimum standards for the protection of mobile workers' pension rights regarding

- their acquisition  
(no later than after three years of employment relationship and employees' own contributions can never be lost),
- their preservation  
(workers are entitled to keep their pension rights in the scheme unless they agree on receiving them as a capital payment) and
- appropriate information  
(transparency about how mobility might affect pension rights).

However, as was discussed in section 3, the directive does not cover the transferability of occupational pensions rights to new schemes and thus does not ensure true portability. In the US, it remains difficult to move 401(k) savings from one plan to another but has turned out rather easy to move them to Individual Retirement Accounts (IRAs) – with adverse effects on employees as IRAs often have fewer consumer protection and come at higher fees than workplace plans (e.g. Munnell and Bleckman 2014).

### *5.3 Managing benefit risks*

Another concern about private DC plans is that “they fail to provide a formal mechanism by which individuals can insure against the risk of outliving their resources” (Brown and Warshawsky 2001, p. 1). In fact, DC plans may be designed as to allow a choice between an annuity and a lump sum, or perhaps even termination in the form of a lump sum only. Although in the latter case employees can still elect to buy an annuity on the insurance market, they may not choose to do so, especially if adverse selection due to higher average life expectancy in the individual annuity market generates a lower payout for the premium. In addition, administrative costs of annuities purchased by individual participants in DC plans may also be higher than in a group plan that benefits from economies of scale. As Diamond (2004, pp. 5-7) put it, after reviewing the reasons alleged to explain the limited use of annuities in general: “The major issue behind this pattern of insurance demand is the failure of many to understand the advantages of annuitization”. Thus, in some countries, workers have been encouraged or even required (as in the case of the German Riester reform) to choose annuities in favor of lump sum distributions. In the Netherlands, an annuity option for DC plans was introduced in 2016 according to which participants can choose between either a fixed annuity (providing a guaranteed level of income until the end of life) or a variable annuity (allowing for investments in riskier assets with performance-related income levels) or a combination of both (OECD 2017 p 38). Furthermore, private pension annuities in the EU must be gender neutral required after 2007 by EU directive.

Apart from the longevity risk, private pension plans also face financial

risks in terms of unexpectedly low or negative returns on the contributed capital, low pension wealth at the point of retirement due to investments in risky and thus volatile assets or inflation. (e.g. Modigliani et al. 2001 or Diamond and Orszag 2004) Both in the US as well as in the EU, regulations therefore require employees and employers to invest in appropriate, diversified portfolios while at the same time strengthening the economy. On the country level, additional incentives have been set to firms like e.g. in France where social taxes were lowered down to 16% for companies that invest at least 7% of their PERCOs portfolio in SMEs with a default option of gradually reducing investment risks as workers age. (OECD 2017, p 34) In addition, pension protection funds like the American PBGC protect and regulate pension funds. Some countries like Germany provide a return guarantee by the state (though only in nominal terms) which is also being debated for the US (Modigliani and Muralidhar 2004).

## 5. Summary and Outlook

In most European countries as well as in the United States, retirement income derives from three sources: public pensions, private occupational pensions (pension funds and insurance policies) and private personal savings. There is a broad policy consensus that retaining and promoting a mixed system, based on public and private sources of retirement income, is the best overall policy. At the same time, as long-run fiscal pressures on public pensions have mounted in all countries, due to an aging population and decreased fertility, there has also been a recognition that private sources of retirement income are likely to become increasingly important in a mixed system. This view has been strengthened further in the wake of the financial and subsequent debt crisis, though with an increasing awareness of the risks related to capital market transactions.

Thus, countries that do not already have a well-developed private pension sector can reap benefits by implementing policies and structural changes that foster the development of a private pension sector. In contrast, countries that already have a true mixed system, relying on both public and private pension elements, need to ensure that such systems continue to provide secure and adequate retirement benefits.

In the United States, the policy debate about private pensions has taken place in the context of a system consisting of a compulsory Social Security scheme meant to provide a foundation for retirement income with strong redistributive elements. Beyond this foundation, further pension coverage has been left to occupational or individual schemes. A major trend has been the shift in employer-provided private pensions away from a DB to a DC model in which future

retirement income of participants is strongly correlated with earnings or contributions and does not explicitly aim at redistributive goals. The policy debate in the US has recognized that as inevitable retrenchment occurs in the public system, future retirees will need to depend more on such private plans for retirement income, and special attention has been focused on increasing participation in voluntary, private DC plans, especially among lower paid workers.

Characterizing the situation in Europe is more complex because, unlike the US, there is no single “national pension system” and national variation creates somewhat different contexts for second and third pillar pension reform. In adopting the simple Bismarck-Beveridge-Typology especially the countries of the EU-15, the “old Europe” can nicely be categorized into two different types that depict quite well the distinct transitional process to private pensions in Western Europe.

The distinction between Bismarck and Beveridge schemes is relevant because there is a negative correlation between the extension of the first and the second pillar that corresponds to where countries fall on the Bismarck versus Beveridge continuum. Namely, countries with high first pillar replacement rates, in which public pensions are (or at least have been so far) deemed sufficient to afford a satisfactory income level during old-age, have shown little or no importance of the second pillar until the beginning of the new millennium, while the reverse is true for countries of the Beveridge type where the second pillar takes a prominent role.

Nonetheless, the need to place the first pillar on more secure footing has created strong pressures in Europe for policies aimed at encouraging the growth

of the second and third pillar marking a transition to private pensions. In countries such as the UK and the Netherlands, that already have a well-developed private pension sector, an internal shift within the class of private pension schemes towards the DC model, like in the US, could be observed. European countries with nonexistent or less-developed private pension sectors have moved toward this US/UK model to supplement public first pillar pensions with private occupational or personal, often tax-subsidized pension plans. In at least one prominent case – that of Germany – these moves have also been accompanied by broad-scale efforts to subsidize private pension contributions of lower-income workers. The scale and success of such efforts has varied among EU countries ranging from what appears to be a large-scale and successful transformation of the German pension sector and promising reforms in Italy to more modest results in France or Spain.

A distinctively European policy theme has been the interaction between reform of national pension systems and the EU-wide policy objective of promoting greater labor and capital mobility throughout the European economy. Although individual member states have had near-complete autonomy in adapting their pension systems to fit with national circumstances, the EU has provided increasingly stronger guidance about the desired attributes of second-pillar pension institutions. While the constitutional skeleton of pension systems is left to the member states, the European Union is concerned with ensuring the free movement of workers, the free supply of financial services within the Union and the diffusion of proper instruments for prudential regulation. To date, however, efforts to shape national pension policies to meet the EU-wide policy objectives, have so far been modest in scope.

For the future, to give workers true choice over their preferred work and retirement at the end of their working and beginning of their retirement periods – with flexible paths to retirement being the new trend – pension policy measures should more strongly complement necessary labor market policies. Encouraging employers to provide flexible work solutions to workers that consider working beyond the statutory retirement age thus also means ensuring that occupational pension schemes can be adapted accordingly.

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# Appendix

**Table 1: Replacement Rates<sup>1</sup> of Public and Private Pensions in the EU-15 and the US**

Type	Country	Gross			Net	Gross		Net
		Mandatory			Total	Voluntary	Total	
		Public	Private	Total		Private	Total	Total
Bismarck	Austria	78,4		78,4	91,8		78,4	91,8
	Belgium	46,7		46,7	66,1	14,2	60,8	72,7
	Finland	56,6		56,6	65,0		56,6	65,0
	France	60,5		60,5	74,5		60,5	74,5
	Germany	38,2		38,2	50,5	12,7	50,9	65,4
	Greece	53,7		53,7	53,7		53,7	53,7
	Italy	83,1		83,1	93,2		83,1	93,2
	Luxembourg	76,7		76,7	88,4		76,7	88,4
	Portugal	74,0		74,0	94,9		74,0	94,9
	Spain	72,3		72,3	81,8		72,3	81,8
Beveridge	Denmark	14,8	71,6	86,4	80,2		86,4	80,2
	Ireland	34,1		34,1	42,3	38,0	72,1	77,2
	Netherlands	28,7	68,2	96,9	100,6		96,9	100,6
	Sweden	36,6	19,2	55,8	54,9		55,8	54,9
	United Kingdom	22,1		22,1	29,0	30,0	52,2	62,2
	United States	38,3		38,3	49,1	33,0	71,3	87,1

Source: Authors' illustration based on OECD 2017, Chapter 4.

Note: The data is derived from theoretical calculations by the OECD based on national parameters and rules that apply in 2016

<sup>1</sup> The gross (net) replacement rates shows the level of gross (net) pension benefits relative to gross (net) lifetime average earnings of a worker who enters the system today and retires after a full career. It is assumed that individual earnings grow in line with average earnings so that lifetime average earnings are equal to the last earnings for full-career workers. Workers thus are assumed to maintain the same position within the wage distribution throughout their career. (OECD 2017, p. 26ff.) Net rates are higher because subtracting social insurance contributions and taxes reduces the denominator proportionally more than the numerator.

**Table 2: Coverage<sup>1</sup> of private pension plans by type of plan in the EU-15 and the US**

Type	Country	Mandatory / Quasi- mandatory 2016	Voluntary				Total
			Occupational 2016	Occupational 2008	Personal 2016	Persona l 2008	
<b>Bismarck</b>	Austria	x	13,9	13,9	18,0		..
	Belgium	x	59,6	55,6	..		..
	Finland	89,8	6,6	8,7	19,0	7,3	25,6
	France	x	24,5	15,0	5,7		..
	Germany	x	57,0	64,0	33,8	44,0	70,4
	Greece	x	1,3		..		..
	Italy	x	9,2	10,6	11,5	5,1	20,0
	Luxembourg	x	5,1	5,6	..		..
	Portugal	x	3,7	4,0	4,5		..
	Spain	x	3,3	8,7	15,7		18,6
<b>Beveridge</b>	Denmark	ATP: 84.0 QMO: 63.4	x		18,0		18,0
	Ireland	x	38,3	42,9	12,6	14,9	46,7
	Netherlands	88,0	x		28,3		28,3
	Sweden	PPS: ~100 QMO: ~90	x		24,2		24,2
	United Kingdom	x	..	47,1	..	18,9	43,0
	United States	x	40,8	46,0	19,3	34,7	..

Source: Authors' illustration based on OECD 2009 and 2017, Chapter 4.

Note: QMO = Quasi-mandatory occupational; PPS = Premium Pension System; ".." = Not available; "x" = Not applicable, "~" = Approximately. Data for Belgium and the United States refer to 2013, data for Greece to 2014, data for France, Germany and Sweden to 2015. Data for the Netherlands and Spain come from the Chapter 4 of the OECD Pensions Outlook 2012.

<sup>1</sup> As a percentage of working-age population (15-64 years)

**Table 3: Assets in private pension plans in % of GDP in the EU-15 and the US**

Type	Country	2007	2016
Bismarck	Austria	4,8	6,0
	Belgium	4	6,9
	Finland	71	59,3
	France	1,1	9,8
	Germany	4,1	6,8
	Greece	0	0,7
	Italy	3,3	9,4
	Luxembourg	1	2,9
	Portugal	13,7	10,8
	Spain	7,5	14,0
Beveridge	Denmark	32,4	209,0
	Ireland	46,6	40,7
	Netherlands	138,1	180,3
	Sweden	8,7	80,6
	United Kingdom	78,9	95,3
	United States	76,7	134,9

Source: Authors' illustration based on OECD 2009 and 2017, Chapter 4.