

# CESifo DICE REPORT

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## PENSIONS AND THE FINANCIAL CRISIS

### RECESSIONS AND RETIREMENT: HOW STOCK AND LABOR MARKET FLUCTUATIONS AFFECT OLDER WORKERS

COURTNEY COILE<sup>1</sup>

The sharp drop in equity values that occurred at the beginning of the recent financial and economic crisis led to widespread concern about the effect of the crisis on retirement security. Between July 2007 and March 2009, the S&P 500 Index monthly average value fell by 50 percent.<sup>2</sup> With defined contribution (DC) pension plans largely having replaced defined benefit (DB) plans for US workers (Poterba, Venti and Wise 2007), millions of workers experienced deep declines in the value of their retirement savings as a result of the crisis. It was widely predicted that workers would need to delay retirement in order to make up for these losses, with many newspaper headlines such as “Economic Crisis Scrambles Retirement Math” and “Will You Retire? New Economic Realities Keep More Americans in the Workforce Longer.”<sup>3</sup>

At the same time, a lesser-noticed element of the crisis, in terms of its potential effect on retirement, was the rise in the unemployment rate. Between May 2007 and October 2009, the US national unemployment rate rose from 4.4 to 10.0 percent.<sup>4</sup> Moreover, compared to earlier periods, workers who lost a job during the recent crisis experienced longer spells of unemployment and a lower probability of finding a new job (Farber 2011). Many older workers who experienced a job loss and subsequent difficulty in finding new work may have decided to retire earlier than they had planned. Indeed, the Social Security Administration reported in 2009 that new retired worker benefit claims had risen by ten

percent more than expected during the previous year and surmised that the weak economy was the cause (Goss 2009), suggesting a potential increase in retirement. Thus the potential effects of the recent crisis on retirement are more complex than suggested by the headlines.

In this article, which is based on research conducted with my colleague Phillip Levine (Coile and Levine 2006, 2007, 2010, 2011a, 2011b; Coile, Levine and McKnight 2014), I discuss the evidence regarding the effect of stock and labor market fluctuations on retirement decisions and retiree well-being in the US. While the recent financial and economic crisis motivates this article, the evidence discussed below draws on 30 years of data, essentially asking whether retirement rates are higher or lower in times and places (in the case of the labor market) when the stock or labor market is stronger or weaker. I also explore whether recessions have long-term impacts on the income and health of retirees.

#### Does the stock market affect retirement?

In order for stock market fluctuations to affect retirement decisions, several conditions must be met. Firstly, since investors presumably expect to earn a positive rate of return on equity investments and understand that there is a certain amount of daily volatility in prices, there must be asset price movements that represent larger- or smaller-than-expected equity returns. Secondly, workers must have enough stock assets that these price changes constitute a meaningful wealth shock for them. Thirdly, workers must respond to market movements as economic theory would predict. Economists generally expect leisure to be a normal good, so individuals who experience a positive wealth shock would be expected to take some of that wealth in the form of leisure and retire earlier, and conversely to retire later if they experience a negative wealth shock.

The condition of unusually large or small equity returns has been met over the past two decades, as equity markets experienced two boom-bust cycles that culminated with the “dot com” crash of 2000–2002 and the recent financial crisis. Whether workers have substantial equity



<sup>1</sup> Wellesley College.

<sup>2</sup> Data accessed from the Federal Reserve Bank of St. Louis (2015).

<sup>3</sup> These articles appeared in the Christian Science Monitor (Trumbull 2009) and in the Washington Post (Trejos 2008).

<sup>4</sup> Data from the United States Bureau of Labor Statistics (2015).

investments is a different question. Coile and Levine (2010) report that 58 percent of US households with a head aged 55 to 64 held stock assets in 2007, just prior to the recent crisis. The most common form of stock ownership is through retirement accounts (50 percent of households), although some households also own stocks directly (21 percent) or in mutual funds outside of retirement accounts (14 percent). Median stock assets are 78,000 USD among stockholders. Both asset ownership and values are strongly correlated with education – 78 percent of households headed by a college graduate own stocks and median holdings of stockholders are 125,000 USD, versus 21 percent and 10,000 USD for high school dropouts. Overall, nearly six in ten of these near retirement age households have less than 25,000 USD in stock assets and only one in eight have assets over 250,000 USD.

To estimate the impact of stock market returns on retirement, we would ideally like to run a controlled experiment in which some individuals are randomly assigned to experience unusually strong or weak stock market conditions near the time of retirement (the “treatment group”), while others are assigned to experience normal conditions (the “control group”). In reality, a controlled experiment is not possible, but the two recent boom-bust cycles provide a natural experiment that mimics the desired set-up. If we compare the average retirement rate among those who experienced different market conditions, controlling for individual-specific factors such as age and education that could also influence retirement decisions and for any long-run trends in retirement behavior over time, the difference should reflect the effect of the unusual market conditions.

Furthermore, we can construct a stronger test of the effect of the stock market on retirement by noting that individuals with greater stockholdings should be more responsive to market fluctuations. While many data sets lack detailed information on stock holdings, the fact that stock holdings vary strongly with education level, as noted above, enables us to treat education as a proxy for stock ownership. Thus, the question is whether more highly educated households are more sensitive to stock market fluctuations than less educated households when making retirement decisions.

Focusing only on the boom period of the mid-to-late 1990s, several early papers in this literature find a relationship between unexpected capital gains and retirement (Sevak 2001; Coronado and Perozek 2003). One potential concern, however, is that unexpected gains are

strongly correlated with stock ownership, which may itself be correlated with unobservable characteristics that affect retirement, such as preferences for leisure or the ability to plan for retirement. Coile and Levine (2006) note that a stronger test is whether individuals with greater stock holdings are both more likely to retire during the boom and less likely to retire during the bust. Using data from the Current Population Survey (CPS, 1980–2002) and the Health and Retirement Study (HRS, 1992–2002), they find no evidence to support this hypothesis. These findings are consistent with those of Hurd, Reti and Rohwedder (2009), who fail to find that individuals with large financial gains retired earlier than anticipated or revised their retirement expectations relative to individuals without such gains.<sup>5</sup> Disney, Radcliffe and Smith (2013) also find little effect of market fluctuations on retirement in the UK.

There are two possible explanations for the lack of a discernible effect. The first, suggested by Coile and Levine (2006), is that the number of people who experience large unexpected wealth gains (or losses) from market fluctuations is relatively small, and thus wealth effects are difficult to detect in the data. The second is that wealth effects are relatively small in magnitude. Hurd et al. (2009) are sympathetic to this argument, citing evidence from lotteries. Revisiting the question with additional years of data, Coile and Levine (2011a) are able to identify a group that is responsive to stock market fluctuations. Specifically, they find that long-term market fluctuations (as measured by the percentage change in the S&P 500 Index over a five-year or ten-year period) affect the retirement decisions of workers aged 62 to 69 with a college degree, while there is no statistically significant effect of short-term fluctuations on retirement behavior, nor any effect of market fluctuations on younger workers or workers with less education. The magnitude of the response is economically meaningful – a one-standard-deviation (or 77 percentage point) increase in the ten-year return increases the retirement rate of college graduates by 1.5 points, or 12 percent relative to the mean.

Overall, the empirical findings suggest that while there are almost certainly workers who do retire earlier (later) than expected upon experiencing larger (smaller) than expected stock market returns, the number of workers

<sup>5</sup> These findings are similar to those of Goda, Shoven and Slavov (2010), who also use a long time horizon, but dissimilar from Goda et al. (2011), who focus on the recent crisis and find that stock market returns do affect retirement expectations. Goda et al. (2011) suggest that their findings may reflect factors that were unique to the Great Recession, such as a higher level of pessimism about the economy.

who experience substantial wealth shocks is relatively small and the magnitude of the retirement response is likely to be modest. Therefore, it is unlikely that any change in labor force participation for the population as a whole that coincides with a stock market upswing or downturn is driven by a retirement response to the stock market.

### Does the labor market affect retirement?

The Great Recession has equaled or surpassed recessions of the 1970s and 1980s in terms of the steep rise in unemployment and slow pace of recovery. While it seems logical that such an event could affect retirement behavior, the rich retirement literature offers surprisingly little guidance on this point, as it has focused almost exclusively on labor supply questions such as the effect of Social Security and pensions, health and health insurance, and wealth on retirement. Over the past decade, however, there has been a new emphasis on labor demand.<sup>6</sup>

Some of the early work in this area explored the effect of job loss on older workers' employment outcomes. Chan and Stevens (1999, 2001) estimate that the employment rate of displaced older workers two years after a job loss is 25 percentage points lower than that of similar non-displaced workers and that the median reemployed worker earns 20 percent less at his new job. In such analyses, however, it can be challenging to identify an appropriate comparison group, since displaced workers may differ from non-displaced workers in unobservable ways that predispose them to worse employment outcomes even in the absence of a job loss.<sup>7</sup>

Whether retirement is cyclically sensitive is a related but distinct question, potentially less subject to endogeneity concerns. Coile and Levine (2007) explore this question using twenty-five years of CPS data. Unlike an analysis of the stock market, a study of the labor market can take advantage of differences in market conditions across geographic locations. The authors include state fixed effects to account for differences that may lead workers to retire earlier in some states than oth-

ers at any point in the business cycle, year fixed effects to account for factors that affect retirement nationwide in some years relative to others, and individual characteristics (including age and education) that increase the propensity of some workers to retire sooner than others. Having done so, the analysis essentially asks whether workers retire earlier when the labor market is weaker in their geographic area after all the other differences are taken into account.

The paper's central finding is that retirement is cyclically sensitive – a five-point increase in the unemployment rate raises the probability of retirement by about one percentage point, or eight percent relative to the mean annual retirement rate of 13 percent. Moreover, the labor supply response to unemployment emerges at age 61, as workers approach the Social Security early retirement age of 62; retirement is not cyclical for workers age 55 to 60. Munnell, Soto, Triest and Zhivan (2008) similarly find that differences in older men's labor force participation are related to labor market conditions, while Hallberg (2011) finds that the probability of a worker retiring early in Sweden is related to deviations from typical employment levels in his or her industry.

In Coile and Levine (2011a), the authors explore how the cyclicity of retirement varies with education. They find that workers with only a high school degree experience the largest effect – for them, a five-point increase in the unemployment rate raises the probability of retirement by 1.8 percentage points, or nearly 20 percent relative to the mean. The effects for other education groups are positive but not statistically significant. In explaining these results, Coile and Levine (2010) surmise that high school dropouts may be most likely to lose a job during a recession, but also likely to retire at early ages regardless of market conditions due to poor health and the inability to continue working at physically demanding jobs, while more skilled workers may have a relatively low risk of unemployment during a recession. "High school graduates may have the right combination of desire to continue working along with a higher risk of unemployment and difficulty in finding new work, so a recession may lead many of them to retire involuntarily." In short, the results suggest that retirement is cyclically sensitive, particularly for less-educated workers.

### Do stock and labor markets affect retiree well-being?

Finally, we turn to the question of whether market fluctuations have long-term effects on retiree well-being.

<sup>6</sup> In addition to the literature discussed subsequently, Lahey (2008) explores age discrimination in hiring, while Neumark (2003) provides a summary of the research on age discrimination legislation.

<sup>7</sup> Von Wachter, Song and Manchester (2007) address this in their study of the long-term earning losses of workers who lost jobs during the 1982 recession, by including worker fixed effects to account for unobservable characteristics. They find that job loss is associated with large and persistent earnings reductions that last 15 to 20 years. Relative to that paper, our focus here is on job loss that occurs closer to the traditional age of retirement.

The focus here is on labor market conditions, as the rebound in the stock market from its 2009 low to values now 25 percent above pre-crash levels have diminished the importance of this part of the story.<sup>8</sup> By contrast, the weakness in the labor market has been extensive and persistent. Moreover, a spell of late-career unemployment can have long-term consequences for an individual even once the market rebounds. If an individual fails to find new employment, he or she may take up Social Security benefits when they are first available at age 62, potentially years earlier than planned. As benefits are subject to an actuarial adjustment, earlier claiming results in a permanently lower monthly benefit amount.<sup>9</sup>

In Coile and Levine (2011b), the authors use data from the American Community Survey (ACS), an annual survey similar to the Census, to look at the relationship between the labor market conditions that existed around the time of retirement (age 62) and an individual's income in his 70s. As in their earlier work, the authors essentially treat labor market conditions at retirement as a random draw, asking whether individuals who are unlucky enough to approach retirement during a recession have lower retiree income than other individuals, after controlling for state, year, and age fixed effects. They find that experiencing a recession in the years leading up to retirement lowers subsequent retiree income. The finding is particularly evident for Social Security income, for less educated workers, and for labor market conditions experienced at or after age 62.

Of course, income is not the only important measure of well-being. Coile et al. (2014) explore the impact of labor market conditions around the time of retirement on health – more specifically, on longevity. Individuals who experience a late-career layoff may face several years of reduced employment and lower earnings before retiring when they reach Social Security eligibility age. They may also experience lost health insurance and reduced access to health care until reaching age 65, when Medicare becomes available. The authors explore the link between labor market conditions around retirement age and subsequent mortality using 30 years of Vital

<sup>8</sup> There are also important differences in what part of the population is affected by labor market vs. stock market fluctuations. Coile and Levine (2010) estimate that a 25 percent reduction in investment income (which might occur if there was a permanent 50 percent drop in the value of the stock market and an individual had half their portfolio invested in stocks) would reduce income by less than one percent for those in the bottom third of the income distribution, vs. by eight percent for those in the top third. The estimated effect of unemployment on income, in percentage terms, is largest for the bottom third.

<sup>9</sup> In theory, a worker could subsequently re-enter the labor force and suspend benefits (this in fact happens automatically once earnings exceed the earnings test limit); in practice, benefit claiming tends to be an absorbing state.

Statistics data. They find that experiencing a recession in one's late 50s leads to a reduction in longevity. They also establish that reduced employment, insurance coverage, and health care access are plausible mechanisms for this finding.

## Conclusion

Market fluctuations affect retirement, but the story is nuanced – weaker long-term stock returns lead more-skilled workers to delay retirement, while higher unemployment rates lead the less-skilled to retire earlier. Coile and Levine (2011a) estimate that if the unusual stock and labor market conditions experienced during the recent crisis were to gradually return to normal over a five-year period, there would be a net increase in retirements of about 120,000, or 1.2 percent relative to the estimated ten million workers retiring during this period. In fact, the stock market has rebounded more quickly and the labor market more slowly, so the actual net increase in retirements is likely larger than this estimate suggests. Moreover, it is less-skilled workers who bear the brunt of the labor market effects of the crisis, and research suggests that there are negative long-term effects of late-career unemployment on both income and health. While the recent crisis focused public attention on retirement security in an age of DC pension plans, it seems clear that the difficulties facing individuals who approach retirement at a time when the labor market is weak are real and merit greater public attention.

## References

- Chan, S. and A. Huff Stevens (1999), "Employment and Retirement Following a Late-Career Job Loss", *American Economic Review* 89 (2), 211–6.
- Chan, S. and A. Huff Stevens (2001), "Job Loss and Employment Patterns of Older Workers", *Journal of Labor Economics* 19 (2), 484–521.
- Coile, C. C., P. B. Levine and R. McKnight (2014), "Recessions, Older Workers, and Longevity: How Long Are Recessions Good for Your Health?", *American Economic Journal: Economic Policy* 6 (3), 92–119.
- Coile, C. C. and P. B. Levine (2011a), "The Market Crash and Mass Layoffs: How the Current Economic Crisis May Affect Retirement," *The B.E. Press Journal of Economic Analysis and Policy* 11 (1, Contributions), article 22.
- Coile, C. C. and P. B. Levine (2011b), "Recessions, Retirement, and Social Security," *American Economic Review: Papers & Proceedings* 101 (3), 23–8.
- Coile, C. C. and P. B. Levine (2010), *Reconsidering Retirement: How Losses and Layoffs Affect Older Workers*, Brookings Institution Press, Washington D.C..
- Coile, C. C. and P. B. Levine (2007), "Labor Market Shocks and Retirement: Do Government Programs Matter?" *Journal of Public Economics* 91 (10), 1902–19.

Coile, C. C. and P. B. Levine (2006), "Bulls, Bears, and Retirement Behavior," *Industrial and Labor Relations Review* 59 (3), 408–29.

Coronado, J. and M. Perozek (2003), "Wealth Effects and the Consumption of Leisure: Retirement Decisions During the Stock Market Boom of the 1990s," *Board of Governors of the Federal Reserve System Finance and Economics Discussion Series* no. 2003–20.

Current Population Survey (CPS) (2015), <http://www.ipums.org>

Disney, R., A. Radcliffe and S. Smith (2013), "Booms, Busts, and Retirement Timing," mimeo.

Farber, H. S. (2011), "Job Loss in the Great Recession: Historical Perspective from the Displaced Worker Survey, 1984-2010," *IZA Discussion Paper* no. 5696.

Federal Reserve Bank of St. Louis (2015).  
<http://research.stlouisfed.org/datatools.html>.

Goda, G. S., J. B. Shoven and S. N. Slavov (2010), "Does Stock Market Performance Influence Retirement Expectations?" *National Bureau of Economic Research Working Paper* no. 16211.

Goda, G. S., J. B. Shoven and S. N. Slavov (2011), "What Explains Changes in Retirement Plans during the Great Recession?" *American Economic Review: Papers & Proceedings* 101 (3), 29–34.

Goss, S. C. (2009), *Applications for Social Security Retirement Worker Benefits in Fiscal Year 2009*, Social Security Administration, Office of the Chief Actuary, Washington.

Hallberg, D. (2011), "Economic Fluctuations and Retirement of Older Employees," *Labour* 25 (3), 287–307.

Health and Retirement Study (HRS) (2015),  
<http://hrsonline.isr.umich.edu/>

Hurd, M. D., M. Reti and S. Rohwedder (2009), "The Effect of Large Capital Gains or Losses on Retirement," in *Developments in the Economics of Aging*, David A. Wise, ed., University of Chicago Press, Chicago.

Lahey, J. N. (2008), "Age, Women, and Hiring: An Experimental Study," *Journal of Human Resources* 43 (1), 30–56.

Munnell, A. H., M. Soto, R. K. Triest and N. A. Zhivan (2008), "How Much Do State Economic and Other Characteristics Affect Labor Force Participation of Older Workers?" *Boston College Center for Retirement Research Working Paper* no. 2008-12.

Neumark, D. (2003), "Age Discrimination Legislation in the United States," *Contemporary Economic Policy* 21 (3), 297–317.

Poterba, J., S. Venti and D. A. Wise (2007), "The Changing Landscape of Pensions in the United States," *National Bureau of Economic Research Working Paper* no. 13881.

Sevak, P. (2001), "Wealth Shocks and Retirement Timing: Evidence from the Nineties," *Michigan Retirement Research Center Working Paper* no. WP00D1.

Trumbull, M. (2009), "Economic Crisis Scrambles Retirement Math", *The Christian Science Monitor*, 4 March.  
<http://www.csmonitor.com/Business/2009/0304/economic-crisis-scrambles-retirement-math>

Trejos, N. (2008), "Will You Retire? New Economic Realities Keep More Americans in the Workforce Longer", *The Washington Post*, 15 October.  
<http://www.washingtonpost.com/wp-dyn/content/article/2008/10/13/AR2008101302398.html>

Von Wachter, T., J. Song and J. Manchester (2007), "Long-Term Earnings Losses due to Job Separation During the 1982 Recession: An Analysis Using Longitudinal Administrative Data from 1974 to 2004," *Columbia University Discussion Paper* no. 0708-16.

United States Bureau of Labor Statistics (2015), Database: Labor Force Statistics from the Current Population Survey (Series LNS14000000).  
<http://data.bls.gov/timeseries/LNS14000000>.



## OLD-AGE PROVISION IN GERMANY: THE CRISIS IMPEDES A SHIFT TOWARDS HIGHER PRE-FUNDING

MARTIN WERDING<sup>1</sup>

Following the deep recession that started in 2008, the German real economy has recovered rather quickly, implying that the crisis had next to no lasting effects for the unfunded German public pension scheme. However, continuing turbulence in the financial sector is impeding a re-orientation of the overall system of old-age provision that is urgently needed as a response to large-scale demographic ageing. In a nutshell, these are the consequences of the crisis for old-age provision in Germany. The situation is thus less comfortable than it may seem at first sight.

### Background: recent pension policy

Traditionally, public pensions were the dominant source of retirement income in Germany. In fact, up until the 1990s the Statutory Pension Scheme, a prototypical Bismarckian “social insurance” scheme (Pestieau 2006, Ch. 5; Werding 2007, 97–100), was meant to secure earlier living standards at old age for those with a full life-time work record. (Additional) private provision was mainly considered an issue for high earners and for the self-employed.<sup>2</sup> Occupational pensions often topped up the public pension entitlements of employees with high earnings and other privileged sub-groups of “core” employees.

Around the turn of the millennium, a major shift was initiated within this traditional three-pillar system.

<sup>1</sup> Ruhr-Universität Bochum, CESifo Research Network, ifo Research Professor (affiliated with the ifo Center for Labour Market Research and Family Economics).

<sup>2</sup> High earnings are not fully covered in the public scheme due to an upper limit on covered wages. The self-employed are generally not covered, with special rules applying to craftsmen running small businesses and special schemes existing for many professions where self-employment is widespread.

After years of heated debates, all major political parties finally agreed that this had basically become inevitable, due to a process of demographic ageing which started later than, for example, in the United States, but will ultimately be one of the most pronounced processes in the developed world, comparable only to expected trends in Japan or Italy. For the public pension scheme, this led to a series of reforms enacted in 2001, 2004 and 2007 by which the level of benefits is now inversely linked to the “system dependency ratio”,<sup>3</sup> while the statutory age limit for claiming full benefits is currently being increased from 65 to 67 years.<sup>4</sup> The resulting reduction in benefit levels, which will take place over the next two to three decades (Werding 2014), clearly calls for a greater emphasis on additional provisions in the second or third pillar. A new programme for subsidizing private old-age provision and a few amendments to the legal rules for occupational pensions were also introduced between 2000 and 2007 as a result.

### Public pensions: largely unaffected by the crisis

When the crisis spread in 2008 and quickly became the “Great Recession”, Germany was hit by a severe downturn in aggregate demand and production to a greater extent than most other developed economies. From 2008 to 2009, real GDP fell by no less than 5.6 percent (United States: 2.8 percent; Japan: 5.5 percent; United Kingdom: 4.3 percent; France: 2.9 percent (OECD 2015)), creating an enormous risk to employment, while wage growth practically ground to a halt.

The German Statutory Pension Scheme is purely financed on a pay-as-you-go basis, holding only minor reserves that can safeguard the system against business-cycle fluctuations of regular strength and duration. In the short run, pension finances are thus directly dependent on labour market performance – while they also

<sup>3</sup> “System dependency” measures the number of pensioners (weighted by amounts of individual entitlements) divided by the number of individuals in covered employment. The relevant mechanism, called “sustainability factor”, has a direct, negative effect for the assessment of benefits at award and for up-ratings of benefits after award, and hence for the overall level of benefits provided by the scheme.

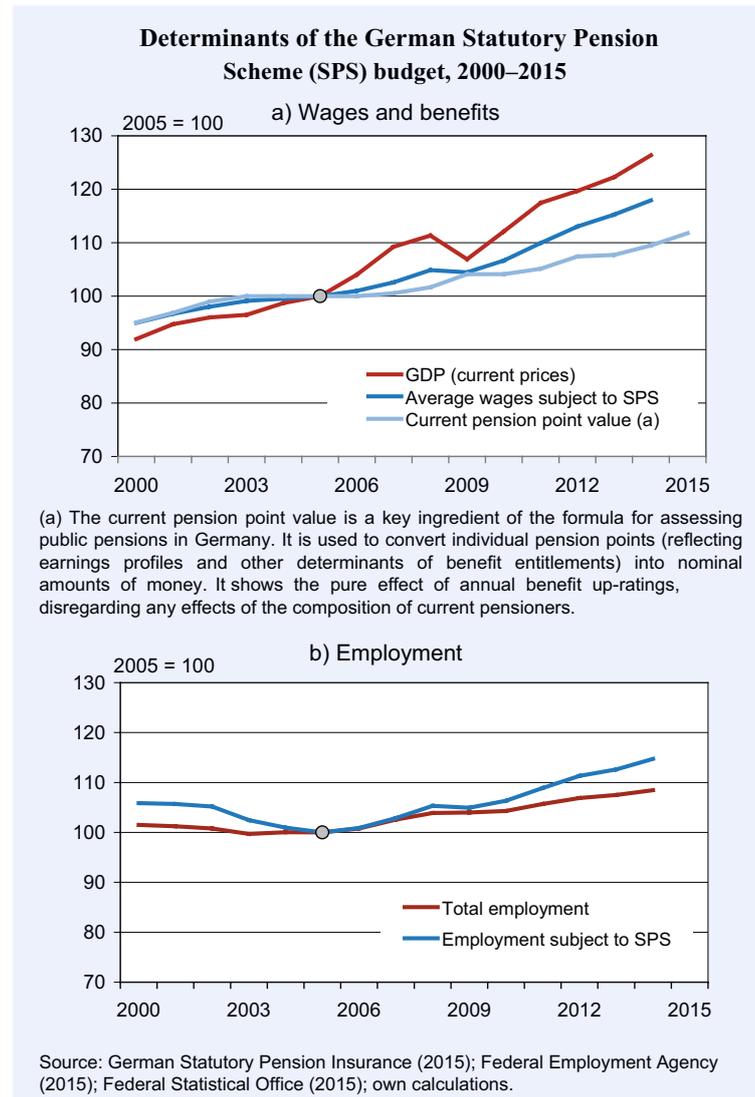
<sup>4</sup> The increase started in 2012, for females and males alike, and is scheduled to last until 2029. If the actual retirement age goes up as well, this will slow down projected increases in system dependency and, therefore, moderate the expected decline in benefit levels.

depend heavily on demographic trends in the long run. Given the precise rules for operating the system and adjusting important parameters, the crisis could have triggered the following effects. On the one hand, lower employment and lower (growth of) wages reduce the tax base from which current pensions are financed, so that contribution rates have to be increased (once existing reserves are exhausted). On the other hand, lower wage growth and higher contribution rates reduce future pension benefits (due to a net-wage indexation component of annual benefit up-ratings), which takes away some of the pressure on pension finances; higher system dependency resulting from lower employment works in the same direction.

Further peculiarities of the German pension law that could be taken into account here relate to the fact that the system receives a substantial subsidy from the federal budget and to an amendment of the law governing benefit up-ratings which was made during the initial stage of the crisis. The subsidy is adjusted annually, partly in line with wages and partly in line with contribution rates, creating mixed effects of the same type as before. The *ad-hoc* amendment made sure that if the combined impact of all relevant factors might call for reductions in pension benefits, the latter would be held constant on nominal terms instead, with compensations through lower benefit up-ratings in subsequent years. The new rule was applied in 2010; *ex ante*, it was unclear whether the promise of compensations would be kept later on. But it turned out that this was actually the case and that the resulting increase in the benefit level was perfectly neutralised.

More generally speaking, whether all the effects described here turn out to be transitory or permanent, especially in the sense that the benefit level is permanently reduced, crucially depends on whether employment eventually recovers to its pre-crisis level and, more

Figure 1



importantly, whether wages ever return to their earlier growth path, following a recovery period with accelerated wage growth. Information that appears suited to answer this question is illustrated in Figure 1. A genuine counterfactual in which all consequences of the crisis are absent is, of course, missing. However, the data support the impression that all effects that directly matter for the pension budget were surprisingly small and basically only temporary in their nature.

To many observers, the performance of the German economy from 2009 onwards was truly astonishing. While the German labour market was generally considered to be particularly rigid at that time, the crisis revealed that multiple channels for “internal” flexibility of adjustments in labour utilisation had been developed in German firms during the very difficult times they had

gone through previously. These channels included flexible work-time arrangements (with enormous amounts of overtime accumulated in the years preceding the crisis), the recruitment of temporary workers (and earlier reluctance of regular hiring), plus a widely-accepted policy of wage moderation in collective bargaining and firm-level wage agreements. Together with the extensive use of instruments of labour market policy supporting a strategy of labour hoarding (“short-time work”) and some amount of good luck in a joint bet on a quick recovery of aggregate demand, this explains what was quickly termed the “German miracle” (Möller 2010; Burda and Hunt 2011).

Historically unique or accidental aspects aside, the German example illustrates potential strengths of a pay-as-you-go scheme in situations where labour markets and the real economy are functioning acceptably well and are able to absorb external shocks more easily than a financial sector in which major players, including supervisors and monetary authorities, have become nervous about possible systemic risks. The bad news for Germany is that success in this area is of limited value because unfunded pensions alone will never be sufficient to provide retirement income in the years ahead, i.e., when demographic ageing will become really pressing.

Moreover, what looks like a success can be misleading, or may even prove an illusion. While long-term prospects for financing public pensions continue to be difficult (Werdning 2014), the current, strong labour market performance has filled the reserves of the system up to their legal limit. Instead of reducing contribution rates, at least temporarily, as the law would demand, or simply accumulating higher reserves for the time period ahead, German politicians recently introduced additional types of benefit entitlements, which will still be effective when system dependency is likely to increase substantially, that is, between 2020 and 2035. Moderate increases in disability benefits, which form part of this package, can be justified as a protective measure for a group that is particularly vulnerable during the process of on-going adjustments. However, this claim does not apply to other, more expensive elements of the reform, such as privileged access to early retirement for workers with very long work records or increases in child-related benefit entitlements.<sup>5</sup> The fruits of recent positive developments

<sup>5</sup> To be sure, introducing or expanding child-related benefits in pay-as-you-go schemes is definitely defensible as a means of restoring incentives for bringing up children and investing in their human capital – which is basically a way of “pre-funding” for old age in these schemes (Cigno and Werdning 2007, Chs. 7–8). Here, however, increases were targeted at mothers of children born before 1992. Thus, there can be no incentive effects.

in the German public pension scheme have thus been spent on amendments that do not address actual challenges and partly contradict earlier reform trends.

### Private provision: limits to voluntary diffusion

Reforms that were enacted to improve the long-term sustainability of the Statutory Pension Scheme are very likely to reduce the level of benefits deriving from the first pillar to below adequate levels. This reflects a fundamental trade-off in dealing with the consequences of ageing in pay-as-you-go pension schemes. Therefore, when taking their first steps to scaling back public pensions over time, German lawmakers also tried to strengthen forms of supplementary funded provision, as this constitutes the only alternative.

The original plan was to establish a mandatory system of private provision for all individuals covered in the Statutory Pension Scheme, scaled in such a way that private pensions would make up for the widening gap *vis-à-vis* the earlier benefit level of the public scheme.<sup>6</sup> However, fearing public resistance politicians soon dropped the idea of using coercion and changed their strategy. The “Riester pensions” that were finally enacted – named after the responsible minister of that time – were voluntary, but publicly subsidised, directly as well as through special tax incentives, in order to induce people to choose appropriate amounts of supplementary provision.

“Certified” products falling under this programme have to meet a number of conditions (mainly, a guarantee of nominal amounts of contributions plus subsidies, no withdrawals before entering retirement, annuitisation of accumulated wealth). Following a short phase-in, expected contributions are now four percent of individual earnings covered in the public pension scheme. Subsidies are fixed, with a strong child-related component, so that subsidisation is much more pronounced for participants with low earnings or with several children. All active members of the Statutory Pension Scheme, plus their spouses, are eligible for receiving subsidies; meanwhile, the same applies to civil servants and their spouses.

<sup>6</sup> The target level was a combined net-replacement rate of 70 percent, as the Statutory Pension Scheme had openly pursued a policy of keeping benefits at this level from 1992 to 1999. Whether this is indeed enough to maintain earlier living standards is an open question (Dudel, Ott and Werdning 2013), but the target made sense in the context of this reform.

Over time, a number of changes have been made to make the programme more transparent, less costly and, ultimately, more attractive. Nevertheless, participation rose strongly only between 2004 and 2008, that is, with some delay and until the financial crisis arrived. Different statistics tell different stories about how many individuals in the target group have been reached (Figure 2). Figures regularly published by the Federal Ministry of Labour and Social Affairs basically reflect the accumulated number of new Riester contracts. Alternatively,

the Federal Statistical Office evaluates tax files that become available only with a massive delay to account for contracts that are actually used and subsidised. The difference between figures from both sources may thus either refer to individuals who made contracts but failed to claim subsidies, or to contracts that were temporarily suspended or are entirely out of use.

Another difficulty in assessing the success of the programme is that the overall size of the target group cannot easily be determined.<sup>7</sup> Existing estimates put it in the range of 35 and 40 million people. Under the current framework actual take-up is thus between 25 and 40 percent, roughly ten years after the programme was implemented. Furthermore, the expansion has clearly slowed down towards the end of the observation periods, suggesting that it may eventually stop far away from the original goal of reaching full coverage. Another intriguing issue, namely whether subsidised contributions add to total provisions and aggregate savings, or whether they just substitute for other, less privileged forms of old-age provision or capital accumulation, has not been fully researched to date.

A number of studies have investigated the characteristics of those who are covered by Riester pensions (e.g., Bucher-Koenen 2011; Pfarr and Schneider 2013). They find, by and large, that participants have more children and a higher income than the average and tend to be financially literate. The first aspect is fully in line with current rules, while the other two could probably be addressed by further policy changes. Although their subsi-

<sup>7</sup> The reason is that major sub-groups – those who are eligible thanks to their employment status and those who are eligible through a marriage – may overlap, while relevant information cannot be recovered from existing employment statistics.

Figure 2



disation rates are rather high, many individuals with low earnings feel that they cannot save for old age simply because they are lacking resources. This perception may be true in some cases, and not in others. Participation among these individuals could certainly be increased by returning to a mandatory arrangement, while a line may need to be defined between those who actually can afford to make old-age provisions and others who would be exempted, most likely being in need of income support at old-age.<sup>8</sup> Pension programmes aimed at the participation of a majority of the population should not require special financial expertise. To improve on this, one could make use of insights from “behavioural finance” and establish a mechanism for automatic enrolment, with an opt-out clause for those who are absolutely sure they need no additional cover.

However, a major obstacle to political moves in such directions are created by the recent, and currently on-going, financial crisis. Although actual losses of retirement savings appear to have been low (Börsch-Supan, Gasche and Ziegelmeyer 2010; Bucher-Koenen and Ziegelmeyer 2014), the crisis has undermined public trust in institutions and instruments that have never been very popular in Germany. In addition, low interest rates that are basically administered through unconventional monetary policies and may continue to apply for a while, at least in Europe, are far from helpful in this situation.<sup>9</sup>

<sup>8</sup> In Germany, special benefits to protect against old-age poverty are offered outside the public pension scheme. A design feature that might be worth considering would be a reduction in transfer withdrawal rates for those with low benefit entitlements from other sources – just like with earned income in welfare schemes for individuals of working age – in order to preserve incentives to engage in provisions of all kinds for this group.

<sup>9</sup> This scenario also entails considerable risk for the highly regulated business of an older type of private old-age provision through life insurance contracts, where providers have to keep promises that are not excessive, but are unrealistic under current conditions.

Most importantly, they obscure a fundamental advantage of funded old-age provision with respect to its long-run performance, based on higher annual yields and the effects of compound interest. Clearly, pointing to low yields as an excuse to refrain entirely from making old-age provisions and ending up with highly inadequate retirement income is not a good idea, but this is currently hard to explain. Heading for a broad-based coverage with supplementary funded pensions is therefore difficult in this environment, although it is definitely necessary.

### Occupational pensions: a better vehicle?

While private old-age provision does not have a long tradition among average workers in Germany, occupational pensions have. It was already mentioned that, traditionally, they were used to top up public pensions of employees with high earnings (exceeding the upper limit of the Statutory Pension Scheme) and to stabilise “core” employment against fluctuations. Participation is thus biased against employment in small and medium-sized enterprises and against low-wage employees. Over the years, employers switched from DB to DC-type arrangements to avoid risks, and some closed old plans and did not introduce new ones to cut costs. Nevertheless, occupational pensions always remained an important instrument of supplementary old-age provision for a considerable share of workers.

In the period of reforms after the year 2000, two new channels were added to the relevant legal framework, one involving pure deferred compensation – as a right of employees, without any co-sponsoring from employers. Attempts were also made to integrate Riester pensions and employer-based plans, without much success in terms of take-up. Otherwise, employer-based provisions were outside the focus of recent pension policy. Longer time series of comparable figures are lacking. Reliable data up to the present only start in 2001, when occupational pensions covered 48.7 percent of all employees (TNS Infratest Sozialforschung 2015, 12). It can be assumed that this was a rather low figure, resulting from a long-term decline since the 1980s. Until 2009, coverage had increased again to 59.5 percent, due to the new instruments, but has remained at this level since then.

A question that German pension policy should seriously address is whether this relatively high level could not provide a good basis for further expansion towards a next-to-universal supplementary coverage that unfolds

as the ageing process continues, while public pensions must be scaled back accordingly. Two aspects deserve special interest in this context. One aspect is that German lawmakers to date have not extensively used options for influencing decisions taken by employers in a way that is politically desirable – e.g., by introducing auto-enrolment and an opt-out clause in this context (like in the UK) or by linking favourable tax treatment to target rates for participation among all employees or among specific sub-groups, such as low-earners (as with non-discrimination rules applied in the US).

The second aspect is that collective, industry-wide agreements could also provide a suitable vehicle for making considerable progress in terms of coverage. Arrangements of this kind could help to reduce costs, as they may produce solutions that are not one-size-fits-all, but sufficiently standardised to meet the typical needs of workers from the same branch of industry. More importantly, the key role of representatives of workers and their employers in negotiating plans and promoting participation could solve the problem of a lack of trust in financial intermediaries and financial markets, which is currently hindering the further expansion of supplementary, funded old-age provision in Germany.

### References

- Börsch-Supan, A., M. Gasche and M. Ziegelmeyer (2010), “Auswirkungen der Finanzkrise auf die private Altersvorsorge”, *Perspektiven der Wirtschaftspolitik* 11(4), 383–406.
- Bucher-Koenen, T. (2011), “Financial Literacy, Riester Pensions, and Other Private Old Age Provision in Germany”, *MEA Discussion Paper* No. 250-2011.
- Bucher-Koenen, T. and M. Ziegelmeyer (2014), “Once Burned, Twice Shy? Financial Literacy and Wealth Losses during the Financial Crisis”, *Review of Finance* 18(6), 2215–46.
- Burda, M.C. and J. Hunt (2011), “What explains the German Labor Market Miracle in the Great Recession?”, *Brookings Papers on Economic Activity*, Spring 2011, 273–319.
- Cigno, A. and M. Werding (2007), *Children and Pensions*, MIT-Press, Cambridge, MA, London.
- Dudel, C., N. Ott and M. Werding (2013), “Maintaining One’s Living Standard at Old Age: What Does That Mean? Evidence Using Panel Data From Germany”, *CESifo Working Paper* No. 4223.
- Federal Employment Agency (Bundesagentur für Arbeit) (2015), *Arbeitsmarkt in Zahlen: Beschäftigungsstatistik*, <https://statistik.arbeitsagentur.de/Statistikdaten/Detail/Aktuell/iiiia6/beschaeftigung-sozbe-zr-svb-alter/zr-svb-alter-d-0.xls.xls> (accessed 26 April 2015).
- Federal Ministry of Labour and Social Affairs (Bundesministerium für Arbeit und Soziales) (2015), *Statistik zur privaten Altersvorsorge*, <http://www.bmas.de/DE/Themen/Rente/Zusaetzliche-Altersvorsorge/statistik-zusaetzliche-altersvorsorge.html> (accessed 26 April 2015).
- Federal Statistical Office (Statistisches Bundesamt) (2014), *Staatliche Förderung der Riester-Rente*, various years, Statistisches Bundesamt, Wiesbaden.

Federal Statistical Office (Statistisches Bundesamt) (2015), *Volkswirtschaftliche Gesamtrechnung: Inlandsproduktberechnung – Lange Reihen 2014*, Fachserie 18, Reihe 1.5, Statistisches Bundesamt, Wiesbaden.

German Statutory Pension Insurance (Deutsche Rentenversicherung) (2015), Kenngrößen und Bemessungswerte: Zeitreihen, <http://forschung.deutsche-rentenversicherung.de/ForschPortalWeb/> (accessed 26 April 2015).

Möller, J. (2010), “The German Labor Market Response in the World Recession –De-Mystifying a Miracle”, *Zeitschrift für Arbeitsmarktforschung*, 42(4), 325–36.

OECD (2015), Real GDP (doi: 10.1787/1f84150b-en), <https://data.oecd.org/gdp/real-gdp-forecast.htm#indicator-chart> (accessed on 27 April 2015).

Pestieau, P. (2006), *The Welfare State in the European Union*, Oxford University Press, Oxford, New York.

Pfarr, C. and U. Schneider (2013), “Choosing Between Subsidized or Unsubsidized Private Pension Schemes: Evidence From German Panel Data”, *Journal of Pension Economics and Finance* 12(1), 62–91.

TNS Infratest Sozialforschung (2015), *Trägerbefragung zur betrieblichen Altersversorgung (BAV 2013)*, Forschungsbericht No. 449/1, Bundesministerium für Arbeit und Soziales, Berlin.

Werding, M. (2007), “Social Insurance: How to Pay for Pensions and Health Care?”, in I. Hamm, H. Seitz and M. Werding, eds., *Demographic Change in Germany: The Economic and Fiscal Consequences*, Springer, Berlin, Heidelberg, New York, 89–128.

Werding, M. (2014), “Demographischer Wandel und öffentliche Finanzen”, *SVR-Arbeitspapier* No. 1/2014.

## THE DUTCH PENSION SYSTEM AND THE FINANCIAL CRISIS

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SIERT VOS<sup>4</sup>

### Introduction

Around the world the sustainability of pension arrangements is under increasing pressure from population ageing. The recent economic and financial crisis, which has caused dramatic deteriorations in public deficits and public debt positions, has given an impulse to further reforms aimed at improving the sustainability of pension arrangements.

In this paper we focus on the consequences of the crisis for the Dutch funded occupational pensions, the so-called second pillar. The Dutch pension system differs rather substantially from many other systems in that a substantial part of total pension provision comes from occupational pension funds operating in the private sector. The significant pension savings that have accumulated in these funds in recent decades will help to overcome the burden that population ageing poses for non-funded pension systems. However, they also make the pension system vulnerable to the risks of a financial crisis, as recent experience has shown.

The following section starts with a brief overview of the Dutch pension system and is followed by a chronological description of the events affecting the system during the crisis. Then the reforms of the prudential framework and pension contracts are discussed, while the subsequent section discusses one of the most contentious issues in the debate: the choice of the appropriate rate to discount future pension benefits. We then discuss

the macroeconomic effects of the impact of the crisis on the Dutch funded pillar. The subsequent section draws some lessons from the crisis; and the last section offers a few conclusions.

### Overview of the Dutch pension system

The Dutch pension system consists of three pillars: a state sponsored pay-as-you-go (PAYG) first pillar, funded occupational pension provision in the second pillar and funded individual pension savings in the third pillar.

The state sponsored first pillar pension, called the “Algemene Ouderdomswet” (AOW), was instituted in 1957. Through the AOW, the Dutch government provides all inhabitants older than the legal pensionable age with a basic pension income. The benefit is flat, hence independent of an individual’s wage history. Everybody living or working in the Netherlands automatically accumulates entitlements to the AOW pension at a rate of two percent per year (Rijksoverheid 2015). After 50 years of living in the Netherlands, residents are entitled to the full AOW pension. Since the AOW provides a basic pension income, the amount of AOW pension income is related to the legal Dutch minimum wage. Married or co-habiting persons receive 50 percent of the minimum wage, while single persons receive 70 percent of the minimum wage. Since the AOW is a PAYG system, current benefit payments to pensioners are mainly covered by current contributions made by the working population.<sup>5</sup>

The second pillar, the occupational pension, is organised at the level of the employer and is part of the terms of employment agreed upon by the social partners (representatives of employer and employee organisations). Over 90 percent of employees in the Netherlands participate in an occupational pension scheme (CBS 2012). Occupational pensions are funded collective arrangements that are run by a separate institution, either a pension fund – in EU

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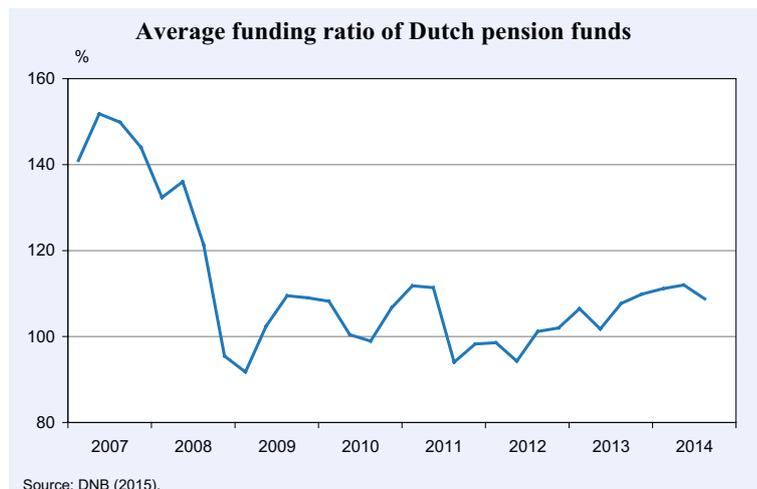
<sup>2</sup> MN (Dutch pension and insurance administration and asset management company) and AG (Royal Actuarial Association).

<sup>3</sup> University of Amsterdam.

<sup>4</sup> University of Amsterdam and MN.

<sup>5</sup> However, since the contributions by the working population are capped, parts of the benefits are paid out of general tax revenues. Since everybody, including pensioners, pays taxes, a limited part of AOW pensions is paid by pensioners themselves. Due to the cap and the increasing size of the retired population, the fraction paid out of general tax revenues will continue to rise in the future.

Figure 1



terminology an “Institution for Occupational Retirement Provision” (IORP) – , an insurance company or a new type of pension provider termed a “Premium Pension Institution” (PPI). At the end of 2014 the total size of the second pillar was around 1,225 billion EUR, of which 1,060 billion EUR was accounted for by pension funds, 165 billion EUR by pension savings at insurance companies and 1.2 billion EUR by PPIs (DNB 2015). Pension savings are legally separated from the employer’s business: there is no pension provision on the books of the employer.

Traditionally, occupational pension arrangements in the Netherlands were of the Defined Benefit (DB) type. Specifically, the benefit is expressed in terms of the number of EUR that a participant receives annually until his/her death. Hence, participants build up nominal entitlements that are usually indexed to nominal wage and price developments over the past year, while there is no hard guarantee of the value of the pension benefits in real terms. Indeed, the purchasing power of the benefit is subject to various risks: inflation risk (as indexation of the entitlements tends to be conditional to the financial health of the pension fund and may differ from the realized inflation rate), productivity risk (there may be full or partial indexation to nominal wage developments) and various types of market risk (depending on the investment portfolio of the pension fund).

Pension funds exist for different collective groups: industry-wide pension funds (for example the civil servants pension fund ABP, the health care pension fund PFZW, or the metal workers’ pension funds PMT and PME), company pension funds (for example, the pension funds of Shell, ING and Unilever), and profession-

al pension funds (pension funds for the free professions, such as the general practitioners’ pension fund, the pension fund for medical specialists and the notary pension fund).

Third pillar pension provision is made on a voluntary, individual basis. This type of pension provision consists of life insurances, individual annuities or specifically labelled savings. Banks and insurance companies are the typical providers of third pillar pension products.<sup>6</sup>

The largest part of the third pillar consists of life insurance products provided by insurance companies.

For both second and third pillar pension savings, the tax regime is “EET”: the part of income that goes into pension savings is exempt from taxes and the returns generated by the pension savings are exempt from taxes, while the resulting pension benefit payments are taxed. Thus, all pension savings in the second and third pillar include a deferred tax claim by the Dutch government, which will be realized when the benefits are paid out. Given the total size of pension savings of over 1400 billion EUR (i.e. over 200 percent of GDP, which was 655 billion EUR in 2014 (CBS 2015)) of the second and third pillar together, this constitutes a very substantial tax claim on future pension income.

In the remainder of this paper, when discussing the second pillar, we will mainly discuss how pension funds were affected, as these constitute by far the largest part of the second pillar. Moreover, most of the changes induced or speeded up by the crisis occurred here.

### How pension funds fared during the economic and financial crisis

At the onset of the crisis in 2007, Dutch pension funds were financially healthy. Financial health is measured by the funding ratio, defined as the market value of the fund’s assets divided by the market value of the fund’s

<sup>6</sup> The third pillar is defined less clearly than pillars one and two. In this paper, we use the narrow definition of the third pillar as defined in the text. One could also use a broader definition by stating that all (pension) savings that are not pillar 1 or 2 are by definition pillar 3 savings. We do not pursue this point in further detail here.

liabilities. The market value of the assets can be derived directly from the market prices of the assets. The market value of liabilities is determined by calculating the present value of the cash flows of the future pension benefit payments associated with pension accrual up to now. Before 2007, the rate at which projected future benefits were discounted was fixed (usually at four percent). However, from 2007 onwards, the prudential rules were adjusted implying that benefits had to be discounted against the risk-free term structure of interest rates (derived from the interbank swap-curve). In June 2007, the average funding ratio was over 150 percent. That is, for every one EUR of pension liabilities, there were 1.50 EUR in assets available.

Figure 1 depicts the average funding ratio since the beginning of 2007. During the second half of 2007 when

the crisis was in its early stages, the financial markets lost some value, but this caused only a modest decline in the average funding ratio to around 145 percent. As 2008 progressed and financial markets plummeted in the aftermath of the demise of the American investment bank Bear Sterns and the run-up to the Lehman Brothers bankruptcy, funding ratios dropped further to around 120 percent by the end of quarter 3 of 2008. Risk-free interest rates were still around five percent for all maturities (see Figure 2), hence the fall in the average funding ratio had been driven entirely by losses on assets in the return portfolio. However, between October 2008 and February 2009, interest rates plummeted, possibly due to flight-to-safety effects, to levels below two percent for the 1-year maturity and to 3.3 percent on 30-year debt (also displayed in Figure 2). As a result, the average funding ratio experienced a

strong decline to 91 percent at the end of the first quarter of 2009. Over the remainder of 2009 and until the first half of 2011 interest rates remained roughly stable, leading to a recovery in funding ratios partly due to the strong performance of risky assets in the return portfolio (see Figure 3 for equity returns on several indices for an overview of equity performance during the crisis).

The euro-area debt crisis also started to become a severe burden. The third quarter of 2011 saw a further drop in interest rates, causing the funding ratio to go down sharply too. In 2012 the actuarial tables were revised, implying an increase in life expectancy that had to be factored into the calculation of the liabilities. As a result, funding ratios came under further pressure. In the second quarter of 2013, there was a further persistent drop in interest rates, while at the end of 2013 a number of pension funds had to cut benefits. In spite of the strong performance of major asset markets and corresponding high asset returns on pension funds, funding ratios remain low because of the steady fall in interest rates.

Figure 2

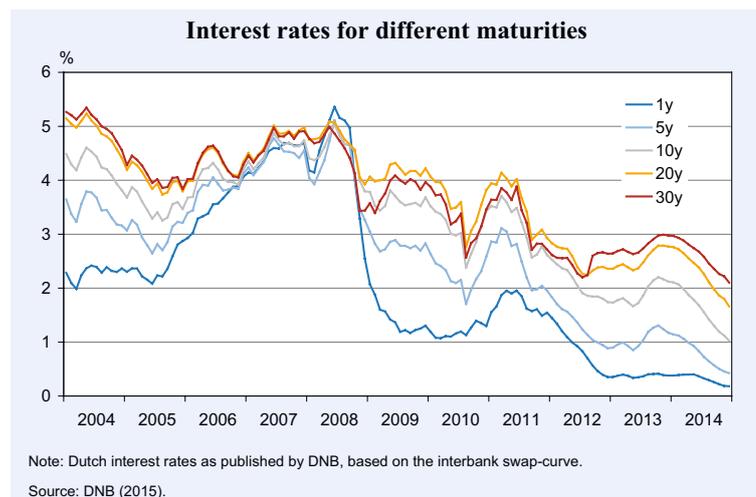
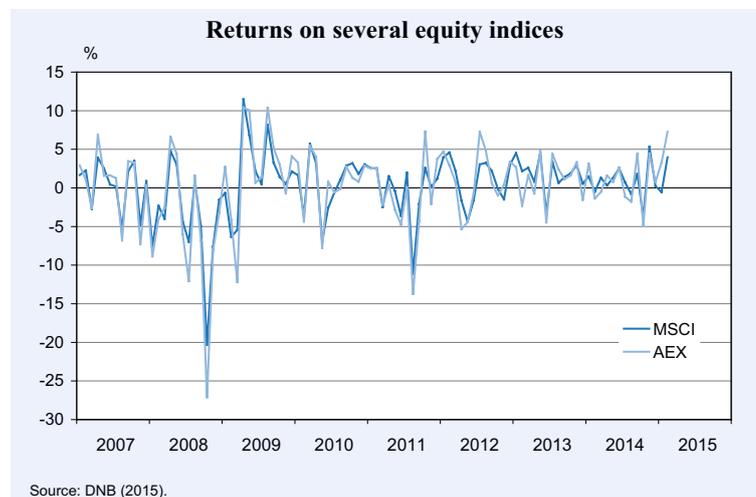


Figure 3



Unlike some banks and insurance companies, Dutch pension funds weathered the crisis without support from the government. However, the consequence of the crisis was that pension funds had to take measures to improve their financial health. These measures included reducing or abolishing indexation to price inflation – so that pension entitlements could no longer keep up with increases in the price level – raising pension contributions and eventually writing off entitlements (as a measure of last resort).

**Figure 4**

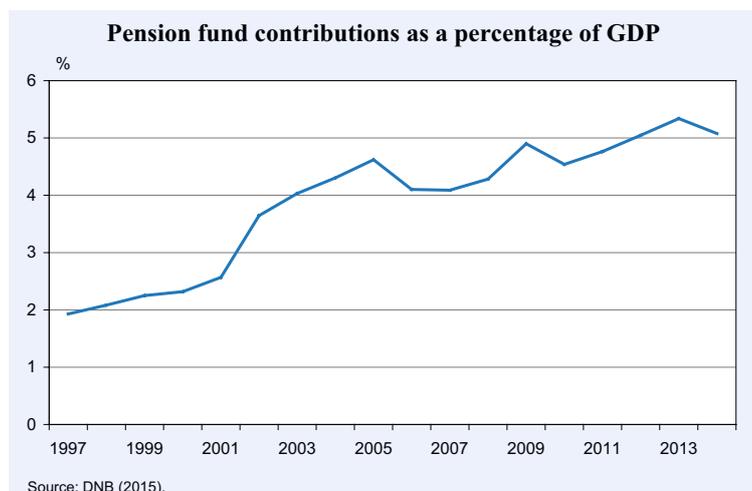


Figure 4 depicts total pension fund contributions as a percentage of Dutch GDP. These increased sharply after the previous crisis from 2.5 percent of GDP in 2001 to 4.5 percent of GDP in 2005. At the onset of the financial crisis in 2007, contributions as a percentage of GDP were slightly over four percent. In response to the crisis, they increased to over five percent of GDP in 2012 and close to 5.5 percent in 2013. These increases nevertheless did not prove great enough to restore the financial health of the pension funds. There are two reasons for this: The first is the increased costs of new pension accrual: the decrease in interest rates has increased the contributions necessary for a fixed accrual. Therefore, even if contributions are increasing strongly, only part of these contributions will contribute to an increase in the funding ratio. The second is the relatively small size of contribution payments as a share of the total amount of pension fund savings (in 2014 total pension fund contributions represented approximately three percent of total pension fund assets). Thus, the increase in the flow of pension contributions has not been high enough to fully restore the financial health of pension funds.

#### **Reforms of the prudential framework and pension contracts in the second pillar**

The new prudential framework (the so-called “financieel toetsingskader”, FTK), with its market-based valuation of liabilities, was introduced in January 2007. An evaluation was planned after three years. The evaluation was conducted by two commissions, the Commission-Frijns, which dealt with asset management and governance, and the Commission-Goudswaard, which dealt with the prudential framework itself. Both commission reports

(Frijns, Nijssen and Scholtens 2010 and Goudswaard, Beetsma, Nijman and Schnabel 2010), which were published in early 2010, made clear that the financial crisis had exposed some important structural problems in the design of the second pillar. In particular, the financial sustainability of the standard pension contract was called into question, and recommendations were made on how to deal with the consequences of ongoing population ageing. The commission reports were followed by a Pension Agreement between the social partners in June 2010. It contained high level agreements on raising both the first- and second-pillar statutory retirement age, on adjustments to second-pillar pension fund contracts and on supervision to make second-pillar pensions more stable. In June 2011, the social partners published a more detailed agreement which, in addition to increasing the statutory retirement age, envisaged a new type of pension contract, sometimes referred to as “Defined Ambition”, in which accrued pension benefits are not guaranteed, but automatically adjusted on the basis of investment returns and changes in life expectancy.

Subsequently, in May 2012, the Dutch Ministry of Social Affairs published a Headline Note (“Hoofdlijnennotitie”), outlining plans to introduce both a Defined Ambition contract (the “real contract”) and the supervisory framework to support this new contract in addition to the traditional DB plan (the “nominal contract”). Work on these plans continued until the end of 2013, when the Ministry announced, after a public consultation, that there would be only one type of pension contract and a single supervisory framework. The contract would be a middle-of-the-road solution between the nominal and real contracts that had been discussed until then. The associated legislation was finalized dur-

ing 2014 and was approved by the Parliament and Senate in December 2014. Hence, as of January 2015 the new pension framework has been in place.

The eventual framework introduces a number of changes compared with the previous framework. Firstly, maximum (tax-facilitated) pension accrual rates have been reduced, so that annual accrual is in line with the shift in the retirement age from 65 to 67. Secondly, supervision will be conducted on the basis of a “policy funding ratio”, a moving average of the funding ratios over the past 12 months. Thirdly, the pension contract is made more complete by explicitly laying down indexation policy and the conditions under which entitlements can be cut in a financial crisis plan. Fourthly, indexation policy becomes more conservative in that indexation can only be given when the funding ratio exceeds 110 percent. The chosen indexation policy also has to be sustainable for the future. Fifthly, restoration to the long-run target of the funding ratio (which is determined by the capital requirements) needs to take place within a maximum of ten years (versus 15 years previously), while entitlements may be cut immediately if restoration through other measures cannot be expected. Restoration plans have become rolling, in the sense that they are updated each year with a window of ten years. Finally, in cases where the policy funding ratio has been below the minimum required level of 105 percent for five years, and this is also the case for the actual funding ratio, immediate restoration measures need to be taken. The framework has been adjusted to induce greater stability in the policies to be followed by the pension fund, to avoid major shifts in the value of the pension contract between generations and to enhance the system’s sustainability with regard to rising longevity.

#### Discussions about and changes to the discount rate

During the reform process, discussions about the “correct” interest rate to be applied to discount the pension liabilities have been particularly fierce. The importance of the discount rate lies in the fact that it is an important determinant of the distribution of the value of the pension contract across participating cohorts. Given the value of the funds’ assets, an increase in the discount rate shifts value from younger to older cohorts and vice versa. The discussion has been fuelled by the extremely low interest rates at the moment.

The discount rate that funds can apply to calculating their liabilities has been changed several times. In

2007, there was the switch from a fixed discount rate to discounting based on the risk-free term structure in the market. In December 2011, the discount rate was changed to the moving average over the past three months of the market term structure of risk-free interest rates. In September 2012, the Ultimate Forward Rate (UFR) was introduced in the discount curve.<sup>7</sup> The implementation chosen fixes the 1-year forward interest rate at 60 years ahead at a certain long-term equilibrium level, the UFR (the chosen value of the UFR is currently 4.2 percent). The forward rates for the range of 20 to 60 years ahead are constructed as a weighted average of the market interest rate and the UFR with decreasing weight on the market interest rate as one gets closer to 60 years. From these adjusted forward rates, an adjusted spot curve of interest rates can be constructed, which is used for discounting liabilities. The introduction of the UFR has been beneficial in terms of the funding ratios, while using a three-month moving average of the term structure for discounting has increased funding ratios during some periods and decreased them during others, depending on the trend in interest rates in the last three months. Finally, in January 2015 the three-month averaging effect in the discount curve was abolished.

#### Macroeconomic effects

Pension fund supervision in the Netherlands is mainly aimed at the health of individual pension funds. If the financial situations of the individual funds are uncorrelated, then the macroeconomic effects of restoration policies imposed on pension funds are negligible. However, the crisis has taught us that the financial health of individual funds is highly correlated, while, moreover, it turns out to be highly correlated with the business cycle movements of the economy as a whole. After the previous economic downturn, the dot.com crisis in 2001–2002, some of these effects were already documented with special attention paid to the interaction between increasing the level of contributions and the business cycle (see, for instance, Van Ewijk 2005).

A large share of Dutch pension funds got into severe financial trouble at precisely the same time when the economy went into a severe downturn. The supervisor required individual funds to take measures aimed at restoring financial sustainability, such as further increasing contributions and/or decreasing indexation to

<sup>7</sup> The UFR is also used in Solvency II, the European supervisory framework for insurance companies. For more details, see EIOPA (2014).

price inflation. However, at the aggregate level, these measures had substantial effects on the disposable income of workers through higher contributions and on pensioners through reduced indexation and write offs of entitlements (see Beetsma and Romp 2009). The resulting demand side effects added to the already precarious situation of the Dutch economy. Admittedly, there is no easy solution to the dilemma facing the supervisory authorities. One potential way of limiting adverse macroeconomic effects is to allow funds a longer period to restore, or to require a greater restoration effort when the economy is in an upturn and less effort when it is in a downturn.

### Lessons learnt from the crisis

Policymakers have succeeded in implementing a number of much-needed reforms in the Dutch pension system. In particular, the fiscal framework and the financial supervisory framework were adjusted to handle the effects of further increases in life expectancy, while the latter was also redesigned to smooth the impact of the various possible shocks, and particularly financial shocks, on pension entitlements. Moreover, the governance of pension funds was strengthened by the increased involvement of independent experts in pension fund executive and supervisory boards.

However, the crisis has also shown how vulnerable pension funds are to developments in the financial markets, which are driven both by economic factors and by political responses to them. In turn, this has led experts to again ask the question of what is the right balance between funded and pay-as-you-go pensions. More attention has been paid (and should still be paid) to raising the awareness of pension fund participants that their pension is uncertain, but also that greater certainty about future benefits comes at the cost of lower expected benefits. Decreasing investment risk when funding ratios are low is a questionable policy response, because this also implies giving up upward potential. Much of the supervision is targeted at individual funds, which means that the macroeconomic effects of supervision have received only limited attention. Those macroeconomic effects are less important if the pension sector as a whole is small relative to the economy. However, this is not the case for the Netherlands. The restoration requirements should reflect the interests of all the parties involved. A longer restoration period improves the scope for intergenerational risk sharing and minimizes demand- and supply-side macroeconomic effects. Too

long restoration periods and high discount rates may reduce the young generations' willingness to participate, and may accordingly threaten the sustainability of the system.

### Concluding remarks

This article has discussed how the Dutch funded pension pillar was affected by the recent economic and financial crisis. Dutch pension funds managed to independently survive the crisis, but their financial position was severely affected, stimulating reforms aimed at dealing with the ongoing increase in life expectancy and with an adjustment in the way shocks are absorbed in the system. Finally, the crisis has exposed several aspects of pension fund supervision that could be improved.

### References

- Beetsma, R. and W.E. Romp (2009), „Herstelplannen, bestedingseffecten en continuïteit”, *Economisch Statistische Berichten* 94 (4558), 230–3.
- CBS (2012), *Witte vlek op pensioengebied 2010*, Centraal Bureau voor de Statistiek.
- CBS (2015), StatLine, Centraal Bureau voor de Statistiek, <http://www.cbs.nl/nl-NL/menu/home/default.htm> (accessed 28 April 2015).
- DNB (2015), Statistieken De Nederlandsche Bank, [www.statistics.dnb.nl](http://www.statistics.dnb.nl) (accessed 24 April 2015).
- EIOPA (2014), “Consultation Paper on a Technical Document Regarding the Risk Free Interest Rate Term Structure”, *EIOPA Consultation Paper* 14/042.
- Ewijk, C. van (2005), “Reform of Occupational Pensions in the Netherlands”, *De Economist* 153 (3), 331–47.
- Frijns, J., J. Nijssen and L. Scholtens (2010), *Pensioen: “Onzekere zekerheid”, Een analyse van het beleggingsbeleid en het risicobeheer van Nederlandse pensioenfondsen*, Rapport Commissie Beleggingsbeleid en Risicobeheer, Rijksoverheid.
- Goudswaard, K., R. Beetsma, Th. Nijman and P. Schnabel (2010), *Een sterke tweede pijler: naar een toekomstbestendig stelsel van aanvullende pensioenen*, Rapport Commissie Toekomstbestendigheid Aanvullende Pensioenen, Rijksoverheid.
- Rijksoverheid (2015), Algemene Ouderdomswet (AOW), [www.rijksoverheid.nl/onderwerpen/algemene-ouderdomswet-aow](http://www.rijksoverheid.nl/onderwerpen/algemene-ouderdomswet-aow) (accessed 24 April 2015).



## CHALLENGES FOR SPANISH PENSIONS IN THE EARLY 21<sup>ST</sup> CENTURY

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### Spain faces an intense ageing process

The Spanish pension system is currently undergoing a process of change and reform. At the moment it is a Pay-As-You-Go, contributory and defined benefit system, although with the 2013 reform, it is moving towards a defined contribution model. In the last century some changes in the key parameters of the system were introduced, but the most important reforms took place in 2011 and 2013. In 2011 two crucial elements were changed: the extension of the number of years taken into account to calculate the pension, and the increase in the retirement age. This second change was relevant for Spain because the pension age had not been amended since the year it was established in 1919. The importance of the reform of 2013 lies in the introduction of an automatic link between the initial pension and the evolution of life expectancy. This new element will turn the system into a defined contribution model. In addition, the 2013 reform introduces a new pension revaluation index. The purpose of these reforms is to adapt the system to an ageing population. Although all developed countries face this challenge, the process will be more severe in Spain than in other countries. In the next forty years there will be 8.7 million fewer people between 16 and 66 years old and, at the same time, there will be an increase of eight million people over 67 years of age (according to the population projections released by the Spanish National Statistics Institute).

There are three reasons why this ageing process will be more intense in Spain. The first is rising life expectancy,

both at birth and at age 65. At 85.5 years, Spanish women have the world's highest life expectancy at birth, second only to Japan. Moreover, Spain is the third country with the highest life expectancy at 65 of 22.8 years (Figure 1). This number is expected to continue rising as mortality rates among the elderly continue to decrease. The second reason is that the fertility rate in Spain is one of the lowest of all developed countries. In 2013 a woman of childbearing age had an average of 1.27 children compared to an average of 1.55 children in the European Union (28 countries, Figure 2). Although Spain's ageing population has already been noticed, the third reason is that it is lagging behind other industrialised countries.<sup>3</sup> This delay is due to the high immigration flows that Spain experienced in the first decade of this century. Spain received nearly four million foreigners

<sup>3</sup> See Conde-Ruiz and González (2010) for a more detailed international comparison.

Figure 1

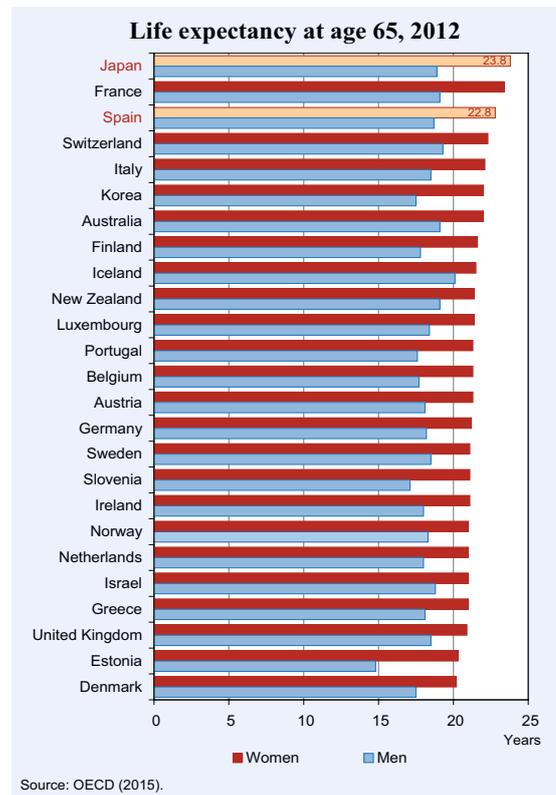


Figure 2



of an average age younger than that of the Spanish population during this period. And the most populous generation, the baby boomers born between 1957 and 1975, is going to reach retirement age later than in other developed countries.

These three reasons show that Spain’s ageing process will be even more severe than that of other countries in the next decade; and this will be reflected in a higher dependency ratio<sup>4</sup> in the future. The value of this variable will increase from 26.8 percent to about 75 percent in the next fifty years, compared to the European Union average of 50 percent in the year 2060 (Figure 3). In Spain, the dependency ratio is currently much lower than in other European countries, while its pension expenditure is slightly above ten percent of its GDP. However, since there is a positive relationship between the dependency ratio and pension expenditure and forecasts indicate that the dependency ratio will increase, pension expenditure will inevitably also go up. In order to alleviate this expected increase in pension expenditure two reforms were approved in Spain in 2011 and 2013.

**The 2011 reform: a good reform that did not go far enough**

From 2000 until the beginning of the economic crisis Spain attracted a large number of foreigners (600,000

<sup>4</sup> Dependency ratio is measured as the ratio of the population aged over 65 years among the working-age population aged 16-64 years.

new arrivals per year between 2000 and 2007 on average), which was largely due to the real-estate boom. This meant that the immigrant population increased fivefold within a very short space of time.<sup>5</sup> The significant increase in employment led to surpluses in the Social Security system, reaching a maximum of 1.4 percent of GDP in 2007. However, the economic crisis accelerated Spain’s entry into deficit that was expected by the middle of the next decade.

In 2011 the government approved changes to the pension system by modifying two fundamental parameters: the calculation period and the retirement age.<sup>6</sup> The law will be implemented gradually starting in 2013, so that by 2027 the following changes will be fully incorporated:

- The extension of pension calculation period: it will be based on the last twenty-five years as opposed to the last fifteen years, i.e. the contribution bases<sup>7</sup> of the twenty-five years prior to retirement will be taken into account in the benefit formula.
- The raising of the retirement age from 65 to 67 years: this represents the most significant change because the retirement age of 65 was established in the 1919. However, those workers with the equivalent or more than 38 years and 6 months of contributions may take retirement at age 65. At the same time, the early pension age was increased from 61 to 63 years for those who have worked for at least 33 years.<sup>8</sup>

According to our calculations,<sup>9</sup> the 2011 reform obtained a saving of almost one third of the expected increase in pension expenditure over the next forty years (equivalent to three percentage points of GDP).<sup>10</sup> This result is in line with the projections published by Spain’s Ministry of Economy and Finance, the Bank of Spain and other academic works.<sup>11</sup>

<sup>5</sup> See González, Conde-Ruiz and Boldrin (2009) for an analysis of the impact of the migration phenomenon on the Spanish pension system.

<sup>6</sup> The number of years of contributions required to receive full benefit increased from 35 to 37 years.

<sup>7</sup> The contribution base is the wage earned, but it is subject to the existence of a floor and a ceiling. In Spain a minimum of 15 years of contribution are required before individuals are entitled to a retirement pension. Eligible individuals receive an old age pension benefit equal to the product of a reference wage and a replacement rate. The reference wage is the weighted average of the contribution bases over the fifteen years prior to retirement until the reform in 2011.

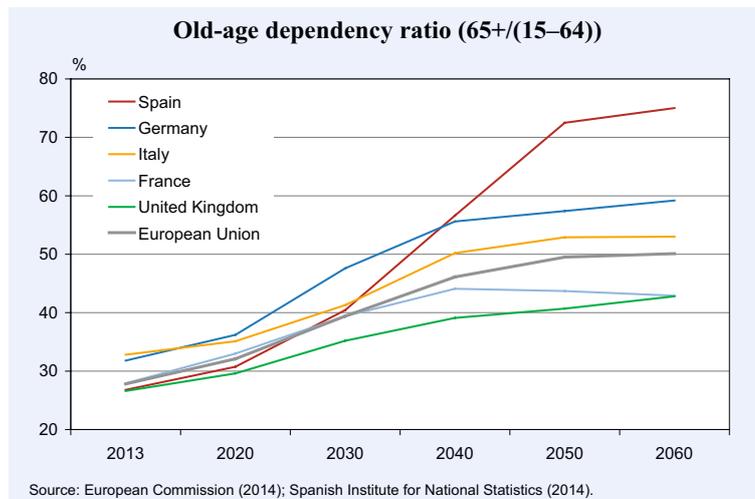
<sup>8</sup> With the exception of involuntary retirement due to extraordinary circumstances arising from the economic crisis.

<sup>9</sup> See González (2013) and Conde-Ruiz and González (2013) for the detailed methodology used to obtain these results.

<sup>10</sup> Without the reforms, pension expenditure would have grown from more than 10.1 percent of GDP in 2010 to 19 percent of GDP in 2050 (Conde-Ruiz and González 2013).

<sup>11</sup> MEH (2011), Banco de España (2011), de la Fuente and Doménech (2013), Díaz-Gimenez and Díaz-Saavedra (2011).

Figure 3



It is important to note the relevance of the 2011 reform because it introduced changes to the pension system that seemed difficult for society to accept. The increase in the years of contributions in the benefit formula reinforces the link between contributions and benefits. The increase of the retirement age is the most significant change because it was established in 1919 and always had seemed a difficult factor to change. However, it is worth noting that the adoption of this reform achieved great social consensus – it was agreed under the Social Dialogue, i.e. between the Government, Trade Unions and Employer's Organisations.

### 2013 reform: from a defined benefit to a defined contribution system

The 2011 reform was very relevant, but is only able to address a third of the future system's sustainability problem. Due to the ageing of the population, the structural deficit of the pension system will remain crucial in the coming decades. This prompted the introduction of the sustainability factor in the 2013 reform. The government created a committee of independent pension experts who were given the task of developing the so-called sustainability factor.<sup>12</sup> The experts proposed a reform that would allow the system to address the problem of longevity, as well as macroeconomic fiscal imbalances.<sup>13</sup> The changes proposed will change the pension system from a defined benefit system to a defined

<sup>12</sup> The 2011 pension reform proposed the adjustment of the relevant parameters of the pension system to reflect changes in life expectancy every five years, but it was not fully defined.

<sup>13</sup> See Conde-Ruiz (2014) for a fuller description of the experts' proposal.

contribution system. The 2013 reform also introduced a new pension indexation rule. In late 2013, the Spanish government approved this new sustainability factor, based on the experts' proposal.

### 2013 reform: the sustainability factor

The 2013 reform defined and established the so-called sustainability factor linking the initial pensions to the increase in life expectancy of 67-year-old retirees. It will be introduced as of 2019 and will be revised every five years. With its introduction,

Spain joined the group of countries (Finland, Denmark, France, Greece, Italy, Portugal, Poland and Latvia) with a defined benefit system that takes into account the evolution of life expectancy in its pension system. Other countries like Sweden, Hungary, Germany and Japan have included variables such as GDP and salary in addition to the shift in life expectancy.

This factor seeks to achieve a greater actuarial balance between pensions and contributions paid during working life. The main goal is to offer the same treatment to people with the same employment history who retire at the same age, but at different times. Because they belong to different generations, they have different life expectancies, so they will obtain a different pension amount over a different number of years. The sustainability factor would mean that a person who retires,<sup>14</sup> for example in 2025, who has the same contributory history as another person today, will receive an initial pension that is approximately three percent lower than his/her present-day counterpart. If the dependency ratio reached 46 percent in 2050<sup>15</sup> with full employment (employment rate of 73 percent), we calculate that the effects of the 2011 reform and the sustainability factor of the 2013 reform could lead to a pension expenditure of approximately 16 percent of GDP in 2050 (Table 1).<sup>16</sup> In other words, despite these two important reforms the effect of the ageing population is so severe that the system will still have a significant structural deficit.

<sup>14</sup> According to the life expectancy projections of Spain's Ministry of Employment and Social Security.

<sup>15</sup> This dependency ratio is calculated considering a more optimistic demographic scenario than the last projections released by the Spanish National Statistics Institute, developed in Conde-Ruiz and González (2013).

<sup>16</sup> See Conde-Ruiz (2014).

### 2013 reform: a new index for revaluing pensions

Since 1997 the growth of pensions in Spain was linked to the evolution of prices via the Consumer Price Index (CPI) (i.e. price indexation). This changed with the 2013 reform. As of 2014 the annual increase in contributory pensions is linked to a new index that takes into account the total budget constraint of the pension system, i.e. the balance between revenue and expenditure.<sup>17</sup> The law also set an upper and lower limit for growth in pensions; so that if there were a deficit in the system, pensions would only rise by 0.25 percent and if there were a surplus, pensions might increase in line with the CPI plus an extra 0.5 percent. The introduction of a minimum rate guarantees that pensions grow in nominal terms. However, even if pensions only increase 0.25 percent in nominal terms, projections show that the structural deficit will persist. Therefore, for as long as the inflation rate is higher than 0.25 percent, pensions will decrease in real terms.

The calculations show that for decades, revenue would be insufficient to cover pension expenditure and pensions would rise by only 0.25 percent in nominal terms. This means that pensions will essentially remain frozen for a very long period of time. In other words, this system would provide a pension that, after 20 years from the date of retirement, could buy between 30 and 40 percent fewer goods or services than in the year of retirement.<sup>18</sup> So the burden of the adjustment of the system would fall on pensioners, who would have to manage their consumption with a pension decreasing in real terms. Everybody understands that the current situation of the Spanish pension system is politically unsustainable.

<sup>17</sup> To avoid the effects of an economic cycle, the values of an 11-year period are taken into account in the formula, incorporating past, present and future evolution of these variables in terms of both revenue and expenditure.

<sup>18</sup> Sánchez-Martín (2014) and Díaz-Giménez and Díaz-Saavedra (2014) have found similar results.

### Concluding remarks

The latest two pension reforms approved in Spain have led to very significant changes to its pension system. The 2011 reform involved the modification of two of the most important parameters of the system; extending the calculation period and increasing the retirement age, elements that had previously seemed impossible to change. These changes will reduce pension expenditure, but do not solve the difficulties faced by the Spanish pension system due to the ageing of its population. The 2013 reform involved major changes introducing two automatic instruments: the link of the initial pension to the shift in life expectancy and the revaluation of pensions based on the evolution of revenue and the expenditure of the system. These reforms are very important firstly because they change the Spanish pension system from a defined benefit pension scheme to a defined contribution one, and secondly because they link the annual revaluation of pensions to the balance of the Social Security system.

However, the Spanish pension system still faces a number of challenges. The changes mentioned address the problem of an ageing population. However, public pension expenditure will continue to increase in the decades ahead due to the retirement of the baby boom generation. At the same time, it is estimated that revenues will remain more or less constant at around ten percent of GDP, so the system's deficit will continue to rise even when Spain pulls out of the economic crisis (i.e. it has a structural deficit). The cap for the revaluation index implies constant nominal growth in pensions of 0.25 percent for as long as the system has a deficit. This will result in the loss of purchasing power on the part of pensioners when inflation is higher than 0.25 percent. In other words, it will amount to a quasi-freezing of pensions. As this system is not politically or economically sustainable, the Spanish pension system will soon face

**Table 1**

**Pension reforms in Spain and their impact on expenditure**

	2012	2050		
		Without reforms	2011 reform	With sustainability factor
Old-age dependency ratio	0.26	0.52	0.46	0.46
Labour market factor	1.78	1.36	1.36	1.36
Institutional factor	0.22	0.29	0.28	0.26
Generosity	0.19	0.23	0.21	0.20
Expenditure (% GDP)	10.1	20.5	17.3	16.0

Note: The old-age dependency ratio in 2011 reform and with sustainability factor has been calculated  $(67+/(16-66))$  and employment rate is between 16-66 years old. Demographic scenario used in Conde-Ruiz and González (2013), it is more optimistic than INE.

Source: The authors.

the need to make changes again.<sup>19</sup> Spanish society will have to decide between one of two options: to either turn the current system into a purely redistributive pension system (a Beveridgean-type system) or to maintain or reinforce the contributory element of the current system, and consolidate its current Bismarckian model. The decision is not trivial and both systems are based on a different philosophy.

A Beveridgean pension system aims to guarantee a minimum pension, but it requires lower contributions, leaving room for the middle classes to complement their pensions with private savings. Countries with this pension system (UK, Ireland, Denmark, Canada or United States of America)<sup>20</sup> have a wider use and a higher development of private pension plans. Beveridgean systems are associated with lower public pension expenditure in relation to the country's GDP than Bismarckian systems (six percent vs. ten percent of GDP). The Bismarckian type of pension system, however, was designed to provide more adequate pensions to all workers and is characterized by a close link between previous earnings and retirement benefit. Countries with this type of pension system include Germany, Spain, Portugal, Italy or France among others.

The first option, namely changing the system to a purely redistributive pension system, would imply the gradual reduction of pensions that are above the average pension, where all workers would end up receiving the same pension when they retire.<sup>21</sup> However, in our opinion it would make more sense to strengthen the contributory element of the current Spanish pension system, so that individual pensions reflect the actuarial equivalence with workers' individual contributions. Those workers who contribute most would earn a higher pension although the average pension compared to wages would decrease. Such a change would be similar to models introduced in Sweden, Italy, Norway, Latvia and Poland, all countries that have taken this concept a step further by introducing a Notional Defined Contribution system (and maintaining Pay-As-You-Go financing). This pension model allows the introduction of automatic adjustment elements, a flexible retirement age and the actuarial balance between contributions and pensions.

<sup>19</sup> See Conde-Ruiz (2014) for more detailed arguments related to this question and the consequences of the 2013 reform.

<sup>20</sup> Classification following Disney (2004).

<sup>21</sup> In Spain, the existence of an upper cap for the contribution base, which is growing at a faster rate than the maximum possible pension, could break the link between pensions and contributions, ultimately giving all workers the same pension. This phenomenon was called the 'Silent Pension Reform' by Spanish expert economists. See Conde-Ruiz and González (2014) for a quantitative analysis of its impact on the Spanish pension system.

Workers' contributions are accumulated in a personal account that earns a notional rate of return. Finally, the pension formula is based on the accumulated contributions in an individual's account at the time of retirement.

Therefore, despite the importance of the 2011 and the 2013 reforms, the debate on pensions in Spain is ongoing. On the one hand, the quasi freezing of pensions is not politically sustainable, and on the other hand financial sustainability will force a drop in the average pension in relation to the average wage. Spain needs to decide which pension system it prefers: to move towards a Beveridgean pension system or to reinforce the contributory element and consolidate its current Bismarckian model. This decision is very important as it will allow workers to adapt their savings and employment decisions to best fit their future needs.

## References

- Banco de España (2011), *Informe Anual 2010*, Banco de España, Madrid.
- European Commission (2014), *The Ageing Report 2015: Underlying Assumptions and Projection Methodologies, European economy 8–2014*, European Commission, Brussels.
- Conde-Ruiz (2014), *¿Qué será de mi pensión? Cómo hacer sostenible nuestro futuro como jubilados*, Ediciones Península Atalaya, Barcelona.
- Conde-Ruiz, J. I. and C. I. González (2010), "Envejecimiento: pesimistas, optimistas, realistas", *Panorama Social* no. 11, 112–34.
- Conde-Ruiz, J. I. and C. I. González (2013), "Reforma de pensiones 2011 en España", *Hacienda Pública Española/Review of Public Economics*-, 204 (1/2013), 9–44.
- Conde-Ruiz, J. I. and C. I. González (2014), "From Bismarck to Beveridge: the other pension reform in Spain", *Banco de España Working Paper* no. 1417.
- de la Fuente, A. and R. Doménech, (2013), "The financial impact of Spanish pension reform: A quick estimate", *Journal of Pension Economics and Finance* 12 (1), 111–37.
- Díaz-Giménez, J. and J. Díaz-Saavedra (2011), "Parametric reforms of the Spanish pension system: a quantitative analysis", Mimeo, <http://javierdiazgimenez.com/res/pen3-a12.pdf>
- Díaz-Giménez, J. and J. Díaz-Saavedra (2014), "The future of spanish pensions", *serie The Papers*, Working Paper no.14/03, University of Granada.
- Disney, R. (2004), "Are contributions to public pension programs a tax on employment?", *Economic Policy* 19 (39), 267–311.
- González, C. I., J. I. Conde-Ruiz, and M. Boldrin, (2009), "Immigration and Social Security in Spain", *FEDEA Working Paper* 2009-26.
- González, C. I. (2013), *Sostenibilidad del sistema de pensiones de reparto en España y modelización de los rendimientos financieros*, vol. 65 of Estudios de la Fundación (Serie Tesis), FUNCAS.
- Instituto Nacional de Estadística (INE) (2014), *Proyección de la Población de España a Largo Plazo 2014–2064*, Madrid. <http://www.ine.es>.
- Ministerio de Economía y Hacienda (MEH) (2011), *Programa de Estabilidad España 2011-2014*, Madrid. [http://www.minhap.gob.es/Documentacion/Publico/GabineteMinistro/Varios/29-04-11\\_Programa\\_Estabilidad\\_Espana\\_2011-2014.pdf](http://www.minhap.gob.es/Documentacion/Publico/GabineteMinistro/Varios/29-04-11_Programa_Estabilidad_Espana_2011-2014.pdf).
- Sánchez-Martin, A. R. (2014), "The Automatic Adjustment of Pension Expenditures in Spain: an Evaluation of the 2013 Pension Reform", *Banco de España Working Paper* no. 1420.

## ROBUSTNESS OF THE DANISH PENSION SYSTEM<sup>1</sup>

TORBEN M. ANDERSEN<sup>2</sup>

### Introduction

Pension systems have multiple objectives. Firstly, the distributional objective of ensuring decent living standards for all elderly. Secondly, to provide pensions that stand in a reasonable relation to individuals' previous income when working to avoid sharp changes in living standards upon retirement (consumption smoothing). Thirdly, to provide insurance against various events, including a long life. Since the World Bank (1994) it has been generally accepted that a diversified or multi-pillar pension system is required to achieve this portfolio of objectives. The Danish pension system is a combination of public (pay-as-you-go, defined benefits) and labour market (funded, defined contributions) pensions. The system effectively prevents old age poverty and ensures reasonable replacement rates for most pensioners. The pension system is in transition in the sense that labour market pensions have been subject to rising coverage and contribution rates since the early 1990s. Gradually a growing number of people will have more pension savings at retirement.

The robustness of the pension system has various dimensions. One crucial dimension is whether the system implies an incentive structure supporting the underlying objectives. Another is whether the system is financially viable and resilient to changes in, for example, longevity or changes in financial markets (financial crisis or a low interest rate scenario). This paper takes stock of the Danish pension system. How is it structured? Is it prepared to cope with an ageing population? How has it been affected by the financial crisis?

### The Danish pension system

The public pension includes a basic amount (flat-rate pension) and means-tested supplements<sup>3</sup>. Furthermore, there are a number of age-dependent supplements. These pension entitlements are of the defined benefit type, and tax financed<sup>4</sup>. Public pensions are indexed to wages.<sup>5</sup> By law all wage earners and recipients of transfer income contribute to the supplementary labour market pension (ATP). It is a defined contribution scheme to which all contribute the same monthly amount (depending on working hours). The contribution rates are relatively small, and therefore this scheme cannot in itself ensure sufficiently high replacement rates. Labour-market pensions are agreed upon as part of an employment relationship or through collective agreements between the social partners. The development of labour market pensions took off in 1989–91, and the arrangements have subsequently been extended to a large part of the labour market, and contribution rates have been increasing until recently. Today contribution rates vary between 12 and 18 percent, with rates tending to be higher for high income groups. Private pension savings comprise other forms of savings (voluntary savings), as well as savings in pension savings schemes in banks and insurance companies (the return is taxed more leniently, but the funds are tied to retirement).

Statutory ages in the pension system (for public pensions, for early retirement, and age limits for payment of funds from pension schemes) are established by legislation and thus regulated at a political level. Recent reforms – the welfare reform of 2006 and the retirement reform of 2011 – will increase these ages considerably to cope with an ageing population. The first element of the reforms is discrete increases in the early retirement age from 60 to 62 years over the period 2014–17, shortening the early retirement period from five to three years over



<sup>1</sup> Comments from Peter Schultz-Møller are gratefully acknowledged.

<sup>2</sup> Aarhus University, CESifo, CEPR and IZA.

<sup>3</sup> Eligibility for the public pension requires residence in 40 years within the age of 15 and 65, if this requirement is not fulfilled, the pension is reduced proportionally to the accumulated period of residence.

<sup>4</sup> This section provides a summary, for a more detailed description see, for example, Money and Pension Panel Expert Group (2012).

<sup>5</sup> This adjustment is carried out relative to increases in annual wages two years earlier, according to wage statistics from the Confederation of Danish Employers. If the rate of increase exceeds two percent, 0.3 percent is allocated to an adjustment pool used for activities directed at the recipients of transfers. According to a recent tax reform the indexation of transfers is changed for the period 2016 to 2023 such that, on average, they are only adjusted by changes to prices.

the years 2018–19 and 2022–23, implying an early retirement age of 64 in 2023, and increasing the pension age from 65 to 67 years over the period 2019–22. The second element is an indexation of the early retirement age and pension age to the development in life expectancy at the age of 60 in order to target the expected pension period to 14.5 years (17.5 including early retirement) in the long-run<sup>6</sup> (currently about 18.5/23.5 years).

The overall taxation principle for pension savings follows an ETT-model, that is, contributions are tax exempt, returns are taxed, and pension payments are treated as personal income and thus taxable income. Due to progressive elements in the tax system, the value of the tax deduction for contributions may be higher than the tax paid on the pension payments. However, this should be seen relative to means testing of public pensions, cf. below. The current tax rate on the returns is 15.3 percent, which is low compared to most other savings possibilities, see also below.

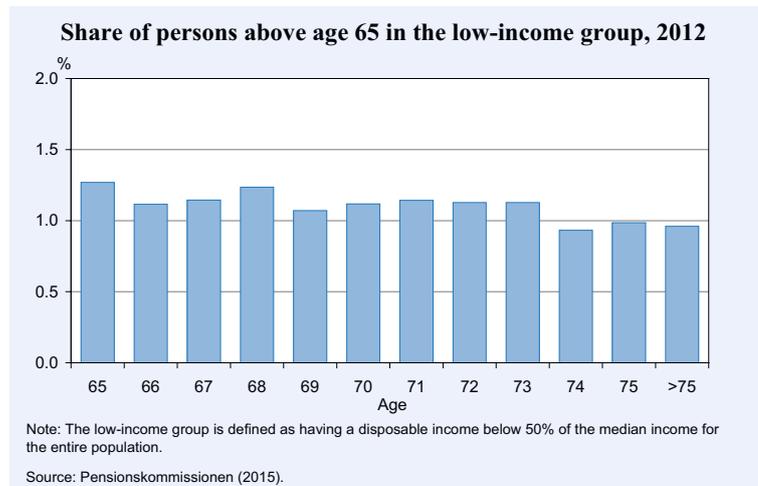
**Outcomes**

The many elements of the Danish pension system serve several purposes. The public pension can be seen as the base of the system, i.e., it provides the minimum income that all pensioners are ensured independently of any labour-market pension or other private savings. Supplements depend on income and wealth targeting economically disadvantaged pensioners. This serves the distributional objective. Labour-market pensions depend on the extent of work and income during economically active years, as well as the return on accumulated funds. High employment rates and income result

in high contributions and, consequently, in high pension savings, and thus, by extension, in higher consumption opportunities as a pensioner. Labour-market pensions therefore play a decisive role in ensuring that the consumption opportunities of pensioners stand in relation to those prevailing prior to retirement (consumption smoothing). Finally, voluntary private pension savings give individuals the opportunity to ensure a higher pension for themselves than the amount due to them from compulsory public pensions and labour-market pensions.

The outcomes of the Danish pension system in terms of distribution and replacement rates are illustrated in Figures 1 and 2, respectively. The level of public pension is such that very few elderly people end up in the

**Figure 1**



**Figure 2**

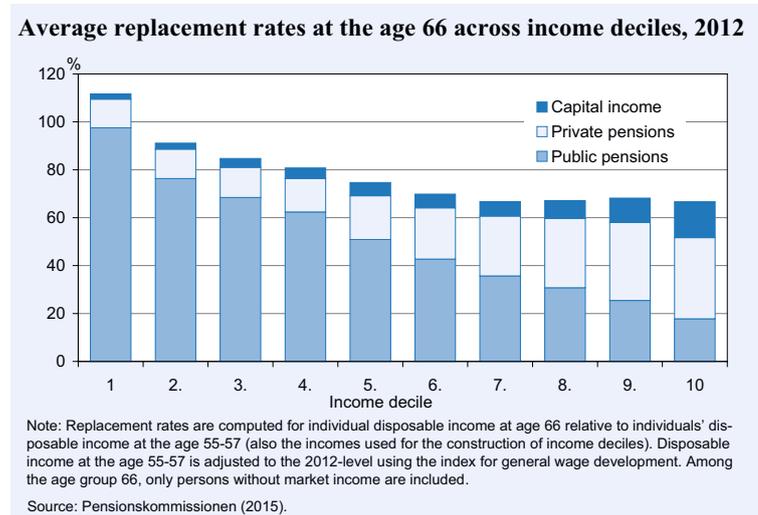


Figure 3

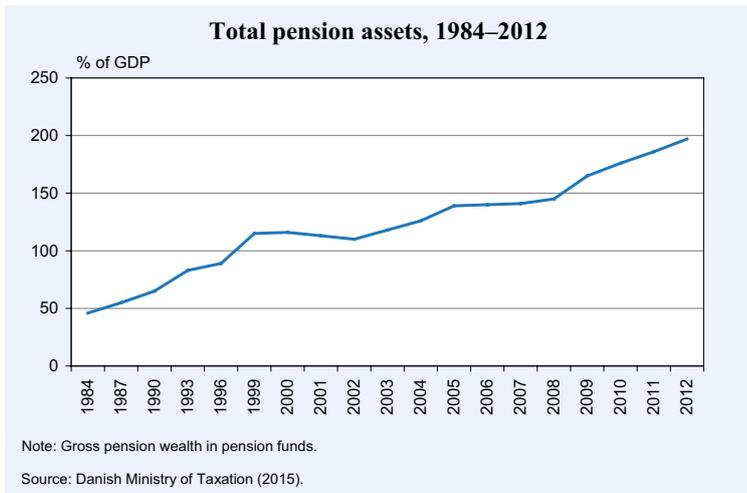
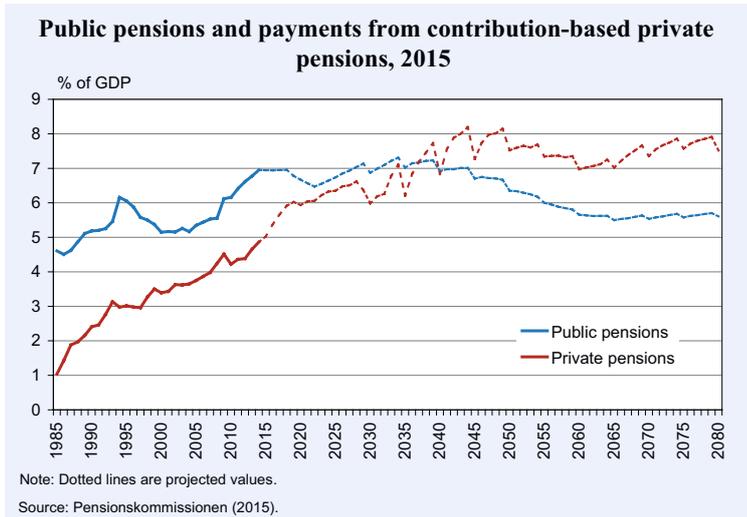


Figure 4



low-income group that has a disposable income below 50 percent of median income (see Figure 1). Those in the low-income groups are often immigrants who do not meet the full residence requirement for public pensions. Using the official poverty line, only 0.3 percent of those above the age of 64 fall below this threshold (see Økonomi- og Indenrigsministeriet (2014)).

The replacement rates and their composition are shown for different income groups in Figure 2. Several points are worth noting: Firstly, replacement rates close to 100 percent for low income groups (1<sup>st</sup> decile) reflect that social transfers for non-employed individuals of a working age are close to the full public pension (base pension plus supplements). Most people with an income in the 1<sup>st</sup> decile are out of work and receive a social

transfer. Hence the replacement rate is close to 100 percent. This is related to the finding above that poverty among the elderly is rare. Secondly, the replacement rate for high income groups (5<sup>th</sup> decile or above) is about 65 percent. This is relatively high compared to other OECD countries, see OECD (2014). Thirdly, in terms of the composition of the replacement ratio, the relative role of public pensions is declining and that of private pensions is increasing in the income level. This is a direct result of the means testing of supplements in the public pension system. Looking to the future, this will become even stronger, since private pensions are still in a transition phase, cf. below. Hence, replacement rates will increase, and private pensions will increase in importance, although public pensions remain of significant importance to most.

**Pension system in transition**

The Danish pension system is in transition. Contribution rates for labour market pensions have been increasing since the early 1990s, and they have only been steady at current levels for a few years.

Accordingly, there is a time horizon of several decades before the current system can be fully phased in such that pensioners can draw on labour market pensions created by contributing at this level through a full working career. As a result, pension funds are in a building-up phase with relatively steep increases in total pension assets. Figure 3 shows a rather significant development, whereby today’s assets constitute about 200 percent of GDP. This is a gross amount since pensions are taxable income, but still of significant importance.

The building up of private pension funds relieves public finances due to the means testing (and even more so if the public system is to deliver the same replacement rates as the combined system). Public finances are sensitive to the age structure of the population. As noted, reform in-

initiatives have been launched to address the implications of ageing on public finances, primarily involving increasing retirement ages. Danish public finances thus meet the criterion for fiscal sustainability<sup>7</sup> (see Ministry of Finance 2015, Danish Economic Council 2014). In that sense, the pension system is robustly funded.

An implication of the phasing in of private pensions and reforms of retirement ages is that private pensions will play an increasing role and public pensions a decreasing, but still significant role. This is illustrated in Figure 4, which shows both public pensions and annual pensions from funded schemes as a share of GDP.

### Challenges

Despite a robust structure the Danish pension system faces some challenges. Some relate to inherent dilemmas in the structuring of pension systems, and others to specific features related to the Danish system.

#### (i) Effective tax rates on savings and retirement

Means testing of public pension (supplements) serves a targeting purpose of ensuring that all pensioners have a decent living standard. However, it also implies that increased private savings, and thus pensions, are not reflected one-to-one in total pensions, since public pensions are reduced. Means testing thus effectively implies a tax on private savings. In considering the incentives to save and retire, it is therefore not only important to consider formal taxes, but also the implicit taxes arising via means testing. Due to the complexity of the rules, this cannot easily be summarized, but Figure 5

<sup>7</sup> The projected budget profile is nevertheless problematic since it has a sequence of structural deficits between 2025 and 2055 (peaking at about 1.5 percent of GDP in 2045, and in most years exceeding the 0.5 percent of GDP limit) to be followed by surpluses in the distant future. This profile is mainly the result of a slow phasing in of the increases in retirement ages and a strong effect of the indexation scheme in the long-run (decreasing the share of life spent as pensioner).

Figure 5

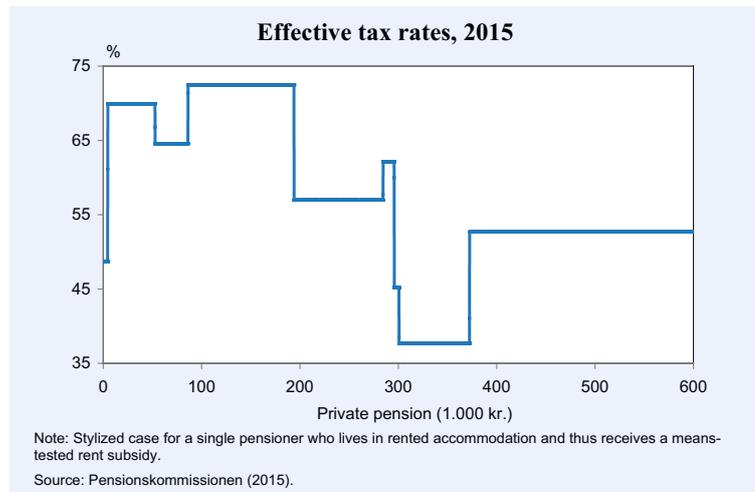
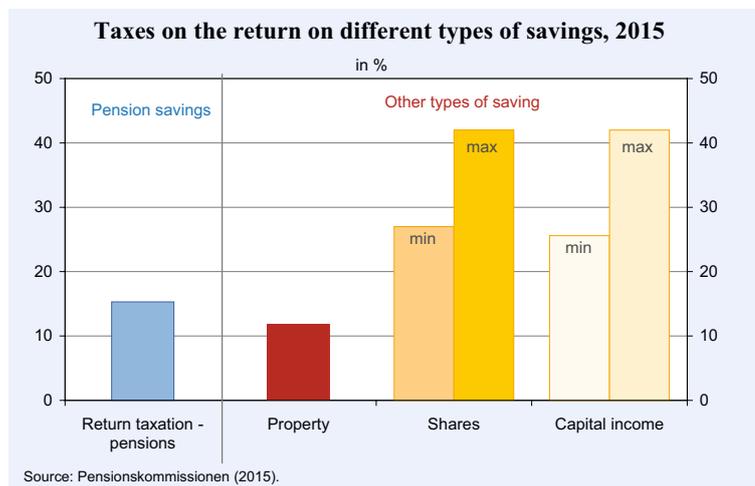
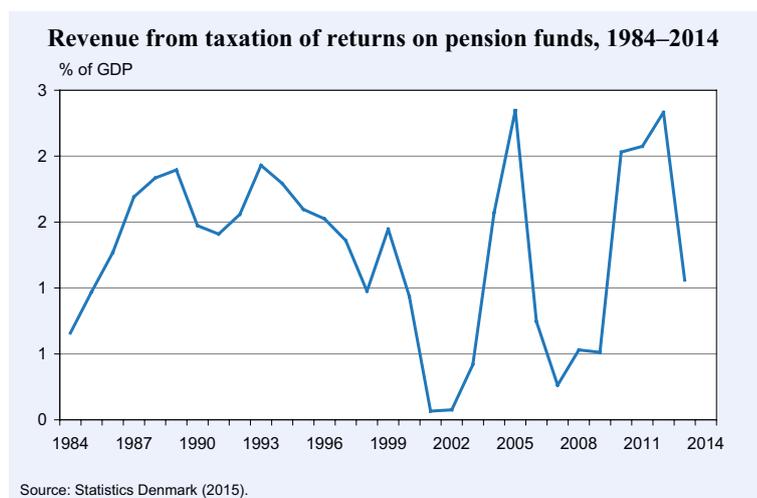


Figure 6



illustrates such implicit taxes for a single pensioner in rented accommodation. The figure shows the effective tax on the payment of a private pension. For low values of private pensions the effective tax rate can be close to 75 percent, while for high values of pensions it is about 53 percent. The reason why the effective tax rates become high for low private pensions (and thus typically low income groups) is means-testing, which targets public pensions for the least well-off pensioners. While serving a distributional purpose, means-testing creates an incentive problem, which may be detrimental to the overall objectives of strengthening private pension savings and inducing later retirement.

Figure 7



### *(ii) Different taxation of various types of pension savings*

The current system has very different rates of taxation for the return on different types of savings, cf. Figure 6. This is problematic since it has a distorting effect on asset allocation. The lower taxation of the return on pension savings is motivated by these savings being tied for release only when retired. The favourable taxation of housing is partly related to a nominal freeze of property taxes since 2002.

A particular question is whether the tax structure provides incentives to so-called balance expansion for households. A person contributing to pension savings (with a return tax of 15.3 percent) and at the same time borrowing (with interest rates deductible at a rate of 25–33 percent) effectively receives a tax subsidy by expanding the balance. Denmark stands out as having households with high gross debt ratios, although the average household is a net-creditor.<sup>8</sup> However, the liquidity of assets and liabilities is very different, and this may create a systemic risk factor with implications for macroeconomic stability. It is also questionable whether the Danish tax system should offer this kind of incentives.

### *(iii) Return variability and low interest rate scenario*

The discussion above points to the possible adverse incentive effects of the interplay between public and private pensions via means testing of the latter (and tax-

<sup>8</sup> Further, a persistent surplus on the current account also indicates that Denmark does not have a general savings problem.

ation in general). This, however, also has an insurance effect. All changes in private pensions beyond individual control, like involuntary unemployment or variation in the return on pension savings, are shared with public pensions. In the Money and Pension Panel Expert Group (2012) a number of cases are considered, showing that there is an implicit insurance effect. Since means testing applies to relatively low incomes/pensions, there is an asymmetry in the insurance mechanism. Households ending up with low private pensions receive more from the public system. In the case of a higher

private pension, means testing ceases at some point, implying that further increases in private pensions benefit the individual (low effective tax). The implicit insurance created via means testing and taxation is thus mainly an insurance against downside risks.

As noted, Denmark follows an ETT principle in the taxation of pensions overall. It is thus one of the few countries taxing the return on pension savings. The return taxation was introduced in 1984 since a disinflationary policy implied a high real return on nominal fixed bonds (constituting a significant share of pension fund portfolios at the time). The tax has been changed a number of times and is now a proportional tax of 15.3 percent on the pension fund return (a return calculated based on returns, including accrued capital gains and losses). This contributes a non-trivial amount of tax revenue (on average 1.25 percent of GDP), cf. Figure 7. The revenue from the tax is a mirror of capital market developments (and overall accumulated funds). The variation is rather large and introduces significant short-run volatility in public budgets.

A low interest rate scenario raises a number of questions for pension savings. One concern is whether pension funds, in the quest for a higher return, will take greater risks. The asymmetric risk sharing implied by the system may reinforce such a tendency. If lower real returns are caused by lower productivity growth, the implication is not only a lower return on private pensions, but also corresponding lower growth in wages, and thus in public pensions (presuming that wage indexation is maintained).

The effect of lower rates of return on fiscal sustainability is complicated. Lower returns on pension savings will imply less tax revenue, higher expenditure on public pensions, but also a lower interest rate on public debt (and thus discounting to assess fiscal sustainability). The net effect – given the underlying budget profile for Denmark – is that a lower interest rate marginally deteriorates fiscal sustainability (Ministry of Finance (2015)).

### Concluding remarks

The foundation for the Danish pension system was laid in the late 1980s with a build-up of funded labour market pensions. This, in combination with later reforms of public pensions to address the ageing challenge (primarily via increased pension ages), ensures that the system is viable and is meeting its main objectives. This is reflected if the system satisfies the requirements of fiscal sustainability, offers relatively high replacement rates and avoids poverty among elderly citizens. Having been relatively quick to prepare for ageing, the system also implies that the financial crisis has not challenged the pension system or contributed to make the situation worse.

Despite this, a number of challenges remain with the structure of the Danish pension system. While the interplay between private and public pensions reflects a division of labour between concerns for distribution and consumption smoothing, it also implies a distorted incentive structure for pension savings and retirement.

### References

- Danish Economic Council (2014), *Danish Economy – Autumn 2014*, Rosendahls-Schultz Distribution, Copenhagen.  
<http://www.dors.dk/english/list-of-reports>
- Danish Ministry of Taxation (2015), <http://www.skm.dk/skattetal/statistik/generel-skattestatistik/pensionsformuen-1984-2012/>
- Money and Pension Panel Expert Group (2012), *Basic Pensions - The default option for labour-market pensions*, Report by the Committee of the Money and Pension Panel, Copenhagen.  
[http://www.raadtilpenge.dk/~media/PPP/Pensionsrapport/Basicpercent20pension\\_abridgedpercent20versionpercent20ofpercent20report.ashx](http://www.raadtilpenge.dk/~media/PPP/Pensionsrapport/Basicpercent20pension_abridgedpercent20versionpercent20ofpercent20report.ashx)
- Ministry of Finance (2015), *Convergence Programme Denmark 2015*, Copenhagen.  
[http://ec.europa.eu/europe2020/pdf/csr2015/cp2015\\_denmark\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2015/cp2015_denmark_en.pdf)
- OECD (2014), *Pensions at a Glance*, OECD Publishing, Paris.
- Pensionskommissionen (2015), *The Danish pension system – internationally praised but not without problems (Det danske pensionssystem – internationalt anerkendt, men ikke problemfrit)*, Copenhagen.  
[http://pensionskommissionen.dk/media/1086/det-danske-pensionssystem\\_samlettilweb.pdf](http://pensionskommissionen.dk/media/1086/det-danske-pensionssystem_samlettilweb.pdf)
- Statistics Denmark (2015), <http://www.statistikbanken.dk/statbank5a/default.asp?w=1600>
- Økonomi- og Indenrigsministeriet (2014), *Familiernes økonomi – fordeling, fattigdom og incitamenter*, Rosendahl-Schultz Distributions, Copenhagen.  
[http://oim.dk/media/623533/Familiernes\\_Oekonomi\\_Fordeling\\_Fattigdom\\_og\\_Incitamenter.pdf](http://oim.dk/media/623533/Familiernes_Oekonomi_Fordeling_Fattigdom_og_Incitamenter.pdf)
- World Bank (1994), *Averting the Old Age Crisis*, World Bank Publications, Washington D.C..

## PENSION REFORM IN EUROPE: WHAT HAS HAPPENED IN THE WAKE OF THE CRISIS?<sup>1</sup>

DAVID NATALI<sup>2</sup>

### Introduction

What has happened to pension policy since the onset of the Great Recession? To address this question the present contribution provides a summary of reforms in Europe. This article focuses on the fate of the pension paradigm that has dominated recent decades: so-called pension privatisation. Such a paradigm consists of the full or partial replacement of social security pension schemes with pension systems based on individual, private pension savings accounts. This model has been implemented in many countries. From the 1980s onwards, Europe has also seen the spread of pension privatisation.

The recent economic and financial crisis has proved a tough test for that paradigm. Many commentators foresaw further pressure to contain public spending and thus the reinvigoration of the privatisation trend: with austerity measures affecting public schemes and the parallel strength of pension funds (Pochet and Degryse 2012). In contrast, by analysing the output of the reforms, this contribution stresses that European countries have not experienced a coherent privatisation of their pension systems. Firstly, pre-funded schemes have also suffered from the adverse economic context, and some countries have experienced the re-nationalisation of pre-funded private schemes. Secondly, a wide range of reforms have been implemented in Europe. Central Eastern Europe (CEE) has seen a halt to, if not the roll-back of, private pension funds, while pre-funded schemes have spread somewhat in southern Europe (albeit to a far more limited extent than expected). Yet those countries with a

more widespread multi-pillar arrangement (like, for example, the UK, Denmark and the Netherlands) have further reinforced the public/private mix inherited from the past, with cost-containment in both public and private schemes paralleled by new incentives to promote the spread of the latter schemes. All these developments are consistent with the persistent, if not growing divergence of pension systems in Europe.

The present article is structured as follows: the first section provides a summary of the effects of the crisis on pensions, while the second and third sections shed light on the reforms passed in the wake of the Great Recession. After reviewing measures related to the first pillar, we focus on measures affecting pension funds (second and third pillars). Section four concludes with a critical review of the more recent reform trends and a brief analysis of the future prospects of pension policy in Europe.

### European pension systems and the effects of the crisis

There are a great variety of pension systems in Europe. Some emerged from explicit universalistic anti-poverty ambitions, while others evolved from schemes with an income-maintenance goal. In some of these systems, supplementary pensions quickly developed, while other pension systems centred on a public 'one-pillar' model (Natali and Stamati 2013, 2). The latter are the so-called *social insurance* systems, where the state provides the greater part of pension benefits through national and universal or occupational schemes based principally on social insurance (e.g. France, Germany, Italy and Sweden). The financing method is usually of the pay-as-you-go (PAYG) type. Current contributions paid by both employers and employees (or revenues from ongoing taxation) are not saved, but are immediately used to finance current benefits. The main goal of such pension programmes is 'income-maintenance'. The generous level of coverage and the encompassing character of pension benefits reduce the scope for supplementary occupational and/or individual schemes. Under *multi-pillar* systems, by contrast, the state is liable for basic entitlements aimed solely at poverty prevention, while



<sup>1</sup> The present article is based on the research carried out by the author for the European Social Observatory (OSE) in the context of the Commission-funded European Social Policy Network (ESPN). It is also based on the first results of the research project 'The New Pension Mix in Europe' carried out by OSE and financed by the European Trade Union Institute (ETUI) of Brussels.

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additional benefits are provided by supplementary occupational and/or individual schemes (e.g. Denmark, the Netherlands, and the UK). The financing methods are thus mixed: on the one hand, public pension programmes (first pillar) provide flat-rate or means-tested benefits; while supplementary occupational schemes (second pillar) and individual pension funds (third pillar), by contrast, are mainly funded. Current revenues are saved and then used to finance future benefits. Many Central Eastern European countries have implemented the second generation of multi-pillar systems, where public programmes provide contributions-based and earnings-related benefits and are supplemented by mandatory and/or voluntary funds.

#### **Common reform trends up to 2007**

From the 1980s up to 2007, Europe saw a progressive shift away from public PAYG schemes and towards prefunded private pensions. Countries with social insurance models started to set up new occupational and/or personal pensions and retrenched public pensions. Countries with multi-pillar pension systems further reinforced pre-funded pillars, while strengthening the regulation of private funds; and central eastern European countries implemented their new pre-funded pension schemes (Ebbinghaus 2015). According to Holzmann (2012), twenty-nine countries passed systemic reforms between 1988 and 2008 and established a mainly non-government funded pension pillar. In Europe, this was the case with Sweden, Poland, Estonia, Lithuania, Latvia, Bulgaria, Croatia, Slovakia and Romania. Continental and Southern European countries followed a more path-dependent trend: public schemes were subjected to cost-containment via a number of measures such as, for example, stricter links between contributions and benefits, higher pensionable ages and the lower indexation and valorisation of benefits. Such an overall trend was consistent with the new paradigm of pension privatisation: the full or partial replacement of social security pension schemes (typical of the social insurance model) with pension systems based on private savings accounts. Pension privatisation proved attractive to governments in that it promised to reduce the fiscal challenge, to cut state guarantees for old age and to foster economic growth and efficiency through the market (Orenstein 2011).

#### **In 2007 the crisis struck**

The *Great Recession* has had significant effects on pension systems across the EU. The adverse economic conditions – higher unemployment, declines in GDP, reduced tax revenue, low interest rates and downward trends in the financial markets – have led to budgetary tensions with respect to both PAYG and pre-funded pension schemes. As far as the former are concerned, negative economic trends – such as the contraction of employment and the rise in unemployment – have led to reduced contributory inflows, while leading to increases in total spending to counter the more worrying social consequences of the recession at the same time. A second, more indirect pressure has resulted from the fiscal stimulus implemented by many countries in order to reduce the impact of the crisis, which has led to a rapid deterioration in public finances. A third source of tensions has been represented by the low rates of return on pension funds. Many countries have established public pension reserve funds to improve the first pillar financial sustainability (OECD 2014).

As far as pre-funded pension schemes are concerned, the financial sector crisis resulted in a major drop in the value of the assets of pre-funded schemes. Such losses were largely recovered after the crisis. Further stress was generated by the adverse economic conditions, which resulted in far lower average interest rates. Pension funds whose assets included bonds being devalued thus started to face serious solvency issues. Protracted low interest rates have deeply affected pension funds and insurance companies, by increasing the present value of future liabilities and curbing future investment returns. In sum, collapsing stock markets, increasing bond yields, and persistently low risk-free rates all jeopardised the solvency status of pension sponsors (Natali and Stamati 2013, 18).

#### **Recasting first pillar schemes in the wake of the crisis**

After a first round of measures to improve protection and buffer the social consequences of the crisis, reforms have involved a reduction in future replacement rates and benefit eligibility to bring future pension spending under control. As the European Commission and Economic Policy Committee (ECEPC 2012) put it, a comparison of spending projections proposed in 2009 and 2012 shows that average benefits should decline over the decades ahead and that such a negative trend

Table 1

Reforms of first pillar schemes in the wake of the crisis (selected European countries)		
	Reforms consistent with major cutbacks	Reforms consistent with more balanced cut-backs and improvements (or just improvements)
Social insurance		
Continental and Southern Europe	Cyprus, Greece, Italy Portugal, Spain	Austria, Belgium, Germany, Luxembourg, Malta
Nordic countries		Finland, Sweden
Multi-pillar countries		
Countries with long-lasting pension funds	Ireland	Denmark, the Netherlands, UK
Central Eastern Europe		Bulgaria, Croatia, Estonia, Romania, Czech Republic

Source: OECD (2014); ESPN (2015).

has become more accentuated since the crisis. Across Europe, the effect of benefit reduction in the 2012 projections is slightly higher than it was in 2009 (-2.6 percentage points of GDP in 2009, -2.7 percentage points of GDP in 2012), which in many cases reflects reforms that have been introduced so as to make the public pension systems sustainable. In Greece, Luxembourg, Romania, Cyprus, Latvia, Poland, Denmark, the Netherlands, Malta, Portugal, Ireland, Slovakia, Slovenia and Germany the offsetting impact of the relative benefit reduction has increased compared to the 2009 projections (ECEPC 2012, 145).

Reforms typically involved a stricter link between contributions and entitlements, more years required for a full pension, higher statutory pension ages, restricted access to early retirement and various financial incentives to work longer (Ebbinghaus 2014). At first glance this is not a new trend: retrenchment has characterised reforms as of the 1980s. Yet the measures introduced since 2007 have shown some innovative traits. Firstly, cost-containment has consisted of short-term cutbacks, with limited (if any) phase-in periods. The last round of reforms has thus affected older cohorts of citizens and pensioners, as well as younger cohorts. Even pensions already being paid out have been subject to cutbacks. Secondly, some countries (such as Denmark, Ireland, Italy and Finland) have introduced automatic mechanisms to control future spending: for instance, by linking indexation and benefit calculation to life expectancy. Thirdly, and in line with the attempt to delay the exit from the labour market, measures have consisted of setting a higher pensionable age and establishing tighter access to early retirement schemes (Denmark, Finland,

Greece, and the Netherlands) (Schwarz and Arias 2014). As stressed elsewhere, especially in cases where no ceiling is set for social insurance benefits, the increase in the retirement age may contribute to benefit adequacy while implicitly reducing incentives to contribute to private pension funds (Natali and Stamati 2013). Fourthly, at least in some countries, there is clear evidence that the relative position of the elderly has not deteriorated, since social protection for children and adults usually suffered more from the effects of the crisis (in countries like Bulgaria, Cyprus, Spain and the UK) (ESPN 2015).

While all European countries have approved reform packages featuring both cutbacks and some improvements in benefits, the balance between the two differ from country to country. In some member states, those most affected by the crisis and thus under fiscal pressure (Southern European countries, some Central and Eastern European countries, the Baltics and Ireland), reforms focused on short-term consolidation with evident reduction of benefits (Table 1, column 1). To give just a few examples, in Portugal, as a result of the measures passed in the period 2008–12, the ratio between the average old age pension and average wages has decreased by about 45 percent. In Greece cuts to total pensions in payment for private sector pensioners have ranged from 14.3 to 44.2 percent (in real terms) (ESPN 2015).

Other countries have experienced a more mixed set of reforms: with long-term reductions accompanied by some benefit improvements (Table 1 column 2). This is the case of those countries less affected by economic, financial and fiscal tensions, like Austria, Germany and the Netherlands. Others, like Belgium for example, ex-

perienced a mix of retrenchments and improvements in minimum pension benefits. There were also a few countries (such as Bulgaria and Croatia) where the national political climate proved to be at odds with the idea of cutting pensions as part of fiscal consolidation.

### Recasting supplementary pension funds

Reforms in Europe have not consisted of a general rise in the role of pension funds (in terms of contribution rates and coverage). As far as the social insurance pensions systems are concerned, Southern and Continental European countries have not passed major reform measures on pre-funded schemes. Yet some of these countries have legislated a cut in tax subsidies for contributions to voluntary pension funds (including Austria, Belgium, Greece, Italy and Spain). At the same time, the coverage of voluntary pension funds has slightly increased (in Italy and Spain for instance), but at a much slower pace than in the past (Table 2, column 1). Greater stability has also characterised the Nordic countries, where public PAYG schemes coexist with widespread pension funds: this particularly applies to Finland and its weak voluntary private funds (OECD 2014) (Table 2, column 2).

In the so-called multi-pillar systems, pension funds have experienced financial stress; but reforms have aimed at improving their sustainability, rather than reducing their role (Table 2, column 2). Their cover-

age has remained stable or increased in countries like Denmark, the Netherlands, and the UK. The latter is the only country in which a major reform was passed. In 2008, the government adopted a reform of supplementary schemes and introduced ‘auto-enrolment’, whereby employers have to enrol their employees into an occupational pension scheme. This is expected to reverse the long-standing decrease in the coverage of occupational pensions in the UK. In the Netherlands, efforts to restore pension funds’ solvency have consisted of benefit cuts, such as the suspension of indexation; increases in contributions, and the introduction of higher pensionable ages.

In Central and Eastern European countries where, since the late 1990s, national pension systems have embraced the ‘privatisation’ paradigm, some countries have followed a different path (Drahokoupil and Domonkos 2013). Many countries first decided to put contributions on hold, a move that was followed by a more radical intervention (Table 2 column 3). Hungary rolled back mandatory pension funds in 2010. In Poland, the contribution to mandatory pension funds decreased from 2014, from 7.3 to 2.92 percent of wages. Pension fund members had to choose to pay contributions to pre-funded schemes, or to pay their whole contribution into the PAYG system. Savings currently remain in the pension funds, but will be transferred to a pay-as-you-go system gradually. Individuals could choose to remain members of funded schemes on a voluntary basis. Several other

**Table 2**

#### Reforms of pre-funded schemes in the wake of the crisis (2007–14) (selected European countries)

	No major reforms and stable coverage of voluntary pre-funded pension schemes	Reforms consistent with the stability of widespread pension funds	Temporary reduction in the role of pension funds	Major reduction in the role of pension funds
Social insurance				
Continental and Southern Europe	Austria, Cyprus, Germany, Greece, France, Italy, Malta, Portugal, Spain			
Nordic countries		Finland, Sweden		
Multi-pillar countries				
Countries with long-lasting pension funds		Denmark, Ireland, the Netherlands, UK		
Central Eastern Europe			Bulgaria, Croatia, Estonia, Romania,	Latvia, Lithuania, Hungary, Poland, Slovakia

Source: OECD (2014), ESPN (2015).

countries, including Latvia, Lithuania and Slovakia (ESPN 2015) significantly reduced contributions.

Some other CEE countries, like Croatia, Estonia, Romania and Bulgaria, have reinforced the multi-pillar model introduced in the past. In these countries, pension funds have suffered some temporary cuts, but no roll back (Table 2, column 4). In Croatia, for some categories of insured persons, opting out from second pillar funds and moving only to the first pay-as-you-go pillar is a valuable option. In Estonia the temporary reduction of mandatory contributions to pre-funded pension schemes was stopped after the crisis eased. For these countries, there has been no evidence of a general reduction in contribution rates, while mandatory private funds have not been transformed into voluntary schemes (ESPN 2015).

## Conclusion

Recent reforms across Europe have not confirmed the expected further and overall privatisation of pension systems. By contrast, the evidence above proves that austerity has hit both public PAYG schemes and private pre-funded schemes. Both have seen measures to contain costs (higher pensionable age, the introduction of automatic stabilisers of future spending, reduced indexation and higher taxes and/or contributions). While the retrenchment of social insurance schemes is not new, innovative measures have consisted of: cutbacks to pensions in payment; automatic mechanisms to contain future pension spending and depoliticise future intervention; systematic attempts to increase the pensionable age and to delay the exit from the labour market. As for private pre-funded schemes, cost-containment has consisted of reduced tax subsidies, increased contributions, more limited indexation and/or direct cuts to benefits, and as an extreme measure, the shift of pension funds' assets to the public budget.

All this has consisted of different public/private mixes. The latter have been shaped by pension systems inherited from the past. Those countries with well-established private pensions have passed measures to maintain the multi-pillar model of the past. In the case of UK there was a further attempt to increase the coverage of supplementary pensions through auto-enrolment. Countries with social insurance pension models in Continental and Southern Europe have opted for less favourable fiscal treatment of pension funds, and this has happened at the same time as the slow spread of private schemes. What is more, at least in the countries where social in-

surance benefits do not have any ceiling, the future increase in the pensionable age will probably improve public pension protection and thus reduce scope for pension funds. The troubled path of private funds is even more evident in Central Eastern Europe. Some countries have rolled back their mandatory pension funds introduced since the 1990s, while others have approved temporary reductions in mandatory contributions to private pension schemes. Yet few countries have confirmed, if not provided, more room for the private schemes.

Such evidence proves that the public/private mix of the future is still uncertain. We can expect further reforms due to persistent strains on the financial viability and social adequacy of pension systems. On the one hand, public schemes need further intervention to reinforce their viability in the context of a timid economic recovery. On the other, private pensions have not been dismantled, but their popularity has declined among policymakers, at least in some countries. What is certain is that future pension systems will be shaped by the policy legacy.

## References

- Drahokoupil, J. and S. Domonkos (2013), "Averting the Funding-Gap Crisis: East European Pension Reforms Since 2008", *Global Social Policy* 12(3), 283–99.
- Ebbinghaus, B. (2015), "The Privatization and Marketization of Pensions in Europe: A Double Transformation Facing the Crisis", *European Policy Analysis* 1(1), 56–73.
- European Commission and Economic Policy Committee (ECEPC) (2012), *The 2012 Ageing Report: Economic and Budgetary Projections for the 27 EU Member States (2010–2060)*, *European Economy* 2/2012, Publications Office of the European Union, Luxembourg.
- Holzmann, R. (2012), *Global Pension Systems and Their Reform. Worldwide Drivers, Trends and Challenges*, World Bank Discussion Paper no. 1213, Washington D.C..
- Natali, D. and Stamati, F. (2013), "Reforming Pensions in Europe: A Comparative Country Analysis", *ETUI Working Paper* No. 2013.08, Brussels.
- ESPN (European Social Policy Network) (2015), *Synthesis Report on the Impact of the Crisis on Pensions in Payment and Current Retirement Patterns*, unpublished manuscript.
- OECD (2014), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing.
- Orenstein, M. A. (2011), "Pension Privatization in Crisis: Death or Rebirth of a Global Policy Trend?", *International Social Security Review* 64(3), 65–80.
- Pochet, P. and C. Degryse C. (2012), "The Programmatic dismantling of the European Social Model", *Intereconomics* 47 (4), 200–29.
- Schwarz, A.M. and O. S. Arias(2014), *The Inverting Pyramid. Pensions Systems Facing Demographic Challenges in Eastern Europe and Central Asia*, World Bank Europe and Central Asia Reports, Washington D.C..



## THE FINANCIAL CRISIS AND DIFFERENCES IN STATE PENSION GENEROSITY ACROSS EU COUNTRIES

AARON GEORGE GRECH<sup>1</sup>

### Introduction

In pensions, major reforms, to some extent, predate the onset of the financial crisis. However, the crisis has led to significant changes – especially in those countries that had left their pension systems relatively unchanged prior to 2008. European countries entered the crisis with very different pension systems, for instance in terms of generosity or reliance on the state. The crisis led to a greater degree of convergence in two respects at least. Eastern European countries, which had sought to lessen the role of the state prior to the crisis, ended up undoing many of these reforms. Meanwhile, Southern European countries, which traditionally had relatively generous pension schemes, introduced substantial cutbacks. This paper will seek to describe this process of convergence imposed to some degree by the financial crisis.

### Pension reform during the financial crisis

EU pension systems differ greatly. In fact, a number of typologies of welfare states put different European systems in quite separate categories. For instance, Liebfried (1992) divided Europe into Anglo-Saxon countries (with a residual welfare state), Bismarkian systems (where the welfare state maintains income differentials), the Scandinavian block (with a progressive welfare state focused on moderating inequalities) and the Latin rim (where the welfare state is a semi-institutionalised promise with in-built differences in generosity towards certain groups). Similarly Bonoli (1997) and Soede, Vrooman, Ferraresi and Segre (2004), using

data on a number of characteristics of welfare regimes, categorise Western European welfare states into these four blocks, with the Eastern European countries falling into a distinct group. The latter group is quite a hybrid mix, as a number of these countries traditionally had a very progressive pension system, which is changing rapidly for new contributors into arrangements with a much tighter link between benefits and contributions. On the other hand, Ferrera (1996) and Katrougalos and Lazaridis (2008) describe the main elements of the so-called Southern European (or Latin rim) welfare state as being a low degree of institutionalism (and related political clientelism), a high fragmentation of policies and the grafting of universalist schemes onto occupational systems, but with few work incentives, leading to excessive spending and endemic early retirement.

Prior to the crisis, there were substantial changes in EU pension systems (for details see European Commission 2010 and Grech 2014). Early in their transition to becoming market economies, many Eastern European countries introduced mandatory individual private schemes as the main mandatory pension provision (see Fultz and Steinhilber 2003). The crisis had a major impact on the image of private pensions being a stable source of long-term income (Yermo and Severinson 2010 and Impavido and Tower 2009). Orszag (2013) nevertheless argues that while the downturn threw new light on certain issues, such as over-reliance on defined contribution pensions, the structure of pension provision may not change over much, as pensions are a difficult long term issue that induces avoidance behaviour amongst policymakers.

The financial crisis, however, exacerbated the impact on government finances of the adoption of mandatory individual pensions (Whitehouse 2009). Hirose (2011) and World Bank (2013) document the major changes effected in many Central and Eastern European states, with countries like Hungary nationalising their mandatory private provision, while others like Slovakia and Poland are undoing most pension reforms and shifting back contributors to the previous state system. While tight finances undoubtedly played a role, Drahokoupil and Domonkos (2012) argue that another important cause of these developments was the change in the consensus

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on the benefits of pension individualisation and privatisation. They argue that the IMF, for instance, provided tacit support for decisions to scale down mandatory private systems, while the World Bank's previous advocacy of these schemes became much more muted.

Natali (2011) notes that two common responses to the crisis in many EU countries have been to increase minimum pensions and to raise retirement ages. In Western European countries another strong driver of pension reform appeared to be the continued move towards adopting stronger activation policies in welfare policies (Vis, van Kersbergen and Hylands 2011). Pensions in most countries already had a strong contributory principle embedded in them, but recent reforms sought to strengthen this principle even further (European Commission 2010). This process predated the crisis and has also affected countries (like Scandinavia, for example) that traditionally had a more universalist focus (Bosco and Chassard 1999). This common reaction may possibly have been an attempt to get people to seek to re-enter labour markets quickly.

On the face of it, the downturn should not have impacted some pension systems, such as the German one. Yet, Hinrichs (2013) notes contribution rates were lowered and projected cuts in benefits (due to the sustainability factor embedded in the German system)<sup>2</sup> were delayed. The author argues that the crisis' impact on employment careers has to be taken into account, as pension reforms have significantly tightened the link between contributions and entitlements. The increasing use of atypical jobs, particularly part-time and temporary contracts, means that individuals will accumulate less pensions in the long term. Moreover, Hinrichs notes that, in most cases, these jobs would not result in individuals getting contribution credits.

Bodor and Rutkowski (2013) argue that the crisis changed the political context and framing of pension reform decisions. Policymakers in stressed countries could have arrived at the conclusion that a stance supporting pension reform driven by fiscal pressure could be the lesser evil between resistance to reform and the price of avoiding a default. Systemic reforms need a longer period for design development, and therefore crisis times could be more conducive to parametric reforms. An in-depth review of reforms in those countries most heavily affected by the crisis can be found in

<sup>2</sup> This factor takes into account the changing worker to pensioner ratio and tries to ensure that the contribution rate required to finance pension expenditure remains stable.

Social Justice Ireland (2013) or Petmesidou and Guillen (2014). In cases where radical reforms have been put in place, these seem to have been imposed from the outside (see Matsaganis 2012 for an extensive discussion of the Greek experience), although even in such cases policy-makers have found it hard to tackle the entitlements of the more privileged groups (Venieris 2013).

Even countries, like Portugal, which came to the crisis with reformed systems that were supposed to have tackled long-term increases in spending through complex design features, like sustainability factors and longevity indexes, were not spared further changes. Pedrosa (2014) indicates that amongst the first actions to be taken was a reduction in current benefits, particularly by stopping indexation. A lot of these measures have been deemed unconstitutional in Portugal. Zartaloudis (2014) argues that reforms have been more dramatic in Greece and Portugal than in Italy and Spain as the latter countries have less economic and political power to resist reform. He observes that retrenchment highlights that these countries have not yet converged to their richer neighbours' income standards. That said, other studies (like Sanchez 2014) argue that even in Italy and Spain - while changes may not be immediate - the introduction of adjustment factors aimed at reducing indexation to keep the system in financial balance means that some cohorts will bear a disproportionate share of the costs and current retirees may face sharply decreasing relative pensions during retirement.

Symeonidis (2013) argues that while the crisis brought down the social security system in other countries, in Greece the system was already on its knees due to the political actions of the preceding thirty years. Amongst the most pressing issues was the excessive fragmentation of the system, which featured 133 funds all with their particular rules. Indexation was arbitrary and subject to political pressure most of the time. He argues that politicians tended to make the system more generous in order to reduce pensioner poverty, but failed to understand that the inherent problem was inadequate coverage and not low pensions as such. To make things worse, the crisis directly affected the 133 pension funds directly as they mostly held Greek government bonds and the value of their assets plummeted.

The troika, a tripartite committee composed of the European Commission, the European Central Bank and the International Monetary Fund included explicit references to pension reform in their Memorandum of Understanding with the Greek government. They in-

roduced a basic pension to serve as a safety net, but halved the accrual rates of the general pension regime. The effective retirement age was increased and linked to life expectancy after 2021. The contribution period required was boosted to 40 years, benefit calculation was moved to career earnings and the indexation of benefits was prevented from exceeding inflation. Moreover, if expenditure increases by more than 2.5 percent of GDP by 2060, system parameters need to change (similar to a notional defined contribution system). In that case individuals who retired earlier will be obliged to return part of their pensions to a Government fund. According to Symeonidis (2013) pensions were cut by 20 percent for normal retirees and by 40 percent for early retirees, although those on lower incomes were spared. All of these measures are projected to lower growth in public pension spending by 2060 from 12 percent of GDP under the old regime to virtually nothing under the new one (European Commission 2015).

Greece may present an extreme case. Looking also at Spain, Italy and Portugal, Matsaganis and Leventi (2014) present evidence that pension cuts had a mixed distributional impact, as some of the changes were progressive. On the other hand, Natali and Stamati (2014) argue that cost containment measures put future adequacy at risk and gave rise to new problems of inequality, risk individualisation and increasing vulnerability to external shocks.

#### Quantifying the difference in the impact of pension reforms

To study whether pension reforms reflected the size of the economic downturn affecting the country, we look at estimates of pension entitlements made by the OECD in its biennial ‘Pensions at a Glance’ publication issued in 2007 (just before the crisis) and in 2014. These estimates were made using pension system rules before and after the crisis in 19 EU countries (comprising 92 percent of the total population of the Union).

To facilitate comparisons, countries are classified into groups using two classifications. In the first, the 19 countries are divided into a group where the relative difference in the GDP level for 2013 compared to that in 2008 is higher than the EU average and another where economic recovery is more pronounced. The first group entitled ‘countries with under-performing economies’ (CUPE) includes the Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, the

Netherlands, Portugal and Spain. It amounts to 39 percent of the EU’s total population. In the second classification, we divided the 19 countries into a group with countries heavily affected by the sovereign debt crisis, i.e. Greece, Ireland, Italy, Portugal and Spain, and the rest. The first group denoted henceforth as the “stressed countries” comprises 29 percent of the EU’s total population. It is worth noting that while the CUPE group includes countries with very different pension systems, stressed countries are nearly all members of the so-called Latin Rim or Southern European welfare model.

Table 1 presents estimates of replacement rates for someone on the average wage, and who was covered by the mandatory pension system in that country using the pension rules as in 2006, and those in place seven years later. Estimates are calculated assuming a 40-year uninterrupted career.

**Table 1**

Replacement rates for someone retiring in forty years’ time		
	2006	2013
Austria	90.9	90.2
Belgium	63.0	62.1
Czech Rep.	75.6	64.7
Denmark	86.7	77.4
Finland	68.8	62.8
France	63.1	71.4
Germany	58.0	57.1
Greece	110.1	70.5
Hungary	102.2	95.2
Ireland	38.5	44.8
Italy	77.9	81.5
Luxembourg	96.2	69.4
Netherlands	96.8	101.1
Poland	74.9	59.5
Portugal	69.2	67.8
Slovakia	72.9	85.4
Spain	84.5	80.1
Sweden	64.0	55.3
UK	41.1	41.8
<i>CUPE</i>	83.0	79.6
<i>Others</i>	59.4	59.0
<i>Stressed</i>	80.9	77.7
<i>Others</i>	63.7	62.7
Total	68.6	67.0

The replacement rate compares the initial pension accruing to an individual retiring after a 40-year uninterrupted career with their previous wage (assumed equal to the average wage).

Source: OECD (2007), OECD (2014).

On the face of it, it appears that the financial crisis did not result in a substantial weakening of pension entitlements. Even in stressed countries, replacement rates fell by an average of just 3.2 percentage points. The drop in countries less affected by the crisis was more restrained, at 0.4 percentage points. Pension entitlements fell in 13 countries, with the largest drops in Greece and Luxembourg. Meanwhile, three of the five biggest nations boosted pension generosity. One of the interesting facts emerging from Table 1 is that when one assumes full careers, the generosity of pensions is substantially higher in the countries that faced large economic downturns, including the stressed countries. The OECD estimates suggest that, despite the cuts, replacement rates remain high in most countries. In fact, the replacement rates in most countries, particularly those facing the most economic turmoil, exceed the 60 percent replacement rate benchmark that the World Bank deems

as unaffordable (Holzmann and Hinz 2005) and the 45 percent replacement rate that the International Labour Office deems as providing a decent standard of living (Humblet and Silva 2002).

These results are contradicted by Eurostat data on the proportion of elderly people living in relative poverty. The elderly poverty rate in stressed economies stands at 13.7 percent for men and 17.4 percent for women, versus 11 percent and 14.8 percent in the non-stressed economies. Yet Table 1 implies that pension generosity is significantly lower in the latter group. This paradox is easily explained. Replacement rate measures estimated using the full-career assumption are not very representative of actual generosity. Grech (2013) shows how these measures show very little correlation with at-risk-of-poverty rates. Especially for women and those on low incomes, career lengths are much shorter. Eurostat data on the duration of working lives suggests that in 2013, only men in Denmark, the Netherlands, Sweden and the UK worked 40 years or more. In Hungary the average man worked 32.5 years, while the average Greek and Italian man worked 35 years. Amongst women, careers tend to be even shorter, standing at about 32 years on average across the EU. In the Mediterranean countries, the contrast is even starker, with the average woman in Italy having a 25 year career, while women in Greece work for 28 years on average. Since recent reforms have strengthened the link between entitlements and career length, estimates such as those in Table 1 can be deceptive.

To address this issue, we can look at another measure of pension generosity, known as the benefit ratio. This measure compares the average pension with the average wage. The main difference compared to the OECD replacement rate measure is that instead of being based on the entitlements of a hypothetical worker, the benefit ratio is computed using projected pension expenditure, estimated on the basis of projected labour participation. These estimates, shown in Table 2, are derived from the projections made using pension rules in 2007 (European Commission 2009) and those made using rules set in 2014 (European Commission 2015). They suggest much lower generosity than the OECD estimates, with the average pension across countries amounting to just 44 percent of the average wage using the 2007 pension rules, versus the replacement estimate of 69 percent. Moreover, the relative difference in pension generosity between the groups of countries suggested by this indicator is somewhat lower. The countries most affected by the crisis have a benefit ratio just 20 percent higher than

Table 2

Benefit ratio for an individual retiring in 2050		
	2007	2014
Austria	42.7	38.7
Belgium	44.6	43.1
Czech Rep.	37.6	39.1
Denmark	37.5	34.8
Finland	48.3	45.6
France	48.3	40.5
Germany	42.5	37.3
Greece	83.7	54.1
Hungary	36.6	32.3
Ireland	31.5	26.2
Italy	51.7	52.4
Luxembourg	42.9	54.4
Netherlands	40.7	34.2
Poland	30.6	32.8
Portugal	34.5	46.7
Slovakia	34.9	32.2
Spain	54.5	40.2
Sweden	31.4	27.6
UK	35.8	34.8
<i>CUPE</i>	<i>49.7</i>	<i>44.1</i>
<i>Others</i>	<i>40.3</i>	<i>36.7</i>
<i>Stressed</i>	<i>53.3</i>	<i>47.0</i>
<i>Others</i>	<i>40.2</i>	<i>36.7</i>
Total	44.0	39.6

The benefit ratio is the ratio of the average pension to the average wage. The average pension is derived by dividing actual and projected pension expenditure by the number of pensioners.

Source: European Commission (2009), (2015).

those less affected, versus the 35 percent difference that exists in replacement rates.

The picture that emerges when one compares the projected benefit ratio for someone retiring in 2050 using the pre-crisis pension rules and the post-crisis ones diverges to a far greater degree than that shown by replacement rates. Even before the crisis, the projected benefit ratio was already quite low compared with the benchmarks set by the International Labour Office. The reforms implemented since then have reduced the average benefit ratio across countries by 4.4 percentage points, or a tenth. In the stressed countries, the decline was 6.3 percentage points, or nearly double the decrease observed among other countries. There is a similar difference in the projected reduction in generosity between countries most affected by the crisis and those less affected. One of the most striking results to emerge from Table 2 is that while the pre-crisis benefit ratio for Greece was projected to be double that of Luxembourg, after the reforms enacted since the crisis, the benefit ratio in Greece is now projected to be lower than in Luxembourg.

It is also important to remember that there have been substantial revisions of future economic conditions in these countries. In the 2009 Ageing Report, Greece's GDP was projected to grow on average by 1.8 percent per annum until 2060. The latest Ageing Report now projects an average growth of 0.7 percent per annum. By contrast, Luxembourg's projected average increase in GDP was revised downwards from 2.7 percent to 2.5 percent per annum. Thus, besides the significant decline in projections of relative pension generosity, there has also been a substantial reduction in expected levels of generosity in absolute terms.

## Conclusion

EU countries entered the financial crisis with relatively different pension systems. As a result of the crisis, either through direct external intervention or internal domestic political decisions, there now appears to be a greater degree of convergence amongst systems. This has occurred mainly as under-performing economies have cut their system generosity, in some cases like Portugal and Greece quite significantly. Despite the cuts, pension systems in the stressed economies should still be generous enough to keep the majority of pensioners out of relative poverty. However, this depends on a quick turnaround in the labour market performance in these countries,

particularly in terms of youth employment, as the reformed pension systems have introduced a stronger link between entitlements and contributory records. Unless this happens, there is a risk that today's young generations will face an uncertain retirement.

## References

- Bodor, A. and M. Rutkowski (2013), "NDC Schemes as a Pathway Toward Politically Feasible Pension Reform", In Holzmann R., E. Palmer and D. Robalino, eds., *Nonfinancial Defined Contribution Pension Schemes in a Changing Pension World*, World Bank, Washington, 215–32.
- Bonoli, G. (1997), "Classifying Welfare States: A Two-Dimension Approach", *Journal of Social Policy* 26(3), 351–72.
- Bosco, A. and Y. Chassard (1999), "A Shift in the Paradigm: Surveying the European Union Discourse on Welfare and Work", In W. O'Conghaile (ed.), *Linking Welfare and Work*; European Foundation for the Improvement of Living and Working Conditions, Luxembourg.
- Drahokoupil, J. and S. Domonkos. (2012), "Averting the Funding-Gap Crisis: East European Pension Reforms After 2008", *Global Social Policy* 12(3), 283–99.
- European Commission (2009), *The 2009 Ageing Report*, European Economy 2/2009, European Commission, Brussels.
- European Commission (2010), *Progress and Key Challenges in the Delivery of Adequate and Sustainable Pensions in Europe*, European Economy 71/2010, European Commission Brussels.
- European Commission (2015), *The 2015 Ageing Report*, European Commission Brussels.
- Ferrera, M. (1996), "The Southern Model of Welfare in Social Europe", *Journal of European Social Policy* 6(1), 17–37.
- Fultz, E. and S. Steinhilber (2003), "The Gender Dimensions of Social Security Reform in the Czech Republic, Hungary and Poland." In E. Fultz, M. Ruck and S. Steinhilber (eds.), *The Gender Dimensions of Social Security Reforms in Central and Eastern Europe: Case Studies of the Czech Republic, Hungary and Poland*, International Labour Office, Warsaw.
- Grech, A.G. (2013), *How Best to Measure Pension Adequacy*, CASE/172, LSE, London.
- Grech, A.G. (2014), "Evaluating the Possible Impact of Pension Reforms on Elderly Poverty in Europe", *Social Policy & Administration* 49(1), 68–87.
- Hinrichs, K. (2013), "Successional Crisis in Europe: Any Impact on Germany's Pension System?", In J. Meszaros (ed.), *Pension Systems in Crisis: Response and Resistance*, National Pension Insurance, Budapest.
- Hirose, K. (2011), *Pension reform in Central and Eastern Europe in Times of Crisis, Austerity and Beyond*, International Labour Office, Budapest.
- Holzmann, R. and R. Hinz (2005), *Old-Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform*. The World Bank, Washington D.C..
- Humblet, M. and R. Silva (2002), *Standards for the XXIst Century: Social Security*. International Labour Office, Geneva.
- Impavido, G. and I. Tower (2009), *How the Financial Crisis Affects Pensions and Insurances and why the Impacts Matter*, IMF Working Paper No. WP/09/151, Washington D.C..
- Katrougalos, G. and G. Lazaridis (2008), "The Southern European Welfare States at the Dawn of the New Millennium: Identity and Problems", *Social Cohesion and Development*, 3(1), 5–25.

Liebfried, S. (1992), Towards a European Welfare state? On Integrating Poverty Regimes into the European Community, in Z. Ferge and J.E. Kolberg (eds.), *Social Policy in a Changing Europe*, European Centre for Welfare Policy Policy and Research, Frankfurt.

Matsaganis, M. (2012), "Social Policy in Hard Times: The Case of Greece", *Critical Social Policy* 32(3), 406–21.

Matsaganis, M. and C. Leventi (2014), "The Distributional Impact of Austerity and the Recession in Southern Europe", *South European Society and Politics* 19(3), 393–412.

Natali, D. (2011), Pensions After the Financial and Economic Crisis: a Comparative Analysis of Recent Reforms in Europe, *Working Paper 2011.07*, European Trade Union Institute Brussels.

Natali, D. and F. Stamati (2014), "Reassessing South European Pensions After the Crisis: Evidence From Two Decades of Reforms", *South European Society and Politics* 19(3), 309–30.

OECD (2007), Pensions at a Glance 2013: OECD and G20 Indicators, OECD Publishing.

OECD (2014), Pensions at a Glance 2013: OECD and G20 Indicators, OECD Publishing.

Orszag, M. (2013), "Will the Financial Crisis Change Pensions?", In J. Meszaros (ed.), *Pension Systems in Crisis: Response and Resistance*, National Pension Insurance, Budapest.

Pedroso, P. (2014), *Portugal and the Global Crisis: the Impact of Austerity on the Economy, the Social Model and the Performance of the State*, Friedrich Ebert Stiftung Berlin.

Petmesidou, M. and A. M. Guillen (2014), "Can the Welfare State as we Know it Survive? A View From the Crisis-Ridden South European Periphery", *South European Society and Politics* 19(3), 295–307.

Sanchez, A. R. (2014), "The Automatic Adjustment of Pension Expenditures in Spain: An Evaluation of the 2013 Pension Reform", *BdE Working Paper No. 1420*, Banco d'España, Madrid.

Social Justice Ireland (2013), *A Study of the Crisis and Austerity on People, With a Special Focus on Greece, Ireland, Italy, Portugal and Spain*, Caritas Europe, Brussels.

Soede, A. J., C. Vrooman, P. M. Ferraresi and G. Segre (2004), *Unequal Welfare States: Distributive Consequences of Population Ageing in six European Countries*. Social and Cultural Planning Office The Hague.

Symeonidis, G. (2013), The Case of Greece: Through the Wormhole" In J. Meszaros (ed.), *Pension Systems in Crisis: Response and Resistance*, National Pension Insurance Budapest.

Venieris, D. (2013), *Crisis Social Policy and Social Justice: The Case for Greece, Hellenic Observatory Papers on Greece and Southeast Europe*, GreeSE paper 69, LSE London.

Vis, B., K. van Kersbergen and T. Hylands (2011), "To What Extent Did the Financial Crisis Intensify the Pressure to Reform the Welfare State?", *Social Policy and Administration* 45(4), 338–53.

Whitehouse, E. (2009), Pensions During the Crisis: Impact on Retirement Income Systems and Policy Responses, *Geneva Papers on Risk and Insurance – Issues and Practice*, 01/2009; 34(4), 536–47.

World Bank (2013), *Reversal and reduction, resolution and reform: lessons from the financial crisis in Europe and Central Asia*, Washington: World Bank.

Yermo, J. and C. Severinson (2010), *The Impact of the Financial Crisis on Defined Benefit Plans and the Need for Counter-Cyclical Funding Regulations*, OECD Paris.

Zartaloudis, S. (2014), "The Impact of the Fiscal Crisis on Greek and Portuguese welfare States: Retrenchment Before the Catch-Up?" *Social Policy & Administration* 48(4), 430–49.



## THE ROBUSTNESS OF PENSION SYSTEMS: LESSONS FROM THE CRISIS

FALILOU FALL<sup>1</sup>

### Introduction

The recent economic crisis has provided a stress test for pension systems. The fall in financial market values during the crisis constituted a major shock for funded schemes. The crisis also lowered potential output and thus the revenue base for social protection schemes. At the same time, ageing and other secular trends raise long-term sustainability issues. What is the impact of the crisis on pension systems in OECD countries? How have different pension systems been exposed to the various types of shocks and trend developments of main macroeconomic variables? Which policies can increase the robustness of pension schemes?

The aim of this article is three-fold: firstly, it will analyse the impact of the crisis on pension systems, assessing the sustainability impact and changes to the adequacy (or generosity) of benefits; secondly, lessons will be drawn about the weaknesses and robustness of different types of schemes building on simulations of different long-run shocks (productivity, ageing and migration); and, finally, building on the experiences of different OECD countries, it will provide policy recommendations to strengthen the robustness of pension systems.<sup>2</sup>

In a nutshell, public pay-as-you-go (PAYG) pension systems have generally weathered the crisis well, fulfilling their social goal of maintaining income for pensioners, although the medium and long-term consequences

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<sup>2</sup> This article is based on an OECD Economic Policy Paper on the "Vulnerability of Social Institutions" and its accompanying working papers; among which are Pisu (2014) and Pareluisen (2014).

will likely be significant. On the other hand, private pension funds were severely affected by the financial crisis, with a sizeable aggregate real investment loss in 2008. In terms of policies, increasing the retirement age is a more efficient way of balancing PAYG pension schemes, including defined-contribution point schemes, while preserving pension adequacy, than increasing the contribution rate or decreasing the pension rate. However, raising the retirement age is not sufficient, if options for early retirement exist; the employment of older workers needs to be facilitated. Adjusting key parameters automatically to trend changes also enhances the financial robustness of PAYG pension systems. The adjustment can link the pension level, the retirement age, the contribution period or a combination of these factors to life expectancy. To ensure adequacy in the future and to avoid ageing costs unduly weighing on social budgets, widening the coverage of voluntary private pensions should be a prime objective in countries where they represent an important complement to (relatively

Figure 1

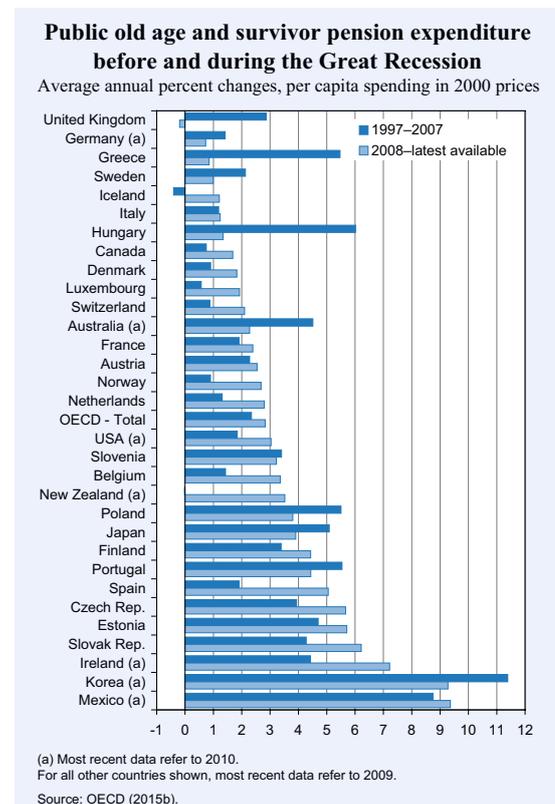
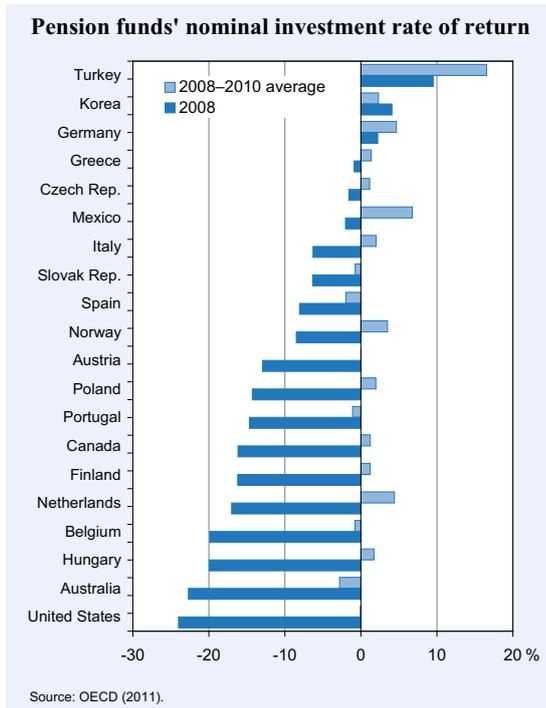


Figure 2



low) public pensions. A life cycle investment approach and prudential regulations, such as funding ratios, are important to safeguarding the financial sustainability of private and funded pension schemes.

**The impact of the recent crisis on pension spending and revenues**

Public old age pension expenditure in real terms continued to drift up during the crisis, although Iceland was an exception to this rule, as it recorded a small drop (Figure 1). Indeed, pension reforms aside, public pension expenditure is not sensitive to cyclical changes, depending largely on past wage and contribution trends along with demographic patterns. Pension financing, however, is sensitive to cyclical variations, particularly with regard to changes in wage growth, potentially resulting in pension system deficits. Contribution rates remained unchanged in most countries over the period 2007 to 2010, at close to 20 percent of gross earnings on average in the OECD. Moreover, during the crisis, labour productivity was negative in most of the OECD countries, adding to the slack in potential output and therefore the financing source of pension systems (OECD 2015a).

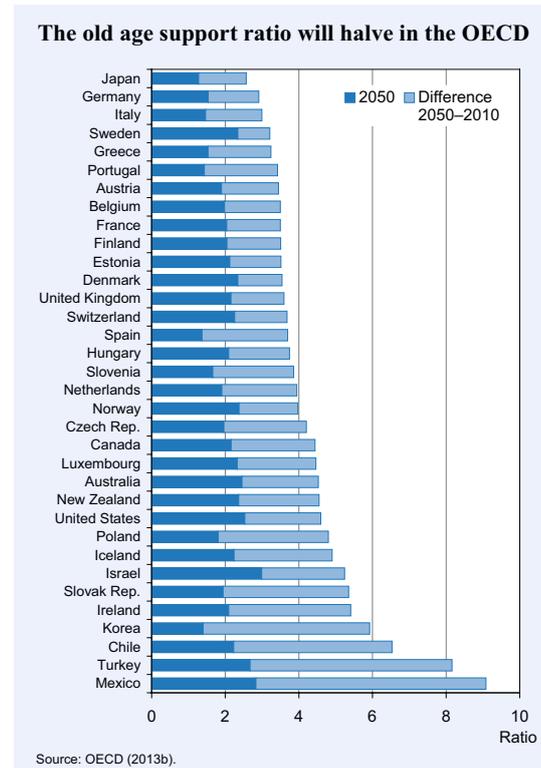
Private pension funds in the OECD countries were hard hit by the financial crisis, with an aggregate loss of 23

percent of their real value in 2008 (D’Addio, Seiseddos and Whitehouse 2009). However, there are considerable differences in portfolio performance across countries. Ireland, the United States and Australia experienced the greatest decline in pension funds’ nominal investment rate of return in 2008, with declines well over 20 percent; while in other countries, notably Germany, Korea and Turkey, modest positive returns were maintained (Figure 2). From 2008 to 2010, average returns were still negative for some countries, such as Spain, the Slovak Republic, Portugal or Belgium. Countries with a greater share of equity holdings in 2007 experienced the greatest investment loss, while those less vested in the stock market remained relatively unscathed (Fall, Bloch, Hoeller, Pareliussen and Pisu 2014).

**Adequacy of pensions during the crisis**

Public PAYG pension systems generally weathered the initial crisis years well, fulfilling a counter-cyclical role by maintaining income for pensioners, although the medium- and long-term consequences will likely be significant. On average, public pensions account for about 75 percent of total pensions in OECD countries (OECD 2013b). Private pensions and income from accumulated financial assets play a large role in several OECD coun-

Figure 3



**Box 1****Two stylised PAYG pension schemes*****The PAYG DB scheme***

In the PAYG defined-benefit scheme, employees contribute to the financing of the scheme during their career. At retirement, the pension is calculated by applying a pension rate to the reference salary, which is the average career salary. The reference salary depends on the revaluation index used to up-rate past salaries at the retirement year, which is the growth rate of wages. During retirement, pensions are indexed to the inflation rate. At the scheme level, each year's contributions pay current pensions. The annual balance depends, on the financing side, on the size of the payroll and the contribution rate and, on the spending side, on the number of retirees and on the average pension. If pension spending exceeds total contributions the scheme is in deficit.

***The PAYG DC point scheme***

The accumulated rights of an individual are calculated in terms of the number of points accumulated over the working life. The number of points acquired is determined by dividing contributions paid by the purchasing value of the point, which is determined as the price of one unit of deferred life annuity. The pension at retirement is calculated by multiplying the number of points by the service (or selling) value of the point, which is the balancing value of the scheme. The service value of the point is identical for all insured individuals. It converts the points into monetary values at the retirement year and also during retirement. Thus, pension levels during retirement are revalued with respect to its development. The purchasing value of the point and the service value of the point are the two key parameters for the steering of the scheme. They are adjusted to ensure that the scheme remains in balance. Point prices depend on the projection of life expectancy by age cohort.

tries, representing about 44 percent of retirement income in the United States and nearly half of all retirement income in Australia and the United Kingdom. Relying on financial asset revenues was a source of vulnerability. For instance, in the United States, the crisis affected the revenues of the elderly mostly through its impact on asset returns (Fall, Bloch, Hoeller, Pareliussen and Pisu 2014).

In most European countries, retirement incomes have largely been unaffected by the crisis. Average old age pensions have grown, albeit modestly over the crisis period. In terms of buying power, compared to the active population, retirement pensions rose largely in line with, and in some cases slightly more than average wages over the period of 2007 to 2010, with the only small dip being seen in Slovenia, and a significant catch-up of average pensions to average wages for Estonia (Fall, Bloch, Pareliussen and Pisu 2014).

**Analysing the vulnerability of PAYG systems to various shocks**

PAYG and funded schemes are exposed to various shocks in different ways. Demographic shocks are the main source of the vulnerability of pension systems. Demographic developments are unfavourable to the financial sustainability of pension systems in all OECD countries (Figure 3). This is compounded by the lasting effects of the recent crisis and slowing productivity

growth. OECD-wide, public pension spending is expected to increase from 9 percent of GDP in 2010 to 12 percent of GDP in 2050. Pension spending is expected to be above 15 percent of GDP in 2050 in France, Greece, Italy, Austria, Belgium, Slovenia and Luxembourg (OECD 2013b). However, countries are also exposed to productivity growth changes or negative migration developments (OECD 2014b) that can undermine the sustainability of PAYG pension schemes.

Two stylised PAYG models, a defined-benefit (French type) and a point scheme (German type), have been developed to illustrate the transitional and permanent impact of different types of shocks (Box 1). Fall (2014) provides more detail on the model parameters, the simulation assumptions and the results. Both schemes are in steady state in the baseline scenario and balanced. In the baseline demographic scenario the mortality rate is constant. There is thus no ageing and the number of retirees is constant.

**The impact of a productivity shock**

The stylised model was used to simulate the impact of a productivity shock on the two schemes. Under the assumption that productivity and real wages move in tandem over longer periods, the productivity shock is simulated as a permanent reduction in the growth rate of the real wage by one percentage point from two percent.

Due to the shock, the balance of the DB scheme moves gradually into deficit up to year 40 (-17 percent of baseline revenues) and then it improves gradually to -5 percent of baseline revenues in the long run (Table 1). As initial pensions are tied to wage developments, the average pension decreases considerably in the long run in comparison with the baseline average pension. Revenues go down by even more, as revenues depend on the wage bill, which is much larger than the pension bill.

The PAYG DC point scheme is balanced by definition. Under the productivity shock, as the revenues of the scheme decrease, pension benefits shrink progressively leading to a reduction in the average pension of 50 percent compared with the baseline average pension. The service value of the scheme decreases in line with the revenues of the scheme. In the long run, as the cohorts entering retirement are affected by the productivity shock and therefore have accumulated less capital points, the decrease in the service value necessary to balance the scheme is lower than that required in the medium term.

### The impact of a migration shock

The migration shock is a permanent negative shock. From the initial year of the shock, the size of the cohort entering the labour market (aged 20) is lowered permanently by five percent. 40 years later all working cohorts are five percent smaller than in the baseline. 40 years after the shock, these smaller cohorts start retiring, which improves the support ratio progressively.

The impact of the negative migration shock on the balance of the DB scheme follows the evolution of the support ratio and is temporary. From the initial year of the shock to year 40 the balance of the scheme deteriorates. Then, as these cohorts of lower size retire, the support ratio improves and so does the balance of the scheme. In the long run, the DB scheme reverts to balance.

The DC point scheme is balanced by definition. The negative impact of the migration shock is absorbed by declining pensions. As revenues decline, the service value of the point is reduced to balance the scheme. The

**Table 1**

#### Vulnerability of PAYG schemes to shocks

	Year 10 after the shock	Year 30 after the shock	Year 40 after the shock	Year 70 after the shock
<b>Productivity shock</b>				
<b>DB scheme</b>				
Difference in balance (in percent of baseline revenues)	0	-7	-17	-5
Difference in average pension (in percent)	-3	-13	-16	-44
<b>Point DC scheme</b>				
Difference in average pension (in percent)	-3	-20	-33	-50
Difference in point service value (in percent of baseline value)	-2	-17	-30	-22
<b>Migration shock</b>				
<b>DB scheme</b>				
Difference in balance (in percent of baseline revenues)	-2	-5	-7	0
Difference in average pension (in percent)	0	0	0	-2
<b>Point DC scheme</b>				
Difference in average pension (in percent)	-2	-5	-7	-2
Difference in point service value (in percent of baseline value)	-2	-4	-6	0
<b>Ageing shock</b>				
<b>DB scheme</b>				
Difference in balance (in percent of baseline revenues)	-7	-23	-26	-29
Difference in average replacement rate (in percent points)	-4	-3	-4	-5
<b>Point DC scheme</b>				
Difference in average replacement rate (in percent points)	-7	-10	-12	-13
Difference in service value (in percent)	-4	-14	-18	-21
<p>Note: The schemes are balanced in the baseline scenario. The productivity shock is a reduction in the growth rate of the real wage by one percentage point. The migration shock is a permanent negative shock. The size of the cohort entering the labour market (aged 20) is lowered permanently by five percent. In the long run the labour force is five percent lower than in the baseline. The ageing shock induces a fall in the support ratio from 2.3 to 1.5 in the long run. The average pension is the annual average of pensions among all pensioners. The average replacement rate is the average pension over the annual average wage among all workers.</p>				

Source: Fall (2014).

average pension decreases in line with contributions and stays below the baseline in the long run.

### The diffusion of an ageing shock

The demographic shock scenario corresponds to a longevity shock. The longevity shock induces a fall in the support ratio from 2.3 to 1.5 in the long run.

In the DB scheme, ageing induces a progressive deterioration of the balance of the scheme. The average replacement rate (the ratio of the average pension to the average wage) in the ageing scenario is lower than in the baseline due to a decline in the average pension, reflecting the fact that pensions are averaged among all cohorts in retirement, with the oldest pensioner cohorts having lower pensions than younger cohorts as pensions are indexed to prices, rather than wages.

The DC point scheme is balanced by definition. The negative effect of the same ageing process is reflected in a decline in the replacement rate. The decline in the replacement rate is larger than for the DB scheme. The service value of the point also diminishes in line with the support ratio, whereas the purchasing value of the point – defined as the price of one unit of deferred life annuity – increases with life expectancy. Therefore, individuals gain a lower number of points at a lower service value.

To summarise, the simulations show that:

- Lower trend productivity growth decreases the pension benefits paid out by a DB scheme in the long run, thus affecting adequacy. The balance of the DB scheme deteriorates because pension revenues decrease more than pension spending.
- A negative permanent migration shock has a temporary negative effect on the balance of the DB scheme. In the long run, the DB scheme reverts to balance. As the DC point scheme is balanced by definition, it is the average pension, which is negatively affected by the migration shock. A negative migration shock is similar to a negative fertility rate shock.
- The effect of the ageing shock on the DB scheme is straightforward. As the number of pensioners increases, the balance of the DB scheme deteriorates. In the DC point scheme, it is the average replacement rate (the ratio of average pensions to the average wage), which decreases sharply. In the long run, the average replacement rate is much lower in the ageing scenario compared with the baseline scenario.

- The simulations also confirm that the diffusion of shocks in pension systems is very long. It takes 40 years to reach the peak effect of the productivity and migration shocks and 30 more years to reach a new steady state.

### The exposition of funded pension schemes to macroeconomic shocks

The main impact of ageing on private funded pension systems results from the improvement in life expectancy and the uncertainty surrounding it (i.e. longevity risk). An increase in life expectancy lengthens the time people remain in retirement, which, in turn, increases the liabilities of defined-benefit (DB) pension plans and annuity providers (Antolin 2007). In addition, the uncertainty about future longevity gains has affected the ability of DB pension funds to provide the level of retirement income participants were promised. In defined-contribution (DC) pension plans, individuals bear the risk.

Population ageing will also affect funded private pensions through its impact on financial markets, and particularly on portfolio allocation and returns on investment. The impact of ageing on market returns is not straightforward and controversial. D'Addio et al. (2009) using historical data on returns on equities and bonds in major OECD economies over the past quarter century show a median annual real return of 7.3 percent on a portfolio equally split between equities and bonds. It might be expected that, over a very long period, the degree of uncertainty in investment returns is small, as a few bad years in the market are likely to be offset by boom years. However, they found the degree of uncertainty to be large, even for the relatively long investment horizons of pension schemes.

### Pension reforms in response to the crisis to strengthen the robustness of pension systems

The crisis led to a renewed reform push in many countries. Most reforms have focussed on increasing the retirement age either directly or by increasing the minimum number of years of contributions required for full pension eligibility.<sup>3</sup> The official retirement age

<sup>3</sup> See Fall (2014) for the different impacts and propagation mechanisms of the three types of reforms (increasing retirement age, increasing contribution rates and reducing pension benefits) on sustainability and pension adequacy.

has already been increased or is legislated to increase in most OECD countries. The Netherlands, Poland and Sweden plan to raise the pension age, while in Iceland and Norway, the pension age is already 67. Luxembourg (60), France and the Slovak Republic (62 both) have the lowest pensionable age for men and Chile, Luxembourg and Poland (60) for women. However, Poland introduced a gradual increase in the retirement age for women (67 by 2040) and for men (67 by 2020). The effective retirement age is lower than the pensionable age in many OECD countries due to early retirement schemes and distortions of the retirement-income system, which affect the individual's retirement decision (Fall et al. 2014a).

Public pension contribution rates (employee's plus employer's contributions) have remained broadly stable since the mid-1990s (OECD 2013b), except in the Czech Republic. Since the crisis, some countries have decided on an increase in contribution rates (Canada/Quebec, Finland, France, Luxembourg and Portugal) or a reduction in tax rebates (Ireland, Netherlands and Sweden). Concerns over the effect of higher labour taxes on employment have counteracted any further raises in contribution rates in other countries.

For private plans, the crisis led to a better diversification of asset holdings of private plans to avoid the dramatic losses experienced at the onset of the crisis. Some countries, such as Austria, the Netherlands and Iceland, divested massively from equity markets, with Iceland favouring bills and bonds, and Austria and the Netherlands investing in mutual funds with a better split of monetary and equity holdings (Fall and Bloch 2014). Pension funds in the United States moved eight percent of total pension fund investments from equity holdings to public sector bills and bonds and other investments. Only Germany and Mexico increased

their equity holdings, but in both instances by small amounts.

### Policy recommendations to strengthen the robustness of pension systems

#### *Automatic adjustment mechanisms can shelter pension systems from the ageing shock*

Automatic adjustment mechanisms are an alternative to frequent and difficult pension reforms and create greater clarity about the future shape of the pension system. Three key variables (the pension level, the pensionable age or the contribution rate) can be adjusted to bring the sustainability of pension systems into line with changes

**Table 2**

Automatic adjustment mechanisms to ensure the sustainability of pension schemes				
	Link of pension benefit to life expectancy	Pension valorisation and indexation	Retirement age	Contribution rate
Australia	X			
Canada	X	X		X
Chile	X			
Czech Republic			X	
Denmark			X	
Estonia	X			
Finland	X			
France			X <sup>1</sup>	
Germany	X	X		X
Greece			X	
Ireland	X			
Israel	X			
Italy	X		X	
Japan	X	X		X <sup>2</sup>
Mexico	X			
Netherlands			X <sup>3</sup>	
Norway	X			
Poland	X			
Portugal	X	X		
Slovak Republic	X			
Sweden	X	X		
United Kingdom	X			
United States	X			

Note: Pension valorisation refers to rates applied to past contributions or past wages in DB schemes that determine their value at the retirement date. Indexation refers to annual pension increases, including rates of return in NDC schemes. The link of pension benefit to life expectancy may be partial.

<sup>1</sup> For France, it is the contribution period for the receipt of a full pension, which is linked to life expectancy and the adjustment is not completely automatic as the government has to enact it.

<sup>2</sup> For Japan, the measures are temporary up to 2017.

<sup>3</sup> For the Netherlands, the retirement age will be adjusted to life expectancy from 2023 after the pension age has gradually increased to 67 years.

Source: OECD (2012).

in life expectancy. Many OECD countries have introduced automatic adjustment mechanisms to cope with ageing (see Table 2). Sweden, for instance, automatically adjusts benefit levels when the balancing ratio (present and future resources over liabilities of the pension system) is below one. In Finland, the life expectancy coefficient automatically adjusts pension payments as life expectancy changes. In notional defined-contribution schemes (Sweden, Chile, Estonia, Mexico and Italy) and some defined-contribution plans, accumulated contributions and investment returns are converted into a pension or annuity in retirement, with the conversion factor depending on life expectancy. Ten countries still do not have automatic adjustment mechanisms linked to gains in life expectancy yet. However, in most of these countries, an increase in the retirement age is already planned.

#### ***Policies to safeguard the sustainability of funded schemes***

Prudential regulation is important for safeguarding the financial sustainability of private pension schemes facing large financial market risks. Restrictions or limits on investments in different asset classes and minimum funding ratios are among the regulatory instruments (Fall and Bloch 2014). Prudential regulation faces a trade-off between preventing excessive risk-taking and allowing for sufficiently high returns on investments to provide adequate pensions. However, the pension capital of individuals close to retirement or already in retirement should be invested in safer assets, even though they have lower returns. Investment strategies based on this life-cycle approach should be the default investment strategy, as shown by OECD work (Antolín, Payet and Yermo 2010). In voluntary and occupational private plans, including life insurance, individuals should also be encouraged to annuitise their withdrawal from schemes as a protection against longevity risk.

Private plans should be sufficiently well-funded. Full funding exists, in principle, for defined-contribution plans. The funding ratio requirements should be flexible given the long-term liabilities of pension plans. The funding ratio or activation for additional capitalisation is normally stricter for defined-benefit pension plans. In addition, countries may need to have funding rules that seek to assure that plan assets at least equal all promised benefits to date if the plan were to be wound-up (the accumulated benefit obligation or termination liability). Pension funds in Portugal, Germany, Sweden and Norway were overfunded in 2010 and 2011, with an av-

erage funding ratio around 110 percent (Fall and Bloch 2014). Pension funds, by contrast, were underfunded at the end of 2011 in the Netherlands, Austria and Iceland.

#### ***Private occupational pension plans and DC schemes should be covered by an insurance mechanism***

Despite funding standards, there is a tail risk that private pension plans may be unable to fulfil their pension promises following economic or asset price shocks. For instance, if an enterprise sponsoring an occupational pension plan goes bankrupt, it is unable to honour its liabilities vis-à-vis the pension plan. To protect individuals from these shocks, an insurance mechanism is in place in some countries. Such schemes exist, for instance, in the United States, Sweden, Germany, Ontario – Canada, Switzerland, Japan and, more recently, in the United Kingdom. In the United States, for instance, the Pension Benefit Guaranty Corporation (PBGC) assumed responsibility for 47,000 people in 155 failed single-employer plans in 2012 and started paying benefits to the 17,000 retirees in those plans (PBGC 2012).

#### **References**

- Antolín, P. (2007), “Longevity Risk and Private Pensions”, *OECD Working Papers on Insurance and Private Pensions* no. 3, OECD Publishing, Paris. doi: [10.1787/261260613084](https://doi.org/10.1787/261260613084)
- Antolín, P., S. Payet and J. Yermo (2010), “Assessing Default Investment Strategies in Defined Contribution Pension Plans”, *OECD Journal: Financial Market Trends* 1 (5), 87–115. doi: [10.1787/fmt-2010-5km7k9tp4bhb](https://doi.org/10.1787/fmt-2010-5km7k9tp4bhb)
- D’Addio, A. C., J. Seisdedos and E. R. Whitehouse (2009), “Investment Risk and Pensions: Measuring Uncertainty in Returns”, *OECD Social, Employment and Migration Working Papers* no. 70, OECD Publishing, Paris. doi: [10.1787/224016838064](https://doi.org/10.1787/224016838064)
- Fall, F., D. Bloch, P. Hoeller, J. K. Pareliussen and M. Pisu (2014), “Vulnerability of Social Institutions”, *OECD Economic Policy Papers* no. 11, OECD Publishing, Paris. doi: <http://dx.doi.org/10.1787/5jz158r4q0zn-en>
- Fall, F., D. Bloch, J. K. Pareliussen and M. Pisu (2014), “Vulnerability of Social Institutions: Lessons from the Recent Crisis and Historical Episodes”, *OECD Economics Department Working Papers* no. 1130, OECD Publishing, Paris.
- Fall, F. and D. Bloch (2014), “Overcoming Vulnerabilities of Pension Systems”, *OECD Economics Department Working Papers* no. 1133, OECD Publishing, Paris. doi: <http://dx.doi.org/10.1787/5jz1591prxth-en>
- Fall, F. (2014), “Comparing the Robustness of PAYG Pension Schemes”, *OECD Economics Department Working Papers* no. 1134, OECD Publishing, Paris.
- OECD (2011), *Pension Markets in Focus No. 8*, OECD Directorate of Financial and Enterprise Affairs, Paris. <http://www.oecd.org/finance/private-pensions/48438405.pdf>
- OECD (2012), *OECD Pensions Outlook 2012*, OECD Publishing, Paris. doi: [10.1787/9789264169401-en](https://doi.org/10.1787/9789264169401-en)
- OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris. doi: [10.1787/pension\\_glance-2013-en](https://doi.org/10.1787/pension_glance-2013-en)

OECD (2014), *OECD Pensions Outlook 2014*, OECD Publishing, Paris.  
doi: <http://dx.doi.org/10.1787/9789264222687-en>

OECD (2015a), *Economic Policy Reforms- Going for Growth 2015*, OECD Publishing, Paris.

OECD (2015b), OECD Social Expenditure Database, May 2015.

Pareliussen, J. (2014), “Overcoming Vulnerabilities of Unemployment Insurance Schemes”, *OECD Economics Department Working Papers* no. 1131, OECD Publishing, Paris.

PBGC (Pension Benefit Guaranty Corporation) (2012), *Annual Report 2012: Excellence in Customer Service*, Washington D.C..

Pisu, M. (2014), “Overcoming Vulnerabilities of Health Care Systems”, *OECD Economics Department Working Papers* no. 1132, OECD Publishing, Paris.



## TRADABLE REFUGEE-ADMISSION QUOTAS, MATCHING AND THE NEW EUROPEAN AGENDA FOR MIGRATION

JESÚS FERNÁNDEZ-HUERTAS MORAGA<sup>1</sup> AND  
HILLEL RAPOPORT<sup>2</sup>



### Introduction

*“Migration is a shared responsibility of all Member States and all Member States are called now to contribute to tackling this historical challenge” - Federica Mogherini, 13th of May 2015 (Vice-President of the European Commission).*

In the past decade, the European Union has experienced a refugee crisis that has recently blown up into a humanitarian catastrophe. The UNHCR estimates that about 1,700 people died at Europe’s southern borders and reports almost 40,000 crossings over the Mediterranean Sea in 2015 alone. Thousands of refugees are accumulating on its shores (Lampedusa, Malta, Sicily) and land borders (Greece, Bulgaria), fleeing civil war (in Libya or Syria), armed conflict or oppression (e.g., Eritrea). Even if these numbers are small in comparison to those of refugees hosted by States of first asylum such as Lebanon, Jordan or Turkey, this puts pressure on countries of first arrival, with thousands of persons then migrating into the EU-Schengen space and beyond. At the same time, the existing European asylum policy is overwhelmingly judged as inappropriate and is criticized not just because of its inability to address the challenges posed by the volume of refugee flows, but also due to the many legal deficiencies, political inconsistencies and economic inefficiencies that characterize the current asylum system. At a legal and political level, the “Common European Asylum System” (CEAS), launched in 1999, is coming increasingly under fire.

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For one thing, the so-called “Dublin-system” (implemented since 1997) whereby an asylum seeker is mainly under the responsibility of the country of first-entry, is increasingly widely regarded as ill-conceived (e.g., De Bruycker et al. 2010). Under this system, an asylum seeker who entered the EU in Greece, for instance, and got arrested for illegal staying in Belgium, for example, could be transferred back to Greece. Such a system creates disincentives for the Greek government to effectively implement the CEAS norms. Furthermore, the Dublin system prevents asylum seekers from choosing their country of asylum within the European Union, creating incentives for them to circumvent legal restrictions to mobility before their asylum claims have been examined. A second major issue with the current system is that of responsibility sharing. Indeed, the current system places (at least in theory) a disproportionate burden on the countries of first entry (such as Malta, Greece or Italy) that are responsible for many asylum seekers due to their geographic position.

Over the last 30 years, multiple proposals have been made in order to address the issue of responsibility-sharing for refugees and asylum seekers across EU Member States (ICMPD 2014). Naturally, the priority of implementing the various proposals on the European agenda has varied with the intensity of migration pressure on Europe’s Southern borders. Accordingly, in the past decades national authorities in Denmark, Germany, and Austria, as well as bodies of the European Union (e.g., Eurasyum, the European Refugee Fund) presented different approaches to designing an optimal scheme of responsibility sharing. Most of these proposals include economic (GDP, unemployment rate), demographic (population size), and geographic dimensions (national area in square km).

Under this general process, many attempts at improving the system have been initiated. For instance, in 1994 Germany proposed a distribution key that weights GDP, size of the national territory, and size of the population equally by one third, identifying France, Sweden, Greece, and Germany as the countries that take on the most responsibility and Spain, Portugal and some Baltic and Eastern European countries as the ones who lack sufficient involvement. Surprisingly, under the German

distribution key of 1994, Italy would be an underperformer today; meaning that in 2013 Italy accepted too few refugees relative to its economic, demographic and geographic size (ICMPD 2014). On the EU side, efforts were directed towards a further harmonization of asylum law, the creation of the European Asylum Support Office (EASO), the continuation of EU funding through the new Fund for Asylum, Migration and Integration, and finally the relocation of refugees across receiving countries. However, it is fair to say that progress in practice has been rather limited (Hatton, 2011, 2012, 2013; Thielemann et al. 2010).

The Guidelines adopted by the European Council on 27 June 2014 underline that “the Union needs an efficient and well-managed migration, asylum and borders policy, guided by the Treaty principles of solidarity and fair sharing of responsibility, in accordance with article 80 of the Treaty on the Functioning of the European Union and its effective implementation” (guideline 5) and that “The Union’s commitment to international protection requires a strong European asylum policy based on solidarity and responsibility” (guideline 7; European Council 2014). This has not been the case so far: out of the 625,000 asylum applications filed in 2014, almost half were placed in Germany (>200,000) and Sweden (>88,000), whereas France, Italy, and the UK together only registered about 160,000 applications. Many Eastern European countries and the Baltic States in particular exhibit very low numbers of applications and admissions. This pattern existed even before the tremendous increase in applications in 2013 and 2014 (numbers have doubled since then). Between 2000 and 2012 the EU received on average around 300,000 asylum claims per year (Figure 1), about one third of the total registered in the world. Over three quarters (79 percent) of the stock of asylum seekers in the EU in 2012 accumulated in only six destinations countries:

Figure 1

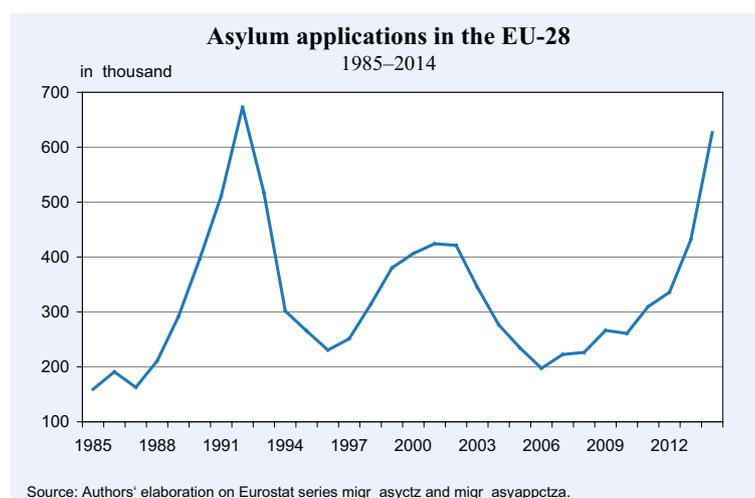
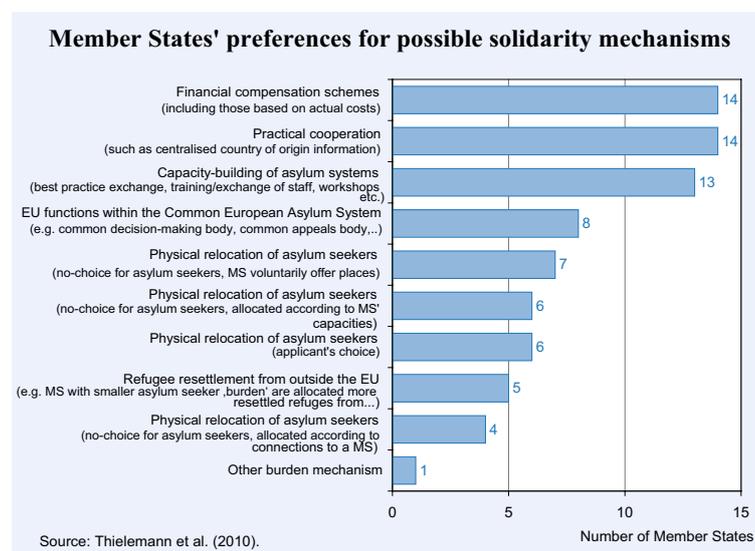


Figure 2



Germany, France, Greece, Austria, the UK and Sweden. A similar picture emerges from the 2012 numbers on refugees in Europe. 87 percent of the 1.3 million refugees in the EU are hosted by Germany, France, the UK, Sweden, Italy and Austria and 44 percent of them reside in Germany alone.

Based on surveys asking Member States about their preferences regarding their preferred solidarity mechanisms (Figure 2), Thielemann et al. (2010) called for (1) harmonization of the costs (and conditions) for hosting asylum-seekers, (2) a financial compensation for over-burdened countries, and (3) a voluntary movement of asylum seekers from more to less affected states, avoiding costly forced movements as far as possible. As

we shall see, these recommendations are totally consistent with our proposals.

The current system of EU asylum policy has failed. The increasing intensity of heated debates between strong advocates and resilient opponents of a new distribution key for refugee admissions shows that the current system is not a system of shared responsibility and solidarity. In fact, under any of the distribution keys proposed in recent decades, there would be less disparity between Member States than is the case today (ICMPD 2014). The current tragic circumstances create a political momentum for overhauling the Dublin system.

### The distribution key: a useful first step

In its Communication “A European Agenda on Migration” of the 13th of May 2015, the European Commission (2015) stated that one of the main weaknesses in the current refugee policy is: “the lack of mutual trust between Member States, notably as a result of the continued fragmentation of the asylum system”. The Commission demands greater responsibility-sharing, proposes a revision of the Dublin system in 2016 and proposes to adopt immediately (by June 2015) its recommendations for a European resettlement and relocation scheme proposed on May 27 2015. The European scheme for relocation and resettlement is designed as a voluntary system of refugee allocation that follows a specific distribution key. The key takes into account the population size of a country (with a weight of 40 percent), its GDP (40 percent), unemployment rate (ten percent), and the number of spontaneous asylum applications and resettled refugees per million inhabitants between 2010 and 2014 (ten percent).<sup>3</sup> The scheme will consist of a single European pledge of 20,000 resettlements (for Syrian refugees currently in refugee-camps in Syria’s neighboring countries – see Table 1) and the relocation of 40,000 asylum seekers currently in Greece and Italy and who arrived after April 15 to be relocated in other EU countries who will receive 6,000 Euros for each person relocated. It is worth noting that the financial compensation to Member States is well below the average direct cost per relocated refugee as evaluated by a European Commission (2010) report setting the direct

<sup>3</sup> The Commissions’ proposed distribution key comes closest to the key proposed by the Expert Council of German Foundations on Integration and Migration (SVR) and the German Stiftung Wissenschaft und Politik (SWP) in 2013 to find criteria for the allocation of refugees across regions (*Länder*) within Germany. The SWP model considers economic strength as measured in GDP (40 percent), population size (40 percent), geographic area (ten percent) and the unemployment rate (ten percent).

Table 1

European Commission resettlement scheme (2015)	
Member State	EC resettlement scheme (%)
Austria	2,22
Belgium	2,45
Bulgaria	1,08
Croatia	1,58
Cyprus	0,34
Czech Republic	2,63
Denmark	1,73
Estonia	1,63
Finland	1,46
France	11,87
Germany	15,43
Greece	1,61
Hungary	1,53
Ireland	1,36
Italy	9,94
Latvia	1,10
Lithuania	1,03
Luxembourg	0,74
Malta	0,60
Netherlands	3,66
Poland	4,81
Portugal	3,52
Romania	3,29
Slovakia	1,60
Slovenia	1,03
Spain	7,75
Sweden	2,46
United Kingdom	11,54

Source: European Commission (2015).

cost at 8,000 euros (of which screening and travel costs were evaluated at 1,000 euros and the rest is accommodation and other support costs). It is also worth noting that even 8,000 euros seems way below the true cost of hosting refugees – including all economic, social and political costs – as discussed below.

Improving solidarity and responsibility sharing within the EU first requires a proper assessment of the burden carried and the opportunity created for each Member State. Indeed, a number of attempts have already been made to assess the current extent of financial burden sharing between EU countries with respect to EU asylum policy. Most prominently, Thielemann et al. (2010) estimate the total amount to be distributed in 2008–2013 by the European Refugee Fund as representing only 14 percent of the total asylum costs for the EU-27 for the

single year 2007. These costs include reception, accommodation, administrative procedures, deportation, integration measures, and so on. They do not, however, include the economic costs and benefits (e.g., the immigration surplus, net fiscal contribution) of refugees, nor the perceived social and political costs often associated with their integration. Such costs, however, are not commensurate with the direct costs detailed above, and are the salient ones in terms of political decision-making. As we discuss below, the true costs (and benefits) of hosting refugees can only be revealed through a market mechanism akin to the tradable quotas systems proposed here.

### **Tradability: revealing the true cost of refugee admission**

The definition of a distribution key allocating refugee-admission quotas among Member States is a matter of equity (or fairness) in responsibility/burden sharing. However, there is no reason to believe that the proposed distribution key could be efficient, in other words that it allows for allocating refugees to destinations in a way that minimizes the total cost of such resettlement/relocation. In fact, the distribution key is based on an implicit “capacity” argument, rather than on an “ability” one. Minimizing total cost implies obtaining information on the costs and benefits of hosting refugees/relocating asylum seekers in each potential destination. However, destination countries have little incentives to reveal such information if they know it may affect the distribution key. This is why setting an initial quota based on simple observable factors is merely a first step which, although being a welcome one, cannot suffice to determine an efficient allocation.

The mechanism we propose in Fernández-Huertas Moraga and Rapoport (2014, 2015) is not demanding in terms of informational requirements since the revelation of the opportunity costs of refugee admission (that is, of countries’ comparative advantage in hosting refugees) is precisely one of its main objectives. The true costs are unknown ex-ante, but can be revealed over time through the market, which is an approach that has been widely used in other fields. There is a vast literature on tradable quotas, starting with the seminal contribution of Coase (1960). The literature has mainly concerned applications related to cap-and-trade systems to reduce pollution levels and the creation of a market for tradable emission permits is still proposed as one of the most promising instruments for addressing climate change challeng-

es (Stavins 2011). Hahn and Stavins (2010a,b) discuss the pros and cons of tradable quotas and try to explain why they are so popular among politicians. The main reason they put forward is the ability of such schemes to achieve efficiency and cost-effectiveness, even in the presence of well-known problems such as market power and political bargaining. While in practice tradable quotas have not been used except for environmental policy, they have also been proposed as a potential solution to a variety of externality situations such as budget deficit reduction (Casella 1999) or fertility controls (De la Croix and Gosseries 2007).

Our model (Fernández-Huertas Moraga and Rapoport 2014, 2015) is based on the premise that providing protection to refugees and to asylum seekers with valid claims is an international public good. Given this, free riding is likely to occur – that is, each EU country would like the protection to be provided by other Member States, resulting in an overall under-provision of protection. Formally, countries will take in refugees to the point where the marginal cost of accepting an additional refugee would outweigh the benefit of hosting him or her, not taking into account that other countries care about providing international protection. Optimally, Member States would take into account the overall benefit of providing care to refugees across all EU states instead of only their own. As we shall see, this optimal solution can be replicated by creating a market for tradable refugee quotas.

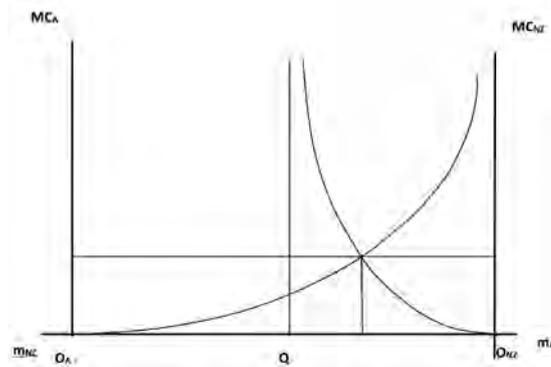
Three points must be emphasized. First, this would be a non-traditional market in the sense that participation would be restricted, at least initially, to EU governments. Second, the market would not apply to all refugees or asylum seekers at the doors of the EU, but only to a predetermined number that Member States would need to agree upon. Third, the system presupposes that the initial distribution of quotas must also be agreed upon at the EU level through some commonly accepted “burden-sharing” rules or, to use the recent and more politically correct terminology, a commonly accepted distribution key.

A simple example with two destination countries can illustrate how such a market could work. Suppose that Australia and New Zealand agree on hosting a given quantity of (climate-change) refugees from Kiribati, denoted by the distance OA – ONZ in Figure 3. They also agree initially on a distribution key such that Australia will host Q refugees, while New Zealand takes in the complementary number. Figure 3 also depicts the mar-

ginal net perceived costs of both countries on the vertical axis, with Australia counting refugees from left to right – so that the net marginal cost increases in the number of refugees received - and New Zealand counting them in the opposite direction. If a market for tradable quotas opened between both countries, they would reach an equilibrium quota price at the intersection of both marginal cost curves. At the price marked by this intersection, Australia is willing to receive financial compensation for taking more refugees than its initial quota, while New Zealand is willing to pay for not having to host them.

Figure 3

**A market for tradable refugee-admission quotas**



Source: The authors.

Unlike the market for tradable emission quotas, the market for refugee admission quotas is more complex, as refugees are heterogeneous in terms of education, age, family status, etc., which can make them more or less desirable from the viewpoint of receiving countries. Not less importantly, in contrast to pollution particles, refugees have preferences over their locations. This creates room for further efficiency gains by taking into account refugees' and Member States' preferences – hence the matching mechanism detailed below.

**Taking preferences into account: matching**

The creation of a suitable matching process has been proposed in the economic literature to optimize various processes whereby items offered by certain providers have to be assigned to agents, such as university admissions (Roth 1985) and even kidney donors to patients in need (Roth, Sonmez and Unver 2004). In this context, the problem is to assign indivisible items (rights for a

refugee or an asylum seeker to enter a given destination country, or “visas”) to agents (refugees or asylum-seekers) taking into account their preferences, as well as destination countries' preferences over the type of refugees they host.

**Refugees' preferences**

From a theoretical point of view, the problem is analogous to assigning houses to tenants with existing rights, studied, among others, by Abdulkadiroglu and Sonmez (1999). The solution proposed by Abdulkadiroglu and Sonmez is the use of the top-trading cycle mechanism:

1. Each refugee/asylum seeker ranks all potential destination countries, specifying those to which he/she would not want to go at all.
2. An ordering of refugees and asylum seekers is randomly chosen from a given distribution of orderings.
3. For any given ranking of countries made by the refugees and ordering of refugees, the outcome is obtained using the following algorithm: assign the first refugee (from the ordering obtained in step 2) her top choice, the second refugee her top choice, and so on, until someone requests a visa for a country whose quota (resulting from the market) is filled. Assign that refugee her second choice, and so on, until all quotas are filled.

The top trading cycles mechanism has been shown to be individually rational, as it assures every refugee a visa that is at least as good as the possibility of staying in her first-asylum country or her refugee camp. It is also incentive-compatible (no refugee has an incentive to misrepresent her preferences whatever the strategies others use) and Pareto-efficient in the sense that it guarantees that two refugees will not find it beneficial to switch places (destinations).

It turns out that the addition of the matching mechanism to the market for tradable refugee-admission quotas (TRAQs) described in the previous section does not alter its efficiency properties as long as it is properly designed. If participating countries were to be compensated on the basis of the number of refugees and asylum seekers they bid for in the market, they would have an incentive to bid for a large quota, and subsequently discourage refugees and asylum seekers from going there. This way, they would be compensated by the market in addition to not actually incurring the cost of hosting the refugees and asylum seekers, who would use the

matching mechanism not to go to an undesirable destination. To avoid this perverse incentive, the solution is to compensate countries based on the actual numbers of refugees and asylum seekers they host, rather than on those they bid for.

This amounts to forcing destination countries to pay the market price for the unfilled part of their quotas. This is a penalty that countries would have to pay for not being able to attract as many refugees and asylum seekers through the matching mechanism as they would bid for in the market. This acts as a disciplining device, insuring that countries do not have incentives to become unattractive from the point of view of refugees and asylum seekers. In practice, the EU could be in charge of collecting this penalty in the case of any off-equilibrium behaviour.

In terms of enforcement, the penalty would generate incentives for countries to abide by their agreements and actually host the number of refugees they accept to host in theory. Of course, collecting the penalty would be an additional enforcement issue, but we do not think it different from the enforcement problems associated with the collection of other payments at the EU level.

### Member states' preferences

Receiving countries also have preferences with respect to the type of refugees or asylum seekers they host. There are a number of dimensions that affect the expected cost of refugees from the viewpoint of receiving countries: skills and education, age, gender, language spoken, religion, etc. For some of these characteristics (e.g., education), countries' preferences are likely to be homogenous, while for others (e.g., language), they are heterogeneous. In the first case, taking countries' preferences into account will have no effect on the type of refugees they receive. It is only if countries' preferences are heterogeneous – that is, there is horizontal differentiation – that the expression of their preferences can affect the type of refugees they receive, making it closer to their preferred type and helping to make the whole mechanism even more cost-effective.

There are at least two ways to introduce countries' preferences into the model. The first and less interesting way would imply creating one market for each type of refugee and asylum seeker that exists. For example, if countries only had preferences between refugees and asylum seekers, the EU would only need to create a market for

refugee quotas and a market for asylum seekers' quotas. A second possibility, described in the previous section, is to group refugees and asylum seekers into the same market, even if they are heterogeneous. This methodology can be extended to the case where there are many different types of refugees or asylum seekers over which countries can have preferences in terms of, for example, their language, their nationality or their skill level.

Adding a matching mechanism that assigns both destinations to their preferred refugees and refugees to their preferred destinations to the market for TRAQs has no effect on the efficiency properties of the market. Marginal cost equalization across migrant types and across countries would still obtain, but at a lower level. The cost-reduction depends on how heterogeneous countries are in their preferences: the more heterogeneous they are, the higher the cost-reduction.

### Conclusion

The recent proposal by the EU Commission to introduce a distribution key for refugees and asylum seekers is a welcome concrete measure to give solidarity and responsibility sharing in the field of asylum a practical content. It is akin to the distribution of initial quotas. We propose to extend this policy proposal in two directions. First, we propose to implement a matching mechanism to take refugees' and host countries' preferences into account. In doing so, the matching mechanism will contribute to lower the expected cost of hosting refugees for host countries and will improve refugees' long-term integration prospects. Second, we propose that the initial quotas allocated through the distribution key could be traded in a market for refugee-admission visas. The two proposed components are linked in the sense that the matching mechanism makes it possible to design a sanction scheme ensuring that receiving countries will have incentives to be attractive from the perspective of refugees and asylum seekers, that is, to offer them good treatment and conditions.

### References

- Abdulkadiroglu, A. and T. Sonmez (1999), "House Allocation with Existing Tenants", *Journal of Economic Theory* 88, 233–260.
- Casella, A. (1999), "Tradable Deficit Permits. Efficient Implementation of the Stability Pact", *Economic Policy* 29, 323–347.
- Coase, R. (1960), "The Problem of Social Cost", *Journal of Law and Economics* 3, 1–44.

De Bruycker P., Jaillard M., Maiani F., Vevstad V., Jakuleviciene L., Bieksa L., de Bauche L., Jaumotte J., Sarolea S., Hailbronner K. (2010), *Setting up a Common European Asylum System: Report on the application of existing instruments and proposal for the new system*, Luxembourg, Publications Office of the European Union.

De la Croix, D. and A. Gosseries (2007), "Procreation, Migration, and Tradable Quotas", in R. Clark, A. Mason and N. Ogawa, eds., *Population Aging, Intergenerational Transfers and the Macroeconomy*, Edward Elgar Publishing, 227–49.

European Commission (2010), *Study on the Feasibility of Establishing a Mechanism for the Relocation of Beneficiaries of International Protection*, JLT/2009/ERFX/PR/1005, Copenhagen: Directorate General of Home Affairs.

European Commission (2015), *A European Agenda on Migration*, Brussels, 13.5.2015, COM(2015) 240 final.

European Council (2014), *Conclusions concerning the area of Freedom, Security and Justice and some related horizontal issues*, 2014/C 240/05.

Fernandez-Huertas Moraga, J. and H. Rapoport (2014), "Tradable Immigration Quotas", *Journal of Public Economics* 115, 94–108.

Fernandez-Huertas Moraga, J. and H. Rapoport (2015), "Tradable Refugee-admission Quotas and EU Asylum Policy", *CESifo Economic Studies*, forthcoming.

Hahn, R. W. and R. N. Stavins (2010a), "The Effect of Allowance Allocations on Cap-and-Trade System Performance", *The Journal of Law and Economics*, forthcoming.

Hahn, R. W. and R. N. Stavins (2010b), Why cap-and-trade should (and does) have appeal to politicians, <http://www.voxeu.org/article/why-cap-and-trade-should-and-does-have-appeal-politicians>.

Hatton, T. J. (2011), *Seeking Asylum. Trends and Policies in the OECD*, Centre for Economic Policy Research (CEPR), London, UK.

Hatton, T.J. (2012): "Asylum Policy in the EU: the case for deeper integration", *Norface Migration Discussion Paper* No. 2012-16.

Hatton, T.J. (2013): "The Slump and Immigration Policy in Europe", *The Australian National University Centre for Economic Policy Research Discussion Paper* No. 686.

ICMPD (2014), An Effective Asylum Responsibility-Sharing Mechanism, *ICMPD Asylum Programme for Member States – Thematic Paper* October.

Roth, A. E. (1985): "The College Admissions Problem is not Equivalent to the Marriage Problem", *Journal of Economic Theory* 36, 277-288

Roth, A., T. Sonmez and U. Unver (2004), "Kidney exchange", *Quarterly Journal of Economics* 119 (2), 457–88.

Stavins, R. N. (2011), "The Problem of the Commons: Still Unsettled after 100 Years", *American Economic Review* 101, 81–108.

Thielemann, E., R. Williams, C. Boswell and Matrix Insight Ltd. (2010), "What system of burden-sharing between Member States for the reception of asylum seekers?", *Directorate General for Internal Policies, Policy Department C: Citizens' Rights and Constitutional Affairs, Civil Liberties, Justice and Home Affairs*, European Parliament, Brussels.

## HOW DOES FIRM HETEROGENEITY AFFECT INTERNATIONAL TAX POLICY?

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Firms - even in a narrowly defined sector - differ vastly in their size and productivity (Bernard, Jensen, Redding and Schott 2007). A firm at the 90th percentile of the productivity distribution produces almost twice as much output with the same inputs as a firm at the 10th percentile of the productivity distribution (Syverson 2011). This empirically observed heterogeneity has become a core element of recent theoretical and empirical research in many sub-disciplines of economics, such as the international trade literature (based on the seminal theoretical contribution by Melitz 2003). Clearly, the heterogeneity of firms is also relevant to the proper and well-targeted design of international corporate tax policy. Nevertheless, the existing theoretical literature on international corporate taxation has largely been confined to settings where all firms are identical.

In this contribution we report on the still relatively small strand of theoretical research that incorporates firm heterogeneity into models of tax policy towards mobile, multinational firms. The issues addressed by this strand of research are both positive and normative. The positive questions are whether firm heterogeneity can help to explain the tax reforms that we have observed in recent decades, and whether it can contribute to our understanding of firms' reactions to tax policy. From a normative perspective, firm heterogeneity raises the question of whether firms with different levels of productivity should be taxed differently under an optimized corporate tax scheme, and what this differentiation should look like.

### Implications for positive international tax theory

#### *International competition for foreign direct investment*

We first turn to the implications of firm heterogeneity for positive international tax theory. Table 1 compares statutory and effective corporate tax rates in 20 OECD countries in 1990 and 2014 and contrasts this with the development of corporate tax revenue. A first, and puzzling, observation is that corporate profit tax revenue has risen in the majority of OECD countries, even though tax rates have been sharply reduced simultaneously. This suggests an increase in the corporate tax base that is caused by a combination of rising profitability in the corporate sector and an increase in the number of incorporated firms (see Auerbach, Devereux and Simpson 2010 for further discussion). But with a larger corporate tax base, standard optimal tax theory would predict that tax rates should rise, rather than fall.

A second observation from Table 1 is that effective tax rates, which include changes in the corporate tax base, have fallen by less than statutory corporate tax rates. This suggests that the corporate tax base has been broadened along with the reduction in the statutory tax rate.<sup>2</sup> One explanation for this pattern of tax reforms is that countries compete primarily for the allocation of accounting profits in multinational enterprises (MNEs), and these are driven primarily by the statutory tax rate (Devereux, Lockwood and Redoano 2008). At the same time, countries broaden their tax bases to increase tax revenue at a margin that does not affect the profit allocation of MNEs.

Related to this, a third observation (not shown in Table 1) is that firms located in low-tax countries have a systematically higher profitability than firms located in countries with higher taxes (Hines 1999; Becker, Fuest and Riedel 2012). This runs counter to a basic tax arbitrage argument, which would predict that pre-tax profits should be higher in high-tax countries, in order for after-tax profits to equalize in a world of international capital mobility. The conventional explanation for this



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<sup>2</sup> Similar reforms have also been enacted in less developed countries (Klemm and van Parys 2012).

Table 1

Corporate taxation in 20 OECD countries						
	Statutory tax rate <sup>a)</sup> (in %)		Effective average tax rate <sup>b)</sup> (in %)		CIT (Capital income tax) revenue (% of GDP)	
	1990	2014	1990	2014	1990	2012
Australia	39	30	35	27	4.0	5.2
Austria	39	25	29 <sup>d)</sup>	22	1.4	2.2
Belgium	41	34	33 <sup>d)</sup>	28	2.0	3.0
Canada	28	15	39 <sup>e)</sup>	23	2.5	2.9
Denmark	40	25	30 <sup>d)</sup>	22	1.7	3.0
Finland	50	20	35 <sup>c)</sup>	18	1.9	2.1
France	37	38	31	32	2.2	2.5
Germany	60	31	49	27	1.7	1.8
Ireland	10	13	9 <sup>d)</sup>	11	1.6	2.3
Italy	46	30	38	24	3.7	2.8
Japan	50	38	43	34	6.4	3.7
Netherlands	35	25	30 <sup>c)</sup>	19	3.0	1.9
New Zealand	33 <sup>c)</sup>	28	30 <sup>e)</sup>	26	2.4	4.7
Norway	51	27	25 <sup>c)</sup>	25	3.7	10.5
Portugal	40	30	33 <sup>f)</sup>	25	2.1	2.7
Spain	40	35	34 <sup>e)</sup>	34	2.8	2.0
Sweden	52	22	26 <sup>c)</sup>	19	1.5	2.6
Switzerland	31	21	23 <sup>d)</sup>	17	1.7	2.8
United Kingdom	35	23	31	21	3.4	2.7
United States	40	40	35 <sup>e)</sup>	35	2.4	2.5
<b>unweighted average</b>	<b>39.9</b>	<b>27.5</b>	<b>31.9</b>	<b>24.5</b>	<b>2.6</b>	<b>3.2</b>

<sup>a)</sup> including local taxes; <sup>b)</sup> see CBT Corporate Tax Ranking 2012, Appendix A for details of calculation; <sup>c)</sup> 1992; <sup>d)</sup> 1994; <sup>e)</sup> 1996; <sup>f)</sup> 1998; <sup>g)</sup> 1999

Source: Oxford University Centre for Business Taxation (2015), OECD (2014).

observation is that differences in the profitability of affiliates of a multinational group reflect profit shifting behavior from high-tax to low-tax countries. The question is, however, whether international profit shifting is the only explanation for both the observed tax-rate-cut-cum-base-broadening reforms and the higher profitability of firms in low-tax countries.

To address these issues, Davies and Eckel (2010) and Haufler and Stähler (2013) analyze two-country models of tax competition for internationally mobile firms that differ in their productivity. In equilibrium, the larger country chooses the higher tax rate.<sup>3</sup> While this pattern

<sup>3</sup> In these models, only an asymmetric tax equilibrium can exist. In particular, Haufler and Stähler (2013) show that a Nash equilibrium in taxes can exist in models with mobile, heterogeneous firms only when countries are sufficiently different with respect to their underlying market characteristics, such as country size. Intuitively, in cases where countries are very similar, each country will try to marginally underbid its neighbor in order to attract all the high-profitability firms. This “destabilizing” incentive will stop only when the equilibrium tax differential is so large that an underbidding strategy is too costly for the (large) high-tax country.

of tax differentiation is already known from models with homogeneous firms, the new feature arising from firm heterogeneity lies in the sorting of firms according to their productivity level. This sorting occurs because production costs are deductible from the corporate tax base; this deduction is more valuable in high-tax countries, and it is more valuable for firms with high production costs, i.e. low productivity. Therefore, in the location equilibrium, low productivity firms locate in the larger market, which has the higher marginal return to capital in equilibrium, but also the higher tax rate. By contrast, highly productive firms self-select into the small, low-tax country, because, for these highly profitable firms, the low tax rate overcompensates for the effect of the smaller market size. Therefore, the stylized fact that high-profitability firms tend to cluster in low-tax countries can be explained from the sorting of heterogeneous firms in a tax competition equilibrium, even in the absence of profit shifting.

A further result in models of tax competition with heterogeneous firms is that a simultaneous market expansion in both countries that increases corporate tax bases can lead to a fall in the corporate tax rate of both countries (Haufler and Stähler 2013, Proposition 4). This surprising result is obtained because an increase in market size (and hence profit opportunities) implies that firms react more sensitively to the existing international tax differential. As a result, some of the firms that originally locate in the large, high-tax country will move to the small, low-tax country following the market expansion. Hence, the pivotal firm (which is just indifferent between the two locations) changes, and it will be characterized by lower costs and hence higher profits in the new equilibrium. This makes the pivotal firm (still) more sensitive to any given tax differential and aggravates the tax competition between countries that compete for internationally mobile firms. In equilibrium, the increased elasticity of corporate tax bases dominates the higher level of tax bases from the perspective of both countries, thus causing equilibrium tax rates to fall.

As Table 1 has also shown, while tax rates have fallen, tax bases have been broadened in many countries. To explain this pattern of tax-rate-cut-cum-base-broadening reforms, Baldwin and Okubo (2009) and Bauer, Davies and Haufler (2014) endogenize the corporate tax base in models with firm heterogeneity and trade. The latter authors start from a trade model with product differentiation and imperfect competition. At the margin, countries have an incentive to subsidize capital by granting a tax allowance in excess of the true cost of capital. Trade integration then leads to higher effective tax rates on capital, and thus to a broadening of the corporate tax base. This is due to two effects. First, reduced trade costs imply that more foreign goods and fewer domestic goods are consumed in equilibrium. This, in turn, implies that subsidies to increase domestic production become less effective as economic integration proceeds, and hence the optimal policy is to reduce these subsidies. This effect is also present in models with homogeneous firms. However, in a model with firm heterogeneity there is a second reason for governments to increase effective tax rates on domestic firms: this policy replaces low-productivity domestic producers with high-productivity producers from abroad. Thus the aggregate costs of supplying domestic consumers with the differentiated good fall when the domestic corporate tax base is broadened. Therefore, firm heterogeneity provides a rationale for the broadening of domestic tax bases that goes beyond the mere collection of higher corporate tax revenues.

In conjunction with the results of Haufler and Stähler (2013), these findings match the combination of rising corporate tax revenue, broadened tax bases and sharply reduced corporate tax rates that has characterized corporate tax policy in OECD countries over the last decades (see Table 1). These stylized facts can therefore be explained solely by the competition for foreign direct investment when firm heterogeneity is incorporated into the analysis. The studies thus offer a complementary explanation to the tax competition for profit shifting in multinational firms, on which a large part of the existing literature has focused.

### *Profit shifting by multinational firms*

Firm heterogeneity also has implications for the profit-shifting opportunities of multinational firms. Bauer and Langenmayr (2013) analyze profit taxation under the ruling arm's length principle in the presence of heterogeneous firms. The arm's length principle states that for tax purposes, transactions between different subsidiaries of multinational corporations have to be treated as if they had taken place between independent parties. In other words, the "price" for internal transactions has to be the same as the price observed in the market for the same input.

This presumes that there are no fundamental differences between transactions within a multinational firm and among independent firms. Otherwise, the implied price for taxation is not correct. However, the international trade literature has shown that integrated, multinational firms are much more productive than domestic firms. In fact, it is this higher productivity that allows these firms to incur internationalization costs and to become multinationals in the first place. They can thus produce the input at a lower cost than the price at which it sells on the market. In addition, market prices include a mark-up that arises from the bargaining between the firm and the independent supplier. As a subsidiary within a multinational firm has less bargaining power than an independent supplier, this mark-up also implies that market prices are higher than input prices within the firm.

Bauer and Langenmayr (2013) model the decision of the firm between outsourcing and integrating the production of the input and analyze the consequences of this decision for the effective tax burden of the firm. They show that if the integrated firm uses the observed market price to value intra-firm transactions for tax purposes (as the tax law requires it to do), it pays less tax in its home country and more in the location where

it produces the input – but the latter is potentially a strategically chosen low-tax jurisdiction. As a result, the integrated, multinational company pays less tax than a comparable domestic firm that obtains inputs from an independent supplier abroad. Thus, including the productivity differences between multinational and domestic enterprises explains why multinational firms pay less tax (relative to their profits) than purely domestic companies, even when the multinational firms do not strategically influence transfer prices to minimize their tax burden. This result contributes to explaining the empirical evidence: Egger, Eggert and Winner (2010), for example, estimate that in European high-tax countries, subsidiaries of multinational corporations pay on average 32-57 percent less tax than similar domestically-owned firms.

Of course, the low tax burden of multinational firms can also arise because these firms shift profits abroad on purpose. Desai, Foley and Hines (2006) have shown that larger (and thus highly productive) firms are more likely to do so. Krautheim and Schmidt-Eisenlohr (2011) set up a model that reflects this empirical observation. They then study the competition in tax rates between a large country and a tax haven. As firms cannot produce in the tax haven, the two countries compete only for the firms' profits. In this model, a higher degree of firm heterogeneity increases the intensity of tax competition. More heterogeneity implies that there are more highly productive firms. As these firms react more strongly to tax rate differentials than low productivity firms, the large country has to lower its tax rate by a more significant amount. Nevertheless, a larger share of its tax base is shifted to the tax haven when firms are more heterogeneous. Thus, the existence of tax havens is more harmful for countries with a high level of firm heterogeneity.

Langenmayr (2015) proposes a similar model where governments can enact specific policies to limit profit shifting activities, such as thin capitalization rules or regulations on transfer prices. However, as these regulations can only focus on the means to shift profits, not on profit shifting itself, they impose costs also on firms that do not actively shift profits. Such policies can thus force low-productivity firms to exit the market. The resulting lower competition makes the remaining firms more profitable and induces them to shift even more profits abroad. Thus, because of firm heterogeneity, regulations to limit profit shifting may be self-defeating if they impose a large compliance burden on all firms.

### Implications for normative international tax theory

As the discussion above has shown, the effective tax burdens differ among firms with different productivity levels. One core issue in the research on firms with heterogeneous productivity is therefore whether optimal government policies should discriminate between firms with different productivity – and if so, in which direction. This question is taken up in Langenmayr, Haufler and Bauer (2015). To simplify the analysis, the model incorporates firms with only two productivity levels, high and low. Consistent with empirical and theoretical results from the new trade theory, the high productivity firms will also be the large firms in equilibrium.

In the model, the government has two tax instruments at its disposal, the statutory tax rate and a tax base parameter. While the statutory tax rate is constrained to be the same for all firms, the tax base parameter, and hence the effective tax rate, can vary. Such discriminatory effects arise, for example, from thin capitalization rules that limit the deduction of interest payments from the corporate tax base. In many countries, thin capitalization rules allow the full deduction of interest paid up to some absolute threshold value (see Table 2). Other things being equal, such tax codes imply that the deductibility of interest is higher, and the effective tax rate is therefore lower, for smaller firms. On the other hand, large firms have been empirically shown to reduce their tax base more aggressively through corporate tax noncompliance. To the extent that these transactions are not audited rigorously, tax policy can thus also discriminate in favor of larger and more productive firms.

The statutory tax rate that the government sets in this model is determined endogenously in the competition with a tax haven. In equilibrium, the statutory tax rate is thus high when the cost of shifting profits to the tax haven is high (and tax competition is accordingly weak). The optimally differentiated tax base policy depends critically on the degree of international tax competition. When tax competition is weak and optimal profit tax rates are high, favoring high-productivity firms is the optimal policy. When tax competition is aggressive and profit taxes are low, however, the optimal tax policy reverses and favors low-productivity firms.

The reason for this switch in the pattern of optimal tax differentiation is that tax policy pursues two conflicting goals. On the one hand, the government seeks to increase tax revenues by broadening the tax base of high-

Table 2

Thin capitalization rules in EU-15 countries			
Country	Scheme	Threshold	Introduced in
Austria	<i>No thin capitalization rule</i>		
Belgium	Thin capitalization rule, debt-to-equity ratio 5:1		2012
Denmark	Interest cap, 80% of profits	Interest > kr. 21.3m	2007
Finland	Interest cap, 30% of EBITDA <sup>a)</sup>	Interest > € 0.5m	2014
France	Thin capitalization rule, int. debt-to-equity ratio 1.5:1	Interest > € 0.15m	2007
Germany	Interest cap, 30% EBITDA	Interest > € 3m	2008
Greece	Interest cap, 25% EBITDA	Interest > € 1m	2014
Ireland	<i>No thin capitalization rule</i>		
Italy	Interest cap, 30% EBITDA		2008
Luxembourg	<i>No thin capitalization rule</i>		
Netherlands	Restriction of interest deduction	Interest > € 0.75m	2013
Portugal	Interest cap, 30% EBITDA	Interest > € 3m	2013
Spain	Interest cap, 30% EBITDA	Interest > € 1m	2012
Sweden	<i>No thin capitalization rule, some rules on deductibility of internal debt</i>		
United Kingdom	Worldwide debt cap	Large groups (EU definition)	2010
<sup>a)</sup> Earnings before interests, taxes, depreciation and amortization Notes: Limitation on interest deductibility in EU-15 countries. The year in the last column refers to the introduction or the last substantial change in the rules regarding interest deductibility.			
Source: Langenmayr, Haufler and Bauer (2015).			

ly productive and partly foreign-owned multinational firms. On the other hand, tax policy can increase the total productivity of the domestic economy by favoring the highly productive firms. This second objective will dominate when the government can capture a sufficiently large share of aggregate profits by means of a high profit tax rate. As profit tax rates fall due to tax competition, the first motive of raising more tax revenues from highly profitable firms by broadening their tax base becomes increasingly important.

The analysis thus predicts a fall in the tax advantages of large, productive enterprises as a result of economic integration and more aggressive corporate tax competition. This explains why many countries have countered the fall in statutory corporate tax rates over the last three decades by more serious attempts to increase the corporate tax base of the most productive firms. The German corporate tax reform of 2008, which is explicitly aimed at increasing the effective taxation of the largest (and most productive) multinational firms, is a typical example of such policies. Many other countries have also recently introduced measures aimed at limiting the tax advantages of large and highly profitable firms. A typical example is the proliferation of thin capitalization rules, shown above in Table 2. The model

thus gives an explanation for why these measures were aimed at large firms.

In summary, firm heterogeneity has important implications for both positive and normative tax theory. It contributes to an understanding of the observed patterns of corporate tax reforms and to explaining both the aggressive reduction of statutory tax rates and the comparatively low tax payments of multinational firms. This more detailed explanation of the forces shaping international tax competition is, in turn, important to shaping tax policy in the face of major productivity differences within the corporate sector.

## References

- Auerbach, A.J., M.P. Devereux and H. Simpson (2010), "Taxing Corporate Income", in J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba, eds., *Dimensions of tax design: the Mirrlees Review*, Chapter 9, Oxford University Press, Oxford, 837–93.
- Baldwin, R. and T. Okubo (2009), "Tax Reform, Delocation and Heterogeneous Firms", *Scandinavian Journal of Economics* 111 (4), 741–64.
- Bauer, C., R.B. Davies and A. Haufler (2014), "Economic Integration and the Optimal Corporate Tax Structure With Heterogeneous Firms", *Journal of Public Economics* 110, 42–56.

Bauer, C. and D. Langenmayr (2013), "Sorting Into Outsourcing: Are Profits Taxed at a Gorilla's Arm's Length?", *Journal of International Economics* 90 (2), 326–36.

Becker, J., C. Fuest and N. Riedel (2012), "Corporate Tax Effects on the Quality and Quantity of FDI", *European Economic Review* 56 (8), 1495–511.

Bernard, A.B., J.B. Jensen, S.J. Redding and P.K. Schott (2007), "Firms in International Trade", *Journal of Economic Perspectives* 21 (3), 105–30.

Davies, R.B. and C. Eckel (2010), "Tax Competition for Heterogeneous Firms With Endogenous Entry", *American Economic Journal: Economic Policy* 2 (1), 77–102.

Devereux, M., B. Lockwood and M. Redoano (2008), "Do Countries Compete Over Corporate Tax Rates?", *Journal of Public Economics* 92 (5-6), 1210–35.

Desai, M., F. Foley and J. Hines (2006), "The Demand for Tax Haven Operations", *Journal of Public Economics* 90 (3), 513–31.

Egger, P., W. Eggert and H. Winner (2010), "Saving Taxes Through Foreign Plant Ownership", *Journal of International Economics* 81 (1), 99–108.

Haufler, A. and F. Stähler (2013), "Tax Competition in a Simple Model With Heterogeneous Firms: How Larger Markets Reduce Profit Taxes", *International Economic Review* 54 (2), 665–92.

Hines, J.R. (1999), "Lessons From Behavioral Responses to International Taxation", *National Tax Journal* 52 (2), 305–22.

Klemm, A. and S. van Parys (2012), "Empirical Evidence on the Effects of Tax Incentives", *International Tax and Public Finance* 19 (3), 393–423.

Krauthaim, S. and T. Schmidt-Eisenlohr (2011), "Heterogeneous Firms, 'Profit-Shifting' FDI and International Tax Competition", *Journal of Public Economics* 95 (1), 122–33.

Langenmayr, D. (2015), "Limiting Profit Shifting in a Model with Heterogeneous Firm Productivity", *B.E. Journal of Economic Analysis and Policy (Contributions)*, in press.

Langenmayr, D., A. Haufler and C. Bauer (2015), "Should Tax Policy Favor High- or Low-Productivity Firms?", *European Economic Review* 73, 18–34.

Melitz, M. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica* 71 (6), 1695–725.

OECD (2014), OECD Revenue Statistics, <http://statlinks.oecdcode.org/232014343P1T025.XLS>.

Oxford University Centre for Business Taxation (CBT) (2015), CBT Tax Database, [www.sbs.ox.ac.uk/ideas-impact/tax/publications/data](http://www.sbs.ox.ac.uk/ideas-impact/tax/publications/data).

Syverson, C. (2011), "What Determines Productivity?", *Journal of Economic Literature* 49 (2), 326–65.

## HOUSEHOLD DEBT AND THE IMPORTANCE OF EFFECTIVE PRIVATE INSOLVENCY LAWS

### The development of private household indebtedness since 2000

The US subprime crisis and the Spanish housing market crisis among others have recently raised awareness of the importance of securing the sustainability of household indebtedness. Figure 1 shows the debt-to-GDP ratios of private households for European countries in 2000, 2008 and 2013. Household debt-to-GDP ratios have risen in the past decade for most countries in the EU, especially in the credit boom phase between 2000–2008, which was accompanied by loose credit conditions, as well as excessive mortgage lending in some countries.

Countries in this graph are sorted descending by their debt-to-GDP ratio in 2013, with Denmark topping the list with the highest debt-to-GDP ratio of almost 140 percent in 2013, followed by countries like the Netherlands and Ireland with debt-to-GDP ratios of over 100 percent. Countries with low debt-to-GDP ratios of around or below 30 percent in 2013 were mainly Eastern European countries like Romania, Bulgaria, Lithuania, Latvia and Hungary. The biggest European countries, France and Germany, were positioned in the middle with ratios of between 55–65 percent.

Changes in debt-to-GDP ratios (in percentage points) between 2000 and 2008 and between 2008 and 2013 are displayed in Figure 2. In the first period, 2000 to 2008, every country except Germany experienced a rise in the debt-to-GDP ratio; whereas efforts to deleverage have intensified throughout Europe since 2008. Especially in the Eastern European countries of Estonia, Latvia, Hungary and Lithuania cited above, but also in Ireland, the United Kingdom, Iceland and Spain, household debt-to-GDP ratios declined from 2008 to 2013. In countries like Greece, Norway, Sweden and Finland, on the other hand, the debt-to-GDP ratios still rose between 2008 and 2013, with Greece and Norway experiencing the highest increase during that period. Interestingly, some of these countries like Norway, the Netherlands and Sweden already had high debt-to-GDP levels in 2008. Overall, Europe is divided almost exactly into countries

that deleveraged and countries where debt-to-GDP ratios rose in recent years.

In 2012 the EU established the MIP Scoreboard (Macroeconomic Imbalances Procedure Scoreboard) as an annual early warning system consisting of eleven indicators covering the major sources of macroeconomic imbalances (European Commission 2012). Besides other macroeconomic indicators, the scoreboard gives information on debt-to-GDP targets and ratios: government debt should not exceed the well-known Maastricht criteria of 60 percent of GDP while private sector (including companies, households, etc.) debt should not exceed 133 percent of GDP.<sup>1</sup> Hence no overall target for private households alone officially exists to date.<sup>2</sup>

### Reasons for becoming an indebted household

High household debt is usually a result of accumulating consumer debts. There are several reasons for consumer over-indebtedness that can be economic, but also

<sup>1</sup> When the scoreboard was established in 2011/2012 the threshold for the debt-to-GDP ratio of the private sector was 160 percent.

<sup>2</sup> There are several empirical studies which give hints for deleveraging needs of households, for an overview please see European Commission 2014 p.15.

Figure 1

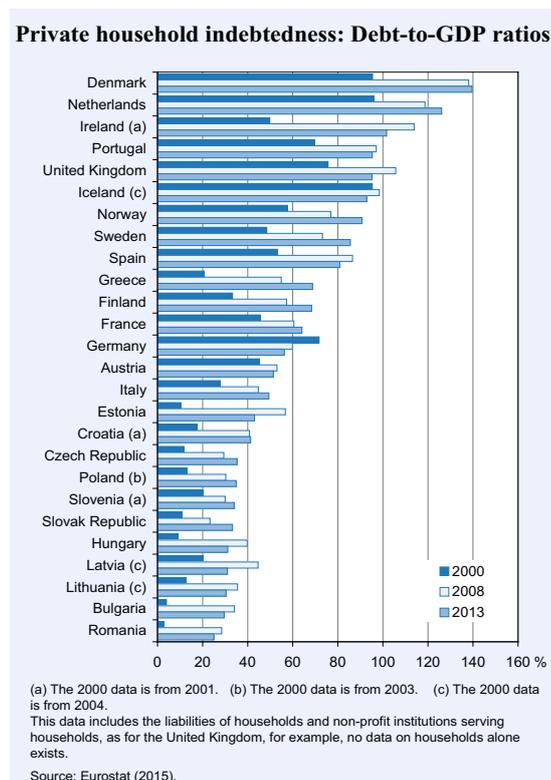
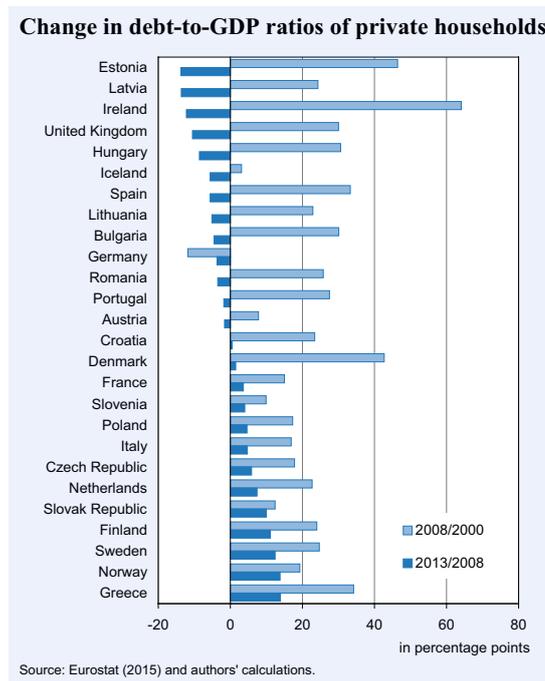


Figure 2



psychological/family-related. Among the main economic reasons are unemployment, the lack of a financial overview, business failure, excessive consumption and a lack of experience with banks (Ramsay 2012).

In the non-Euro countries in particular, but also in Austria, households are indebted in foreign currencies like the euro and the Swiss franc because these foreign currency loans had lower interest rates than loans in the national currency. A lack of consumer protection and information guidelines addressing possible risks about excessive consumption on credit, particularly regarding the exchange rate risks associated with foreign currency loans, are one explanation for the rising indebtedness. With the appreciation of the Swiss Franc after January 15<sup>th</sup> 2015, foreign currency loans in Swiss francs became an even bigger problem for the debtors holding these loans causing serious problems for a considerable number of households in countries like Austria, Poland and Hungary (The Economist 2015; Fisher et al. 2015).

### Ways to reduce household debt

High household debt becomes a problem when it prevents private individuals from taking part in economic life. Households that are heavily indebted reduce household consumption. Therefore, a severe debt overhang on the part of private households can threaten

economic growth. To counter this challenge several forms of active deleveraging can be pursued (European Commission 2014): negative credit flows (active debt repayment); changes in outstanding nominal debt via valuation changes (e.g. due to foreign currency denomination) and debt write-downs/restructuring; real GDP growth; and inflation (measured by the GDP deflator).

In the following we will focus on debt write-downs or restructuring via private insolvency laws, which have recently been implemented in a number of (East European) countries. These offer institutionalized ways of directly dealing with high household debt and avoid the severe macroeconomic side-effects of devaluations. In recent times, some governments have achieved debt-write downs via ad-hoc measures like the haircuts on loans or mortgages (see, for example, the case of Croatia, Government of the Republic of Croatia 2015). These measures can be criticized as they interfere with private contracts, damage the rule of law, induce moral hazard and undermine credit discipline, which creates negative incentives for private households to continue to run up excessive debt (Liu and Rosenberg 2013).

### Private insolvency laws for debt restructuring

Private insolvency laws have several purposes (also referred to as consumer/individual insolvency laws). In general, they aim to establish balanced and predictable burden sharing between debtors and creditors (Liu and Rosenberg 2013). On the one hand, such laws should help individuals to make a “fresh start” after a certain period of repayment by discharging their remaining debts that cannot be served. This is necessary to enable indebted persons to fully participate in the economic life again (Christopherson and Abjornsson 2011). On the other hand, insolvency laws should maintain credit discipline and prevent moral hazard. A legal framework on consumer bankruptcy should remove uncertainty about indebtedness and provide a standard framework for dealing with indebtedness for both debtors and lenders. In addition, out-of-court settlement for distressed mortgages, voluntary guidelines or codes of conduct could also provide guidance on mortgage restructurings for borrowers in financial distress.

Consumer bankruptcy regulations structure consumers' debt payments and limit the amount of earnings that can be spent on individuals' living expenses. In general, there are two opposing models of consumer insolvency laws: the Anglo-Saxon and the continental European

Table 1

Private insolvency laws in Europe				
Country	First effectiveness/ major reforms	Clusters for duration of discharge period		
		Short (shorter than 3 years)	Medium (between 3 and 5 years)	Long (longer than 5 years)
Austria	1995			x
Belgium	1998		x	
Bulgaria		Currently no law		
Croatia <sup>a)</sup>		Currently no law		
Czech Republic <sup>b)</sup>	1991 / 2008		x	
Denmark	1984		x	
Estonia	2004		x	
Finland	1993		x	
France	1989 / 1998	(x)	x	
Germany	1999 / 2014		(x)	x
Greece	2010		x	
Hungary		Currently no law		
Ireland	1988 / 2012		x	
Italy	2012		x	
Latvia	2008 / 2010	(x)	x	
Lithuania	2013		x	
Netherlands	1997		x	
Poland	2009	(x)	x	
Portugal <sup>c)</sup>	2004 / 2012	See footnote		
Romania		Currently no law		
Slovak Republic	2007		x	
Slovenia	2008		x	
Spain <sup>d)</sup>	2003 / 2013	See footnote		
Sweden	1994		x	
England & Wales	(1881)/2002	x		
Norway	1993		x	

Notes: In some countries (like Germany and Latvia) the discharge period can be shortened when fulfilling special requirements (x percent of all debts must be repaid for example). These shorter periods are shown in brackets.

<sup>a)</sup> A proposal to establish a consumer law was presented to the Croatian parliament in June 2014. On March 13th 2015 the Croatian government endorsed the personal bankruptcy bill.  
<https://vlada.gov.hr/news/government-endorses-personal-bankruptcy-bill/16540>

<sup>b)</sup> Before 2008 the insolvency law recognised the traditional bankruptcy proceedings for consumers.

<sup>c)</sup> In Portugal a law establishing a special regime to protect housing loan debtors in the dire economic situation of September 2012 applies to mortgage debtors who meet certain conditions such as low income levels, the suffering of income loss, real-estate value loss, and the existence of no other assets.

<sup>d)</sup> The bankruptcy law is only designed for corporate and self-employed individuals whose debt is tied to business; debt relief for individuals for mortgage debt is possible since 2013.

Source: Ramsay 2012; Niemi 2012 and authors' research.

model. The first stands for a liberal “fresh start” policy and is common in the United States, Canada, England and Commonwealth countries. It is referred to as a “Fresh Start” system, since debtors can discharge their debt via bankruptcy and continue their lives free of their existing debt without the need to follow a “payment plan” over a certain time period (Ramsay 2012). The continental approach, on the other hand, consists of a long-lasting procedure, which allows for a fresh start

only after a long period of distress and sanctions during which individuals have to live on minimum subsistence and need to contribute all excess earnings to their creditors (“earned start”) (Ramsay 2012). Laws within the continental approach mainly differ with regard to the duration of repayment and recuperation period.

Table 1 gives an overview of private insolvency laws in Europe. The German law, for example, is considered as

creditor-friendly: the discharge period is six years and can only be shortened to three years if the debtor is able to repay at least 35 percent of his/her debts. In Latvia, which is seen as debtor-friendly, the maximum recharge period is 3.5 years, which can be shortened to one year. Apart from those countries with very long discharge periods like Austria and Germany, there are still countries with an insufficient (Spain, Portugal) or even no private insolvency law at all (Bulgaria, Hungary and Romania). Overall, European laws are moving towards shorter discharge periods. In recent years most new laws or revisions had a discharge period ranging from 3–5 years.

As there is no common insolvency procedure on EU level and no standardized discharge period, the problem of insolvency tourism (Hoffmann 2012) arises as consumers try to open a bankruptcy act in countries with more favourable bankruptcy laws (mainly because of shorter discharge periods) like England or France (Alsace region).

### Preventive measures

Additional measures need to be implemented to prevent households from falling into over-indebtedness. Loose credit conditions and uninformed customers were the main drivers behind debt accumulation over the last decade. Therefore guidelines for banks with regard to the kind of information about possible risks that is provided to customers (especially when dealing with foreign currency loans), as well as debt counselling and financial education for individuals should be established and fostered to prevent severe household debt. In April 2011 the European Commission published a proposal for the legislation of ‘responsible lending and borrowing’. This proposal includes a range of preventive measures such as requiring a standardized pre-contractual information sheet, having a mandated period where the borrower has the right to withdraw, and regulating advertisement and testing credit worthiness (European Commission 2011 and 2013).

### Conclusion

Enduring household debt can have negative externalities on the whole economy as it constrains consumption and, by extension, economic growth. One measure for reducing the household-debt-to-GDP ratio is to reduce household over-indebtedness via debt restructuring. An effective consumer insolvency law represents a reliable

instrument for adequately sharing the debt burden between creditor and debtor.

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### References

- Christopherson, K. and R. Abjornsson (2011), Republic of Lithuania: Technical Assistance Report on Proposals for Reforming the Insolvency Regime, *IMF Country Report* No. 11/320.
- The Economist (2015), Poles were slow to get out of Swiss-franc mortgages. Now they are paying the price, published 15.01.2015, <http://www.economist.com/news/europe/21639760-poles-were-slow-get-out-swiss-franc-mortgages-now-they-are-paying-price-currency-risk>.
- European Commission, Directorate General for Economic and Financial Affairs (2014), Private sector deleveraging: Where do we stand?, *Quarterly Report on the Euro Area*, 13 (3), 7-19, [http://ec.europa.eu/economy\\_finance/publications/qr\\_euro\\_area/2014/pdfr/area3\\_section\\_1\\_en.pdf](http://ec.europa.eu/economy_finance/publications/qr_euro_area/2014/pdfr/area3_section_1_en.pdf).
- European Commission (2013), Creating a fair single market for mortgage credit – FAQ, [http://europa.eu/rapid/press-release\\_MEMO-13-1127\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-1127_en.htm) (accessed 12 March 2015).
- European Commission (2012), Scoreboard for the Surveillance of Macroeconomic Imbalances, *Occasional Papers* 92.
- European Commission (2011), Proposal for a Mortgage Directive, [http://ec.europa.eu/finance/finservices-retail/credit/mortgage/index\\_en.htm](http://ec.europa.eu/finance/finservices-retail/credit/mortgage/index_en.htm) (accessed 12 March 2015).
- Eurostat (2015), Financial balance sheets [nasa\_10\_f\_bs] (accessed 06 May 2015).
- Fischer, M. et al. (2015) „Schweiz- Die Notenbank koppelt sich vom Euro ab“, *Wirtschaftswoche* 4/19.01.2015, 34–8.
- Government of the Republic of Croatia (2015), Gov’t endorses scheme to write off debts of destitute citizens, <https://vlada.gov.hr/news/gov-t-endorses-scheme-to-write-off-debts-of-destitute-citizens/16134> (accessed 09 April 2015).
- Hoffmann, T. (2012), “The Phenomenon of “Consumer Insolvency Tourism” and its Challenges to European Legislation”, *Journal of Consumer Policy* 35 (4), 417–9.
- Liu, Y. and C. B. Rosenberg (2013), “Dealing with Private Debt Distress in the Wake of the European Financial Crisis - A Review of the Economics and Legal Toolbox”, *IMF Working Paper* 13/44.
- Niemi, J. (2012), “Consumer Insolvency in the European Legal Context”, *Journal of Consumer Policy* 35 (4), 417–9.
- Ramsay, I. (2012), “Between Neo-Liberalism and the Social Market: Approaches to Debt Adjustment and Consumer Insolvency in the EU”, *Journal of Consumer Policy* 35 (4), 421–41.

## MINIMUM WAGE REGIMES IN THE EUROPEAN UNION

### National statutory and sectoral regimes

Every EU member state has some form of minimum wage system in place. The different systems, however, vary regarding the levels, scope and the institutional setting of minimum wages (MW). The main distinction can be made between national statutory and sectoral regimes. National statutory regimes define a general wage floor, which is compulsory for all employees. Sectoral regimes have no general wage floor. Instead, multiple minimum wage levels are agreed by social partners in sector-based collective agreements, albeit with varying coverage of the workforce.

**Belgium, Luxembourg, France, the Netherlands and Portugal** introduced a national statutory MW back in the 1970s, while the **Eastern European** countries followed at the beginning of the 1990s. **Ireland** and the **United Kingdom** implemented a national statutory MW in 1999/2000 and in 2015 the statutory MW was also institutionalised in **Germany**.

**Austria, Cyprus, Denmark, Finland, Italy and Sweden** are the only EU Member States that do not have a statutory national MW. These countries set minimum wages only at sectoral or occupational level through collective agreements (Figure 1).

Statutory minimum wage regimes vary with respect to the instruments used to determine the level of MW, and these may also change over time. In most countries the minimum wage is currently set by the government (**Czech Republic, Croatia, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovenia, Spain, United Kingdom**). In a second group of countries, the minimum wage is determined by collective agreements or by tripartite arrangements among the state, trade unions and employer representatives (**Belgium, Germany, Bulgaria, Estonia, Poland, Slovak Republic**)<sup>1</sup> (Schulten 2014).

In practice, most countries foresee an institutionalised participation of trade unions and employer representa-

<sup>1</sup> Bulgaria, Estonia, Poland, Slovak Republic: if a tripartite agreement is not concluded, the decision is taken by the legislator.

tives in the process of minimum wage fixing through national bodies (e.g. *Low Pay Commission* in the United Kingdom or *Commission Nationale de la Négociation Collective* in France), even if the level is finally set by the government.

In many countries statutory minimum wage regulation and collective bargaining also form a complementary system. While the government fixes a general wage floor, trade unions conclude higher minimum wages above that level through collective agreements at a sectoral level (ILO 2012).

### Minimum wage adjustments

In countries where the minimum wage is set by collective agreements in certain sectors or occupational groups, its level is usually adjusted through regular collective agreements. Countries with a national statutory MW, on the other hand, have implemented different systems. Schulten (2014) distinguishes between four adjustment methods:<sup>2</sup>

<sup>2</sup> Broad classification, the differentiation between an institutionalised consultation with social partners and a general “hearing” of social partners is not always distinct.

Figure 1



Source: Schulten (2014).

1. **Index method:** automatic adjustments based on economic indices (e.g. consumer price, wage development outside a MW). During periods of high unemployment, the increase may be temporarily put on hold (**Belgium, Luxembourg, France, Malta, Slovenia, the Netherlands**).
2. **Collective or tripartite agreement:** a MW adjustment is set through negotiations between employee and employer representatives (and academic advisers) (**Bulgaria, Estonia, Germany, Poland, Slovak Republic**). In Belgium the index method is also used).
3. **Institutionalised consultation with employer and employee representatives** (and academic advisers): final decision and political responsibility lies with the government, based on consultation with the social partners (**Croatia, Latvia, Lithuania, Portugal, United Kingdom**). France, Luxembourg, the Netherlands, Slovenia in addition to the index method).
4. **Unilateral decision by the government:** government decides in the absence of predefined rules. This method emerged mainly as a result of the economic crisis, whereas these countries previously set a MW using the above methods.<sup>3</sup> There may still be some level of consultation with representatives, but it is not institutionalised (**Greece, Czech Republic, Hungary, Ireland, Romania, Spain**).

In most countries, MW is adjusted on an annual basis. However, some countries have no predefined adjustment frequency and MW changes depend on the respective government and the economic conditions (see [DICE Database 2015a](#) for minimum wage setting mechanisms).

#### Exemptions and different rates

Many countries set alternative minimum wage rates for categories of workers who may be perceived as meriting special consideration (younger or less experienced people). For example, **Belgium, Greece, France, Ireland, Luxembourg** and the **United Kingdom** each specify youth rates, typically for workers aged 16 and 17 years old. In some countries, the MW is lower in the first or second year of employment (e.g. **Ireland**), or based on

the job category (e.g. **Greece, Hungary**). Lower rates for apprentices apply for example in **Austria** and the **United Kingdom**. **Germany**, which has just introduced a national MW in 2015, has set transition rules for certain occupations (until 2016/17). Exemptions include also minors without a vocational qualification, interns (if an internship is a compulsory part of their education) and the long-term unemployed in the first six months of a new job (see [DICE Database 2015b](#) for an overview of exemptions).

#### Institutional changes as a result of the economic crisis

In a number of countries the MW has been frozen or cut as a result of the economic crisis, but there have also been some institutional changes in MW setting systems, particularly in countries requiring support from the Troika of the European Commission, the International Monetary Fund and the European Central Bank (Eurofound 2015, ILO 2015). Within the EU's new *Economic Governance Framework* regular country-specific recommendations for national wage-setting have become a normal feature of European policy (Schulten 2012) and the *Memoranda of Understanding* between the Troika and specific (credit receiving) countries have put further pressure on national MW regulation (Eurofound 2014).

For example, in **Cyprus** and **Portugal**, the respective Memoranda of Understanding between the Troika and the governments concerned impose restrictions on the criteria for increases in the MW, and require any increase to be agreed with the Troika (IMF 2011, 2013). In **Spain**, the government discontinued its practice of consulting with social partners before setting the MW level in 2011 (Eurofound 2014). For the first time since the introduction of the national MW, the Spanish government decided to suspend its annual adjustment. At the same time the ECB sent a letter to the Spanish government demanding the introduction of a new form of "mini-jobs" to be paid below the national minimum wage in return for the central bank's purchase of Spanish bonds (ILO 2012). In **Hungary**, the tripartite commission that had determined MW was abolished in 2011, MW is now set by the government (consultative role of representative organisations).

**Greece** introduced changes to the MW setting in 2012. Whilst previously, the MW was determined by a cross-sector national agreement, MW will now be set

<sup>3</sup> Partly only temporarily in force as part of agreements with the Troika, see section on Institutional changes as a result of the economic crisis.

by the government, with the social partners having only a consultative, but no institutionalised, role (Eurofound 2014). Collective bargaining was also decentralised, with priority given to enterprise-level agreements (ILO 2015). As part of this law, the MW in Greece was frozen until 2016 and cut by 22 percent (32 percent for under 25 year-olds).

### Development of minimum wage levels since 2000

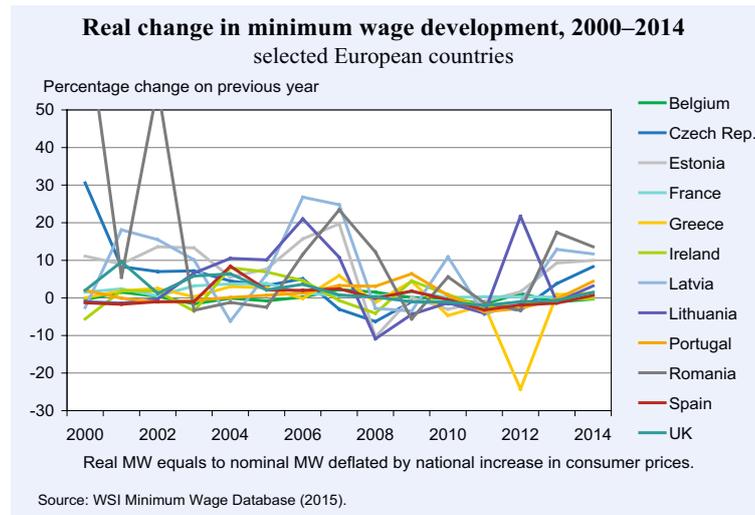
The trend in the MW rates since 2000 shows a relatively patchy picture (Figure 2 for selected countries). In real terms, the MW has developed at a rather moderate pace in **Western and Southern European** countries, on average per annum barely by one percent (WSI Minimum Wage Database 2015). The sharpest rise was in the United Kingdom (1.8 percent on average per annum between 2000–2014), due to strong increases in the early 2000s. Not surprisingly, all of these countries have seen a more or less pronounced cut in MW from 2008 onwards.

A much stronger dynamic can be found in the **Eastern European** countries. Whilst all of these countries have seen cuts in the years since 2008 (**Czech Republic, Lithuania and Estonia** by up to ten percent, again in real terms), the minimum wage in all of the Eastern European countries had risen again by 2014 (in **Estonia, Latvia, Romania** by ten percent or more). These significantly higher increases in the Eastern European countries stand for catch-up processes in general wage development, which, in absolute terms, are still based on a low MW level in these countries (Schulten 2015).

The DICE Database provides an interactive “**Visual Story**” with minimum wage indicators in Europe and other countries. An Excel file containing the underlying data is also available (DICE Database 2015c). Follow the [link](#) to compare different MW rates, nominal and MW real development, MW expressed in purchasing power standards, the ratio of minimum wages to the median earnings of full-time workers and consumer price developments in an interactive format.

Sabine Rumscheidt

Figure 2



### References

- DICE Database (2015a), “Minimum Wage-setting Mechanisms, 2015”, Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/w/4Xac7DLBA>.
- DICE Database (2015b), “Minimum wage exemption / differentiation across groups, 2006 - 2015”, Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/w/3qAFjJEFH>.
- DICE Database (2015c), “Minimum Wage Indicators, 1960–2015”, Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/w/3jcirgg8Y>.
- Eurofound (2014), *Changes to Wage-setting Mechanisms in the Context of the Crisis and the EU’s New Economic Governance Regime*, Dublin.
- Eurofound (2015), *Industrial Relations and Working Conditions Developments in Europe 2013*, Publications Office of the European Union, Luxembourg.
- ILO (2012), “Social justice and growth: The role of the minimum wage”, *International Journal of Labour Research*, Vol. 4 Issue 1. International Labour Office, Geneva.
- ILO (2015), “Global Wage Report 2014/15: Wages and income inequality”, International Labour Office, Geneva.
- IMF (2011), “Portugal: Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding, 17 May, 2011”.
- IMF (2013), “Cyprus: Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding, April 29, 2013”.
- Schulten, T. (2012), Minimum Wages in Europe Under Austerity. *ETUI Policy Brief* No 5/2012.
- Schulten, T. (2014), *Mindestlohnregime in Europa ... und was Deutschland von ihnen lernen kann*. Friedrich-Ebert-Stiftung, Berlin.
- Schulten, T. (2015), WSI-Mindestlohnbericht 2015 – Ende der Lohnzurückhaltung?, *WSI-Mitteilungen* 2/2015, 133-140.
- WSI Minimum Wage Database (2015), [http://www.boeckler.de/wsi-tarifarchiv\\_44064.htm](http://www.boeckler.de/wsi-tarifarchiv_44064.htm).

## NET PENSION REPLACEMENT RATES

Pensions generally have the function to smooth consumption paths, to redistribute and to provide insurance against risks such as longevity. Against the backdrop of recent events such as the financial crisis, ageing demographics and low interest rates, a key question for individuals in developed countries is whether their pension is sufficient to maintain their previous standard of living.

### Facing demographic challenges

Given the demographic changes in developed countries, the predominantly pay-as-you-go (PAYG) financed public pension systems in particular have come under considerable financial pressure in recent years. In PAYG financed systems no pension reserves for workers are set aside during their working time, but are directly transferred from younger workers' taxes to retirees. Demographic changes (lower birth rates and increased longevity) are reflected in a rising old age support ratio over the past decades. This ratio, which measures the number of people at working age relative to the number at retirement age, has declined from 6.6 in 1950 to 3.3 in 2013 in the EU, and is projected to fall to 1.8 workers per retiree by 2050 (OECD 2013). These issues have given rise to considerable worries over the financial sustainability of public pension systems, with most experts viewing a rise in contribution rates, a rise of the retirement age or a cut in benefits as inevitable solutions.

### Three pillar model

To find adequate responses to the challenges mentioned above, the World Bank (1994) introduced the concept of the three pillar model. According to this model old age provisions are dividable into a publicly managed (first pillar), a mandatory private (second pillar) and a voluntary private system (third pillar). Moving away from an over-reliance on the first pillar and advocating a strengthening of the second pillar by diversifying into a mix of public and private pensions has been recommended by the World Bank as 'the best way to insure' against any uncertainties. Keeping a publicly managed pillar is seen as essential in order to maintain a redistributive function across society, while the second and third pillar are savings- and insurance-oriented only.

Other common arguments for keeping a public pension scheme include the potential shortsightedness of individuals (preventing them from saving anything at all), insurance market failures and information gaps.

### Net replacement rates

The net pension replacement rate is an individual's net pension entitlement divided by net pre-retirement earnings. This rate shows how effectively each country's pension system provides a retirement income. In comparison to the gross replacement rate, taxes on both pensions and pre-retirement earnings have been accounted for already. Replacement rates can be further disaggregated according to income levels. In Table 1, low and high earners' entitlements are shown in addition to the mean entitlements (representing the entitlements of those with 0.5 and 1.5 times the average earnings). Following the structure of the three pillar model, pensioners' entitlements across Europe are compared in the form of the net replacement rate in Table 1 across 21 European countries in 2013, with the overall average net replacement rate for an average earner being 75.5 percent.

### Pillar compositions compared

The average net replacement rate from public pensions alone was at 56.4 percent in 2013, while public and mandatory pension schemes taken together yielded an average net replacement rate of 67.5 percent. Comparing total mandatory net replacement rates across countries, the Netherlands provides the highest net replacement rate at 101.1 percent, while Ireland is at the lower end of pension provisions at 37.3 percent of pre-retirement earnings.

Contributions to pensioners' entitlements from each pillar vary highly with ten European countries relying solely on a public scheme, six providing pensions through public and private mandatory schemes and five countries relying upon both public and voluntary schemes. The average replacement rate for pensioners in countries relying on public and/or mandatory schemes is at around 74.1 percent. In Germany, the Czech Republic, Belgium, the UK and Ireland, a much smaller provision is given, with an average replacement rate of 46.3 percent. Within this group, Germany offers the highest public provision at 55.3 percent for median earners, while Ireland's public scheme provides just 37.3 percent. If voluntary pen-

Table 1

**Net pension replacement rates from public, mandatory private and voluntary private pensions schemes  
(percentage of individual earnings) in 2013**

	Public			Mandatory private			Total mandatory			Total with voluntary		
	Low earner	Average earner	High earner	Low earner	Average earner	High earner	Low earner	Average earner	High earner	Low earner	Average earner	High earner
Netherlands	65.6	33.0	21.4	39.2	68.2	75.8	104.8	101.1	97.2			
Hungary	94.4	95.2	96.1				94.4	95.2	96.1			
Austria	91.2	90.2	86.2				91.2	90.2	86.2			
Slovak Republic	54.4	48.7	46.8	33.6	36.7	37.8	88.1	85.4	84.7			
Spain	79.5	80.1	79.8				79.5	80.1	79.8			
Italy	78.0	78.2	77.9				78.0	78.2	77.9			
Denmark	66.2	30.1	18.9	51.2	47.3	48.5	117.5	77.4	67.4			
France	75.9	71.4	60.9				75.9	71.4	60.9			
Greece	92.5	70.5	65.0				92.5	70.5	65.0			
Luxembourg	87.1	69.4	66.8				87.1	69.4	66.8			
Portugal	77.7	67.8	68.4				77.7	67.8	68.4			
Finland	71.3	62.8	63.2				71.3	62.8	63.2			
Estonia	49.4	32.7	26.7	30.3	29.7	28.8	79.7	62.4	55.5			
Poland	30.4	29.9	29.7	30.2	29.6	29.5	60.6	59.5	59.1			
Slovenia	80.8	59.0	57.0				80.8	59.0	57.0			
Sweden	47.6	33.7	27.6	21.2	21.5	45.3	68.8	55.3	72.9			
Germany	55.9	55.3	54.4				55.9	55.3	54.4	77.2	76.4	75.2
Czech Republic	79.7	50.7	40.1				79.7	50.7	40.1	123.2	96.4	86.2
Belgium	72.9	50.1	39.9				72.9	50.1	39.9	91.8	68.6	54.7
United Kingdom	61.7	38.0	27.2				61.7	38.0	27.2	100.3	78.1	68.9
Ireland	71.4	37.3	27.9				71.4	37.3	27.9	113.2	81.0	76.9

Note: Low/high earners denote full-time workers with 0.5/1.5 times average earnings.

Source: Based on DICE Database (2015).

sion plans are taken into account, however, this group's average net replacement rate is 80.1 percent. Examining the coverage of private pension plans in these countries in 2011, Germany saw the highest coverage with 71.3 percent of the working age population, while voluntary pension schemes proved less common in the UK, with only 43.3 percent contributing to a private plan (OECD 2013).

### Replacement rates across earning groups

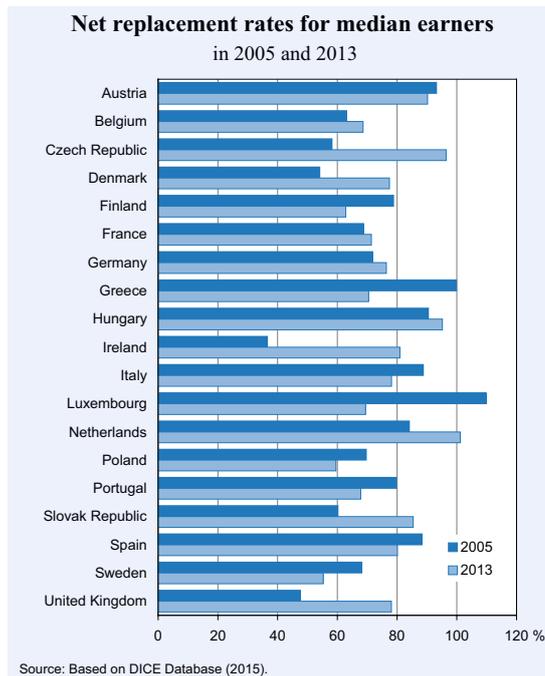
Variations between net replacement rates are not only observable between countries, but also within each country across different earning groups. In 15 out of the 21 listed European countries net replacement rates decrease as earning increase, thus providing higher protection for the poorer (see Table 1). Differences in net replacement rates across earning groups are espe-

cially pronounced in countries like Denmark, Greece, Luxembourg, Estonia, the Czech Republic, Belgium, the UK and Ireland, while differences in the Netherlands, the Slovak Republic, France, Poland and Germany are less pronounced.

### Comparison over time

Comparing net replacement rates between 2005 and 2013 country by country reveals very different movements in replacement rates (see Figure 1). For 13 countries listed the net replacement rate for median earners decreased, while for the remaining six it increased. The largest decrease can be observed for Luxembourg, which moved from a net replacement rate of 110 percent in 2005 down to 69 percent. Greece experienced the second highest negative change, with its net replacement rate falling by over 29 percentage points. The most

Figure 1



positive changes were seen for the Slovak Republic and Denmark, as their net replacement rates increased by 23 and 25 percentage points respectively.

### Concluding remarks

Any definite answer to the question of what constitutes an 'adequate' public pension level remains subjective due to different living circumstances and expectations from country to country. The above comparison, however, indicates that additional private pension provisions in countries like Belgium, the UK, the Czech Republic, Ireland or Germany are more relevant and needed than in countries like the Netherlands or Austria, where the net replacement rates from mandatory pension schemes are already at a high level.

Kathrin Rochlitz

### References

DICE Database (2015), "Gross / net pensions replacement rates from public, mandatory private and voluntary private pension schemes, 2005 - 2012", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/3W8xJEqkP>.

OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, Paris. DOI: [http://dx.doi.org/10.1787/pension\\_glance-2013-en](http://dx.doi.org/10.1787/pension_glance-2013-en)

World Bank (1994), *Averting the old age crisis: policies to protect the old and promote growth*, Washington DC, World Bank, <http://documents.worldbank.org/curated/en/1994/09/698030/averting-old-age-crisis-policies-protect-old-promote-growth>.

## OLD-AGE POVERTY IN OECD COUNTRIES AND THE ISSUE OF GENDER PENSION GAPS

### Introduction

The main objectives of pension policies are to provide an adequate level of retirement income to prevent people from falling into poverty after retiring. In addition, the replacement rate should be high enough to enable pensioners to enjoy a comparable living standard to that of their working lives. Factors like changes in pension systems, the financial crisis and demographical change have recently put strong pressure on pension policies. People experiencing non-standard employment during working age in particular are facing a higher risk of poverty than others. Women interrupting their working career to bear and raise children tend to fall into this category more often than men. This leads to the assumption that old-age poverty is a bigger issue for female retirees than for their male counterparts.

In the context of old-age poverty, a person is considered old if s/he is aged 65 years or over, since this is the most usual statutory retirement age observed in many OECD countries. Furthermore, people are counted as being at risk of living in poverty if their equalized disposable income is below 60 percent of the national median equalized disposable income (after social transfers) (DICE Database 2013). However, it is important to bear in mind that these poverty thresholds are country-specific since they are based on national median incomes. A poor person in Switzerland, a country with a relatively high poverty threshold, still has more disposable income than a non-poor person in Hungary, a country with a relatively low poverty threshold. Moreover, if the working-age population has recently experienced a high growth rate, the retirees will be counted as at risk of growing poor sooner than previously.

### Poverty in old-age compared to general poverty

Figure 1 shows the old-age at-risk-of poverty rates compared to the total at-risk-of poverty rates in certain OECD countries in 2011. While the mean at-risk-of poverty rate for old people and the mean at-risk-of poverty rate for the total population are quite similar (15.9 percent vs. 15.8 percent), the variance is high and the rates differ considerably between certain countries.

The countries can be clustered into three groups:

1. The old-age poverty rate exceeds the mean total poverty rate (old-age at-risk-of poverty rate is 20 percent or higher):  
This group includes Portugal, Belgium, Spain, Slovenia, the United Kingdom, Greece, Croatia, Switzerland, Bulgaria and Cyprus.
2. The old-age poverty rate is approximately as high as the mean total poverty rate (old-age at-risk-of poverty rate is 13 percent to 19 percent):  
The following ten countries fall into this category: Estonia, Romania, Germany, Poland, Denmark, Austria, Italy, Malta, Sweden and Finland.
3. The old-age poverty rate is lower than the mean total poverty rate (old-age at-risk-of poverty rate is 11.1 percent or lower):  
Iceland and Hungary have the lowest rate of old-age poverty, other countries in this group are Luxembourg, the Slovak Republic, the Netherlands, the Czech Republic, Latvia, Lithuania, France, Ireland and Norway.

As data from the DICE Database (2015c) show, most countries in group 3, in which the old-age at-risk-of poverty rate is lower than the mean at-risk-of poverty rate, provide some sort of basic pension of a uniform amount. This is the case for Iceland, Luxembourg, the Netherlands, the Czech Republic, Lithuania, Ireland and Norway. These safety nets are mostly based on residence or citizenship in the country or on age, but are independent of earnings. This is also true for Estonia, Poland, Denmark and Malta in the second group, and Switzerland and the UK in the first group. One can think of many reasons why old-age poverty is still high in countries like the UK and Switzerland. One reason is the initially high level of income in these countries. The at-risk-of poverty threshold in Switzerland, for instance, is far higher than in other countries, resulting in high at-risk-of poverty rates of retirees, even if their income is much higher than in most other OECD countries.

The other countries in which the old-age at-risk-of poverty rate exceeds the mean total at-risk-of poverty rate have pension systems mainly based on earning-related pensions. Additionally, individual retirement schemes play a key role in some of these countries. Interestingly, these countries also tend to have an additional, means-tested old-age income security programme, which offers a certain pension amount if the means of the family or individual in question fall under a designated level. As evidence shows, these payments

do not provide an income that prevents people from living at risk of poverty.

### Old-age poverty by gender

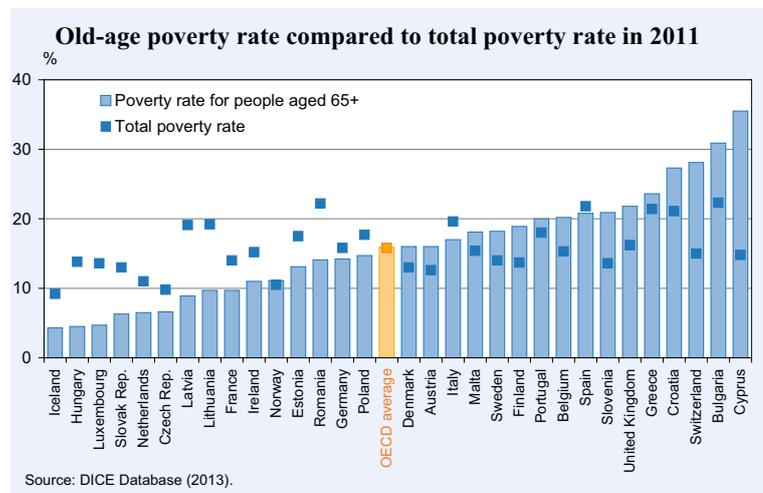
Not only does the at-risk-of-poverty rate differ by age, but also by gender. Figure 2 shows the difference between female and male at-risk-of-poverty rates across OECD countries. As can be clearly seen, with the exception of Malta, Iceland and the Netherlands, the old-age at-risk-of-poverty rate of women significantly exceeds that of men in most countries. Examining the relationship between old-age poverty in general and gender gaps in old-age poverty, there does not appear to be any distinctive pattern (while in Bulgaria, poverty in general and the gender poverty gap are both at an above average level, for example, Belgium has a high total old-age poverty and a small gender poverty gap).

There are several possible explanations for the systematically higher female old-age poverty rate. First of all, the older generation of women faces some drawbacks because such women commonly lived in a traditional family model where the man was the sole breadwinner (Zaidi 2010). In this generation, women started to raise a family earlier and had more children. This led to interruptions of employment-participation for longer periods (or even a total abandonment of employment). Not only did the older generation of women spend less time in paid work, they also earned less than younger women today. Additionally, women are more likely to work part-time and are overrepresented in occupations that are less well-paid than those of men (OECD 2012). Moreover, the female pensionable age is lower than the retirement age for men in most OECD countries. In 2011, average effective age of retirement of men was 62.3 years, versus an average of 60.8 years for women<sup>1</sup> (DICE Database 2015b).

These factors lead to women having significantly shorter careers. This constitutes a problem in retirement, since pension-benefits are often earnings-related

<sup>1</sup> OECD estimates based on the results of national labour force surveys, the European Union Labour Force Survey and, for earlier years in some countries, national censuses.

Figure 1

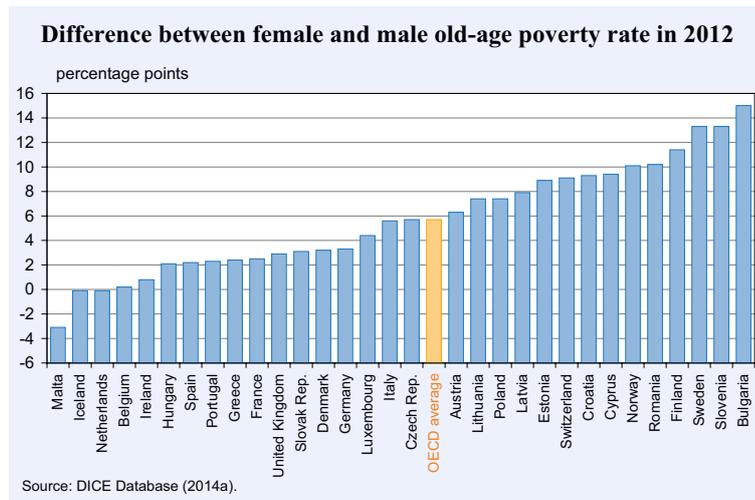


(OECD 2012). Replacement rates are generally lower than earnings during working life (ranking from 37 percent in Croatia to 78 percent in Luxembourg) (DICE Database 2015a). Thus, the gender inequality of pensions in old-age tends to be caused more by gender differences in the labour market and life expectancy than by the structure of the pension system.

This poverty effect is reinforced by the fact that women tend to live longer than men. In 2011, female life expectancy at birth averaged 82.8 years across OECD countries, whereas male life expectancy was 5.6 years lower at 77.2 years (DICE Database 2014b). First of all, a longer retirement period is usually related to higher healthcare costs, reducing the money left for daily expenses. Furthermore, especially in defined contribution pension systems, the amount of savings needs to be spread over a longer period than for men. Moreover, there is evidence that elderly persons living alone are more likely to be at risk of poverty than retirees living in couples. On average, the old-age income poverty for singles is 14.5 percent higher than that of couples (DICE Database 2014c). The higher life expectancy of women increases the likelihood of them becoming widowed, living alone, and being forced to rely on low survivor's benefit (OECD 2012).

Another important factor leading to the old-age poverty of women is the rising divorce rate. In some OECD countries, pension sharing in case of divorce is allowed, but it is not widespread. Without the existence of their own pension rights, the rising divorce rate is increasingly forcing women to rely on old-age safety nets.

Figure 2



What will female poverty rates in old-age look like in the future? Zaidi (2010) offers several suggestions. First of all, it must be taken into account that the education and employment rates of women increase in most European countries. This is likely to change female employment perspectives in the future. Nevertheless, traditional pension systems still redistribute in favour of women to correct for employment disadvantages. This creates work disincentives for women. One big challenge for pension policies is to strike the right balance between redistribution by giving women higher pension rights and a system based purely on individual entitlements. It is nevertheless likely that countries will adjust their pension systems to modern women's lives. Nevertheless, even in countries where the gender employment gap and the gender pay gap have been reduced, disadvantages for women may persist in the labour market.

## Conclusion

To conclude, poverty in old-age is widespread in our sample of OECD countries, especially when looking at female poverty. The main causes of gender income inequality in retirement are career interruptions due to childbirth and the lower earnings of women. The higher life expectancy of women also leads to poverty if they are left to live alone in their old-age. Even if younger women earn more pension entitlements in the future, inequality is still an important issue. However, the different country specific poverty thresholds should be kept in mind when drawing conclusions from the data presented. Moreover, institutions are very important in this

context, since a good institutional framework can compensate for the drawbacks faced by old people, and especially women.

Pension systems thus have to account for these drawbacks by integrating adequate survivor benefits and features like minimum pension payments (OECD 2012). Another frequently discussed policy is the gender equality of pensionable ages in order to allow women a longer period of employment. Moreover, child care and family support policies are of increasing importance to enable women to reconcile family and work (OECD 2012).

Natascha Haitz

## References

- DICE Database (2015a), "Aggregate pensions replacement ratios, 2004 – 2013", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/3grsR3GGX>.
- DICE Database (2015b), "Average effective age of retirement, 1970 – 2012", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/3ehytFMoS>.
- DICE Database (2015c), "Mandatory, old-age income security programmes, by country and type, 2012 – 2014", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/3qL4vf6FY>.
- DICE Database (2014a), "At-risk-of-poverty rate of older people and old age income poverty, 1995 – 2013", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/32SGv99AK>.
- DICE Database (2014b), "Life expectancy at birth, by gender, 1960 – 2012", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/3AJF5ZXk2>.
- DICE Database (2013), "At Risk of Poverty Rate, by Sex and Age Groups, 1995 – 2012", Ifo Institute, Munich, online available at <http://www.cesifo-group.de/DICE/fb/jfQeGk8F>.
- OECD (2012), *Closing the Gender Gap: Act Now*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264179370-en>.
- Zaidi, A. (2010), "Poverty risks for older people in EU countries—an update", *Policy Brief Series*, European Centre, Vienna.

## NEW AT DICE DATABASE

### Recent entries to the DICE Database

In the second quarter of 2015, the DICE Database received a number of new entries, consisting partly of updates and partly of new topics. Some topics are mentioned below.

- Family benefit: Childcare allowance
- Financing family benefits
- Maternity/ paternity benefits
- Guaranteed right to return to work after maternity/ paternity leave
- Comparison of total tax burden by family type
- Transfer payments and tax privileges for parents depending on the family status
- General government outlays by function
- Universal basic skills – Economic impacts of achieving the basic skills goal by 2030
- Unemployment rates by level of educational attainment
- Statutory gross minimum wages in Europe
- Minimum wage exemption/ differentiation across groups in the European Union
- Value added tax exemptions
- Private insolvency laws in Europe

The interactive graphics application [Visual Storytelling](#) has been further expanded.

## FORTHCOMING CONFERENCES

### CEPAR & CESifo Workshops: Pension Taxation, Population Ageing, and Globalisation (Part 2, Munich)

3–4 September 2015, Munich

This conference will take the form of two inter-related and sequential workshops on Pension Taxation, Population Ageing, and Globalisation, organised jointly by CEPAR and CESifo. The first workshop will be a 2-day event in Sydney on November 17–18, 2014, at which first drafts of selected papers will be presented and the Australian perspective will get more attention. A second 2-day workshop will take place in Munich on September 3–4, 2015, where revised and further papers with a European/international perspective will be presented.

Scientific organisers: Prof. John Piggott, Ph.D., Prof. Dr. Robert Holzmann, Prof. em. Dr. Dr. h.c. Bernd Genser

### 5th “Regional Economics” Workshop

10–11 September 2015, Dresden

This year’s workshop on „Regional Economics“ is hosted by the Dresden branch of the Ifo Institute and jointly organized with the Technische Universität Braunschweig. The two-day workshop is supposed to provide a forum for the discussion of current research findings. Especially, it addresses itself to young scientists that are working in the field of regional economics.

Scientific organisers: Julia Heller, Jan Kluge, Christian Ochsner

### 2015 CESifo Area Conference on Economics of Education

11–12 September 2015, Munich

The 2015 CESifo Area Conference on the Economics of Education, organised by Eric A. Hanushek (Stanford University, Area Director) and Ludger Woessmann (Ifo Institute), aims to bring together Network members to discuss their recent research and to encourage broader interactions, particularly on both sides of the Atlantic. All CESifo research network members are invited to submit their papers, which may deal with any topic within the broad domain of the Economics of Education. The Jacobs Foundation Lecture will be delivered by Richard Freeman (Harvard University & NBER).

Scientific organisers: Prof. Eric A. Hanushek, Ph.D., Prof. Dr. Ludger Woessmann

## NEW BOOKS ON INSTITUTIONS

### The Euro Area Crisis in Constitutional Perspective

Alicia Hinarejos

Oxford University Press, 2015

### Reconstructing the World Trade Organization for the 21st Century

An Institutional Approach

Kent Jones

Oxford University Press, 2015

### Financial Markets and Institutions

A European Perspective

Jakob de Haan, Sander Oosterloo and Dirk Schoenmaker  
Cambridge University Press, 2015