

# Effective Retirement Age in Austria – A Review of Changes since 2000

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*Increases in life expectancy, lower birthrates and the aging of the baby-boom generation call for measures to increase the effective retirement age. In Austria, the employment rate of older workers rose from 28.8% to 41.4% between 2000 and 2011, which would imply substantial progress in keeping older workers in employment. Yet social security statistics indicate that the average pension entry age has barely risen in the past decade and that it remains stuck considerably below the statutory age. How can these differing developments be reconciled? By discussing various concepts of the effective retirement age, this article finds that the discrepancy can be largely explained by adjusting the conventional statistical measures in several ways. After accounting for such effects it becomes clear that the average retirement age has indeed risen.*

*JEL classification: J11, J26*

*Keywords: retirement, effective retirement age, public pensions*

The need for longer working lives driven by demographic changes is universally acknowledged: Increased life expectancy and lower fertility rates call for measures to increase the effective retirement age to make public pension systems sustainable. At least since the early 2000s, this need has been addressed by EU initiatives (such as the Lisbon strategy and its successor, the EU 2020 strategy) and reports of international organizations like the OECD advocating pension reforms as well as by actual reforms in EU Member States.

To identify fiscal bottlenecks and areas in need of policy change, policymakers can rely on regular demographic and economic projections, such as the long-term economic and budgetary projections for the EU Member States (“Aging Report”) by the European Commission and the Economic Policy Committee. The Aging Report is compiled approximately every three years; the most recent (fourth) edition of the report was released towards the end of last year (European Commission, 2012). In Austria, the Pension Reform

Commission (Kommission zur langfristigen Pensionsicherung) has recently published a report which analyzes the evolution of the pension age in detail and suggests adjusting the social security statistics to be able to monitor future developments adequately (“Monitoring Report,” Pension Reform Commission, 2012).

When it comes to measuring the success of all the efforts undertaken to make pension systems more sustainable, the employment rate of older workers, derived from Eurostat’s Labour Force Survey (LFS), is a widely recognized indicator. It is usually defined as the population share of people that are employed in the age class from 55 to 64 years. In terms of this indicator, Austria (while continuing to lag the Nordic countries) has made substantial progress during the last decade. Between 2000 and 2011 the employment rate of older workers increased from 28.8% to 41.5%, with most of the increase occurring between 2004 and 2010. Measured by another indicator which is derived from the same data, the “average exit age from the labor force” in

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Austria increased from von 59.2 to 61 (i.e. by 1.8) years between 2001 and 2007.<sup>2</sup>

Yet this positive impression is not confirmed by the Austrian social security statistics, which show that the average pension entry age has increased only by 0.6 years since 2000 (average of men and women) and that it has been virtually stagnant since 2005. According to this source, the average pension entry age was 59.2 for men and 57.3 for women in 2011 and thus substantially below the statutory pension age (above all for men).

The discrepancy between these two sets of data is puzzling. Have the efforts to curb early retirement changed retirement behavior or have they essentially increased recourse to the remaining pathways to early retirement? After all international organizations have regularly criticized the increased number of invalidity pensions and the early retirement scheme for workers with long employment histories (“Hacklerregelung”). It also matters from an economic and social policy perspective how the effective retirement age has actually evolved. This article therefore tries to clarify the statistical puzzle outlined above by discussing the different concepts (employment rates, exit ages from the labor force, and the pension entry age).

The focus of analysis is limited to average figures for women, men and all workers. The article discusses neither the evolution of the statistical distribution of the retirement age (because, in my view, this is not necessary to answer

the question posed above<sup>3</sup>) nor worker heterogeneity in longevity and retirement behavior.<sup>4</sup> Finally, I do not provide an overview of all the pension reforms implemented in the last decade. This would go beyond the scope of this article, which focuses on simple statistical questions regarding the factual progress in the retirement age.

The article is structured as follows: Section 1 makes the demographic case for longer working lives and presents some results from the 2012 Aging Report. Section 2 explains how employment rates for prime-age and for older workers have evolved in the last decade and discusses other measures of old-age employment that indicate the retirement age directly. This overview confirms that the average pension entry age as evident from the Austrian social security statistics shows considerably less progress in increasing old-age employment than the old-age employment rate.

Section 3 discusses reasons why these measures give a different impression of the evolution over time. As regards the LFS data, the results could be affected by sampling errors. Several statistical adjustments suggest that the average retirement age has indeed increased over the last decade. It will be shown that the number of pensioners who work after retirement has risen over time. Moreover, drawing on results from the Monitoring Report by the Austrian Pension Reform Commission, the increase in the average pension entry age derived from the social security statistics becomes larger when the

<sup>2</sup> Those are the latest data that have been published by Eurostat. See box 1.

<sup>3</sup> See Pension Reform Commission (2012) on such statistics.

<sup>4</sup> Klotz (2011) presents evidence on socio-economic differences in mortality. The Economist (2012) provides a short discussion of possible consequences of these differences for pension systems. The Monitoring Report of the Pension Reform Commission provides some evidence on the heterogeneity in the retirement age between different worker groups (i.e. blue-collar, white-collar workers and the self-employed).

statistics are restricted to domestic beneficiaries of Austrian pensions, when a more refined way to calculate the exact pension entry age is used and when the changing age structure of older workers is accounted for. Section 4 summarizes and concludes.

## 1 The Demographic Case for Longer Working Lives

Holding factors such as immigration and economic growth constant, demographic developments call for changes in pay-as-you-go (PAYG) pension systems. The focus is on PAYG pension systems because of the evident connection between demographics and sustainability, and because PAYG pensions are the dominant source of retirement income in Austria.<sup>5</sup> Regarding the issue at hand, there are three demographic trends that are important: increasing life expectancy, decreasing birthrates and the aging of the so-called baby-boom generation, which will be discussed in greater detail below presenting data from the past and assumptions regarding future developments as they are used in the EU Aging Report.

### 1.1 Higher Life Expectancy

Panel (a) of table 1 demonstrates that the average life expectancy has been rising in Austria: Demographers project life expectancy at birth to have increased by almost 16 years for men between 1951 and 2011. Given a corresponding increase of 12 years for women and their higher life expectancy on average, the gender gap in life expectancy is thus projected to have narrowed somewhat. The projections for the conditional life expectancy at the age of 60 are also on the rise: Since 1951 these indicators have increased by

almost 7 years for men and by more than 8 years for women. Panel (b) of the table indicates that the projections in the Aging Report are based on a further, though slower, increase of life expectancy in the coming decades.

### 1.2 Decreasing Fertility

In combination with the secular decline of birthrates, the welcome increase in longevity poses a challenge for economic and social policy. Austria recorded a fertility rate of 2.0 in 1951, which rose to almost 2.8 in the decade to 1961, shortly before the height of the domestic baby boom. Following a continuous decline from the mid-1960s onward, the number of births eventually dropped to 1.3 in 2001. In recent years the fertility rate has been increasing again slowly, reaching 1.4 in 2011 (source: Statistics Austria). The projections of the Aging Report use the underlying assumption of a further small and steady increase in fertility up to 1.5 in 2050.

Table 1

#### Life Expectancy in Austria at Birth and at 60/65

	Men		Women	
	at birth	at 60	at birth	at 60
<b>(a) Statistics Austria life tables</b>				
1951	62.4	14.9	70.5	17.3
1965	66.6	14.9	73.9	18.7
1980	69.0	16.3	76.0	20.3
1995	73.3	18.5	79.4	22.9
2011	78.1	21.7	82.7	25.6
Increase 1951-2011	15.7	6.8	12.2	8.3
	at birth	at 65	at birth	at 65
<b>(b) 2012 Aging Report projections</b>				
2020	79.2	18.6	84.4	21.9
2030	80.7	19.6	85.6	22.9
2040	82.2	20.6	86.9	23.8
2050	83.5	21.5	88.0	24.7

Source: Statistics Austria, European Commission (2012).

<sup>5</sup> For demographic risks of funded systems the reader is referred to Knell (2011).

### 1.3 The Aging “Baby-Boom” Cohorts

Increasing life expectancy and the lower number of births would pose fewer problems if these developments were happening gradually. However, the demographic challenge is aggravated by the “hump” of the baby-boom generation. In Austria this group comprises roughly the birth cohorts from the mid-1950s to the early 1970s. Within this group, numbers peaked in 1963, with almost 135,000 children born in that year. While still of working age today, this group is rapidly approaching the usual retirement age. When the baby-boomers retire, there will be a considerable shift in the share of the working-age population relative to the total population: Currently, this ratio is relatively stable at about 67%. Between 2020 and 2035 – which is roughly the period during which the baby-boomers will retire – it is projected to fall from 66% to less than 60%, decreasing more slowly thereafter (European Commission, 2012).

Chart 1 illustrates that there is considerable volatility in the demographic data as regards cohort size in the period

under consideration in panels (a) for females, (b) for males and (c) for the total population. This variation potentially plays a role when interpreting data on the retirement age in Austria. The “hump” of the baby boom is clearly visible in the chart. In 2000 (indicated by the blue lines), the largest cohorts were in their mid-thirties. Over time, this hump is moving to the right (see the green lines for 2005). Current population data – the latest numbers available are for 2011 (red lines) – show the peak to have shifted towards the mid- to late-forties.

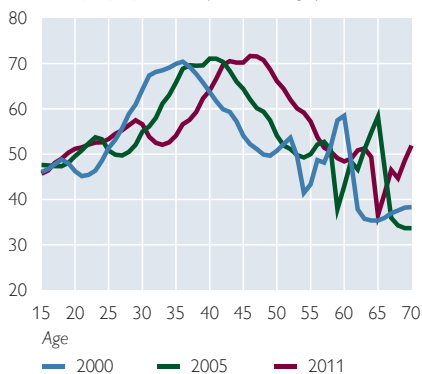
On the right-hand side of the charts, the graphs for 2000 show another noteworthy feature: There is a smaller spike with a peak at around 60. This spike is due to the low fertility rates of the 1930s (the Great Depression in Austria), sharply increasing birthrates in the economic upswing (and euphoria) after the “Anschluss” and the rapidly falling birth rates in the course of world war II resulting in a marked gap to the left of the hump. In 2005, the cohort corresponding to this gap was around the age of 59 years: In that year, there were almost 40,000 fewer people at the age

Chart 1

#### Age Structure of the Austrian Population 2000, 2005 and 2011

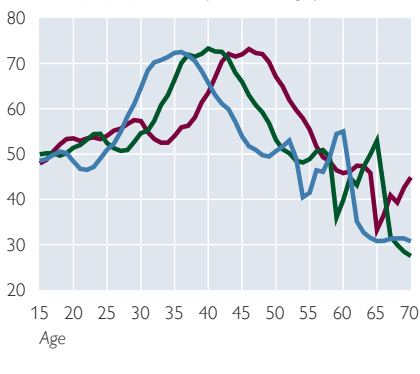
(a) Females

Number of people per cohort (annual averages) in thousands



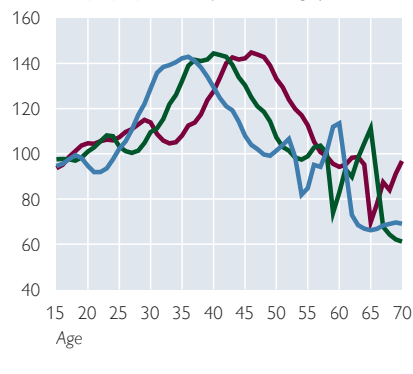
(b) Males

Number of people per cohort (annual averages) in thousands



(c) Total

Number of people per cohort (annual averages) in thousands



Source: Statistics Austria.

of 59 than in 2000. By 2011, this cohort had moved to the age of 65.

#### 1.4 Conditions for a Sustainable Pension System

Given the increase in life expectancy, an increase of the effective retirement age is an obvious remedy given population aging – especially in light of the fact that the effective retirement age is clearly below statutory age in Austria. Moreover, the statutory age has remained constant at 65 for men since at least five decades (OECD, 2012). Of course, this is only one adjustment parameter in a PAYG pension system. Alternatively, adjustment could be accomplished by changing the social security contribution rate and the pension level. In principle, a funding gap in the PAYG system could also be balanced by (increasing) subsidies from the public budget.

Knell (2011) shows that such a system is able to cope with demographic changes by incorporating automatic adjustments via a “life expectancy factor” (which triggers changes in the (statutory) retirement age) and a “sustainability factor” that regulates the contribution rate and the pension level. The Aging Report projections are based on the assumption that the participation rate of older workers will rise from 43.1% in 2010 to 54.2% in 2035. This coincides with an increase of the average retirement age (the “average effective exit age,” which is discussed in section 2) from 60.7 in 2010 to 62.4 years in 2035. The Monitoring Report by the Pension Reform Commission (2012) suggests that the average pension entry age should increase even more strongly, i.e. by 2.5 years between 2011 and 2035.

There are still other margins of adjustment. First, smaller cohort sizes at younger ages could be compensated by immigration. In 2011, net immigration to Austria amounted to more than 35,000 persons; more than 21,000 of these were between 20 and 29 years old. Compared to previous years, this was a high number, which was due to favorable macroeconomic conditions and the opening of the Austrian labor market for the majority of the new EU Member States that joined the Union in 2004 (the so-called EU-8 countries). The aging projections assume that immigration will increase in the coming decade and will stay at the level of approximately 35,000 workers per year between 2020 and 2035. Second, real GDP growth is also a crucial determinant of a public pension system. In the Aging Report, potential real GDP is expected to slow down in the coming two decades: from 1.7% in 2015 to 1.3% in 2035. Obviously, this is related to the slowdown in the growth of the working-age population. The assumption is equivalent to an average growth of real GDP per worker at around 1.5% p.a. in the same period.<sup>6</sup>

#### 1.5 Aging Report Expenditure Projections

The ultimate aim of the Aging Report is to project “age-related expenditure” in all EU Member States in the coming decades. Given projections of demographic developments as well as of employment, macroeconomic conditions and so on, the report makes budgetary projections of expenditures for pensions, health care, long-term care, education, and unemployment benefits.

<sup>6</sup> One could also try increasing the earnings of active workers relative to pensions by raising the average working time, e.g. by efforts aimed at increasing the number of full-time jobs relative to part-time jobs (Schneider, 2012). The Aging Report assumes constant hours per worker in the entire projection period.

For most countries and for the euro area aggregate, the projected increases are rather moderate. For example, according to the latest edition of the report the GDP share of total annual age-related expenditures will increase by 4.4 percentage points in Austria and by 4.1% in the euro area between 2010 and 2060. Almost half of the increase is due to increasing expenditures for pensions (+2.0 percentage points in the same period, both for Austria and the euro area). Hence, the results can also be read in the reverse direction: For example, given demographic and macroeconomic assumptions the report indicates the necessary growth path of total employment and employment at older age so that the increase in age-related expenditures can be kept within narrow limits.

## 2 Effective Retirement Age and Older Workers' Employment Rates in the Last Decade

The European Union's growth strategy, Europe 2020 (Auböck et al., 2011), contains five quantitative targets, the first of which refers to the total employment rate: In 2020, 75% of the 20-64 year-olds<sup>7</sup> should be employed at the EU level. According to the latest available statistics (2011), the employment-population ratio in the EU currently stands at 68.6%, down from 70.3% in 2008 due to the ongoing economic crisis in the euro area. At the beginning of the millennium, this ratio was 66.6%. Austria's current employment rate is substantially higher: In 2011 it was 75.2% while in 2000 it was 71.4%. (However, the time series from

the underlying Labour Force Survey (LFS) exhibit a structural break because of a methodological change between 2003 and 2004.)

Employment rates are highly heterogeneous, both with respect to gender and age groups. The younger population of working age in the EU (usually defined as those between 15 and 24 years) has a lower propensity to work for at least two reasons: First, a substantial share of the respective population is still in (secondary or tertiary) education. Second, something that is relevant in a number of EU Member States, youth unemployment was and is particularly high. In Austria, the share of younger workers in employment is substantially higher than in the EU (EU-27 or EUR-17); increases in this rate have been limited over time, though.

### 2.1 Employment Rates in Prime Age and for Older Workers

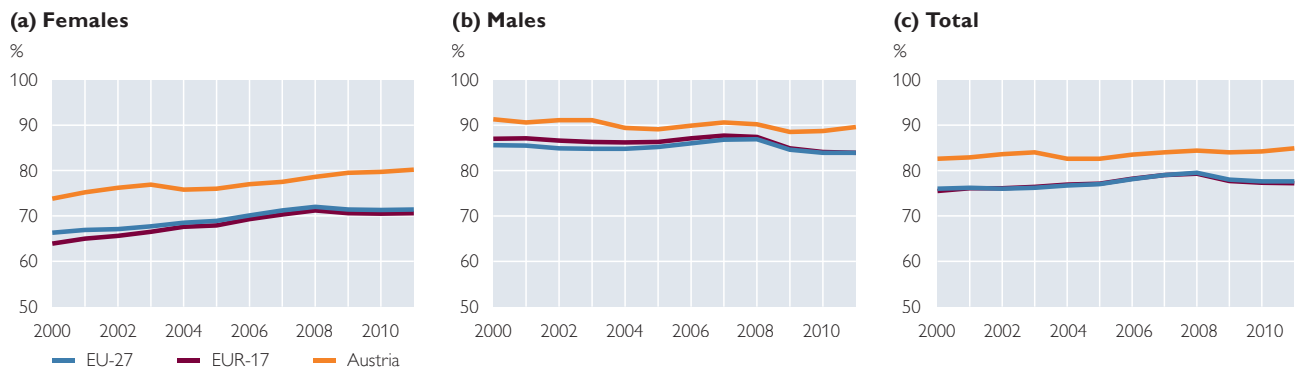
Chart 2 displays employment rates for prime-age workers, i.e. those between 25 and 54 years. In Austria, around nine in ten men of prime age are employed – practically unchanged over time apart from a small decline in 2009 due to the Great Recession. Female employment rates in prime age have steadily increased since 2000 and currently stand at 80%. This reflects the higher attachment of younger generations of women to the labor force. It is female employment which is responsible for the small overall increase in employment in this age group. Prime-age employment rates are higher than EU (or euro area) averages, especially for women.<sup>8</sup>

<sup>7</sup> The previous EU growth strategy, the Lisbon agenda, also contained an employment rate target, but for the 15–64 olds (70% in 2010). The reason for excluding the age class 15–19 years in the new target is probably related to the fact that higher youth employment may contradict another Europe 2020 target, namely that of increasing the population share of those with tertiary education.

<sup>8</sup> At the same time, the share of women working part-time in Austria (44.0%) is higher than in the EU (32.1% in the EU-27 and 35.5% in EUR-17, respectively; Eurostat figures for 2011).



Chart 2

**Employment-Population Ratios (25–54 years)**

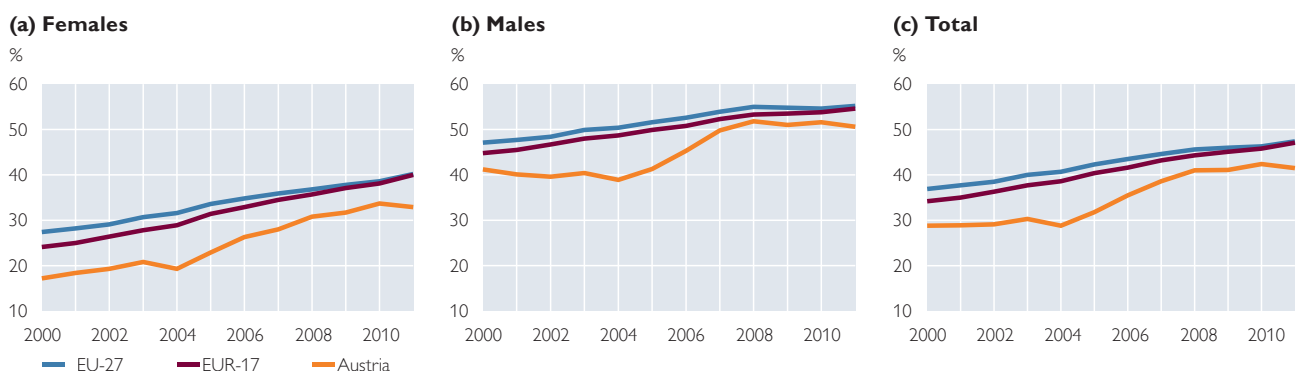
Source: Eurostat.

When it comes to the oldest age group, to workers between 55 and 64 years, employment rates are substantially lower than the prime-age rates in many countries. With 41.5%, the likelihood to be employed in this age group in Austria is clearly below the European average as chart 3(c) shows. Austria is outperformed by Denmark, Finland, Germany and the United Kingdom, for example (with correspondent employment rates of 55% or above). The highest employment rate in this age group

within the EU is that of Sweden (72.3% in 2011).

However, the rate of employment of older workers has been rising steadily. Since 2000 the employment rate for older workers has increased by 12.7 percentage points whereby most of the increase occurred after 2004.<sup>9</sup> With respect to gender, female employment rates in this age bracket tend to be lower, reflecting the lower employment rates in prime age but also the lower statutory retirement age for women

Chart 3

**Employment-Population Ratios (55–64 years)**

Source: Eurostat.

<sup>9</sup> Thus it seems unlikely that the structural break of 2003/2004 in the Austrian LFS markedly distorts the total increase between 2000 and 2011.

in some countries.<sup>10</sup> In Austria, the statutory age for women is 60 while it is 65 years for men.<sup>11</sup>

One could ask why the focus is on the employment rate rather than on the activity (participation) rate (i.e. the population share of the employed and the unemployed). The employment rate is the indicator of choice for two reasons: First, in economic terms (for the evolution of GDP and for the evolution of budgetary expenditures) it is employment rather than labor force participation that matters. Moreover, the low older workers' employment rate in Austria is not due to an increase in unemployment in this age group – quite the contrary: the unemployment rate of older workers exceeds the aggregate rate but has *decreased*<sup>12</sup> in the last decade. Hence, low employment rates for older workers do not result in higher old-age unemployment but in exit from the labor force. For this reason the distinction between employment and activity rates does not matter much in the context of this article.

## 2.2 A Closer Look at Employment Rates for Older Workers

Chart 4 illustrates the employment rates of older workers calculated for staggered age classes of five years for the period from 2004 to 2011.<sup>13</sup> The chart includes the age categories di-

rectly below and above the usual age bracket of older workers, i.e. people aged 50-54 and 65-69 years. The solid lines are conventional employment rates as used in the usual Eurostat statistics shown above. (The dashed lines are discussed below.)

Panel (a) displays the employment rates of men and women aged between 50 and 54 years, i.e. well below the pensionable age. Male employment rates are between 80% and 90% with an increasing trend, disrupted by the Great Recession. Female rates in this age group are some 15 percentage points lower but show a clearly increasing trend, which narrows the gender employment gap towards the end of the time horizon considerably. (The gap amounts to 10 percentage points in 2011.) Panel (b) shows employment rates by gender for the age group 55 to 59 years. Male employment rates are lower than in prime age but considerably higher than those of women. The reason for this discrepancy is probably that women in this age group continue to qualify for different routes into early retirement while men have only a few options left in this respect because the distance to the statutory age is too large.

There is a dramatic change after the age of 60, as shown in panel (c). (Note the change in the scale of the y-axis.) Male employment rates drop substan-

<sup>10</sup> In 2010, the following EU Member States had a lower pensionable age for women than for men: Austria, the Czech Republic, Hungary, Poland, the Slovak Republic, Slovenia and the United Kingdom. Between 1999 and 2010, the statutory pension age for female workers was increased to match that of males in Germany and Belgium (OECD, 2011).

<sup>11</sup> In 1992 a law was enacted under which women's statutory retirement age will rise gradually from 60 to 65 between 2024 and 2033.

<sup>12</sup> From 2000 to 2011 the aggregate unemployment rate (derived from administrative data) increased from 5.8% to 7.0%. In the same time, the unemployment rate of workers aged from 55 to 64 went down from 10.8% to 8.3%. When workers in training measures organized by the public employment service (Arbeitsmarktservice, AMS) are counted as unemployed, the decrease is somewhat smaller. (Source: social security records and AMS. Eurostat does not publish internationally comparable data for old-age unemployment.)

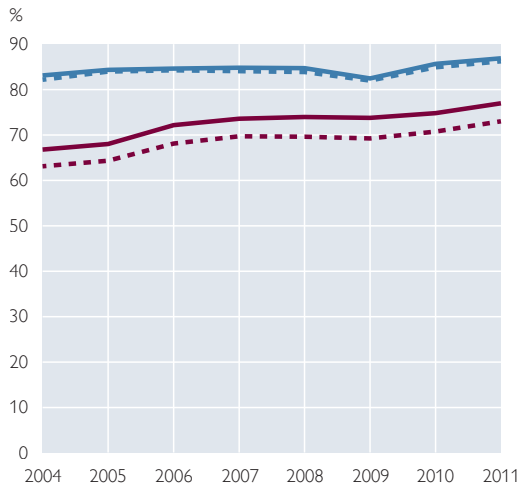
<sup>13</sup> The employment rates have been computed with LFS micro data which are available for researchers from 2004 onward.



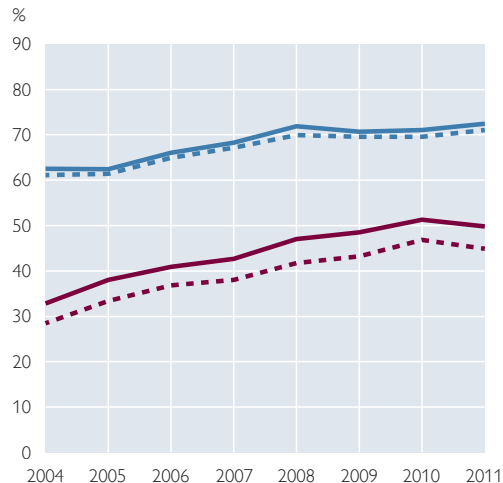
Chart 4

### Employment-Population Ratios of Older Workers in Austria (50–69 years)

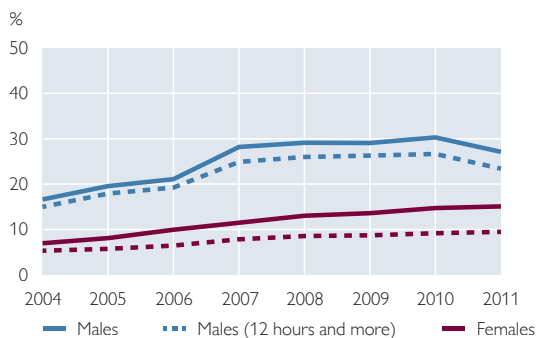
(a) 50–54 years



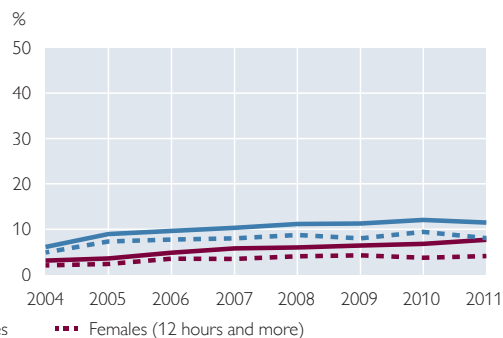
(b) 55–59 years



(c) 60–64 years



(d) 65–69 years



Source: Statistics Austria, author's calculations.

tially, clearly below the female employment rate in panel (b). Early retirement is clearly more widespread among men than among women. Moreover, a considerable (and increasing) share of women is working beyond the statutory retirement age. Finally, panel (d) displays the employment behavior after the statutory pension age of men, i.e. after 65. Employment rates exhibit a further drop but the graph demonstrates that a nonnegligible number of workers work beyond the pensionable age. The population share of these workers is increasing for both men and women: In 2011 these measures amounted to 11.5% (men) and 7.7% (women).

### 2.3 Alternative Direct Indicators of the “Average Retirement Age”

What about other indicators? While not equally prominent (at least from the perspective of international comparisons), other statistics indicate the “average retirement age” directly. (Box 1 gives a short description of different retirement age measures discussed subsequently.) Such indicators are intuitive because they can easily be compared to the statutory pension age. However, the measures in use differ both with respect to their level and their trends. I use the term “retirement age” in a neutral way subject to the caveat that “retirement” is a rather vague concept

in the absence of a standard statistical definition.

Chart 5 displays the “average exit age from the labor force,” a statistic compiled by Eurostat on the basis of the European Labour Survey (which also forms the basis for the employment rates shown above). The blue lines indicate that there is not much of a difference between the euro area and the EU-27. In 2010, the average exit age was 61.5 years – an increase of 1.6 years in 9 years (both in the EU and in the euro area). For Austria, indicated by the orange square markers, only numbers up to 2007 are available (with a gap in 2004). These indicate an increase by 1.8 years

between 2001 and 2007. During this time span, the older workers’ employment rate rose by 6.9 percentage points.

These results raise the question how the two measures are related: Is the increase in the average exit age plausible, given the change in the employment rate? Simple calculations based on the employment rates suggest that the average retirement age has increased by some 1.6 years and stands currently around 60 years.<sup>14</sup> Thus both the level and the increase of the Eurostat exit-age indicator over time seem to be too high. The implausibility of the numbers is probably related to methodological problems with this indicator (box 1).

Chart 5

### A Comparison of Pension Entry Age and Exit Age from the Labor Force



Source: Austrian Association of Social Insurance Providers, Eurostat.

<sup>14</sup> For a better grasp of how the retirement age and the older workers’ employment rate are related, consider the following example: Assume that employment rates of men/women reaching the age interval 55 to 64 years are 85%/75% (chart 4(b)). Assume that cohort sizes and the population shares of men and women are equal. Assume furthermore that men and women all retire at 60 and 57 years, respectively (which implies an average retirement age of 58.6 years). The older workers’ employment rate for men would be 42.5%, that of women 15% (29.6% on average). How do these numbers change if both men and women retire one year later (at 61/58 years)? The average retirement age is then 59.6 years. Men’s employment rate would be 51% and that of women 22.5% (averaging 37.6%). Hence, given the employment shares of men and women, an increase in the retirement age by one year implies an increase of the employment rate by 8 percentage points. The empirical increase in the overall older workers’ employment rate by 12.7 percentage points would thus be equivalent to an increase in the retirement age by 1.6 years.

By a related measure (not shown in chart 5) which is also derived from the Eurostat LFS, the OECD computes “effective retirement ages” for men and women. According to this indicator, the effective retirement for men was 58.9 years and 57.5 years for women in 2009 (OECD, 2011a or b). In 2011, the numbers were 60.4 and 58.4 years for men and women, respectively.

The green line in chart 5 displays yet another indicator, which is based on social security records. Each year, the Austrian Association of Social Insurance Providers (2012) publishes average pension entry ages and tabula-

tions by detailed ages. According to these data, the average pension entry age has barely risen between 2000 and 2011: From 57.7 to 58.3 years, with a visible increase only until 2002 and stagnation afterwards. (Note also the drop in 2004, which was caused by an increase in the number of invalidity pensions in that year. See below in section 2.4.) By gender, the average pension entry age increased from 58.5 to 59.2 for men and from 56.8 to 57.3 years for women.<sup>15</sup> These changes are considerably smaller than what can be expected from the changes in the employment rates.

Box 1

### “Average Retirement Age”: Different Measures

*There is no internationally harmonized statistical definition of “retirement.” However, there are internationally comparable definitions of employment and labor force participation. These form the basis for indirect measures of the average retirement age. The direct measures for retirement age are based on statistics on the entry age into Austria’s public PAYG pension scheme.*

#### **(1) Indirect measures of the retirement age**

*The indirect measures for the average are based on the definitions of active participation of a worker in the labor market in the quarterly Eurostat Labour Force Survey (LFS). As is well known, a person that has worked for at least one hour in the reference week of the household survey is counted as employed. If not employed but actively seeking work, he or she is counted as unemployed. Otherwise, the person is counted as inactive (out of the labor force). The LFS comprises the whole resident population. As the LFS is a survey, it has to be borne in mind that all statistics that are derived from it are subject to sampling errors.*

*The method to compute the Eurostat indicator “average exit age from the labor force” is described in the metadata section of the associated indicator on Eurostat’s website. The exit age  $a$  for a particular year  $t$  is based on activity rates of detailed age cohorts (step size: one year) between  $a=50, 51, \dots, 70$  in that year. Provided that the activity rates are monotonically declining between 50 and 70, conditional probabilities to stay in the labor force between year  $t-1$  and  $t$  at a certain age can be computed by comparing the employment rate at age  $a$  in  $t$  with that of age  $a-1$  in  $t-1$ . These probabilities (and the reverse probabilities, i.e. the probability to exit the labor force between  $t-1$  and  $t$  at a certain age) can be used to compute the unconditional probabilities to exit at a certain age  $a$  between  $t-1$  and  $t$ . The average exit age  $\bar{a}$  finally is computed as the average of all ages weighted by the exit probabilities for each age  $a$ . Eurostat admits that the indicator is of “medium” quality, because (1) the monotonicity of activity rates between 50 and 70 might not be fulfilled and (2) because the sample size for the age group above 65 years of age is very small. Values judged implausible are not published. Apparently, this is the case for Austria in 2008–2010.*

<sup>15</sup> According to longer time series (Austrian Association of Social Insurance Providers, 2012) the average pension age is stagnant or has been falling slightly since 1980. In this year the numbers were 59.2 and 58.3 years for men and women. In 1970, on the other hand, workers retired considerably later, on average at 61.9 years (men) and 60.4 years (women).

According to the description provided in OECD (2011b), the **OECD** appears to use a similar method for its indicator called “**effective age of retirement**,” with two major differences: (1) Activity rates are monitored from the age of 40 onwards. (2) The step size for cohorts is five years (40–44, 45–49,...), and their evolution is compared over a period of five years (i.e. the retirement age computed for 2011 is based on a comparison of activity rates for each of these age groups at 2006 levels). This approach presumably avoids the problems of the Eurostat method because the evolution of the activity rates of the five-year cohorts is smoother and because the sample size for each cohort is larger.

One could question whether these indirect measures of the retirement age as derived from the LFS yield additional information over the old-age employment rates that are more widely regarded, because the employment rate for older workers and the effective exit age calculated by Eurostat are probably highly correlated. But given that the indirect measures of the retirement age focus on activity rather than on employment, that they consider a wider age interval than the employment rates for older workers and that this measure is probably immune to fluctuating cohort sizes (section 3) they may provide valuable complementary information.

## **(2) Direct measures of the retirement age**

As mentioned, the **average entry age into “own”<sup>1</sup> pensions**, broken down by pension type (invalidity pensions and old-age pensions) and gender, is available from the statistical yearbook of the **Austrian Association of Social Insurance Providers** (2012). To be entitled to a pension a person must have an adequate insurance record (a minimum number years with earnings exceeding the threshold for minor jobs (“*Geringfügigkeitsgrenze*”; approximately EUR 387 per month in 2013).

This measure is conceptually different from the exit ages from the labor market described above. First, a person may be counted as employed in the LFS while receiving a pension (which is possible if the earnings do not exceed the threshold for minor jobs.) Second, the data do not cover the total population. Most importantly, pension entry ages of permanent civil servants (“*Beamte*”) are not included. The data also do not include workers who receive only an occupational pension and no state pension (“*Direktpensionen*”).

<sup>1</sup> This term (“*Eigenpensionen*”) is used to distinguish these pensions from pensions for widows, widowers and orphans.

## **2.4 Invalidity Pensions and Early Retirement over Time**

Table 2 shows how the average pension age differs between men and women and between invalidity pensions and old-age pensions. Columns (1) to (3) illustrate how the average pension entry age has evolved for “own pensions” for all workers and broken down by gender. Columns (4) and (5) indicate the entry age for invalidity pensions for men and women, and columns (6) and (7) do the same for old-age pensions, covering both early retirement (before 65/60 years) and regular retirement (at 65/60 or later). Both invalidity pensions and old-age pensions show an

increase of the average entry age of around two years for men and around one year for women. Old-age pensions currently have an entry age of 62.7 years for men and 59.4 years for women. Remarkably, the pension age for men peaked at 63.4 years in 2005 and fell thereafter. The average ages of the entry into invalidity pensions are considerably lower (53.7 for men and 50.1 for women).

The aggregate numbers for all pensions are weighted averages of the entry ages into invalidity pensions and old-age pensions. The evolution of the total average pension age is thus shaped by the relative shares of invalidity

Table 2

**Average Pension Entry Age in Austria 2000–2011**

	All 'own' pensions			Invalidity pensions		Old-age pensions	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total	Men	Women	Men	Women	Men	Women
2000	57.7	58.5	56.8	51.8	49.2	60.5	58.3
2001	58.0	58.7	57.3	53.4	50.4	62.2	59.4
2002	58.2	59.1	57.4	53.7	51.3	62.8	59.3
2003	58.2	59.0	57.3	54.3	51.3	62.7	59.0
2004	57.7	58.5	56.9	54.5	51.0	62.8	59.2
2005	58.1	59.0	57.1	53.9	51.0	63.4	59.5
2006	58.0	59.0	56.9	53.9	50.7	63.2	59.3
2007	58.1	59.0	57.2	53.9	50.6	62.8	59.5
2008	58.1	58.9	57.1	53.7	50.3	62.7	59.5
2009	58.2	59.1	57.1	53.6	50.2	62.5	59.3
2010	58.1	59.1	57.1	53.5	50.1	62.6	59.3
2011	58.3	59.2	57.3	53.7	50.1	62.7	59.4
Difference 2011–2000	0.6	0.7	0.5	1.9	0.9	2.2	1.1

Source: Austrian Association of Social Insurance Providers (2012), author's calculations.

pensions and old-age pensions. Is the stagnation of the average pension entry age a consequence of a growing number of invalidity pensions, which have been called an alternative pathway into early retirement (e. g. OECD 2009 and 2011a)? Panel (a) of chart 6 shows the evolution of the number of pension entries, broken down by invalidity pensions, early retirement (below 65/60 years) and at the regular pension age or later. Panel (b) shows the relative

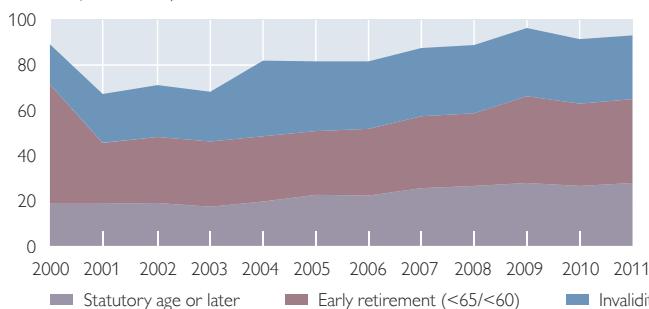
shares of the three broad kinds to retire.

The chart indicates that the share of pension entries at the statutory age has increased slightly over time. The most remarkable feature is the high number of entries into early retirement in 2000, which is due to a combination of the spike in the age distribution at 60 in that year (chart 1) and the announcement of the government at that time to increase the eligibility age

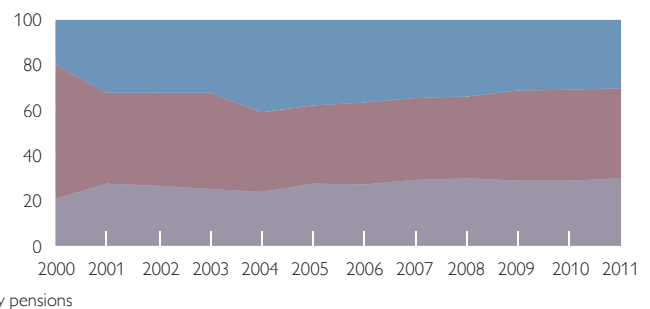
Chart 6

**Inflows into Invalidity Pensions, Early Retirement and Retirement at Statutory Age 2000–2011****(a) Absolute numbers**

Number of entries into pensions in thousands

**(b) Relative to total pension entries**

%



Source: Austrian Association of Social Insurance Providers.

for early retirement on account of longer employment histories (“Vorzeitige Alterspension bei langer Versicherungsdauer”) from 60 to 61.5 in the next year. The number and the share of invalidity pensions have increased indeed, but they did so only until 2004. Their share of all pension entries has been declining since then, but disability pensions still constituted almost 30% of all entries into retirement in 2011.

### 3 Contradicting Evidence on the Evolution of Retirement?

For the reasons outlined in section 1, measures to increase the effective retirement age are required and so are reliable indicators to measure progress in that direction. As illustrated, the available indicators do not show a homogenous picture of what happened in the last decade: Has there been real progress or has the retirement behavior remained virtually unchanged? Should we believe the evidence based on the Labour Force Survey (indicating a steady increase in the employment of older workers) or should we conclude that, based on the social security data, the retirement age has barely risen?

I want to discuss whether the indicators mentioned are really contradictory or whether the evidence can be reconciled taking the properties of the various concepts into account: First, the increase of the LFS employment rate over time may be distorted by sampling errors. Second, the discrepancy may result from the incomplete coverage of the social security statistics (above all, permanent civil servants are missing in the social security data on pension entry age). Third, the difference could be attributable to a growing number of pensioners who work in

retirement. Fourth, drawing mainly on results of the Monitoring Report by the Pension Reform Commission (2012), the average pension entry age might be biased by other structural effects (the distinction between domestic and foreign beneficiaries of pensions, imprecisions in capturing the exact age at pension entry as well as demographic effects).

#### 3.1 Sampling Error in the LFS

Like all survey results, the LFS results are subject to sampling errors. This means that level of the employment rate and the changes over time have to be interpreted with caution. How large could this error be? According to Statistics Austria, the 95% confidence interval for the *overall* employment rate is  $\pm 0.5$  percentage points. As the sample of older workers in the survey is much smaller, the confidence interval becomes larger. Based on the LFS documentation by Statistics Austria and own computations the width of the confidence interval for 2011 is  $\pm 1.6$  percentage points: The true employment rate of workers of that year lies in the interval of 39.9% and 43.1% with a probability of 95%. These considerations suggest that the published increase in the older workers' employment rate by 12.7 percentage points is not merely a statistical artifact but that this number may be either somewhat too high or too low.

#### 3.2 Do Civil Servants Make a Difference?

The tabulations of pension entry ages in the social security statistics do not cover all workers. Most importantly, they do not include permanent civil servants (“Beamte”),<sup>16</sup> who numbered

<sup>16</sup> Contract civil servants (“Vertragsbedienstete”) are included in the statistics.



239,000 in 2012, thus accounting for 6.9% out of a total of 3,465,000 jobs.<sup>17</sup> To my knowledge, there are no comprehensive and publicly available statistics on the average pension age of permanent civil servants.

In principle the pension entry age of civil servants could have risen faster than the entry age of the workers covered in the pension entry age statistics. Civil servants used to have a uniform statutory retirement age of 60 (i.e. for both men and women), but there have been reforms in this area, too. In 2000 the statutory retirement age for civil servants was raised from 60 to 61.5, and ultimately it will be raised to 65 years, with a phase-in period for workers born between 1955 and 1975 (Korecky, 2012).

The topic of the evolution of the retirement age in the public sector would warrant a separate investigation. According to evidence presented by OECD (2005), the average retirement age for both female and male federal<sup>18</sup> civil servants was in the range of the social security statistics (57 years for women and 58 years for men in 2003). Given the rather long time until the statutory retirement age will reach 65 years and given anecdotal evidence that civil servants use possibilities to retire early (chiefly the early retirement scheme for workers with long employment histories; “Hacklerregelung”) at least as heavily as workers in the private sector, it seems implausible that civil servants had above-average increases in their retirement ages in the past decade.

### 3.3 More Pensioners at Work?

As mentioned in box 1, the employment definition in the European Labour Force Survey hinges on a rather weak criterion: Anybody who worked at least one hour for pay in the reference week of the survey counts as employed. Employment and activity rates decline if only those with a minimum of 12 hours of work are counted as employed.<sup>19</sup> The difference is relatively small for prime-age workers, but higher for older workers. Further, this definition matters more for women than for men (Mayrhuber, 2012).

It is perfectly possible to be retired (in the sense of receiving a pension) and employed a few hours per week at the same time (and thus being counted as employed by the LFS). As mentioned in box 1, pensioners may continue to hold a job if their earnings do not exceed the certain threshold for minor jobs (“Geringfügigkeitsgrenze”). Indeed the number of persons receiving a pension and having a minor job has increased over time: From 26,362 in 2000 to 45,055 in 2011 (Federal Chamber of Labour, 2012). This increase of almost 20,000 workers is equal to some 1.7% of the population aged 55 to 64 years in 2011.

Let us turn back to chart 4 to look at the results from adjusted employment rates (computed from LFS micro data) to judge whether a restriction to workers with 12 hours per week or more makes a difference. In all four panels, the dashed lines show adjusted employment rates for women and men in the respective age category that can

<sup>17</sup> Source: *Employment statistics of the Austrian Association of Insurance Providers*. Employment is measured in terms of jobs rather than in terms of people. The self-employed are not covered by these statistics.

<sup>18</sup> Civil servants in the Länder were not included. With the exception of Carinthia, the Länder have adopted the legal changes in the retirement age described above which were originally enacted only for federal civil servants.

<sup>19</sup> This more stringent employment definition is sometimes called “Lebensunterhaltskonzept” (“subsistence concept”) in Austria in order to distinguish it from the definition used in the Labour Force Survey.

be compared with the unadjusted rates (indicated by solid lines). Until the age of 60 the employment rates of males do not change but there is a clearly visible difference for women. This difference even increases if we look at the age class of 60 to 64, i.e. the age class in which the employment rates of both men and women exhibit a considerable drop. Finally, in the highest age category, it makes still a visible difference whether workers with fewer than 12 hours are counted or not.

To answer the question posed above, it is not this difference *per se* that is relevant but whether the difference between the employment rates according to both concepts becomes wider over time. This seems to be the case in the age group of 60–64 years, especially for female workers. At the same time, the effect on the overall indicator (the employment rate for people aged 50–64) is rather small. Using the more stringent employment definition the increase in the older workers' employment rate would be 11.1 instead of 12.7 percentage points. To sum up, the increase in the share of older workers who work only a few hours (and who probably receive a pension at the same time) provides only some explanation for the apparent contradiction between increasing older workers' employment rates and stagnant pension entry ages.

### 3.4 Cohort-Size Effects

Chart 1 demonstrates that cohort sizes have not been quite stable at all in the past and will not be so in the foreseeable future. For example, as mentioned above, the spike in the population distribution of 2000 around the age of 60 years was moving through the 55–64 age group from the mid-1990s until the mid-2000s. Such phenomena

may affect the measures of old-age employment under consideration even if the behavior of workers as regards the patterns of early retirement does not change.

Consider first the case of the employment rate. If, say, a single large cohort (i.e. a large cohort preceded and followed by smaller cohorts) enters the age interval of 55–64 years it will drive *up* the employment rate until it exceeds the average exit age even if the members of the cohort have the same conditional probabilities to stay in or exit from the labor force over the relevant age range as the preceding cohorts.<sup>20</sup> After that, the employment rate will be driven downwards (a large cohort that still adds to the total population of the age interval but contributes relatively few workers). One could compute employment rates that are adjusted for such cohort effects by taking simple averages of the employment rate at each year of age. But the relevant micro data from the LFS have only been available since 2004.

What about the average pension entry age? If a single large cohort enters the relevant older age interval, it will increase first the number of new pensioners at early ages (including disability pensions), thus driving *down* the average pension entry age first and driving it up once it passes the average entry age. Viewed from the perspective whether cohort-size effects (effects of larger cohorts) ameliorate or deteriorate the measures of old-age employment under consideration, the timing is different: Older workers' employment rates first go up and then down, while the average pension age first goes down and then goes up. Finally, the average exit age measure that is derived from LFS data (box 1) is probably

<sup>20</sup> Compare the method for computing the average exit age from the labor force in box 1.

immune to fluctuations in cohort size because it is solely based on comparisons of cohorts with themselves over time.

### 3.5 Age-Structure Adjustment of Pension Entry Numbers

In fact – see chart 1 – cohort sizes changed quite often in the period considered, with both larger and smaller cohorts moving through the ages between 55 and 64 years. Hence, the overall effect of these movements on measures of older workers' retirement is not clear. Türk (2010) compares pension entry ages broken down by broad age classes between 1999 and 2009 and argues that the evolution and change of the average pension entry age published in social security statistics may not be reliable because of changing relative magnitudes of and differing evolutions across size classes. The author suggests that the average pension entry age has increased more strongly, at least for pensioners affected by the pension reforms in recent years.

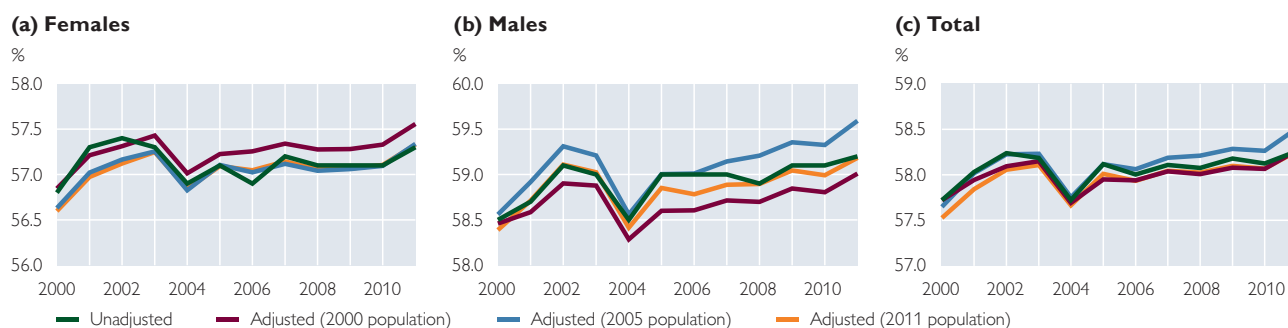
The Monitoring Report by the Pension Reform Commission (2012) considers several measures to improve the statistics for the average pension entry age (see also section 3.7). One way to do so is to account for cohort-size effects by calculating fictitious pension entry numbers for each year by assuming a constant “standard population” over time.<sup>21</sup> These fictitious numbers are then used to calculate a demographically adjusted pension entry age.

The Monitoring Report considers only the time span between 2005 and 2011. For this reason I calculate equivalently corrected pension entry numbers of my own using average population numbers per year provided by Statistics Austria. Chart 7(a) presents the results for females: The correction matters somewhat for the level of the series. As regards the change over time, all adjusted series yield the same result: The pension entry age of women increased by 0.7 years between 2000 and 2011. This is somewhat higher than in the unadjusted statistics (+0.5 years). For males, see panel (b), the outcome is different: The resulting change of the average pension age depends on the choice of the base year: If 2000 is used the change amounts only to +0.5 years (the unadjusted statistics suggest +0.7 years). However, if 2005 is used as the base year (as it is also done in the Monitoring Report) the change is +1.0 years. Finally, when adopting the population structure of 2011 the change is in-between (+0.8 years). In the aggregate, panel (c), the respective increases of the pension age over time for the different base years are +0.5 (2000), +0.8 (2005) and +0.7 (2011) compared to +0.5 years in the unadjusted data.

Why do the results for men depend so strongly on the base year? Very likely, this is due to the idiosyncratic age structures of the population in 2000 and 2005 (chart 1): In 2000, the population size around the unadjusted

<sup>21</sup> This simple adjustment method is used quite frequently by demographers and epidemiologists. It is called “direct age adjustment” (Wolfenden, 1923, cited in Ahmad et al., 2001). The adjustment is carried out as follows. The unadjusted average pension entry age in a particular year  $t$  is  $\bar{a}_t = \frac{1}{\sum_a E_{at}}$  where  $a$  is the entry age of pensioners and  $E_{at}$  is the number of pension entries at each age in  $t$  and the summation is over the entire age interval (in one-year steps). For the age-adjusted average pension age ( $\tilde{a}_t$ )  $E_{at}$  is replaced by  $\tilde{E}_{at} = E_{at} \cdot \frac{POP_{as}}{POP_{at}}$ .  $POP_{at}$  is the number of people aged  $a$  years in  $t$  and  $S$  refers to the standard population.

## Average Pension Entry Age: Adjustment for Age Structure – Different Standard Populations



Source: Austrian Association of Social Insurance Providers, Statistics Austria, author's calculations.

mean (59 years) is rather high, but the population numbers fall dramatically between 61 and 65. In 2005, the opposite is the case: Low numbers at 60 but high numbers at the age of 65. Both 2000 and 2005 are probably not ideally suited as base years: Because of the specific volatility in their age structure they either lead to an underestimation of the increase in the pension age (2000) or to an overestimation (2005). 2011 appears to be a more suitable choice because the population numbers among the older population exhibit a much smoother development.<sup>22</sup> Bearing this in mind one can sum up: After the adjustment for cohort size, the increase in the pension entry age over time becomes somewhat bigger both for women and men.

### 3.6 Cohort Analysis

The average pension entry age as published in social security statistics is based on a cross-section of the workforce and necessarily depicts the behavior of several cohorts which may be – in

the context of this article – affected by pension reforms in different ways. The results are likely to be biased and conclusions about changes in retirement behavior need to be made with caution (Hofmann and Krickl, 2012). The crude adjustment for the population structure discussed above may be regarded only as a partial remedy.

A superior way to study the evolution of the pension age over time is to adopt cohort analysis, i.e. to study the behavior of different cohorts separately. In order to reach valid conclusions the cohorts must have already passed through the entire (relevant) age spectrum. This means, in order to study changes in retirement, practically all members of the cohort should already have retired. This statistical requirement is also the main drawback of the method: Changes in retirement behavior can only be recognized with a considerable time lag.

Such a cohort analysis is contained in the Monitoring Report. It describes the evolution of the average cohort-

<sup>22</sup> It would be possible to use fictitious population structures where large swings in age cohorts are eliminated, e.g. by using average population numbers in the period under consideration. In fact, the results of such an exercise are very similar to those when using 2011 as the standard population. Another population structure that suggests itself would be to start with a certain cohort size at younger ages and let it decrease by empirical mortality rates over the age distribution. Epidemiologists use "ideal" age distributions quite heavily when making comparisons across countries (Ahmad et al., 2001).

entry age for workers born between 1915 and 1941. This means that the youngest cohort reached the age of 70 in 2011. The findings confirm that the cohort-entry age has been on a long-term slow decline almost until recently: For males, the cohort-entry age was 60.8 for workers born in 1915 and 58.8 years for those born in 1940. For female workers, the entry age of the oldest (1915) cohort was 59.7 years and that of the cohort of 1940 was 57.0 years. Only for the youngest cohort (1941) did the entry age increase somewhat: to 59.2 years and 57.2 years for men and women, respectively. This increase is probably due to the increase in the eligibility age for early retirement on account of longer employment histories that became effective in 2001 (chart 6). Although valuable in principle, the cohort analysis presents only evidence on retirement behavior from more than a decade ago.<sup>23</sup>

### 3.7 Other Structural Adjustments in the Monitoring Report

The Monitoring Report<sup>24</sup> applies several methods to adjust the average pension entry age for the period between 2005 and 2011. For example, the average pension entry age is recalculated using the exact age of entrants into pensions (by comparing the month of birth and the month of pension entry) rather than the raw data which are, in effect, based on a simple comparison of the year of birth and the year of pension

entry. After this correction, the increase in the pension age between 2005 and 2011 becomes somewhat bigger (by +0.2 years).

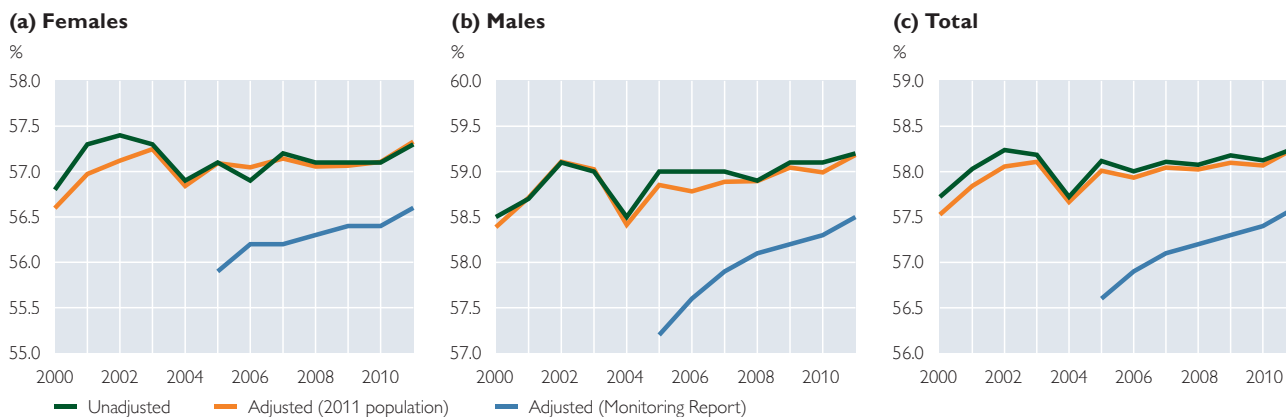
More important is a restriction to domestic pension beneficiaries. This correction shifts the level of the pension entry age substantially downwards (beneficiaries of pensions living abroad tend to have a higher retirement age), but the change over time becomes substantially larger. After accounting for both effects, the increase in the average pension age is +0.8 years (instead of +0.2 years in the raw data).<sup>25</sup> This correction is also relevant for the discrepancy between the employment rates and the average pension entry age in the unadjusted data because the LFS data refer to the *resident* population in Austria. Finally, the report applies a demographic adjustment which is accomplished by holding the age structure of 2005 constant over the entire period (see above). This leads to an additional increase of the pension age by 0.2 years.

The results, taken all these corrections together, are shown in chart 8 (blue lines) and are compared with the unadjusted pension entry age (shown as green lines again) and my own results for the age adjustment (orange lines with the population structure of 2011 like in chart 7). The effective pension entry age is shifted downwards after adjusting the raw data. As regards the change between 2005 and 2011, the

<sup>23</sup> Such an analysis could provide evidence from the more recent past: Hofmann and Krickl (2012) study the retirement behavior up to cohorts born in 1946 (i.e. workers that were 65 in 2011). Because of workers working beyond 65 it is impossible to compute an average entry age. But it is possible to study the evolution of the share of workers going into early retirement closer to the present (until 2006). The authors find that the share of workers retiring at the statutory age has increased markedly over the most recent decade.

<sup>24</sup> The report also presents evidence on the period between the exit of the labor force and pension entry. This “waiting period” sometimes amounts to several years, especially when there is a period of unemployment between employment and retirement. However, this analysis is presented only for a single year (2011). Most adjustments and analyses in the report are based on internal data of the Austrian Ministry of Labour, Social Affairs and Consumer Protection.

<sup>25</sup> Source: Tables 29 and 32 in Pension Reform Commission (2012).

**Average Pension Entry Age: Adjusted and Unadjusted Numbers**

Source: Austrian Association of Social Insurance Providers, Statistics Austria, author's calculations, Pension Reform Commission (2012).

adjustments matter less for women (+0.7 years, compared to +0.2 years in the raw data), but quite strongly for men (+1.3 years compared to +0.2 years). In the aggregate, the adjusted numbers indicate an increase of the pension entry age by 1.0 years in this period (+0.2 years in the raw data).

#### 4 Summary and Conclusions

Increases in life expectancy, lower birthrates and the aging of the baby-boom generation call for measures to increase the effective retirement age. This need has been addressed by initiatives like the EU-2020 strategy and by the regular EU Aging Reports. As measured by the European Labour Force Survey (LFS), the employment rate of older workers increased from 28.8% to 41.4% between 2000 and 2011. Indicators of the effective exit age from the labor force that are derived from the same data source suggest analogous improvements. This means that Austria has made progress in keeping older workers in the workforce – although old-age employment is still below the European average.

Or has it? In fact, based on social security statistics, the average pension

entry age has increased by just 0.6 years from 2000 to 2011, stagnating around 58 and 59 years for female and male workers, respectively – which is considerably below statutory pension ages. Moreover, the small increase in the pension entry age seems implausible, given the increase of the employment rate.

How can these differing developments be reconciled? By discussing the different concepts and data sources this article shows that, first, the LFS-based results might be distorted by sampling errors that are inherent in survey data. (However, the errors could go in either direction.) Second, there is a small effect due to an increasing number of pensioners working a few hours beyond retirement which exaggerates the increase in the older workers' employment rate computed from the LFS.

Third, using a more precise method to identify the exact pension age, the increase in the average pension entry age in the social security statistics over time becomes a bit larger. Fourth, after accounting for the volatile age structure of the older population in the period considered here, the increase in the pension entry age becomes some-



what stronger. Finally, restricting the pensioners to domestic beneficiaries results in a larger increase of the pension age over time. When all these effects are taken together, the pension entry age increases considerably stronger than in the conventional statistics.

Thus, both the Labour Force Survey data and the (corrected) social security statistics now tell a less contradictory story: they suggest that there has indeed been (some) progress in raising the effective retirement age in Austria since 2000.

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